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RENAULT

# 1 Engine and peripherals


10A ENGINE AND CYLINDER BLOCK ASSEMBLY

11A TOP AND FRONT OF ENGINE

12A FUEL MIXTURE

12B TURBOCHARGING

13A FUEL SUPPLY

13B DIESEL INJECTION

13C PREHEATING

14A ANTIPOLLUTION

16A STARTING - CHARGING

17A IGNITION

17B PETROL INJECTION



*X79*

**NOVEMBER 2009** **EDITION ANGLAISE**



"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which the vehicles are constructed".

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# 19A COOLING

# 19B EXHAUST

# 19C TANK

# 19D ENGINE MOUNTING

***X79***

**NOVEMBER 2009** **EDITION ANGLAISE**

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# DUSTER - Chapitre 1

## Contents


Pages

**10A ENGINE AND CYLINDER BLOCK ASSEMBLY**

Crankshaft seal on timing end: Removal - Refitting 10A-1

Crankshaft seal, gearbox end: Removal - Refitting 10A-5

Lower cover: Removal - Refitting 10A-9

Conrod bearing shell: Removal - Refitting 10A-24

Engine oil: Draining - Refilling 10A-32

Oil filter: Removal - Refitting 10A-34

Oil-coolant heat exchanger: Removal - Refitting 10A-37

Oil pressure sensor: Removal - Refitting 10A-42

Oil pump: Removal - Refitting 10A-44

Oil pressure: Check 10A-46

Multifunction support: Removal - Refitting 10A-48

Engine - gearbox assembly: Removal - Refitting 10A-54

Flywheel: Removal - Refitting 10A-75

**11A TOP AND FRONT OF ENGINE**

Pressure at end of compression: Check 11A-1

Accessories belt: Removal - Refitting 11A-2

Crankshaft accessories pulley: Removal - Refitting 11A-10

Timing belt: Removal - Refitting 11A-17

Rocker cover: Removal - Refitting 11A-42

Camshaft: Removal - Refitting 11A-49

Camshaft seal, timing end: Removal - Refitting 11A-56

Oil decanter: Removal - Refitting 11A-68

**12A FUEL MIXTURE**

Air inlet: Description 12A-1

Air resonator: Removal - Refitting 12A-2

Air filter: Removal - Refitting 12A-3

Air filter unit: Removal - Refitting 12A-6

Air flowmeter: Removal - Refitting 12A-10

# Contents

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**12A FUEL MIXTURE**

Throttle valve: Removal - Refitting 12A-11

Inlet distributor: Removal - Refitting 12A-12

Injector holder shim: Removal - Refitting 12A-14

Exhaust manifold: Removal - Refitting 12A-16

**12B TURBOCHARGING**

Turbocharger: Removal - Refitting 12B-1

Turbocharger oil pipe: Removal - Refitting 12B-4

Intercooler: Removal - Refitting 12B-8

**13A FUEL SUPPLY**

Fuel circuit: Operating diagram 13A-1

Manual priming pump: Removal - Refitting 13A-3

Diesel filter: Removal - Refitting 13A-5

Fuel pressure: Check 13A-9

Fuel flow: Check 13A-11

**13B DIESEL INJECTION**

Diesel injection: List and location of components 13B-1

Diesel injection computer: Removal - Refitting 13B-5

Camshaft position sensor: Removal - Refitting 13B-7

**13B DIESEL INJECTION**

Crankshaft position sensor: Removal - Refitting 13B-8

High pressure pump: Removal - Refitting 13B-9

Flow actuator: Removal - Refitting 13B-14

Venturi: Removal - Refitting 13B-16

High pressure pipe: Check 13B-18

High pressure pipe between pump and rail: Removal - Refitting 13B-19

High pressure pipe between rail and injector: Removal - Refitting 13B-22

Injector rail: Removal - Refitting 13B-25

Fuel temperature sensor: Removal - Refitting 13B-28

Injector leak flow: Check 13B-30

Diesel injector: Removal - Refitting 13B-32

Accelerometer: Removal - Refitting 13B-37

**13C PREHEATING**

Pre-postheating unit: Removal - Refitting 13C-1

Heater plugs: Removal - Refitting 13C-2

**14A ANTIPOLLUTION**

Exhaust gas recirculation: List and location of components 14A-1

Fuel vapour absorber: Removal - Refitting 14A-2

# Contents

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**14A ANTIPOLLUTION**

Exhaust gas recirculation solenoid valve: Removal - Refitting 14A-4

Exhaust gas cooler: Removal - Refitting 14A-7

Exhaust gas recirculation assembly: Removal - Refitting 14A-9

Exhaust gas recirculation rigid pipe: Removal - Refitting 14A-12

**16A STARTING - CHARGING**

Alternator: Removal - Refitting 16A-1

Starter: Removal - Refitting 16A-8

Alternator pulley: Removal - Refitting 16A-12

**17A IGNITION**

Coils: Removal - Refitting 17A-1

**17B PETROL INJECTION**

Petrol injection: List and location of components 17B-1

Oxygen sensors: Removal - Refitting 17B-4

Throttle valve potentiometer: Removal -Refitting 17B-6

Petrol injection computer: Removal - Refitting 17B-7

Crankshaft position sensor: Removal - Refitting 17B-9

Injector rail - Injectors: Removal - Refitting 17B-10

**19A COOLING**

Engine cooling system: Operating diagram 19A-1

Engine cooling system: Specifications 19A-2

Engine cooling system: Check 19A-3

Engine cooling circuit: List and location of components 19A-5

Cooling system: Draining - Refilling 19A-6

Cooling radiator: Removal - Refitting 19A-9

Coolant pump: Removal - Refitting 19A-13

Thermostat: Removal - Refitting 19A-19

Water chamber: Removal - Refitting 19A-22

Engine cooling fan assembly: Removal - Refitting 19A-27

Coolant pump inlet pipe: Removal - Refitting 19A-34

Expansion bottle: Removal - Refitting 19A-38

Coolant temperature sensor: Removal - Refitting 19A-40

**19B EXHAUST**

Exhaust: List and location of components 19B-1

Exhaust: Precautions for the repair 19B-6

Catalytic converter: Removal - Refitting 19B-10

Expansion chamber: Removal - Refitting 19B-17

# Contents

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**19B EXHAUST**

Intermediate pipe: Removal - Refitting 19B-18

Silencer: Removal - Refitting 19B-20

**19C TANK**

Fuel tank: Draining 19C-1

Fuel tank: Removal - Refitting 19C-3

Fuel level sensor module: Removal - Refitting 19C-8

**19D ENGINE MOUNTING**

Suspended engine mounting: Tightening torque 19D-1

Left-hand suspended engine mounting: Removal - Refitting 19D-2

Right-hand suspended engine mounting: Removal - Refitting 19D-4

Lower engine tie-bar: Removal - Refitting 19D-8

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# Crankshaft seal on timing end: Removal - Refitting

K9K

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

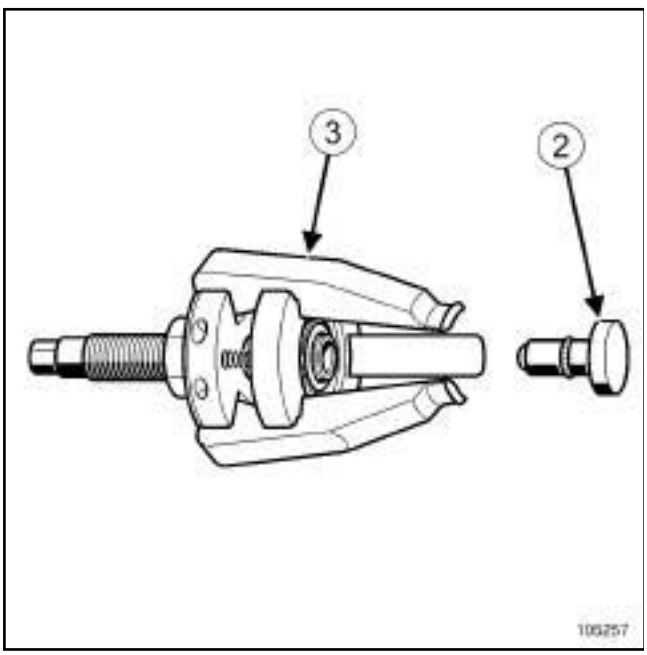
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

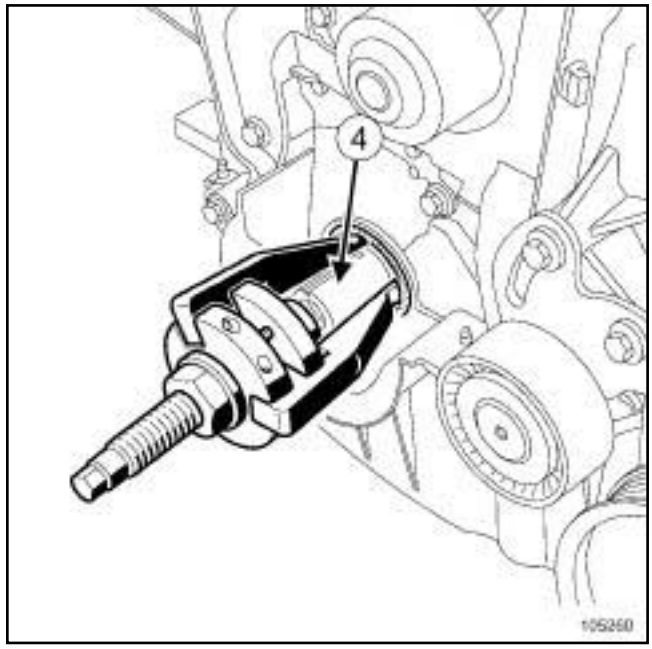
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the timing belt sprocket (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) .

### II - REMOVAL OPERATION



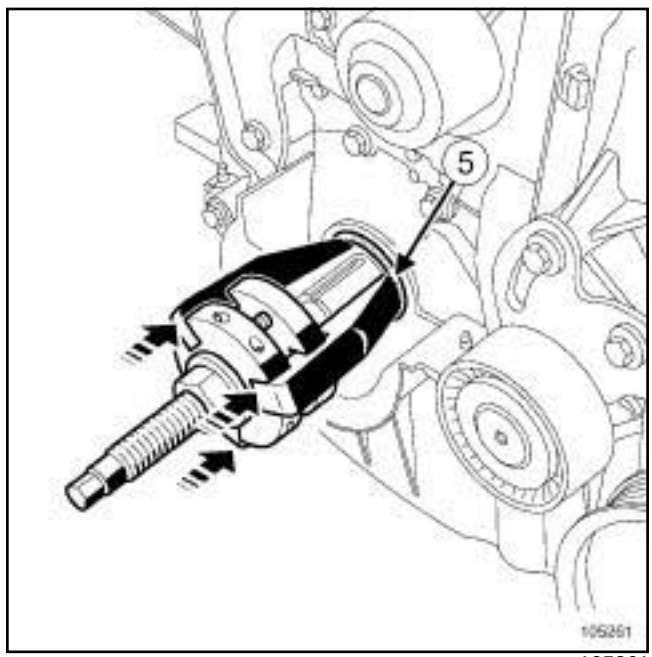

105257

❏ Fit the end piece (**2**) onto the tool (**3**) .




105260

❏ Position the jaws of the toolonto the crankshaft nose (**4**) .




105261

❏ Push on the tooluntil contact is made between the ends (**5**) of the jaws and the crankshaft seal.

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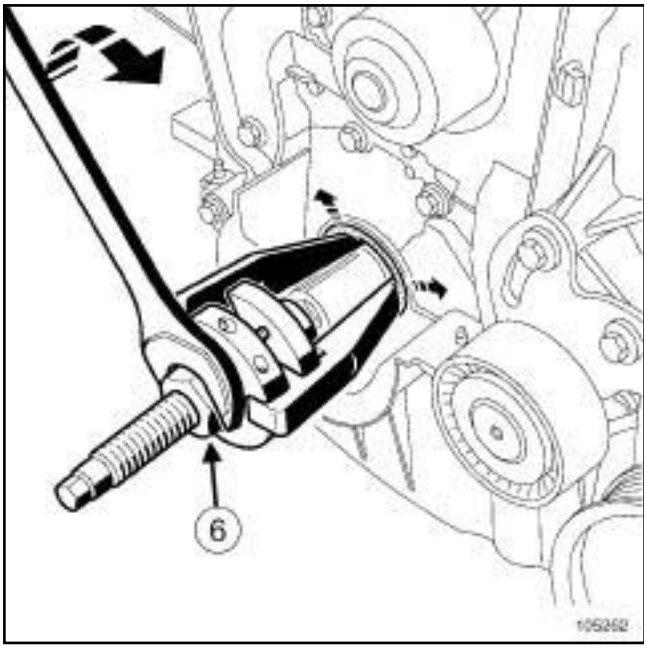
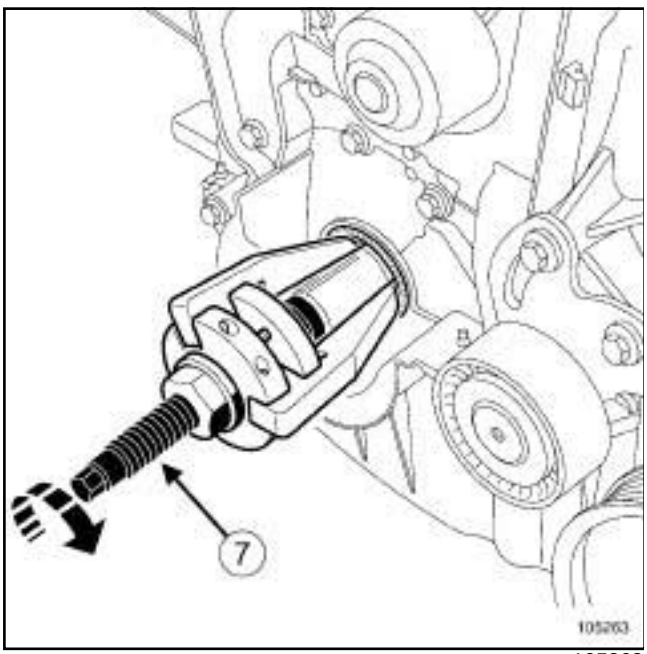
# Crankshaft seal on timing end: Removal - Refitting

K9K




105262

❏ Separate the jaws by screwing the nutof the tool (**6**) .




105263

❏ Screw down the threaded rod (**7**) of the.

❏ Refit the crankshaft seal at the timing end using the tool.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: Crankshaft seal on timing end**.

**WARNING**

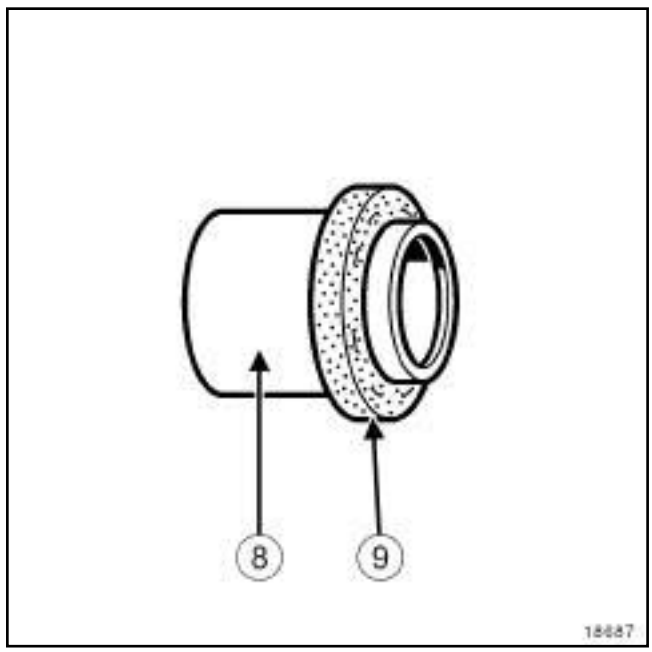
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❏ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the crankshaft seal mating face,

- the crankshaft seal housing in the crankshaft closure panel.

### II - REFITTING OPERATION




18687

18687

❏

Note:

This type of seal is extremely fragile.

Only touch the protective part (**8**) when handling the gasket. It is strictly forbidden to touch the seal (**9**) ; this is to prevent any oil leaks once the oil seal is fitted to the engine.

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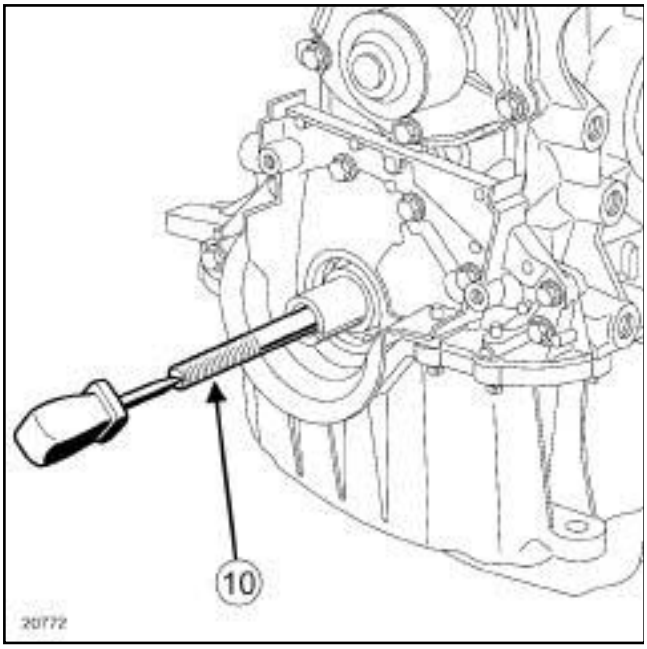
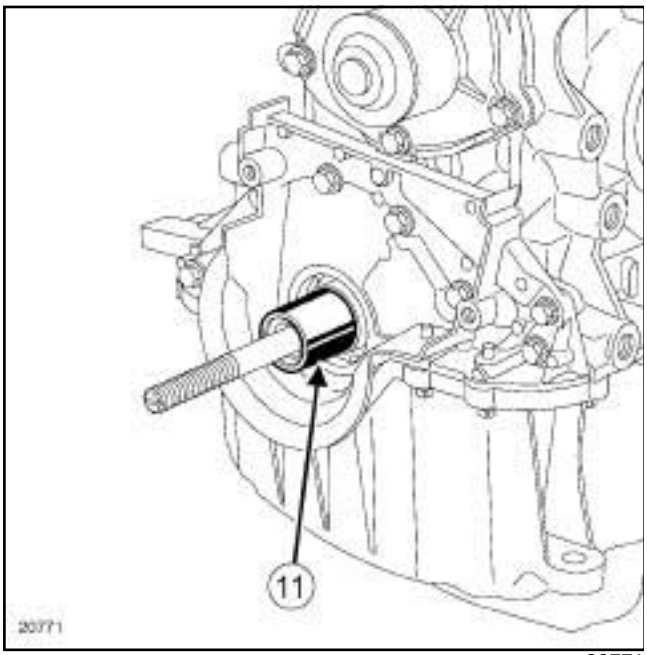
# Crankshaft seal on timing end: Removal - Refitting

K9K



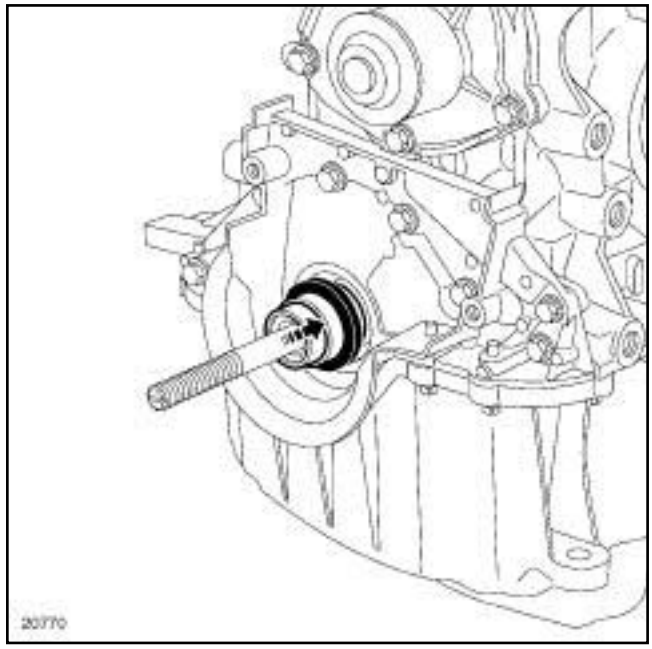

20772

❑ Screw the threaded rod (**10**) of theinto the crankshaft.



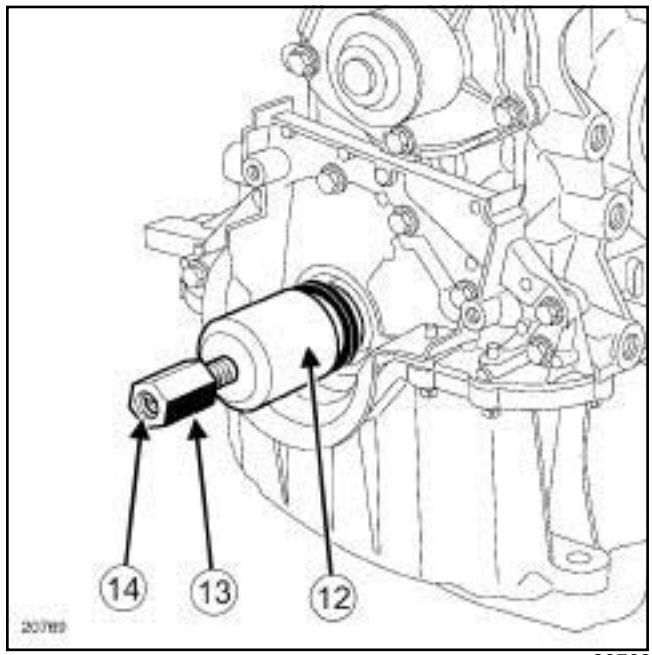

20771

❑ On the crankshaft, fit the spacer (**11**) of the.




20770

❑ Fit the protector with the new seal in place on the spacer, taking care not to touch the seal.




20769

❑ Fit the cover (**12**) and nut (**13**) (with the thread (**14**) of the nut towards the outside of the engine) of the.

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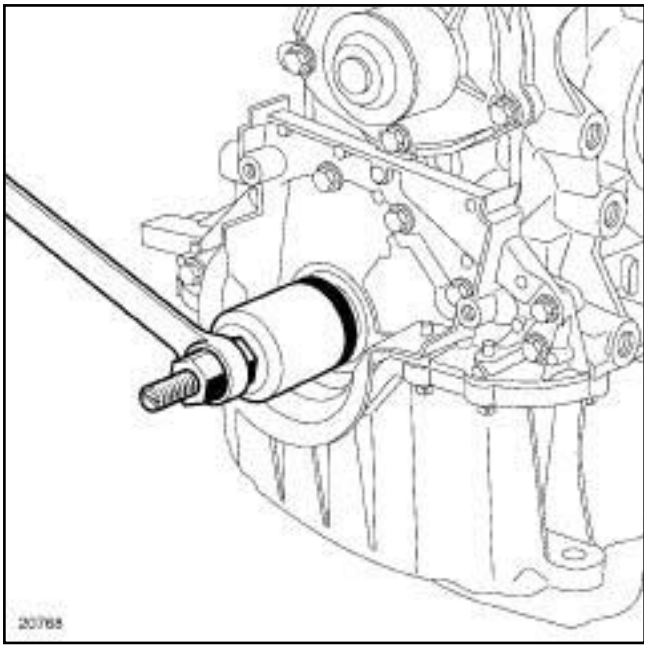
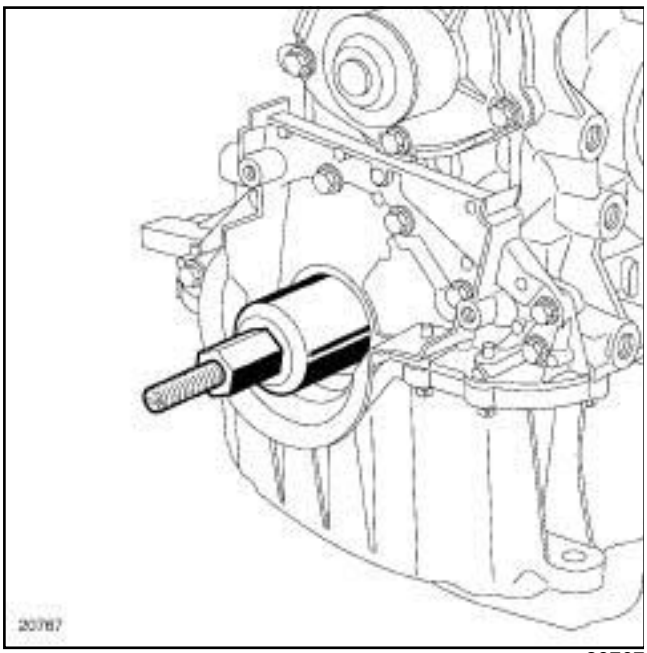
# Crankshaft seal on timing end: Removal - Refitting

K9K

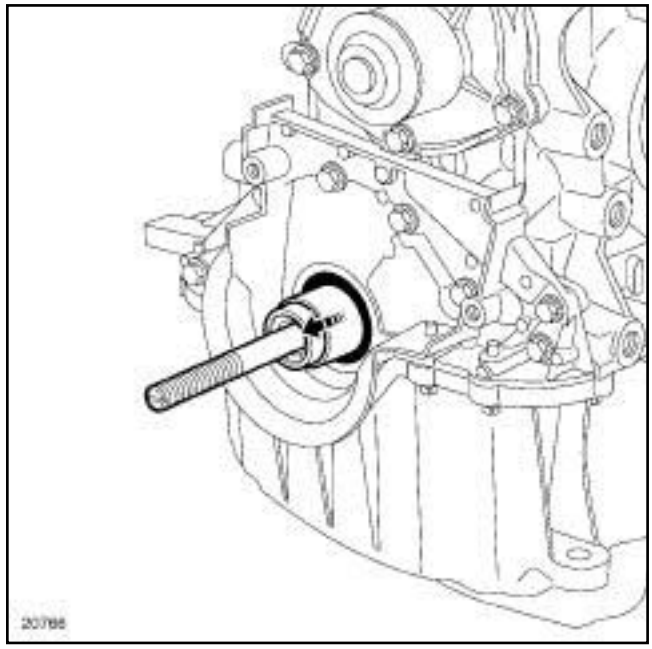



20768




20767

❏ Screw on the nut until the cover touches the spacer.




20766

❏ Remove the nut, the cup, the protector and the threaded rod.

**III - FINAL OPERATION**

❏ Refit:

- the timing belt sprocket (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Crankshaft seal, gearbox end: Removal - Refitting

K4M or K9K

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

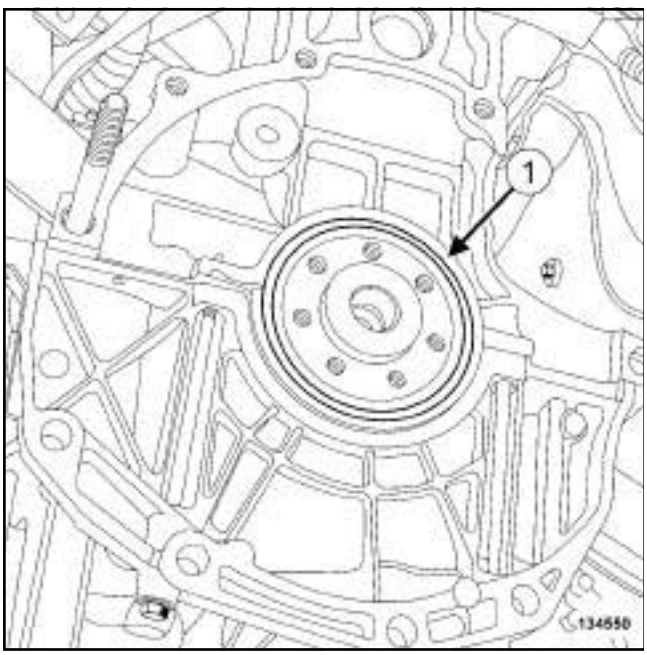
❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the gearbox (see **Manual gearbox: Removal - Refitting**) (21A, Manual gearbox),
- the clutch (see **Pressure plate - Disc: Removal - Refitting**) (20A, Clutch),
- the flywheel (see **10A**, **Engine and cylinder block assembly**, **Flywheel: Removal - Refitting**, page **10A-75**) (20A, Clutch).

### II - REMOVAL OPERATION

K4M



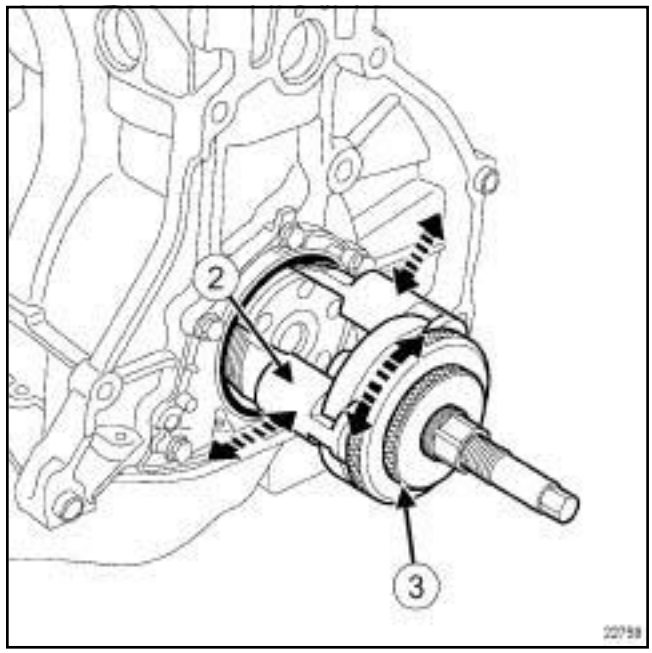

134550

❏ Remove the crankshaft seal (**1**) at the gearbox end using a screwdriver.

Note:

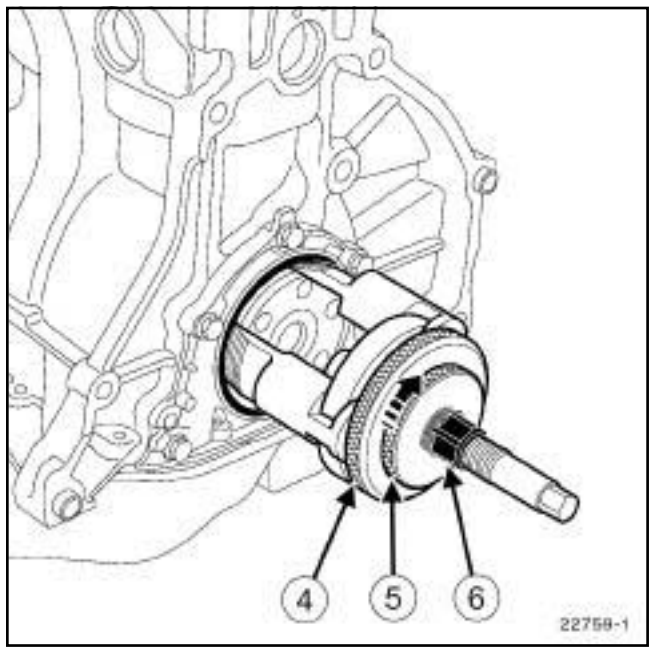
Take care not to damage the crankshaft mating face.

K9K




22759

❏ Fit the extractorto the shaft, adjusting the fingers (**2**) to the diameter of the shaft using the knurled plate (**3**) .




22759-1

❏ Screw knurled plate (**5**) until it is locked to knurled plate (**4**) to keep the fingers in position on the shaft.

❏ Screw the extractor into the seal using the hexagonal nut (**6**) .

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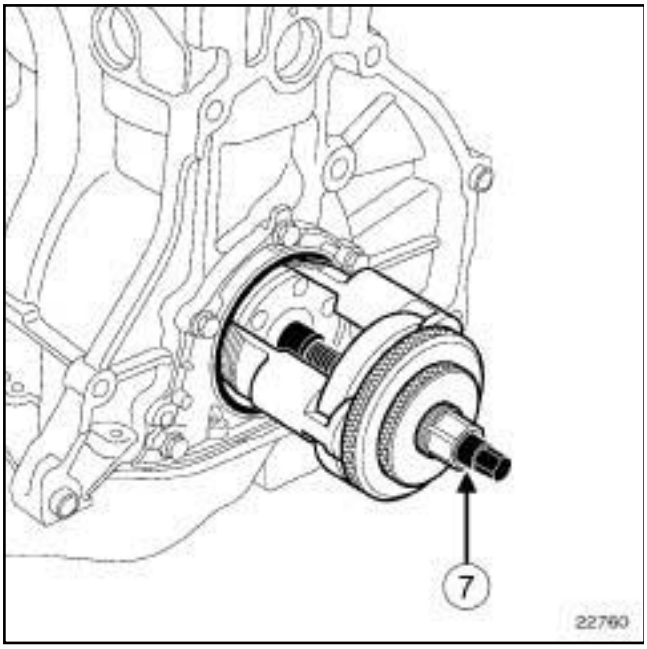
# Crankshaft seal, gearbox end: Removal - Refitting

K4M or K9K




22760

❑ Extract the crankshaft seal at the gearbox end by screwing the threaded rod (**7**) .

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Crankshaft seal on gearbox end**.

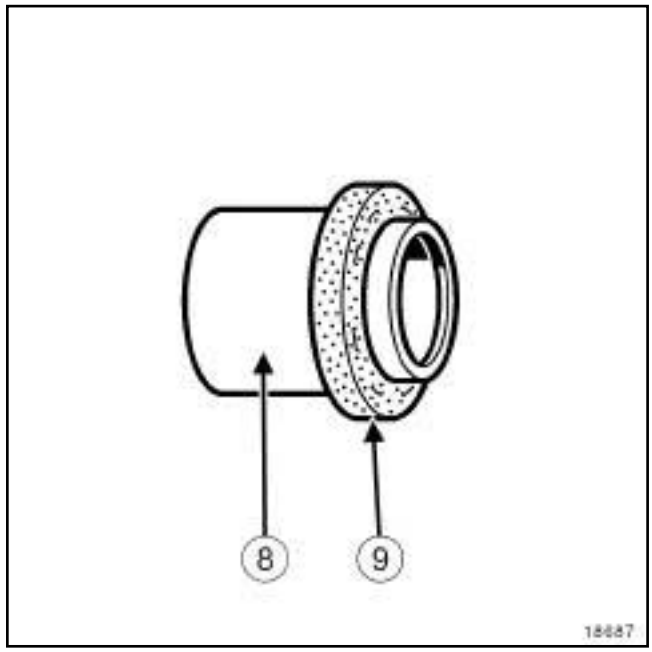
> **WARNING**
> To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the crankshaft seal mating face,
- the crankshaft seal housing on the cylinder block.

### II - REFITTING OPERATION

K9K




18687

❑

> Note:
> This type of seal is extremely fragile.
> Only touch the protective part (**8**) when handling the gasket. It is strictly forbidden to touch the seal (**9**) ; this is to prevent any oil leaks once the oil seal is fitted to the engine.

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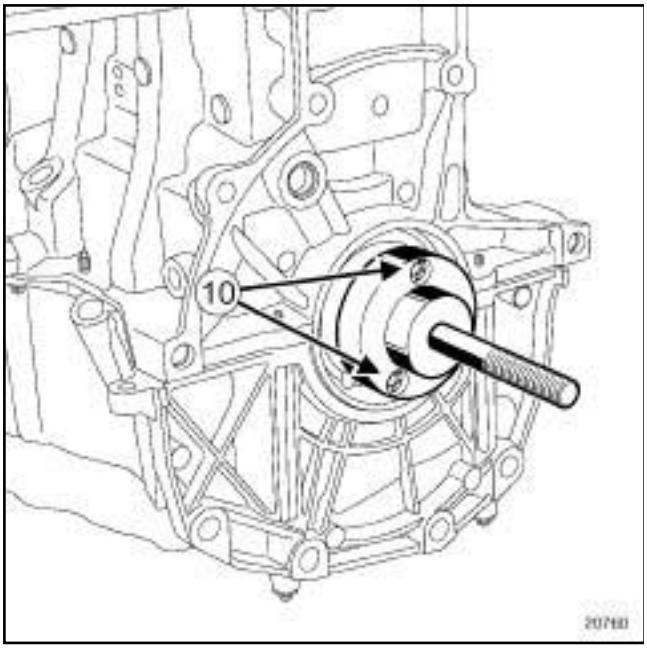
# Crankshaft seal, gearbox end: Removal - Refitting

K4M or K9K

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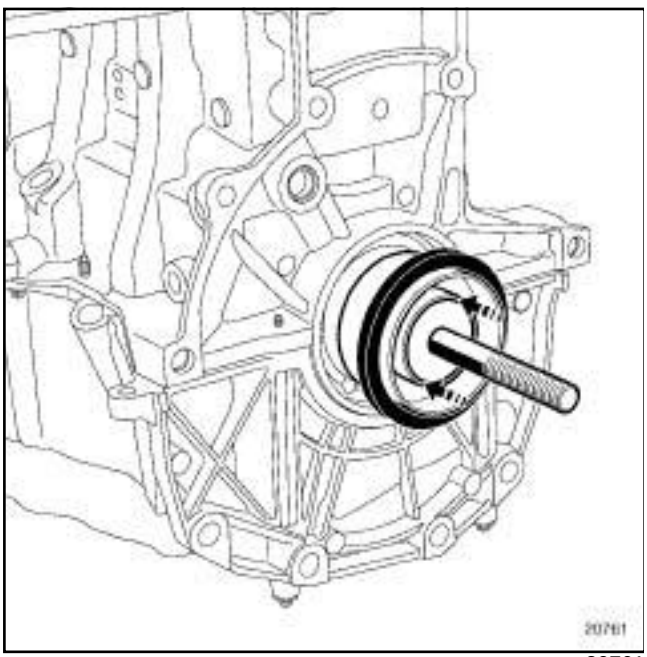
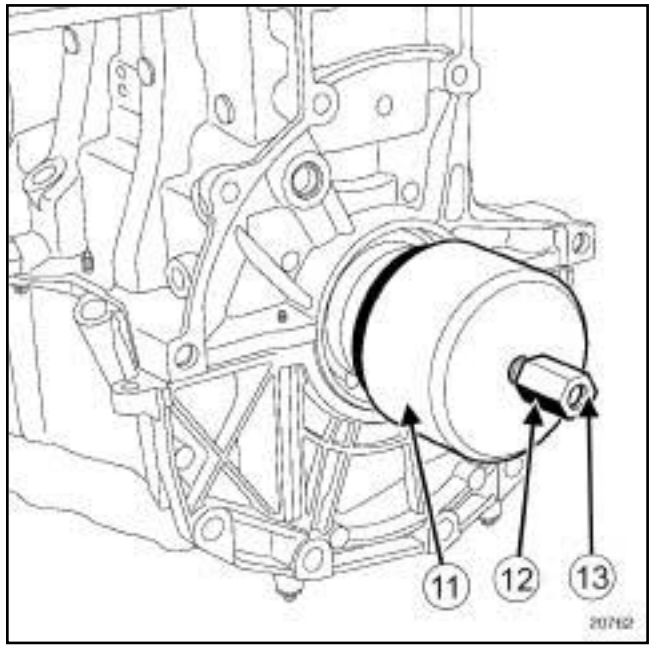
❑ Mount theon the crankshaft, securing it using bolts (**10**) .



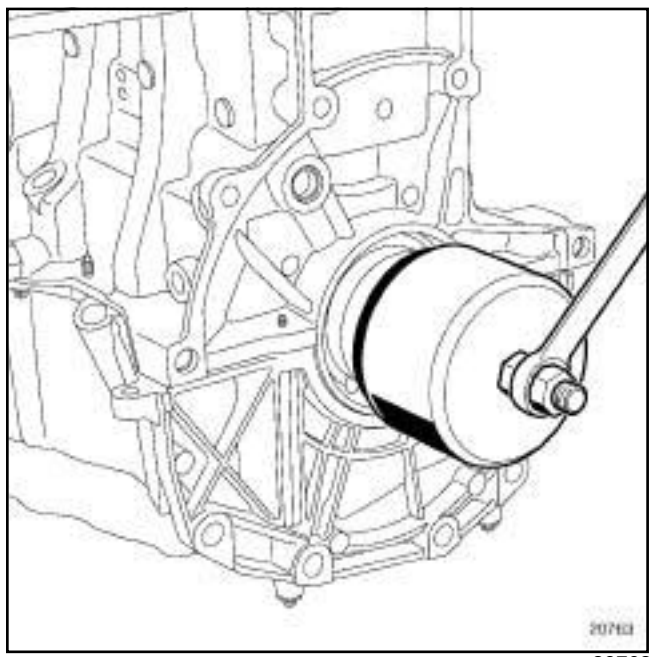
20761

❑ Fit the protector with its seal in place on the, taking care not to touch the seal.




20762

❑ Fit the cover (**11**) and nut (**12**) (with the thread (**13**) of the nut towards the outside of the engine) of the.



20763

❑ Tighten the nut until the cover touches the cylinder block.

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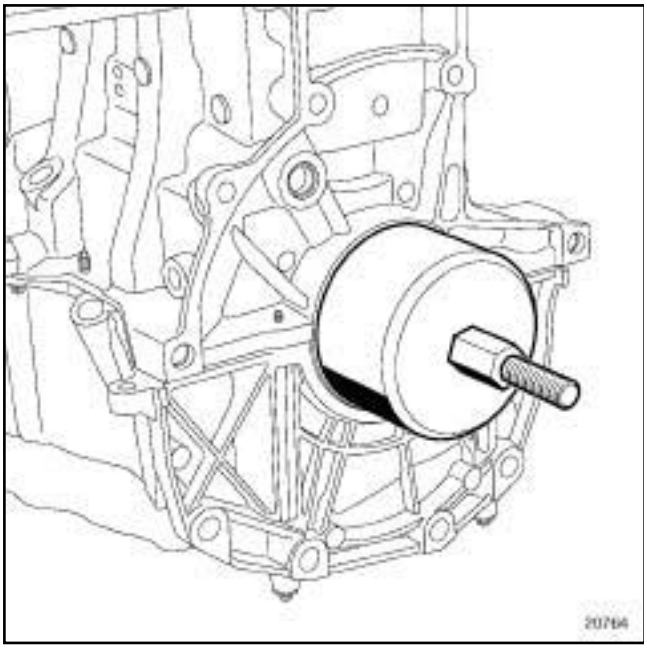
# Crankshaft seal, gearbox end: Removal - Refitting

K4M or K9K



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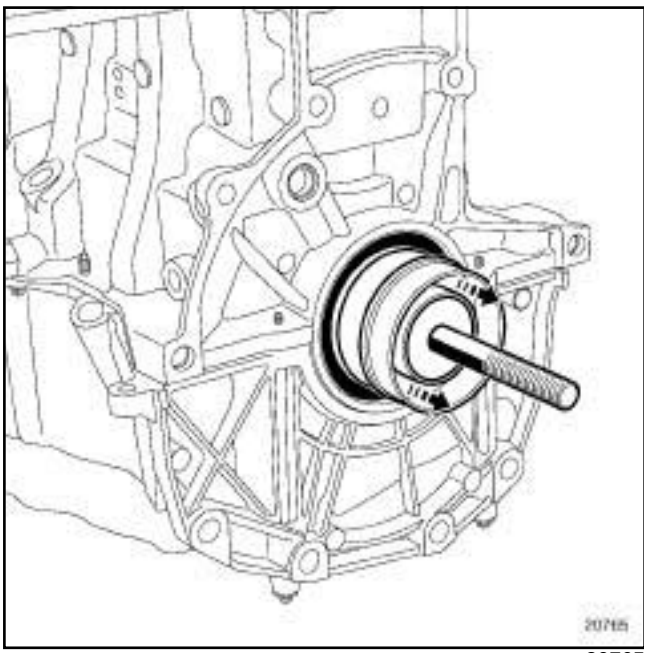
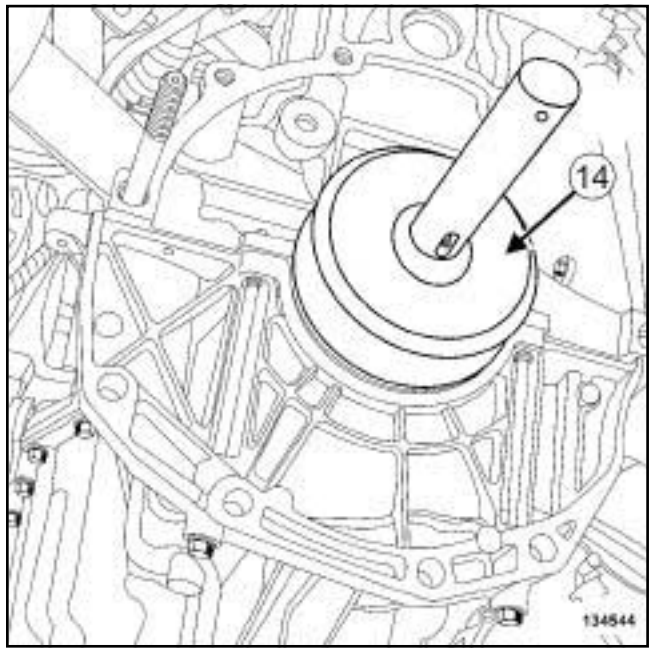


20765

❑ Remove the nut, the cover, the protector and the base plate.

K4M




134544

❑ Refit the crankshaft seal at the gearbox end, using the tool (**14**) .

**III - FINAL OPERATION**

❑ Refit:

- the flywheel (see **10A**, **Engine and cylinder block assembly**, **Flywheel: Removal - Refitting**, page **10A-75**) (20A, Clutch),
- the clutch (see **Pressure plate - Disc: Removal - Refitting**) (20A, Clutch),
- the gearbox (see **Manual gearbox: Removal - Refitting**) (21A, Manual gearbox).

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Perform the following operations:

- fill the manual gearbox (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox),
- bleed the clutch control circuit (see **Clutch circuit: Bleed**) (37A, Mechanical component controls).

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# Lower cover: Removal - Refitting

K9K

| Special tooling required | |
|---|---|
| **Tav. 1747** | Threaded rods for carrying out subframe operations. |

| Tightening torques ▽ | |
|---|---|
| oil pump bolts | **25 N.m** |
| sump bolts on the cylinder block | **14 N.m** |
| sump bolts on the gearbox | **44 N.m** |
| sump bolts on the multifunction support | **25 N.m** |
| power assisted steering pump support bolt on the sump | **25 N.m** |
| bracket bolts | **62 N.m** |
| relay bearing bolts | **44 N.m** |
| right-hand driveshaft flange bolt(s) on the relay bearing | **21 N.m** |
| front axle subframe tie-rod upper bolts | **21 N.m** |
| power-assisted steering low pressure pipe bolt on the front axle subframe | **25 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55, Exterior protection).

❏ Remove:

- the engine undertray bolts,
- the engine undertray.

❏ Drain the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .

❏ Remove:

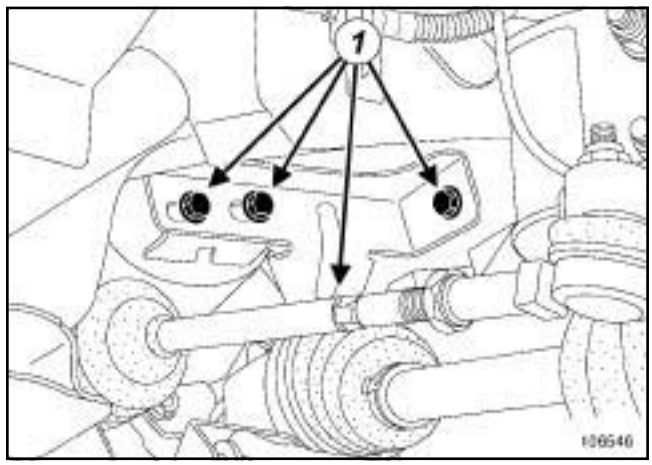
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front wheel arch side liners,
- the lower engine tie-bar (see **19D**, **Engine mounting**, **Lower engine tie-bar: Removal - Refitting**, page **19D-8**) .

❏ Extract the lower arm ball joints from the stub axle carrier (see **Front driveshaft lower arm: Removal - Refitting**) (31A, Front axle components).

❏ Remove (see **Steering box: Removal - Refitting**) (36A, Steering assembly):

- the heat shield bolts on the steering box,
- the steering box heat shield,
- the steering box bolts on the front axle subframe.

❏ Attach the steering rack to the body.



106546

❏ Remove:

- the catalytic converter upstream strut bolts (**1**) ,
- the catalytic converter upstream strut.

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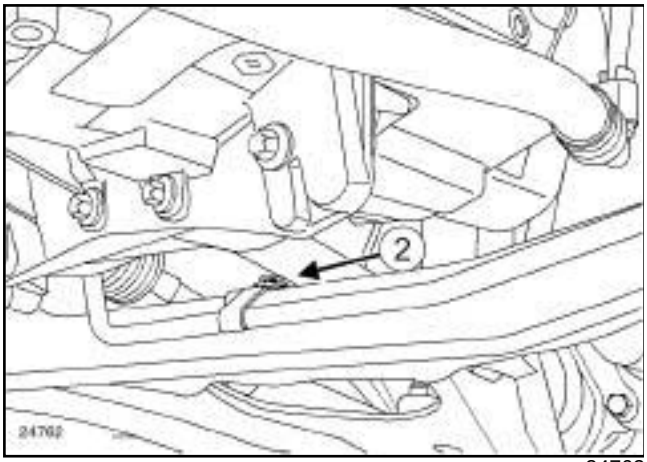
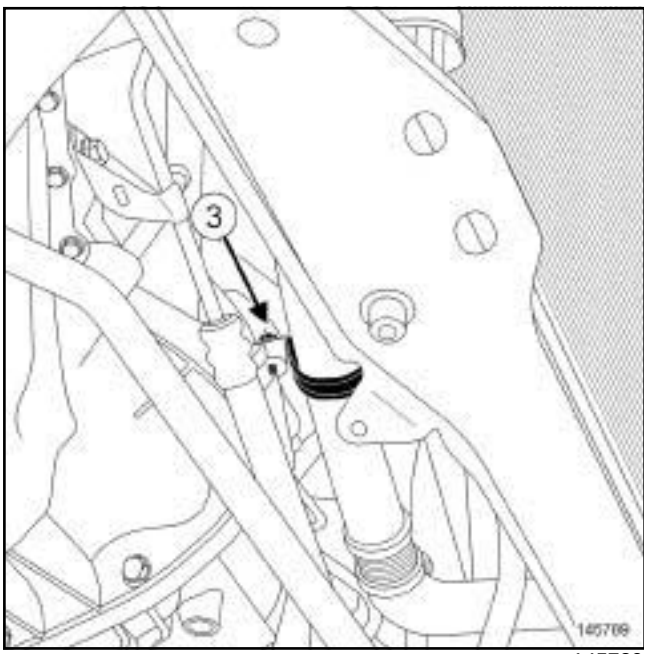
# Lower cover: Removal - Refitting

K9K



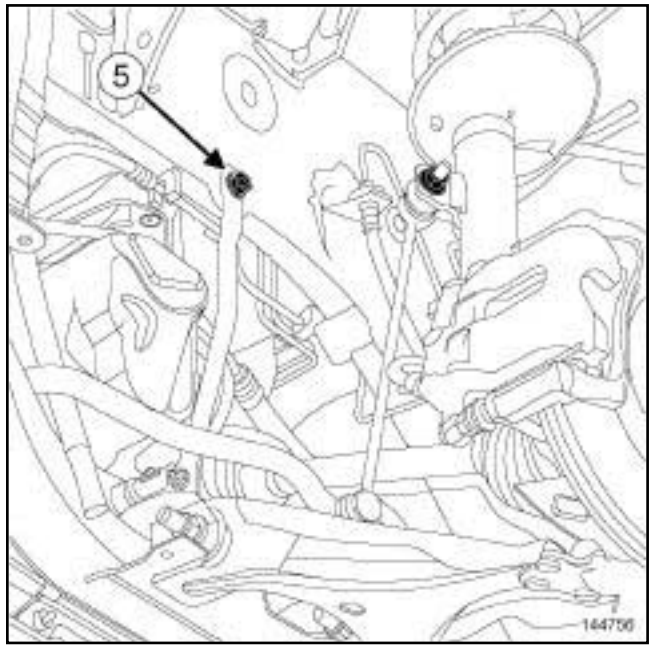

24762

❏ Remove the power-assisted steering low pressure pipe bolt (**2**) on the front axle subframe.



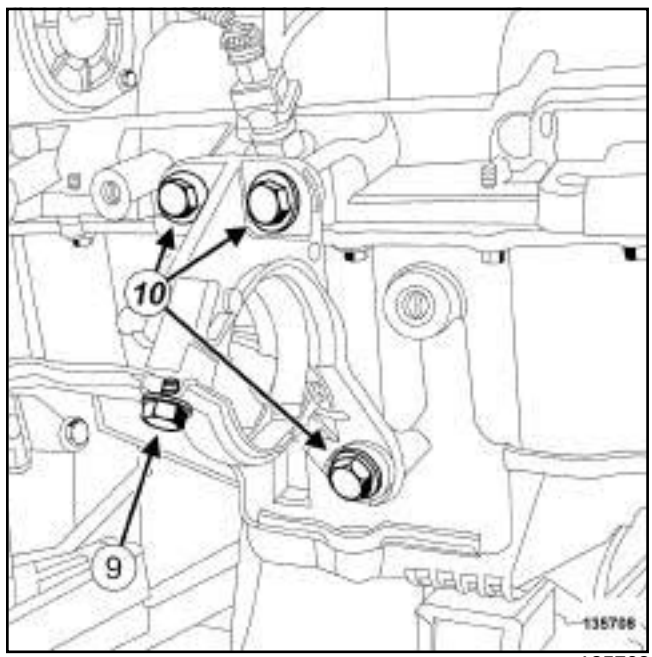

145789

❏ Remove the cooling pipe support bolt (**3**) on the sump.




144756

❏ Remove the front axle subframe tie-rod upper bolts (**5**) .




135708

❏ Remove:

- the right-hand driveshaft flange bolt (**9**) on the relay bearing,
- the bolts (**10**) from the relay bearing,
- the relay bearing.

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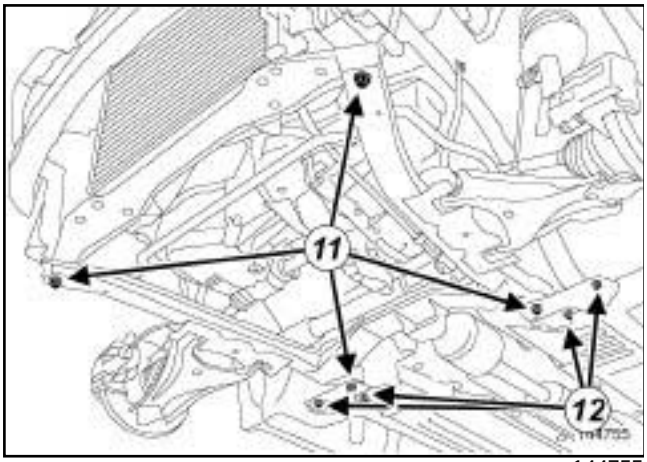
# Lower cover: Removal - Refitting

K9K



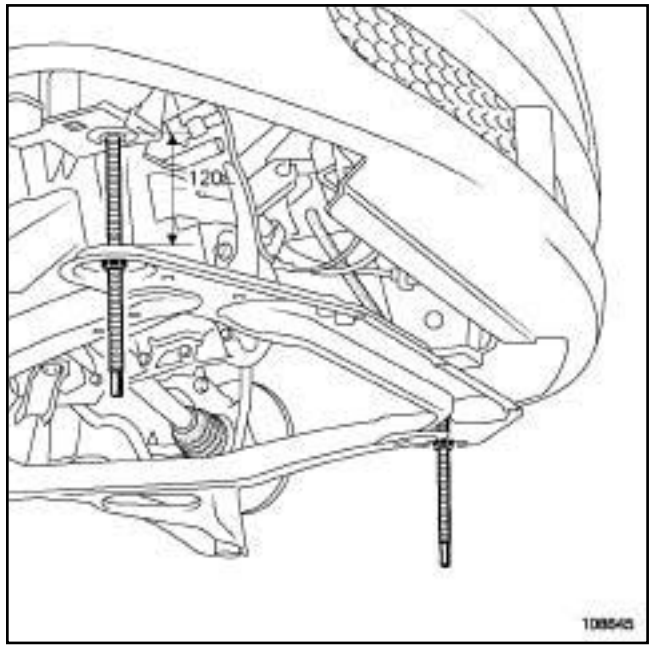

144755

❑ Remove:

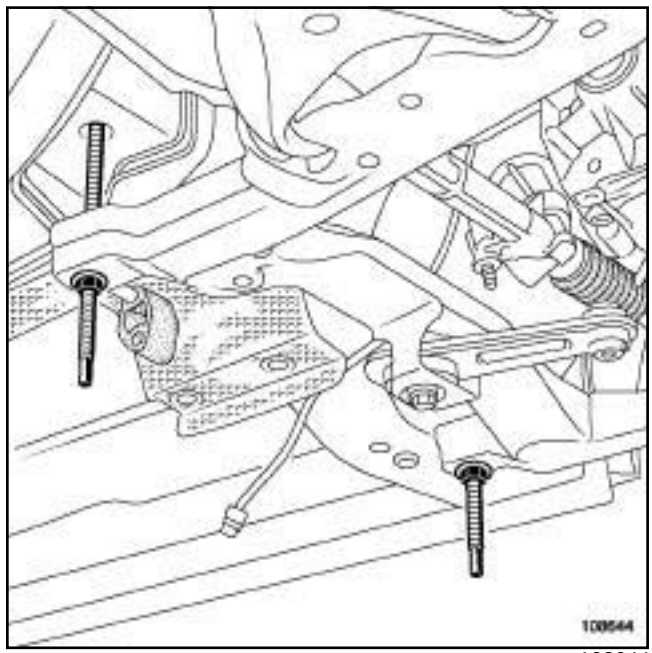
- the bracket bolts (**12**) ,
- one by one, the front axle subframe bolts (**11**) and replace them in turn with the threaded rods of the **(Tav. 1747)**.

Note:

Make sure the threaded rod of the **(Tav. 1747)** is sufficiently screwed into the threaded hole and that the nut of the tool is correctly resting on the front axle subframe.




108645



108644

❑ Lower the front axle subframe **120 mm**, gradually loosening the nuts of the **(Tav. 1747)**.

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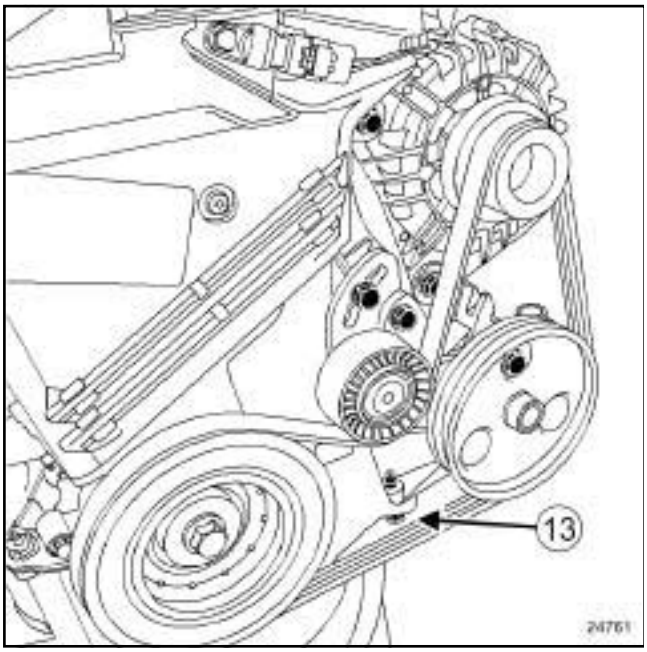
# Lower cover: Removal - Refitting

K9K

## II - REMOVAL OPERATION

STANDARD HEATING RECIRCULATION

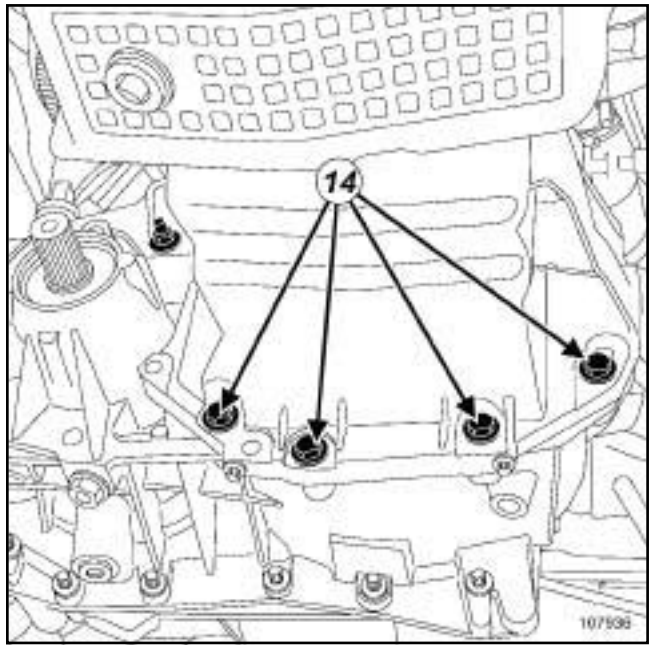



24761

❑ Remove the power-assisted steering pump support bolt (**13**) on the sump.

AIR CONDITIONING

❑ Remove the bolt from the sump on the multifunction support.




107936

❑ Remove:

- the engine-gearbox coupling bolts (**14**) ,
- the sump bolts,
- the sump.

Note:

If the sump cannot be extracted because it is in contact with the oil pump strainer, do not force the removal of the sump as this may damage the oil splash plate.

Loosen the oil pump bolts by a few turns (the tip of your finger should pass between the bolt head and the oil pump casing) using 10 mm and 13 mm open-jawed spanners and while tilting the sump towards the front of the vehicle.

# REFITTING

## I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: engine oil sump seal**.

❑ **parts always to be replaced: Front sub-frame bolt**.

**WARNING**

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

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# Lower cover: Removal - Refitting

K9K

❑ Clean the cylinder block joint face using **SUPER CLEANING AGENT FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

**WARNING**

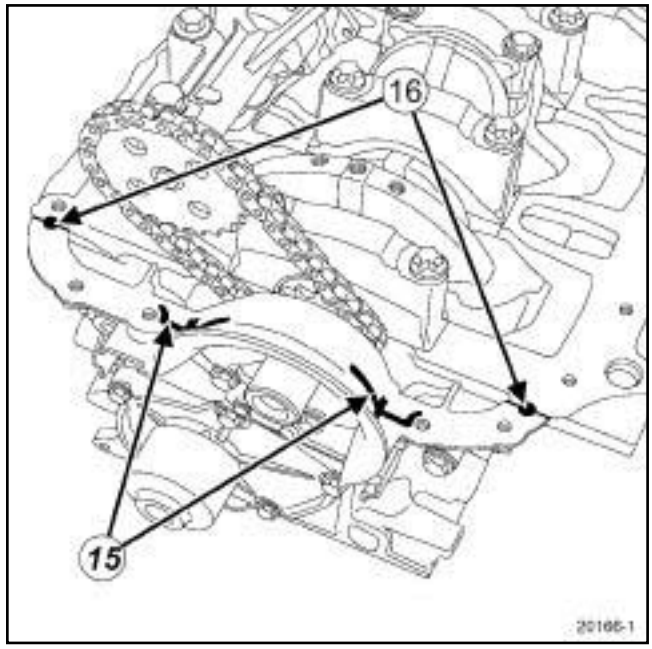
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease:

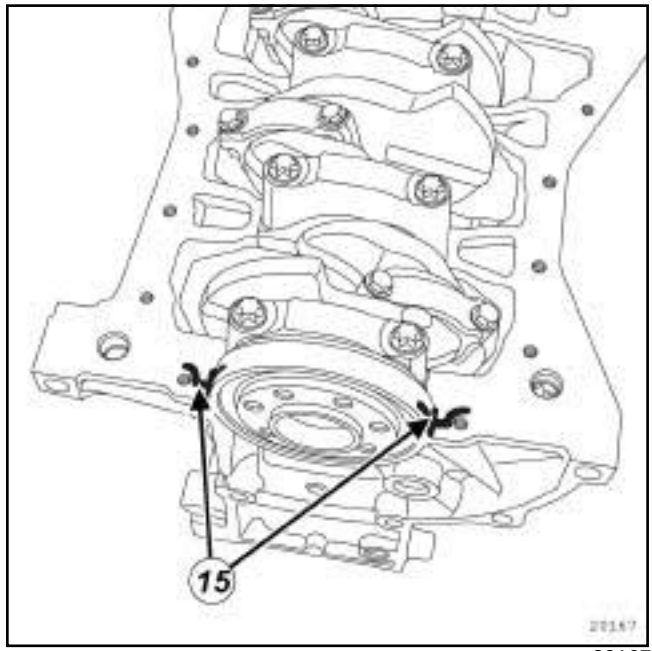
- the sump joint face if it is to be reused,
- the cylinder block gasket face.

**WARNING**

Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).



20166



20167

❑ Apply:

- four beads (**15**) of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) with a diameter of **5 mm**,
- two drops (**16**) of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) with a diameter of **5 mm** at the intersection between the cylinder block and the crankshaft closure panel.

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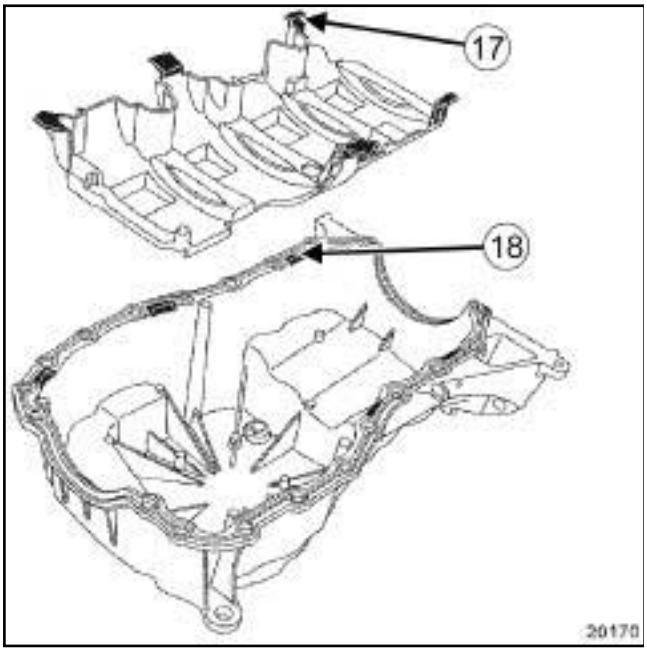
# Lower cover: Removal - Refitting

K9K

## II - REFITTING OPERATION



20170

❑

Note:

When refitting the sump, ensure that:

- the oil splash plate tabs (**17**) are positioned correctly in the slots (**18**) ,
- the coupling faces of the sump and cylinder block are correctly aligned, to prevent the clutch housing being deformed when fitting the gearbox.

Refit the oil splash plate.

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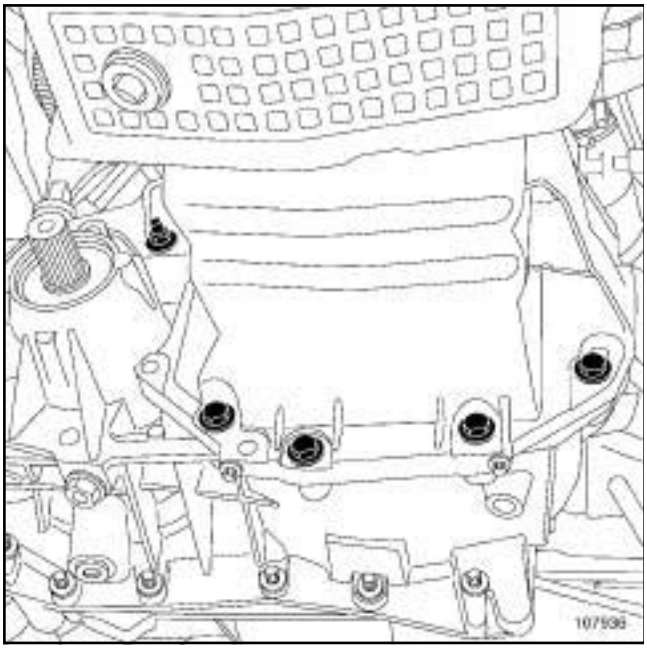
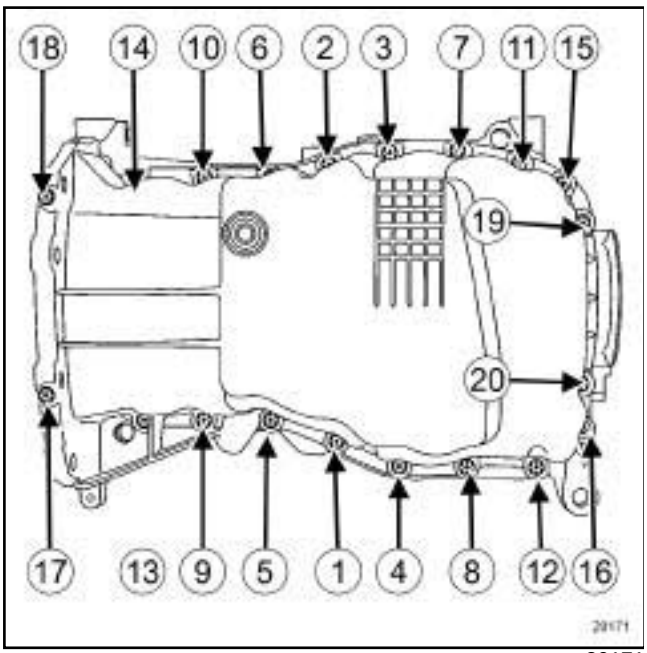
# Lower cover: Removal - Refitting

K9K




107936




20171

❑ Refit the oil sump fitted with a new seal.

Note:

If the oil pump was loosened beforehand in order to extract the sump, position the sump in order to slide the oil pump strainer into the oil splash plate of the sump.

Position a component jack to support the sump.

Lean the sump towards the front of the vehicle in order to access the oil pump bolts.

Torque tighten the **oil pump bolts (25 N.m)** using the small torque wrench **77 11 226 888**.

Note:

Before pressing the sump on the cylinder block, check that the sump seal is still in place and that it has not come out of the grooves on the sides.

❑ Tighten until contact:

- the sump bolts on the cylinder block,
- the sump bolts on the gearbox.

❑ Torque tighten:

- in order the **sump bolts on the cylinder block (14 N.m)**,
- the **sump bolts on the gearbox (44 N.m)**.

AIR CONDITIONING

❑ Refit the sump bolt on the multifunction support.

❑ Torque tighten the **sump bolts on the multifunction support (25 N.m)**.

STANDARD HEATING RECIRCULATION

❑ Refit the power-assisted steering pump support on the sump.

❑ Torque tighten the **power assisted steering pump support bolt on the sump (25 N.m)**.

**III - FINAL OPERATION**

❑ Fit the front axle subframe.

❑ Refit the brackets.

❑ Torque tighten the **bracket bolts (62 N.m)**.

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# Lower cover: Removal - Refitting

K9K

- ❏ One by one, remove the threaded rods of the **(Tav. 1747)** and replace them in turn with new front axle subframe bolts.
- ❏ Refit:
  - the relay bearing bolts,
  - the right-hand driveshaft flange bolt(s) on the relay bearing.
- ❏ Tighten to torque and in order:
  - the **relay bearing bolts (44 N.m)**,
  - the **right-hand driveshaft flange bolt(s) on the relay bearing (21 N.m)**.
- ❏ Refit the front axle subframe tie-rod upper bolts.
- ❏ Torque tighten the **front axle subframe tie-rod upper bolts (21 N.m)**.
- ❏ Refit the cooling pipe support bolt on the sump.
- ❏ Refit the power-assisted steering low pressure pipe bolt on the front axle subframe.
- ❏ Torque tighten the **power-assisted steering low pressure pipe bolt on the front axle subframe (25 N.m)**.
- ❏ Refit the catalytic converter upstream stay (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) .
- ❏ Refit the steering box bolts on the front axle subframe (see **Steering box: Removal - Refitting**) (36A, Steering assembly).
- ❏ Refit:
  - the steering box heat shield,
  - the lower arm ball joints (see **Front driveshaft lower arm: Removal - Refitting**) (31A, Front axle components),
  - the lower engine tie-bar (see **19D**, **Engine mounting**, **Lower engine tie-bar: Removal - Refitting**, page **19D-8**) .
- ❏ Refit the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55, Exterior protection).
- ❏ Refit:
  - the engine undertray,
  - the front wheel arch side liners,
  - the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ❏ Top up the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .

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# Lower cover: Removal - Refitting

K4M

| Special tooling required | |
|---|---|
| **Tav. 1747** | Threaded rods for carrying out subframe operations. |

| Tightening torques ▽ | |
|---|---|
| sump bolts on the cylinder block | **14 N.m** |
| sump bolts on the gearbox | **44 N.m** |
| sump bolt on the multifunction support | **25 N.m** |
| bracket bolts | **62 N.m** |
| front axle subframe bolts | **110 N.m** |
| relay bearing bolts | **44 N.m** |
| right-hand driveshaft flange bolt(s) on the relay bearing | **21 N.m** |
| front axle subframe tie-rod upper bolts | **21 N.m** |
| power-assisted steering low pressure pipe bolt on the front axle subframe | **21 N.m** |
| steering box bolts on the front axle subframe | **105 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection).

❏ Remove:

- the engine undertray bolts,
- the engine undertray.

❏ Drain the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .

❏ Remove:

- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front wheel arch side liners,
- the lower engine tie-bar (see **19D**, **Engine mounting**, **Lower engine tie-bar: Removal - Refitting**, page **19D-8**) .

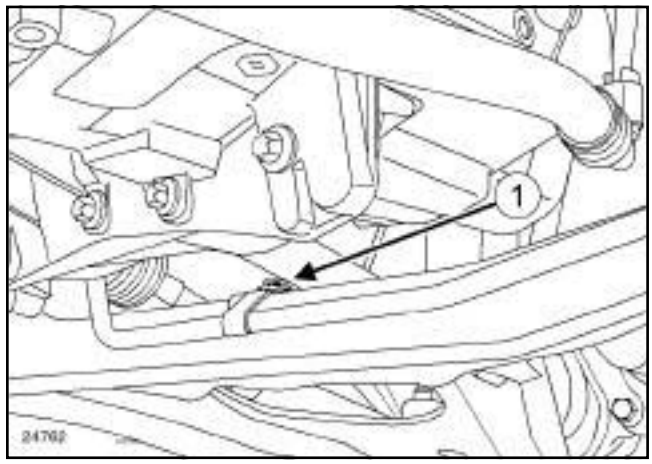
❏ Extract the lower arm ball joints from the stub axle carrier (see **Front driveshaft lower arm: Removal - Refitting**) (31A, Front axle components).

❏ Unclip the downstream oxygen sensor wiring on the heat shield on the steering box.

❏ Remove (see **Steering box: Removal - Refitting**) (36A, Steering assembly):

- the heat shield bolts on the steering box,
- the steering box heat shield,
- the steering box bolts on the front axle subframe.

❏ Attach the steering rack to the body.



24762

❏ Remove the power-assisted steering low pressure pipe bolt (**1**) on the front axle subframe.

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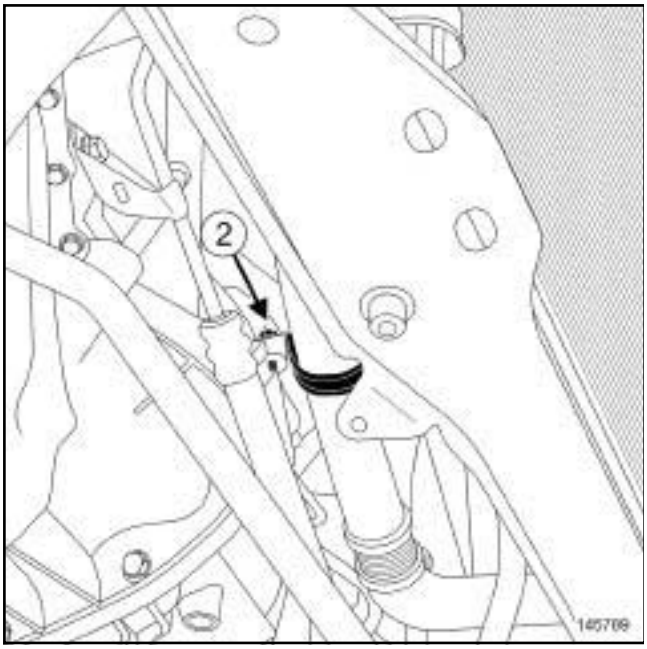
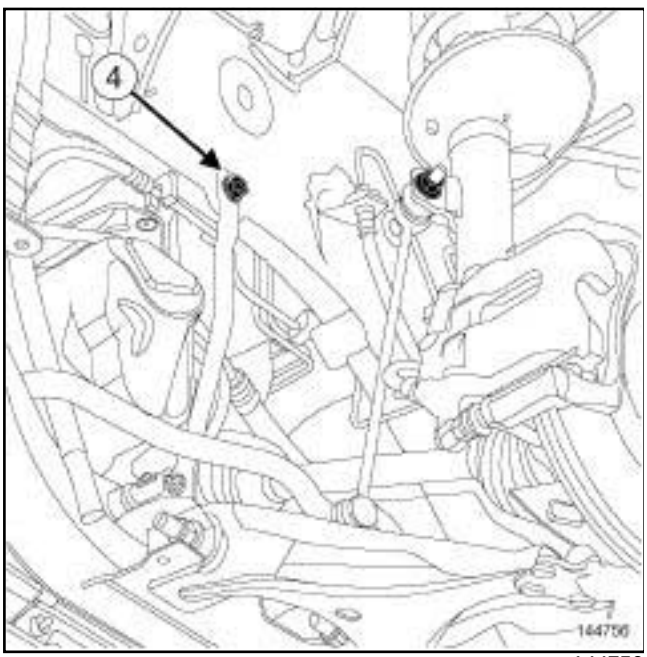
# Lower cover: Removal - Refitting

K4M



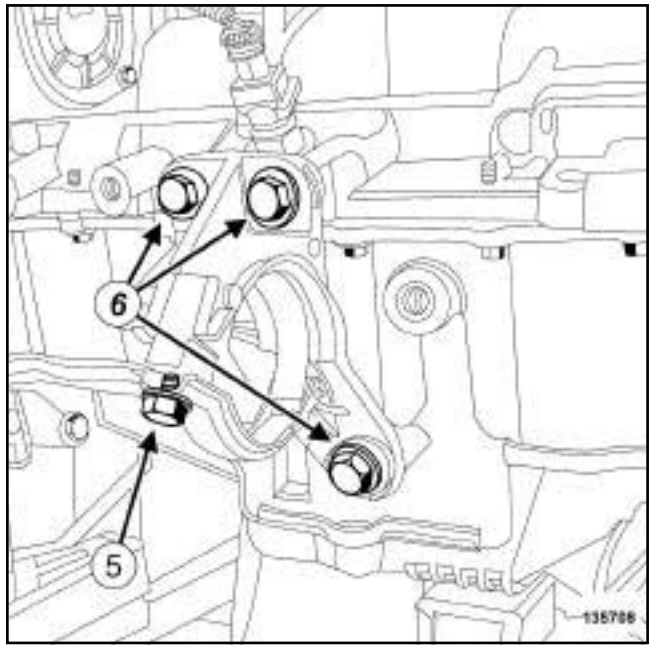

145789

❑ Remove the cooling pipe support bolt (**2**) on the sump.




144756

❑ Remove the front axle subframe tie-rod upper bolts (**4**) .




135708

❑ Remove:

- the right-hand driveshaft flange bolt (**5**) on the relay bearing,
- the bolts (**6**) from the relay bearing,
- the relay bearing.

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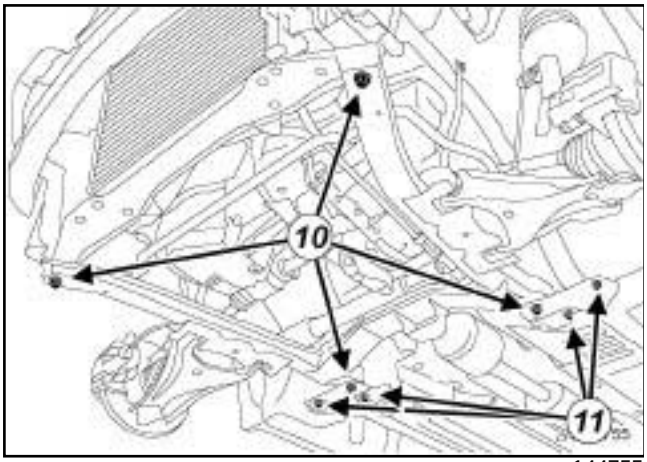
# Lower cover: Removal - Refitting

K4M



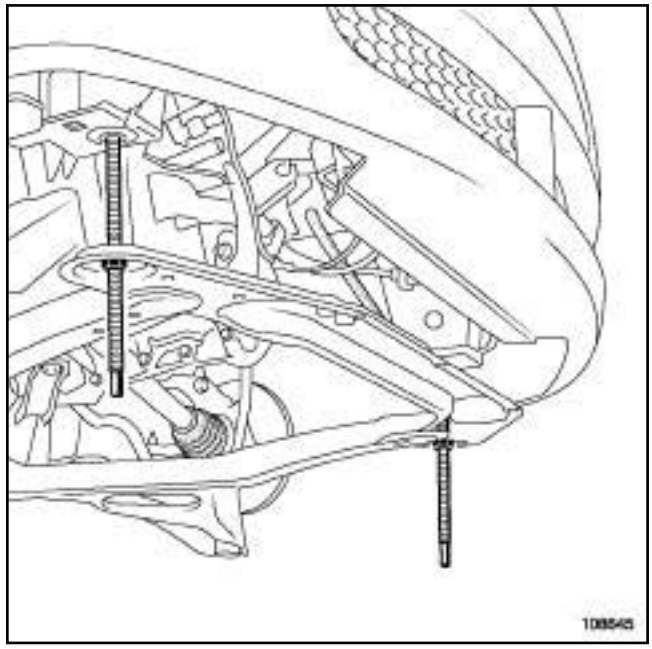

144755

❑ Remove:

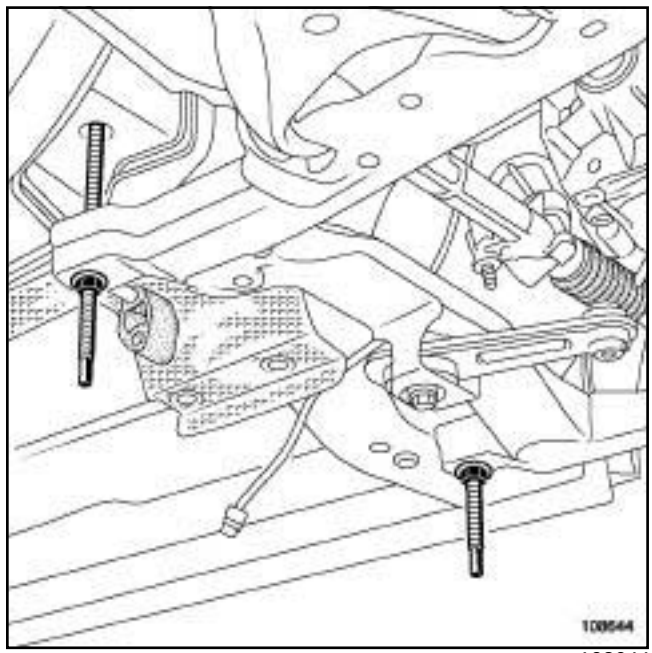
- the bracket bolts (**11**) ,
- one by one, the front axle subframe bolts (**10**) and replace them in turn with the threaded rods of the **(Tav. 1747)**.

Note:

Make sure the threaded rod of the **(Tav. 1747)** is sufficiently screwed into the threaded hole and that the nut of the tool is correctly resting on the front axle subframe.



108645



108644

❑ Lower the front axle subframe by at least **120 mm**, gradually loosening the nuts of the **(Tav. 1747)**.

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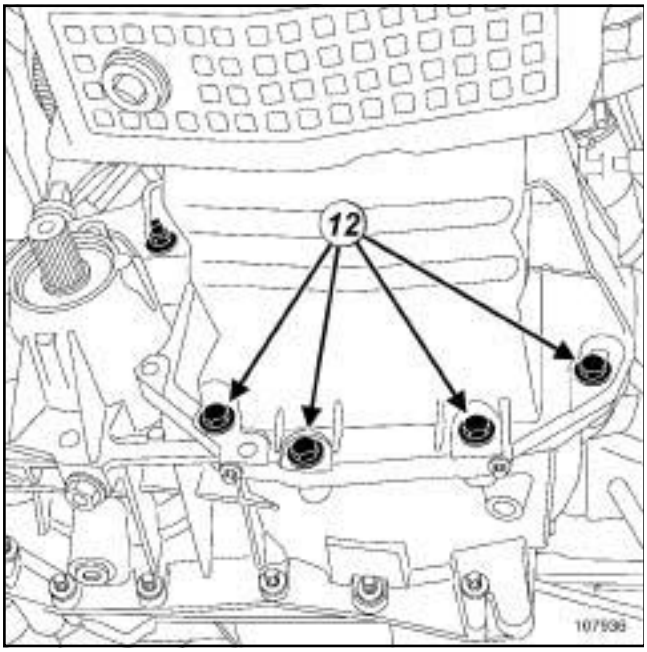
# Lower cover: Removal - Refitting

K4M

## II - REMOVAL OPERATION




107936

❑ Remove:

- the sump bolt from the multifunction support,
- the engine-gearbox coupling bolts (**12**) ,
- the sump bolts on the cylinder block,
- the sump,
- the oil splash plate.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: engine oil sump seal**.

❑ **parts always to be replaced: Front sub-frame bolt**.

**WARNING**

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

❑ Clean the cylinder block joint face using **SUPER CLEANING AGENT FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease:

- the sump joint face if it is to be reused,
- the cylinder block gasket face.

**WARNING**

Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

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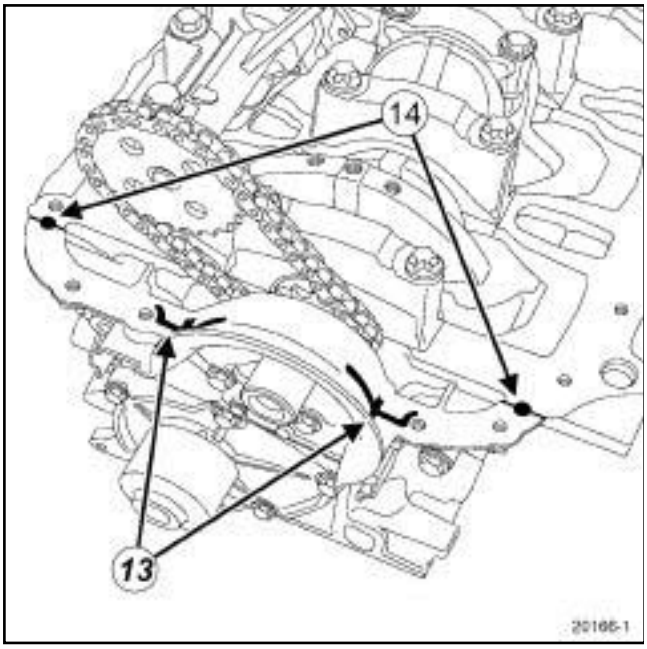
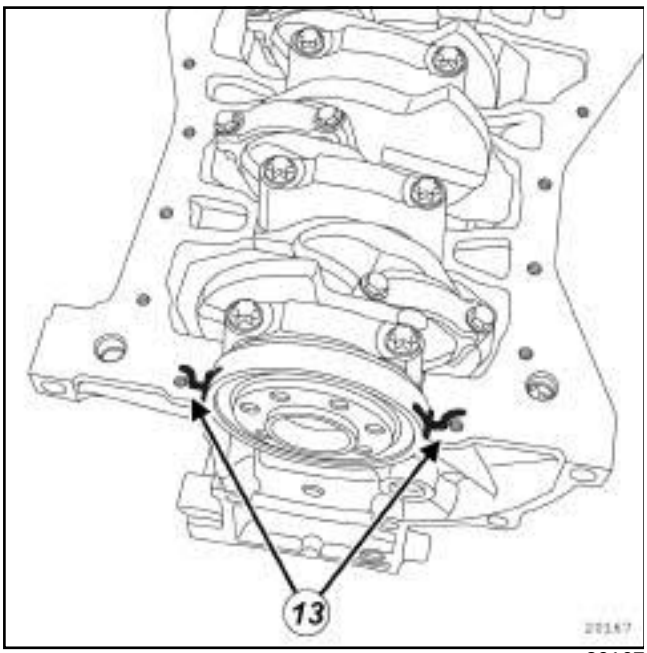
# Lower cover: Removal - Refitting

K4M



20166

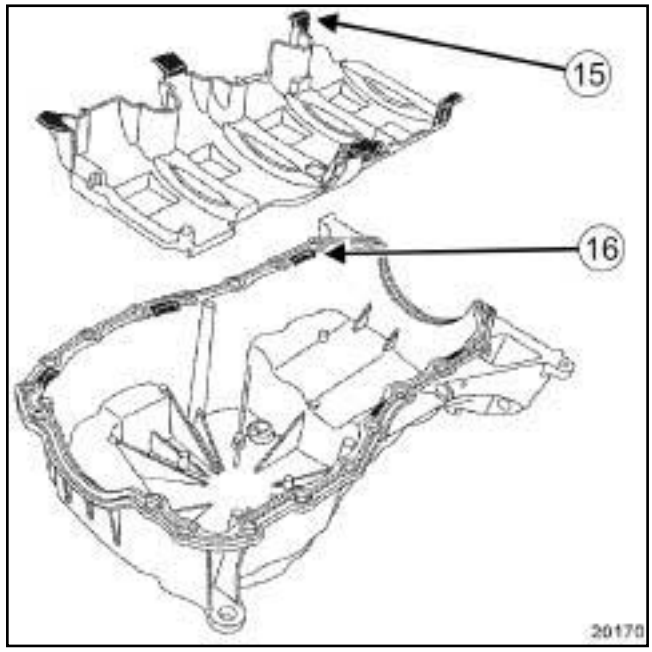


20167

❑ Apply:

- four beads (**13**) of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) with a diameter of **5 mm**,
- two drops (**14**) of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) with a diameter of **5 mm** at the intersection between the cylinder block and the crankshaft closure panel.

## II - REFITTING OPERATION



20170

❑

Note:

When removing the sump, ensure that:

- the oil splash plate tabs (**15**) are positioned correctly in the slots (**16**) ,
- the coupling faces of the sump and cylinder block are correctly aligned, to prevent the clutch housing being deformed when fitting the gearbox.

Refit the oil splash plate.

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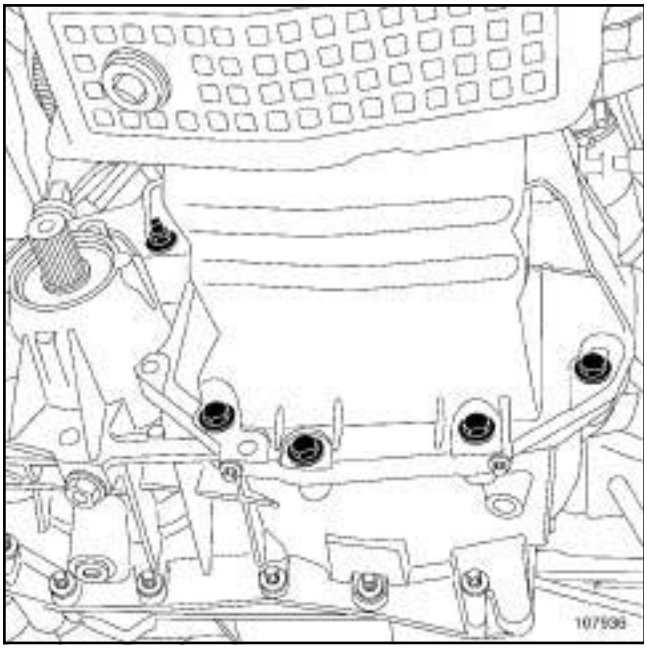
# Lower cover: Removal - Refitting

K4M

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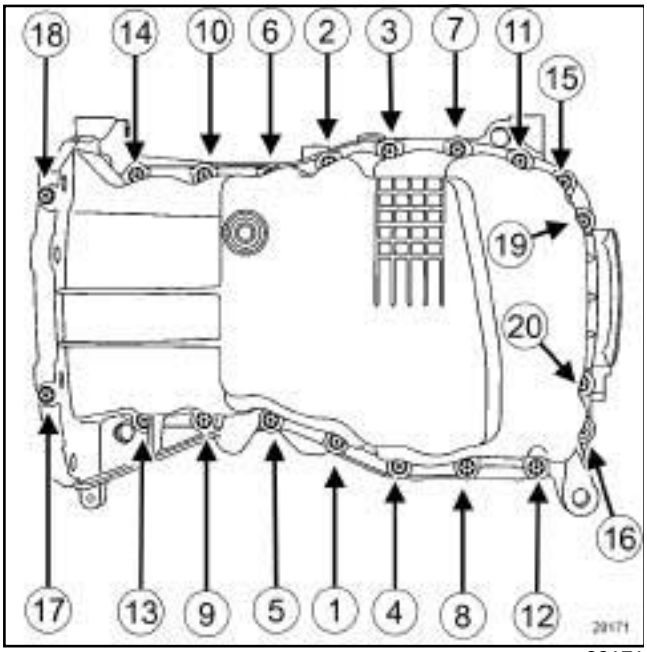


20171

❑ Refit the oil sump fitted with a new seal.

❑ Tighten until contact:

- the sump bolts on the cylinder block,
- the bolts from the sump on the gearbox,
- the sump bolts from the multifunction support.

❑ Torque tighten:

- in order the **sump bolts on the cylinder block (14 N.m)**,
- the **sump bolts on the gearbox (44 N.m)**,
- the **sump bolt on the multifunction support (25 N.m)**.

**III - FINAL OPERATION**

❑ Fit the front axle subframe.

❑ Refit the brackets.

❑ Torque tighten the **bracket bolts (62 N.m)**.

❑ One by one, remove the threaded rods of the **(Tav. 1747)** and replace them in turn with new front axle subframe bolts.

K4M

❑ Torque tighten the **front axle subframe bolts (110 N.m)**.

❑ Refit:

- the relay bearing bolts,
- the right-hand driveshaft flange bolt(s) on the relay bearing.

❑ Tighten to torque and in order:

- the **relay bearing bolts (44 N.m)**,
- the **right-hand driveshaft flange bolt(s) on the relay bearing (21 N.m)**.

❑ Refit the front axle subframe tie-rod upper bolts.

❑ Torque tighten the **front axle subframe tie-rod upper bolts (21 N.m)**.

❑ Refit the cooling pipe support bolt on the sump.

❑ Refit the power-assisted steering low pressure pipe bolt on the front axle subframe.

❑ Torque tighten the **power-assisted steering low pressure pipe bolt on the front axle subframe (21 N.m)**.

❑ Refit the steering box bolts on the front axle subframe.

❑ Tighten to torque the **steering box bolts on the front axle subframe (105 N.m)**.

❑ Refit:

- the steering box heat shield,
- the lower arm ball joints (see **Front driveshaft lower arm: Removal - Refitting**) (31A, Front axle components),
- the lower engine tie-bar (see **19D**, **Engine mounting**, **Lower engine tie-bar: Removal - Refitting**, page **19D-8**) .

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# Lower cover: Removal - Refitting

K4M

❑ Refit the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection).

❑ Refit:

- the engine undertray,
- the front wheel arch side liners,
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❑ Top up the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .

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# Conrod bearing shell: Removal - Refitting

K9K

| Equipment required |
|---|
| safety strap(s) |
| component jack |
| indelible pencil |
| torque wrench |
| Diagnostic tool |

| Tightening torques ▽ | |
|---|---|
| con rod cap bolts | **20 N.m + 45° ± 6°** |
| oil pump bolts | **25 N.m** |

**IMPORTANT**
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Vehicle: Precautions for the repair**) .

**IMPORTANT**
Wear leaktight gloves (Nitrile type) for this operation.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove the engine undertray.

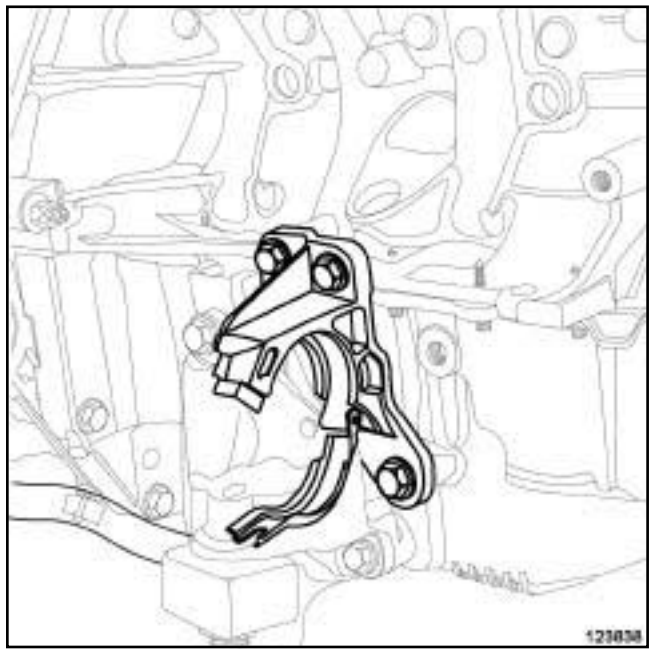
❏ Drain the oil from the engine (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .

❏ Remove the oil filter (see **10A**, **Engine and cylinder block assembly**, **Oil filter: Removal - Refitting**, page **10A-34**) .

❏ Remove the lower engine tie-bar (see **19D**, **Engine mounting**, **Lower engine tie-bar: Removal - Refitting**, page **19D-8**) .

❏ Strap the radiator to the vehicle using **safety strap(s)**.

❏ Remove the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components).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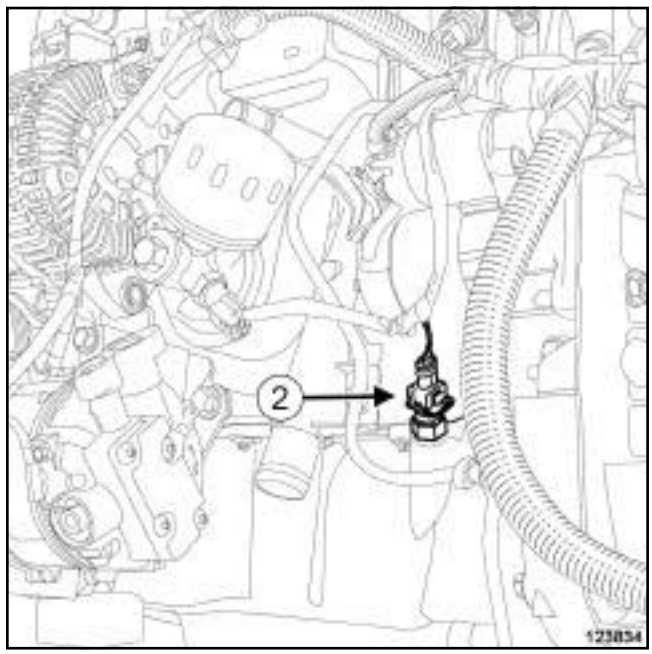
❏ Remove the relay bearing of the front right-hand wheel driveshaft.



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❏ Disconnect the oil level sensor connector (if equipped) (**2**) .

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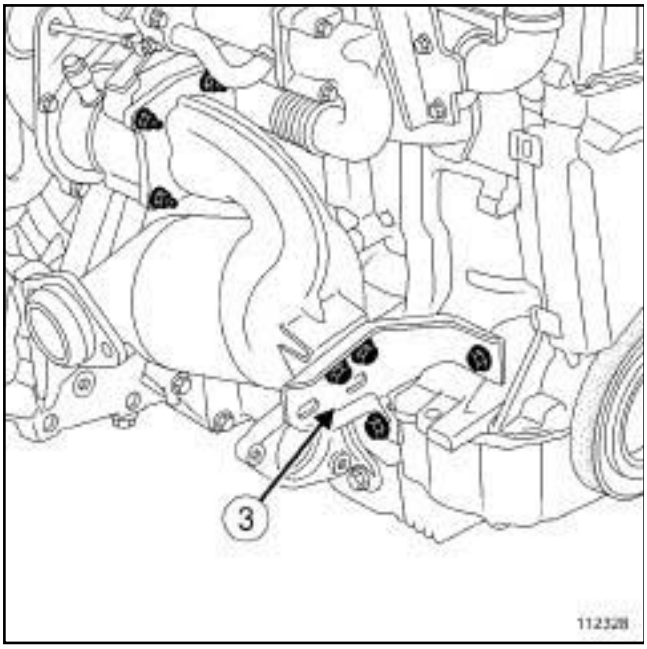
# Conrod bearing shell: Removal - Refitting

K9K



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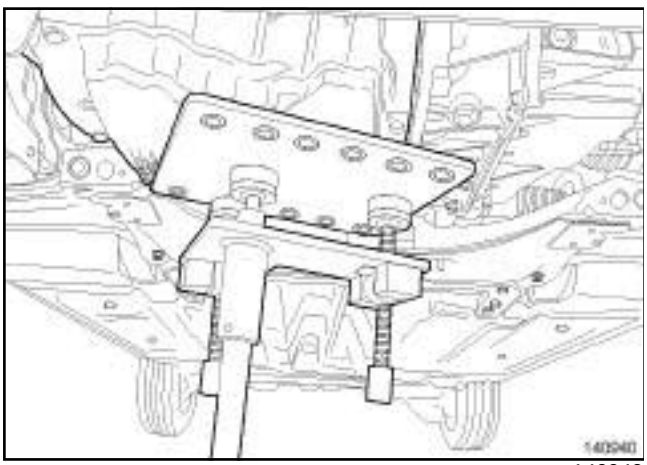
❏ Remove the catalytic converter upstream stay (**3**) .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❏

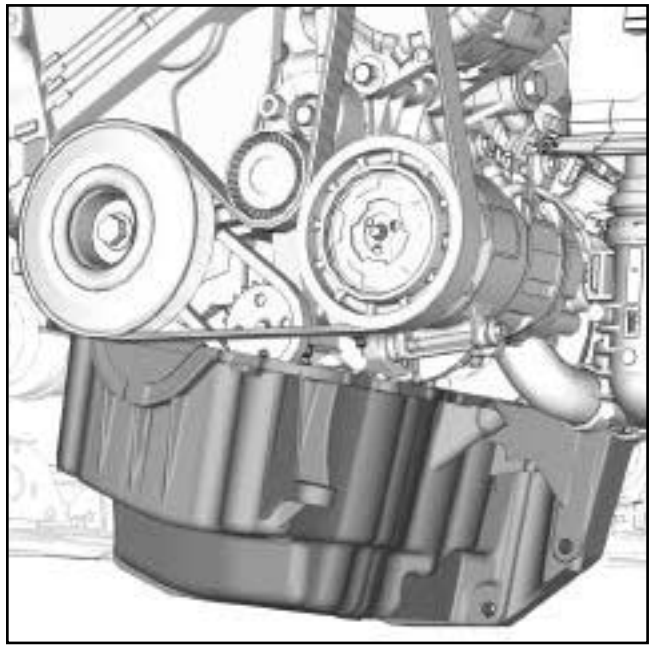
**WARNING**
Failure to observe the following procedure may damage the oil pump strainer.

Undo the bolts of the engine oil sump.

❏ Fit a **component jack** to support the engine oil sump.

❏ Remove the bolts from the engine oil sump.

❏ Detach the engine oil sump, while supporting it with the **component jack**.


140917

❏ Tilt the engine oil sump forwards in order to access the oil pump bolts.

❏ Partially loosen the oil pump bolts **3 mm** to **5 mm**.

❏ Detach the oil pump from its position in order to remove the engine oil sump.

❏ Remove:

- the engine oil sump,
- the engine oil sump seal,
- the oil pump.

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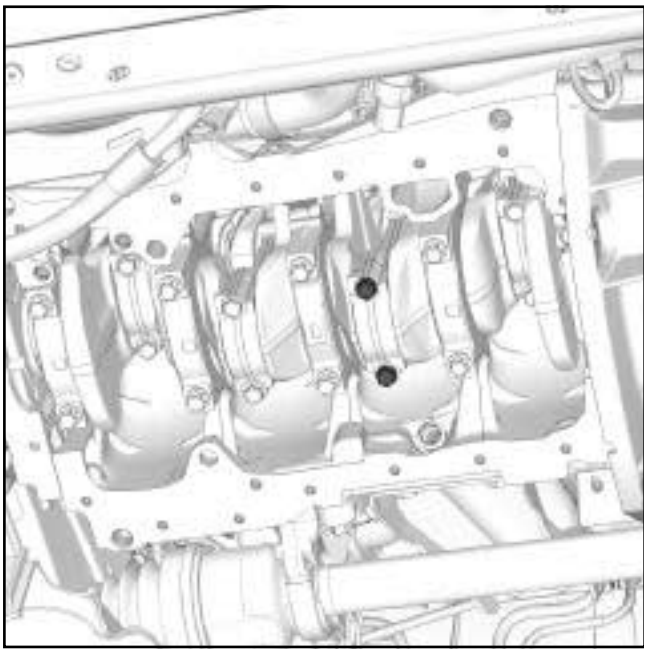
K9K

**II - REMOVAL OPERATION FOR THE CON ROD BEARING SHELLS NO.2**



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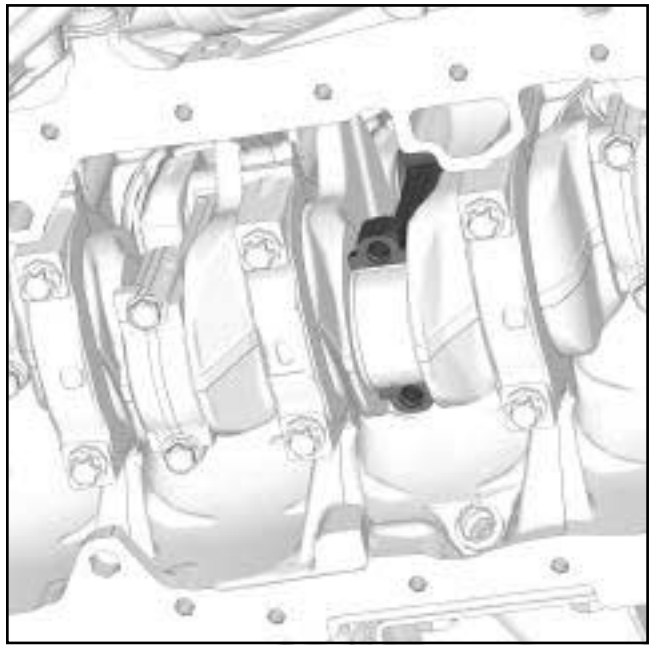
❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the big ends.

❑ Mark the position of the con rod cap in relation to the con rod body using a **indelible pencil**.

❑ Position the crankshaft at Top Dead Centre.



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❑ Remove:

- the con rod bolts,
- the con rod cap,
- the lower con rod bearing shell.

Note:

If reusing the con rod bearing shells, mark the position of the lower con rod bearing shell in relation to the con rod cap.

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - products) to clean the bearing mating face on the con rod cap.

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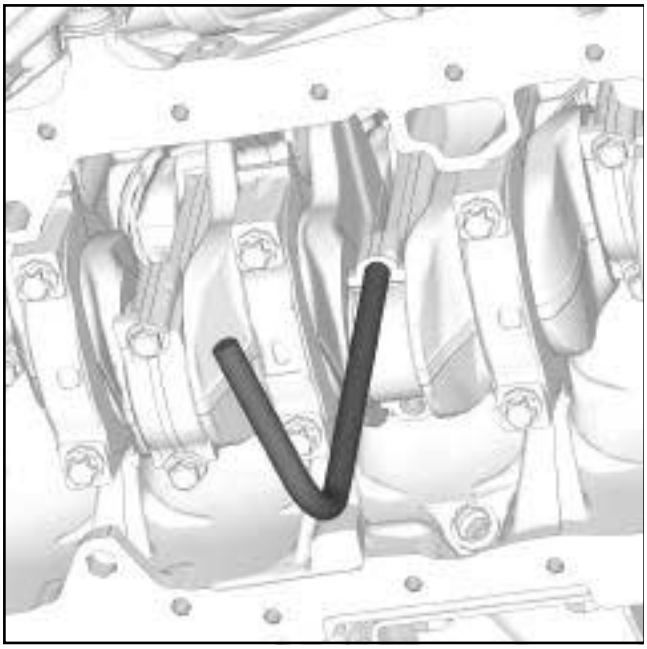
# Conrod bearing shell: Removal - Refitting

K9K



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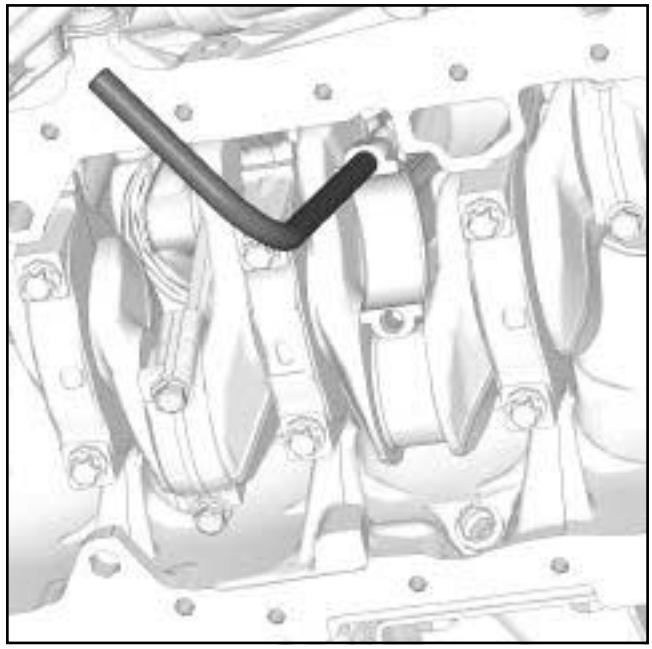
❏ Fit the tie rod of the toolon the con rod body.

❏ Push the con rod upwards to release the con rod from the crankpin.

❏ Turn the crankshaft **90°** clockwise (timing end).



139315

❏

**WARNING**

Failure to observe the following procedure may damage the piston base cooling jets.

Pull the con rod - piston assembly using the tie rod of the tool, taking care not to allow the piston to touch the piston base cooling jets.

❏ Remove the upper con rod bearing shell.

Note:

If reusing the con rod bearing shells, mark the position of the upper con rod bearing shell in relation to the con rod body.

❏ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - products) to clean the bearing mating face on the con rod body.

## REFITTING

### I - REFITTING OPERATION FOR THE CON ROD BEARING SHELLS ON CYLINDER NO.2

❏ **parts always to be replaced: con rod cap bolts**

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# Conrod bearing shell: Removal - Refitting

K9K

❏

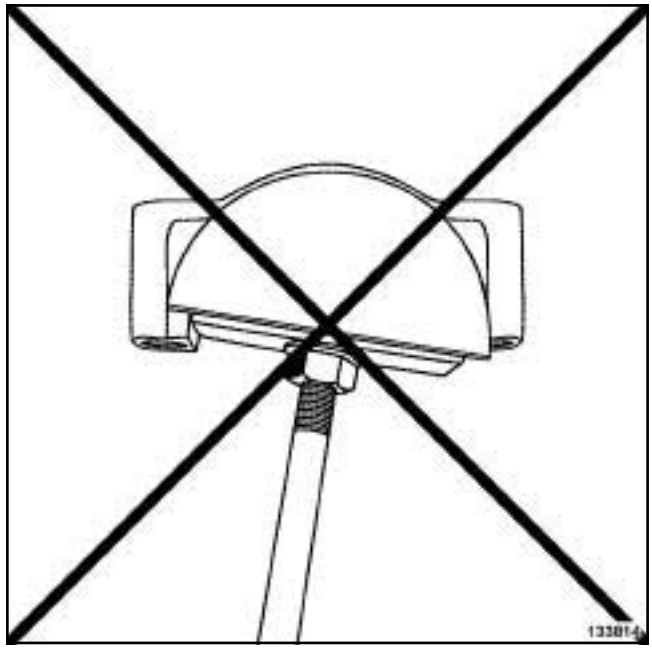
Note:

Always replace con rod bearing shells with a width of **20 mm** by con rod bearing shells with a width of **18 mm**.

If the set of con rod bearing shells only includes con rod bearing shells which are **18mm** wide, only use the head of the toolwith the marking " **K9K SUP** ".

Fit the head of the toolwith the marking " **K9K INF** " on the threaded sleeve of the tool.

❏ Position the lower con rod bearing shell on the tool.



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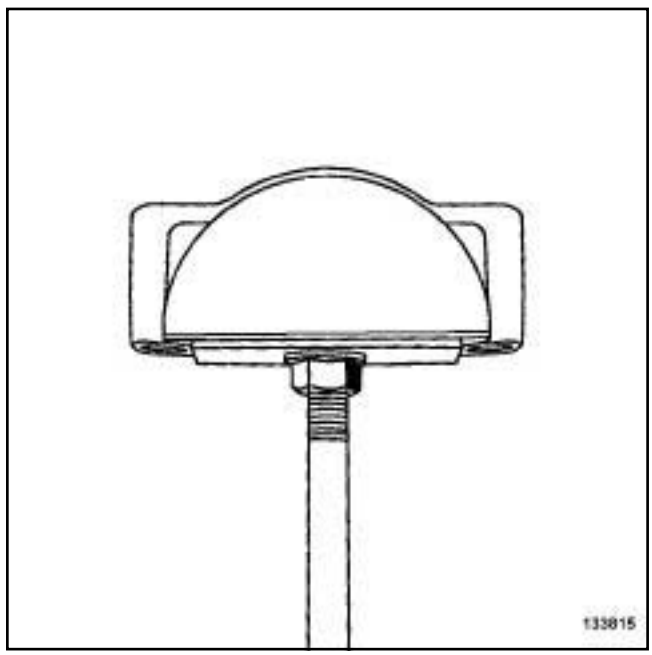

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❏

Note:

The contact surface between the bearing shell and the con rod must be dry and free of grease.

Fit the lower con rod bearing shell on the con rod cap using the tool.

❏ Position the lower con rod bearing shell so that the ends do not protrude beyond the con rod cap.

❏ Lubricate the surface of the con rod bearing shell (crankshaft end) using new engine oil.

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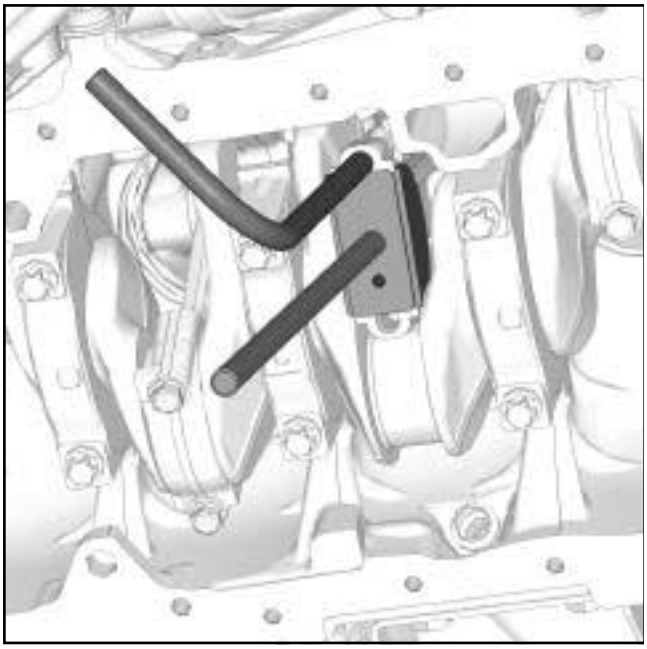
# Conrod bearing shell: Removal - Refitting

K9K



139318

❑ Remove the tool head with the marking " **K9K INF** " and fit the head with the marking " **K9K SUP** ".

❑ Position the upper con rod bearing shell on the tool.

❑ Fit the upper con rod bearing shell on the con rod body using the tool.

❑ Position the upper con rod bearing shell so that the ends do not protrude beyond the con rod body.

❑ Lubricate the surface of the con rod bearing shell (crankshaft end) using new engine oil.

❑ Push the con rod - piston assembly back up into place.

❑ Turn the crankshaft **90°** anticlockwise.

❑ Lubricate the crankpin with new engine oil.

❑ Pull the con rod - piston assembly to position the con rod on the crankshaft.

❑

Note:

Before refitting the con rod cap, ensure that there are no impurities (filings, cloth lint, etc.) on the con rod body or cap surfaces.

Refit:

- the con rod cap according to the mark made during removal,
- the new con rod bolts.

❑ Torque and angle tighten the **con rod cap bolts (20 N.m + 45° ± 6°)**.

**II - REMOVAL - REFITTING OPERATIONS FOR THE CON ROD BEARING SHELLS ON CYLINDERS NO.3, 1 AND 4**

❑ Perform the same removal - refitting operations as for the con rod bearing shells on cylinder no. 2.

Note:

For removing and refitting the con rod bearing shells on cylinders no. 1 and no. 4, position the pistons at Bottom Dead Centre before performing the same removal and refitting operations as for the con rod bearing shells on cylinder no. 2.

**III - FINAL OPERATION**

❑ **parts always to be replaced: engine oil sump seal**

**parts always to be replaced: Oil filter**

**parts always to be replaced: Drain plug seal on engine oil sump**

**WARNING**

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Use a wooden spatula or an **ABRASIVE PAD** to clean the joint face of the cylinder block and engine oil sump.

❑ Refit the oil pump.

❑ Fit without tightening the oil pump bolts, while keeping a clearance of **3 mm** to **5 mm**.

❑ Fit the engine oil sump seal.

**WARNING**

Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

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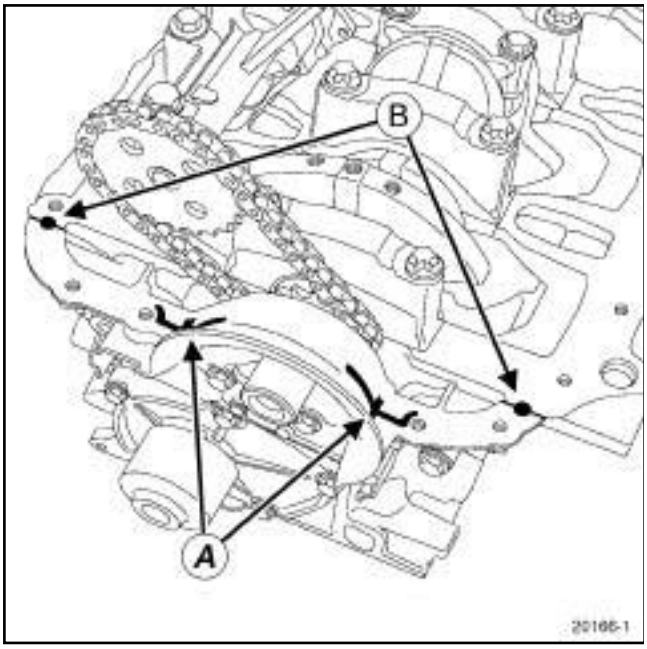
# Conrod bearing shell: Removal - Refitting

K9K

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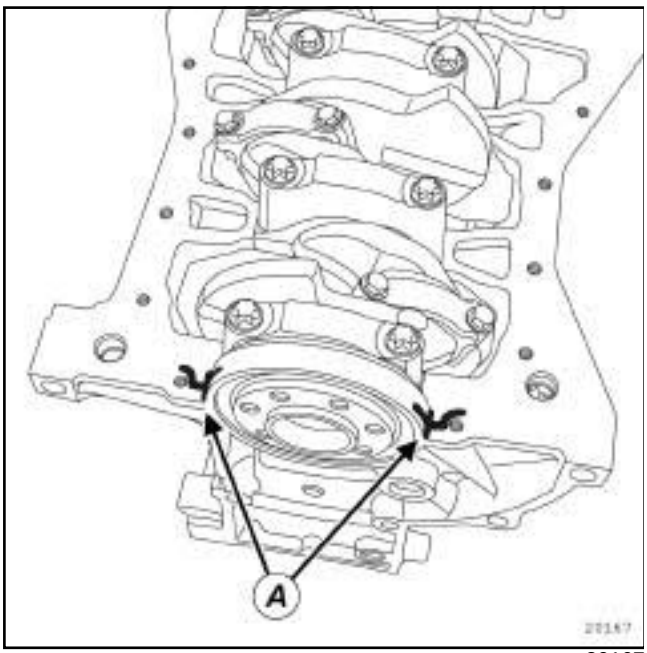


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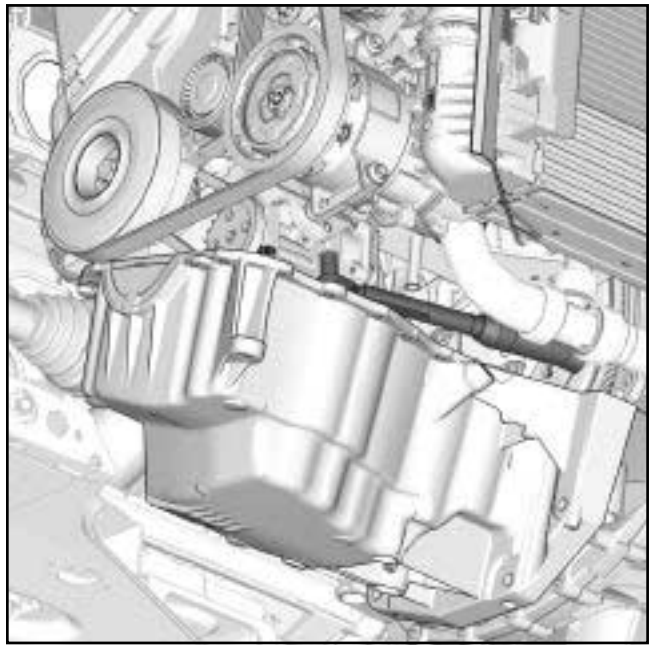
❏ Apply **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) :

- four beads with a diameter of **5 mm** at (**A**) ,
- two drops with a diameter of **5 mm** at (**B**) .

❏ Fit the engine oil sump while supporting it using a **component jack**.



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❏ Tilt the engine oil sump forwards in order to access the oil pump bolts.

❏ Torque tighten the **oil pump bolts (25 N.m)** using the **torque wrench** PROSTEEL, part number **77 11 226 888** starting with the **13 mm** bolt.

❏

Note:

Check that the engine oil sump seal is definitely in place before tightening the engine oil sump bolts.

❏ Refit the engine oil sump bolts.

❏ Torque tighten in order the engine oil sump bolts (see **10A**, **Engine and cylinder block assembly**, **Lower cover: Removal - Refitting**, page **10A-9**) .

❏ Refit the catalytic converter upstream stay (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) .

❏ Connect the connector to the oil level sensor.

❏ Refit the relay bearing of the front right-hand wheel driveshaft (see **Front right-hand driveshaft: Removal - Refitting**) .

❏ Refit the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components).

❏ Remove the **safety strap(s)** from the radiator.

❏ Refit the lower engine tie-bar (see **19D**, **Engine mounting**, **Lower engine tie-bar: Removal - Refitting**, page **19D-8**) .

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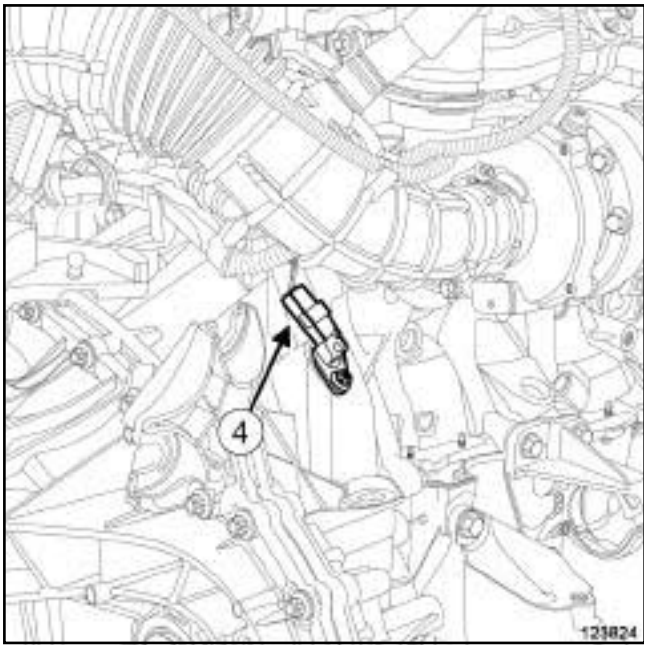
# Conrod bearing shell: Removal - Refitting

K9K

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- ❏ Disconnect the crankshaft position sensor (**4**) to prevent the engine from starting.
- ❏ Refit the oil filter (see **10A**, **Engine and cylinder block assembly**, **Oil filter: Removal - Refitting**, page **10A-34**)
- ❏ Fill up the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .
- ❏ Start the engine using the starter until the engine oil warning light goes out.
- ❏ Connect the crankshaft position sensor.
- ❏ Refit the engine undertray.
- ❏ Clear the present faults using the **Diagnostic tool**.

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# Engine oil: Draining - Refilling

K4M or K9K

| Equipment required |
|---|
| oil recovery tray |
| oil change wrench |
| torque wrench |
| oil change end piece with an 8 mm square drive |

| Tightening torques ▽ | |
|---|---|
| drain plug | **20 N.m** |

## DRAINING

### I - AVERAGE CAPACITY OF ENGINE OIL

K4M

❑ **4.7 litres** (without oil filter replacement).

❑ **4.8 litres** (with oil filter replacement).

K9K

❑ **4.0 litres** (without oil filter replacement).

❑ **4.1 litres** (with oil filter replacement).

### II - RECOMMENDATIONS FOR REPAIR

❑

**WARNING**

Always check the oil level using the dipstick.

Do not exceed the maximum level on the dipstick (could destroy the engine).

Correct the engine oil level if necessary before delivering the vehicle to the customer.

Note:

When filling up the engine oil, always leave at least **10 minutes** for the oil to drain down before checking with a dipstick.

### III - PARTS AND CONSUMABLES FOR REPAIR

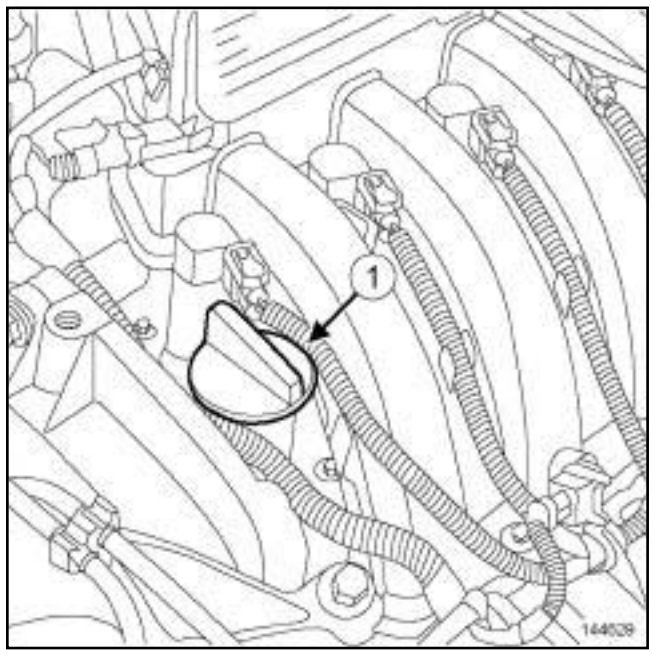
❑ **parts always to be replaced: Drain plug seal on engine oil sump**.

❑ Consumable:

- Engine oil (see **Engine oil: Specifications**) .

### IV - OIL SERVICE

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

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❑ Remove:

- the engine oil filler cap (**1**) ,

- the dipstick.

❑ Place the **oil recovery tray** under the engine.

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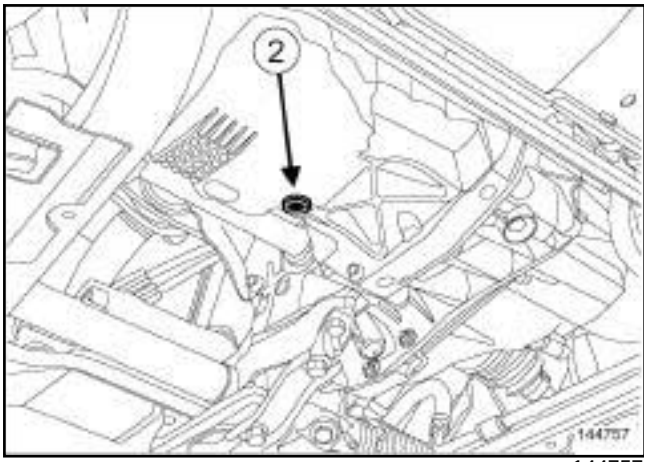
# Engine oil: Draining - Refilling

K4M or K9K

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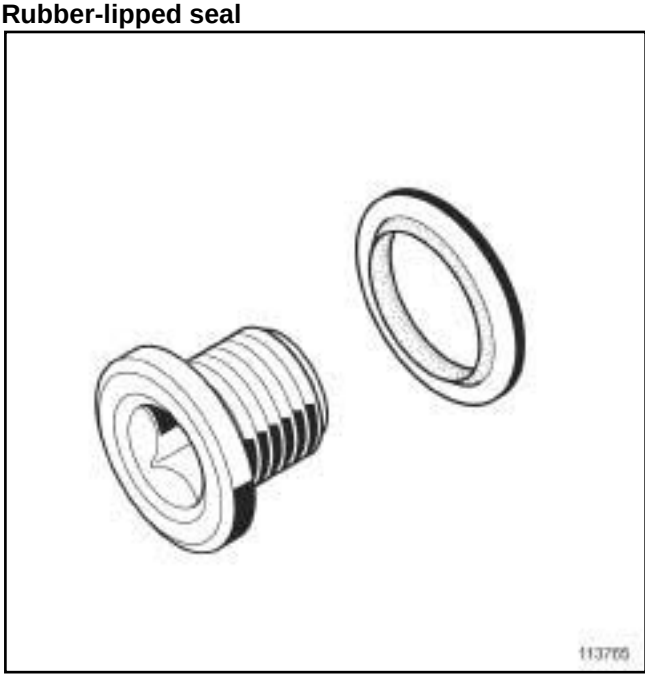
❏ Remove the drain plug (**2**) using theor a **oil change wrench**.

❏ Let the engine oil flow out completely.

❏ Remove the drain plug seal.

**Rubber-lipped seal**

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❏ Refit a new seal to the drain plug (no direction of fitting).

❏ Refit the drain plug.

❏ Torque tighten the **drain plug (20 N.m)** using a **torque wrench** fitted with a **oil change end piece with an 8 mm square drive**.

❏ Clean any oil run-off from the engine oil sump using a cloth.

❏ Remove the **oil recovery tray**.

**V - FILLING**

❏ Fill the engine with oil, respecting the recommended quantity.

❏ Wait at least **10 minutes**.

❏ Check the oil level using the dipstick.

❏ Top up the engine oil level if necessary.

❏ Refit:

- the engine oil filler cap,
- the dipstick.

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# Oil filter: Removal - Refitting

K9K

| Special tooling required | |
|---|---|
| **Mot. 1329** | Oil filter removing tool (76 mm diameter) |

**WARNING**

Always check the oil level using the dipstick.

Do not exceed the maximum level on the dipstick (could destroy the engine).

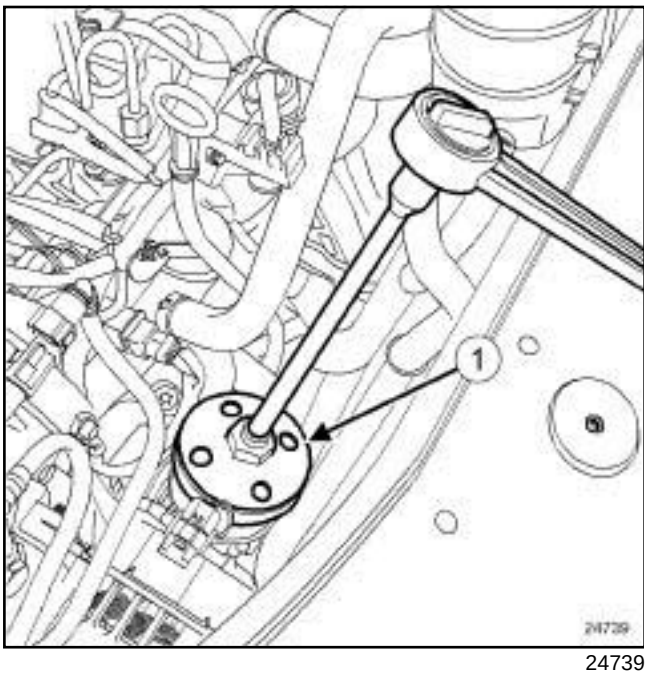
Correct the engine oil level if necessary before delivering the vehicle to the customer.

Note:

When topping up the engine oil, always leave at least 10 minutes for the oil to drain down before checking with a dipstick.

## REMOVAL

### OPERATION FOR REMOVAL OF PART CONCERNED

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❑ Position the **(Mot. 1329)** (**1**) with an extension piece and a ratchet on the oil filter.

❑ Remove the oil filter.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Oil filter**.

❑ Lubricate the new oil filter seal with new engine oil.

### II - REFITTING OPERATION FOR PART CONCERNED

❑ Tighten the oil filter by hand until the oil filter seal makes contact with the oil filter support.

❑ Tighten the oil filter 3/4 of a turn manually or using the tool **(Mot. 1329)**.

### III - FINAL OPERATION

❑ Wipe any oil run-off with a cloth.

❑ Check the oil level with the dipstick.

❑ Top up the oil level (if necessary).

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# Oil filter: Removal - Refitting

K4M

| Special tooling required | |
|---|---|
| **Mot. 1329** | Oil filter removing tool (76 mm diameter) |

| Equipment required |
|---|
| oil recovery tray |

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**WARNING**

Always check the oil level using the dipstick.

Do not exceed the maximum level on the dipstick (could destroy the engine).

Correct the engine oil level if necessary before delivering the vehicle to the customer.

Note:

When filling up the engine oil, always leave at least **10 minutes** for the oil to drain down before checking with a dipstick.

When removing the oil filter, check that the oil filter seal is not still stuck to the cylinder block or the oil filter support.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

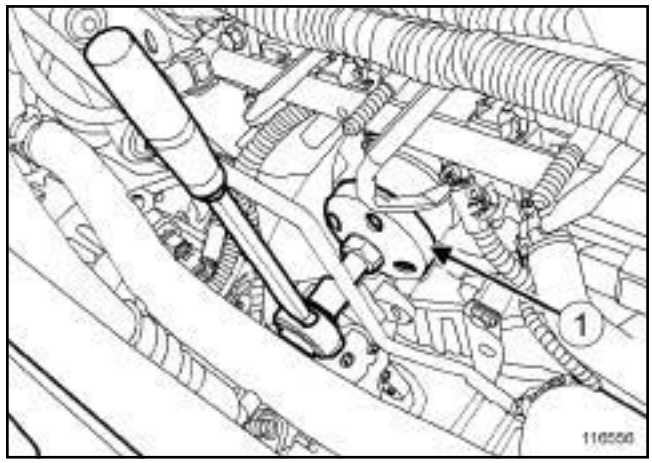
❑ Remove:

- the engine undertray bolts,
- the engine undertray.

❑ Place the **oil recovery tray** under the engine.

❑ Remove the injector rail protector.

### II - REMOVAL OPERATION




116556

❑ Remove the oil filter using the **(Mot. 1329)** (**1**) .

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Oil filter**.

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease the cylinder block joint face.

❑ Lubricate the oil filter seal with new engine oil.

### II - REFITTING OPERATION

❑ Fit a new oil filter.

❑ Tighten the oil filter until it makes contact with the engine.

❑ Manually tighten the oil filter by 3/4 of a turn.

### III - FINAL OPERATION

❑ Refit the injector rail protector.

❑ Remove the **oil recovery tray**.

❑ Wipe any oil run-off with a cloth.

❑ Top up with engine oil recommended by the manufacturer (see **Engine oil: Specifications**) .

❑ Start the engine and wait until the oil pressure warning light goes out on the instrument panel.

❑ Check for leaks from the oil filter.

❑ Refit the engine undertray.

❑ Wait at least **10 minutes**.

❑ Check the oil level using the dipstick.

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# Oil filter: Removal - Refitting

K4M

❑ Top up the engine oil level to the dipstick if necessary (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .

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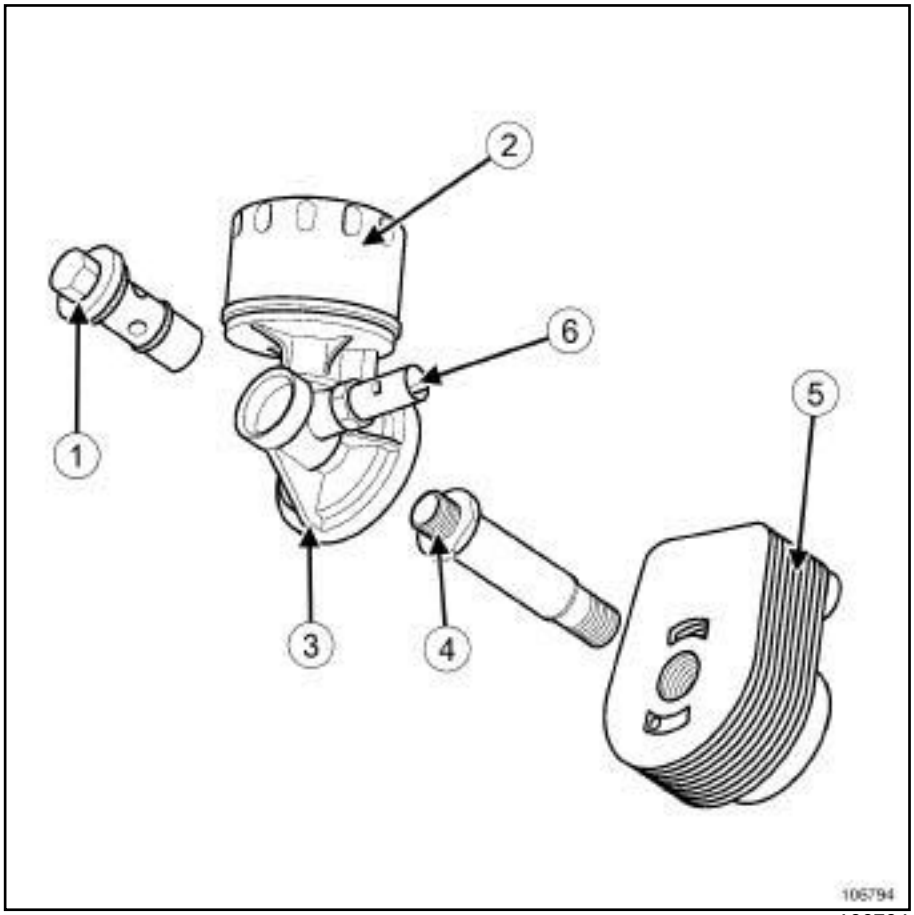
# Oil coolant heat exchanger: Removal - Refitting

K9K, and 796

| Tightening torques ▽ | |
|---|---|
| oil heat exchanger bolt | **39 N.m** |
| oil filter support bolt | **28 N.m** |




106794

(**1**) Oil filter holder mounting bolt

(**2**) Oil filter

(**3**) Oil filter holder

(**4**) Coolant - oil heat exchanger mounting bolts

(**5**) Coolant - oil heat exchanger

(**6**) Oil pressure sensor

❑

## REMOVAL

### REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❑ Remove:

- the engine cover,
- the engine undertray,
- the closure panel component under the diesel filter.

❑ Drain the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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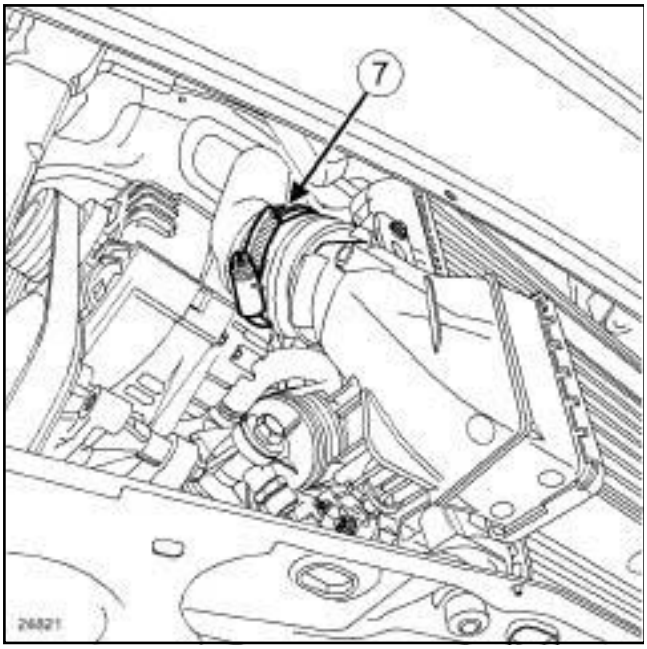
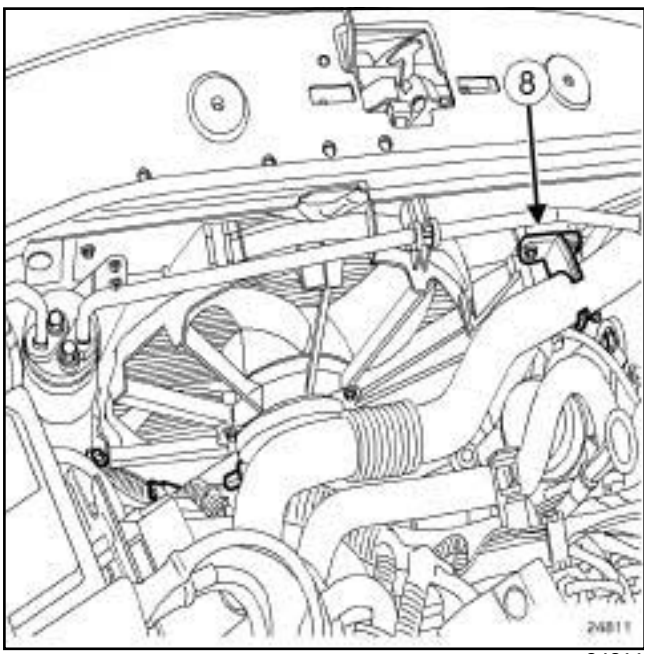
# Oil-coolant heat exchanger: Removal - Refitting

K9K, and 796




24821

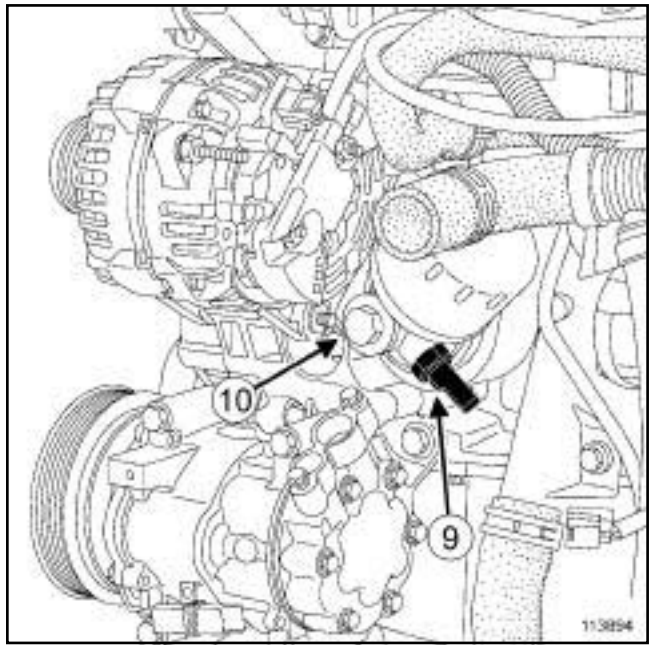
❏ Disconnect the air outlet duct (**7**) on the intercooler.




24811

❏ Move aside the air outlet duct.

❏ Remove the air outlet duct support (**8**) from the fan assembly mounting.



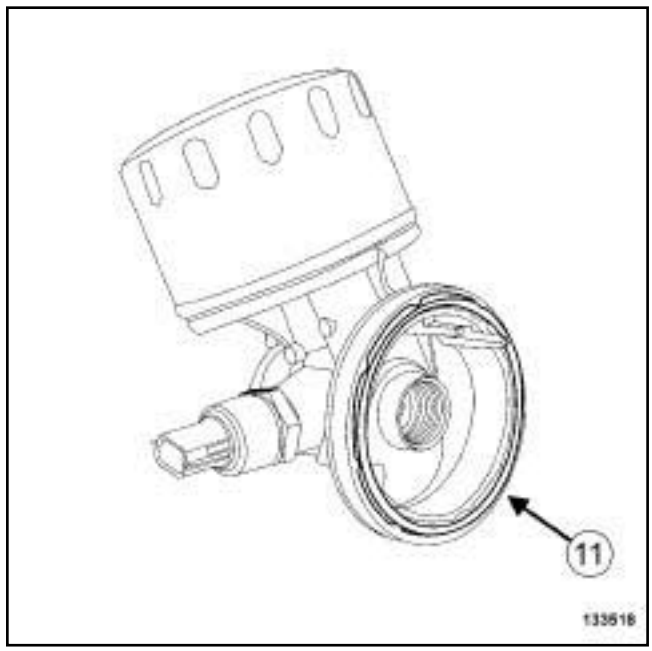

113894

❏ Disconnect the oil pressure sensor connector (**9**) .

❏ Place a container under the engine on the oil filter side.

❏ Remove the bolt (**10**) from the oil filter support.

❏ Remove the oil filter support.




133518

❏ Remove the seal (**11**) from the oil filter support.

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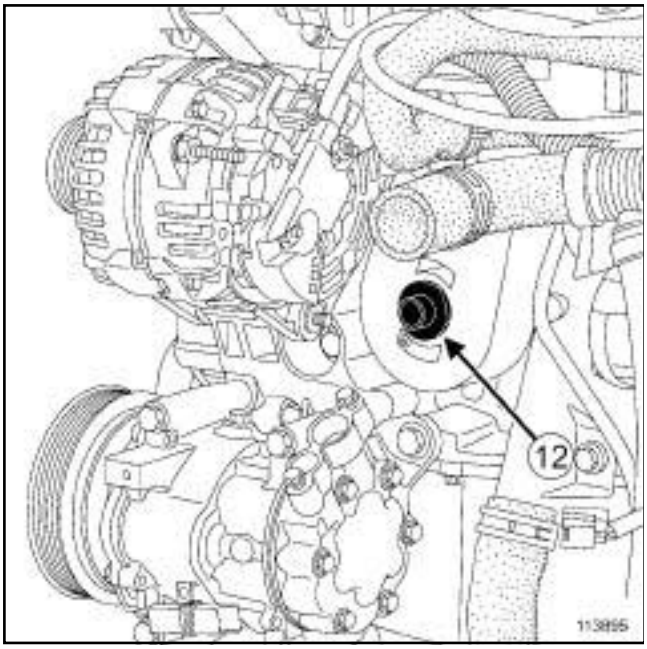
# Oil-coolant heat exchanger: Removal - Refitting

K9K, and 796




113895

❏ Remove:

- the bolt (**12**) from the oil-coolant heat exchanger,
- the oil-water heat exchanger.

❏ Using a clean cloth, clean up any oil and coolant runs on the cylinder block and on the oil filter support.

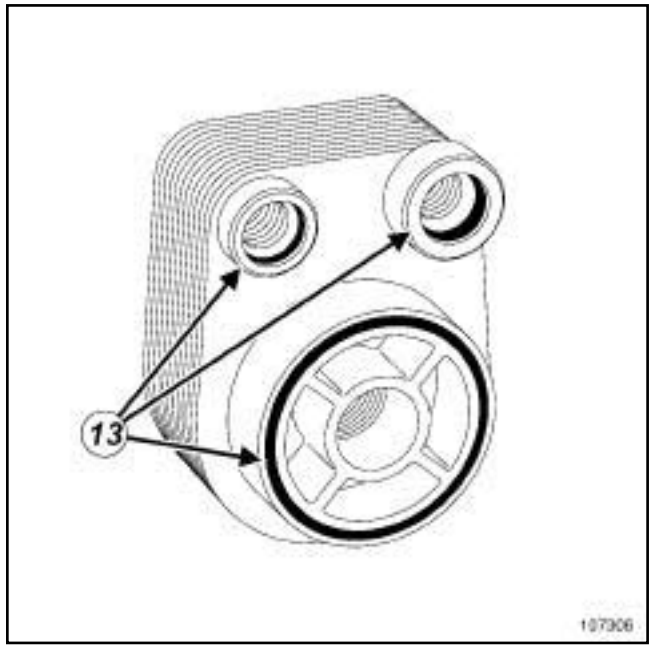
## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: coolant-engine oil heat exchanger seal on the cylinder block**.

❏ Always replace:

- the seals of the oil filter support bolt,
- the oil filter support seal.




107306

❏ Remove the oil-water heat exchanger seals (**13**) .

❏ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the housing of each seal in the oil-water heat exchanger if it is to be reused,
- the oil-coolant heat exchanger seal face if it is to be reused,
- the mating face of each seal on the coolant pump inlet pipe,
- the joint face on the cylinder block,
- the housing of each oil filter support seal,
- the housing of each seal in the oil filter support.

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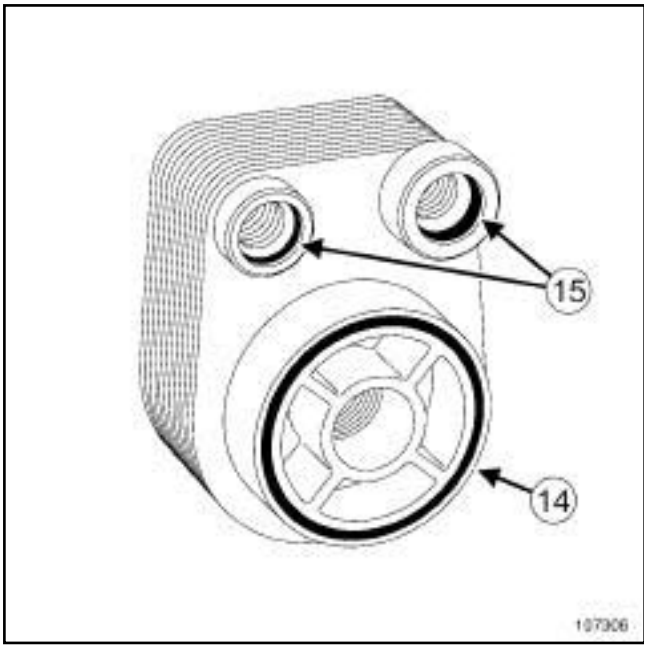
# Oil-coolant heat exchanger: Removal - Refitting

K9K, and 796




107306

❏ Refit new seals (**14**) and (**15**) on the oil-water heat exchanger.

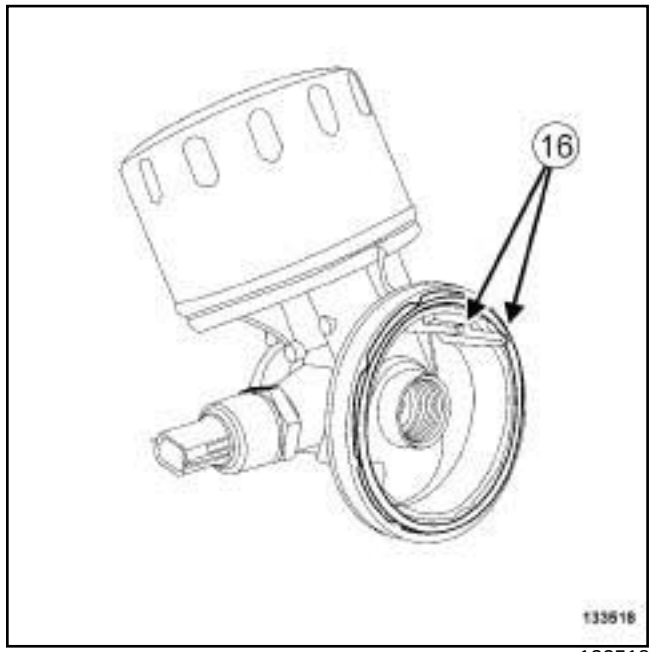
❏ Apply soapy water to the two seals ***(15)*** in contact with the coolant pump inlet pipe.

**II - REFITTING OPERATION FOR PART CONCERNED**

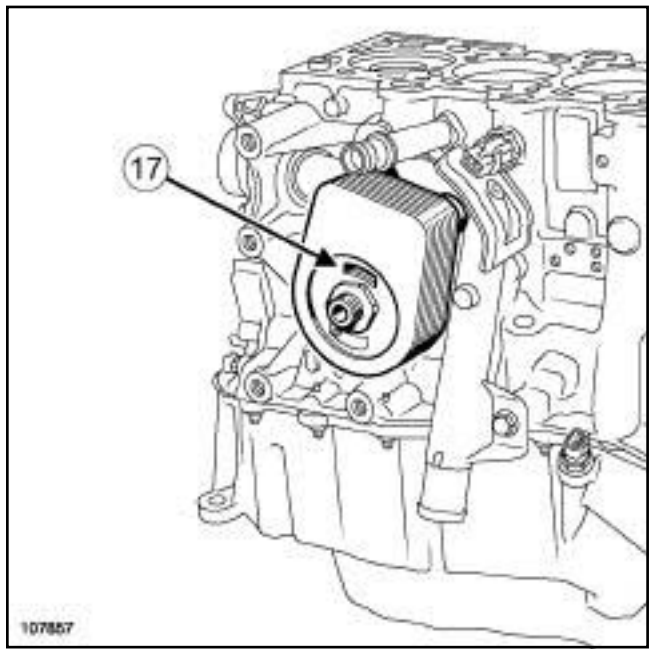
❏ Refit the oil-water heat exchanger.

❏ Torque tighten the **oil heat exchanger bolt (39 N.m)**.

**III - FINAL OPERATION**




133518




107857

❏ Refit:

- a new seal in the housing of the oil filter support,
- the oil filter support, positioning the lug (**16**) in the hole (**17**) of the oil-water heat exchanger.

❏ Refit the oil filter holder bolt.

❏ Torque tighten the **oil filter support bolt (28 N.m)**.

❏ Connect the oil pressure sensor connector.

❏ Refit the air outlet duct support on the fan assembly mounting.

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# Oil-coolant heat exchanger: Removal - Refitting

K9K, and 796

❑ Connect the air outlet duct to the intercooler.

❑ Fill the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❑ Refit:

- the closure panel component under the diesel filter,
- the engine undertray,
- the engine cover.

❑ Bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Oil pressure sensor: Removal - Refitting

K9K

| Tightening torques ▽ | |
|---|---|
| oil pressure sensor | **33 N.m** |

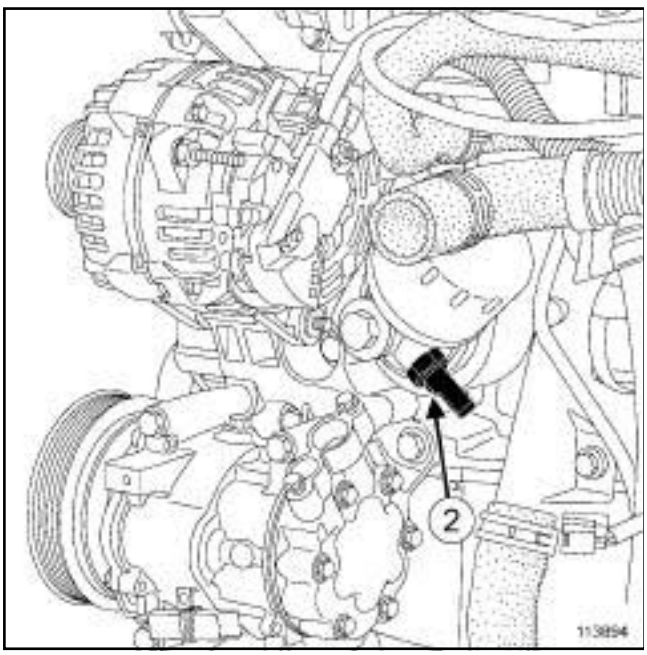
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove the engine undertray.

### II - OPERATION FOR REMOVAL OF PART CONCERNED




113894

❏ Disconnect the oil pressure sensor connector.

❏ Remove the oil pressure sensor (**2**) using the.

## REFITTING

### I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the oil pressure sensor.

❏ Torque tighten the **oil pressure sensor (33 N.m)**.

❏ Connect the oil pressure sensor connector.

### II - FINAL OPERATION

❏ Refit the engine undertray.

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# Oil pressure sensor: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| oil pressure sensor | **35 N.m** |

## REMOVAL

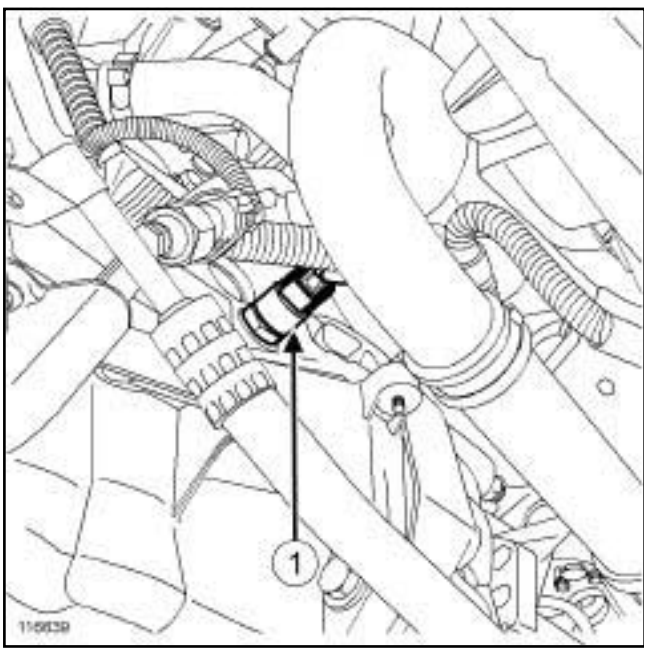
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

- the engine undertray bolts,
- the engine undertray.

### II - REMOVAL OPERATION




116639

❏ Disconnect the oil pressure sensor connector (**1**) .

❏ Remove the oil pressure sensor.

## REFITTING

### I - REFITTING OPERATION

❏ Degrease the mating face of the oil pressure sensor on the cylinder block using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

❏ Refit the oil pressure sensor.

❏ Torque tighten the **oil pressure sensor (35 N.m)**.

### II - FINAL OPERATION

❏ Connect the oil pressure sensor connector.

❏ Refit the engine undertray.

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# Oil pump: Removal - Refitting

K9K

| Tightening torques ▽ | |
|---|---|
| oil pump bolts | **25 N.m** |

## REMOVAL

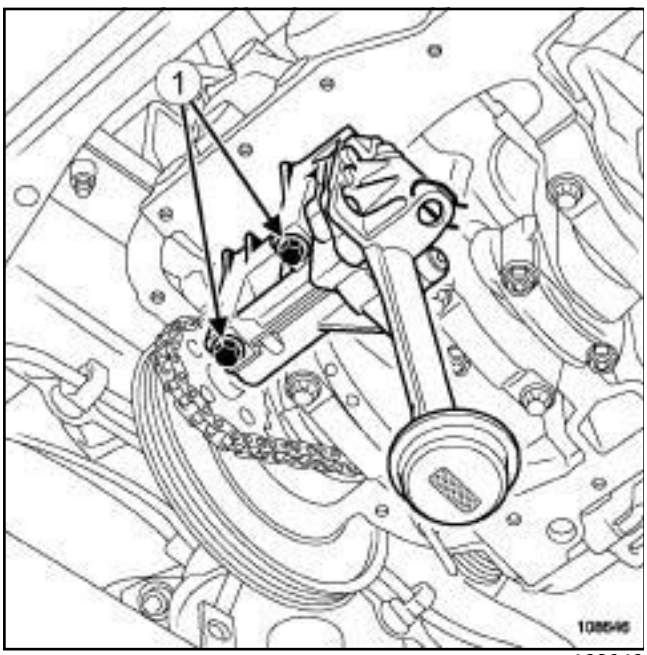
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Drain the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .

❏ Remove the sump (see **10A**, **Engine and cylinder block assembly**, **Lower cover: Removal - Refitting**, page **10A-9**) .

### II - OPERATION FOR REMOVAL OF PART CONCERNED




108646

❏ Remove:

- the oil pump bolts (**1**) ,
- the oil pump.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Check for oil pump centering rings on the cylinder block.

### II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the oil pump.

❏ Torque tighten the **oil pump bolts (25 N.m)**.

### III - FINAL OPERATION

❏ Refit the sump (see **10A**, **Engine and cylinder block assembly**, **Lower cover: Removal - Refitting**, page **10A-9**) .

❏ Top up the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .

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# Oil pump: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| oil pump bolts | **25 N.m** |

## REMOVAL

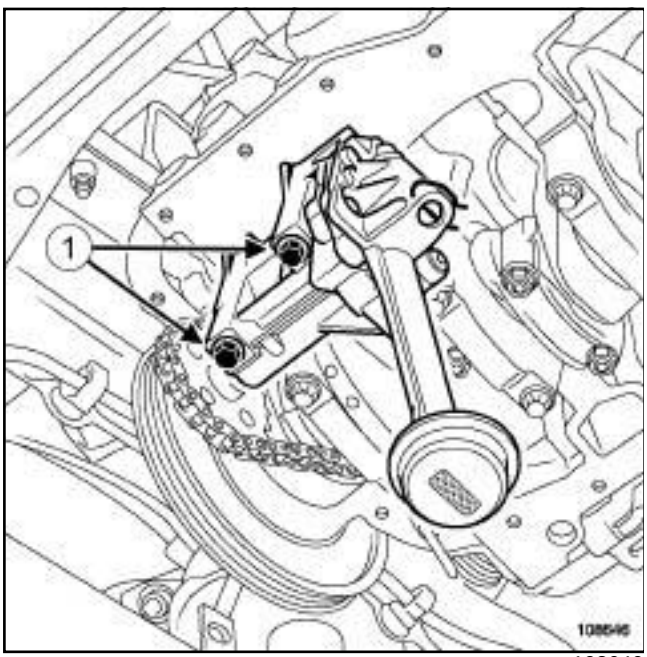
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Drain the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .

❏ Remove the sump (see **10A**, **Engine and cylinder block assembly**, **Lower cover: Removal - Refitting**, page **10A-9**) .

### II - REMOVAL OPERATION




108646

❏ Remove:

- the oil pump bolts (**1**) ,
- the oil pump.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Check for centering rings on the oil pump.

### II - REFITTING OPERATION

❏ Refit the oil pump.

❏ Torque tighten the **oil pump bolts (25 N.m)**.

### III - FINAL OPERATION

❏ Refit the sump (see **10A**, **Engine and cylinder block assembly**, **Lower cover: Removal - Refitting**, page **10A-9**) .

❏ Top up the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) .

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# Oil pressure: Check

K4M or K9K

**Oil pressure tables:**

| Engine | Minimum oil pressure (bar) | | Maximum oil pressure (bar) |
|---|---|---|---|
| | Idling speed | 3000 rpm | 3000 rpm |
| D4D, D4F | **1.5** | **3.9** | **5.3** |
| K7J, K7M | **1.3** | **3.7** | **5.0** |

| Engine | Minimum oil pressure (bar) | | Maximum oil pressure (bar) |
|---|---|---|---|
| | Idling speed | 4000 rpm | 4000 rpm |
| K4M | **0.5** | **3.1** | **4.4** |
| K9K | **0.8** | **3.4** | **5.2** |

**End pieces to be used:**

| Engine | End pieces |
|---|---|
| D4D, D4F | **C + F** |
| K4M, K7J, K7M, K9K | **E + C + F** |

## I - REMOVAL PREPARATION OPERATION

❑

**WARNING**

Always check the oil level using the dipstick.

Do not exceed the maximum level on the dipstick (could destroy the engine).

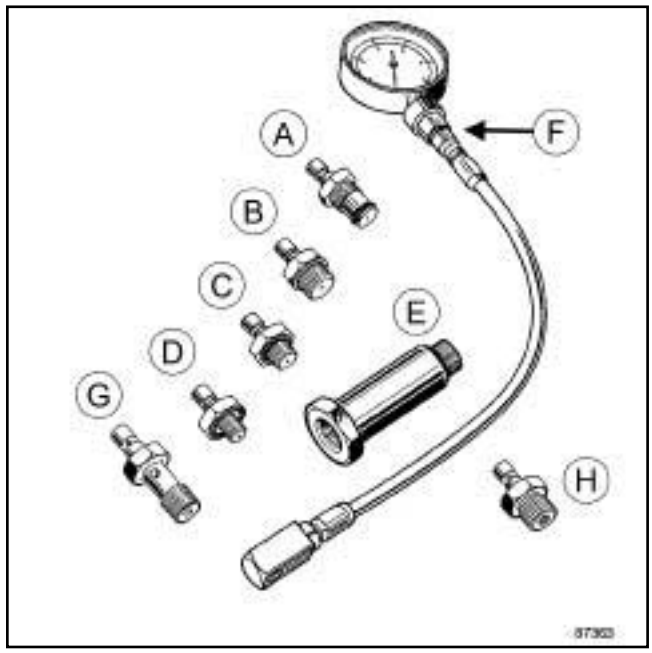
Correct the engine oil level if necessary before delivering the vehicle to the customer.

Note:

When topping up the engine oil, always leave at least **10 minutes** before checking the level with a dipstick.

## II - CHECK

❑ Remove the oil pressure sensor (see **10A**, **Engine and cylinder block assembly**, **Oil pressure sensor: Removal - Refitting**, page **10A-42**) .




87363

❑ In place of the oil pressure sensor, fit thewith suitable adapters using theor a **22 mm** long socket.

❑ Start the vehicle.

❑ Monitor the engine oil pressure as the oil temperature rises (approximately **80°C** or the first time the engine cooling fan is activated); it should not be less than the pressure at idle speed.

❑ If the oil pressure is lower than the pressure at idle speed, check that:

- the oil filter is not clogged,
- dirt or swarf is not present in the engine oil,
- the oil pump is in good condition and being correctly driven.

❑ Check the oil pressure in comparison with the values given in the table above.

❑ Switch off the engine.

❑ Remove thewith the end pieces.

❑ Refit the oil pressure sensor (see **10A**, **Engine and cylinder block assembly**, **Oil pressure sensor: Removal - Refitting**, page **10A-42**) .

❑ Wipe any oil run-off with a cloth.

❑ Wait at least **10 minutes**.

❑ Check the oil level using the dipstick.

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# Oil pressure: Check

K4M or K9K

❏ Top up the engine oil level if necessary (see **Engine oil: Specifications**) .

❏ Start the vehicle and check that there are no oil leaks at the oil pressure sensor.

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# Multifunction support: Removal - Refitting



| Tightening torques ▽ | |
|---|---|
| multifunction support bolts on the cylinder block | **44 N.m** |
| lower bolt of the multifunction support on the sump | **25 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front right-hand wheel arch side liner,
- the injector rail protector,
- the engine undertray bolts,
- the engine undertray.

❏ Remove the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection).

❏ Disconnect fuel supply pipe on the injector rail.

❏ Remove:

- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the alternator (see **16A**, **Starting - Charging**, **Alternator: Removal - Refitting**, page **16A-1**) .

❏ Remove (see **Power-assisted steering pump: Removal - Refitting**) (36B, Power-assisted steering):

- the bolt from the power-assisted steering high pressure pipe on the cylinder block,
- the bolts from the power-assisted steering pump on the multifunction support (without opening the circuit).

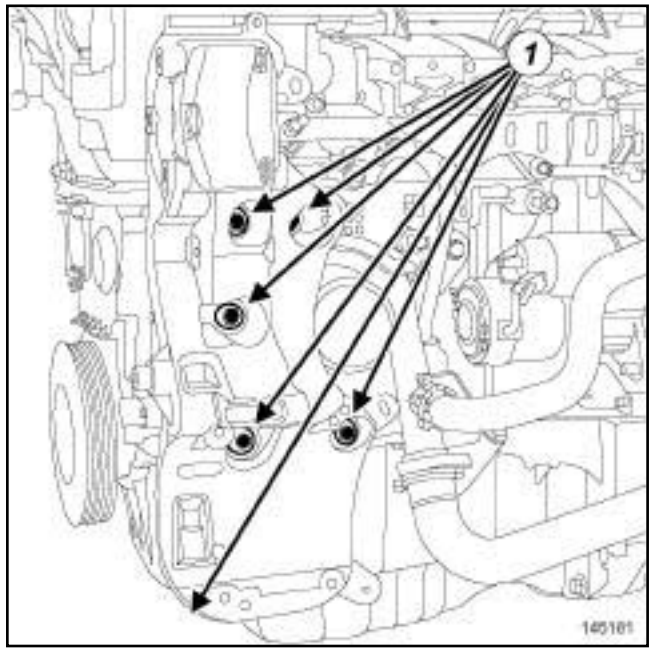
❏ Attach the power-assisted steering pump to the front end panel.

❏ Disconnect the connector from the air conditioning compressor.

❏ Remove the air conditioning compressor bolts (without opening the circuit) (see **Compressor: Removal - Refitting**) (62A, Air conditioning).

❏ Attach the air conditioning compressor to the subframe.

### II - REMOVAL OPERATION




145181

❏ Remove:

- the multifunction support bolts (**1**) ,
- the multifunction support.

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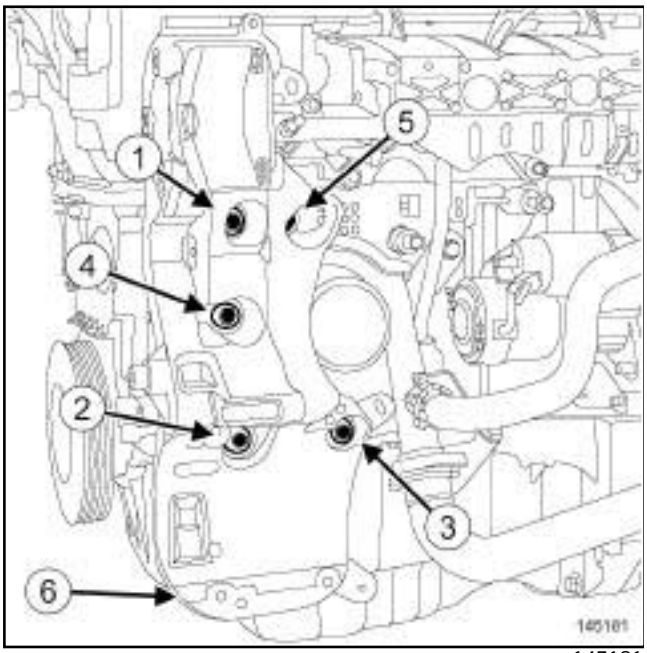
# Multifunction support: Removal - Refitting

K4M, and POWER ASSISTED STEERING, and AIR CONDITIONING

## REFITTING

### I - REFITTING OPERATION



145181

❏ Refit the multifunction support.

❏ Position bolts (**1**) to (**6**) without tightening them.

❏ Pretighten the multifunction support bolts (**1**) and (**2**) on the cylinder block **5 N.m**.

❏ Loosen bolts (**1**) and (**2**) of the multifunction support by one half-turn.

❏ Pretighten the multifunction support bolt (**6**) on the sump **5 N.m**.

❏ Pretighten the multifunction support bolts (**1**) and (**2**) on the cylinder block **5 N.m**.

❏ Pretighten in order (**3**) , (**4**) , (**5**) , (**6**) the multifunction support bolts on the cylinder block (**5 N.m**).

❏ Torque tighten in order (**1**) , (**2**) , (**3**) , (**4**) , (**5**) the **multifunction support bolts on the cylinder block (44 N.m)**.

❏ Torque tighten the **lower bolt of the multifunction support on the sump (25 N.m)** (**6**) .

### II - FINAL OPERATION

❏ Refit the air conditioning compressor (see **Compressor: Removal - Refitting**) (62A, Air conditioning).

❏ Connect the air conditioning compressor connector.

❏ Refit (see **Power-assisted steering pump: Removal - Refitting**) (36B, Power-assisted steering):

- the power-assisted steering pump,
- the bolt of the power-assisted steering high pressure pipe on the cylinder block.

❏ Refit:

- the alternator (see **16A**, **Starting - Charging**, **Alternator: Removal - Refitting**, page **16A-1**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .

❏ Connect the fuel supply pipe on the injector rail.

❏ Refit the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection).

❏ Refit:

- the engine undertray,
- the injector rail protector.

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Multifunction support: Removal - Refitting

K4M, and STANDARD HEATING RECIRCULATION

| Tightening torques ▽ | |
|---|---|
| multifunction support bolts on the cylinder block | **44 N.m** |
| multifunction support bolt on the sump | **25 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front right-hand wheel arch side liner,
- the engine undertray bolts,
- the engine undertray.

❏ Remove the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection).

❏ Remove:

- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the alternator (see **16A**, **Starting - Charging**, **Alternator: Removal - Refitting**, page **16A-1**) .

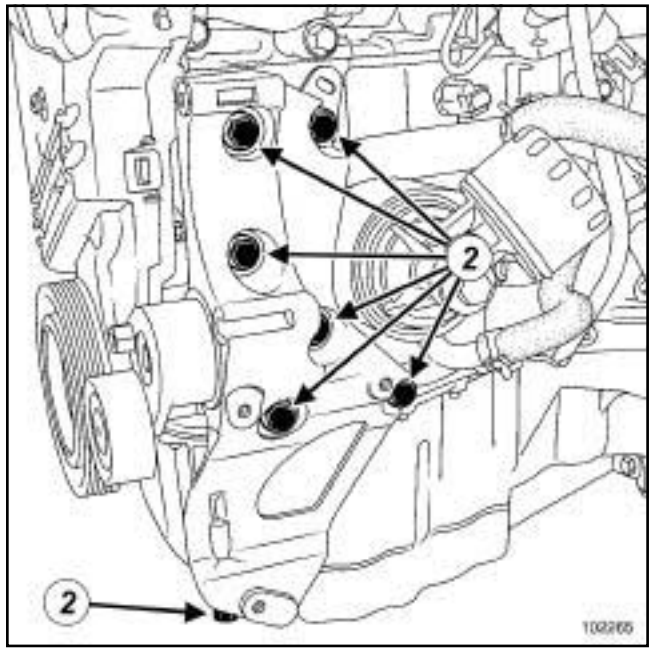
POWER ASSISTED STEERING

❏ Remove (see **Power-assisted steering pump: Removal - Refitting**) (36B, Power-assisted steering):

- the power-assisted steering pump bolts,
- the high pressure pipe bolt on the cylinder block.

❏ Attach the power-assisted steering pump to the front end panel.

### II - REMOVAL OPERATION



102265

❏ Remove:

- the multifunction support bolts (**2**) ,
- the multifunction support.

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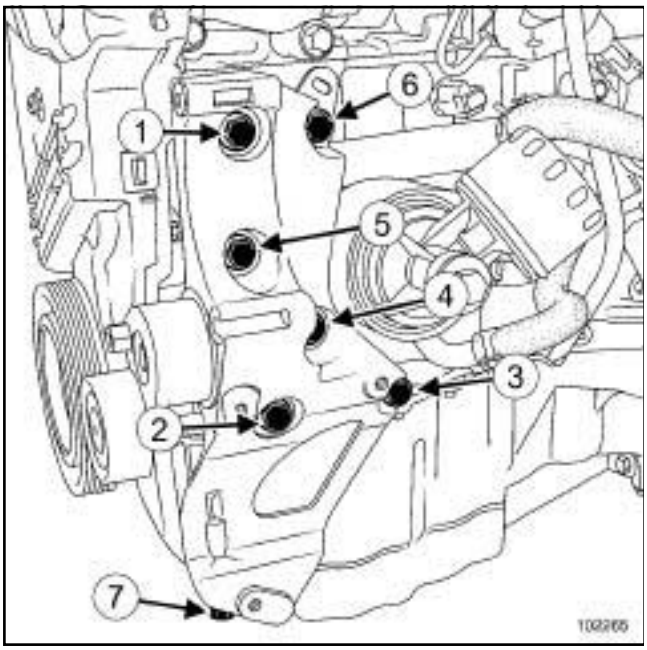
K4M, and STANDARD HEATING RECIRCULATION

## REFITTING

### I - REFITTING OPERATION



102265

❏ Refit the multifunction support.

❏ Position bolts (**1**) to (**7**) without tightening them.

❏ Pretighten the multifunction support bolts (**1**) and (**2**) on the cylinder block **5 N.m**.

❏ Loosen bolts (**1**) and (**2**) a half-turn.

❏ Pretighten the multifunction support bolt (**7**) on the sump **5 N.m**.

❏ Pretighten the multifunction support bolts (**1**) and (**2**) on the cylinder block **5 N.m**.

❏ Pretighten the multifunction support bolts (**3**) , (**4**) , (**5**) , (**6**) on the cylinder block **5 N.m**.

❏ Torque tighten in order **(1), (2), (3), (4), (5), (6)** the **multifunction support bolts on the cylinder block (44 N.m)**.

❏ Torque tighten the **multifunction support bolt on the sump (25 N.m)** (**7**) .

### II - FINAL OPERATION

POWER ASSISTED STEERING

❏ Refit (see **Power-assisted steering pump: Removal - Refitting**) (36B, Power-assisted steering):

- the power-assisted steering pump,
- the power-assisted steering pump bolts,
- the high pressure pipe bolt on the cylinder block.

❏ Refit:

- the alternator (see **16A**, **Starting - Charging**, **Alternator: Removal - Refitting**, page **16A-1**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .

❏ Refit the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection).

❏ Refit the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Multifunction support: Removal - Refitting

K9K

| Tightening torques ▽ | |
|---|---|
| multifunction support bolts on the cylinder block | **44 N.m** |
| multifunction support bolt on the sump | **25 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❑ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front right-hand wheel arch side liner,
- the engine undertray bolts,
- the engine undertray,
- the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection),
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the alternator (see **16A**, **Starting - Charging**, **Alternator: Removal - Refitting**, page **16A-1**) .

POWER ASSISTED STEERING, and STANDARD HEATING RECIRCULATION

❑ Remove the bolts from the power-assisted steering pump on the multifunction support (without opening the circuit) (see **Power-assisted steering pump: Removal - Refitting**) (36B, Power-assisted steering).

❑ Attach the power-assisted steering pump to the front end panel.

AIR CONDITIONING

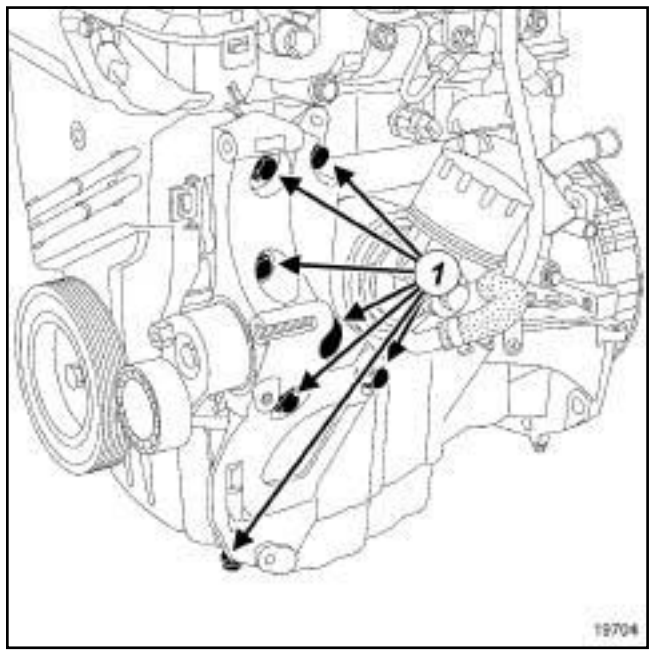
❑ Disconnect the air conditioning compressor connector.

❑ Remove the air conditioning compressor bolts (without opening the circuit) (see **Compressor: Removal - Refitting**) (62A, Air conditioning).

❑ Attach the air conditioning compressor to the lower front cross member.

❑ Unpick the wiring harness on the multifunction support.

### II - REMOVAL OPERATION




19704

❑ Remove:

- the multifunction support bolts (**1**) ,
- the multifunction support.

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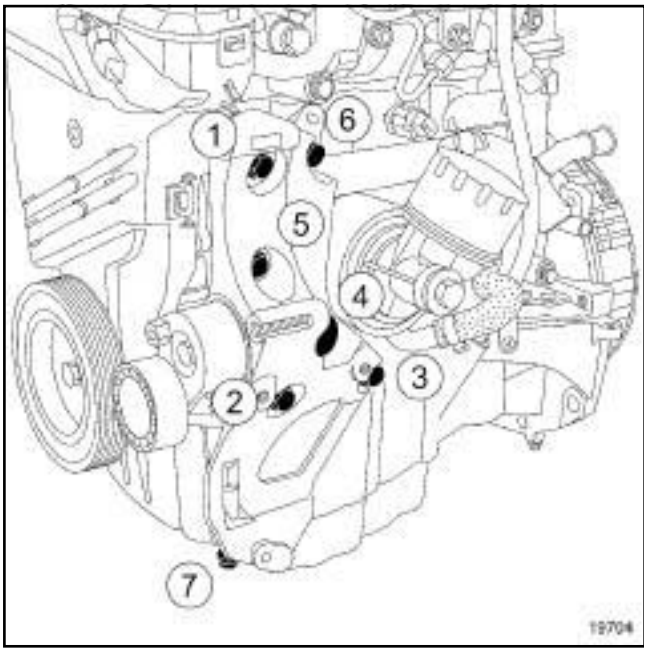
# Multifunction support: Removal - Refitting

K9K

## REFITTING

### REFITTING OPERATION



19704

- ❏ Refit the multifunction support.
- ❏ Position bolts (**1**) to (**7**) without tightening them.
- ❏ Pretighten the multifunction support bolts (**1**) and (**2**) on the cylinder block **5 N.m**.
- ❏ Loosen bolts (**1**) and (**2**) a half-turn.
- ❏ Pretighten the multifunction support bolt (**7**) on the sump **5 N.m**.
- ❏ Pretighten the multifunction support bolts (**1**) and (**2**) on the cylinder block **5 N.m**.
- ❏ Pretighten the multifunction support bolts (**3**) , (**4**) , (**5**) , (**6**) on the cylinder block **5 N.m**.
- ❏ Torque tighten in order (**1**) , (**2**) , (**3**) , (**4**) , (**5**) , (**6**) the **multifunction support bolts on the cylinder block (44 N.m)**.
- ❏ Torque tighten the **multifunction support bolt on the sump (25 N.m)** (**7**) .
- ❏ Proceed in the reverse order to removal.

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# Engine - gearbox assembly: Removal - Refitting

K4M

| Special tooling required | |
|---|---|
| **Mot. 1448** | Remote operation pliers for hose clips. |
| **Mot. 1390** | Support for removal - refitting of engine - gearbox assembly |

| Equipment required |
|---|
| refrigerant charging station |

| Tightening torques ▽ | |
|---|---|
| nut on the rubber pad support of the left-hand suspended engine mounting | **62 N.m** |
| exhaust flange bolts | **21 N.m** |
| front axle subframe tie-rod upper bolts | **21 N.m** |
| anti-roll bar tie rod upper bolts | **37 N.m** |
| earth strap bolt on the gearbox | **21 N.m** |
| power-assisted steering low pressure pipe bolt on the front axle sub-frame | **21 N.m** |
| power-assisted steering pipe bolts on the gear-box support | **21 N.m** |
| power-assisted steering pipe bolts on the gear-box | **21 N.m** |
| power-assisted steering pipe bolt on the cylinder block | **21 N.m** |

**IMPORTANT**
Wear cut-resistant gloves during the operation.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑

**IMPORTANT**
To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

AIR CONDITIONING

❑ Drain the refrigerant circuit using the tool **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❑ Remove:

- the air inlet sleeve,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the injector rail protector,
- the battery tray,
- the injection computer (see **17B**, **Petrol injection**, **Petrol injection computer: Removal - Refitting**, page **17B-7**) .

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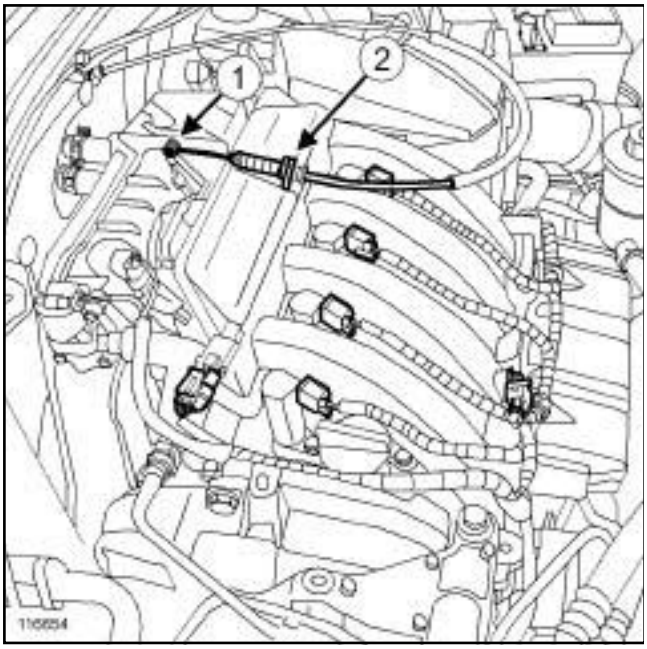
# Engine - gearbox assembly: Removal - Refitting

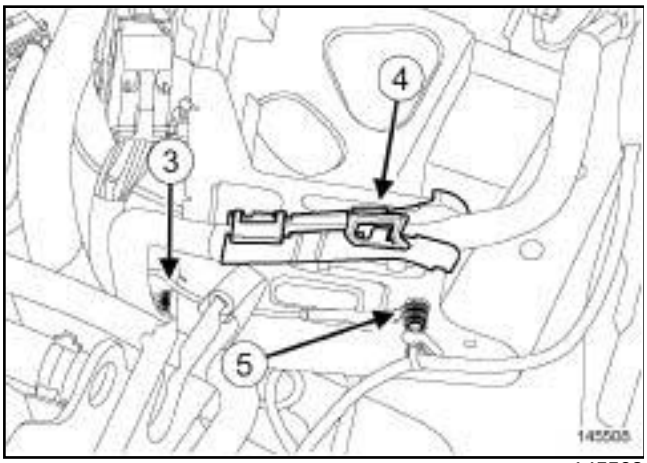
K4M




116654

❏ Disconnect the accelerator cable on the throttle valve at (**1**) .

❏ Remove the accelerator cable from the inlet distributor at (**2**) .

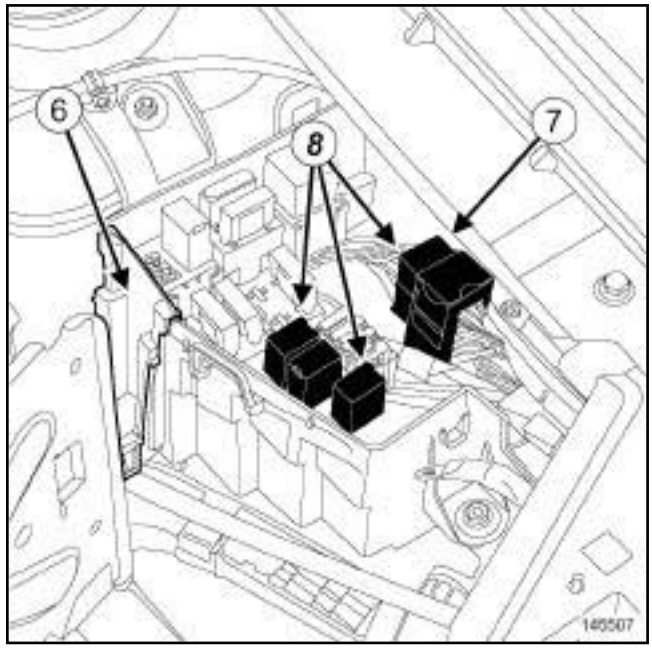



145508

❏ Remove the engine wiring bolt (**3**) on the battery mounting.

❏ Unclip the battery wiring at (**4**) .

❏ Remove the earth strap bolt (**5**) on the battery mounting.




145507

❏ Remove the fuse and relay box cover.

❏ Remove the side protector (**6**) of the fuse and relay box.

❏ Disconnect the engine harness - front wiring connector (**7**) .

❏ Unclip the engine harness fuse holders and relays (**8**) from their mountings on the fuse and relay box in the engine compartment.

❏ Position the engine harness, fuses and relays on the engine.

❏ Remove:

- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the engine undertray bolts,
- the engine undertray,
- the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection),
- the front wheel arch liners (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection).

❏ Drain:

- the engine oil if necessary (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) ,
- the gearbox oil (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox),

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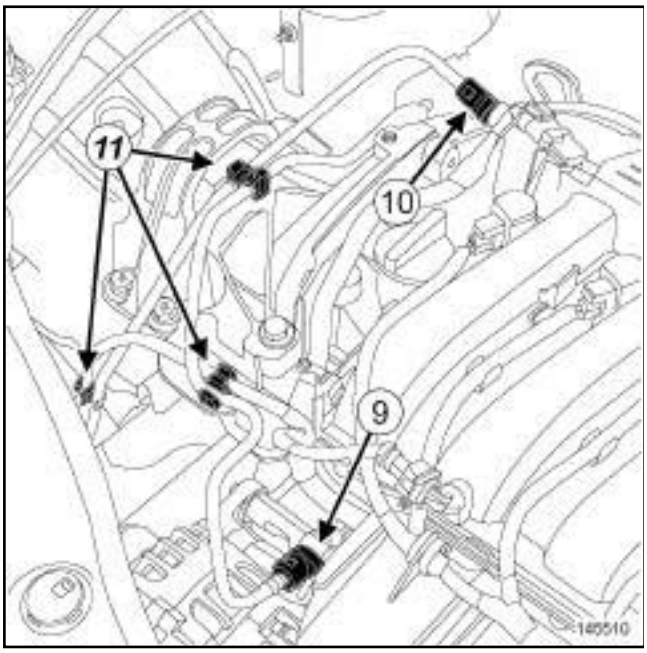
# Engine - gearbox assembly: Removal - Refitting

K4M

- the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .




145510

❏ Disconnect:

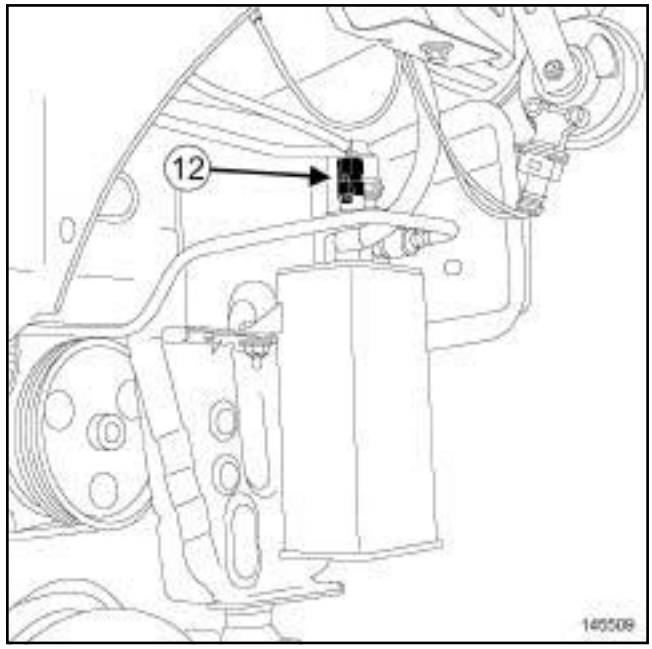
- the fuel supply pipe (**9**) on the injector rail,
- the petrol vapour rebreather pipe (**10**) .

**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

❏ Fit blanking plugs on the fuel supply pipe.

❏ Unclip the pipes at (**11**) .




145509

❏ Disconnect the connector (**12**) from the fuel vapour recirculation solenoid valve.

❏ Disconnect (see **Power-assisted steering pump: Removal - Refitting**) (36B, Power-assisted steering):

- the power-assisted steering low pressure hose on the power-assisted steering pump using the **(Mot. 1448)** and drain the circuit,
- the power-assisted steering high pressure pipe on the power-assisted steering pump,
- the connector from the power-assisted steering pressure switch.

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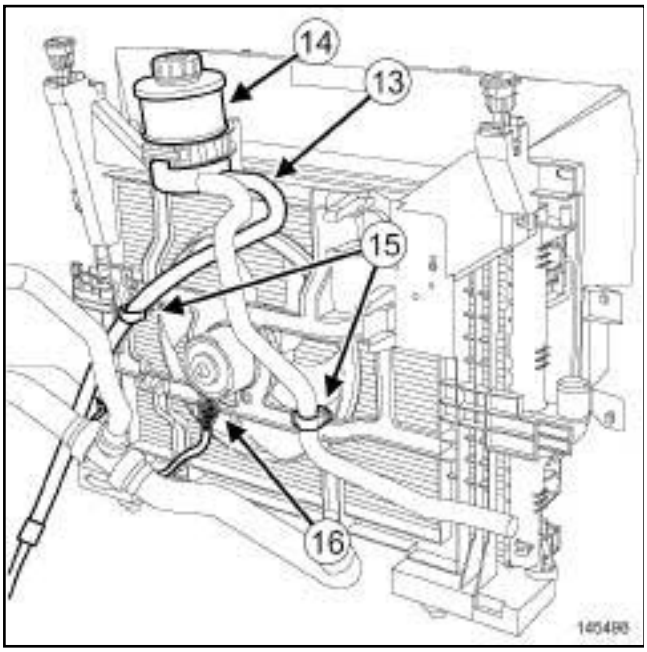
# Engine - gearbox assembly: Removal - Refitting

K4M

## STANDARD HEATING RECIRCULATION




145498

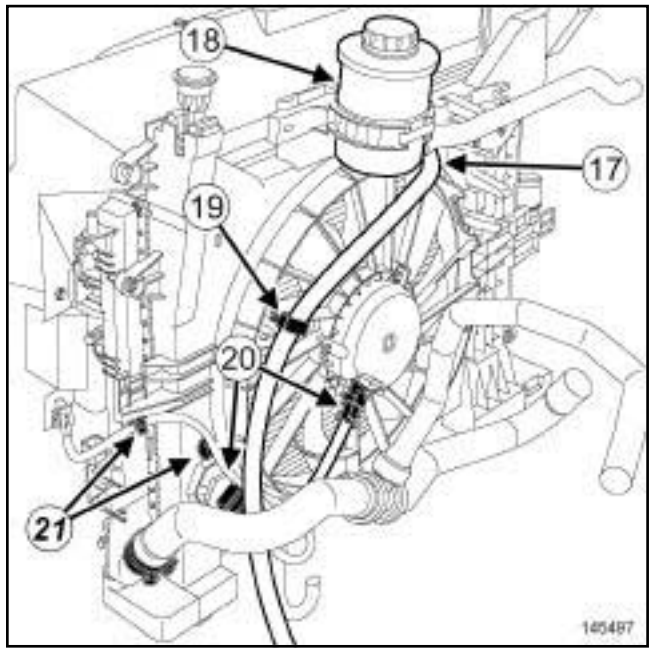
❏ Remove:

- the power-assisted steering low pressure pipe (**13**) on the oil reservoir using the **(Mot. 1448)**,
- the power assisted steering oil reservoir (**14**) ,
- the bolt of the power-assisted steering high pressure pipe on the cylinder block.

❏ Unclip the power-assisted steering pipes on the fan assembly mounting at (**15**) .

❏ Disconnect the fan assembly connector (**16**) .

## AIR CONDITIONING




145497

❏ Remove:

- the power-assisted steering low pressure pipe (**17**) on the oil reservoir using the **(Mot. 1448)**,
- the power assisted steering oil reservoir (**18**) ,
- the bolt of the power-assisted steering high pressure pipe on the cylinder block.

❏ Unclip the power-assisted steering pipes on the fan assembly mounting at (**19**) .

❏ Disconnect the connectors (**20**) from the fan assembly.

❏ Unclip the fan assembly wiring at (**21**) .

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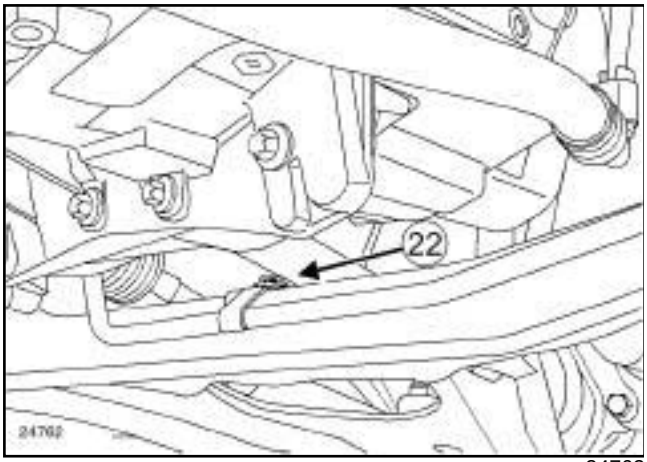
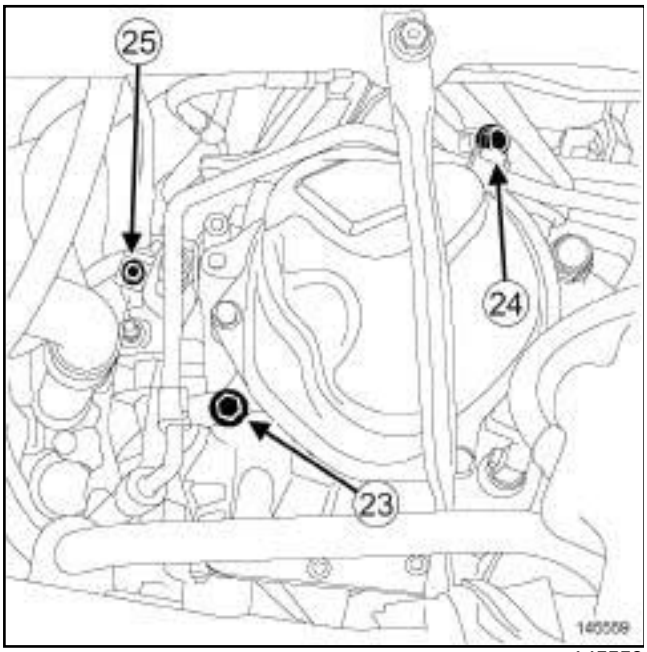
# Engine - gearbox assembly: Removal - Refitting

K4M




24762

❏ Remove the power-assisted steering low pressure pipe bolt (**22**) on the front axle subframe.




145559

❏ Remove:

- the power-assisted steering high pressure pipe bolt (**23**) on the gearbox,
- the power-assisted steering high pressure pipe bolt (**24**) on the gearbox support,
- the earth strap bolt (**25**) on the gearbox.

AIR CONDITIONING

❏ Remove (see **Compressor: Removal - Refitting**) (62A, Air conditioning):

- the pipe retaining bracket bolt on the compressor,
- the pipe union bolts on the compressor.

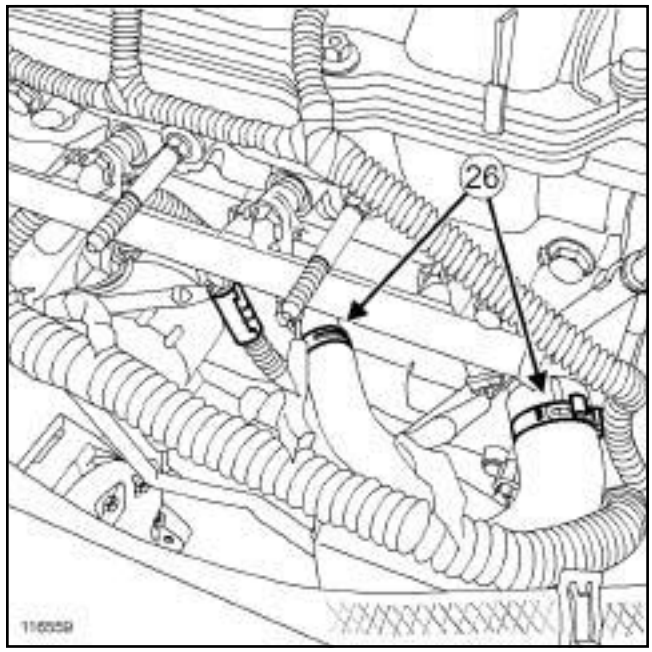
Note:

Plugs must be fitted on the hoses to prevent moisture from entering the system.

❏ Disconnect the compressor pipes.

❏ Fit blanking plugs in the pipe openings.

❏ Disconnect the air conditioning pressostat connector.




116559

❏ Move aside the cooling hose clips (**26**) on the coolant pump inlet pipe using the **(Mot. 1448)**.

❏ Disconnect:

- the cooling hoses on the coolant pump inlet pipe,
- the vacuum pipe on the inlet distributor chamber.

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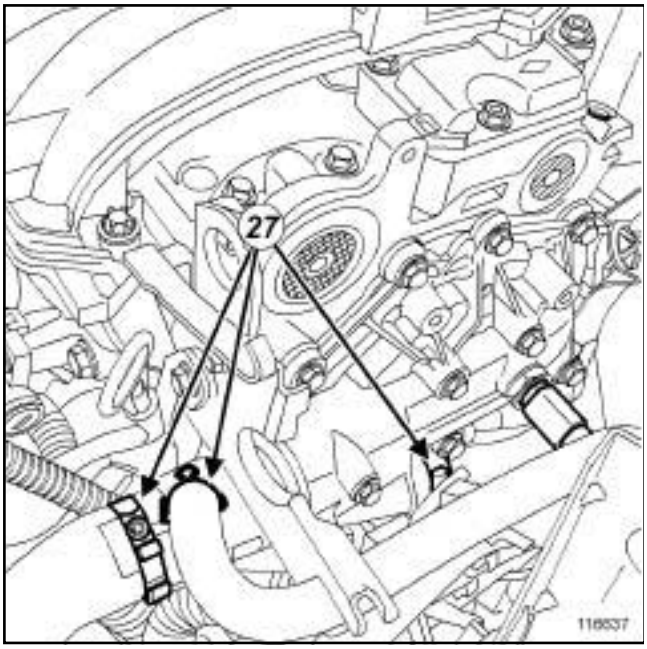
# Engine - gearbox assembly: Removal - Refitting

K4M



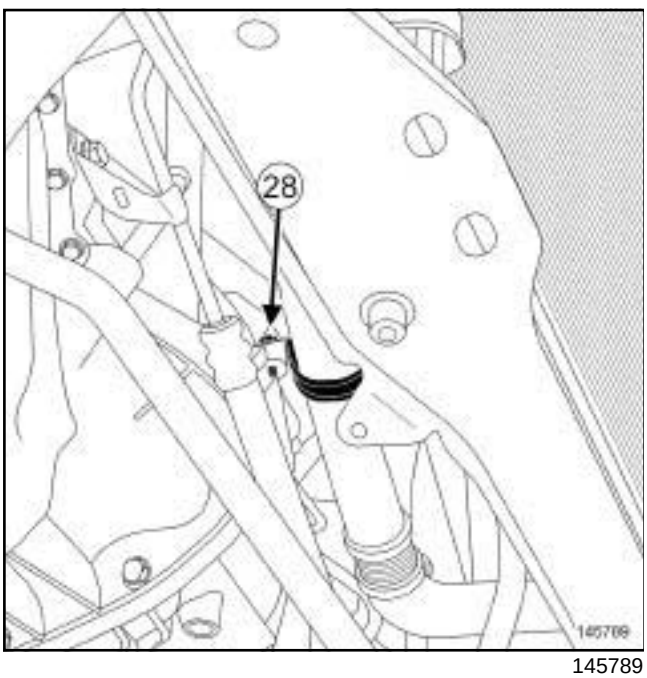

116637

❏ Move aside the clips (**27**) of the coolant hoses on the water chamber using the **(Mot. 1448)**.

❏ Disconnect the cooling hoses from the water chamber.

❏ Unclip the downstream oxygen sensor wiring on the steering box heat shield.

❏ Disconnect the downstream oxygen sensor connector.



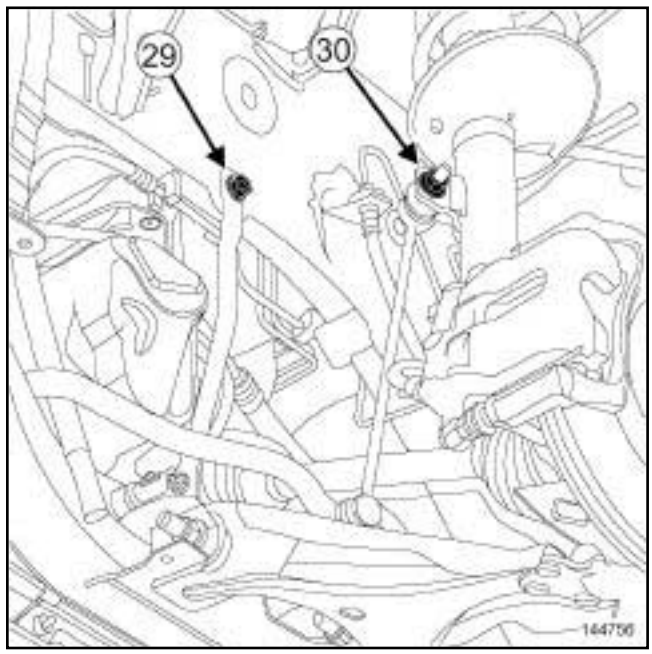

145789

❏ Remove the cooling pipe support bolt (**28**) on the sump.

❏ Remove (see ) (36A, Steering assembly):

- the heat shield bolts on the steering box,
- the steering box heat shield,
- the steering box bolts on the front axle subframe.

❏ Attach the steering rack to the body.




144756

❏ Remove:

- the front axle subframe tie-rod upper bolts (**29**) ,
- the anti-roll bar tie rod upper bolts (**30**) ,
- the front right-hand wheel driveshaft (see **Front right-hand driveshaft: Removal - Refitting**) (29A, Driveshaft),
- the front left-hand wheel driveshaft (see **Front left-hand driveshaft: Removal - Refitting**) (29A, Transmission).

❏ Pass the power-assisted steering low pressure pipe over the gearbox cover.

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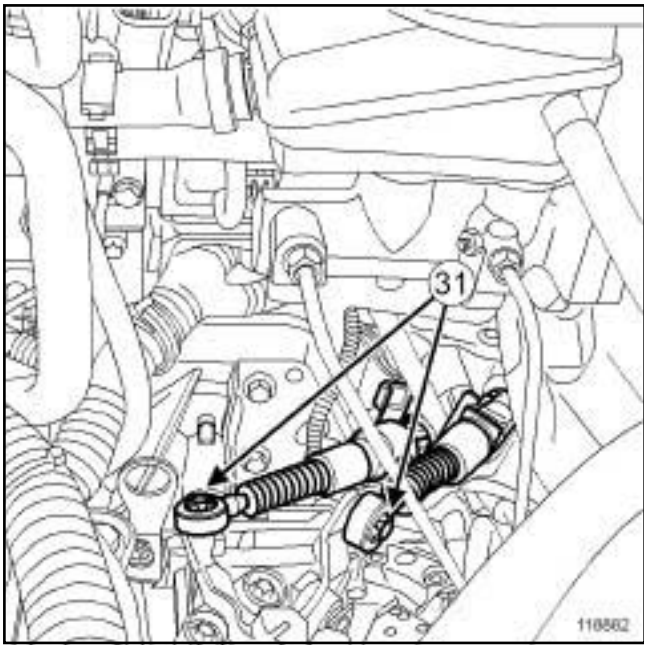
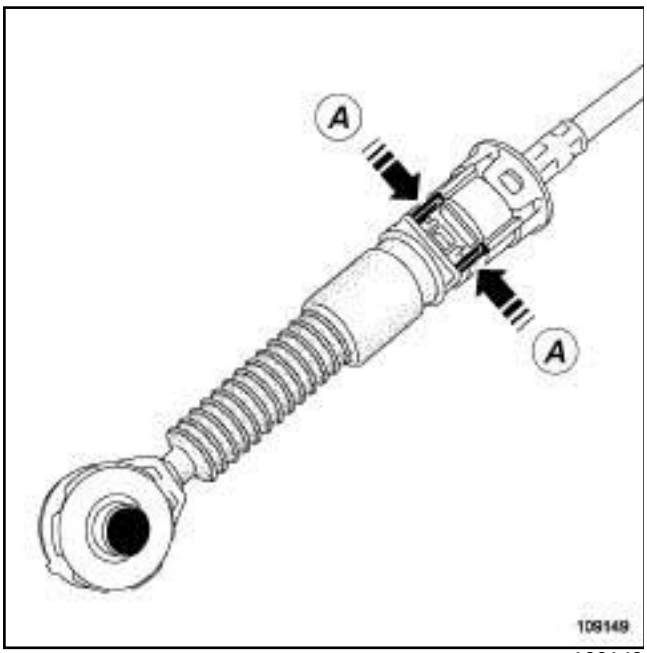
# Engine - gearbox assembly: Removal - Refitting

K4M




118882

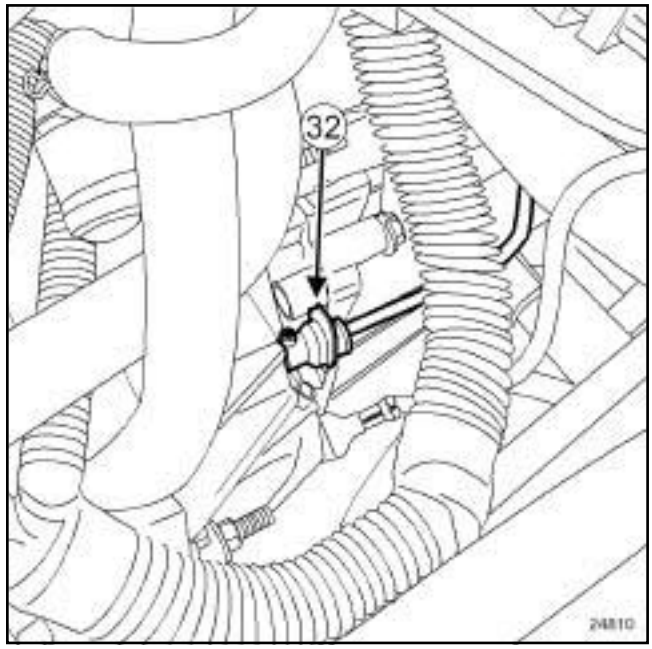



109149

❑ Unclip:

- the gear control cables on the gearbox at (**31**) using a screwdriver,
- the gear control cables from the sleeve stops by pressing at (**A**) .

❑ Move the gear control cables away from the gearbox.




24810

❑

**WARNING**

Do not pull the clip. If it is incorrectly handled in any way, the pipe will need to be replaced.

❑ Disconnect the clutch control pipe on the clutch slave cylinder by pressing the clip (**32**) .

❑ Recover the brake fluid in a container.

❑ Fit blanking plugs on the pipe openings.

❑ Remove the lower engine tie-bar (see **19D**, **Engine mounting**, **Lower engine tie-bar: Removal - Refitting**, page **19D-8**) .

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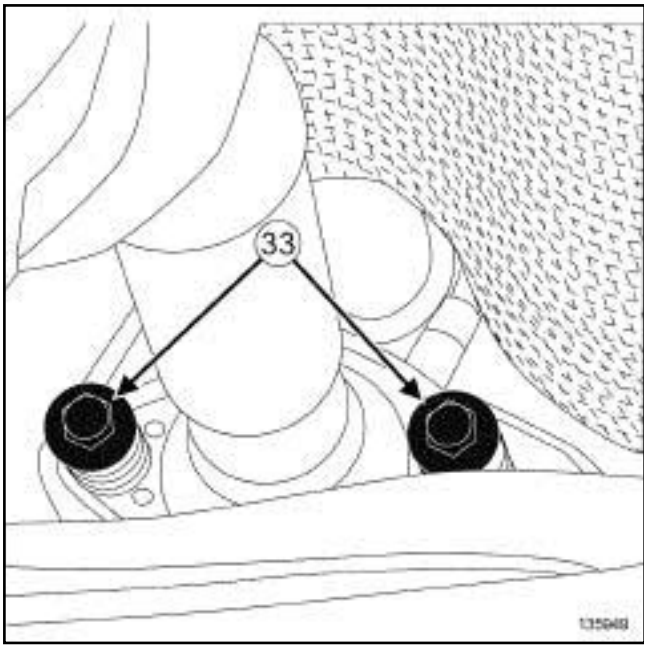
# Engine - gearbox assembly: Removal - Refitting

K4M




135949

❑ Remove:

- the bolts (**33**) from the exhaust flange,
- the exhaust bracket ring.

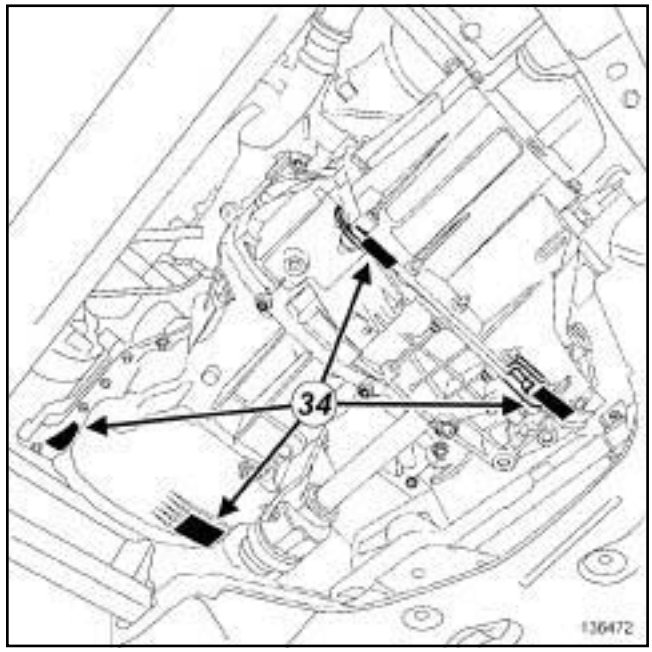
❑ Move aside the exhaust pipe.

Note:

Pull the exhaust pipe backwards.

❑ Remove the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components).

**II - REMOVAL OPERATION**




136472

❑ Mark the positions of the suspended engine mountings on the body.

❑ Support the engine - gearbox assembly on the engine marks (**34**) using the **(Mot. 1390)**.

❑ Remove the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) .

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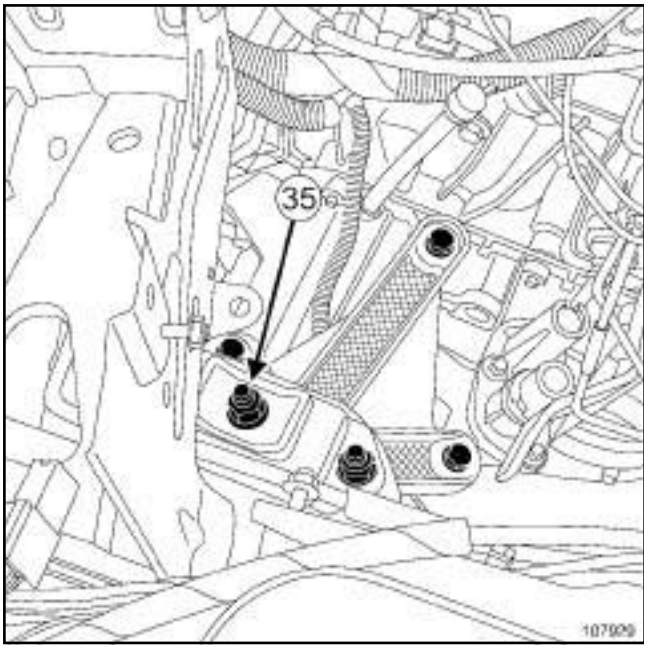
# Engine - gearbox assembly: Removal - Refitting

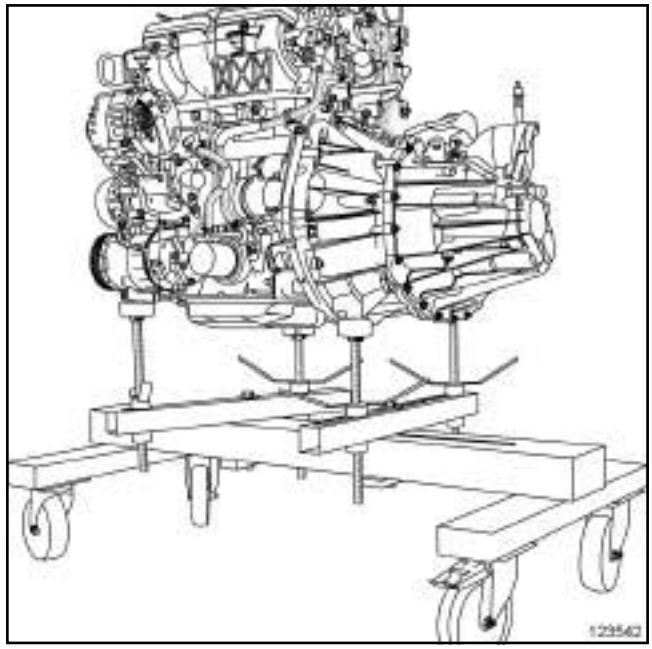
K4M




107929

❏ Remove the nut (**35**) on the rubber pad support of the left-hand suspended engine mounting.

❏ Strike the gearbox stud with a copper hammer to separate the engine - gearbox assembly from the body.



123542

❏ Lift the vehicle to remove the engine - gearbox assembly.

Note:

Ensure that no component obstructs the movement of the body around the engine - gearbox assembly.

❏ Remove the engine - gearbox assembly.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ For standard engine replacements (see **Engine: Standard replacement**) (Technical Note 6006A, 10A, Engine and peripherals).

❏ **parts always to be replaced: ring between exhaust manifold and catalytic converter**

### II - REFITTING OPERATION

❏ Fit the engine - gearbox assembly.

❏ Refit the nut on the rubber pad support of the left-hand suspended engine mounting.

❏ Torque tighten the **nut on the rubber pad support of the left-hand suspended engine mounting (62 N.m)**.

❏ Refit the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) .

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# Engine - gearbox assembly: Removal - Refitting

K4M

❑ Remove the **(Mot. 1390)** from the engine - gearbox assembly.

**III - FINAL OPERATION**

❑ Proceed in the reverse order to removal.

❑ Torque tighten:

- the **exhaust flange bolts (21 N.m)**,
- the **front axle subframe tie-rod upper bolts (21 N.m)**,
- the **anti-roll bar tie rod upper bolts (37 N.m)**,
- the **earth strap bolt on the gearbox (21 N.m)**,
- the **power-assisted steering low pressure pipe bolt on the front axle subframe (21 N.m)**,
- the **power-assisted steering pipe bolts on the gearbox support (21 N.m)**,
- the **power-assisted steering pipe bolts on the gearbox (21 N.m)**,
- the **power-assisted steering pipe bolt on the cylinder block (21 N.m)**.

❑ Perform the following operations:

- top up the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) ,
- fill up the gearbox oil (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox),
- fill and bleed the cooling circuit (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) ,
- bleed the clutch circuit (see **Clutch circuit: Bleed**) (37A, Mechanical component controls).

AIR CONDITIONING

❑ Fill the refrigerant circuit using the tool **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❑ Fill up the power-assisted steering circuit.

❑ First, bleed the power-assisted steering circuit by turning the steering wheel fully from left to right with the engine off.

❑ Bleed the power-assisted steering circuit by turning the steering wheel fully from lock to lock with the engine running.

❑ Top up the oil in the power-assisted steering oil reservoir.

❑ Check that there are no leaks.

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# Engine - gearbox assembly: Removal - Refitting

K9K, and 796

| Special tooling required | |
|---|---|
| **Mot. 1448** | Remote operation pliers for hose clips. |
| **Mot. 1390** | Support for removal - refitting of engine - gearbox assembly |

| Equipment required |
|---|
| refrigerant charging station |

| Tightening torques ▽ | |
|---|---|
| nut on the rubber pad support of the left-hand suspended engine mounting | **62 N.m** |
| exhaust flange bolts | **21 N.m** |
| front axle subframe tie-rod upper bolts | **21 N.m** |
| anti-roll bar tie rod upper bolts | **37 N.m** |
| earth strap bolt on the gearbox | **21 N.m** |
| power-assisted steering low pressure pipe bolt on the front axle sub-frame | **21 N.m** |
| power-assisted steering pipe bolts on the gear-box support | **21 N.m** |
| power-assisted steering pipe bolts on the gear-box | **21 N.m** |
| power-assisted steering pipe bolt on the cylinder block | **21 N.m** |

**IMPORTANT**
Wear cut-resistant gloves during the operation.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑

**IMPORTANT**
To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

AIR CONDITIONING

❑ Drain the refrigerant circuit using the tool **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❑ Remove:

- the engine cover,
- the air inlet sleeve,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the battery tray,
- the injection computer (see **17B**, **Petrol injection**, **Petrol injection computer: Removal - Refitting**, page **17B-7**) .

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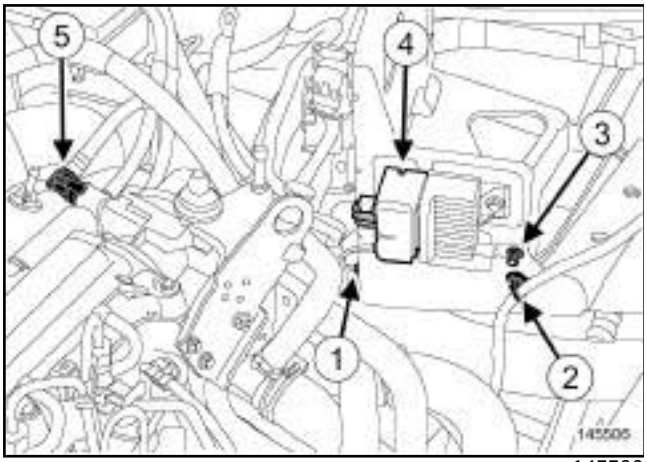
# Engine - gearbox assembly: Removal - Refitting

K9K, and 796




145506

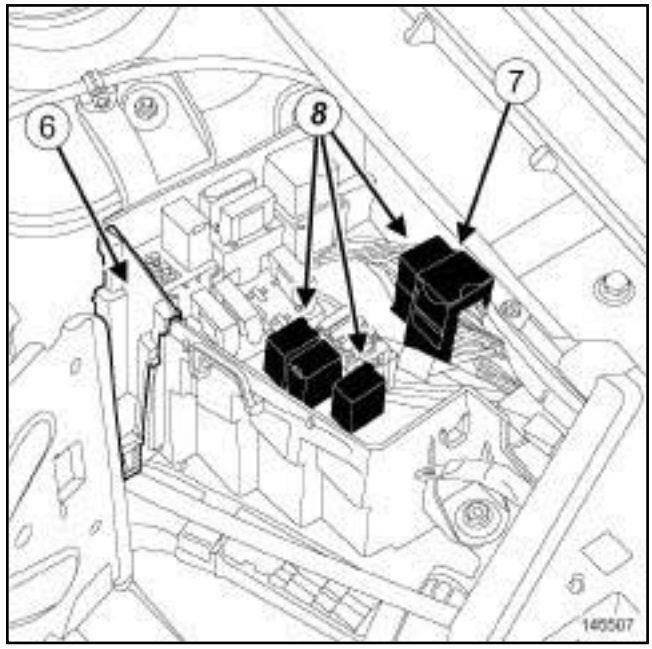
❏ Remove the engine wiring bolt (**1**) on the battery mounting.

❏ Unclip the battery wiring at (**2**) .

❏ Remove the earth strap bolt (**3**) on the battery mounting.

❏ Disconnect the connector (**4**) from the pre-postheating unit.

❏ Disconnect the non-return valve (**5**) at the vacuum pump.




145507

❏ Remove the fuse and relay box cover.

❏ Remove the side protector (**6**) of the fuse and relay box.

❏ Disconnect the engine harness - front wiring connector (**7**) .

❏ Unclip the engine harness fuse holders and relays (**8**) from their mountings on the fuse and relay box in the engine compartment.

❏ Position the engine harness, fuses and relays on the engine.

❏ Remove:

- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the engine undertray bolts,
- the engine undertray,
- the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection),
- the front wheel arch liners (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection).

❏ Drain:

- the engine oil if necessary (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) ,
- the gearbox oil (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox),

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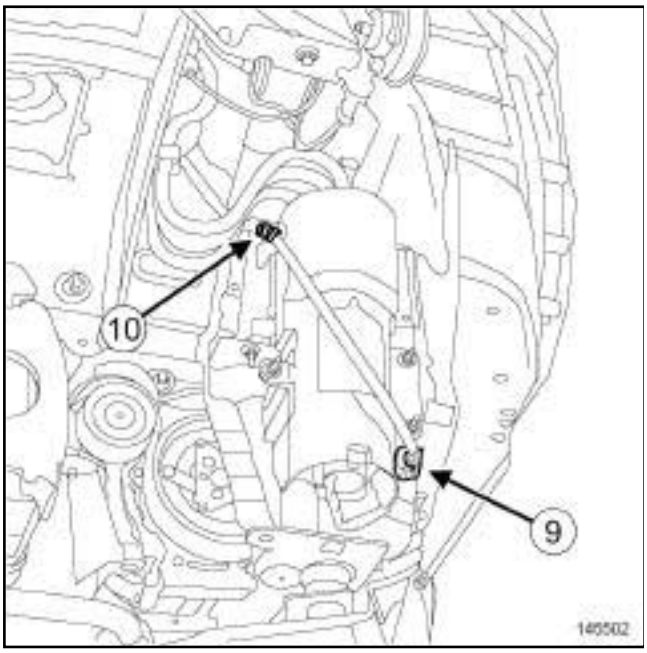
# Engine - gearbox assembly: Removal - Refitting



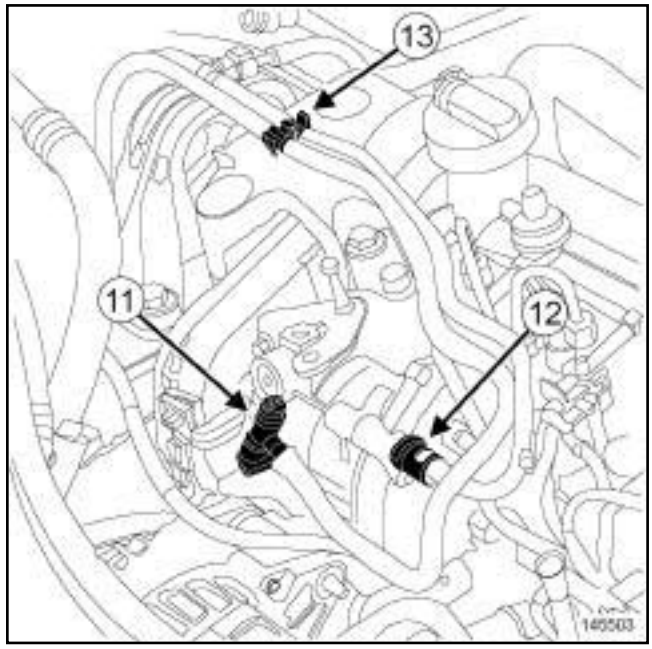
- the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .




145502

❏ Disconnect the connector (**9**) from the water detection sensor on the diesel filter.

❏ Unclip the water detection connector on the diesel filter mounting at (**10**) .




145503

❏ Disconnect:

- the fuel supply pipe (**11**) ,
- the fuel return pipe (**12**) .

**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

❏ Fit blanking plugs on the fuel supply pipe.

❏ Unclip the pipes at (**13**) .

❏ Disconnect the intercooler ducts (see **12B**, **Turbocharging**, **Intercooler: Removal - Refitting**, page **12B-8**) .

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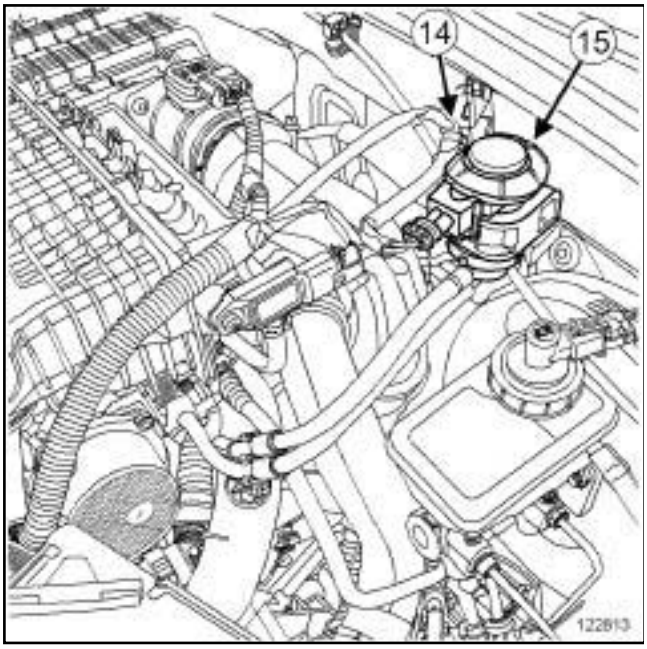
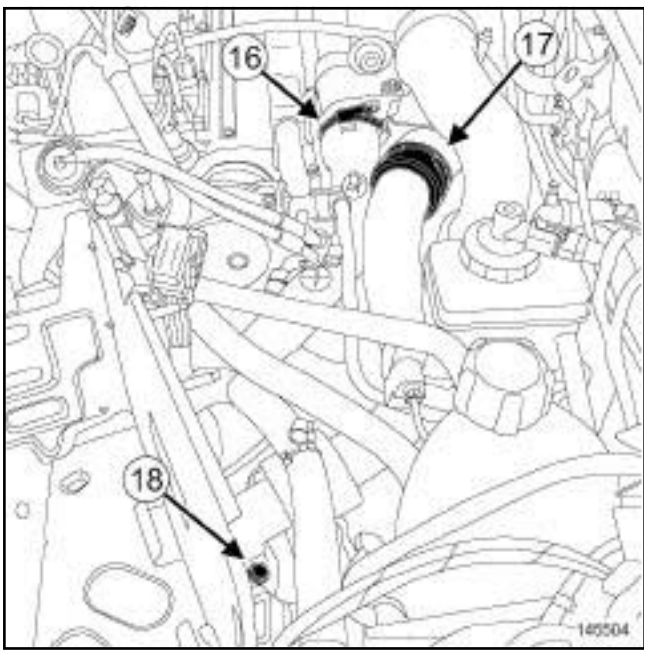
# Engine - gearbox assembly: Removal - Refitting

K9K, and 796




122813




145504

❑ Unclip:

- the turbocharger control solenoid valve wiring at (**14**) ,
- the turbocharger control solenoid valve (**15**) from its support.

❑ Disconnect:

- the air duct (**16**) on the EGR assembly,
- the air duct between the turbocharger and the intercooler at (**17**) .

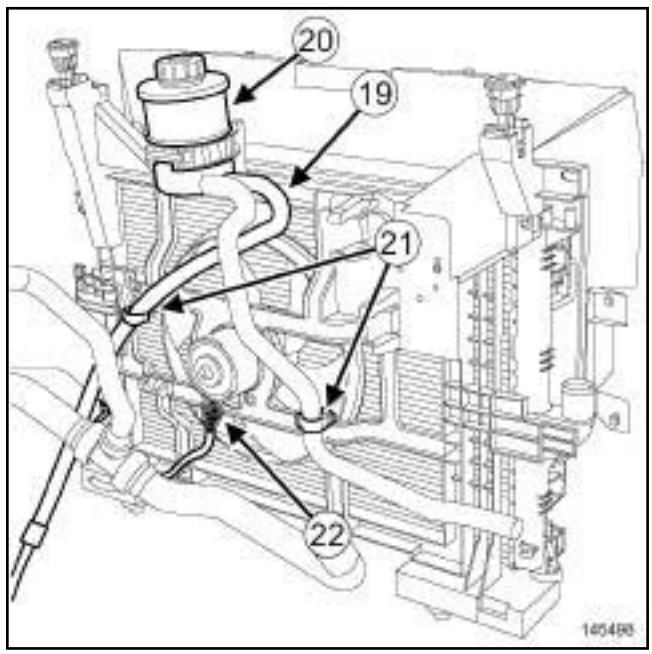
❑ Remove:

- the air duct nut (**18**) on the gearbox,
- the intercooler air ducts.

❑ Disconnect (see **Power-assisted steering pump: Removal - Refitting**) (36B, Power-assisted steering):

- the power-assisted steering low pressure hose on the power-assisted steering pump using the **(Mot. 1448)** and drain the circuit,
- the power-assisted steering high pressure pipe on the power-assisted steering pump,
- the connector from the power-assisted steering pressure switch.

STANDARD HEATING RECIRCULATION




145498

❑ Remove:

- the power-assisted steering low pressure pipe (**19**) on the oil reservoir using the **(Mot. 1448)**,
- the power assisted steering oil reservoir (**20**) ,
- the bolt of the power-assisted steering high pressure pipe on the cylinder block.

❑ Unclip the power-assisted steering pipes on the fan assembly mounting at (**21**) .

❑ Disconnect the fan assembly connector (**22**) .

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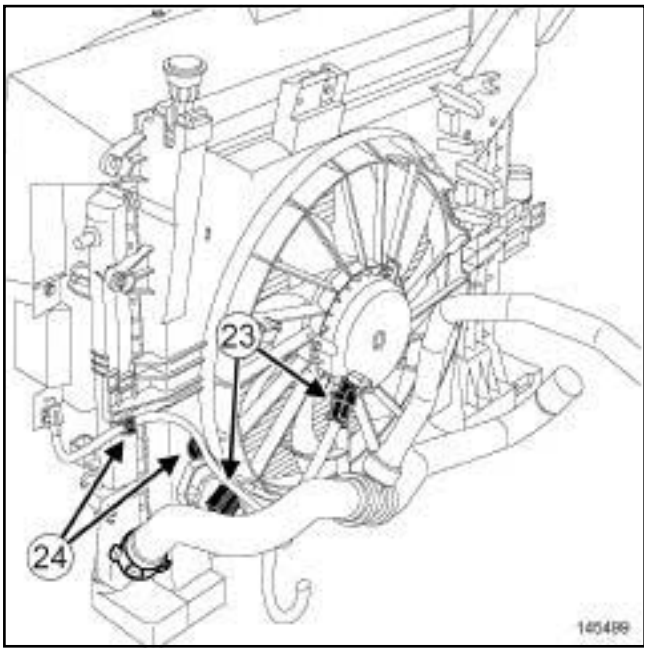
# Engine - gearbox assembly: Removal - Refitting

K9K, and 796

## AIR CONDITIONING

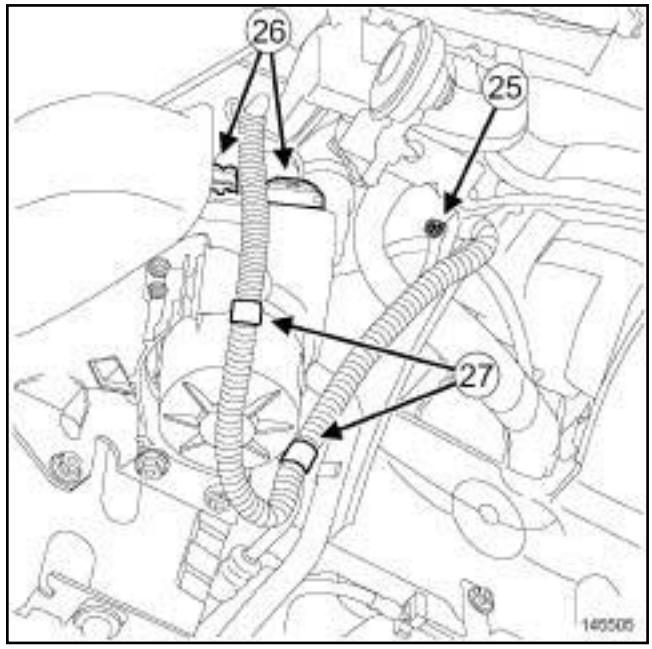



145499

❑ Remove the power-assisted steering high pressure pipe bolt on the cylinder block.

❑ Disconnect the connectors (**23**) from the fan assembly.

❑ Unclip the fan assembly wiring at (**24**) .

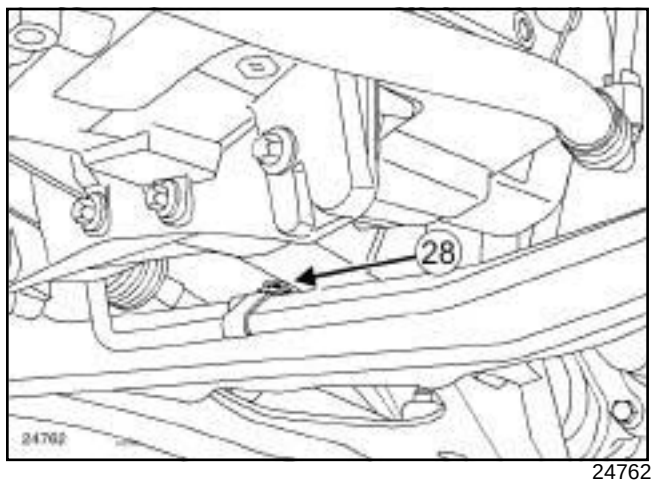



145505

❑ Remove the earth strap bolt (**25**) on the body.

❑ Disconnect the pump assembly connectors (**26**) .

❑ Unclip the pump assembly wiring at (**27**) .




24762

❑ Remove the power-assisted steering low pressure pipe bolt (**28**) on the front axle subframe.

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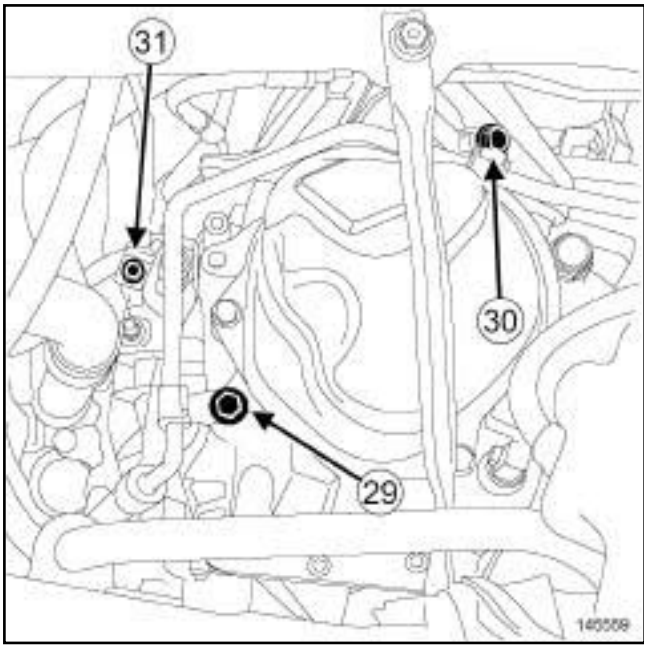
# Engine - gearbox assembly: Removal - Refitting

K9K, and 796




145559

❏ Remove:

- the power-assisted steering high pressure pipe bolt (**29**) on the gearbox,
- the power-assisted steering high pressure pipe bolt (**30**) on the gearbox support,
- the earth strap bolt (**31**) on the gearbox.

AIR CONDITIONING

❏ Remove the bolts from the pipe unions on the compressor.

❏ Disconnect the compressor pipes.

Note:

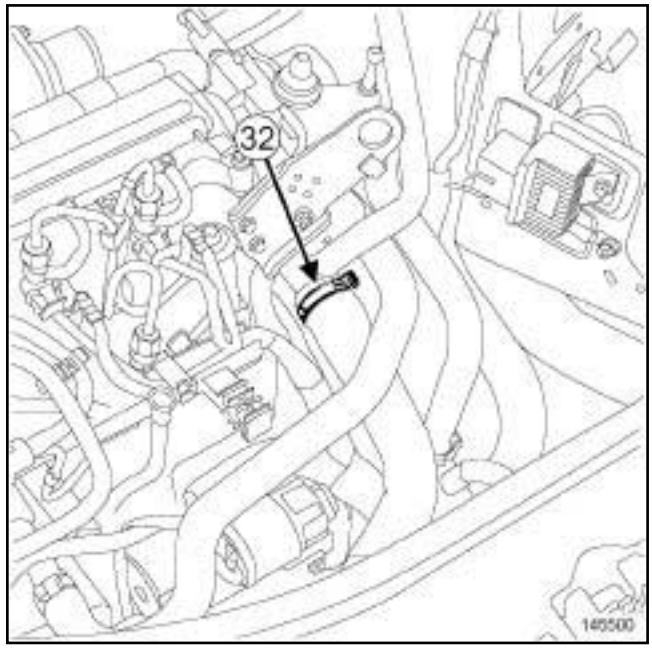
Plugs must be fitted on the hoses to prevent moisture from entering the system.

❏ Fit blanking plugs in the pipe openings.

❏ Disconnect the air conditioning pressostat connector.

❏ Remove the expansion bottle nuts.

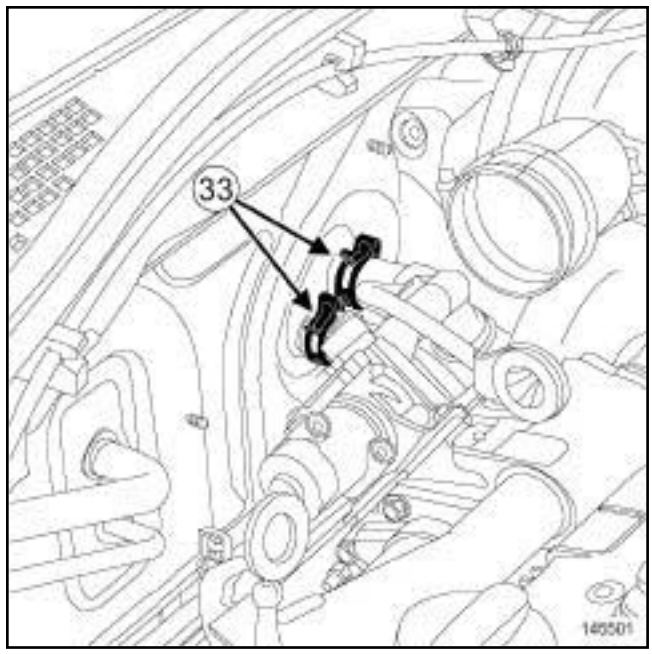
❏ Move aside the expansion bottle.




145500

❏ Move aside the cooling hose clip (**32**) on the water chamber using the **(Mot. 1448)**.

❏ Disconnect the cooling hose on the water chamber.




145501

❏ Move aside the cooling hose clips (**33**) on the heating radiator using the **(Mot. 1448)**.

❏ Disconnect the cooling hoses on the heating radiator.

❏ Remove the cooling hoses from their mountings.

❏ Remove (see ) (36A, Steering assembly):

- the steering box heat shield bolts,

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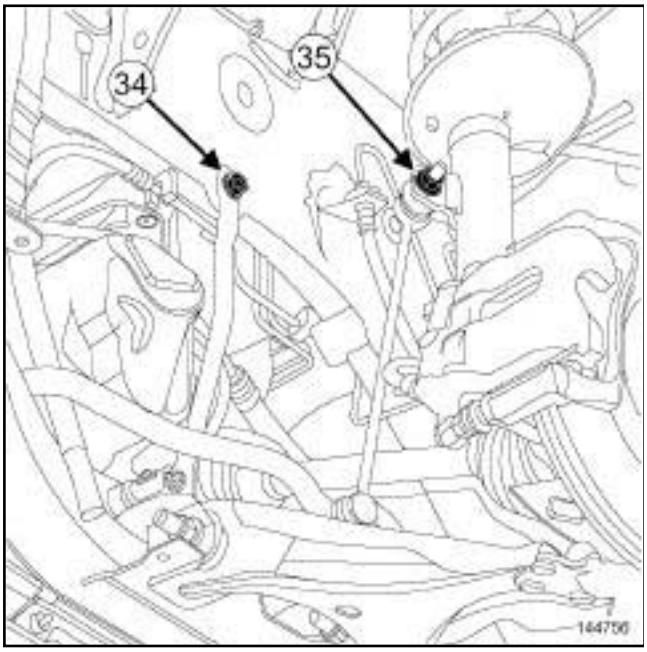
# Engine - gearbox assembly: Removal - Refitting

K9K, and 796

- the steering box heat shield,
- the steering box bolts on the front axle subframe.

❏ Attach the steering rack to the body.




144756

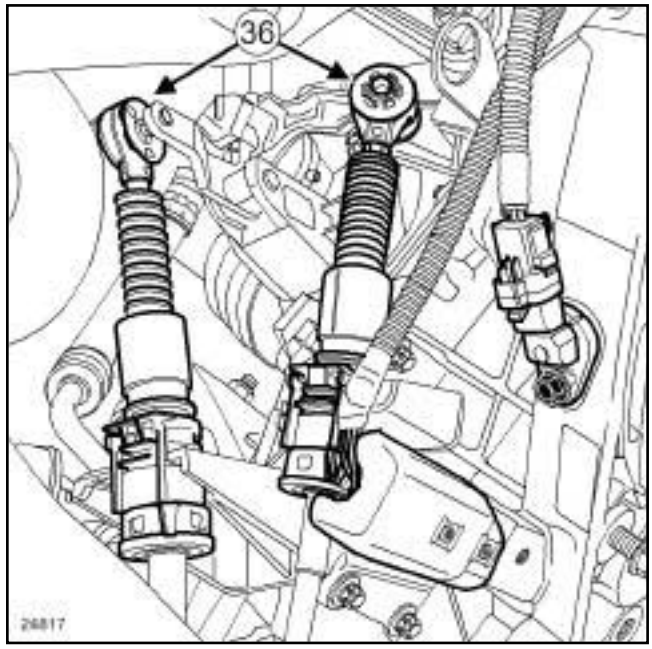
❏ Remove:

- the front axle subframe tie-rod upper bolts (**34**) ,
- the anti-roll bar tie rod upper bolts (**35**) .

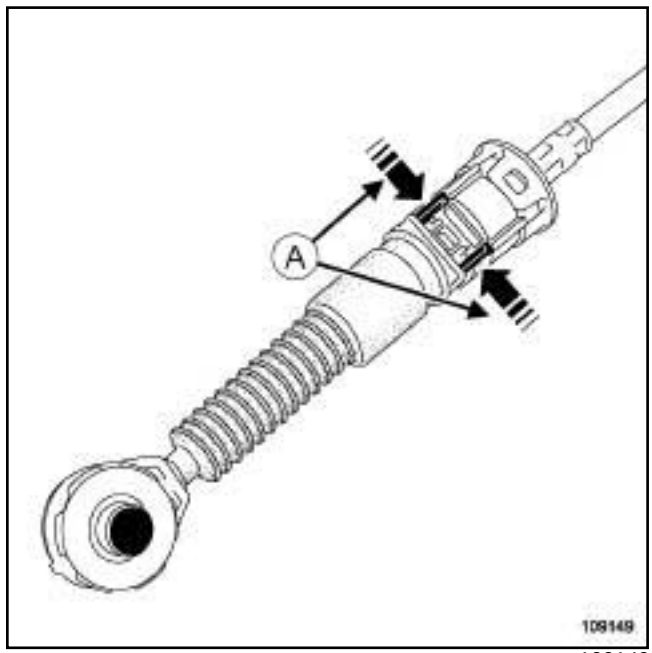
❏ Remove:

- the front right-hand wheel driveshaft (see **Front right-hand driveshaft: Removal - Refitting**) (29A, Driveshaft),
- the front left-hand wheel driveshaft (see **Front left-hand driveshaft: Removal - Refitting**) (29A, Transmission).

❏ Pass the power-assisted steering low pressure pipe over the gearbox cover.




24817




109149

❏ Unclip:

- the gear control cables on the gearbox at (**36**) using a screwdriver,
- the gear control cables from the sleeve stops by pressing at (**A**) .

❏ Move the gear control cables away from the gearbox.

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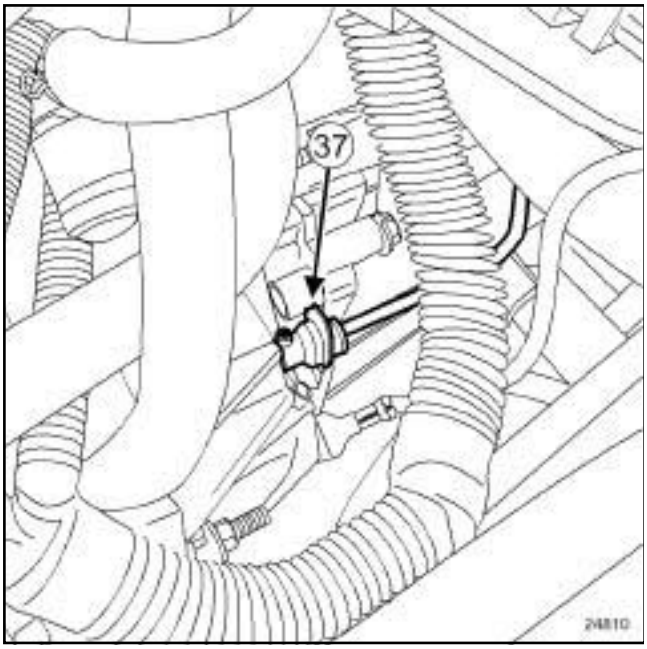
# Engine - gearbox assembly: Removal - Refitting

K9K, and 796




24810

❑

**WARNING**

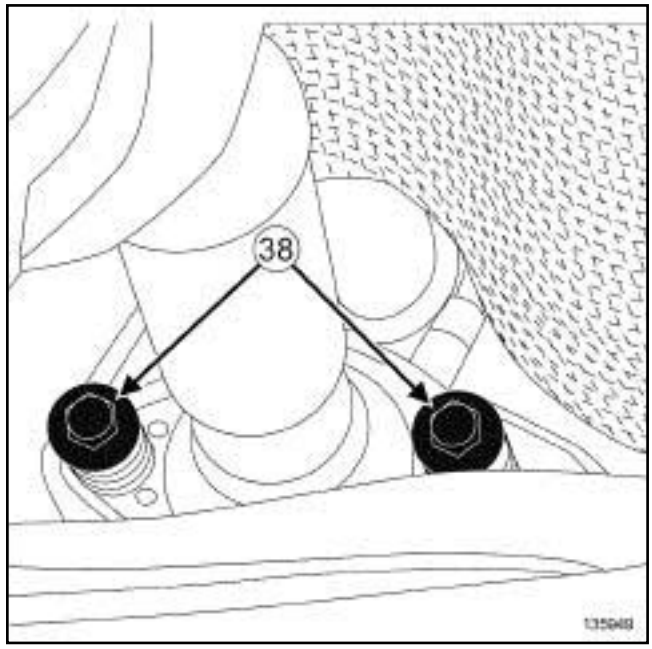
Do not pull the clip. If it is incorrectly handled in any way, the pipe will need to be replaced.

❑ Disconnect the clutch control pipe on the clutch slave cylinder by pressing the clip (**37**) .

❑ Recover the brake fluid in a container.

❑ Fit blanking plugs in the pipe openings.

❑ Remove the lower engine tie-bar (see **19D**, **Engine mounting**, **Lower engine tie-bar: Removal - Refitting**, page **19D-8**) .




135949

❑ Remove:

- the bolts (**38**) from the exhaust flange,
- the exhaust bracket ring.

❑ Move aside the exhaust pipe.

Note:

Pull the exhaust pipe backwards.

❑ Remove the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components).

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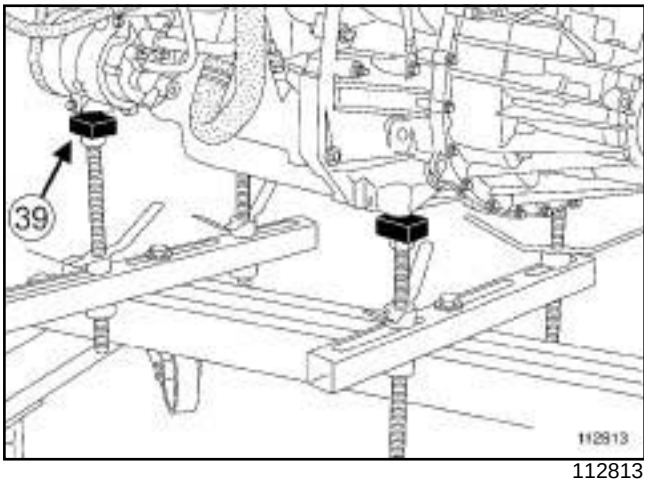
# Engine - gearbox assembly: Removal - Refitting

K9K, and 796

## II - REMOVAL OPERATION

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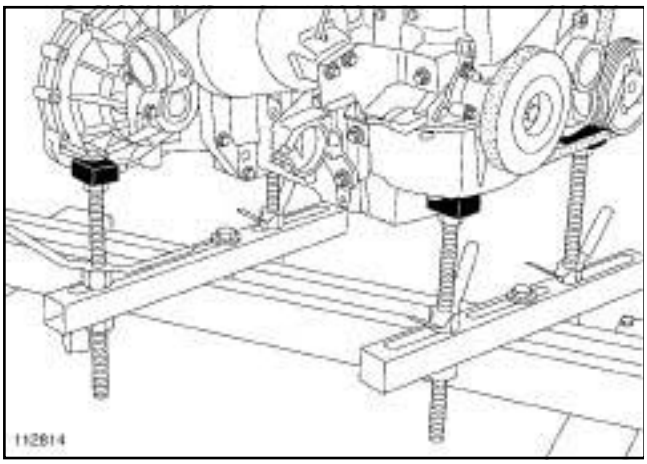



112814

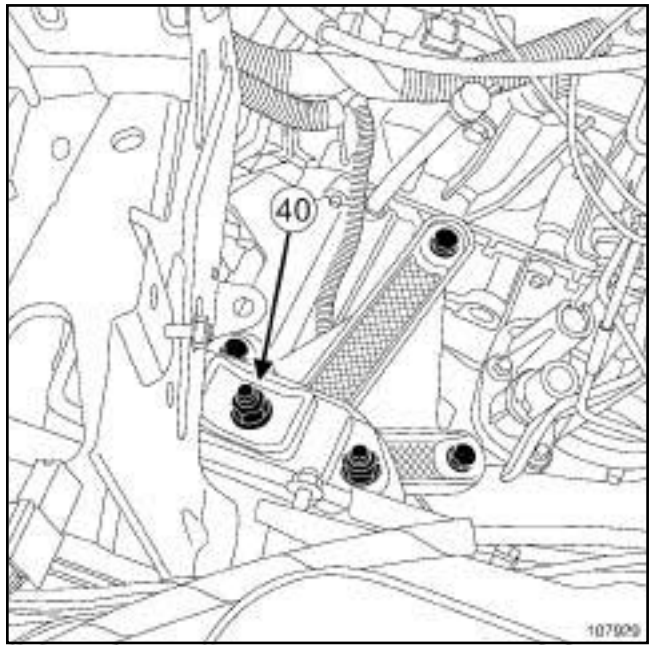
❑

Note:

Ensure that the **(Mot. 1390)** is correctly positioned on the multifunction support at (**39**) .

❑ Position the **(Mot. 1390)** under the engine - gearbox assembly.

❑ Remove the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) .




107929

❑ Remove the nut (**40**) on the rubber pad support of the left-hand suspended engine mounting.

❑ Strike the gearbox stud with a copper hammer to separate the engine - gearbox assembly from the body.

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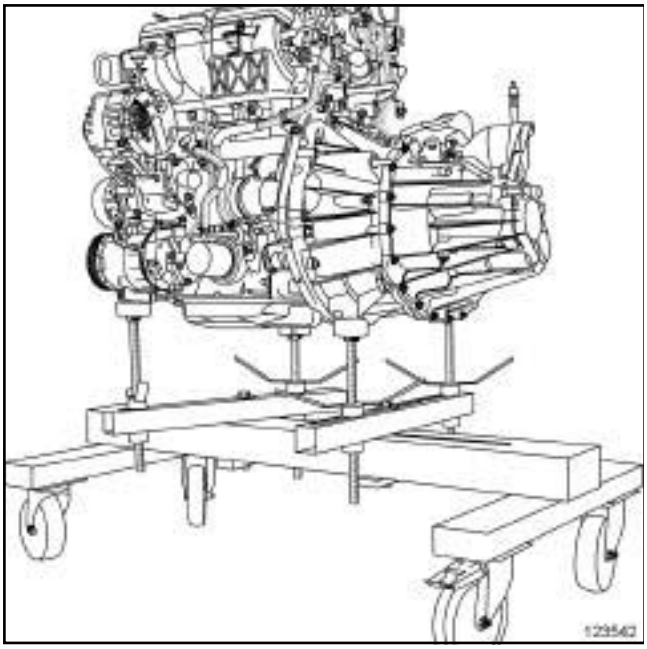
# Engine - gearbox assembly: Removal - Refitting

K9K, and 796



123542

❑ Lift the vehicle to remove the engine - gearbox assembly.

> Note:
>
> Ensure that no component obstructs the movement of the body around the engine - gearbox assembly.

❑ Remove the engine - gearbox assembly.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ For standard engine replacements (see **Engine: Standard replacement**) (Technical Note 6006A, 10A, Engine and peripherals).

❑ **parts always to be replaced: ring between exhaust manifold and catalytic converter**

### II - REFITTING OPERATION

❑ Fit the engine - gearbox assembly.

❑ Refit the nut on the rubber pad support of the left-hand suspended engine mounting.

❑ Torque tighten the **nut on the rubber pad support of the left-hand suspended engine mounting (62 N.m)**.

❑ Refit the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) .

❑ Remove the **(Mot. 1390)** from the engine - gearbox assembly.

### III - FINAL OPERATION

❑ Proceed in the reverse order to removal.

❑ Torque tighten:

- the **exhaust flange bolts (21 N.m)**,
- the **front axle subframe tie-rod upper bolts (21 N.m)**,
- the **anti-roll bar tie rod upper bolts (37 N.m)**,
- the **earth strap bolt on the gearbox (21 N.m)**,
- the **power-assisted steering low pressure pipe bolt on the front axle subframe (21 N.m)**,
- the **power-assisted steering pipe bolts on the gearbox support (21 N.m)**,
- the **power-assisted steering pipe bolts on the gearbox (21 N.m)**,
- the **power-assisted steering pipe bolt on the cylinder block (21 N.m)**.

❑ Perform the following operations:

- top up the engine oil (see **10A**, **Engine and cylinder block assembly**, **Engine oil: Draining - Refilling**, page **10A-32**) ,
- fill up the gearbox oil (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox),
- fill and bleed the cooling circuit (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) ,
- bleed the clutch circuit (see **Clutch circuit: Bleed**) (37A, Mechanical component controls).

AIR CONDITIONING

❑ Fill the refrigerant circuit using the tool **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❑ Fill up the power-assisted steering circuit.

❑ First, bleed the power-assisted steering circuit by turning the steering wheel fully from left to right with the engine off.

❑ Bleed the power-assisted steering circuit by turning the steering wheel fully from lock to lock with the engine running.

❑ Top up the oil in the power-assisted steering oil reservoir.

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K9K, and 796

❑ Check that there are no leaks.

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# Flywheel: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| flywheel bolts | 25 N.m + 50° ± 6° |

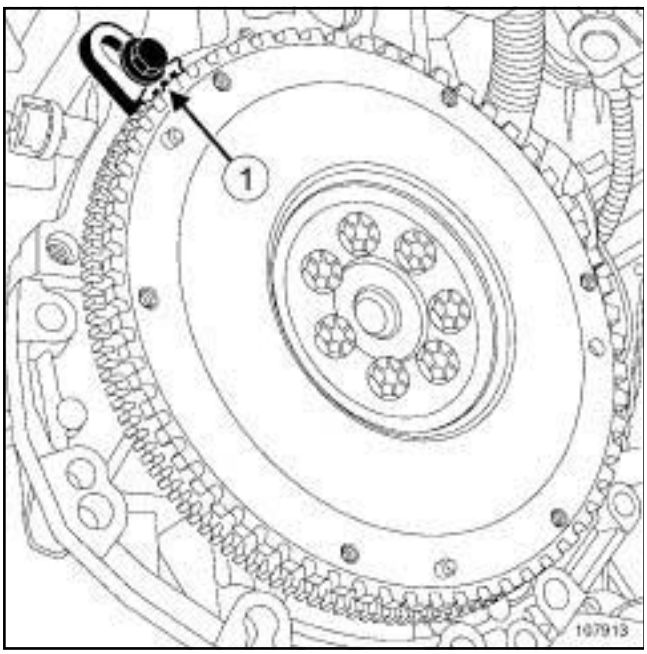
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Remove:

- the gearbox (see **Manual gearbox: Removal - Refitting**) ,
- the clutch pressure plate (see **Pressure plate - Disc: Removal - Refitting**) .

### II - REMOVAL OPERATION




107913

❑ Lock the engine using the (**1**) .

❑ Remove:

- the flywheel bolts,
- the flywheel,
- the.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Check the condition of the flywheel.

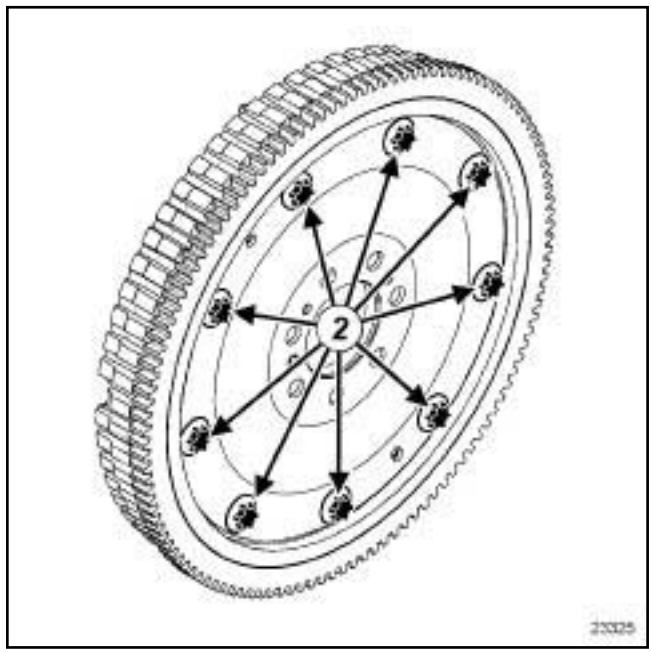
❑ On the crankshaft, clean the flywheel bolt threading.

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the flywheel bearing face if reusing,
- the crankshaft bearing face.

❑ **parts always to be replaced: Flywheel bolts**.

❑ Coat the new flywheel bolts using **FRENETANCHE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).




23325

❑

**WARNING**
Do not remove the bolts (**2**) from the flywheel drive plate.

### II - REFITTING OPERATION

❑ Refit the flywheel.

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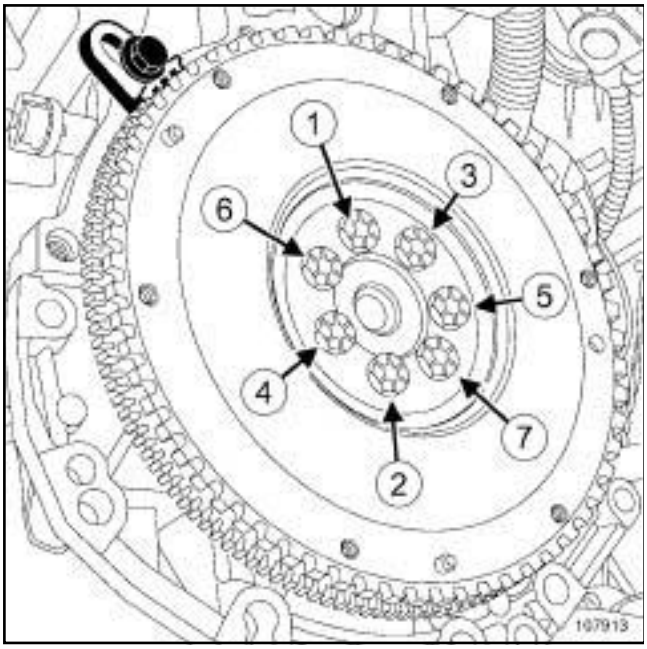
# Flywheel: Removal - Refitting

K4M



107913

- ❏ Screw in the new flywheel bolts without tightening them.
- ❏ Lock the engine using the.
- ❏ Torque tighten in order the **flywheel bolts (25 N.m + 50° ± 6°)**.
- ❏ Remove the tool.

**III - FINAL OPERATION**

- ❏ Refit:
  - the clutch pressure plate (see **Pressure plate - Disc: Removal - Refitting**) ,
  - the gearbox (see **Manual gearbox: Removal - Refitting**) .

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# Flywheel: Removal - Refitting

K9K

| Tightening torques ▽ | |
|---|---|
| flywheel bolts | **55 N.m** |

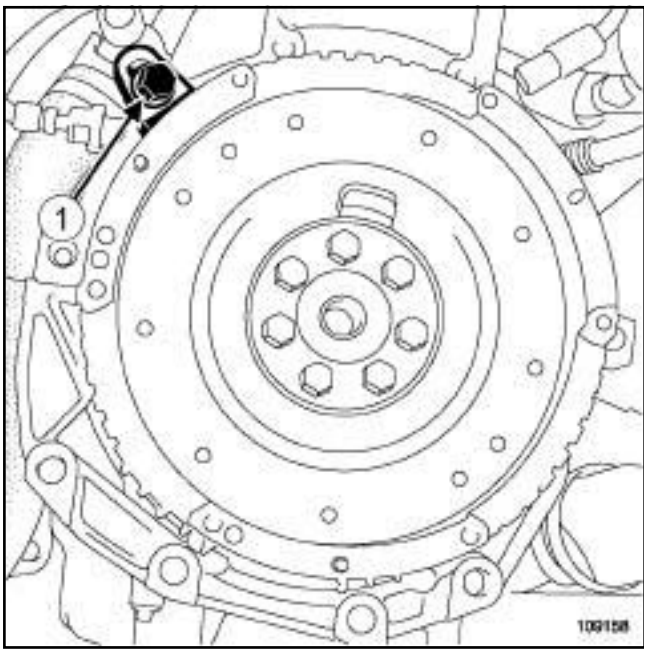
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove:

- the manual gearbox (see **Manual gearbox: Removal - Refitting**) ,
- the clutch pressure plate (see **Pressure plate - Disc: Removal - Refitting**) .

### II - OPERATION FOR REMOVAL OF PART CONCERNED




109158

❏ Lock the flywheel with the(**1**).

❏ Remove the flywheel bolts.

❏ Remove:

- the flywheel,
- the.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Check the condition of the flywheel.

❏ **parts always to be replaced: Flywheel bolts**.

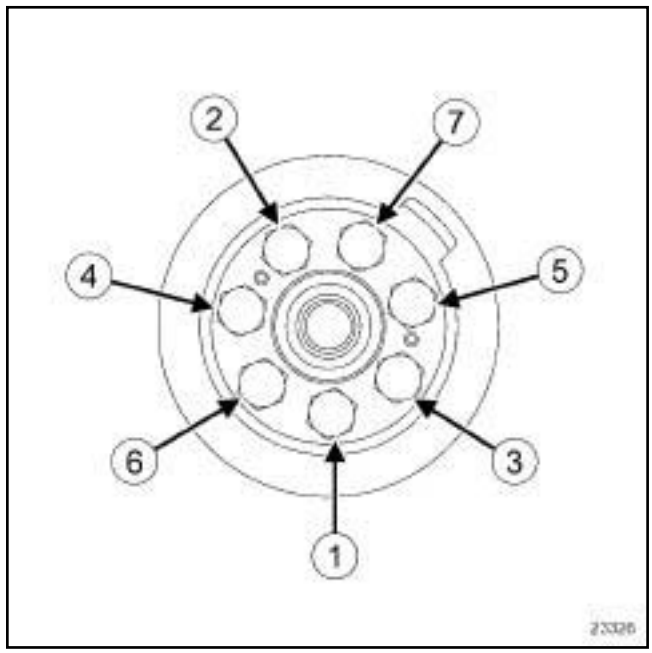
❏ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the crankshaft bearing face on the flywheel if reused,
- the flywheel pressure face on the crankshaft,
- the flywheel threading.

### II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the flywheel.

❏ Coat the new flywheel bolts with **FRENETANCH** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).




23326

❏ Lock the flywheel using tool.

❏ Tighten to torque and in order the **flywheel bolts (55 N.m)**.

### III - FINAL OPERATION

❏ Refit:

- the clutch pressure plate (see **Pressure plate - Disc: Removal - Refitting**) ,
- the manual gearbox (see **Manual gearbox: Removal - Refitting**) .

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# Pressure at end of compression: Check

K4M

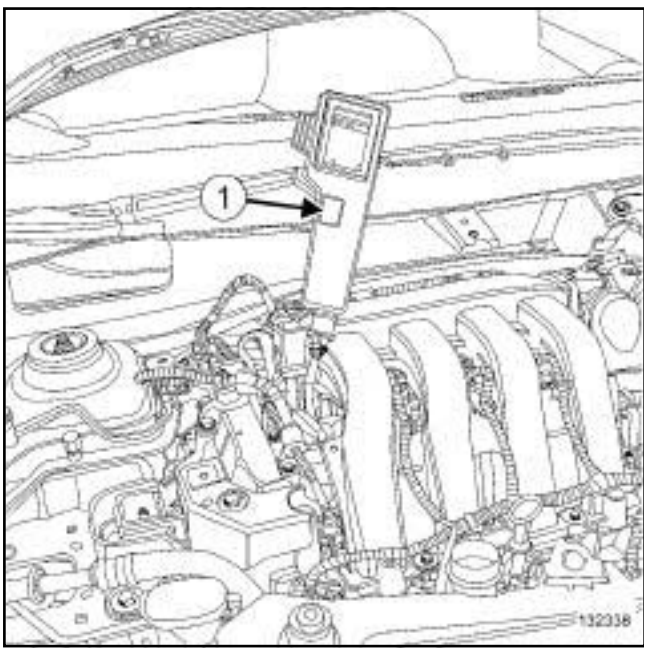
| Equipment required |
|---|
| petrol compression gauge |
| Diagnostic tool |

## CHECK

### I - PREPARATION OPERATION FOR CHECK

❏ Remove:

- the coils (see **17A**, **Ignition**, **Coils: Removal - Refitting**, page **17A-1**) ,
- the spark plugs (see **Plugs: Removal - Refitting**) .




132338

❏ Connect a **petrol compression gauge** (**1**) .

❏ Put the vehicle under starting conditions:

- gear lever in neutral position for manual gearbox,
- gear lever in position P (park) for an automatic gearbox.

❏ Disconnect the injector connectors.

### II - TEST OPERATION

❏ Activate the starter until the needle of the petrol compression gauge stabilises.

❏ Measure the compression of the engine, cylinder by cylinder.

❏ Fully depress the accelerator pedal in order to open the throttle valve during the compression measurements.

> Note:
>
> It is necessary to wait for at least **10 seconds** before starting the engine each time (the starter will not run due to its thermal protection).

### III - FINAL OPERATION

❏ Disconnect the **petrol compression gauge**.

❏ Refit:

- the spark plugs (see **Plugs: Removal - Refitting**) ,
- the coils (see **17A**, **Ignition**, **Coils: Removal - Refitting**, page **17A-1**) .

❏ Connect the injector connectors.

❏ Using the **Diagnostic tool**, check that there are no faults stored in the computer.

❏ Start the vehicle.

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# Accessories belt: Removal - Refitting

K9K, and STANDARD HEATING RECIRCULATION

| Equipment required |
| --- |
| offset spanner |

| Tightening torques ▽ | |
| --- | --- |
| new accessories belt tensioning roller bolt | **40 N.m** |

**WARNING**

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

**WARNING**

In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

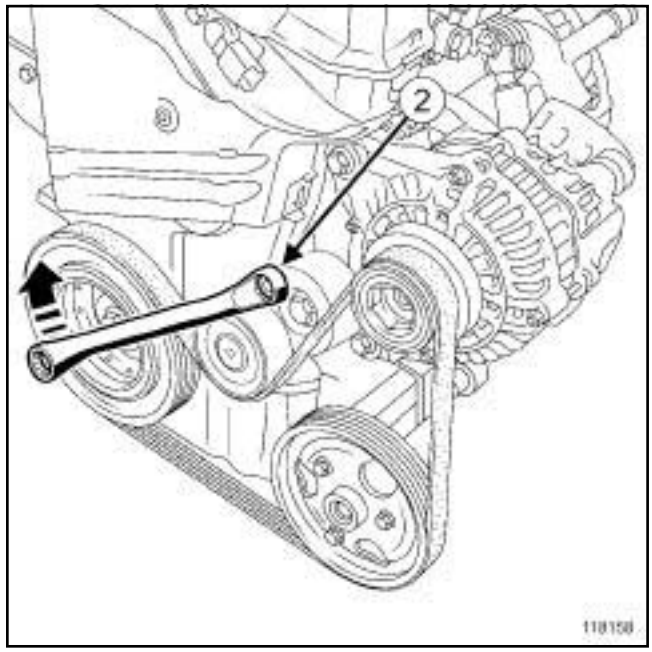
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front wheel arch side liner,
- the front right-hand wheel arch liner partially (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the plastic shield underneath the diesel filter.

### II - OPERATION FOR REMOVAL OF PART CONCERNED

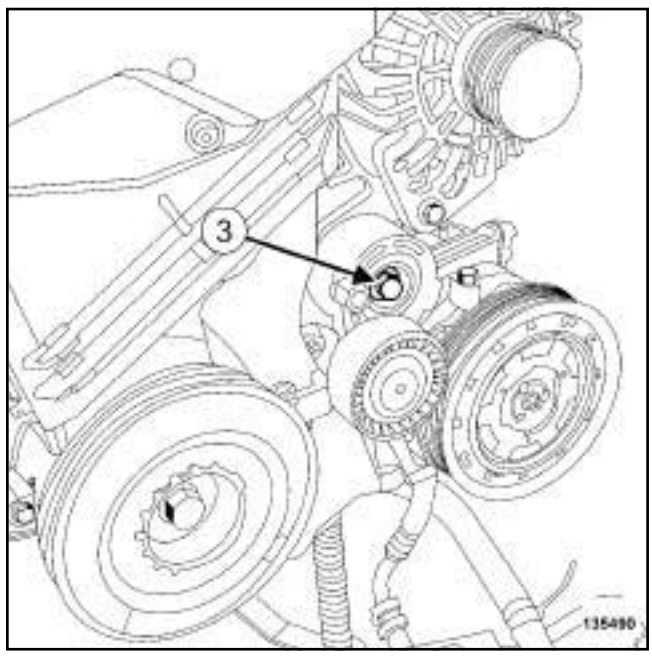
**Auto tensioner**




118158

❏ Turn the accessories belt tensioning roller clockwise at (**2**) using a **16 mm offset spanner**.

❏ Remove the accessories belt.




135490

❏ Remove:

- the accessories belt tensioning roller bolt (**3**) ,
- the accessories belt tension wheel.

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# Accessories belt: Removal - Refitting



## REFITTING

### I - REFITTING PREPARATION OPERATION

❑

**WARNING**
Only use brushes with plastic or non-corrosive metal (brass) bristles.

❑ Use a brush to remove any deposits from the crankshaft accessories pulley V-grooves.

❑ **parts always to be replaced: Accessories belt**

❑ **parts always to be replaced: Accessories belt tensioning roller**

❑ **parts always to be replaced: Accessories tensioning roller bolt**

### II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit a new accessories belt tensioning roller.

**Auto tensioner**

❑ Torque tighten the **new accessories belt tensioning roller bolt (40 N.m)**.

❑ Refit a new accessories belt.

❑ Rotate the crankshaft clockwise through two revolutions (timing end).

### III - FINAL OPERATION

❑ Refit:

- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front wheel arch side liner,
- the plastic shield underneath the diesel filter,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

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# Accessories belt: Removal - Refitting



| Tightening torques ▽ | |
|---|---|
| tensioning roller bolt | **40 N.m** |

**WARNING**

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

**WARNING**

In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

## REMOVAL

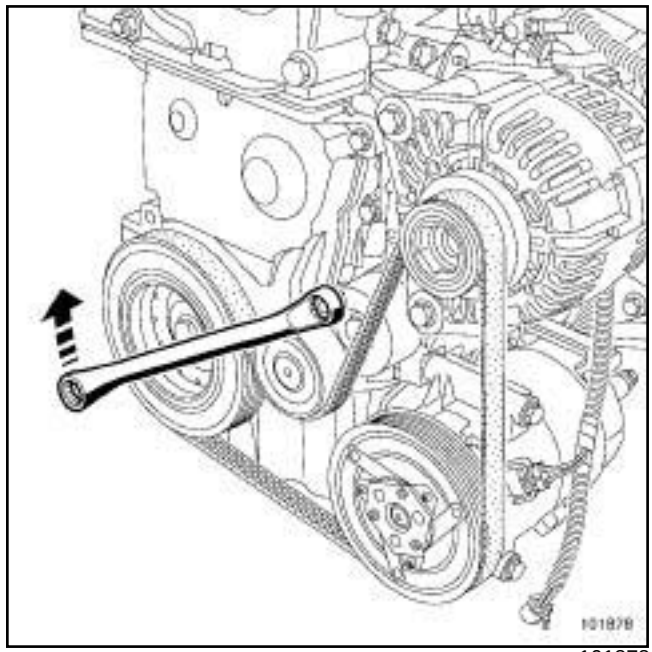
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front right-hand wheel arch side liner,
- the front right-hand wheel arch liner partially (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the plastic shield underneath the diesel filter.

### II - REMOVAL OPERATION




101878

❏ Rotate the accessories belt auto tensioner clockwise using a **16 mm** offset wrench.

❏ Remove:

- the accessories belt,
- the accessories belt tension wheel.

## REFITTING

### I - REPAIR PREPARATION OPERATION

❏ **parts always to be replaced: Accessories belt**.

❏ **parts always to be replaced: Accessories belt tensioning roller**

❏ **parts always to be replaced: Accessories tensioning roller bolt**

**WARNING**

Only use brushes with plastic or non-corrosive metal (brass) bristles.

❏ To remove all deposits, use a brush to clean the grooves of:

- the crankshaft pulley,
- the air conditioning compressor pulley,
- the alternator pulley,

❏ Refit a new tensioning roller fitted with a new bolt.

❏ Tighten to torque the **tensioning roller bolt (40 N.m)**.

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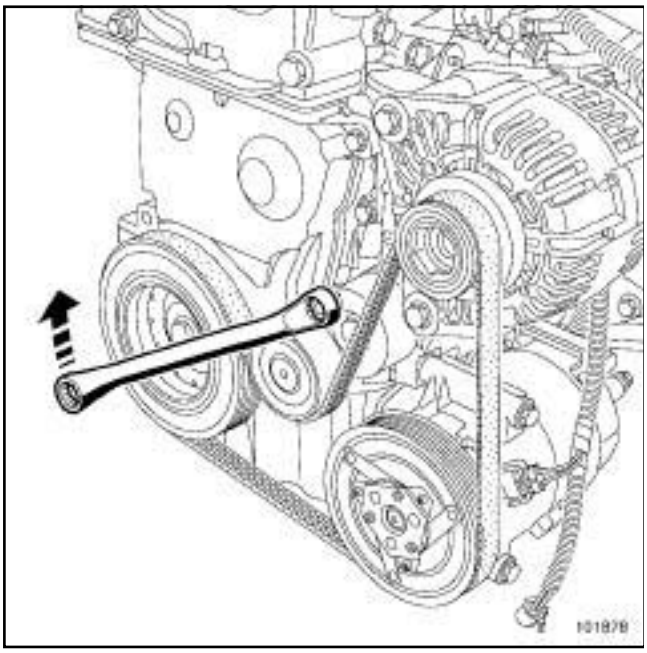
**II - REFITTING OPERATION FOR PART CONCERNED**




101878

❏ Rotate the tensioning roller clockwise using a **16 mm** offset wrench.

❏ Refit a new accessories belt.

❏ Turn the crankshaft two revolutions clockwise (timing end) to position the accessories belt correctly.

**III - FINAL OPERATION**

❏ Refit:

- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front right-hand wheel arch side liner,
- the plastic shield underneath the diesel filter,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

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# Accessories belt: Removal - Refitting



| Tightening torques ▽ | |
|---|---|
| the automatic tensioning roller mounting bolts | **21 N.m** |
| the fixed roller mounting bolt | **21 N.m** |

❑

**IMPORTANT**
Wear cut-resistant gloves during the operation.

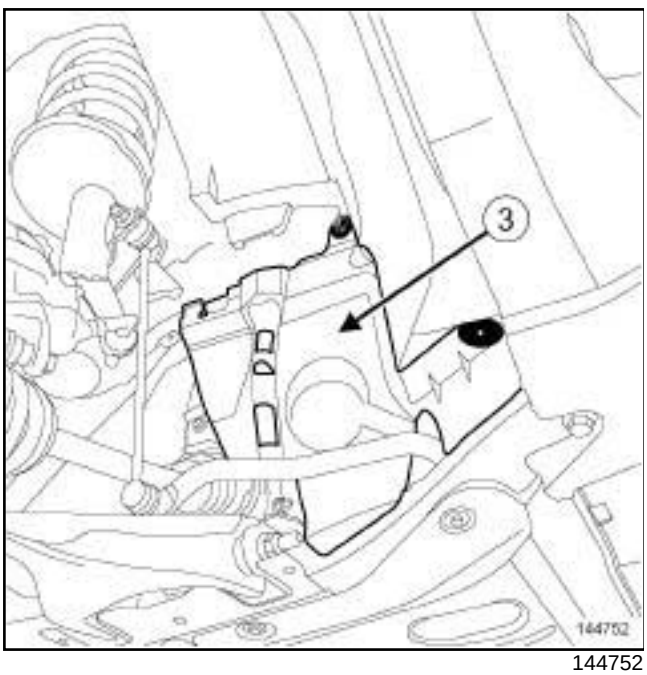
**WARNING**
Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

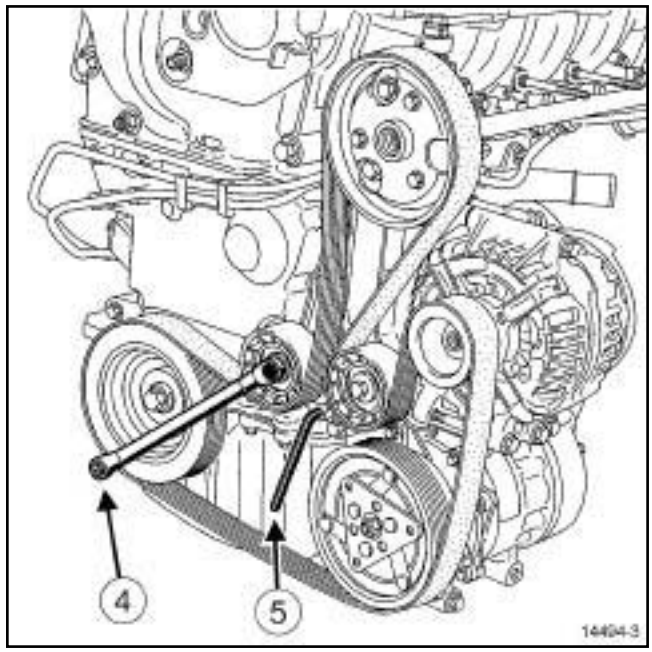
❑ Remove the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).




144752

❑ Remove the front right-hand wheel arch side liner (**3**) .

### II - REMOVAL OPERATION




14494-3

❑ Turn the accessories belt auto tensioner anti-clockwise using a spanner (**4**) (**16 mm**), to relax the belt.

❑ Lock the auto tensioner using a **6 mm** Allen key (**5**) .

❑ Remove:

- the accessories belt,
- the auto tensioner bolts,
- the auto tensioner,
- the fixed roller bolt,
- the fixed roller.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Accessories belt**

**parts always to be replaced: Accessories belt tensioning roller**

**parts always to be replaced: Accessories fixed roller**

❑ Use a brush to remove any deposits from the crankshaft pulley V-grooves.

### II - REFITTING OPERATION

❑ Refit:

- a new fixed roller,
- a new automatic tensioner.

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# Accessories belt: Removal - Refitting



❏ Torque tighten:

- **the automatic tensioning roller mounting bolts (21 N.m)**,
- **the fixed roller mounting bolt (21 N.m)**.

❏ Turn the accessories belt auto tensioner clockwise using a **16 mm** spanner.

❏ Lock the auto tensioner using a **6 mm** Allen key.

❏ Refit a new accessories belt.

❏ Unlock the auto tensioner.

❏ Turn the crankshaft two revolutions clockwise to position the accessories belt correctly.

**III - FINAL OPERATION**

❏ Proceed in the reverse order to removal.

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# Accessories belt: Removal - Refitting

K4M, and STANDARD HEATING RECIRCULATION

| Tightening torques ▽ | |
|---|---|
| auto tensioner bolts | **40 N.m** |

**IMPORTANT**
Wear cut-resistant gloves during the operation.

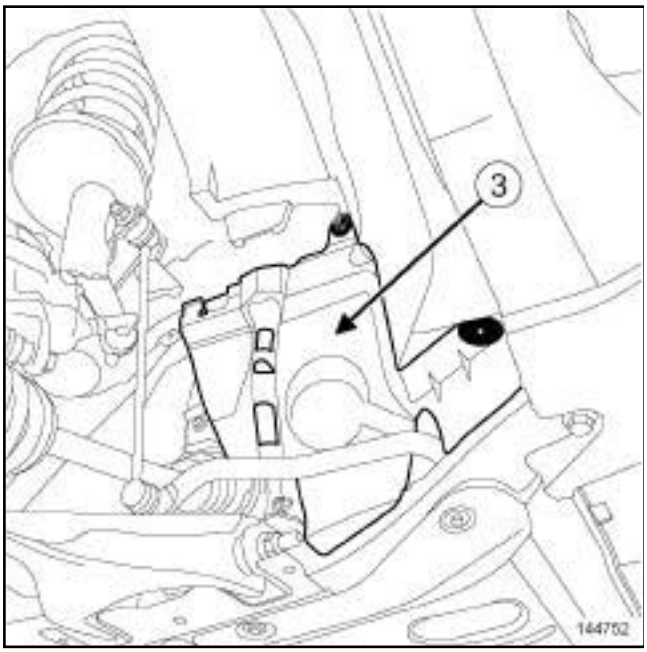
**WARNING**
Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

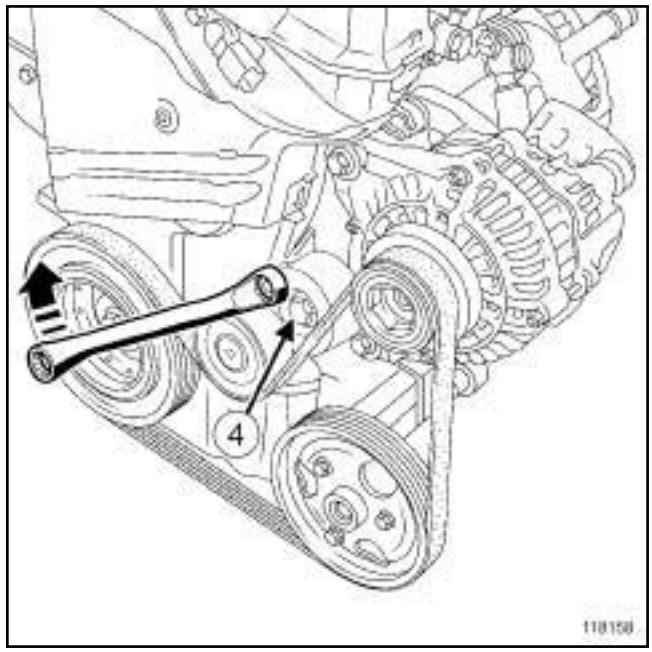
❏ Remove the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).




144752

❏ Remove the front right-hand wheel arch side liner (**3**) .

### II - REMOVAL OPERATION




118158

❏ Pivot the accessories belt auto tensioner clockwise.

❏ Remove:

- the accessories belt,
- the tensioning roller bolt (**4**) ,
- the tensioning roller.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: Accessories belt**

**parts always to be replaced: Accessories belt tensioning roller**

❏ Use a brush to remove any deposits from the crankshaft pulley V-grooves.

### II - REFITTING OPERATION

❏ Refit a new tensioning roller.

❏ Torque tighten the **auto tensioner bolts (40 N.m)**.

❏ Pivot the accessories belt auto tensioner clockwise.

❏ Refit a new accessories belt.

❏ Turn the crankshaft two revolutions clockwise to position the accessories belt correctly.

### III - FINAL OPERATION

❏ Refit the front right-hand wheel arch side liner.

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# Accessories belt: Removal - Refitting

K4M, and STANDARD HEATING RECIRCULATION

❑ Refit the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

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# Crankshaft accessories pulley: Removal - Refitting

K9K

| Special tooling required | |
|---|---|
| **Mot. 1489** | TDC locating pin. |

| Tightening torques ▽ | |
|---|---|
| accessories pulley bolt | **120 N.m + 95° ±15°** |
| TDC pin plug | **25 N.m** |

**IMPORTANT**

Wear cut-resistant gloves during the operation.

**WARNING**

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

## REMOVAL

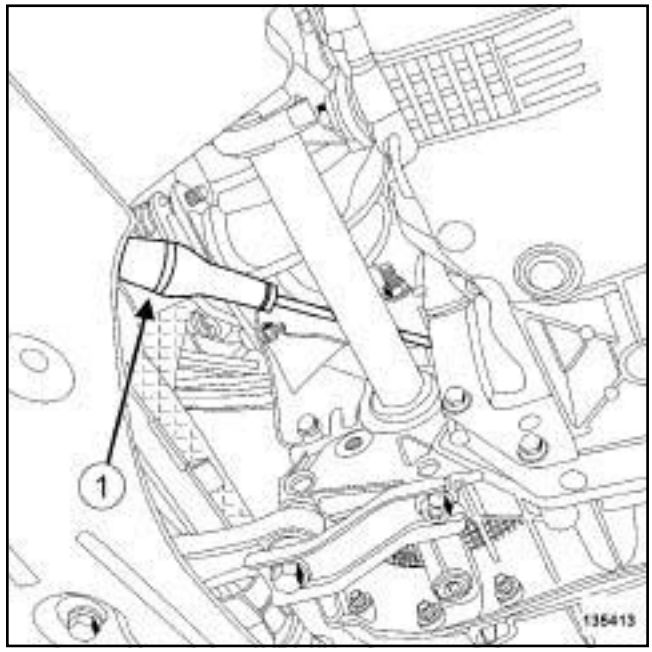
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

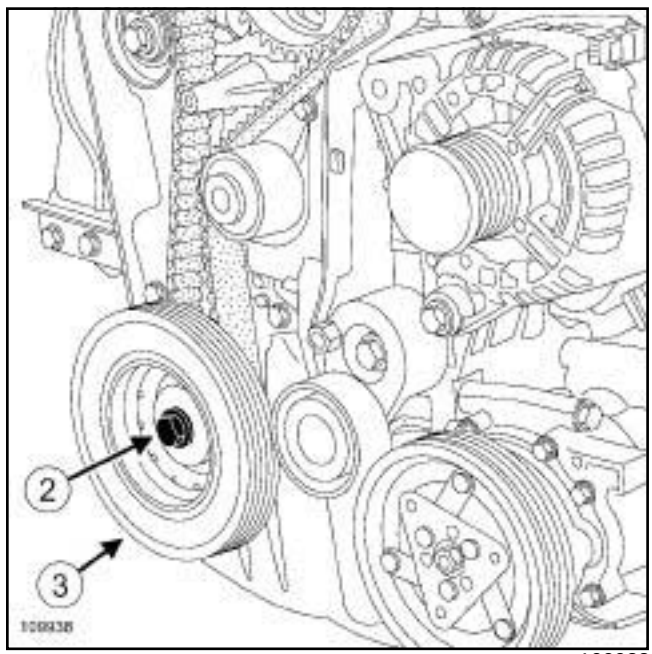
❏ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front right-hand wheel arch side liner,
- the front right-hand wheel arch partially (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the plastic shield underneath the diesel filter,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .

### II - REMOVAL OPERATION




135413




109938

❏ Remove:

- the crankshaft accessories pulley bolt (**2**) , locking the flywheel using a large screwdriver (**1**) ,
- the crankshaft accessories pulley (**3**) .

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# Crankshaft accessories pulley: Removal - Refitting

K9K

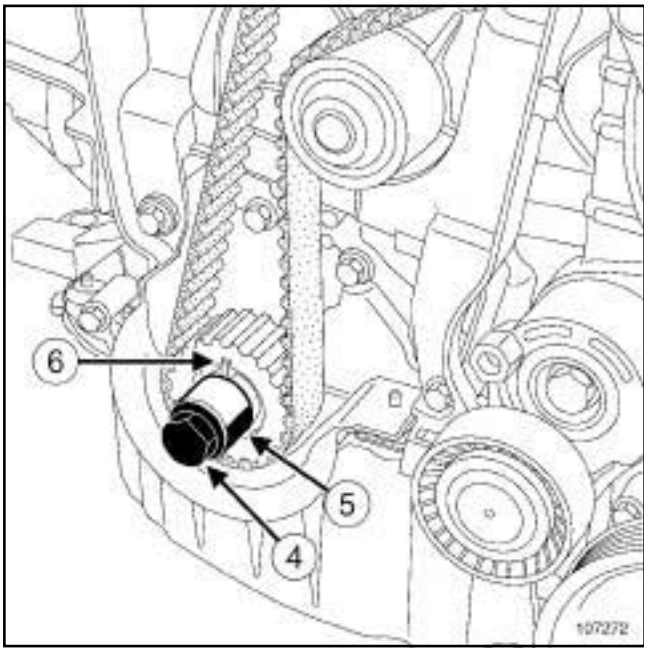
## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Crankshaft accessories pulley bolts**.

> **WARNING**
> Only use brushes with plastic or non-corrosive metal (brass) bristles.

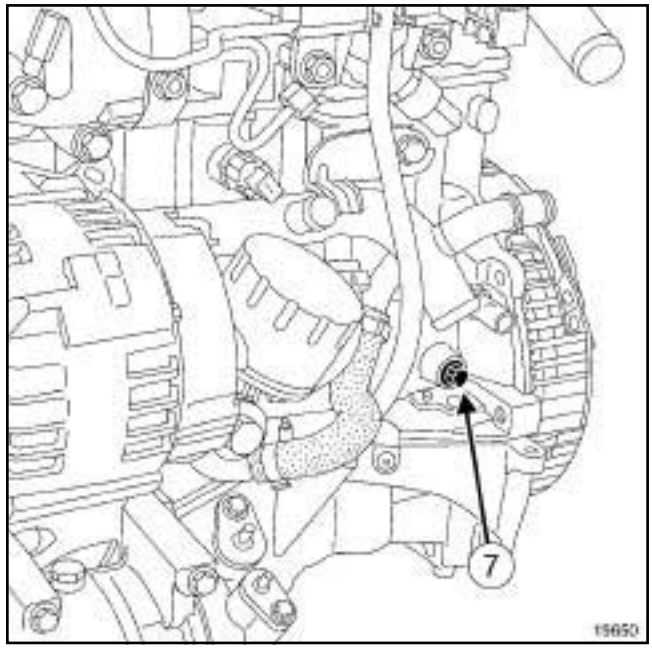
❑ If reusing the crankshaft accessories pulley, clean the crankshaft accessories pulley V-grooves with a brush to eliminate any deposits.




107272

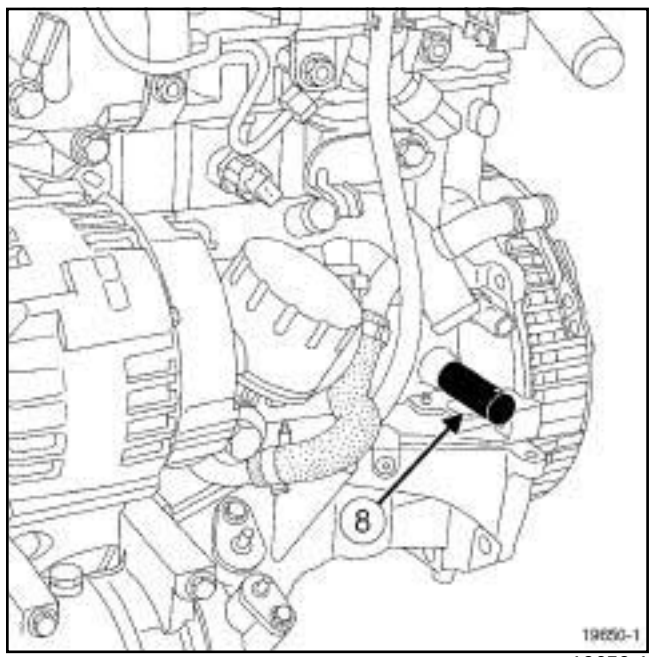
❑ Refit the old crankshaft accessories pulley bolt (**4**) with a spacer (**5**) .

❑ Turn the crankshaft clockwise (timing end) using the old bolt of the crankshaft accessories pulley, until the collet ***(6)*** of the crankshaft timing pinion is almost vertical and facing upwards.




19650

❑ Remove the TDC setting pin plug (**7**) .




19650-1

❑ Screw the TDC setting pin **(Mot. 1489)** (**8**) into the cylinder block.

❑ Remove the old bolt from the crankshaft accessories pulley fitted with its spacer.

### II - REFITTING OPERATION

❑ Refit the accessories crankshaft pulley with a new bolt.

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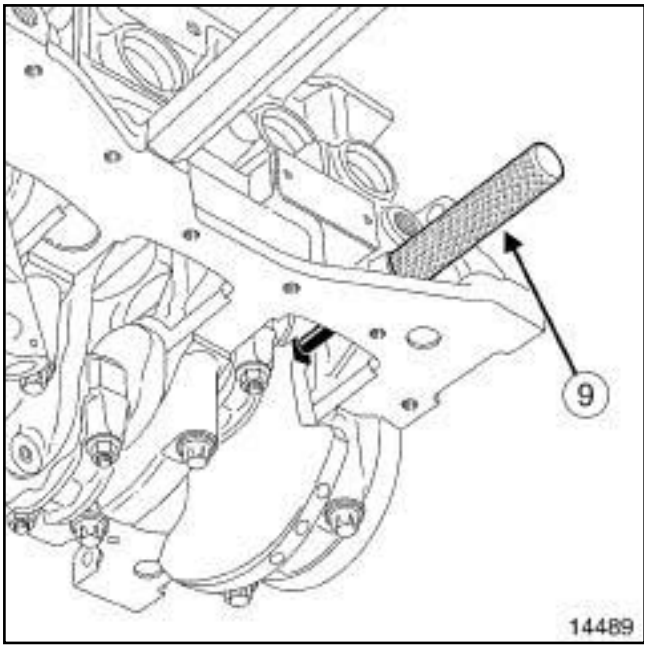
# Crankshaft accessories pulley: Removal - Refitting

K9K




14489

❑ Turn the crankshaft clockwise (timing end) smoothly using the bolt of the crankshaft accessories pulley, until the crankshaft presses against the tool **(Mot. 1489)** (**9**) .

❑ Torque and angle tighten (with the crankshaft in contact with the TDC setting pin) the **accessories pulley bolt (120 N.m + 95° ±15°)**.

❑ Remove the TDC setting rod **(Mot. 1489)**.

**III - FINAL OPERATION**

❑ Apply a drop of **silicone adhesive sealant** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the thread of the TDC setting pin plug.

❑ Torque tighten the **TDC pin plug (25 N.m)**.

❑ Refit:

- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the front right-hand wheel arch side liner,
- the front right-hand wheel arch (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the plastic shield underneath the diesel filter,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

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# Crankshaft accessories pulley: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| new crankshaft accessories pulley bolt | **40 N.m + 145° ± 15°** |
| TDC pin plug | **25 N.m** |

**IMPORTANT**
Wear cut-resistant gloves during the operation.

## REMOVAL

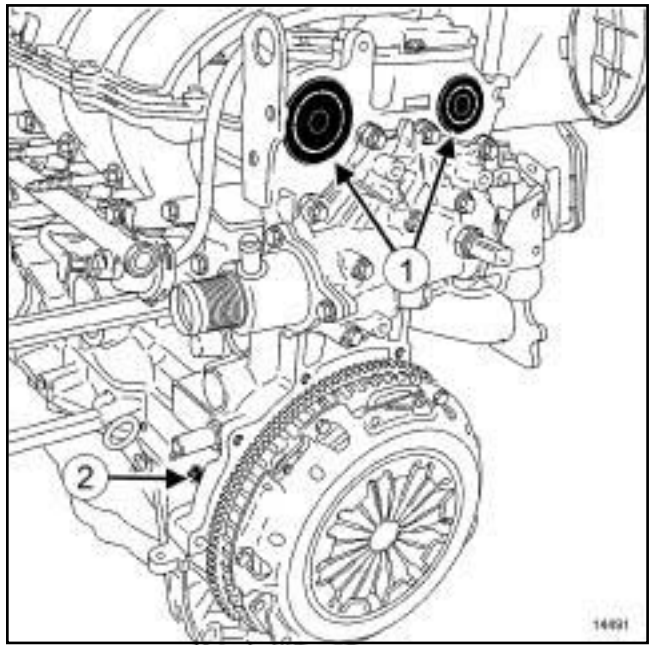
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the air inlet duct,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .

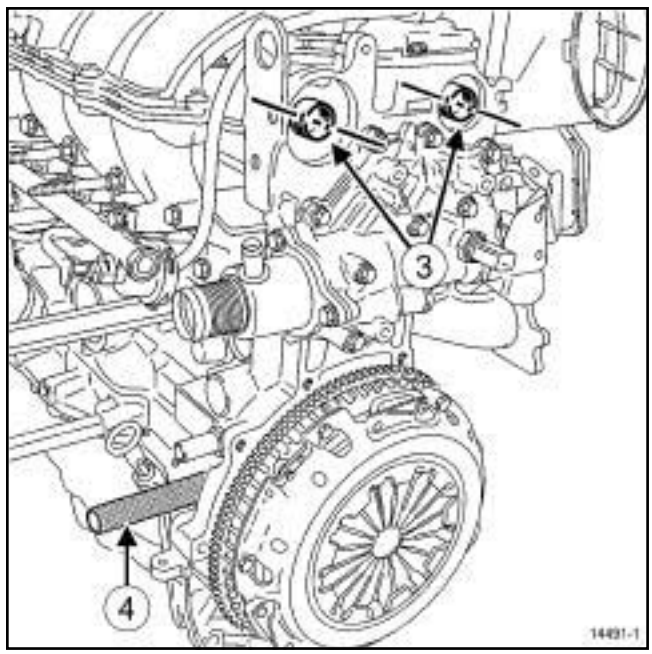



14491

❏ Pierce the centre of the plugs (**1**) at the camshaft ends with a screwdriver.

❏ Remove:

- the plugs from the camshaft ends with a screwdriver,
- the TDC setting pin plug (**2**) .




14491-1

❏ Position the camshaft grooves (**3**) almost horizontally and offset towards the bottom turning the crankshaft in the operating direction (clockwise at timing end).

❏ Screw in the TDC setting pin (**4**) .

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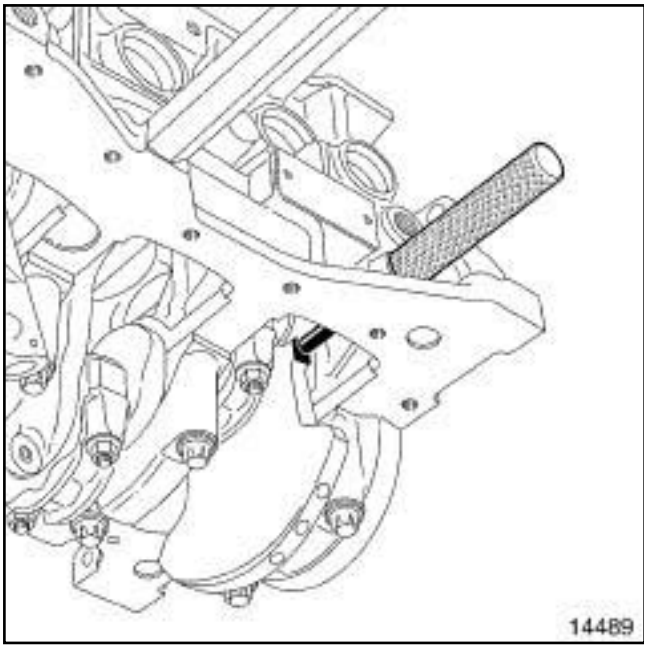
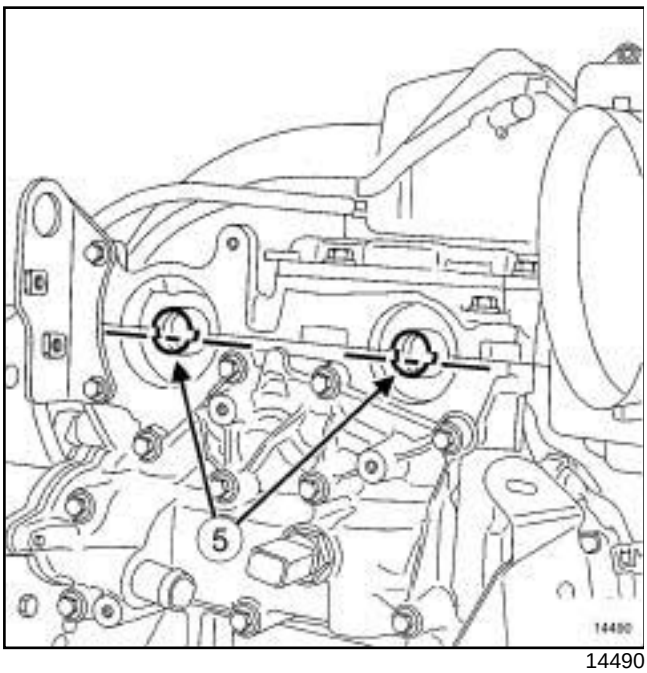
# Crankshaft accessories pulley: Removal - Refitting

K4M




14489

❑ Turn the crankshaft in its operating direction (clockwise at timing end), until the crankshaft presses against the TDC setting pin.



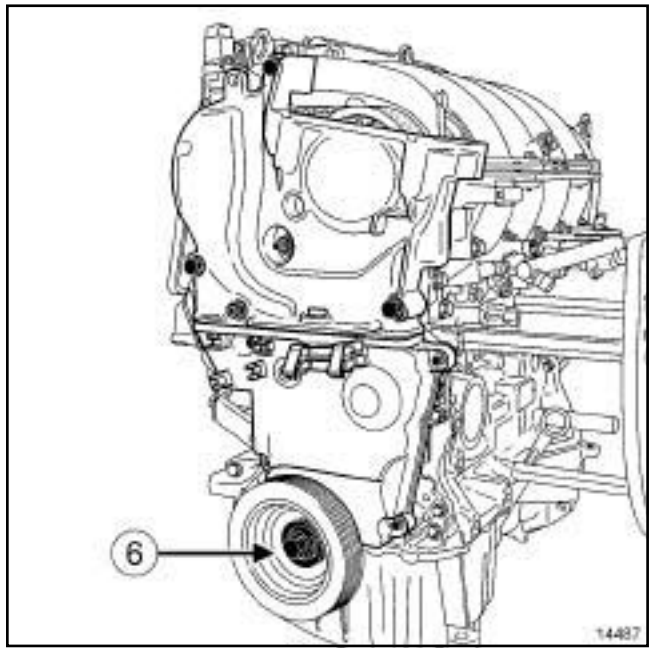

14490

❑ The camshaft grooves (**5**) must be horizontal and offset downwards.

❑ Remove the TDC setting pin.

❑ Lock the flywheel using a screwdriver.

**II - REMOVAL OPERATION**




14487

❑ Remove the crankshaft accessories pulley bolt (**6**) .

## REFITTING

**I - REFITTING PREPARATION OPERATION**

❑ **parts always to be replaced: Crankshaft accessories pulley bolts**

❑

**WARNING**

Be sure to degrease:

- the end of the crankshaft,
- the bearing face of the crankshaft accessories pulley.

This is to prevent timing slippage.

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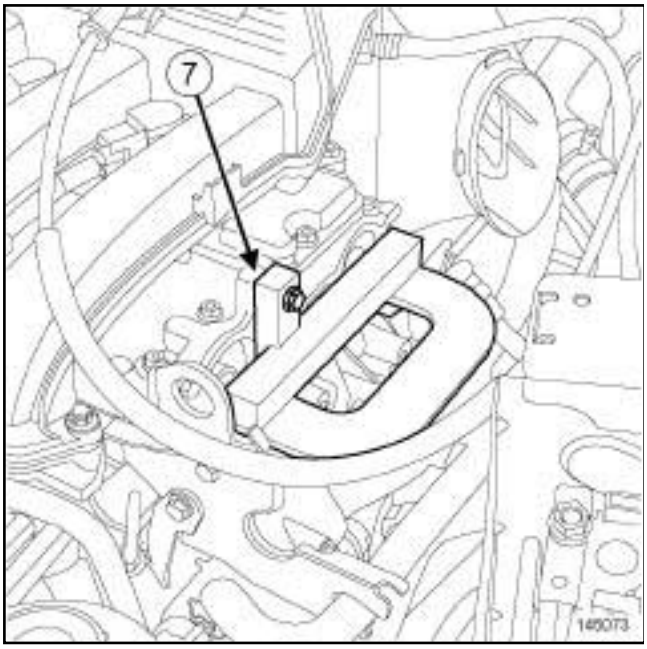
# Crankshaft accessories pulley: Removal - Refitting

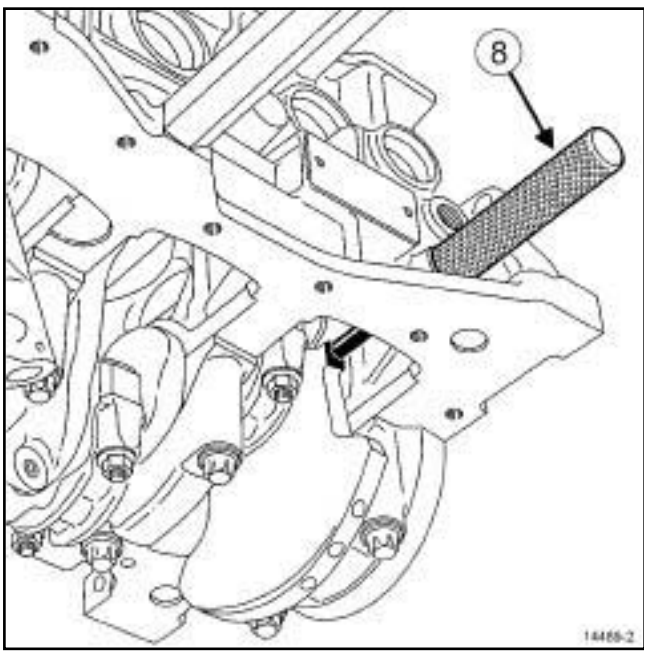
K4M




145073

❏ Position the setting tool.

❏ Secure theto the ends of the camshafts using an M6 bolt (**7**) .

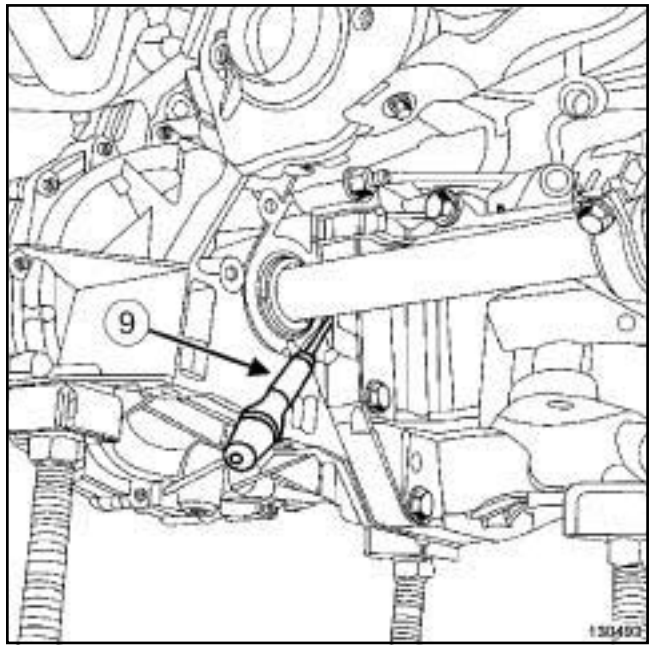



14489-2

❏ Screw in the TDC setting pin (**8**) .

❏ Check that the crankshaft is pressing against the TDC tool.

❏ The crankshaft groove must be upwards.




130493

❏ If the crankshaft is not pressing against the TDC tool, bring the crankshaft back by turning the flywheel using a screwdriver (**9**) .

**II - REFITTING OPERATION**

❏ Refit the crankshaft accessories pulley.

❏ Torque and angle tighten the **new crankshaft accessories pulley bolt (40 N.m + 145° ± 15°)**.

**III - FINAL OPERATION**

❏ Remove:

- the TDC tool,
- the setting tool.

❏ Refit:

- a new inlet camshaft plug using the,
- a new exhaust camshaft plug using the.

❏ Place a drop of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) on the threading of the TDC pin plug.

❏ Refit the TDC setting pin plug.

❏ Torque tighten the **TDC pin plug (25 N.m)**.

❏ Refit:

- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),

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# Crankshaft accessories pulley: Removal - Refitting

K4M

- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the air inlet duct.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Timing belt: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| timing fixed roller bolt | **50 N.m** |
| new crankshaft accessories pulley bolt | **40 N.m + 145° ± 15°** |
| timing tension wheel nut | **27 N.m** |
| lower timing cover bolts | **12 N.m** |
| nut of each camshaft sprocket | **30 N.m + 84° ± 4°** |
| TDC pin plug | **20 N.m** |
| upper timing cover bolts | **46 N.m** |
| upper timing cover nuts | **46 N.m** |
| flywheel end lifting eye bolts | **10 N.m** |

**IMPORTANT**
Wear cut-resistant gloves during the operation.

## REMOVAL

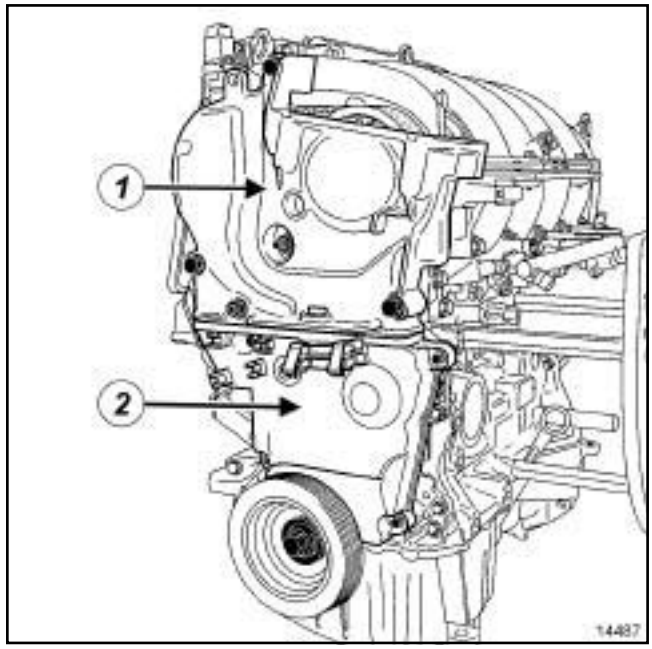
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the air inlet duct,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the crankshaft accessories pulley (see **11A**, **Top and front of engine**, **Crankshaft accessories pulley: Removal - Refitting**, page **11A-10**) ,
- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) .



14487

❏ Remove:

- the upper timing cover bolts (**1**) ,
- the upper timing cover,
- the lower timing cover bolts (**2**) ,
- the lower timing cover.

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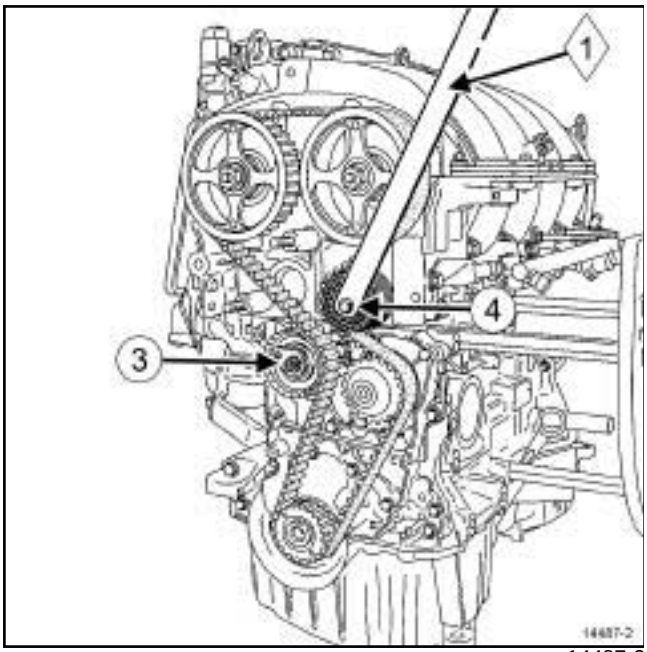
K4M

## II - REMOVAL OPERATION



14487-2

❑ Loosen the nut (**3**) of the timing tensioning roller.

> Note:
>
> Do not drop the crankshaft timing sprocket when removing the timing belt.

❑ Remove:

- the timing fixed roller bolt (**4**) using the tool (**1**) ,
- the timing fixed roller,
- the timing belt,
- the timing tensioning roller nut,
- the timing tensioning roller,
- the crankshaft timing sprocket.

# REFITTING - PROCEDURE 1

## I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Timing belt**,

❑ **parts always to be replaced: Timing belt tensioning roller**,

❑ **parts always to be replaced: Crankshaft accessories pulley bolts**,

❑ **parts always to be replaced: Inlet camshaft cap**,

❑ **parts always to be replaced: Timing fixed roller**,

❑ **parts always to be replaced: Exhaust camshaft cap**.

## II - REFITTING OPERATION FOR PART CONCERNED

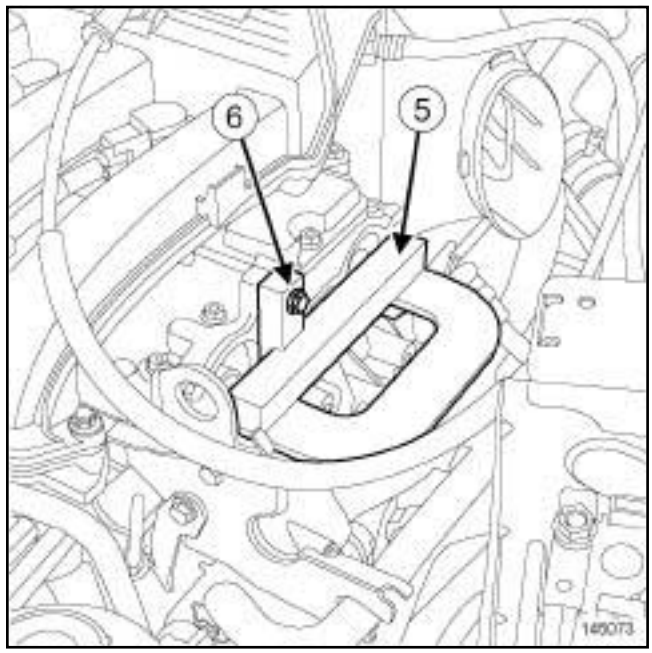
❑ The first procedure applies to replacing any timing face component which has a crankshaft timing sprocket without a collet and which does not require one or more of the camshaft sprockets to be loosened.

### 1 - Adjusting the timing

❑

> **WARNING**
>
> Be sure to degrease:
>
> - the end of the crankshaft (timing end),
> - the timing sprocket pressure faces and bore of the crankshaft,
> - the crankshaft accessories pulley bearing faces,
> - the camshaft ends (timing end),
> - the camshaft sprocket bores and bearing faces.
>
> This is to avoid timing slippage.
>
> This slippage leads to engine damage.

❑ Set the camshaft grooves horizontally and below the centre line by turning the camshafts with theif necessary.



145073

❑ Fit:

- the (**5**) onto the ends of the camshafts,
- a lifting eye bolt (**6**) to secure the.

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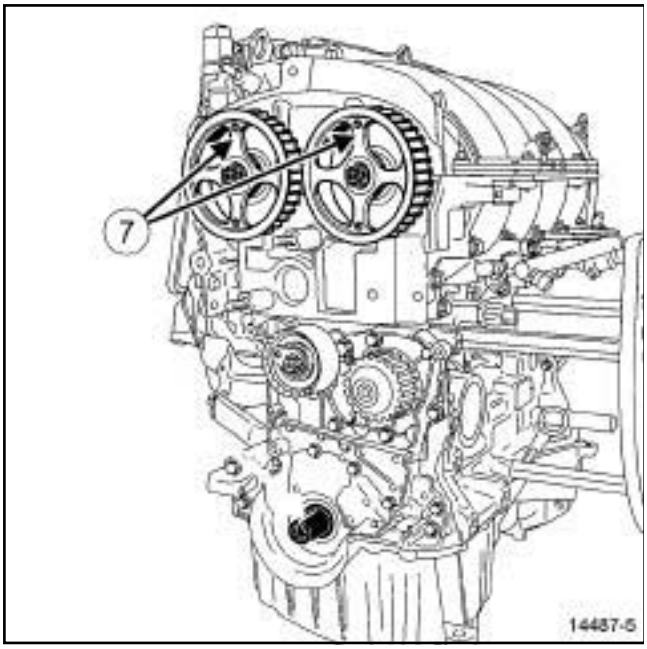
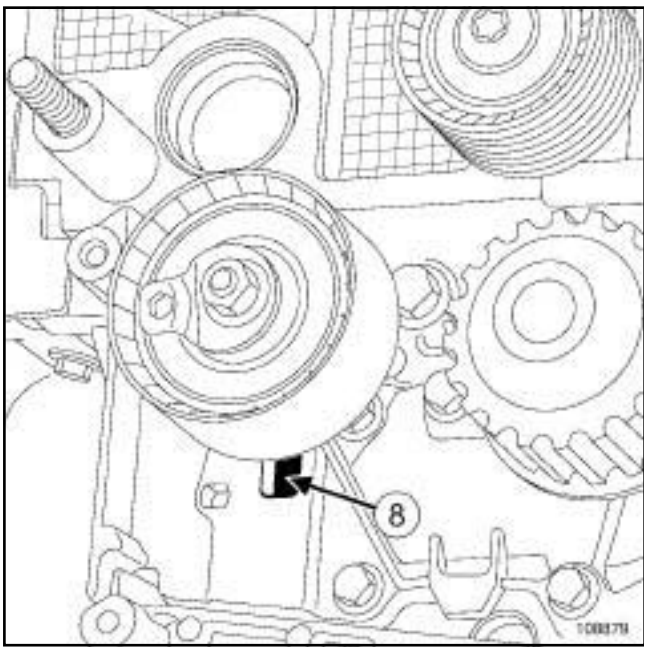
K4M




14487-5

❏ Position the RENAULT badge (**7**) engraved on the stem of each camshaft sprocket vertically and pointing upwards.

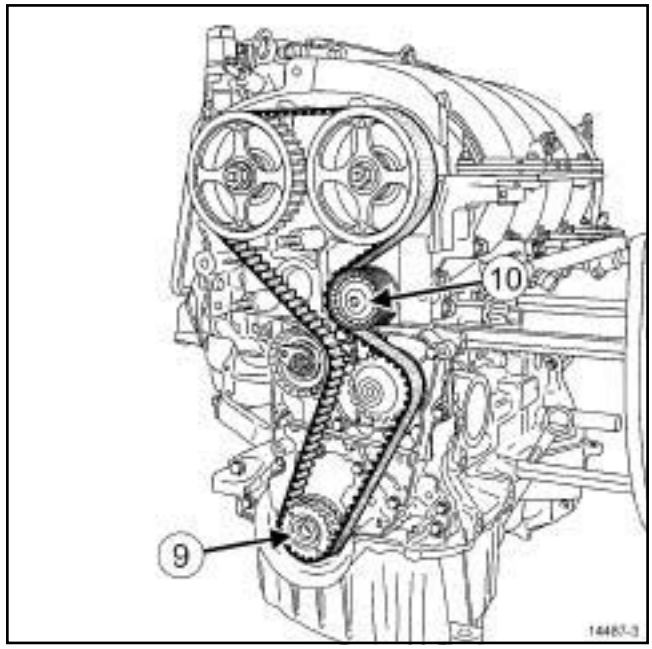
**2 - Refitting**




108879

❏ Refit a new timing tensioning roller by positioning the lug of the timing tensioning roller in the groove (**8**) .

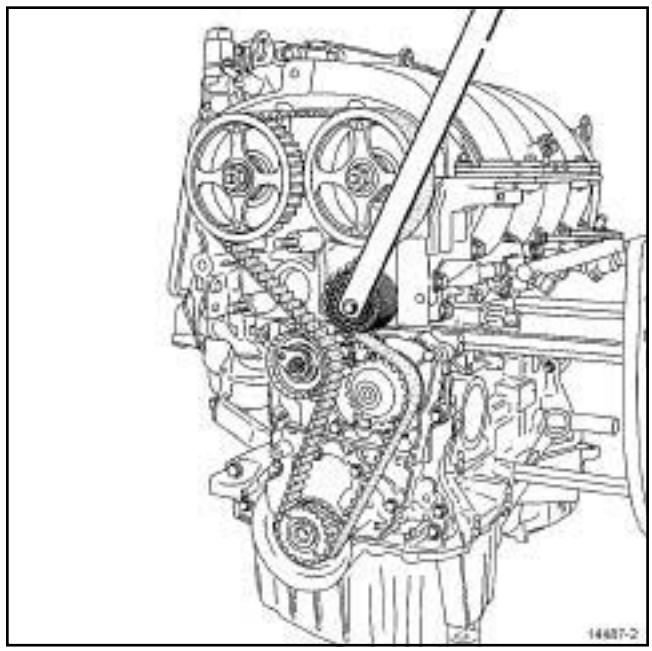
❏ Screw on the timing tensioning roller nut without tightening it.




14487-3

❏ Refit:

- the crankshaft timing sprocket (**9**) ,
- a new timing belt,
- a new timing fixed roller (**10**) .



14487-2

❏ Torque tighten the **timing fixed roller bolt (50 N.m)** using the tool.

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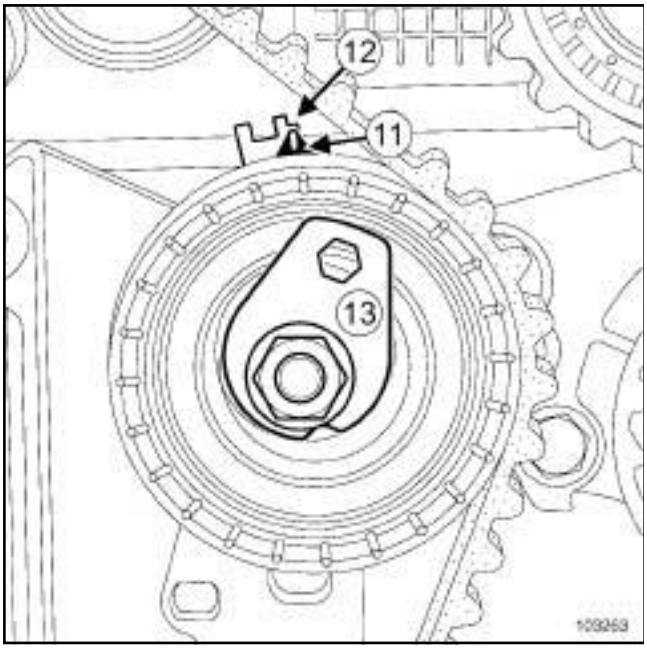
K4M



103263

❏ Position the adjustable index (**11**) opposite the mark (**12**) , by turning the eccentric (**13**) clockwise using a **6 mm** Allen key.

❏ Torque tighten the **timing tensioning roller nut (7 N.m)**.

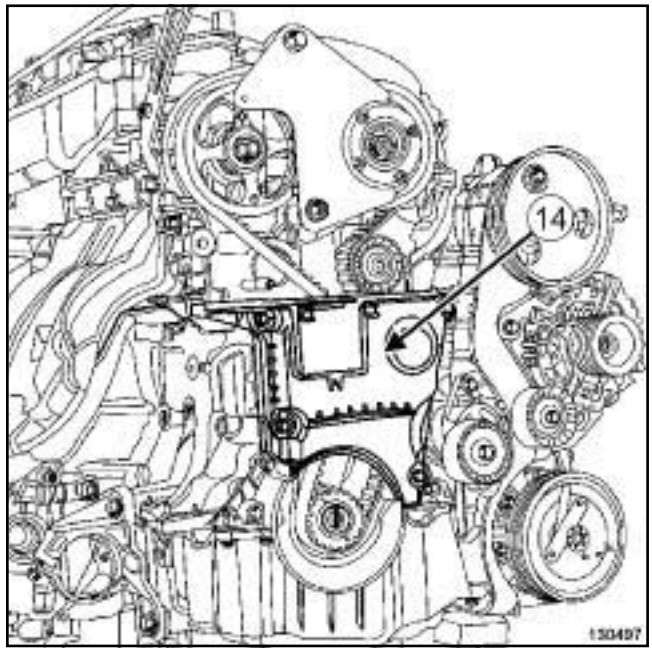
❏ Refit the toolon the cylinder block.

Note:

There are two types of lower timing cover:

- without a timing flap,
- with a timing flap.

***a - Lower timing cover with a timing flap***



130497

❏ Refit the lower timing cover (**14**) .

❏ Tighten to torque the **lower timing cover bolts (12 N.m)**.

***b - continuation of the refitting procedure regardless of the type of lower timing cover***

❏ Refit a new crankshaft accessories pulley.

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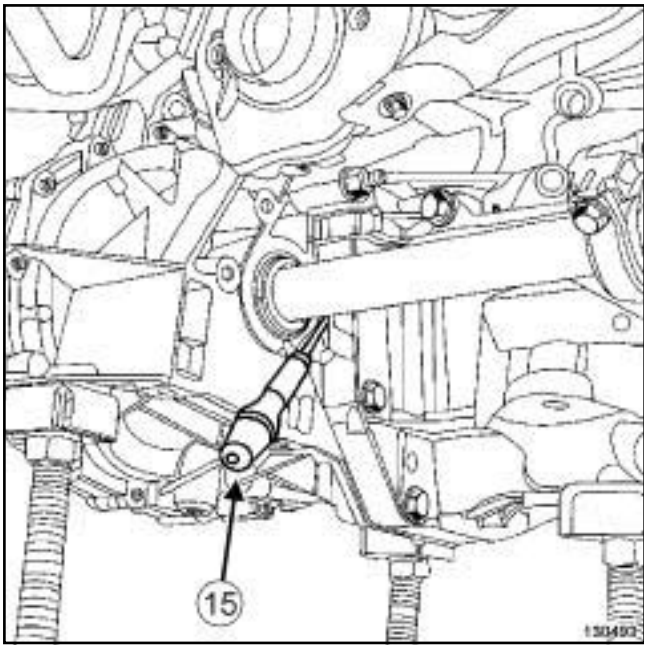
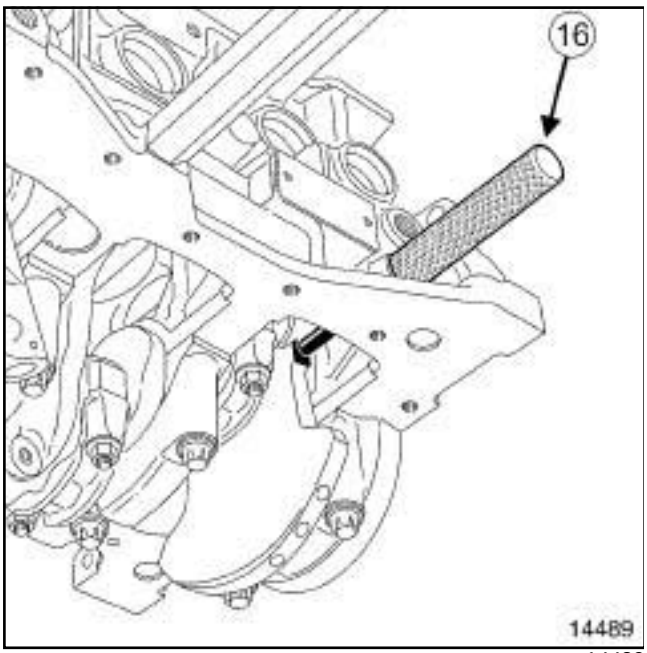
K4M



130493

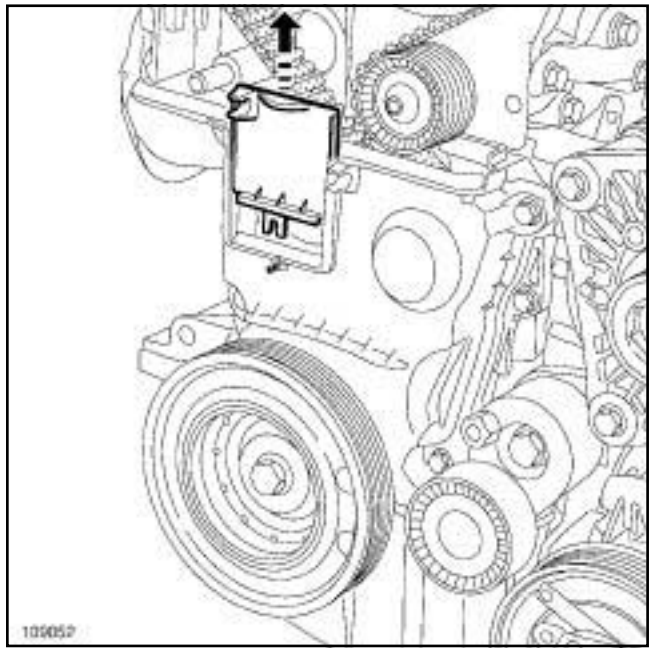


14489

❏ Use a screwdriver (**15**) to check that the flywheel does not turn (clockwise at the timing end), otherwise bring the crankshaft back into contact with the tool (**16**) using the screwdriver; the crankshaft groove should be at the top.

❏ Torque and angle tighten a **new crankshaft accessories pulley bolt (40 N.m + 145° ± 15°)** (crankshaft in contact with the tool).

***c - Lower timing cover with a timing flap***



109052

❏ Remove the timing flap from the lower timing cover.

***d - continuation of the refitting procedure regardless of the type of lower timing cover***

❏ Remove:

- the bolt of the tool,
- the setting tool,
- thefrom the cylinder block.

**3 - Checking the tension**

❏ Rotate the crankshaft twice clockwise at the timing end and before aligning the marks made previously by the operator (on the camshaft dephaser), screw the toolinto the cylinder block.

❏ Move the crankshaft slowly and smoothly until it comes into contact with the tool.

❏ Remove the toolfrom the cylinder block.

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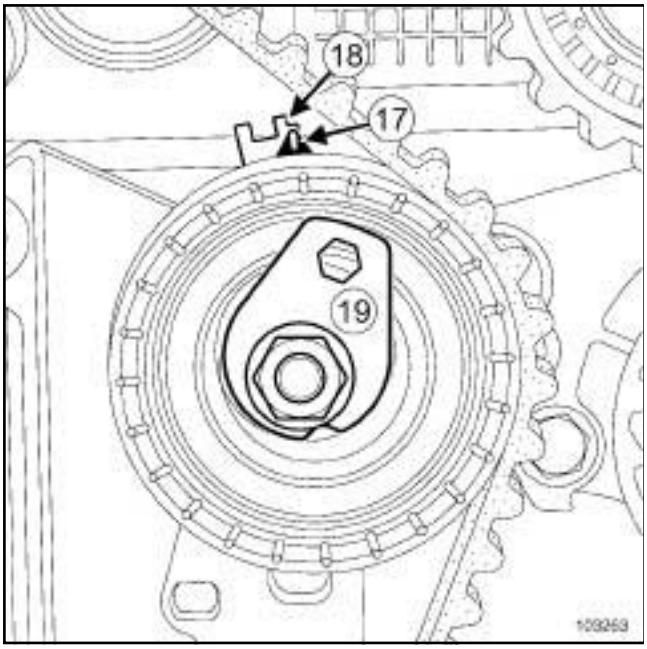
K4M



103263

❑ Check that the adjustable index (**17**) is opposite the notch (**18**) , if this is not the case:

- loosen the timing tensioning roller nut by up to one turn while holding the eccentric with a **6 mm** Allen key,
- gradually move the adjustable index marker (**17**) opposite the mark (**18**) turning the eccentric cam (**19**) clockwise.

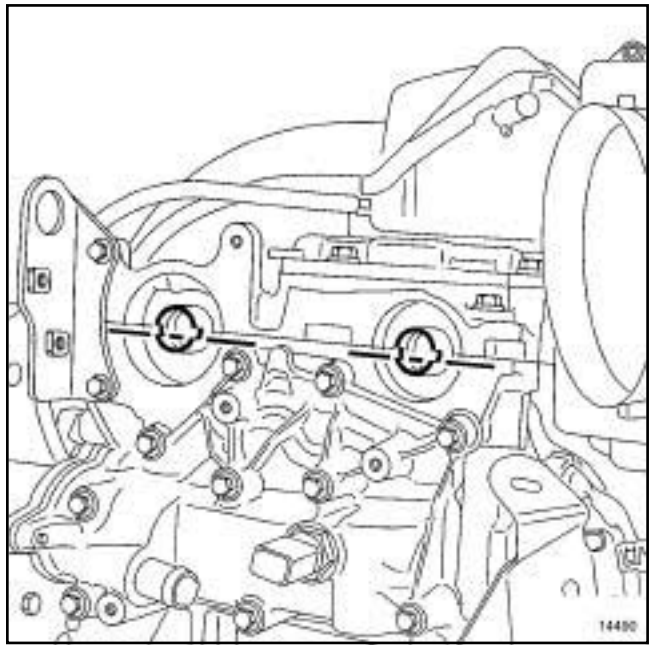
❑ Torque tighten the **timing tension wheel nut (27 N.m)**.

**4 - Checking the timing**

❑ Ensure that the index and the notch on the timing tensioning roller are in the correct position before checking the timing.

❑ Screw toolinto the cylinder block.

❑ Move the crankshaft slowly and smoothly until it comes into contact with the tool.


14490

❑ Position (without forcing) the camshaft setting tool(the camshaft end grooves must be horizontal and offset towards the bottom).

Note:

The timing adjustment and tensioning operation must be repeated if the camshaft setting tool does not engage.

❑ Remove:

- the setting tool,
- thefrom the cylinder block.

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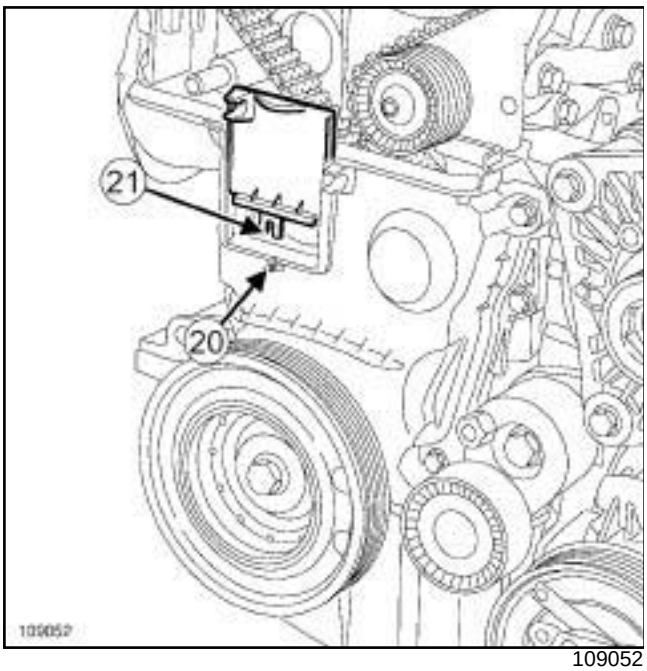
K4M

***a - Lower timing cover with a timing flap***




109052

❏ Refit the lower timing cover flap, checking that the locating pin (**20**) fits properly in the notch (**21**) .

***b - Lower timing cover without a timing flap***

❏ Refit the lower timing cover.

❏ Tighten to torque the **lower timing cover bolts (12 N.m)**.

## REFITTING -PROCEDURE 2

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: Timing belt**,

❏ **parts always to be replaced: Timing belt tensioning roller**,

❏ **parts always to be replaced: Timing fixed roller**,

❏ **parts always to be replaced: Crankshaft accessories pulley**,

❏ **parts always to be replaced: camshaft timing sprocket nut**,

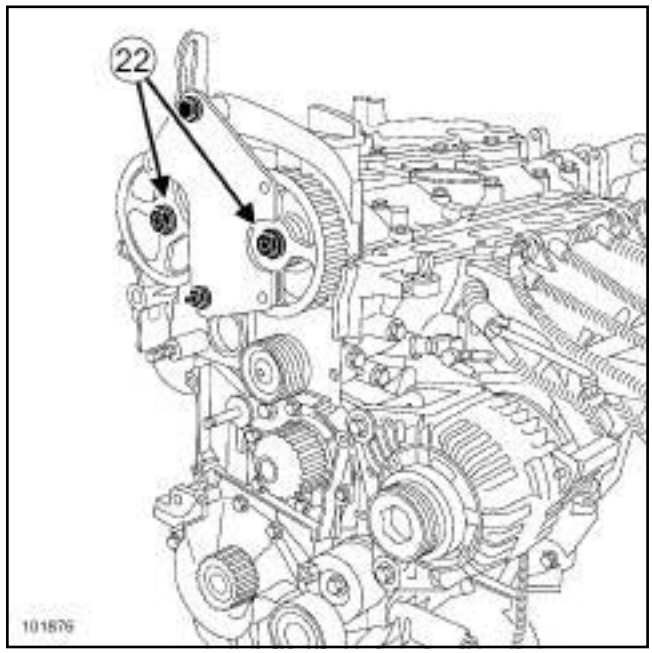
❏ **parts always to be replaced: Crankshaft accessories pulley bolts**,

❏ **parts always to be replaced: Inlet camshaft cap**,

❏ **parts always to be replaced: Exhaust camshaft cap**.

### II - REFITTING OPERATION

❏ The second procedure is used when replacing any timing face component which has a crankshaft timing sprocket with or without a collet, that requires one or more of the camshaft sprockets to be loosened.




101876

❏ Fit the toolon the camshaft sprockets using the tool.

❏ Loosen the nuts (**22**) of each camshaft sprocket.

❏ Remove:

- the toolfrom the cylinder block,
- every camshaft sprocket nut,
- the camshaft sprockets.

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K4M

**1 - Adjusting the timing**

❑

Note:

If the stud loosens with the nut (see **11A**, **Top and front of engine**, **Camshaft: Removal - Refitting**, page **11A-49**) (11A, Top and front of engine).

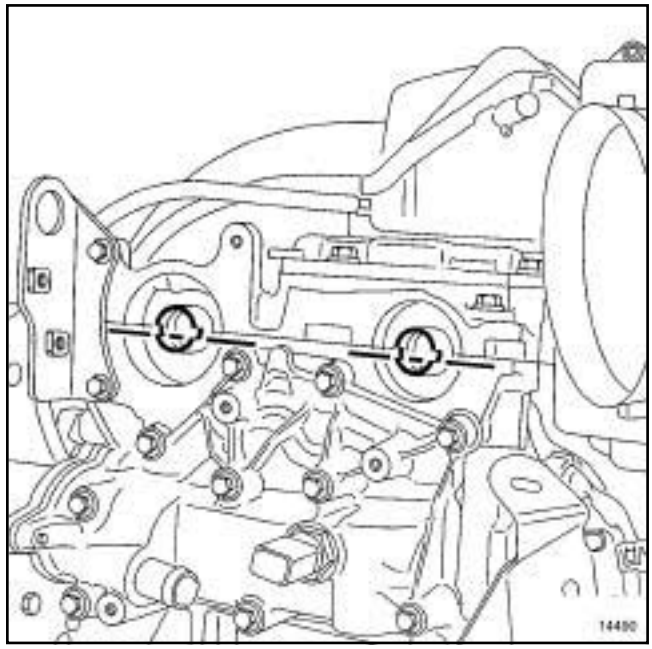
**WARNING**

Always degrease:

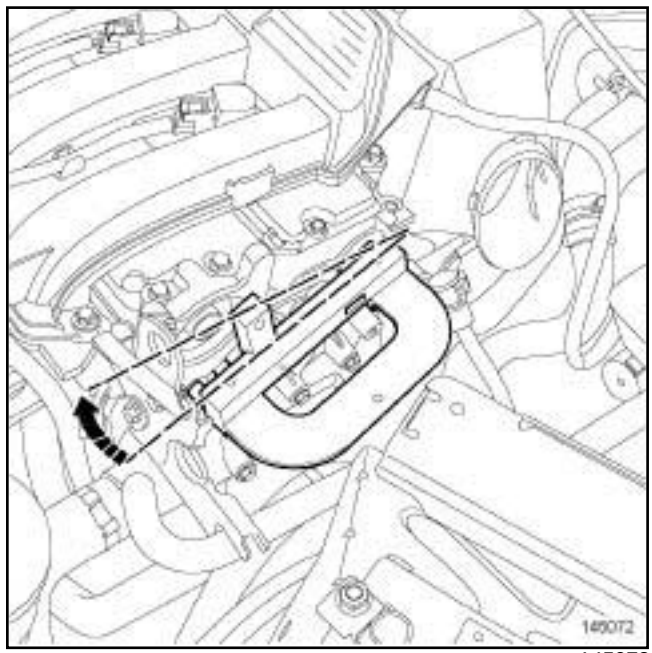
- the end of the crankshaft (timing end),
- the timing sprocket pressure faces and bore of the crankshaft,
- the crankshaft accessories pulley bearing faces,
- the camshaft ends (timing end),
- the camshaft sprocket bores and bearing faces.

This is to avoid timing slippage.

This slippage leads to engine damage.



14490



145072

❑ Position the camshaft grooves horizontally and below the centre line, by turning the camshafts with theif necessary.

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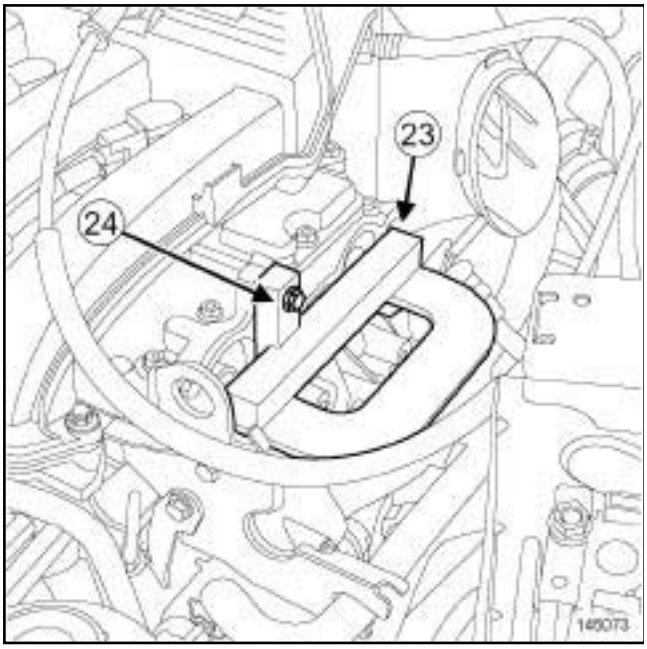
K4M



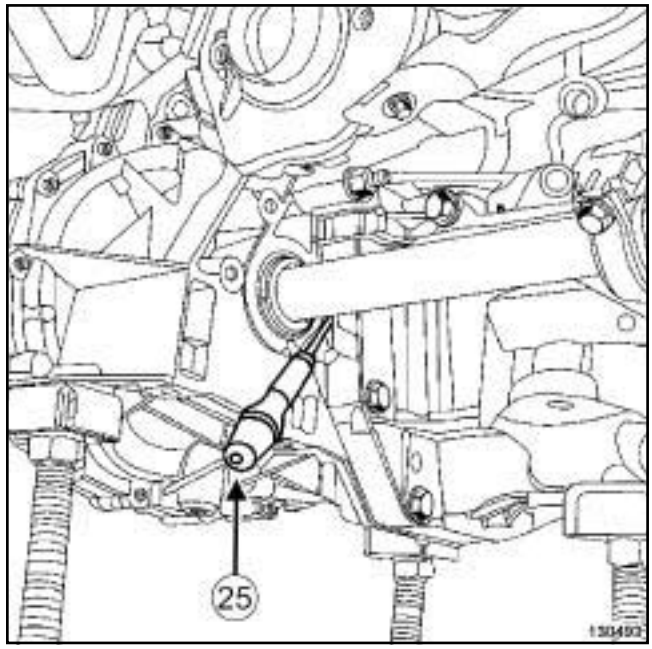
145073

❑ Fit:

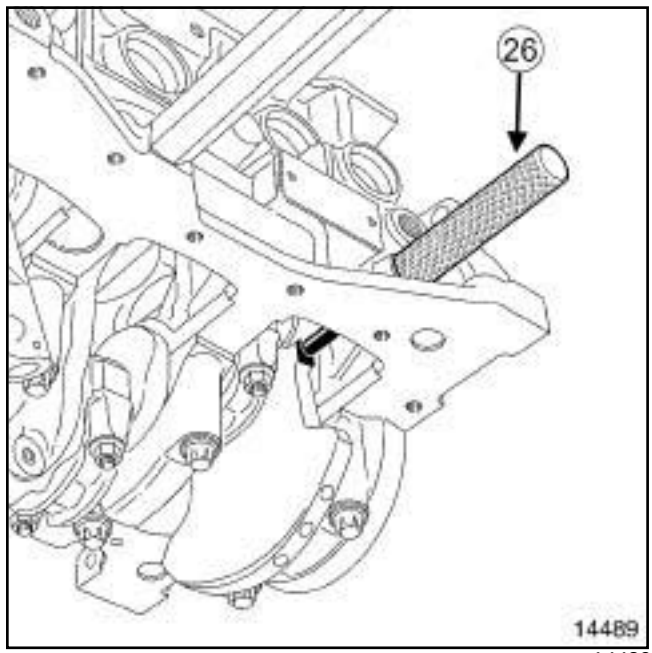
- the (**23**) onto the ends of the camshafts,
- an M6 bolt (**24**) to hold the.

❑ Refit:

- the crankshaft timing sprocket,
- the camshaft sprockets,
- every camshaft sprocket nut.



130493



14489

❑ Refit the toolon the cylinder block.

❑ Use a screwdriver (**25**) to check that the flywheel does not turn (clockwise at the timing end), otherwise bring the crankshaft back into contact with the tool (**26**) using the screwdriver; the crankshaft groove should be at the top.

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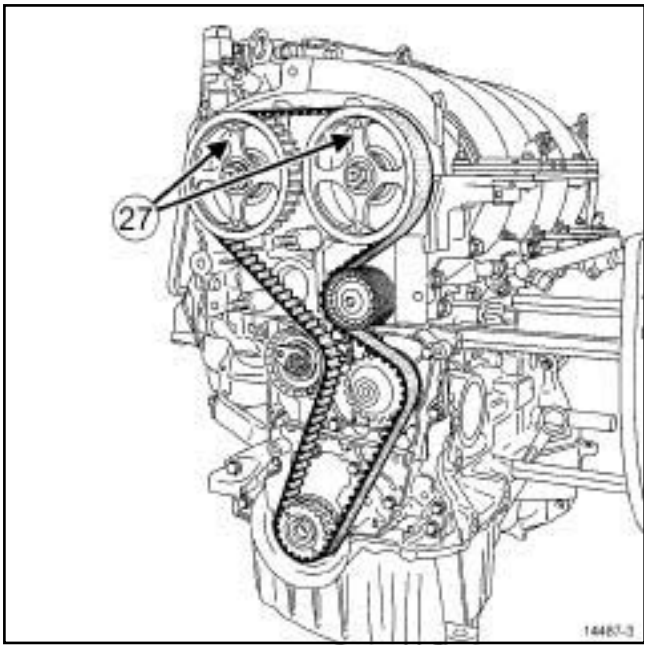
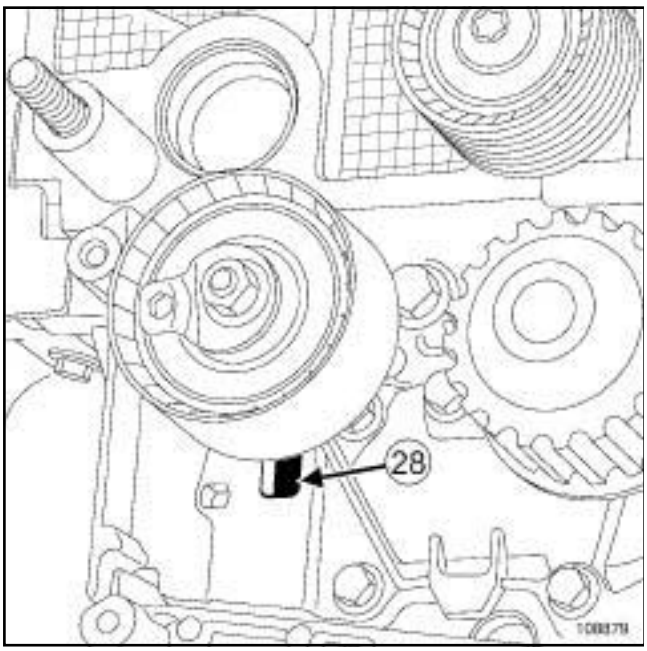
K4M



14487-3

❏ Position the RENAULT badge (**27**) etched on the stem of each camshaft sprocket vertically and pointing upwards.

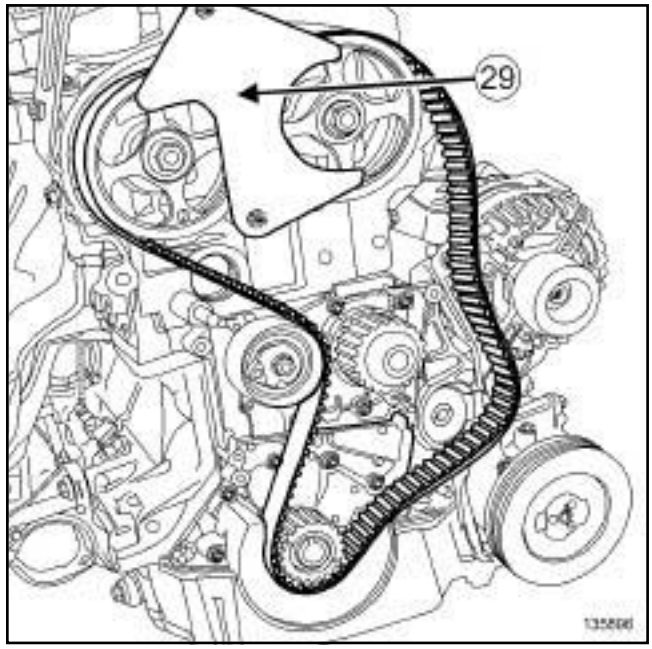
**2 - Refitting**



108879

❏ Refit a new timing tensioning roller by positioning the lug of the timing tensioning roller in the groove (**28**) .

❏ Screw on the timing tensioning roller nut without tightening it.



135896

❏ Refit a new timing belt starting with the sprocket of each camshaft (without moving the sprocket of each camshaft).

❏ Fit the tool (**29**) on the camshaft sprockets (use the bolt and nut of the upper timing cover to fit the tool).

Note:

Take care to properly tighten the timing belt between the two camshaft sprockets.

Note:

If the engine is equipped with a crankshaft timing sprocket with a collet, take care to properly tighten the timing belt between the exhaust camshaft sprocket and the crankshaft timing sprocket.

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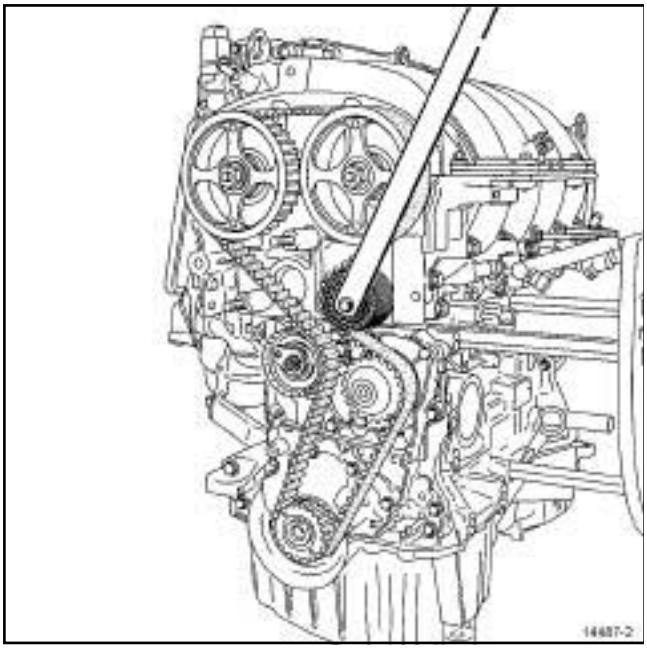
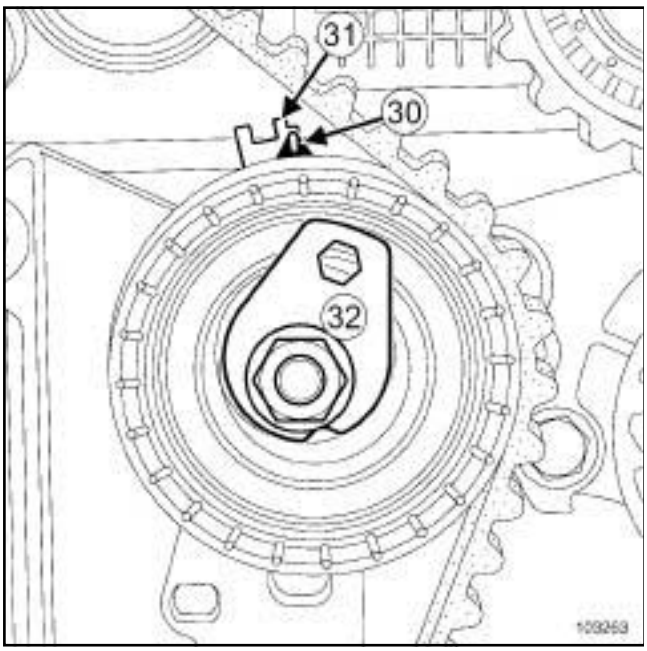
K4M


14487-2

❑ Refit a new timing fixed roller.

❑ Torque tighten the **timing fixed roller bolt (50 N.m)** using the tool.

**3 - Timing belt tension**



103263

❑ Position the adjustable index (**30**) opposite the mark (**31**) , by turning the eccentric (**32**) clockwise using an Allen key.

❑ Torque tighten the **timing tensioning roller nut (7 N.m)**.

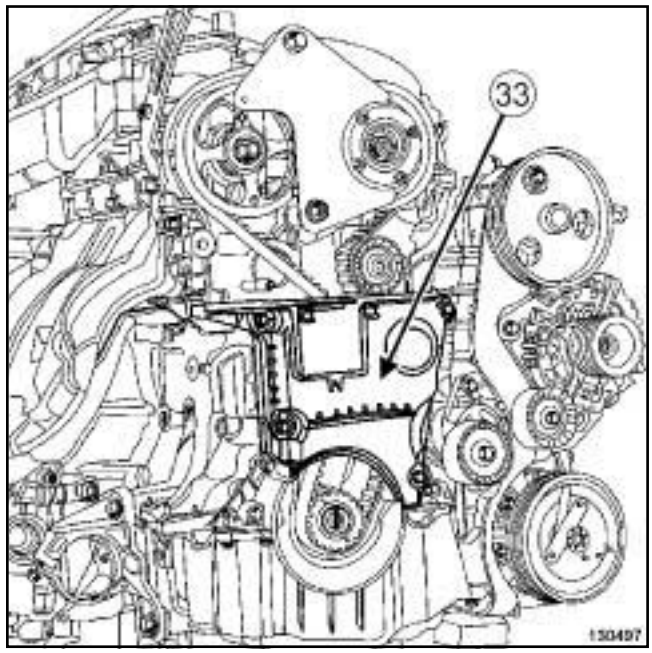
Note:

There are two types of lower timing cover:

- without a timing flap,

- with a timing flap.

***a - Lower timing cover with a timing flap***



130497

❑ Refit the lower timing cover (**33**) .

❑ Tighten to torque the **lower timing cover bolts (12 N.m)**.

***b - continuation of the refitting procedure regardless of the type of lower timing cover***

❑ Refit a new crankshaft accessories pulley.

❑ Torque and angle tighten:

- the **new bolt of the crankshaft accessories pulley (40 N.m + 145° ± 15°)**,

- the **nut of each camshaft sprocket (30 N.m + 84° ± 4°)**.

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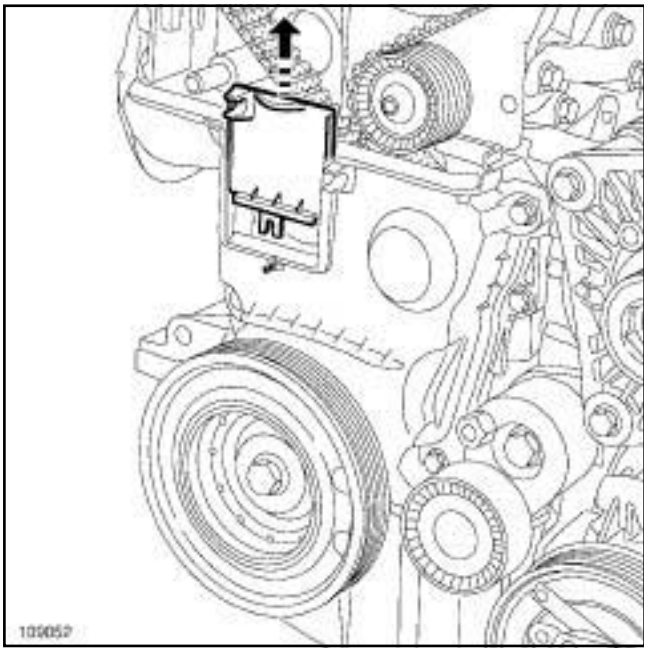
K4M

***c - Lower timing cover with a timing flap***




109052

❏ Remove the timing flap from the lower timing cover.

***d - continuation of the refitting procedure regardless of the type of lower timing cover***

❏ Remove:

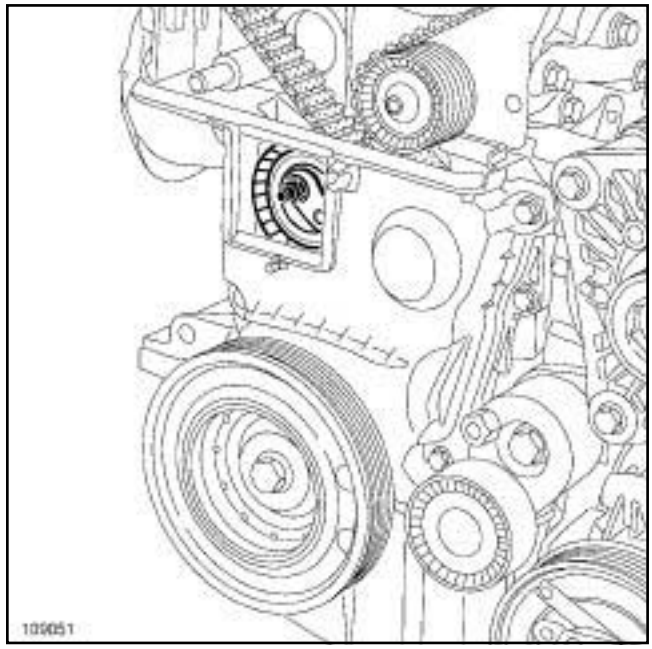
- the bolt of the tool,
- the,
- the toolfrom the cylinder block,
- the.

**4 - Checking the tension**

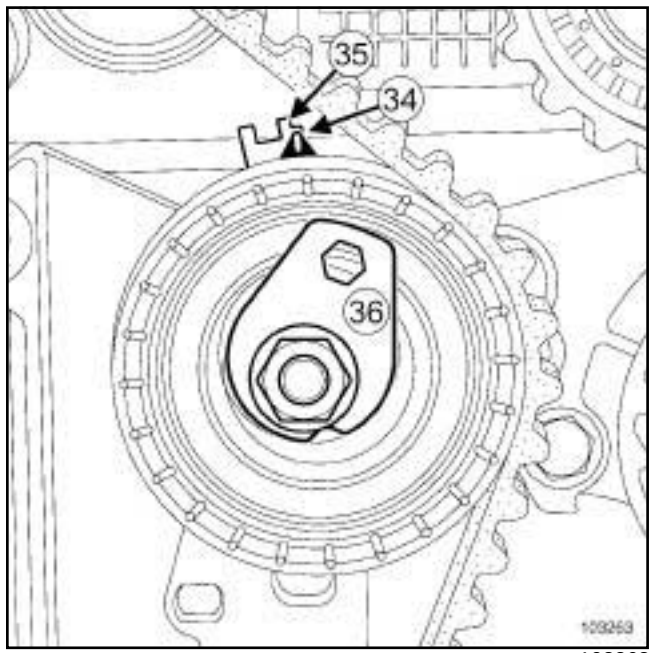
❏ Rotate the crankshaft twice clockwise at the timing end and before aligning the marks made previously by the operator (on the camshaft dephaser), screw the toolinto the cylinder block.

❏ Move the crankshaft slowly and smoothly until it comes into contact with the tool.

❏ Remove the toolfrom the cylinder block.




109051




103263

❏ Check that the adjustable index (**34**) is opposite the notch (**35**) , if this is not the case:

- loosen the timing tensioning roller nut by up to one turn while holding the eccentric with an Allen key,
- gradually move the adjustable index marker (**34**) opposite the mark (**35**) turning the eccentric cam (**36**) clockwise.

❏ Torque tighten the **timing tensioning roller nut (27 N.m)**.

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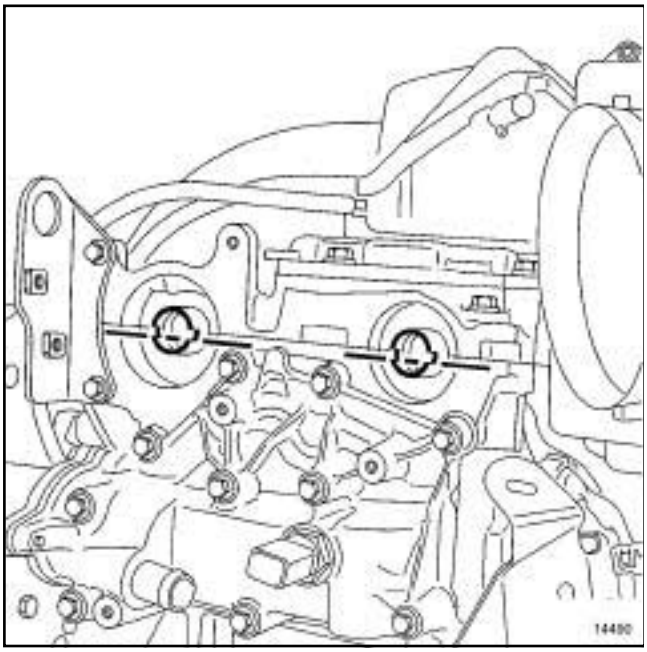
K4M

**5 - Checking the timing**

❑ Ensure that the index and the notch on the timing tensioning roller are in the correct position before checking the timing.

❑ Screw toolinto the cylinder block.

❑ Move the crankshaft slowly and smoothly until it comes into contact with the tool.


14490

❑ Position (without forcing) the(the camshaft end grooves must be horizontal and offset downwards).

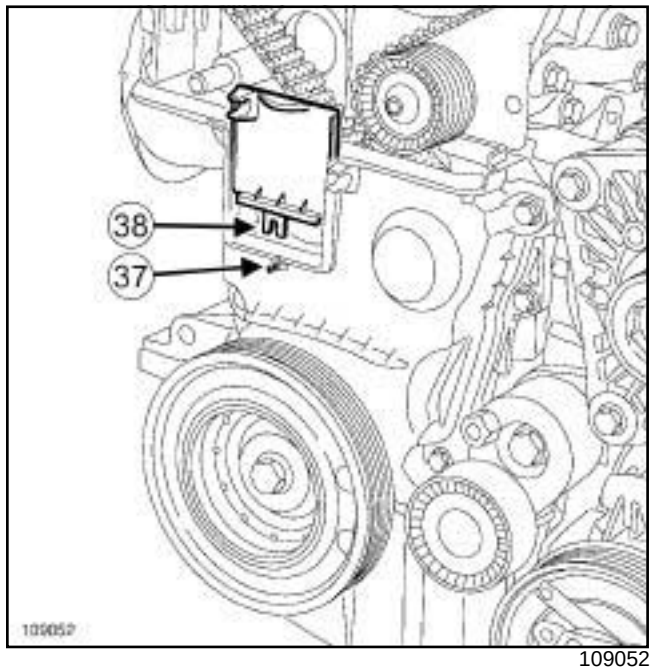
Note:

If thecannot be engaged, readjust the timing and the tension.

❑ Remove:

- the setting tool,
- thefrom the cylinder block.

***a - Lower timing cover with a timing flap***



109052

❑ Refit the lower timing cover flap, checking that the locating pin (**37**) fits properly in the notch (**38**) .

***b - Lower timing cover without a timing flap***

❑ Refit the lower timing cover.

❑ Tighten to torque the **lower timing cover bolts (12 N.m)**.

**III - FINAL OPERATION**

❑ Apply a drop of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the thread of the TDC pin plug.

❑ Tighten to torque the **TDC pin plug (20 N.m)**.

❑ Refit the upper timing cover.

❑ Torque tighten:

- the **upper timing cover bolts (46 N.m)**,
- the **upper timing cover nuts (46 N.m)**.

❑ Refit:

- a new inlet camshaft plug using the,
- a new exhaust camshaft plug using the,
- the engine lifting eye at the flywheel end.

❑ Torque tighten the **flywheel end lifting eye bolts (10 N.m)**.

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# Timing belt: Removal - Refitting

K4M

❑ Refit:

- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the air inlet duct.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Timing belt: Removal - Refitting

K9K, and 796

| Special tooling required | |
|---|---|
| **Mot. 1453** | Engine anchorage support with multiple adjustments and retaining straps. |
| **Mot. 1489** | TDC locating pin. |
| **Mot. 1430** | Set of 5 crankshaft and camshaft pulley timing pins. |

| Tightening torques ▽ | |
|---|---|
| timing belt tensioning roller bolt | **27 N.m** |
| accessories pulley M14 bolt | **120 N.m + 95° ± 15°** |
| timing belt tensioning roller bolt | **27 N.m** |
| TDC pin plug | **25 N.m** |
| right-hand suspended engine mounting bolts | **25 N.m** |

**IMPORTANT**
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Engine: Precautions for the repair**) .

**IMPORTANT**
Wear protective gloves during every operation.

**WARNING**
Never run the engine in the opposite direction to that of normal operation.

**WARNING**
Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

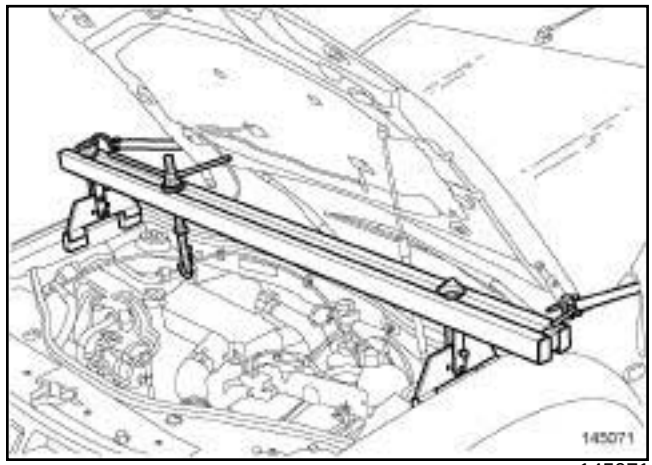
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

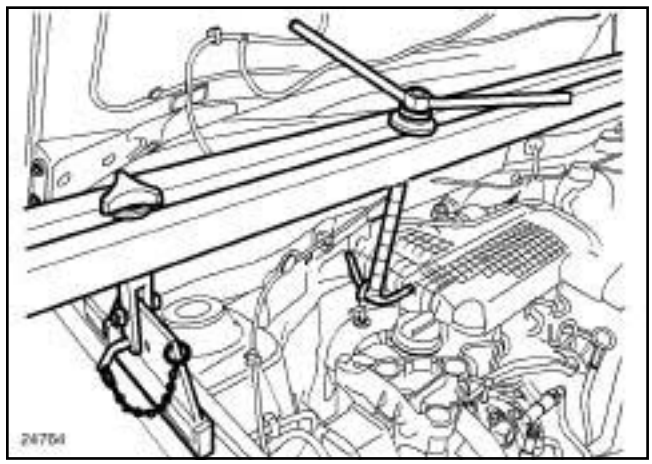
❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❑ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Remove the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).



145071



24764

❑ Fit the engine support tool **(Mot. 1453)** with the retaining belt, taking the timing end lifting eye as an anchoring point.

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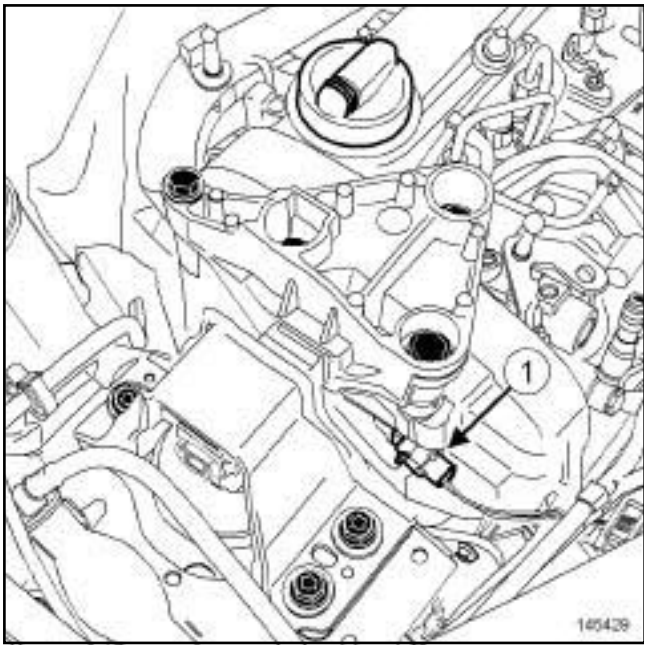
# Timing belt: Removal - Refitting

K9K, and 796

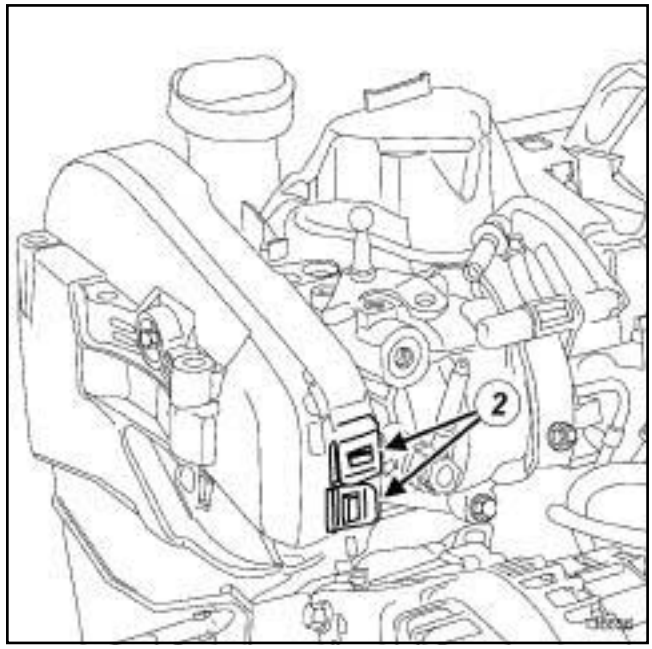


145429

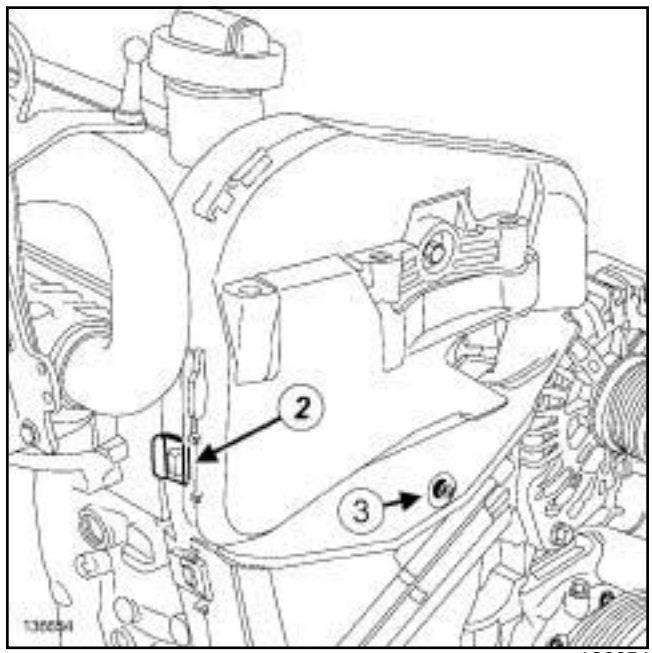
❑ Mark the position of the suspended engine mounting in relation to the body.

❑ Remove:

- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the camshaft position sensor (**1**) (see **13B**, **Diesel injection**, **Camshaft position sensor: Removal - Refitting**, page **13B-7**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .



136656



136654

❑ Remove:

- the bolt (**3**) from the upper timing cover,
- the upper timing cover by unclipping the three tabs (**2**) .

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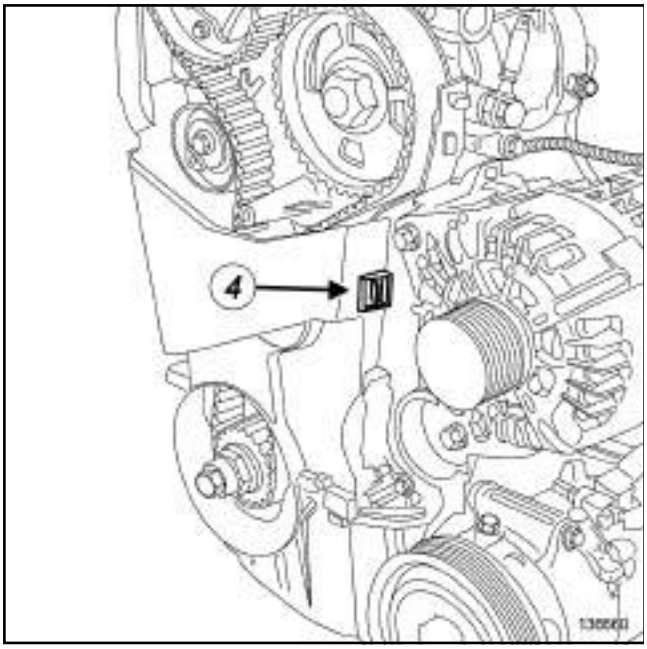
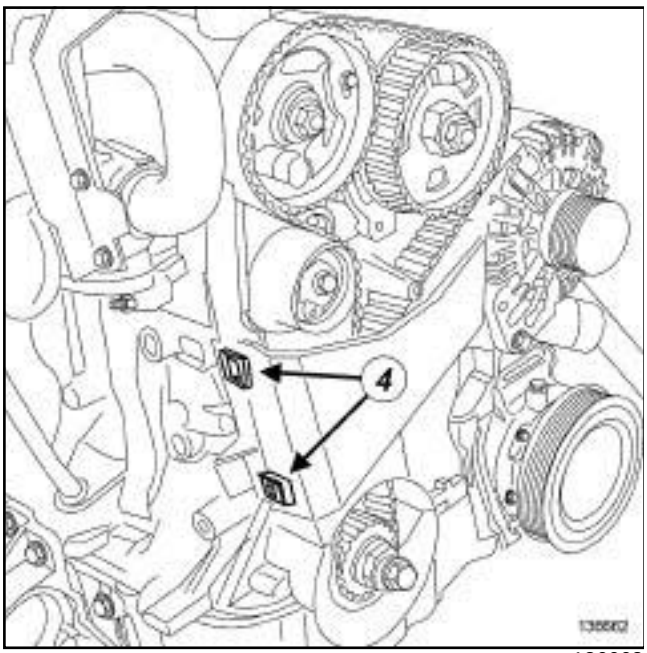
K9K, and 796



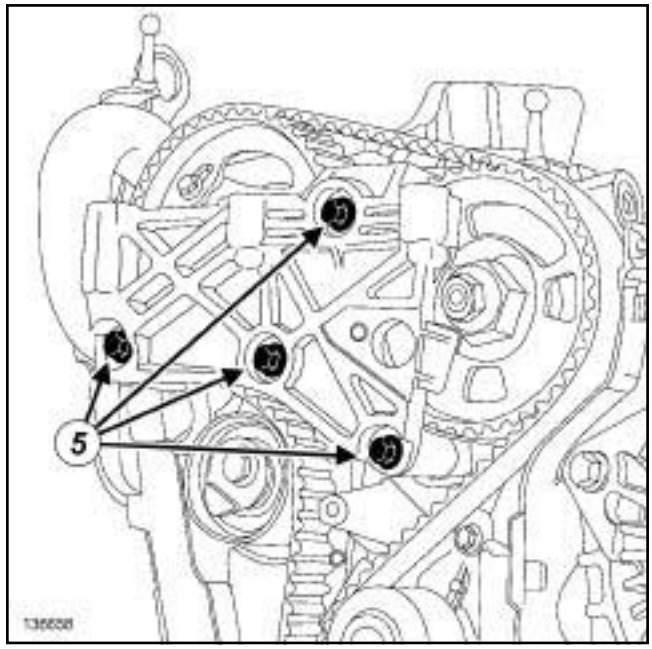
136660



136662

❏ Unclip the three tabs (**4**) .

❏ Remove the lower timing cover.

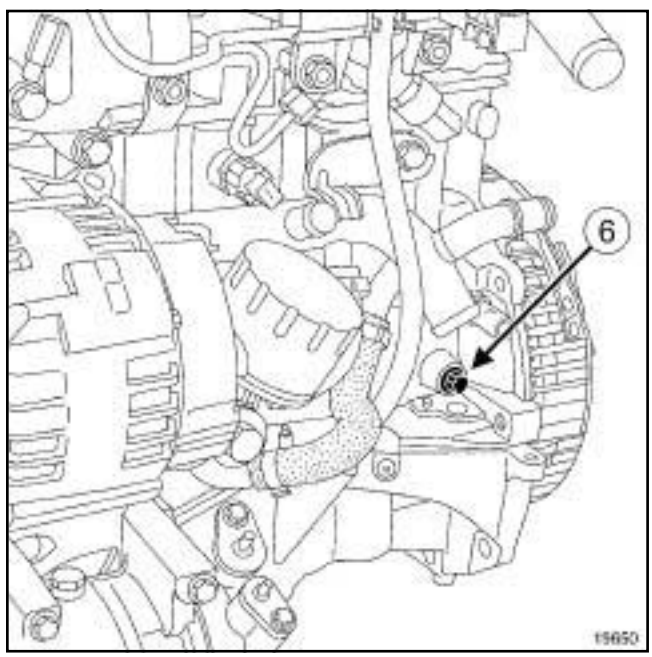


136658

❏ Remove:

- the bolts (**5**) from the right-hand suspended engine mounting support on the cylinder head,
- the right-hand pendulum suspension support.

**II - REMOVAL OPERATION**



19650

❏ Remove the TDC pin plug (**6**) using a **14** female torx socket.

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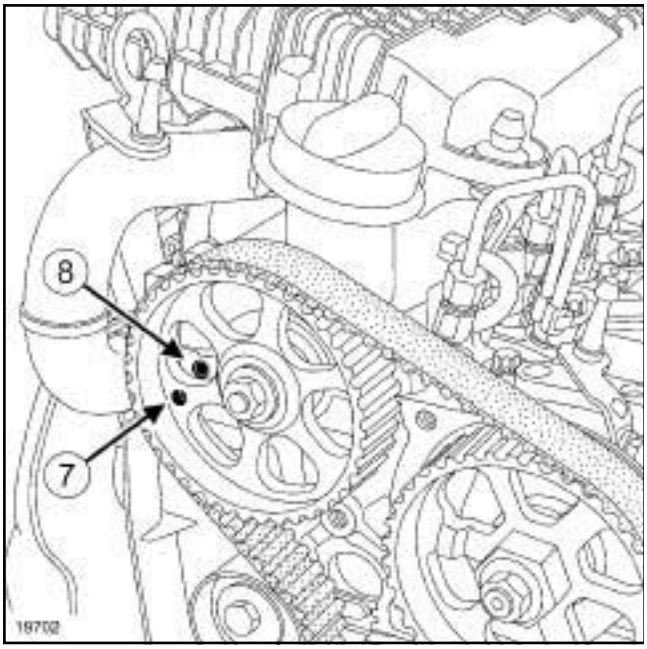
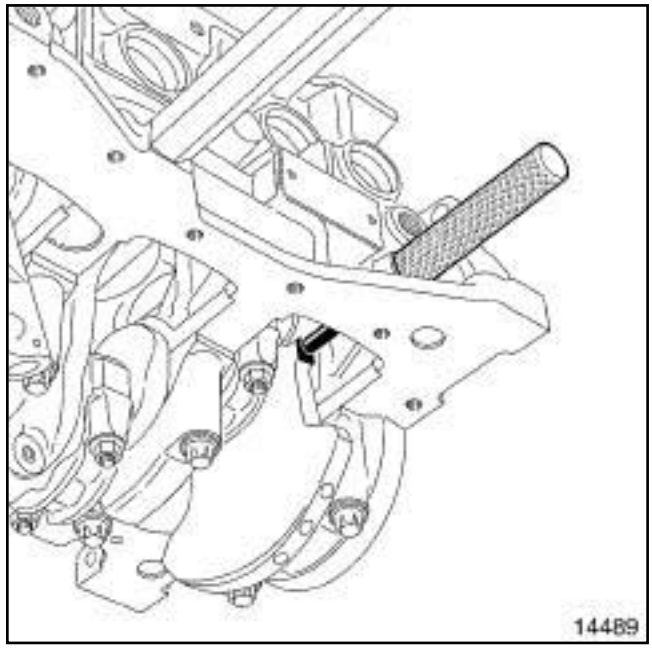
K9K, and 796



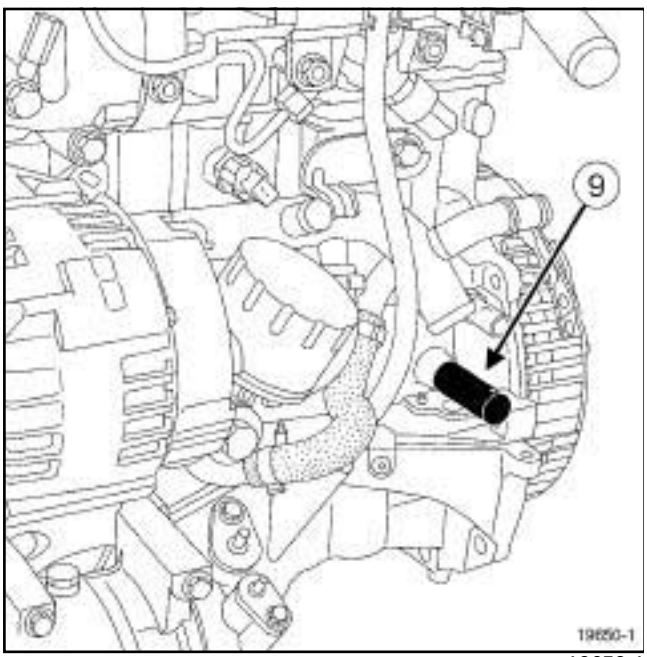

19702

❏ Turn the crankshaft to position the camshaft pulley hole (**7**) almost opposite the cylinder head hole (**8**) .



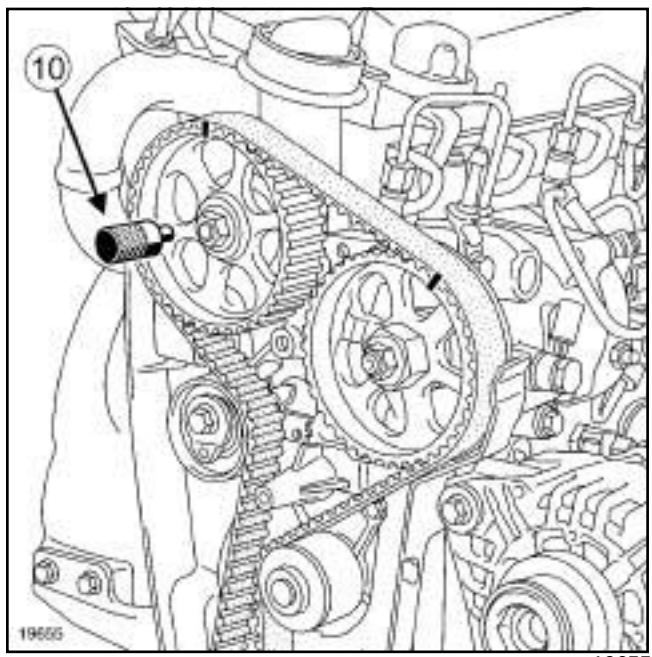

14489

❏ Turn the crankshaft clockwise (timing end) smoothly until the crankshaft is against the **(Mot. 1489)**.




19650-1

❏ Screw tool **(Mot. 1489)** (**9**) into the cylinder block.




19655

❏ Insert the **(Mot. 1430)** (**10**) in the holes of the camshaft pulley and cylinder head.

❏ Remove:

- the **(Mot. 1430)**,
- the **(Mot. 1489)**.

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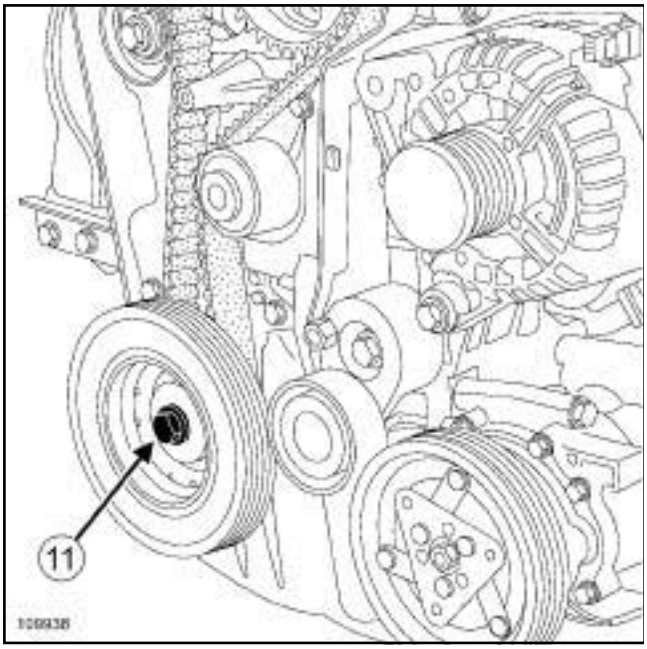
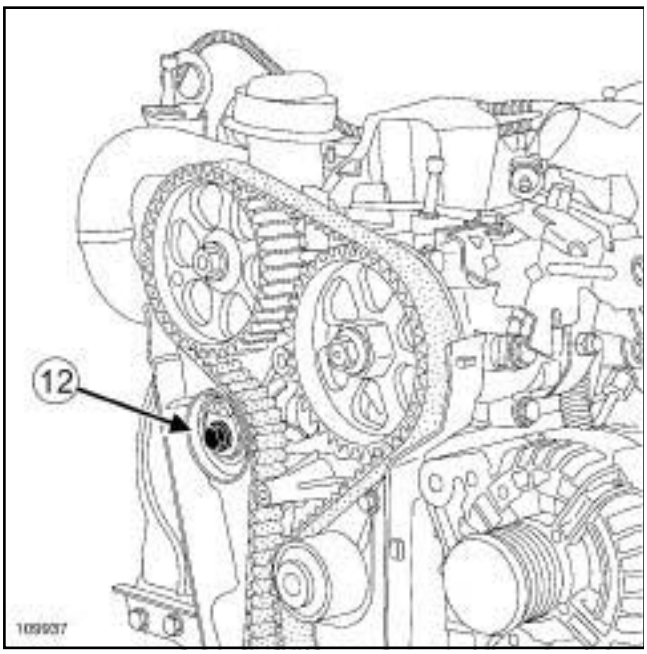
K9K, and 796



109938

❑ Remove:

- the bolt (**11**) from the crankshaft accessories pulley, locking the flywheel using a large screwdriver,
- the crankshaft accessories pulley.



109937

❑ Undo the timing belt tensioning roller bolt (**12**) .

❑ Loosen the timing belt tensioning roller by turning the eccentric cam using a **6 mm** Allen key.

❑ Remove:

- the timing belt taking care not to let the crankshaft timing sprocket fall out.
- the timing belt tensioning roller.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑

**WARNING**
The belt must be replaced with a new one if it has been removed.

**WARNING**
When replacing the belt, always replace the tension wheels and idler pulleys.

**WARNING**

Always degrease:

- the end of the crankshaft (timing end),
- the timing sprocket pressure faces and bore of the crankshaft,
- the contact surfaces of the crankshaft accessories pulley.

This is to avoid timing slippage.

This slippage leads to engine damage.

### II - PARTS AND CONSUMABLES FOR THE REPAIR

❑ **parts always to be replaced: Crankshaft accessories pulley bolts**,

❑ **parts always to be replaced: Timing belt tensioning roller**,

❑ **parts always to be replaced: Timing belt**.

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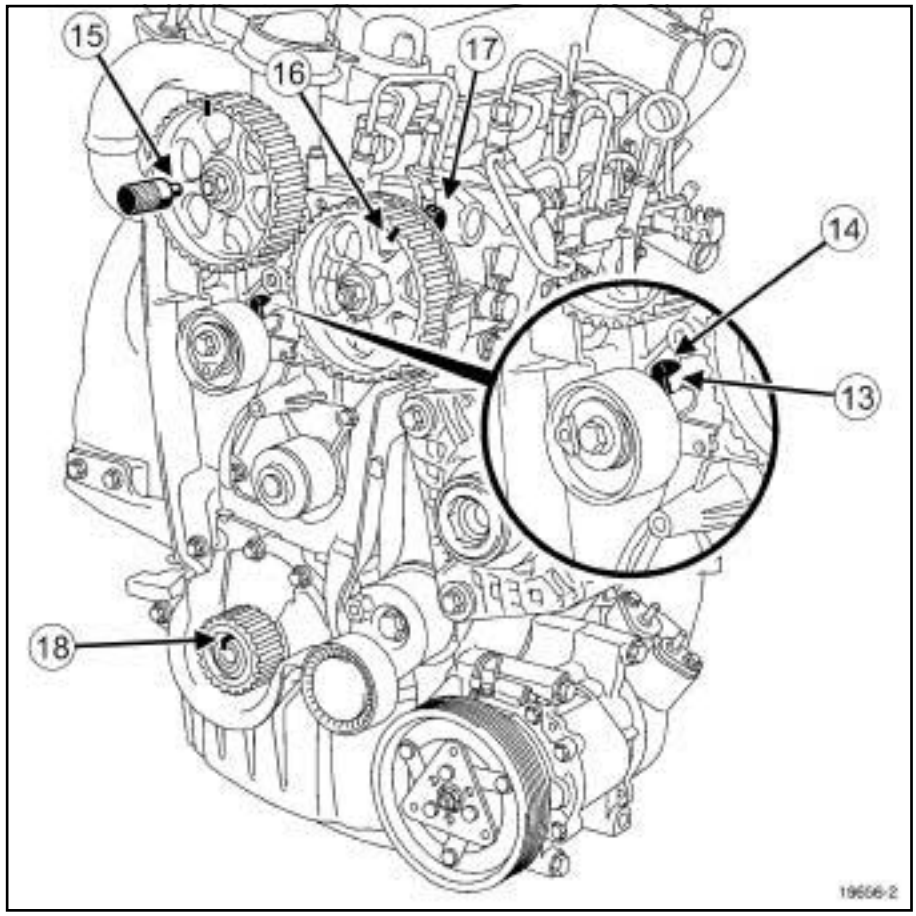
K9K, and 796

**III - REFITTING OPERATION**



19656-2

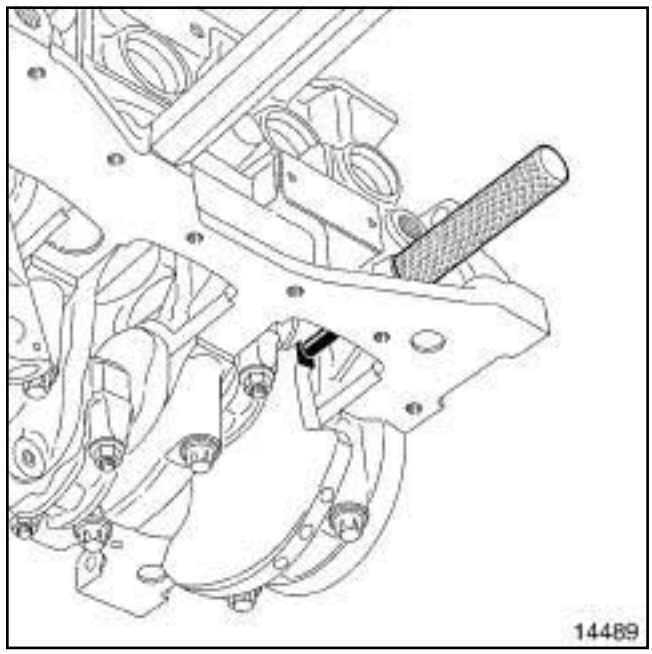
❏ Refit:

- the crankshaft timing sprocket,
- a new timing belt tensioning roller.

❏ Put the tensioning roller lug (**13**) in the cylinder head groove (**14**) .

❏ Engage the **(Mot. 1430)** in the camshaft pulley hole and the cylinder head hole at (**15**) , turning the camshaft using an **18 mm** offset wrench if necessary.

❏ Check that high-pressure pump pulley marking (**16**) is opposite the bolt head (**17**) .



14489

❏ Refit the **(Mot. 1489)**.

❏ Place the crankshaft against the **(Mot. 1489)** (the crankshaft groove ***(18)*** must be upwards).

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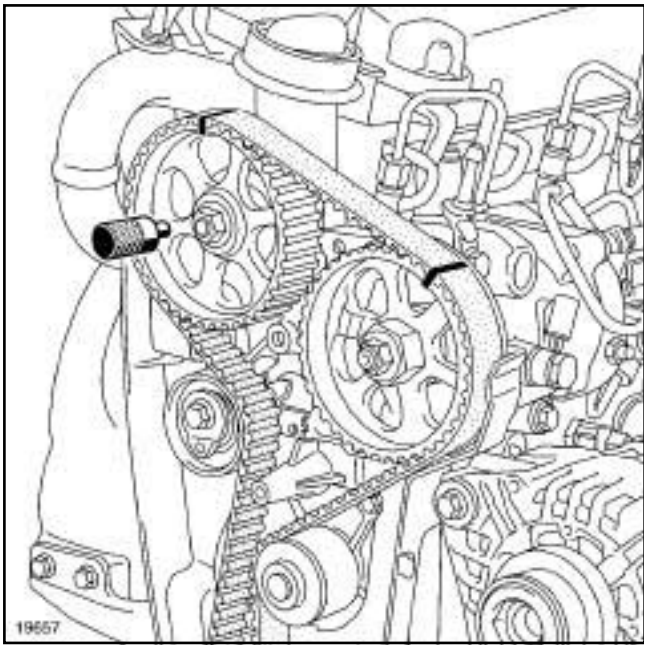
K9K, and 796

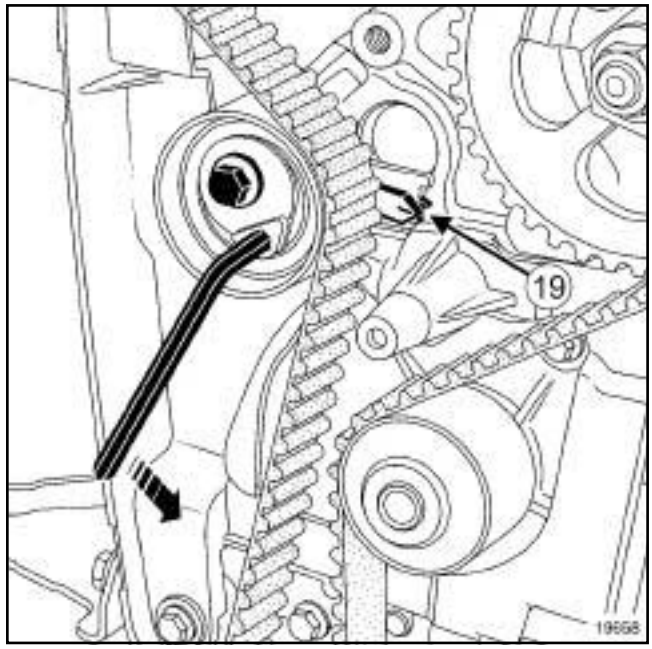


19657

❑ Fit the new timing belt, starting with the crankshaft sprocket, aligning the marks on the belt with those on the camshaft and high pressure pump pulleys.

Note:

There must be **19 timing belt tooth grooves** between the marks of the camshaft and high pressure pump pulleys and **51 timing belt tooth grooves** between the marks of the crankshaft timing sprocket and the high pressure pump pulley.



19658

❑ Position the timing belt tensioning roller adjustable index opposite the lug (**19**) by turning the eccentric cam anti-clockwise using a **6 mm** Allen key.

❑ Torque tighten the **timing belt tensioning roller bolt (27 N.m)**.

❑ Refit the accessories crankshaft pulley with a new bolt.

❑ Torque and angle tighten (crankshaft against the **(Mot. 1489)**) the **accessories pulley M14 bolt (120 N.m + 95° ± 15°)**.

❑ Remove:

- the **(Mot. 1430)**,
- the **(Mot. 1489)**.

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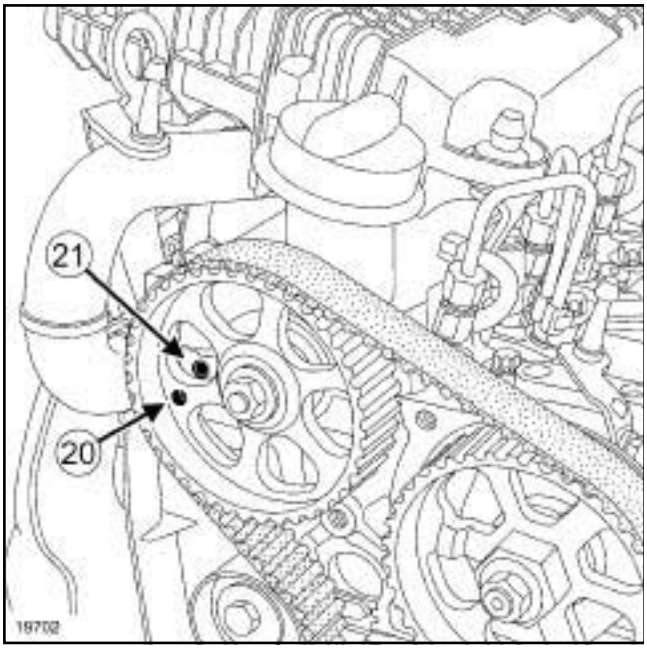
K9K, and 796

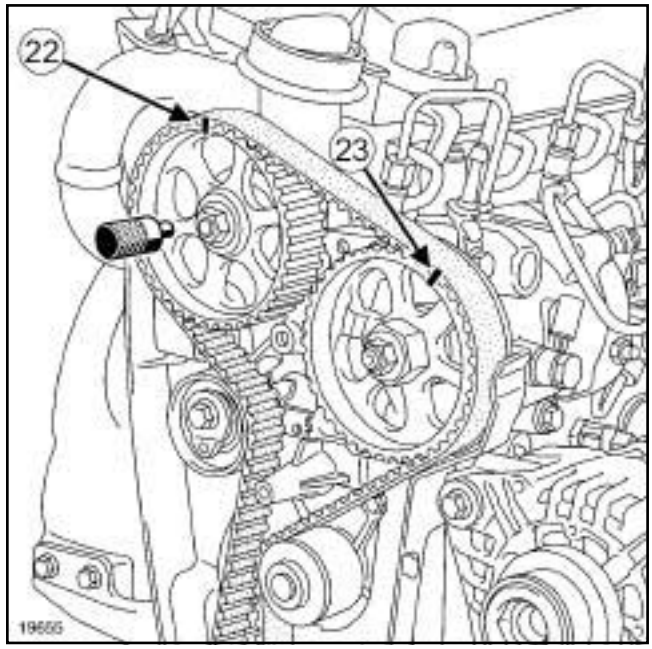


19702

❏ Rotate the crankshaft clockwise through two revolutions (timing end).

❏ Before the camshaft pulley hole (**20**) is opposite the cylinder head hole (**21**) , screw the **(Mot. 1489)** into the cylinder block.

❏ Bring the crankshaft slowly and smoothly into contact with the tool **(Mot. 1489)**.



19655

❏ Set the camshaft pulley using the **(Mot. 1430)**.

Note:

There should be **19 belt tooth grooves** between the marks on the camshaft pulley (**22**) and the high pressure pump pulley (**23**) .

❏ Remove:

- the **(Mot. 1489)**,
- the **(Mot. 1430)**.

Note:

After rotating the crankshaft through two revolutions, the tensioning roller adjustable index may be in one of two positions.

The rotation of the tension wheel eccentric depends on the position.

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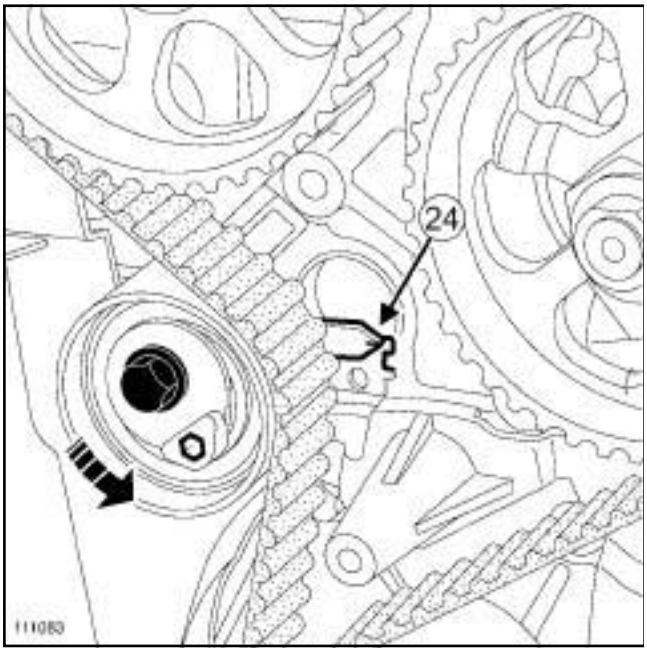
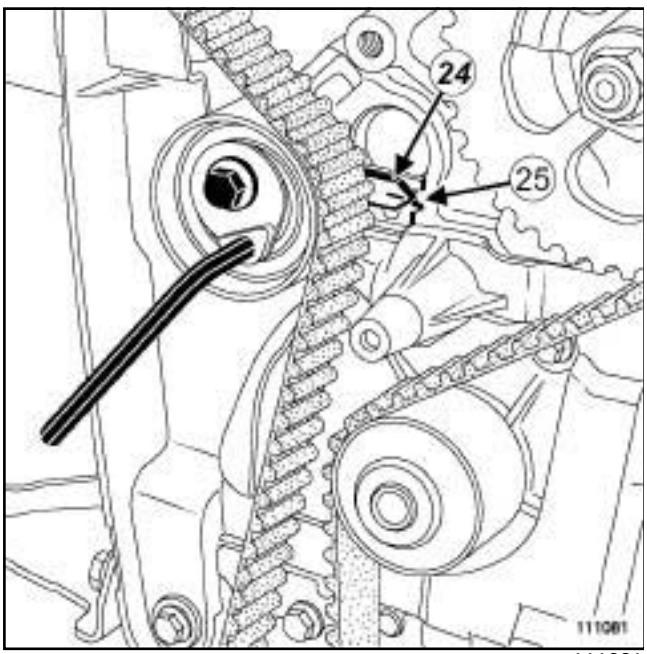
K9K, and 796

**1 - First position**




111083




111081

❏ Loosen the tensioning roller bolt by no more than one turn, holding it with a **6 mmAllen key.**

❏ Gradually align the adjustable index marker (**24**) in the middle of the timing window (**25**) , turning the key anti-clockwise.

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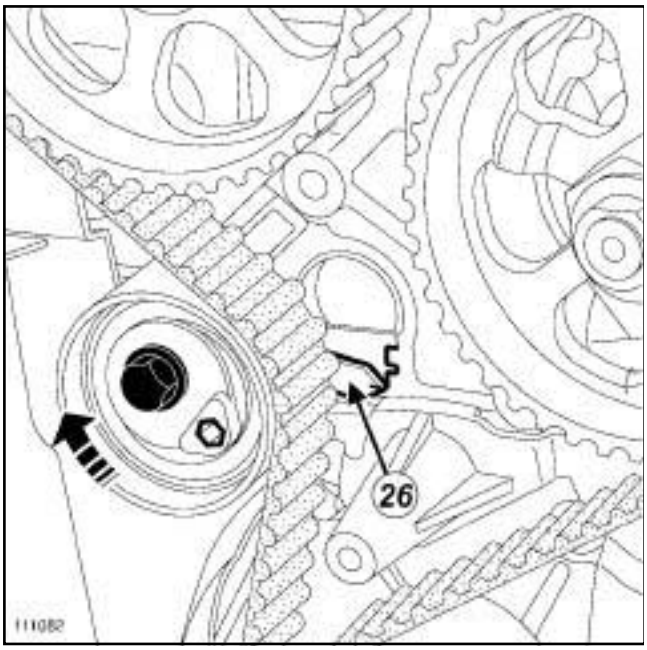
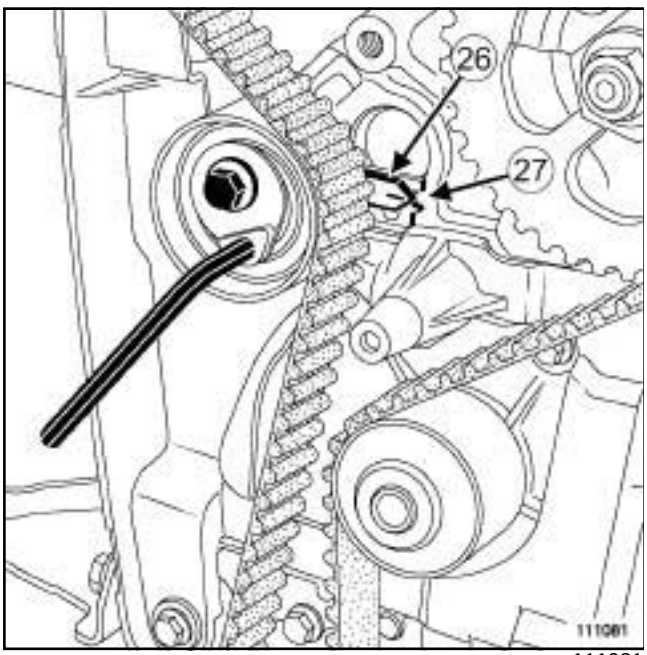
K9K, and 796

**2 - Second position**




111082




111081

❏ Loosen the tensioning roller bolt by one turn, holding it with a **6 mm** Allen key.

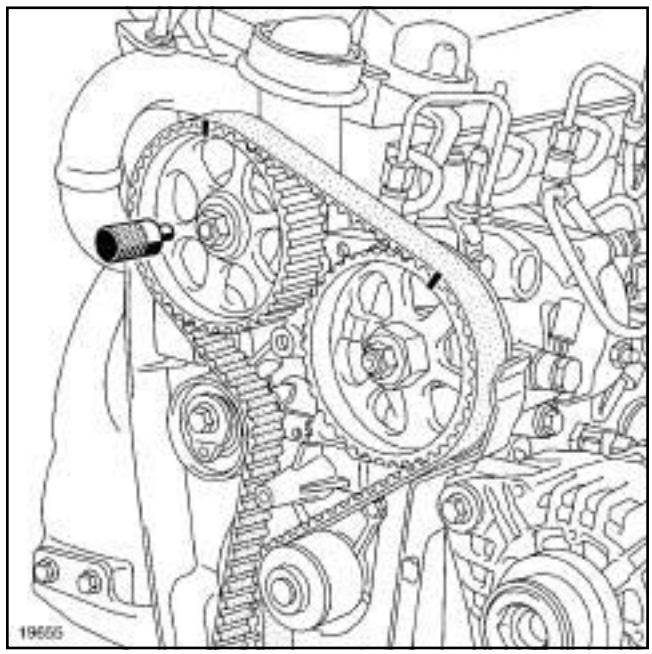
❏ Gradually align the adjustable index marker (**26**) in the middle of the timing window (**27**) , turning the key clockwise.

❏ Torque tighten the **timing belt tensioning roller bolt (27 N.m)**.

❏ Rotate the crankshaft clockwise through two revolutions (timing end).

❏ Before the camshaft pulley hole is opposite the cylinder head hole, screw the **(Mot. 1489)** into the cylinder block.

❏ Bring the crankshaft slowly and smoothly into contact with the tool **(Mot. 1489)**.




19655

❏ Set the camshaft pulley using the **(Mot. 1430)**.

❏ If the tool **(Mot. 1430)** does not engage, repeat the timing belt refitting operation.

❏ Remove:

- the **(Mot. 1489)**,
- the **(Mot. 1430)**.

**IV - FINAL OPERATION**

❏ Place a drop of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) on the threading of the TDC pin plug.

❏ Torque tighten the **TDC pin plug (25 N.m)**.

❏ Refit the right-hand suspended engine mounting support on the cylinder head.

❏ Torque tighten the **right-hand suspended engine mounting bolts (25 N.m)**.

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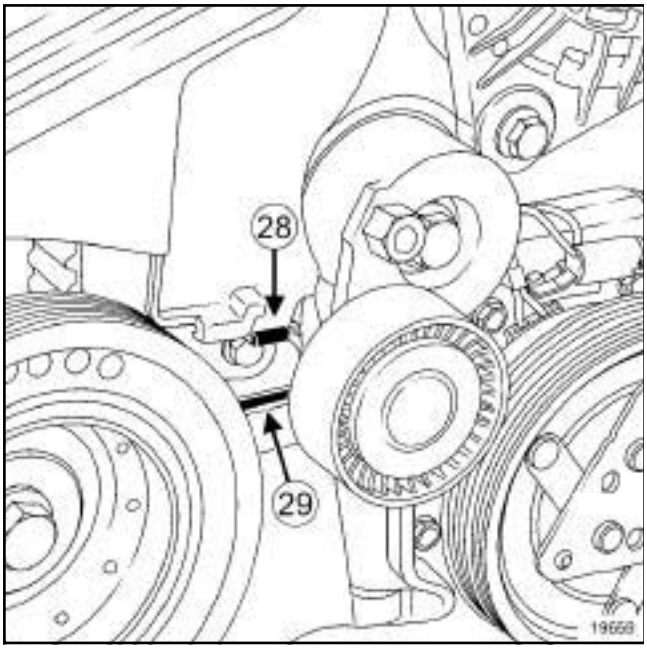
K9K, and 796



19659

❏ Refit the lower timing cover, positioning the tab (**28**) in the opening (**29**) on the inner cover.

❏ Clip on the lower timing cover.

❏ Refit:

- the upper timing cover,

- the upper timing cover bolt.

❏ Clip on the upper timing cover.

❏ Refit:

- the camshaft position sensor (see **13B**, **Diesel injection**, **Camshaft position sensor: Removal - Refitting**, page **13B-7**) ,

- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,

- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) , observing the marks made during removal.

❏ Remove the engine support tool **(Mot. 1453)**.

❏ Refit the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Rocker cover: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| rocker cover bolts 22, 23, 20 and 13 | **8 N.m** |
| rocker cover bolts 1 to 12, 14 to 19, 21 to 24 | **15 N.m** |
| rocker cover bolts 22, 23, 20 and 13 | **15 N.m** |
| flywheel end lifting eye bolts on the rocker cover | **11 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the throttle valve (see **12A**, **Fuel mixture**, **Throttle valve: Removal - Refitting**, page **12A-11**) ,
- the inlet distributor (see **12A**, **Fuel mixture**, **Inlet distributor: Removal - Refitting**, page **12A-12**) ,
- the timing end camshaft seals (see **11A**, **Top and front of engine**, **Camshaft seal, timing end: Removal - Refitting**, page **11A-56**) ,
- the ignition coils (see **17A**, **Ignition**, **Coils: Removal - Refitting**, page **17A-1**) ,
- the oil decanter (see **11A**, **Top and front of engine**, **Oil decanter: Removal - Refitting**, page **11A-68**) ,
- the flywheel end lifting eye on the rocker cover.

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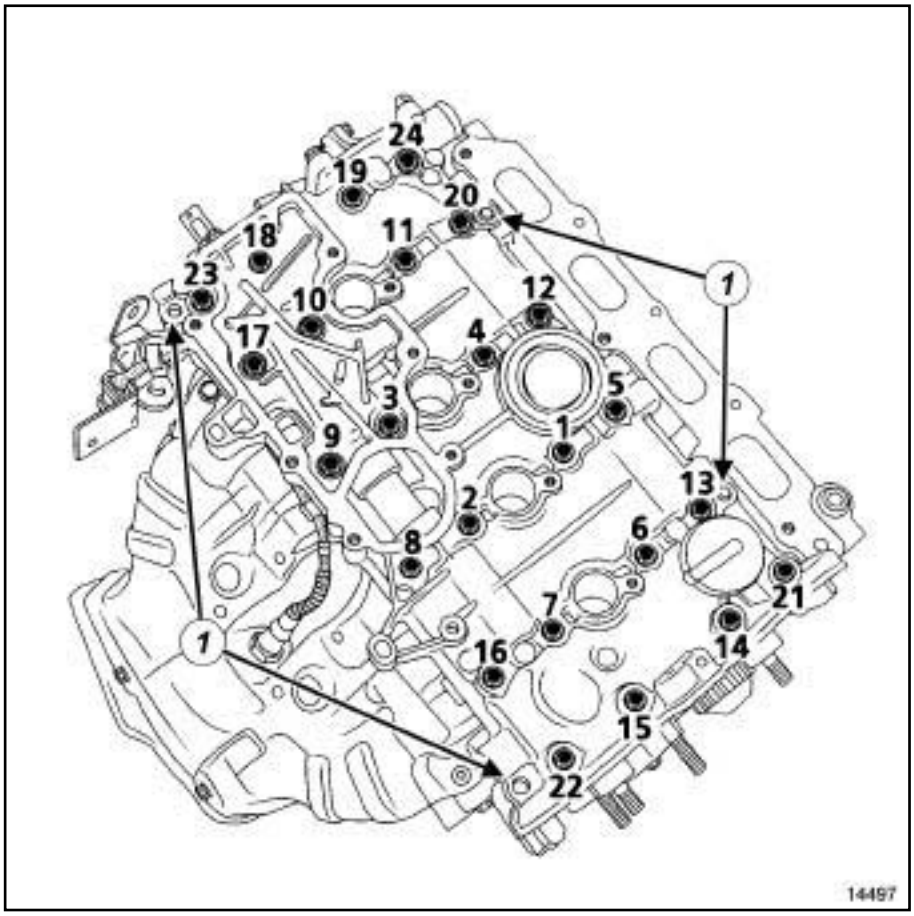
# Rocker cover: Removal - Refitting

K4M

## II - REMOVAL OPERATION




14497

- ❏ Remove the rocker cover bolts.
- ❏ Remove the rocker cover vertically by tapping the lugs (**1**) with a copper hammer.
- ❏ Remove the rocker cover.

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K4M

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑

**IMPORTANT**
Wear cut-resistant gloves during the operation.

**IMPORTANT**
Wear goggles with side protectors for this operation.

**WARNING**
Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

**WARNING**
Do not allow this product to drip onto the paintwork.

Clean the cylinder head carefully to prevent foreign bodies from entering the oil supply and return galleries.

Failure to follow this advice could lead to the blocking of the various oil inlet galleries, which would quickly result in engine damage.

Note:
The gasket faces on the rocker cover must be clean, dry and free from grease (avoid finger marks).

❑ Clean the gasket face of the rocker cover and cylinder head with **SUPER CLEANING AGENT FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to dissolve any pieces of seal that are still attached.

❑ Apply the product to the section to be cleaned.

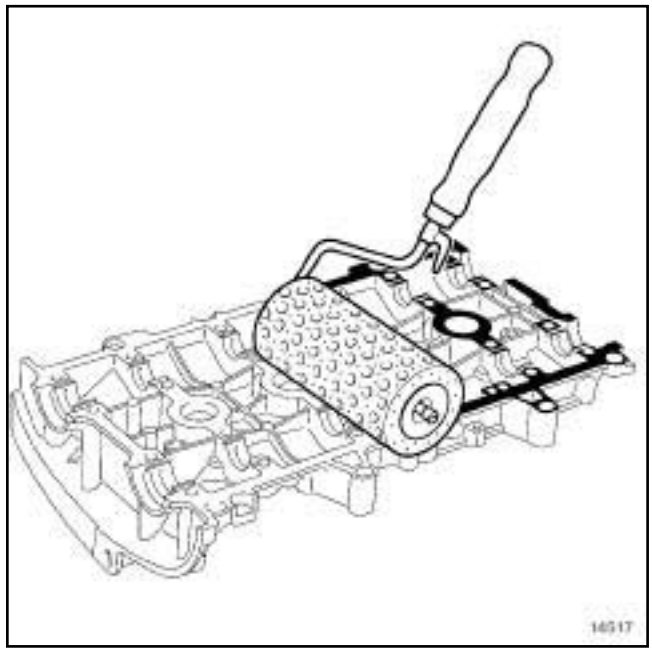
❑ Wait approximately fifteen minutes, then remove any residue with a wooden spatula.

❑ Lubricate the cylinder head camshaft bearings with engine oil.

❑

**WARNING**
Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.)

Note:
Do not put oil on the gasket face of the cylinder head cover.



14517

❑ Using a stipple roller, apply **RESIN ADHESIVE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the gasket face until it is well coated.

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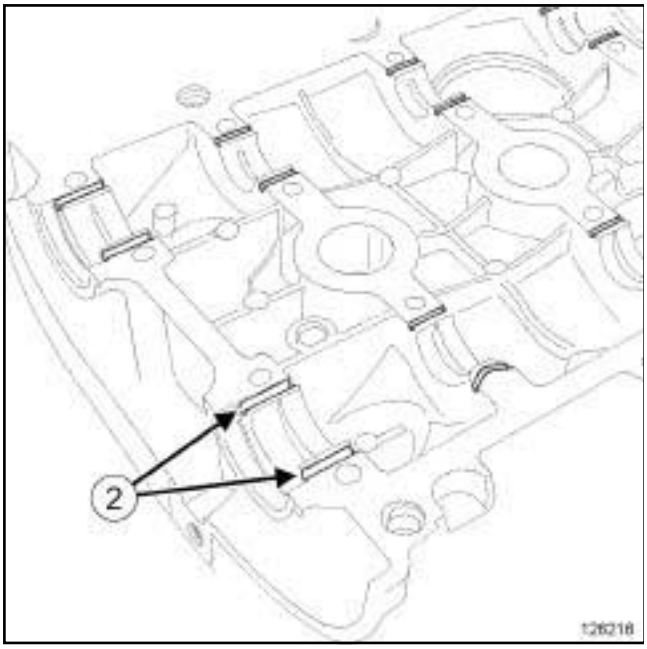
# Rocker cover: Removal - Refitting

K4M




126216

❑ Use a cloth to remove any **RESIN GLUE** in the bearing channels (**2**) on the rocker cover.

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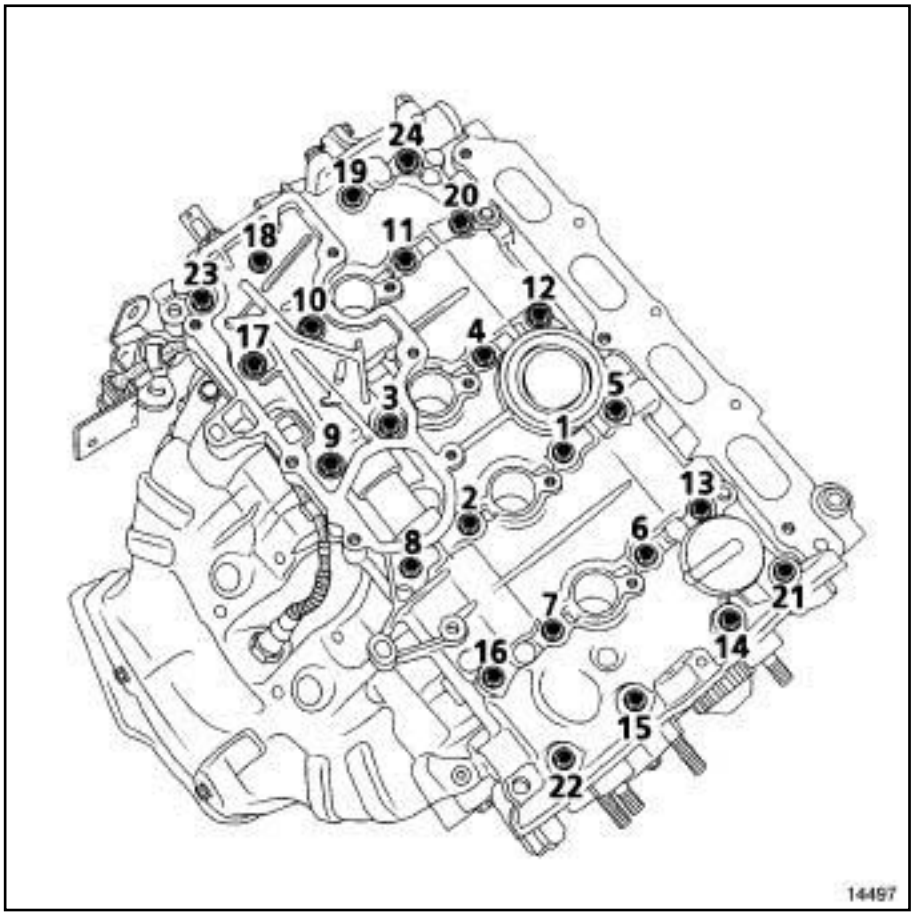
# Rocker cover: Removal - Refitting

K4M

## II - REFITTING OPERATION



14497

❑ Refit the rocker cover.

❑ Tighten to torque and in order:

- **rocker cover bolts 22, 23, 20 and 13 (8 N.m)**,
- **rocker cover bolts 1 to 12, 14 to 19, 21 to 24 (15 N.m)**.

❑ Loosen bolts 22, 23, 20 and 13, in order.

❑ Torque tighten in order **rocker cover bolts 22, 23, 20 and 13 (15 N.m)**.

## III - FINAL OPERATION

❑ Refit the flywheel end lifting eye.

❑ Torque tighten the **flywheel end lifting eye bolts on the rocker cover (11 N.m)**.

❑ Refit:

- the oil decanter (see **11A**, **Top and front of engine**, **Oil decanter: Removal - Refitting**, page **11A-68**) ,
- the ignition coils (see **17A**, **Ignition**, **Coils: Removal - Refitting**, page **17A-1**) ,
- the camshaft seals (see **11A**, **Top and front of engine**, **Camshaft seal, timing end: Removal - Refitting**, page **11A-56**) ,
- the inlet distributor (see **12A**, **Fuel mixture**, **Inlet distributor: Removal - Refitting**, page **12A-12**) ,
- the throttle valve (see **12A**, **Fuel mixture**, **Throttle valve: Removal - Refitting**, page **12A-11**) ,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Rocker cover: Removal - Refitting

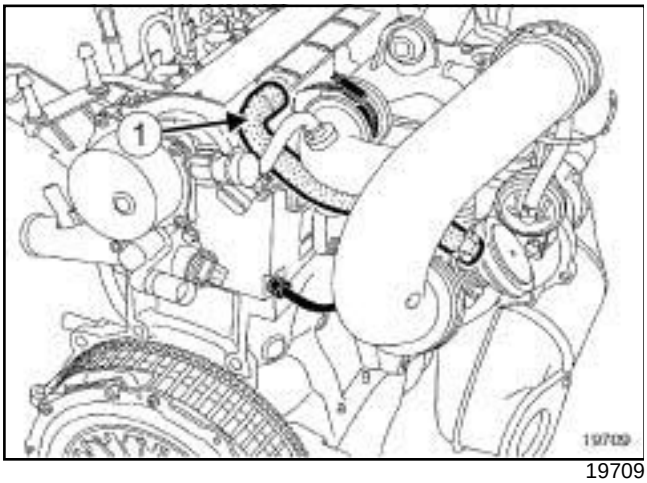
K9K

| Tightening torques ▽ | |
|---|---|
| rocker cover bolts | **12 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .




19709

❏ Remove the oil vapour rebreathing hose (**1**) .

### II - REMOVAL OPERATION

❏ Remove:

- the rocker cover bolts,
- the rocker cover,
- the rocker cover seal.

## REFITTING

### I - REFITTING PREPARATION OPERATION

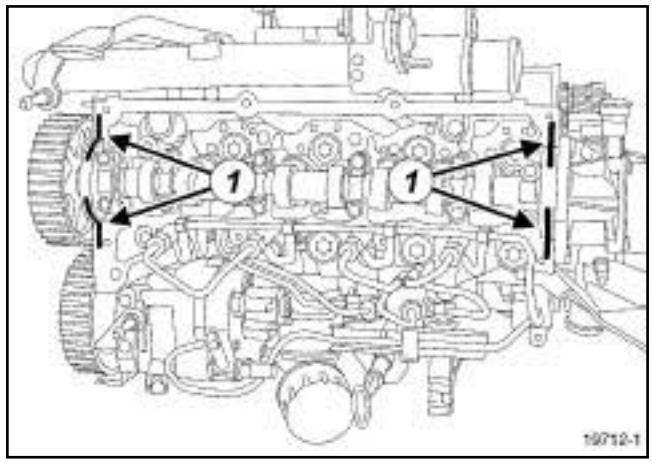
❏ Clean the cylinder head joint face using **GREY ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

❏ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease:

- the cylinder head joint face,
- the housing of the rocker cover seal, if reusing.

❏ **parts always to be replaced: rocker cover seal**.

### II - REFITTING OPERATION




19712-1

❏

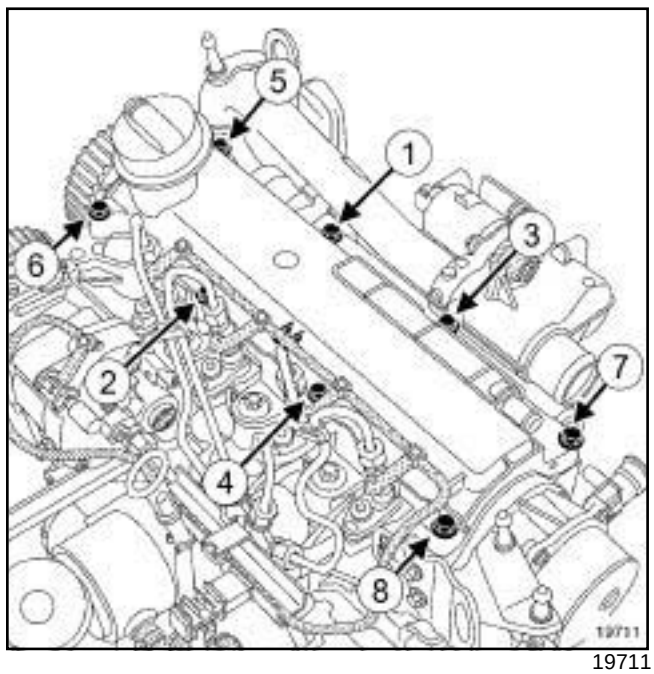
**WARNING**

Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

❏ Deposit four beads (**1**) of **SILICONE ADHESIVE SEALANT** that are **2 mm** in diameter and **10 mm** long.

❏ Refit:

- the rocker cover,
- the rocker cover bolts.




19711

❏ Torque tighten in order the **rocker cover bolts (12 N.m)**.

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# Rocker cover: Removal - Refitting

K9K

**III - FINAL OPERATION**

❑ Connect the oil vapour rebreathing pipe.

❑ Refit the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

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# Camshaft: Removal - Refitting

K4M

| Equipment required |
| --- |
| roller-type stud removal tool |

| Tightening torques ▽ | |
| --- | --- |
| the camshaft dowel | **8 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the throttle valve (see **12A**, **Fuel mixture**, **Throttle valve: Removal - Refitting**, page **12A-11**) ,
- the inlet distributor (see **12A**, **Fuel mixture**, **Inlet distributor: Removal - Refitting**, page **12A-12**) ,
- the ignition coils (see **17A**, **Ignition**, **Coils: Removal - Refitting**, page **17A-1**) ,
- the rocker cover (see **11A**, **Top and front of engine**, **Rocker cover: Removal - Refitting**, page **11A-42**) ,
- the timing end camshaft seals (see **11A**, **Top and front of engine**, **Camshaft seal, timing end: Removal - Refitting**, page **11A-56**) .

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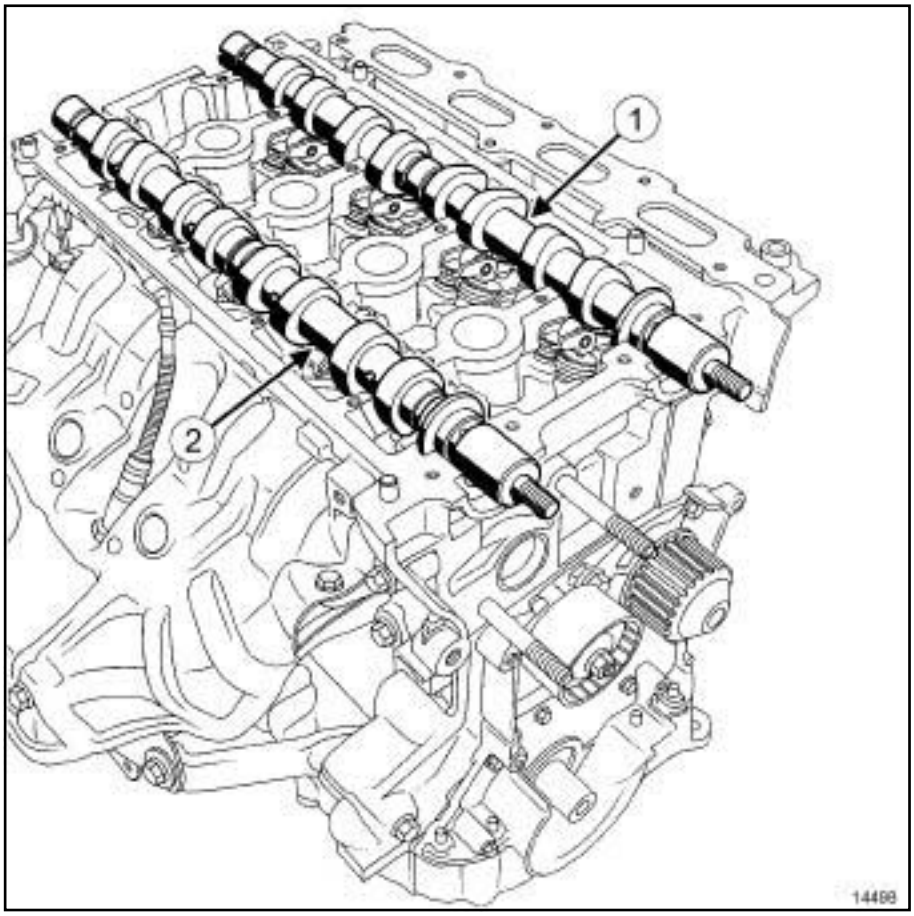
# Camshaft: Removal - Refitting

K4M

**II - REMOVAL OPERATION**



14498

❑ Remove:

- the inlet camshaft (**1**) ,
- the exhaust camshaft (**2**) .

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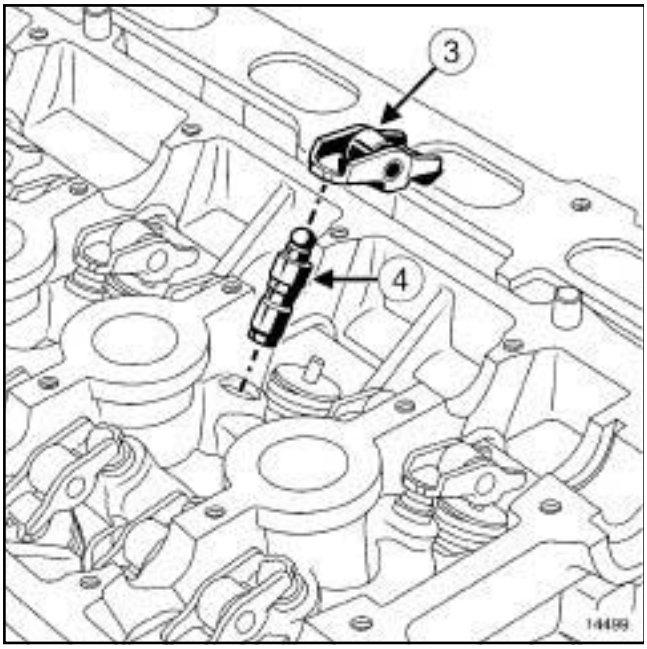
# Camshaft: Removal - Refitting

K4M




14499

❑ Remove:

- the valve rockers (**3**) ;
- the hydraulic tappets (**4**) .

Note:

To prevent any risk of unpriming the hydraulic tappets make sure that they are vertical.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Refit the camshafts while positioning them correctly (see ) (Technical Note 6023A, 10A, Engine and peripherals).

Note:

It is essential to reprime the hydraulic tappets as these may become drained if removed for a long time.

❑ To check if re-priming is necessary, press the top of the tappet with your thumb. If the tappet piston depresses, immerse the tappets in a container full of diesel then reprime them.

**Replacing a camshaft dowel**

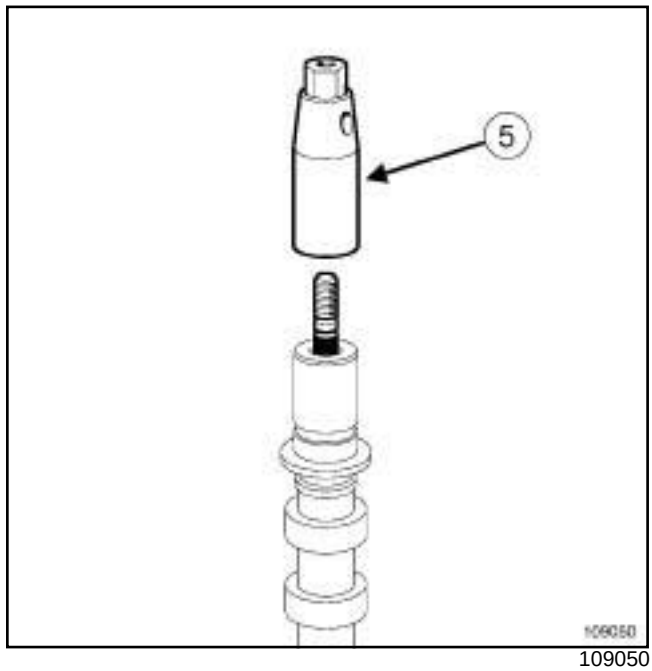
❑

Note:

It is essential to replace the camshaft dowel if it comes loose at the same time as the nut.

***a - Removal***

❑ Place the camshaft in a vice with **aluminium jaws**.




109050

❑ Remove the dowel using a **roller-type stud removal tool** (**5**) .

***b - Cleaning the camshaft***

❑

Note:

Clean the thread hole of the camshaft carefully to prevent foreign bodies from entering the latter.

Failure to follow this advice could lead to the blocking of the oil inlet holes, which would quickly result in engine damage.

***c - Refitting***

❑ Place the camshaft in a vice with **aluminium jaws**.

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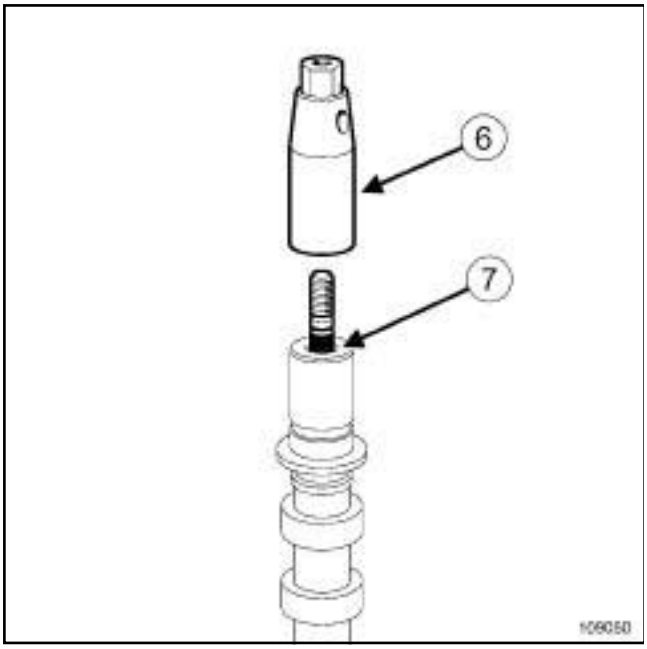
# Camshaft: Removal - Refitting

K4M




109050

❏ Refit the new camshaft dowel (precoated section (**7**) on the camshaft side).

❏ Torque tighten **the camshaft dowel (8 N.m)** using a **roller-type stud removal tool** (**6**) .

### II - REFITTING OPERATION

❏ Refit:

- the hydraulic tappets,
- the valve rockers,
- the inlet camshaft, by lubricating the inlet camshaft bearings,
- the exhaust camshaft, by lubricating the exhaust camshaft bearings.

### III - FINAL OPERATION

❏ Refit:

- the rocker cover (see **11A**, **Top and front of engine**, **Rocker cover: Removal - Refitting**, page **11A-42**) ,
- the camshaft seals (see **11A**, **Top and front of engine**, **Camshaft seal, timing end: Removal - Refitting**, page **11A-56**) ,
- the ignition coils (see **17A**, **Ignition**, **Coils: Removal - Refitting**, page **17A-1**) ,
- the inlet distributor (see **12A**, **Fuel mixture**, **Inlet distributor: Removal - Refitting**, page **12A-12**) ,
- the throttle valve (see **12A**, **Fuel mixture**, **Throttle valve: Removal - Refitting**, page **12A-11**) ,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Camshaft: Removal - Refitting

K9K

| Tightening torques ▽ | |
|---|---|
| bolts of the camshaft bearings | **10 N.m** |

## REMOVAL

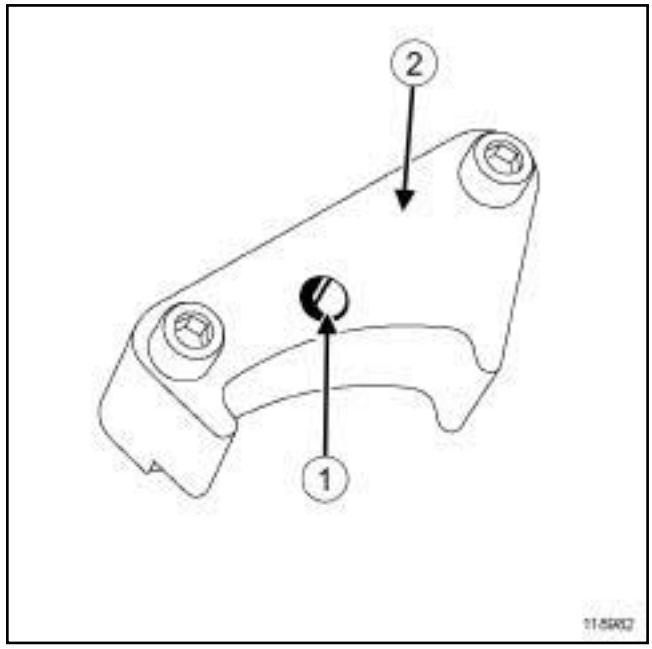
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

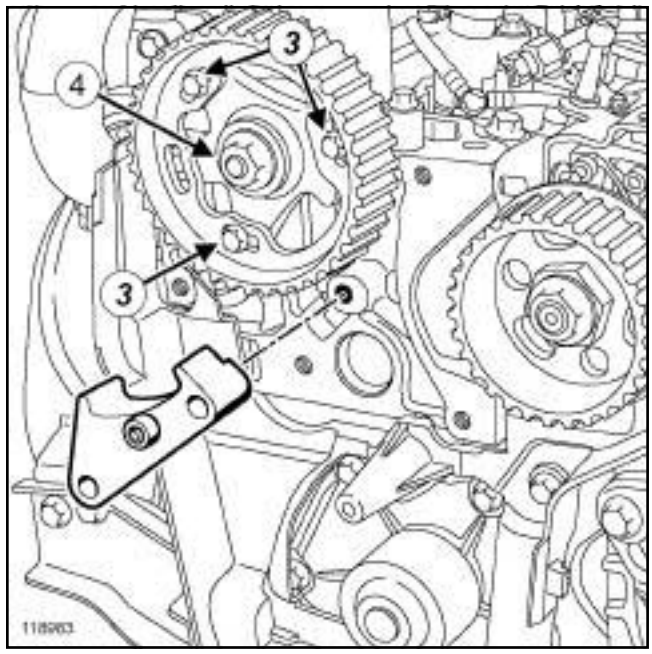
❏ Remove:

- the air filter box (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front right-hand wheel arch liner partially (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the engine undertray bolts,
- the engine undertray,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the camshaft position sensor (see **13B**, **Diesel injection**, **Camshaft position sensor: Removal - Refitting**, page **13B-7**) ,
- the crankshaft accessories pulley (see **11A**, **Top and front of engine**, **Crankshaft accessories pulley: Removal - Refitting**, page **11A-10**) ,
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the vacuum pump (see **Vacuum pump: Removal - Refitting**) (37A, Mechanical component controls),
- the rocker cover (see **11A**, **Top and front of engine**, **Rocker cover: Removal - Refitting**, page **11A-42**) .




118982

❏ Increase the hole (**1**) of the (**2**) using an **8.5 mm** drill bit.




118983

❏ Undo the camshaft pulley hub bolts (**3**) .

❏ Fit theon the cylinder head to lock the camshaft pulley wheel.

❏ Tighten the camshaft pulley hub bolts ***(3)*** .

❏ Remove:

- the nut ***(4)*** from the camshaft pulley,
- the,
- the camshaft pulley.

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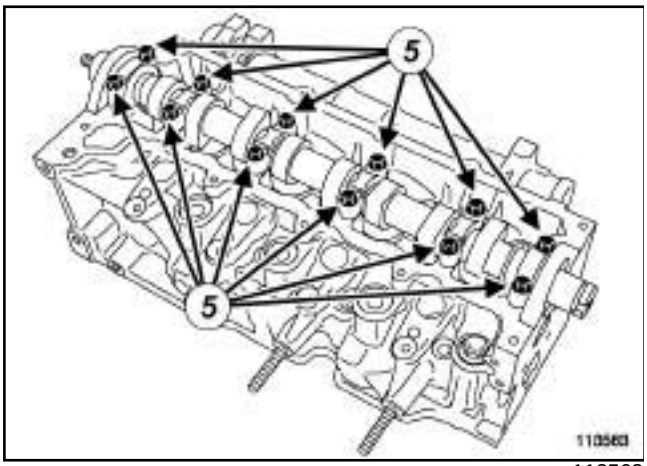
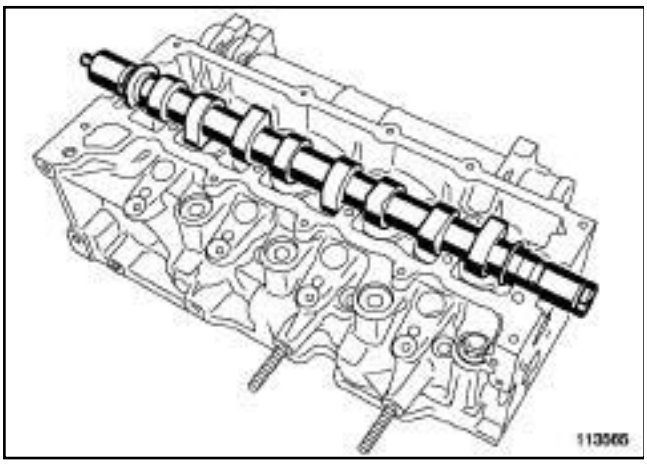
# Camshaft: Removal - Refitting

K9K

## II - OPERATION FOR REMOVAL OF PART CONCERNED



113563


113565

❑ Mark the position of the camshaft bearings.

❑ Remove:

- the camshaft bearing bolts ***(5)*** ,
- the camshaft bearings,
- the camshaft,
- the timing end camshaft seal.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Camshaft seal on timing end**.

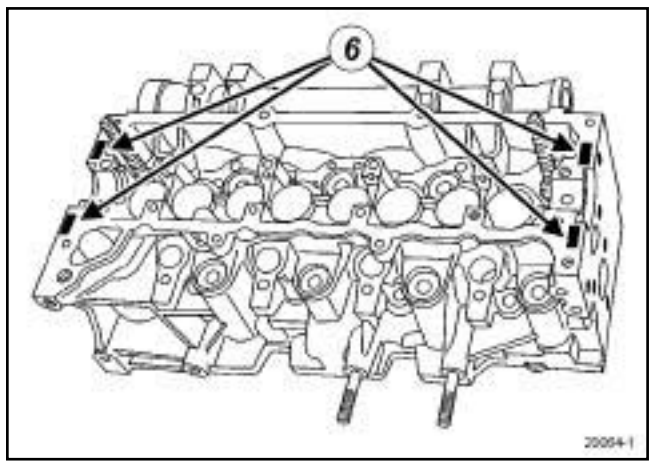
**WARNING**
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

**WARNING**
Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

❑ Use **GREY ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the bearing faces of the camshaft bearings.

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the bearing faces of the camshaft bearings on the cylinder head,
- the bearing faces of the camshaft bearings on the camshaft bearings.



20064-1

❑

**WARNING**
Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

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# Camshaft: Removal - Refitting

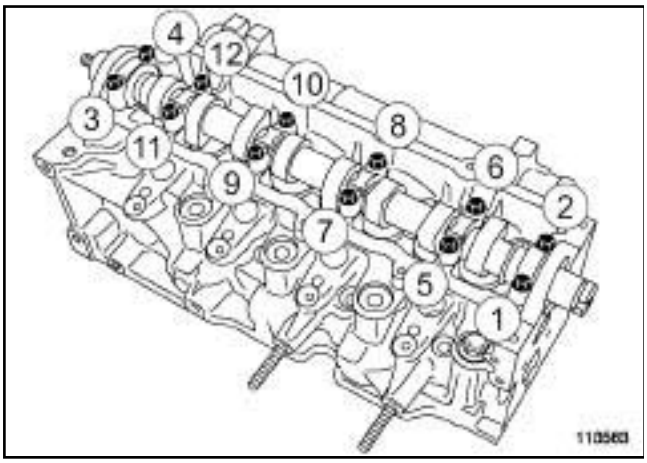
K9K

❑ Apply four beads (**6**) of **RESIN ADHESIVE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) **7 mm** in diameter on the cylinder head.

### II - REFITTING OPERATION FOR PART CONCERNED

❑ Fit the camshaft in place by placing the camshaft groove on the timing end vertically and facing upwards.

❑ Refit the camshaft bearings, observing their original positions (bearing **No. 1** at the flywheel end).



113563

❑ Refit the camshaft bearing bolts (**1**) , (**3**) , (**4**) and (**2**) in order.

❑ Tighten the camshaft bearing bolts ***(1)*** , ***(3)*** , ***(4)*** and ***(2)*** in order.

❑ Refit the camshaft bearing bolts in order.

❑ Tighten to torque and in order the **bolts of the camshaft bearings (10 N.m)**.

❑ Check and adjust (if necessary) the valve clearance (see **Valves: Adjustment**) .

### III - FINAL OPERATION

❑ Refit:

- the camshaft seal (see **11A**, **Top and front of engine**, **Camshaft seal, timing end: Removal - Refitting**, page **11A-56**) ,
- the rocker cover (see **11A**, **Top and front of engine**, **Rocker cover: Removal - Refitting**, page **11A-42**) ,
- the vacuum pump (see **Vacuum pump: Removal - Refitting**) (37A, Mechanical component controls),
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the crankshaft accessories pulley (see **11A**, **Top and front of engine**, **Crankshaft accessories pulley: Removal - Refitting**, page **11A-10**) ,
- the camshaft position sensor (see **13B**, **Diesel injection**, **Camshaft position sensor: Removal - Refitting**, page **13B-7**) ,
- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the engine undertray,
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the air filter box (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Camshaft seal, timing end: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| inlet camshaft hub nut | **30 N.m + 84° ± 4°** |
| exhaust camshaft hub nut | **30 N.m + 84° ± 4°** |

## REMOVAL

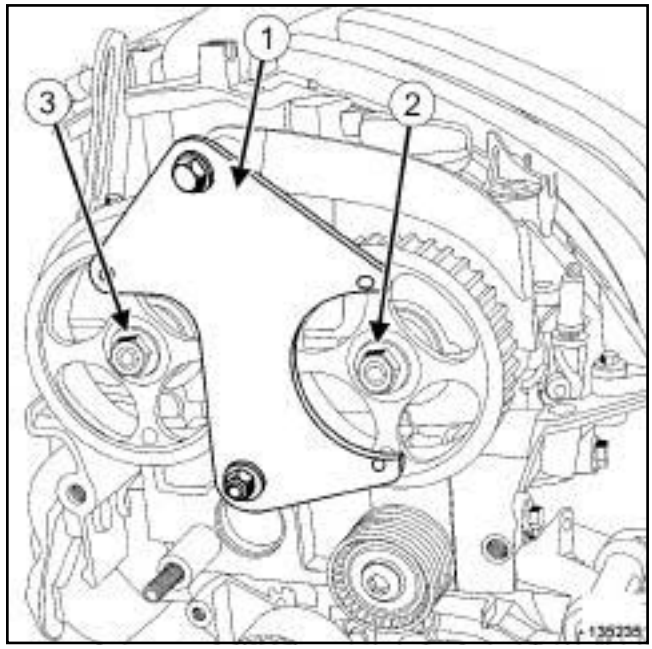
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the throttle valve (see **12A**, **Fuel mixture**, **Throttle valve: Removal - Refitting**, page **12A-11**) ,
- the air inlet distributor (see **12A**, **Fuel mixture**, **Inlet distributor: Removal - Refitting**, page **12A-12**) ,
- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) .




135235

❏ Fit the locking tool (**1**) on the camshaft pulleys.

❏ Remove:

- the inlet camshaft pulley nut (**2**) ,
- the exhaust camshaft pulley nut (**3**) ,
- the,
- the inlet camshaft pulley,
- the exhaust camshaft pulley.

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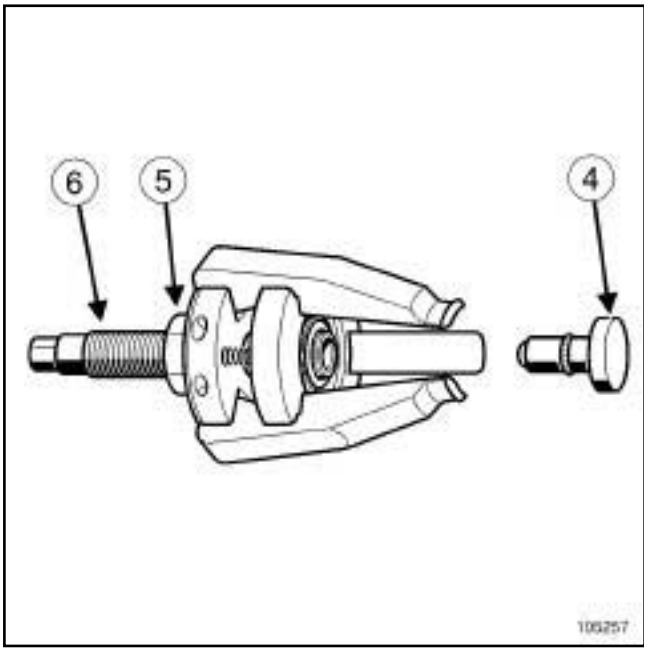
# Camshaft seal, timing end: Removal - Refitting

K4M

## II - REMOVAL OPERATION




105257

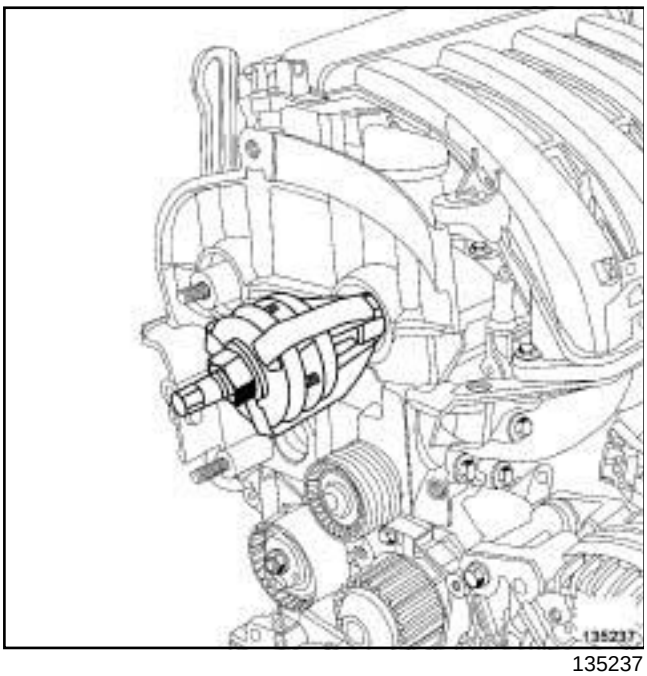
❑

Note:

The inlet and exhaust camshaft seals are removed using the.

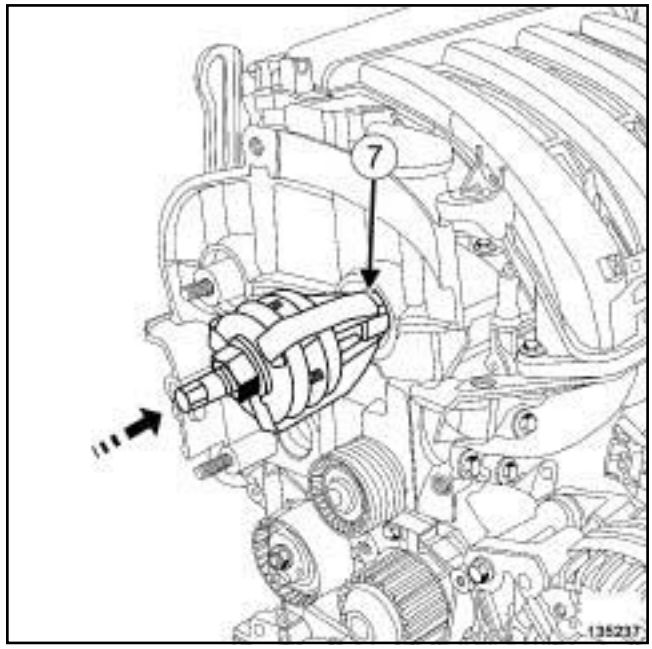
❑ Always remove the end piece (**4**) of the tool.

❑ Loosen bolts (**5**) and (**6**) fully from the.



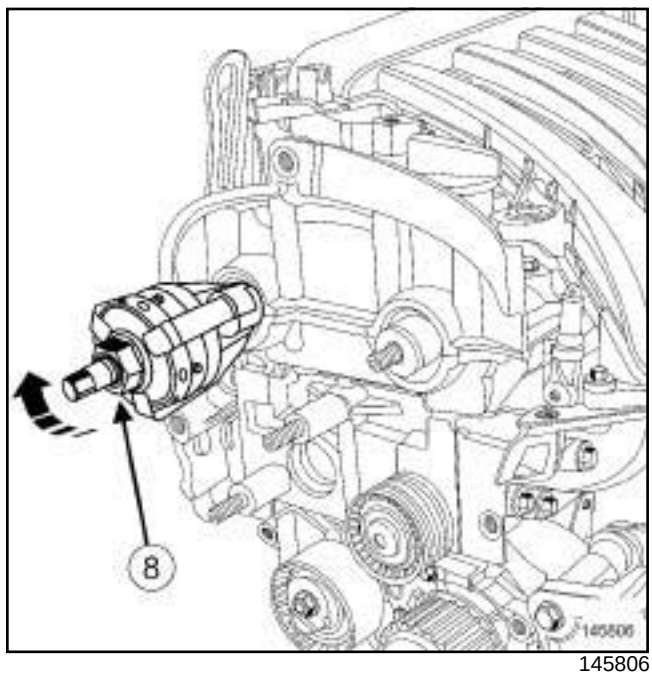

135237

❑ Position the claws of theon the camshaft.




135237

❑ Push theuntil contact is made between the ends of the claws (**7**) and the camshaft seal.




145806

❑ Separate the claws by turning the nut (**8**) clockwise using an open-jawed spanner.

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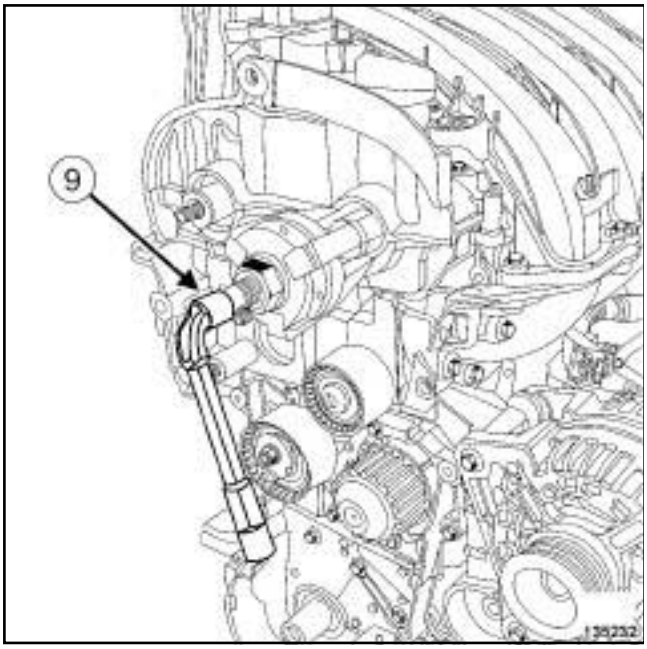
# Camshaft seal, timing end: Removal - Refitting

K4M




135232

❑ Remove the camshaft seal by turning the bolt (**9**) clockwise.

❑ Repeat the previous operations for the other camshaft seal.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Camshaft seal on timing end**

❑ **parts always to be replaced: Exhaust camshaft pulley nut**

❑ **Always replace the inlet camshaft pulley nut.**

**WARNING**

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the seal mating face of each camshaft,

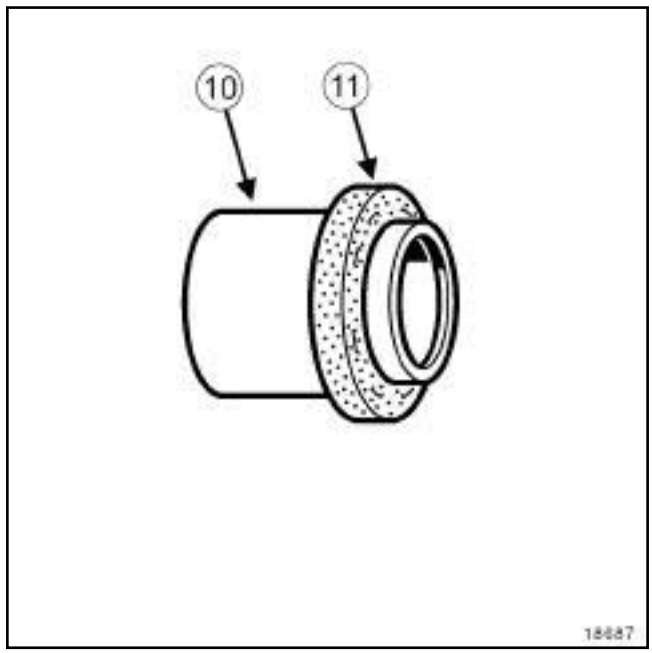
- the camshaft seal housings.

Note:

It is strictly forbidden to lubricate the outer diameter of the ring before fitting.

### II - REFITTING OPERATION

**Fitting the camshaft seal.**




18687

❑

Note:

Always hold the camshaft seal with the protector (**10**) when handling, as this type of seal is very fragile. It is strictly forbidden to touch seal; (**11**) this is to prevent any oil leaks once the oil seal is fitted to the engine.

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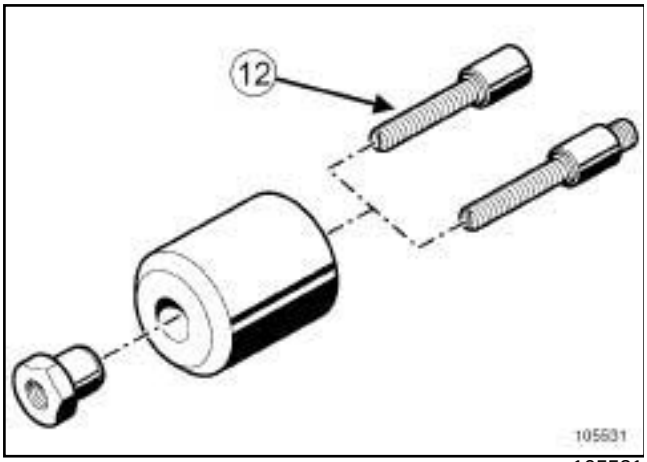
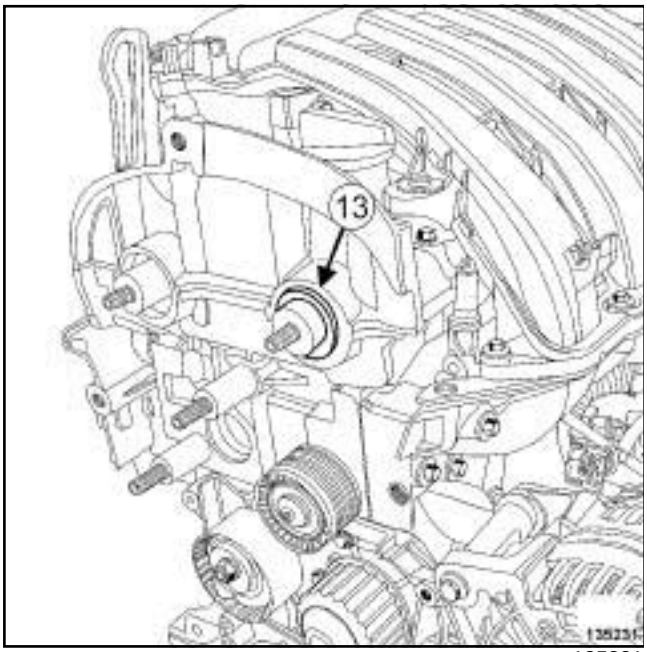
# Camshaft seal, timing end: Removal - Refitting

K4M



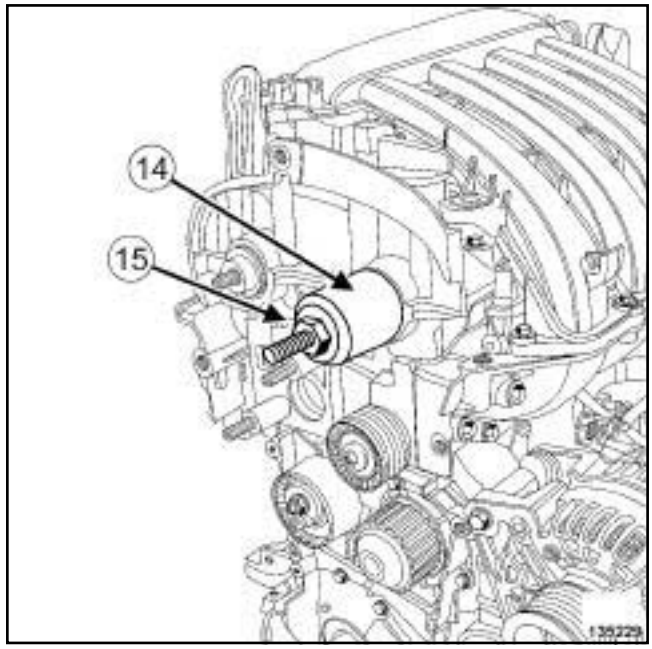

105531




135231

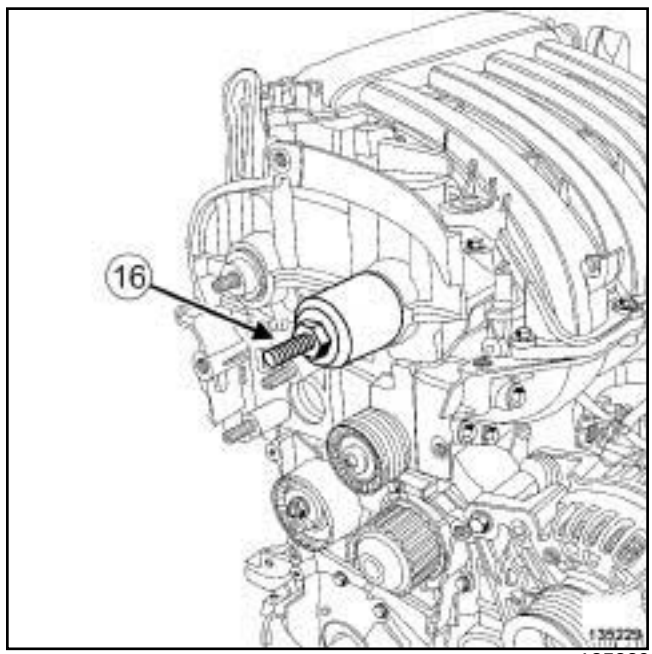
❑ Fit the protector fitted with a new seal (**13**) on the inlet and exhaust camshaft, taking care not to touch the seal.

❑ Screw on the stud (**12**) of the toolon the inlet and exhaust camshafts.




135229

❑ Fit the cover (**14**) and the collar nut (**15**) of the.




135229

❑ Screw on the collar nut until the cover touches the cylinder head.

❑ Remove:

- the nut,
- the cover,
- the threaded rod (**16**) .

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# Camshaft seal, timing end: Removal - Refitting

K4M

**III - FINAL OPERATION**

❏ Refit:

- the inlet camshaft pulley with a new nut,
- the exhaust camshaft pulley with a new nut.

❏ Fit the locking toolon the camshaft pulleys.

❏ Torque tighten:

- the **inlet camshaft hub nut (30 N.m + 84° ± 4°)**,
- the **exhaust camshaft hub nut (30 N.m + 84° ± 4°)**.

❏ Remove the locking tool.

❏ Refit:

- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the inlet distributor (see **12A**, **Fuel mixture**, **Inlet distributor: Removal - Refitting**, page **12A-12**) ,
- the throttle valve (see **12A**, **Fuel mixture**, **Throttle valve: Removal - Refitting**, page **12A-11**) ,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Camshaft seal, timing end: Removal - Refitting

K9K

| Special tooling required | |
|---|---|
| **Mot. 1430** | Set of 5 crankshaft and camshaft pulley timing pins. |

| Tightening torques ▽ | |
|---|---|
| camshaft stud | **12 N.m** |
| camshaft pulley nut | **30 N.m + 86° ± 6°.** |

## REMOVAL

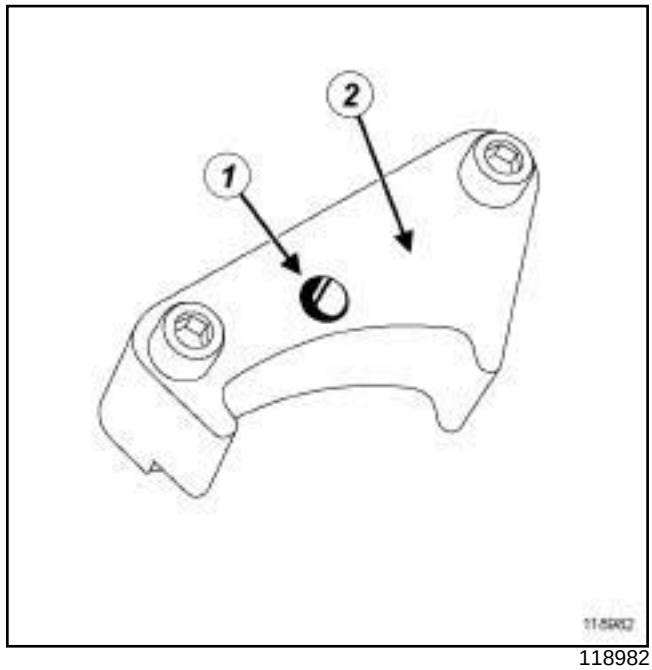
### I - REMOVAL PREPARATION OPERATION

❑ Remove the front engine cover.

❑ Remove:

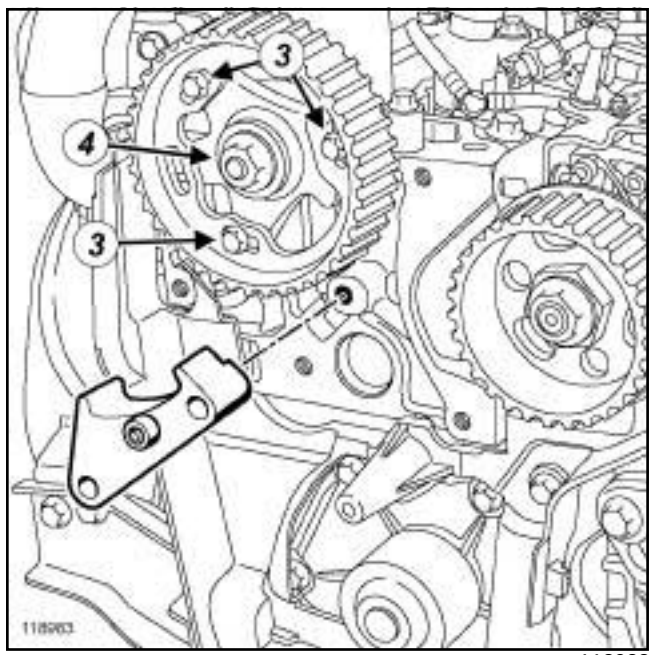
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the engine undertray bolts,
- the engine undertray,
- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the camshaft position sensor (see **13B**, **Diesel injection**, **Camshaft position sensor: Removal - Refitting**, page **13B-7**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the crankshaft accessories pulley (see **11A**, **Top and front of engine**, **Crankshaft accessories pulley: Removal - Refitting**, page **11A-10**) ,
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the **(Mot. 1430)**.

### II - REMOVAL OPERATION




118982

❑ Increase the hole (**1**) of the (**2**) using an **8.5 mm** drill bit.




118983

❑ Undo the camshaft pulley hub bolts (**3**) .

❑ Fit theon the cylinder head to lock the camshaft pulley wheel.

❑ Tighten the camshaft pulley hub bolts (**3**) .

❑ Remove:

- the nut (**4**) from the camshaft pulley,
- the,

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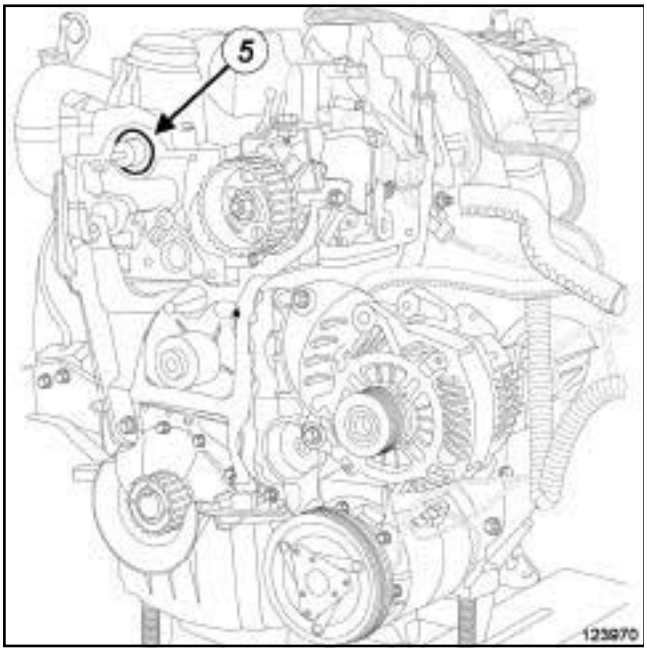
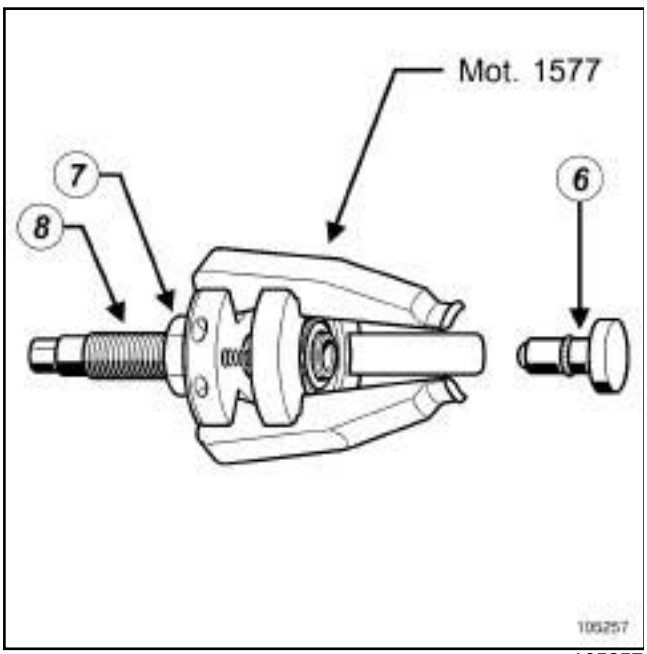
# Camshaft seal, timing end: Removal - Refitting

K9K

- the camshaft pulley.




123970




105257

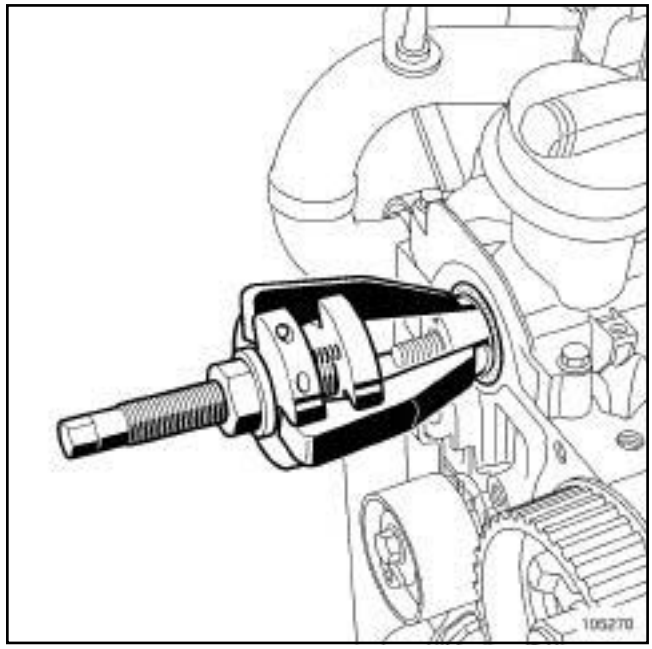
❑

Note:

The camshaft seal is removed using the.

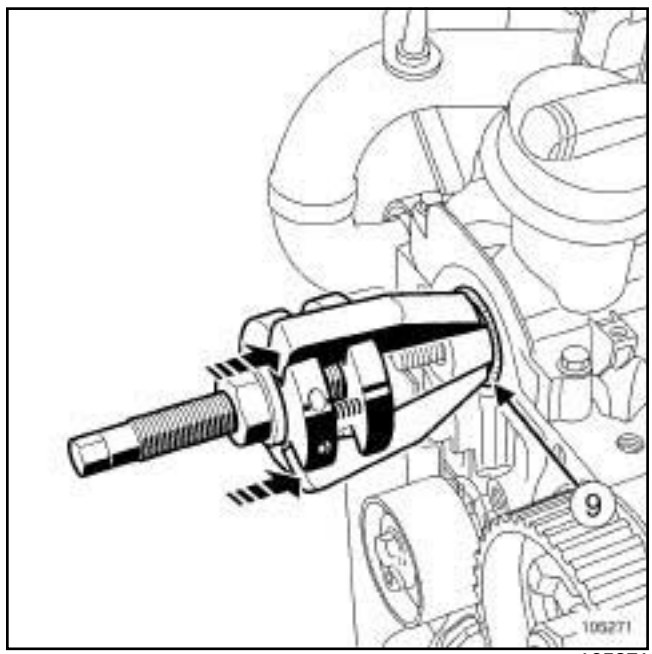
❑ Remove the camshaft seal (**5**) making sure that the end piece (**6**) of the toolis always removed.

❑ Loosen bolts (**7**) and (**8**) fully from the.




105270

❑ Position the claws of theon the camshaft.




105271

❑ Push the tooluntil contact is made between the ends (**9**) of the claws and the camshaft seal.

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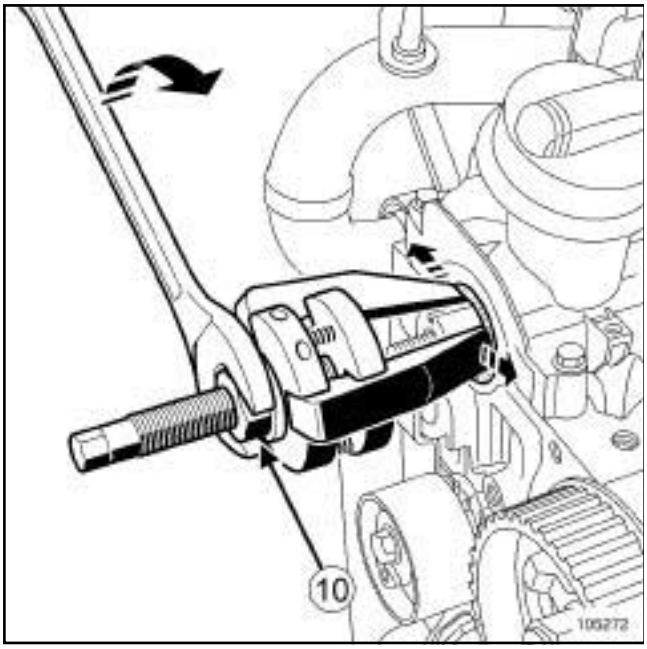
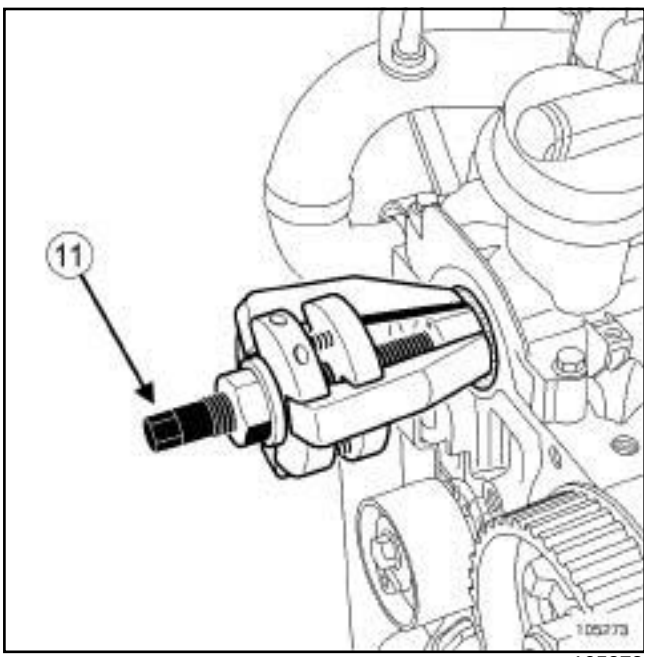
# Camshaft seal, timing end: Removal - Refitting

K9K




105272

❑ Separate the claws by turning the bolt (**10**) clockwise using an open-jawed spanner.




105273

❑ Remove the camshaft seal by turning the bolt (**11**) clockwise.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the camshaft seal housing in the cylinder head,

- the camshaft seal mating face on the camshaft.

**WARNING**

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ **parts always to be replaced: Camshaft seal on timing end**.

❑ **parts always to be replaced: camshaft timing sprocket nut**.

❑ **parts always to be replaced: camshaft timing sprocket stud (if loosened)**.

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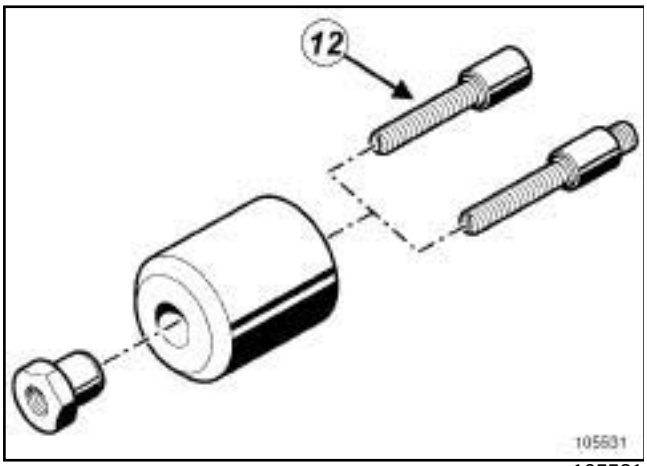
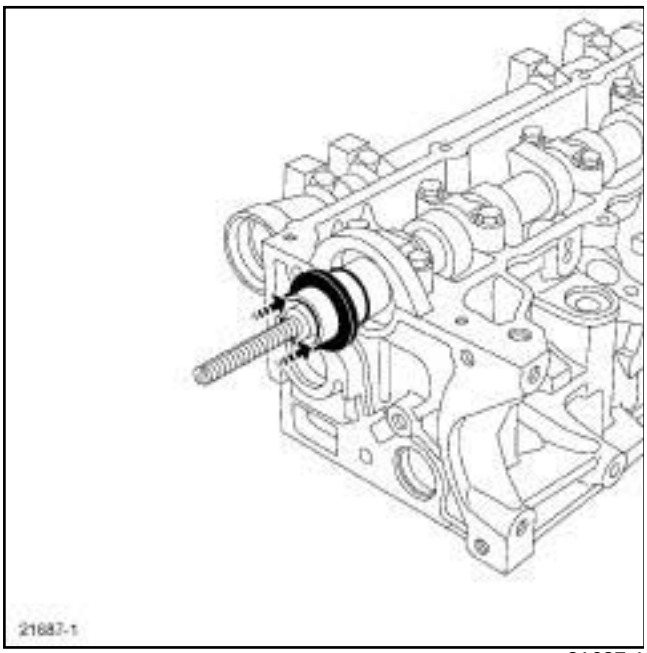
# Camshaft seal, timing end: Removal - Refitting

K9K

## II - REFITTING OPERATION FOR PART CONCERNED




105531




21687-1

❏ Screw the stud (**12**) of theonto the camshaft.

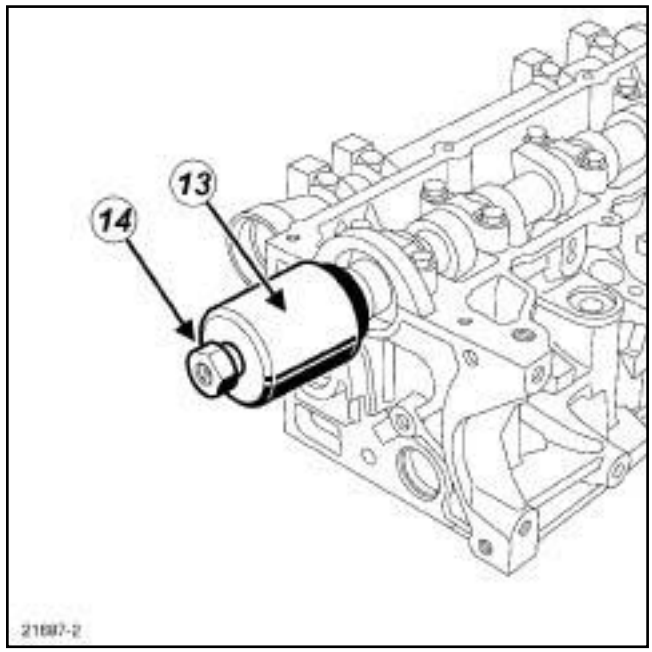
❏ Fit a new camshaft seal on the camshaft.

Note:

For camshaft seals delivered fitted to a protective sleeve:

- do not remove the camshaft seal from its protective sleeve,
- fit the sleeve fitted with the camshaft seal to the camshaft,
- push the protective sleeve towards the cylinder head until the camshaft seal reaches its limit on the cylinder head,
- fit the seal on the camshaft by following the recommendations below.

### 1 - First fitting of the camshaft seal




21687-2

❏ Fit the cover (**13**) and the collar nut (**14**) of the.

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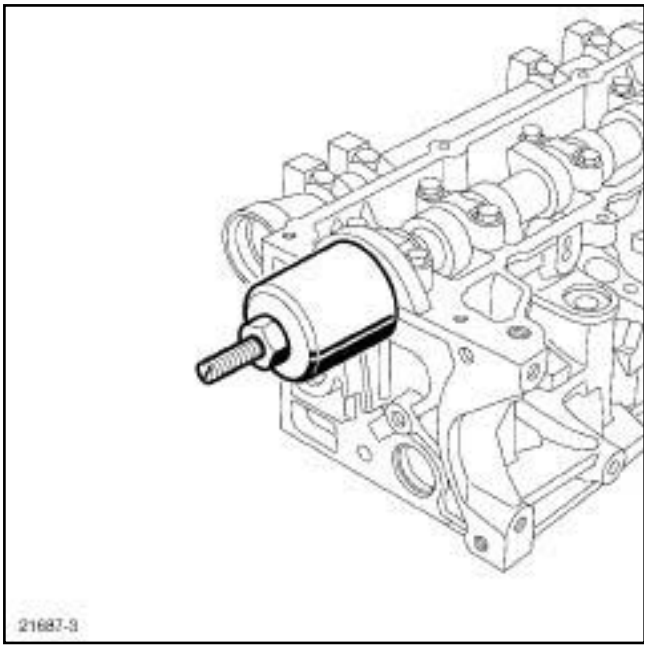
# Camshaft seal, timing end: Removal - Refitting

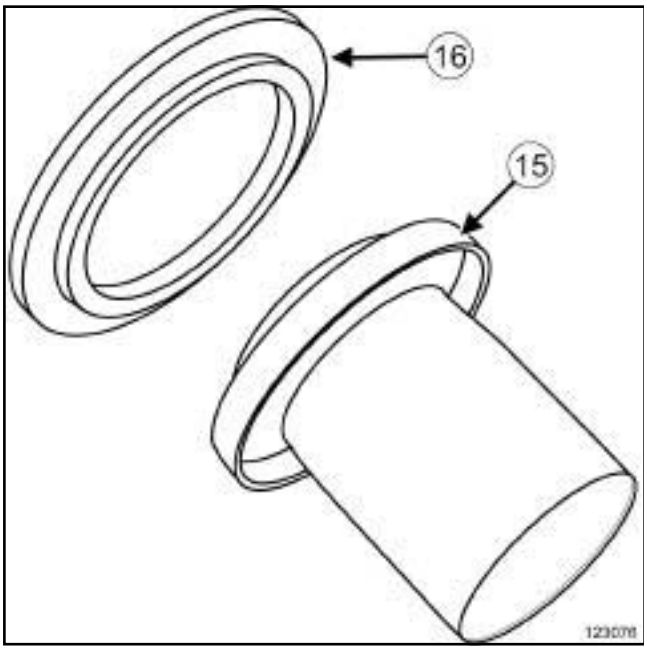
K9K




21687-3

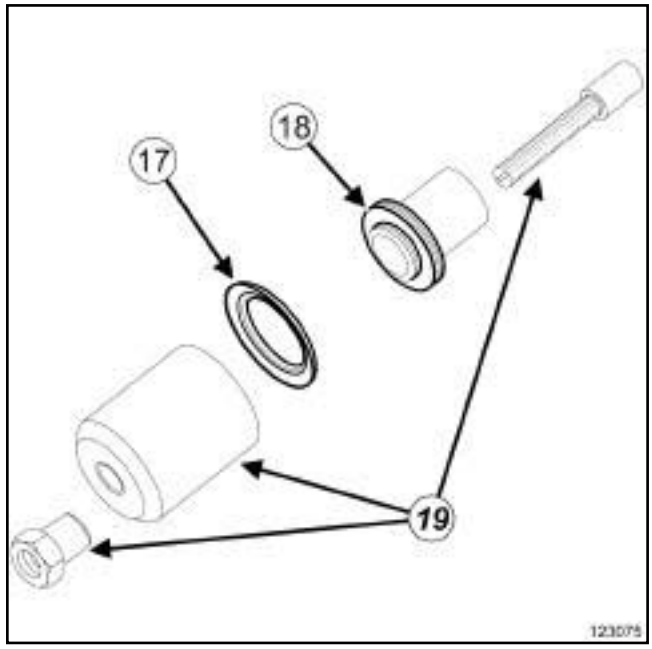
❏ Screw on the collar nut until the cover touches the cylinder head.

**2 - Second fitting of the camshaft seal**




123076

❏ Depending on the case, the Parts Department delivers seals (**15**) equipped with a spacer (**16**) amongst other things.




123075

❏

Note:

The spacer (**17**) is used to fit the seal (**18**) and is used in addition to the tool (**19**) .

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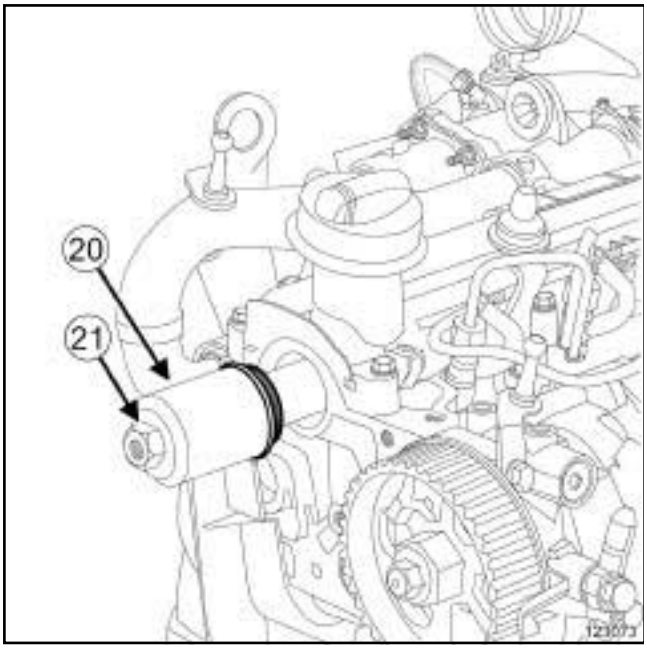
# Camshaft seal, timing end: Removal - Refitting

K9K

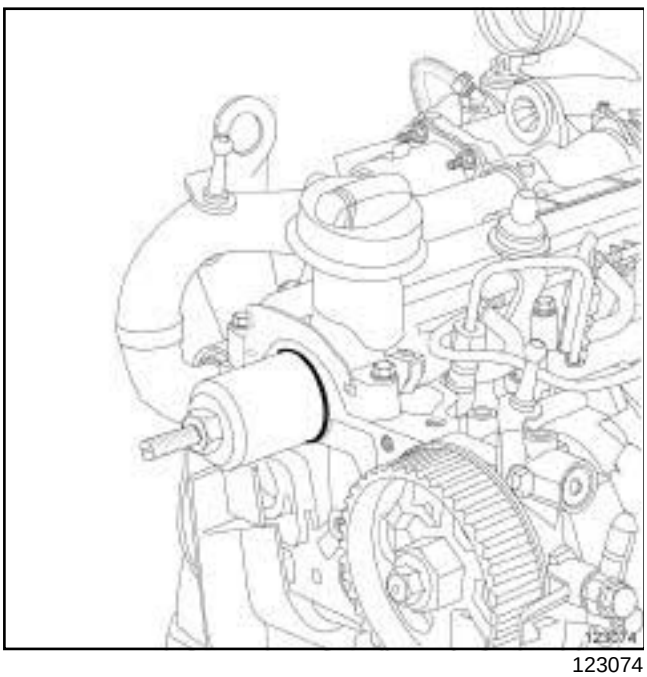



123073

❑ Position the bell (**20**) fitted with the spacer on the camshaft seal side and then position the collared nut (**21**) of the tool.

Note:

The spacer fits on the bell of the toolso that the internal edge of the spacer is on the side of the camshaft seal.



123074

❑ Screw on the collar nut until the spacer fitted on the cover touches the cylinder head.

**3 - Continued for both methods**

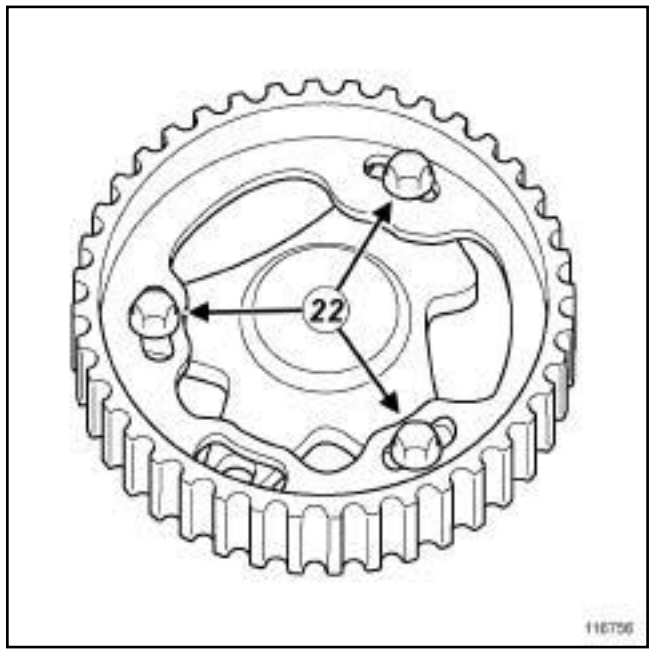
❑ Remove:

- the collar nut from the,
- the cover from the,
- the stud of the,
- the protective sleeve and the spacer, if fitted then throw them away.

❑ Torque tighten the **camshaft stud (12 N.m)**

❑ Refit:

- the camshaft pulley,
- a new camshaft pulley nut.




116756

❑ Undo the camshaft pulley hub bolts (**22**) .

❑ Fit theon the cylinder head to lock the camshaft pulley wheel.

❑ Tighten:

- the camshaft pulley hub bolts,
- to torque and angle the **camshaft pulley nut (30 N.m + 86° ± 6°.)**

❑ Remove the tool.

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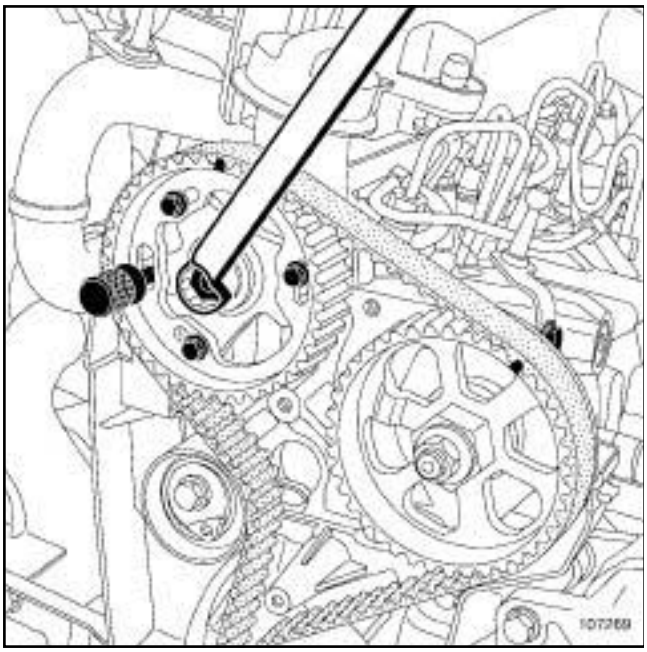
# Camshaft seal, timing end: Removal - Refitting

K9K

**III - FINAL OPERATION**



107269

❏ Set the camshaft pulley hub using the tool **(Mot. 1430)**.

> Note:
>
> If the pin **(Mot. 1430)** does not engage, tum the camshaft pulley hub using an **18 mm** offset wrench to facilitate the setting of the camshaft pulley hub.

❏ Refit:

- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) .
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the camshaft position sensor (see **13B**, **Diesel injection**, **Camshaft position sensor: Removal - Refitting**, page **13B-7**) ,
- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the engine undertray,
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❏ Refit the engine cover.

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# Oil decanter: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| new oil separator bolts | **15 N.m** |

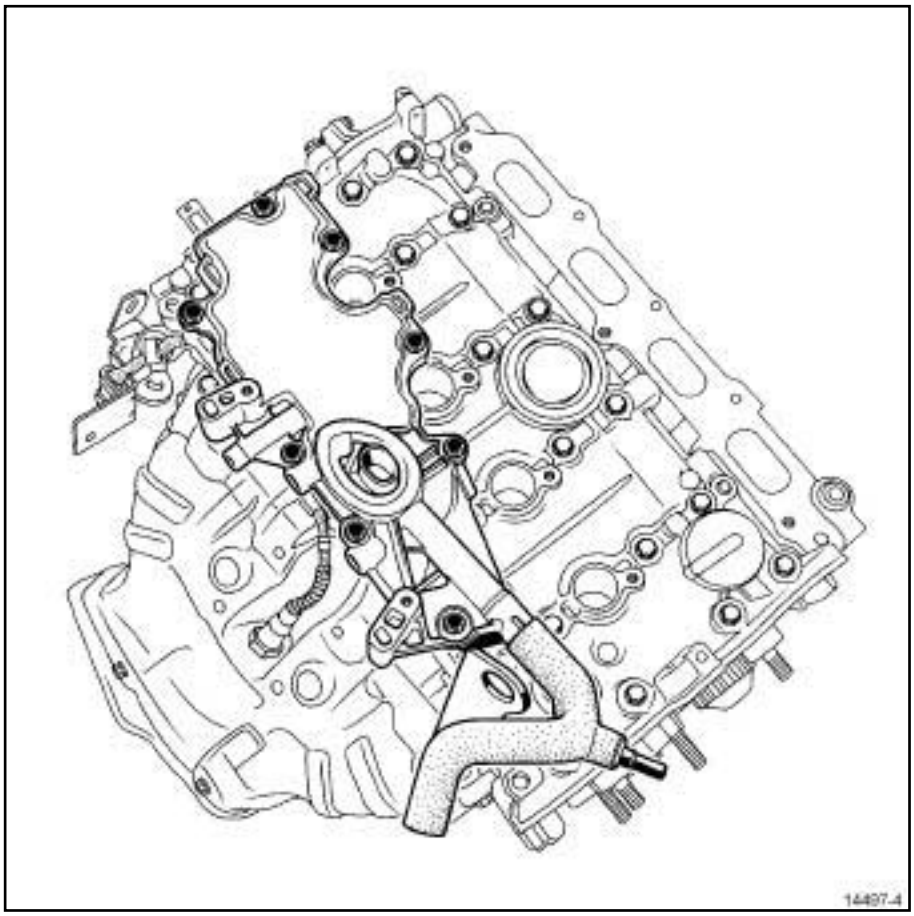
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Remove:

- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the throttle valve (see **12A**, **Fuel mixture**, **Throttle valve: Removal - Refitting**, page **12A-11**) ,
- the inlet distributor (see **12A**, **Fuel mixture**, **Inlet distributor: Removal - Refitting**, page **12A-12**) ,
- the ignition coils (see **17A**, **Ignition**, **Coils: Removal - Refitting**, page **17A-1**) .

### II - REMOVAL OPERATION




14497-4

❑ Remove:

- the oil decanter bolts,
- the oil decanter.

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# Oil decanter: Removal - Refitting

K4M

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: oil decanter bolt**

**WARNING**
Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

**WARNING**
When cleaning parts, it is essential that the parts do not impact on each other, otherwise their mating faces may be damaged and therefore their adjustments may be altered, which could damage the engine.

❑ Use **SUPER CLEANING AGENT FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:

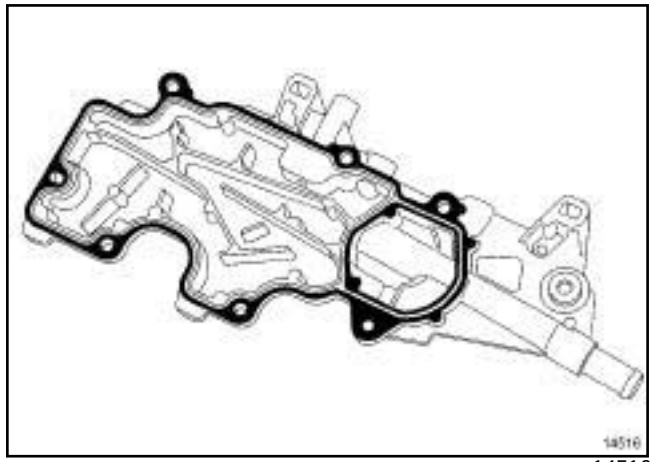
- the oil separator joint face if it is to be re-used,
- the rocker cover joint face.

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease:

- the oil separator joint face if it is to be re-used,
- the rocker cover joint face.

**WARNING**
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

**WARNING**
Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).


14516

❑ Apply **RESIN ADHESIVE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) using a stipple roller on the joint face of the oil separator until the joint face is completely coated.

### II - REFITTING OPERATION

❑ Refit the oil separator.

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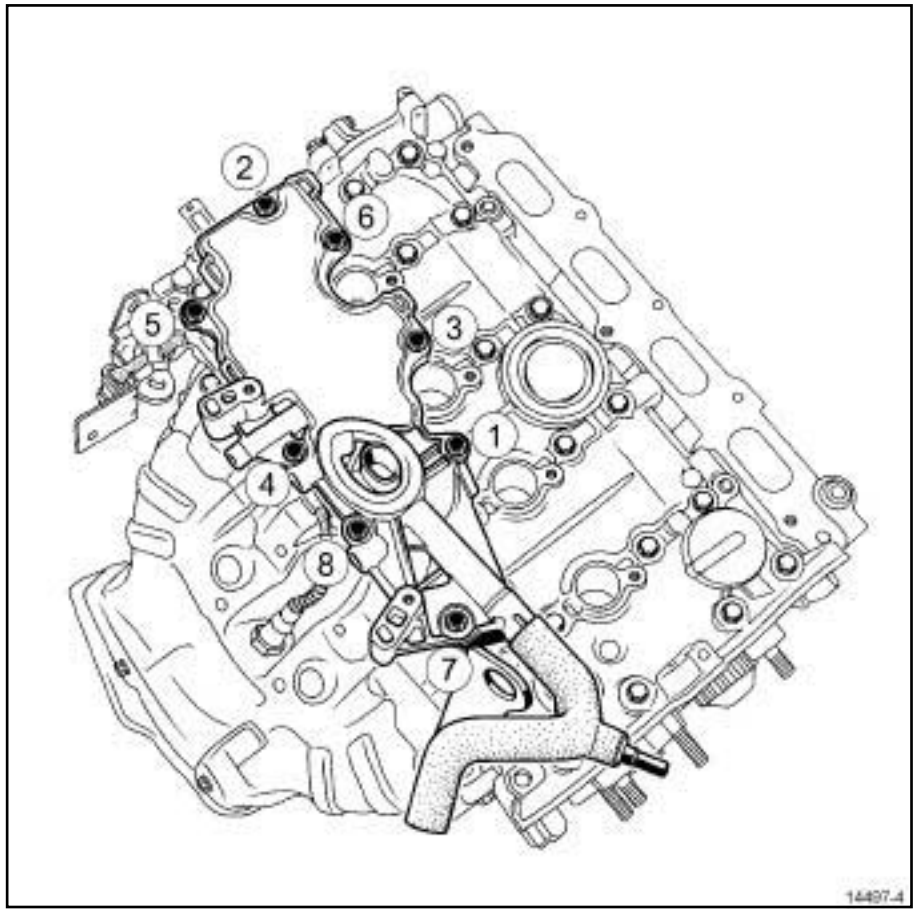
# Oil decanter: Removal - Refitting

K4M



14497-4

❑ Torque tighten in order the **new oil separator bolts (15 N.m)**.

**III - FINAL OPERATION**

❑ Refit:

- the ignition coils (see **17A**, **Ignition**, **Coils: Removal - Refitting**, page **17A-1**) ,
- the inlet distributor (see **12A**, **Fuel mixture**, **Inlet distributor: Removal - Refitting**, page **12A-12**) ,
- the throttle valve (see **12A**, **Fuel mixture**, **Throttle valve: Removal - Refitting**, page **12A-11**) ,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

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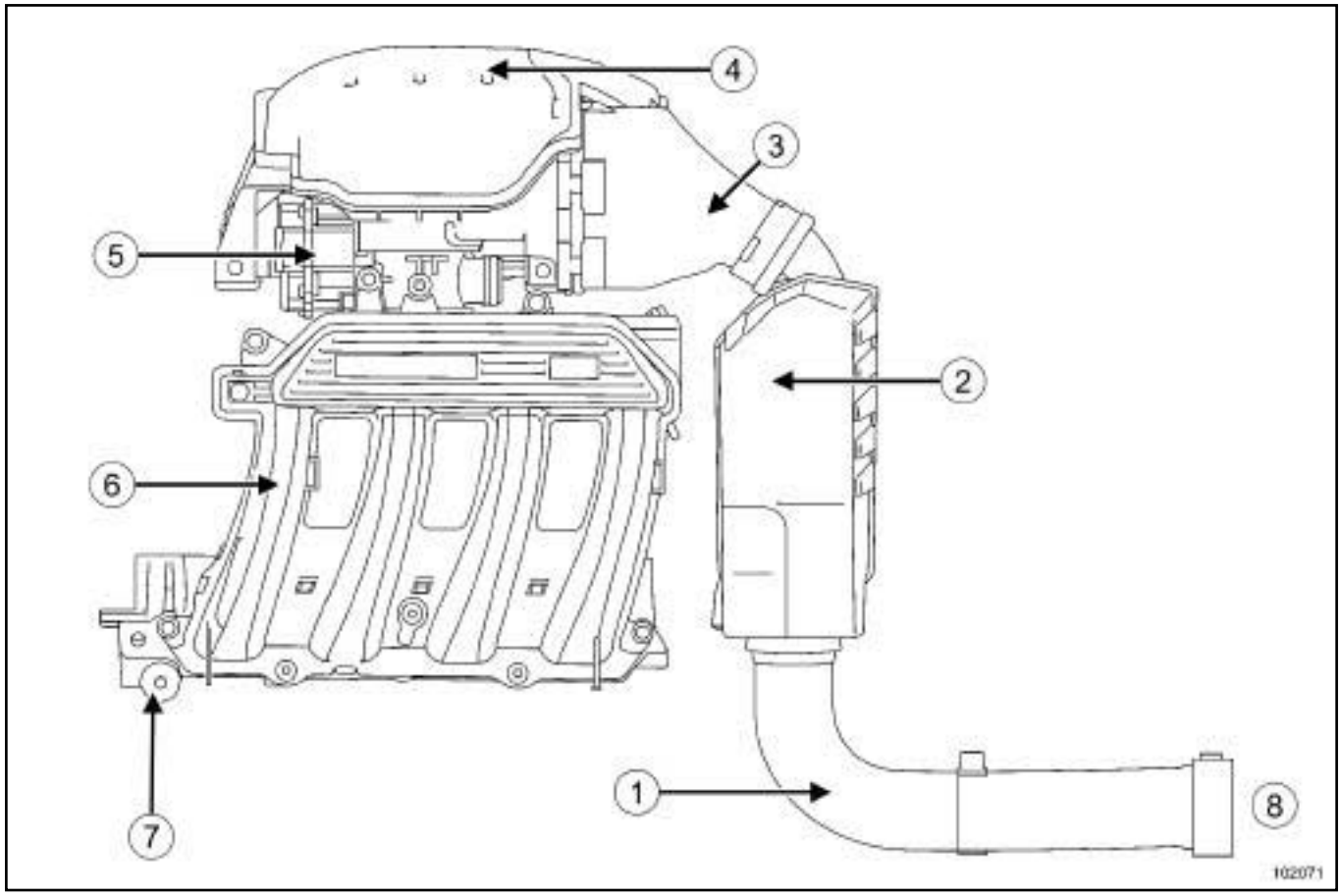
# Air inlet: Description

K4M

**Diagram of the air inlet circuit**




102071

| | |
|---|---|
| (**1**) | Air inlet trunking |
| (**2**) | Air resonator |
| (**3**) | Air filter unit |
| (**4**) | Air filter |
| (**5**) | Throttle valve |
| (**6**) | Inlet manifold |
| (**7**) | Injector holder shim |
| (**8**) | Air inlet |

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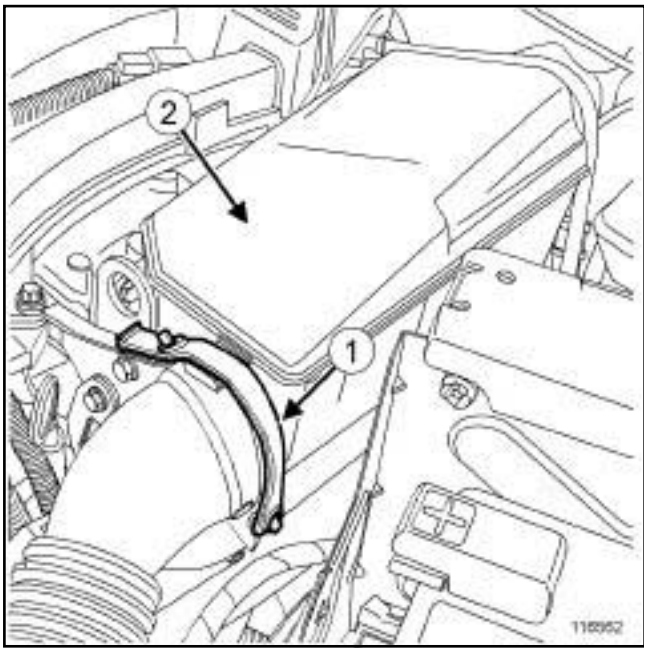
# Air resonator: Removal - Refitting

K4M

## REMOVAL

### REMOVAL OPERATION FOR PART CONCERNED




116562

❑ Remove:

- the elastic mounting (**1**) from the air resonator unit,
- the air resonator unit (**2**) .

## REFITTING

### REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the air resonator unit,
- the air resonator elastic mounting.

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# Air filter: Removal - Refitting

K4M

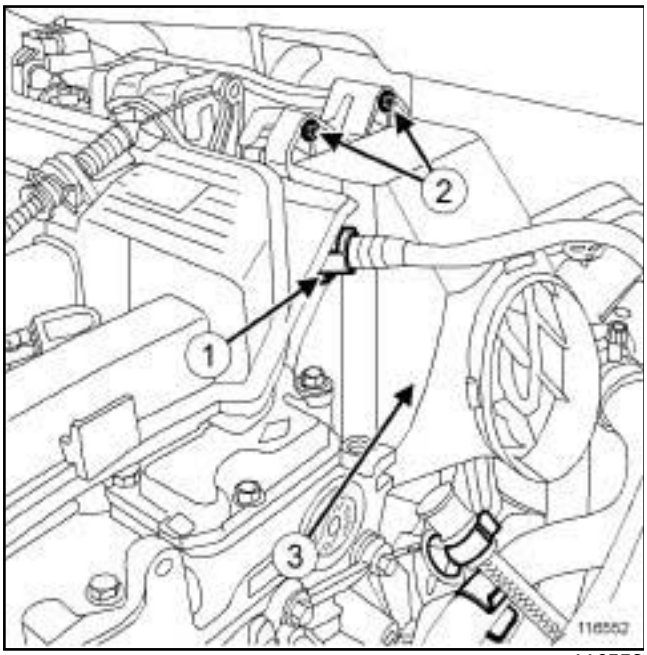
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Remove the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

❑ Disconnect the brake servo vacuum pipe ***(1)*** from the inlet distributor.

### II - REMOVAL OPERATION




116552

❑

**WARNING**

Do not damage the vacuum outlet on the inlet distributor. If it is damaged, the inlet distributor will need to be replaced.

❑ Remove:

- the two bolts (**2**) from the air filter cover,
- the air filter cover (**3**) ,
- the air filter.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Clean the air filter housing.

### II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the air filter,
- the air filter cover,
- the two air filter cover bolts.

### III - FINAL OPERATION

❑ Reconnect the brake servo vacuum pipe to the inlet distributor.

❑ Refit the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

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# Air filter: Removal - Refitting

K9K

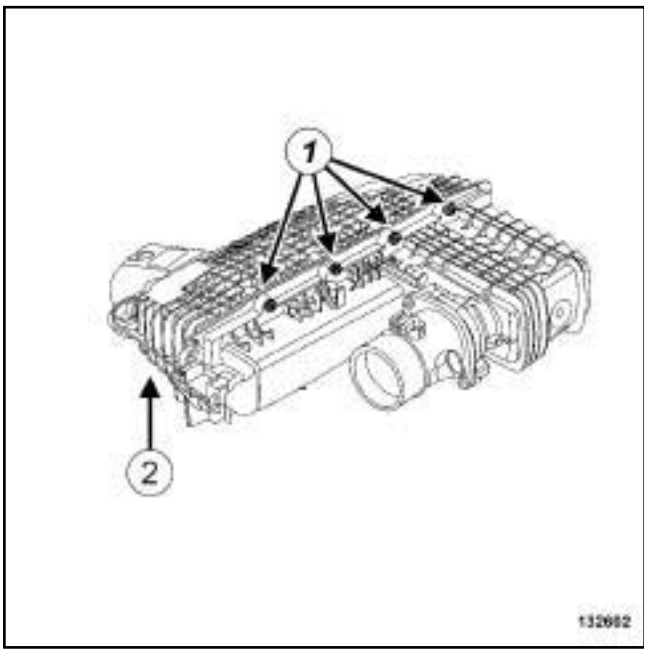
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Remove the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

### II - OPERATION FOR REMOVAL OF PART CONCERNED

#### 1 - First fitting of air filter unit



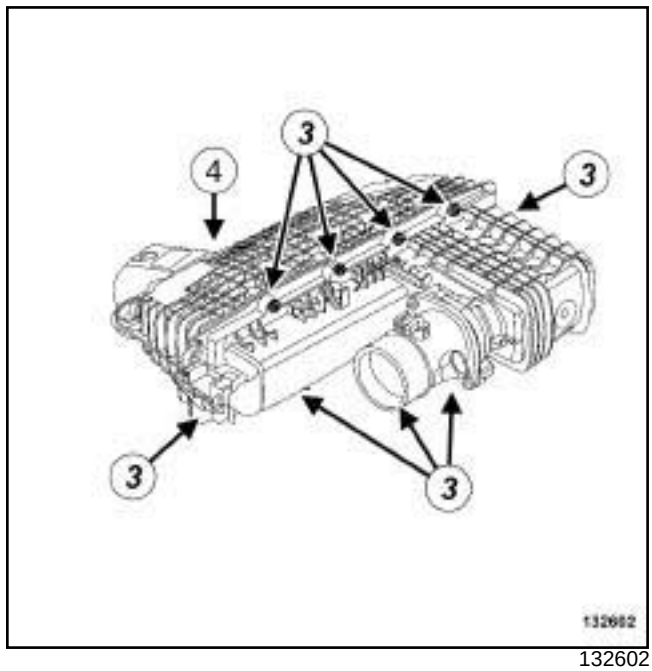

132602

❑ Remove the 4 bolts (**1**) from the air filter unit.

❑ Pivot the hinged cover (**2**) of the air filter unit in relation to the air filter unit tank.

❑ Move aside the air filter unit cover (**2**) .

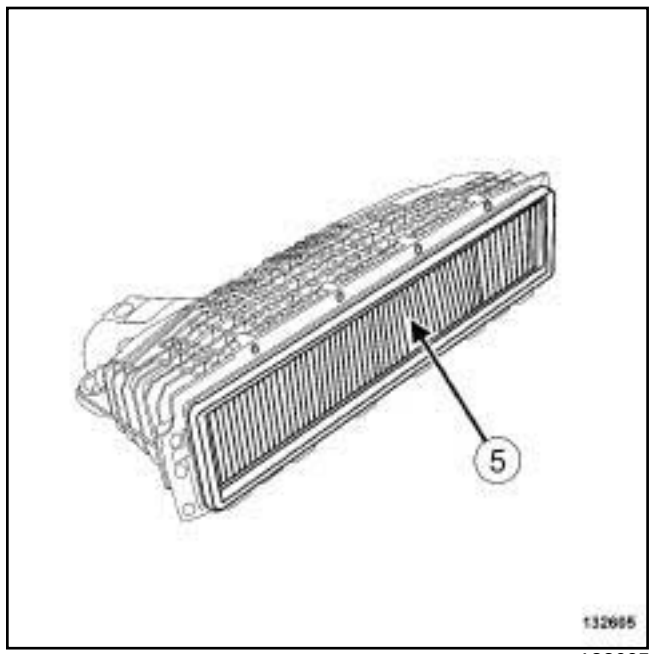
#### 2 - Second fitting of air filter unit




132602

❑ Remove the 9 bolts (**3**) from the air filter unit.

❑ Move aside the air filter unit cover (**4**) .




132605

❑ Remove the air filter (**5**) from the air filter unit cover.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Clean the air filter unit.

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# Air filter: Removal - Refitting

K9K

**II - REFITTING OPERATION FOR PART CONCERNED**

❏ Refit the air filter in the air filter unit cover.

**WARNING**

If the air filter is fitted incorrectly in the air filter unit, unfiltered air may enter the engine and cause the engine to malfunction.

❏ Fit the air filter unit cover.

**III - FINAL OPERATION**

❏ Refit the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

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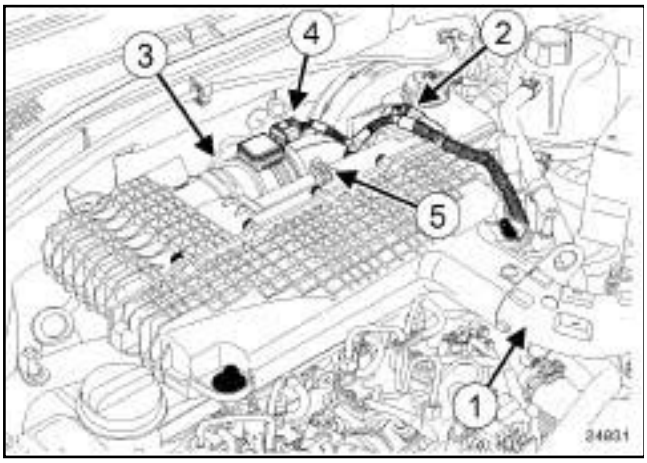
# Air filter unit: Removal - Refitting

K9K

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the engine cover.




24831

❏ Disconnect:

- the air intake sleeve (**1**) on the air filter unit,
- the air pressure sensor connector (**2**) from the air filter unit.

❏ Disconnect the connector from the air flowmeter (**4**) .

❏ Disconnect the air inlet duct (**5**) from the air filter unit.

❏ Move aside the air filter unit wiring harness.

### II - OPERATION FOR REMOVAL OF PART CONCERNED

❏ Lift up the front section of the air filter unit.

❏ Slide the air filter unit to the left.

❏ Remove:

- the bolt of the turbocharger pressure sensor,
- the turbocharger pressure sensor on the air filter unit.

❏ Remove the air filter unit.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Check that there are mounting studs for the air filter unit on the EGR mounting and on the brackets.

| Note: |
| --- |
| Replace the studs if necessary. |

### II - REFITTING OPERATION FOR PART CONCERNED

❏ Fit the air filter unit sideways against the EGR valve mounting.

❏ Slide the air filter unit to the right.

❏ Refit:

- the turbocharger pressure sensor on the air filter unit.
- the bolt of the turbocharger pressure sensor,

❏ Refit the air filter unit by lowering it vertically from the injection end.

### III - FINAL OPERATION

❏ Connect the air inlet duct to the air filter unit.

❏ Connect the air flowmeter connector.

❏ Connect:

- the turbocharging pressure sensor connector,
- the air intake sleeve on the air filter unit.

❏ Refit the engine cover.

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# Air filter unit: Removal - Refitting

K4M

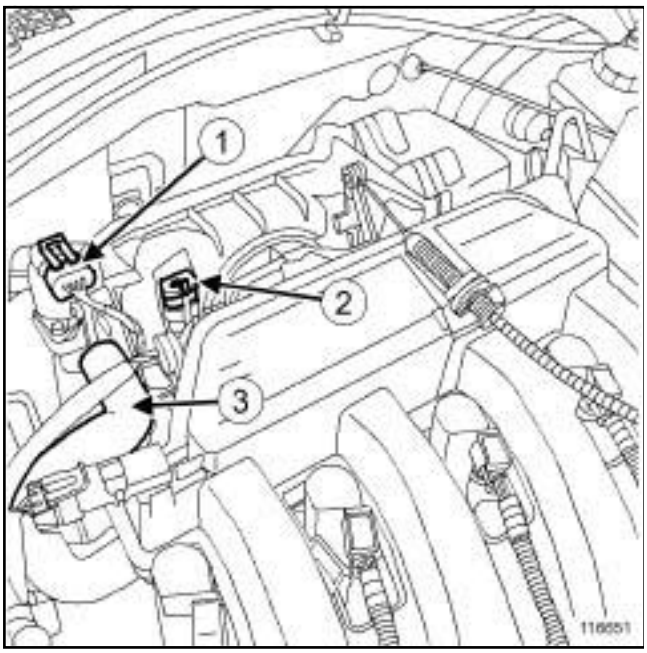
| Tightening torques ▽ | |
|---|---|
| air filter unit bolts | **9 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

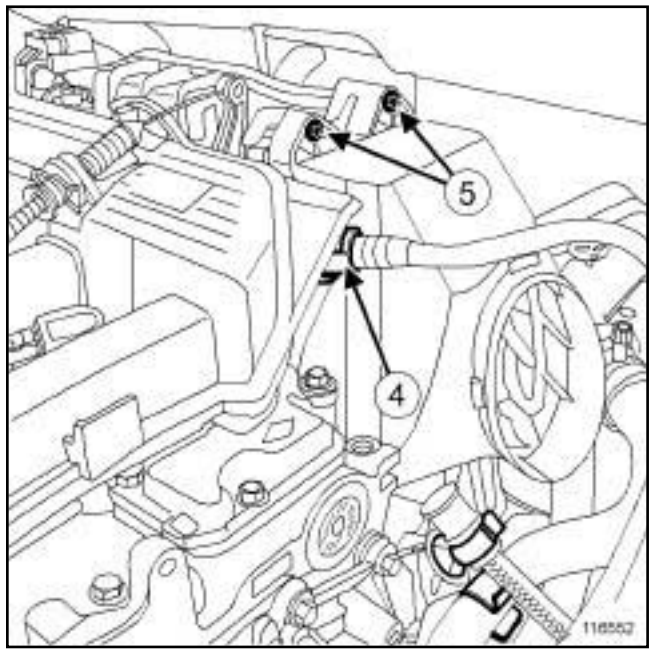



116651

❏ Disconnect:

- the idle speed regulation stepping motor connector (**1**) ,
- the connector (**2**) from the throttle position potentiometer,
- the petrol vapour recirculation pipe (**3**) .

### II - OPERATION FOR REMOVAL OF PART CONCERNED




116552

❏ Disconnect the vacuum pipe (**4**) from the brake servo on the inlet distributor

❏ Remove:

- the two bolts (**5**) from the air filter cover,
- the filter element.

❏

**WARNING**

Do not damage the vacuum outlet on the inlet distributor. If it is damaged, the inlet distributor will have to be replaced.

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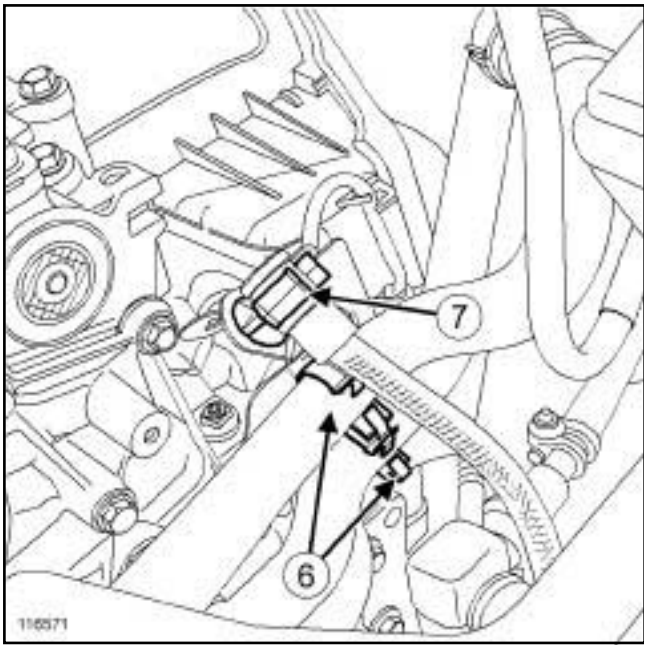
# Air filter unit: Removal - Refitting

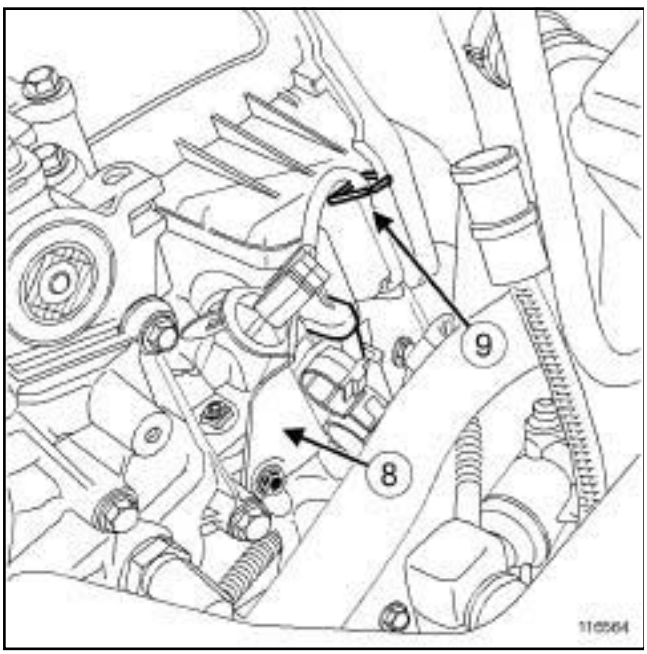
K4M




116571

❏ Unclip:

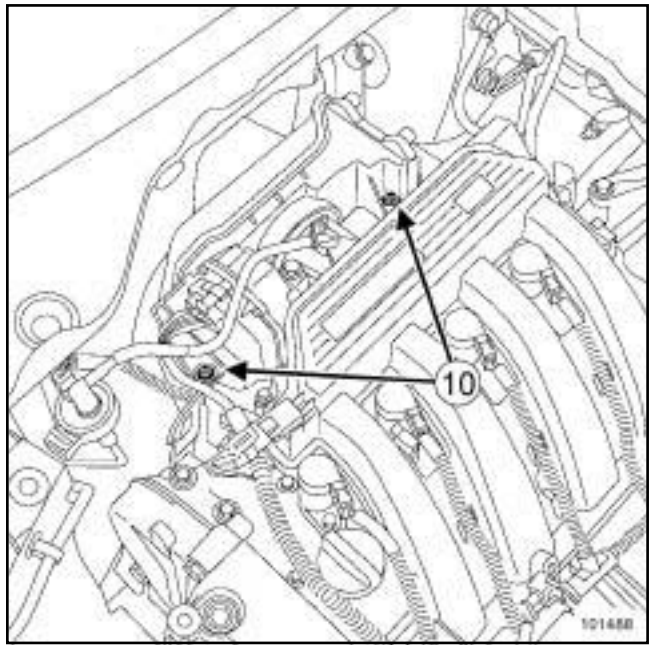
- the coolant pipes at (**6**) ,
- the breather (**7**) .




116564

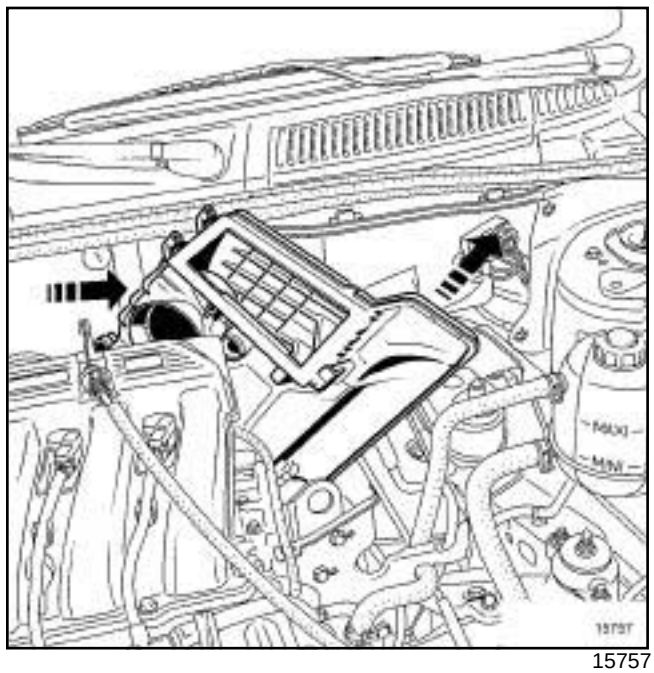
❏ Remove the coolant pipes mounting bracket (**8**) .

❏ Unpick the electrical wiring (**9**) from the oxygen sensor.




101488

❏ Remove the two bolts (**10**) from the air filter unit.



15757

❏ Remove the air filter unit.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Replace:

- the throttle valve seal each time it is removed using grease to make fitting easier,

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# Air filter unit: Removal - Refitting

K4M

- the plastic rivets and clips every time they are removed.

**II - REFITTING OPERATION**

❏ Refit:

- the air filter unit,
- the two air filter unit bolts.

❏ Torque tighten the **air filter unit bolts (9 N.m)**.

❏ Attach the electrical wiring to the oxygen sensor.

❏ Refit the coolant pipes mounting bracket.

❏ Reclip:

- the breather,
- the coolant pipes.

❏ Refit:

- the filter element,
- the two air filter cover bolts.

❏ Reconnect:

- the brake servo vacuum pipe on the inlet distributor,
- the petrol vapour recirculation pipe,
- the throttle position potentiometer connector,
- the idle speed regulation stepping motor connector.

**III - FINAL OPERATION**

❏ Refit the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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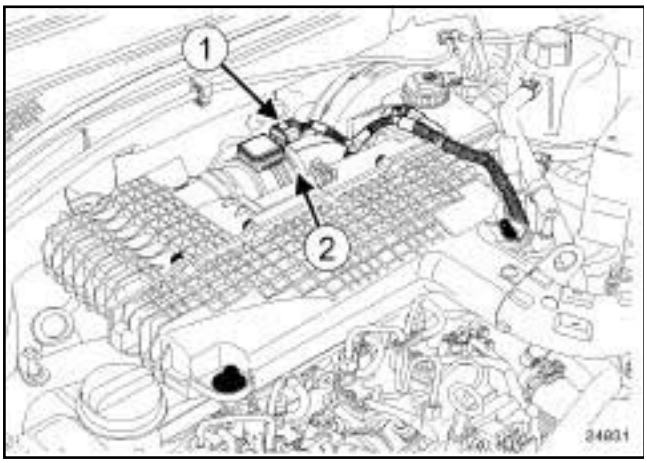
# Air flowmeter: Removal - Refitting

K9K, and 796

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the engine cover.




24831

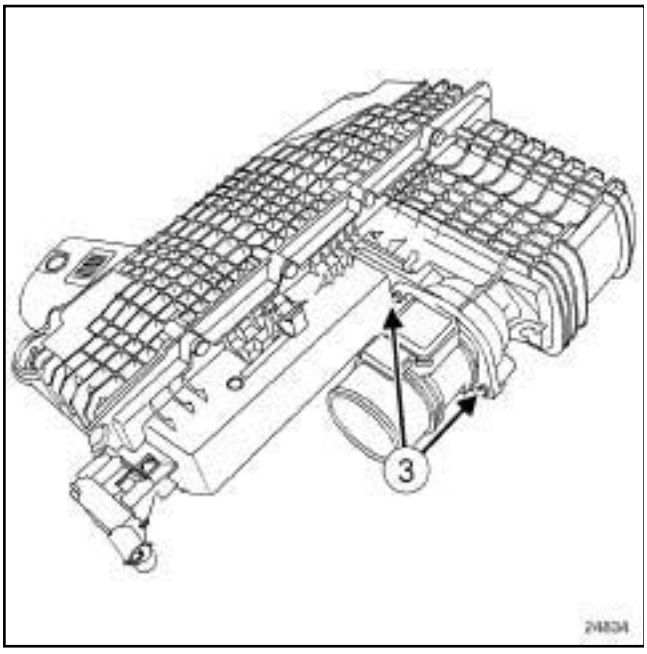
❏ Disconnect the air flowmeter connector (**1**) .

❏ Undo the clip (**2**) from the air flowmeter outlet duct.

❏ Remove the air flowmeter outlet air duct.

❏ Remove the air flowmeter outlet air duct.

### II - REMOVAL OPERATION FOR PART CONCERNED




24834

❏ Remove:

- the air flowmeter (**3**) bolts on the air filter box,
- the air flowmeter,
- the air flowmeter seal.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Always replace the air flowmeter seal on the air filter unit.

### II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- a new air flowmeter seal on the air filter box,
- the air flowmeter,
- the air flowmeter bolts.

### III - FINAL OPERATION

❏ Refit:

- the air flowmeter outlet air duct,
- the air flowmeter outlet air duct clip.

❏ Connect the air flowmeter connector.

❏ Refit the engine cover.

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# Throttle valve: Removal - Refitting

K4M

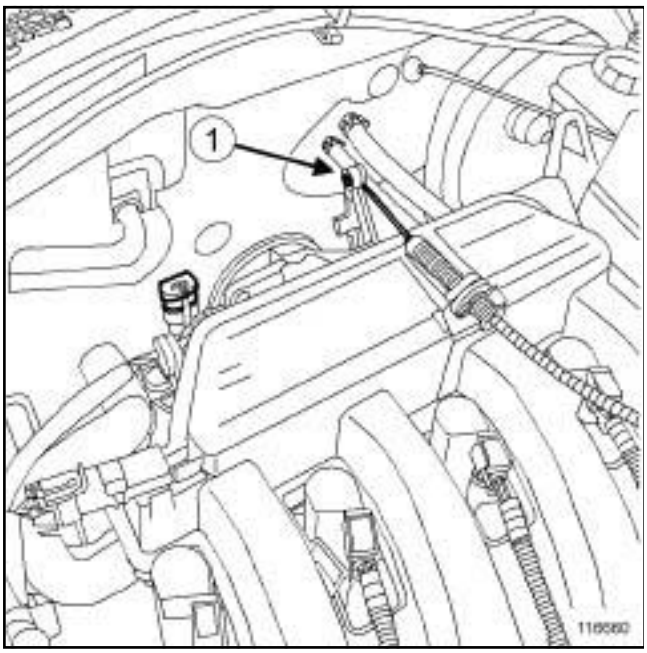
| Tightening torques ▽ | |
|---|---|
| throttle valve bolts | **13 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

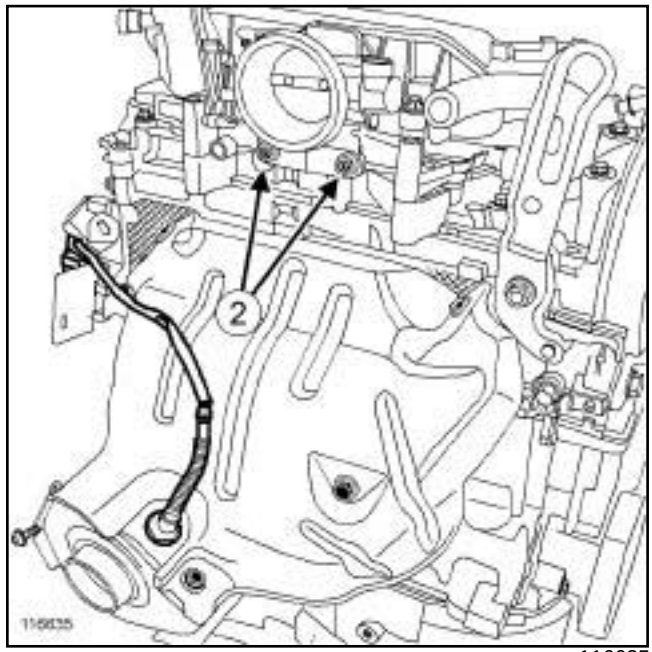
❏ Remove the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .




116660

❏ Disconnect the accelerator cable at (**1**) .

### II - OPERATION FOR REMOVAL OF PART CONCERNED




116635

❏ Remove:

- the throttle valve bolts (**2**) ,
- the throttle valve.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: Throttle valve seal**.

### II - REFITTING OPERATION

❏ Refit:

- the throttle valve equipped with a new seal,
- the throttle valve bolts.

❏ Torque tighten the **throttle valve bolts (13 N.m)**.

### III - FINAL OPERATION

❏ Reattach the accelerator cable.

❏ Refit the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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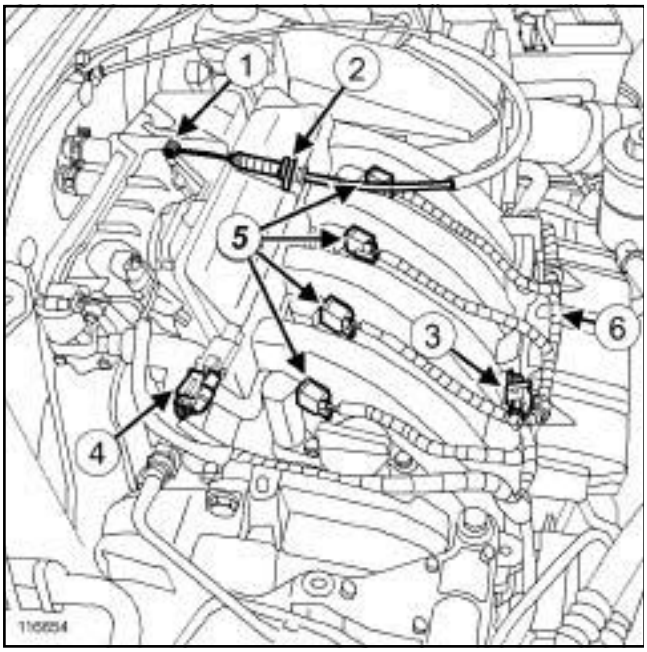
# Inlet distributor: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| intake distributor mounting bolts | 9 N.m |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION




116654

❏ Disconnect the accelerator cable on the throttle valve at (**1**) .

❏ Remove the accelerator cable (**2**) from the inlet distributor.

❏ Disconnect:

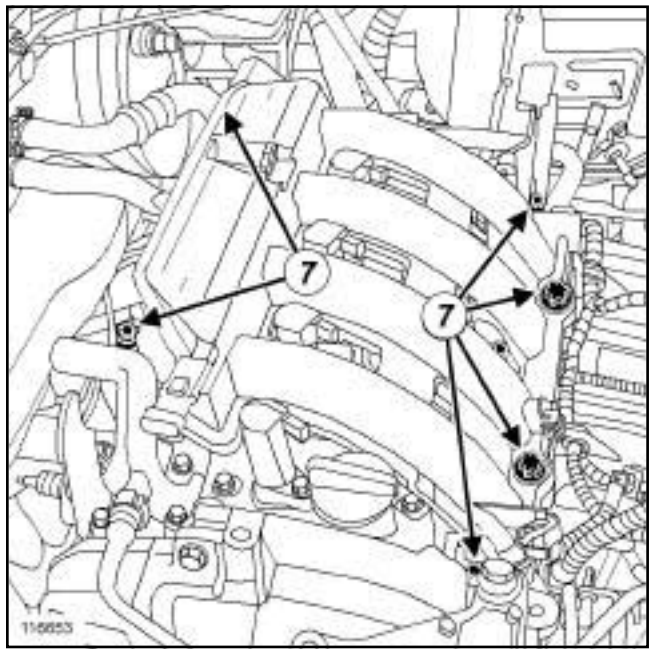
- the air temperature sensor connector (**3**) ,
- the air inlet pressure sensor connector (**4**) ,
- the connectors (**5**) from the coils.

❏ Unclip the wiring (**6**) on the inlet distributor.

❏ Move the wiring aside.

❏ Remove the throttle valve (see **12A**, **Fuel mixture**, **Throttle valve: Removal - Refitting**, page **12A-11**) .

### II - OPERATION FOR REMOVAL OF PART CONCERNED

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❏ Remove:

- the inlet distributor bolts (**7**) ,
- the inlet distributor.

❏ When replacing the inlet distributor, remove:

- the air temperature sensor,
- the inlet air pressure sensor.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: inlet distributor seal**.

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# Inlet distributor: Removal - Refitting

K4M

❑

**WARNING**

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the housing of each inlet distributor seal if reused,
- the joint face of the injector holder shim.

❑ Fit new seals to the inlet distributor.

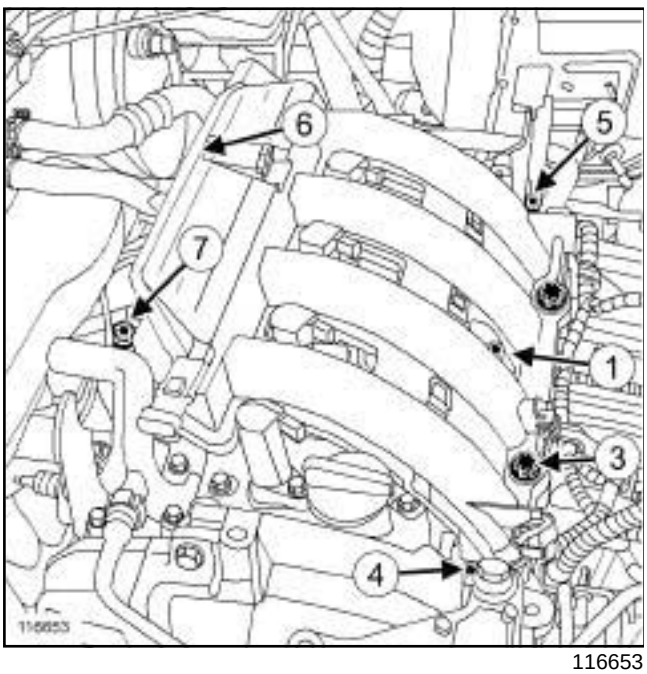
❑ When replacing the inlet distributor, refit:

- the air temperature sensor,
- the inlet distributor pressure sensor.

## II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the inlet distributor,
- the inlet distributor mounting bolts.




116653

❑ Torque tighten in order the **intake distributor mounting bolts (9 N.m)**.

## III - FINAL OPERATION

❑ Refit the throttle valve equipped with a new seal (see **12A**, **Fuel mixture**, **Throttle valve: Removal - Refitting**, page **12A-11**) .

❑ Clip the wiring onto the inlet distributor.

❑ Connect:

- the coil connectors,
- the air inlet pressure sensor connector,
- the air temperature sensor connector.

❑ Position the accelerator cable on the inlet distributor and on the throttle valve.

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# Injector holder shim: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| injector holder shim bolts (7) and (8) | **25 N.m** |
| injector holder shim bolts 9 to 16 | **21 N.m** |
| upper timing cover bolt | **41 N.m** |
| suspended mounting bolt | **62N.m** |

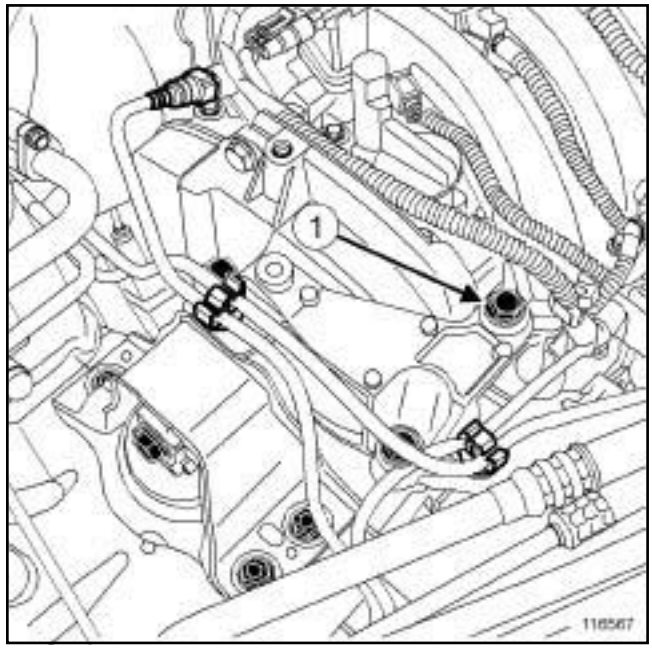
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

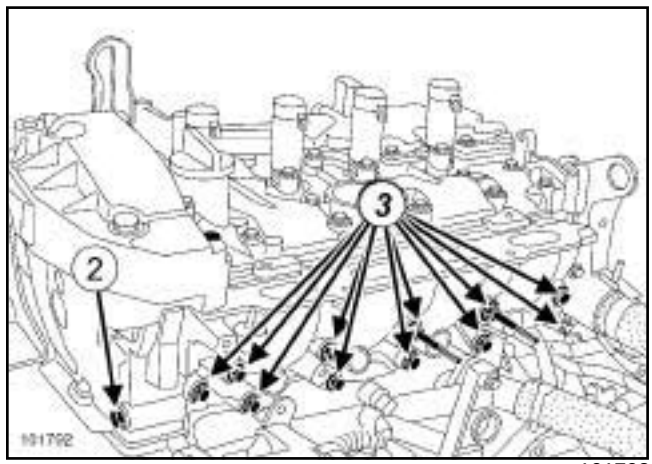
❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the inlet distributor (see **12A**, **Fuel mixture**, **Inlet distributor: Removal - Refitting**, page **12A-12**) ,
- the injector rail (see **17B**, **Petrol injection**, **Injector rail - Injectors: Removal - Refitting**, page **17B-10**) ,
- the multifunction support (see **10A**, **Engine and cylinder block assembly**, **Multifunction support: Removal - Refitting**, page **10A-48**) .



116567



101792

❏ Remove:

- the bolt (**1**) of the suspended mounting on the injector holder shim,
- the bolt (**2**) mounting the upper timing cover on the injector holder shim.

### II - REMOVAL OPERATION

❏ Remove:

- the bolts ***(3)*** from the injector holder shim,
- the injector holder shim.

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# Injector holder shim: Removal - Refitting

K4M

## REFITTING

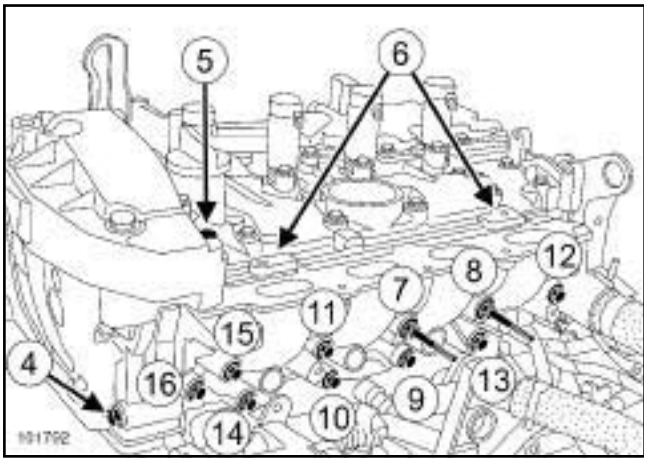
### I - REFITTING PREPARATION OPERATION

❏ The injector holder shim seal must always be replaced.

### II - REFITTING OPERATION

❏ Fit:

- the injector holder shim,
- all the injector holder shim bolts.




101792

❏ Place the injector holder shim against:

- the upper timing cover by manually tightening the bolt (**4**) ,
- the suspended engine mounting by manually tightening the bolt (**5**) .

❏ Position the injector holder shim against the shims (**6**) on the rocker cover.

❏ Tighten to torque and in order:

- the **injector holder shim bolts (7) and (8) (25 N.m)**,
- the **injector holder shim bolts 9 to 16 (21 N.m)**.

### III - FINAL OPERATION

❏ Torque tighten:

- the **upper timing cover bolt (41 N.m)**,
- the **suspended mounting bolt (62N.m)**.

❏ Refit:

- the multifunction support (see **10A**, **Engine and cylinder block assembly**, **Multifunction support: Removal - Refitting**, page **10A-48**) ,
- the injector rail (see **17B**, **Petrol injection**, **Injector rail - Injectors: Removal - Refitting**, page **17B-10**) ,
- the inlet distributor (see **12A**, **Fuel mixture**, **Inlet distributor: Removal - Refitting**, page **12A-12**) .

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Exhaust manifold: Removal - Refitting

K9K

| Tightening torques ▽ | |
|---|---|
| exhaust manifold stud | **9 N.m** |
| exhaust manifold nuts | **26 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

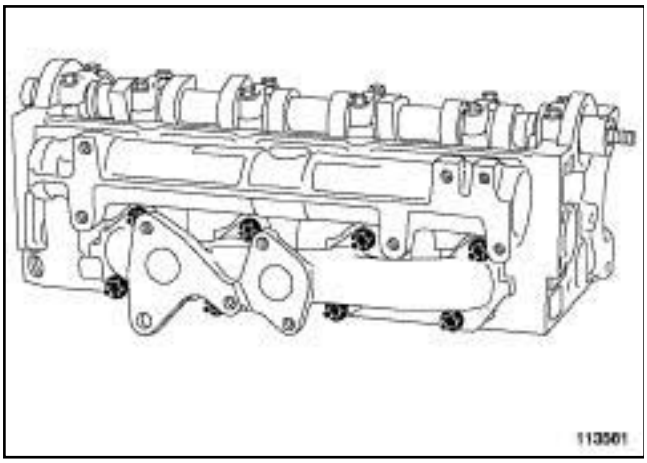
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the engine undertray,
- the catalytic converter (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) ,
- the exhaust gas recirculation assembly (see **14A**, **Antipollution**, **Exhaust gas recirculation assembly: Removal - Refitting**, page **14A-9**) ,
- the turbocharger (see **12B**, **Turbocharging**, **Turbocharger: Removal - Refitting**, page **12B-1**) .

### II - REMOVAL OPERATION




113561

❏ Remove:

- the exhaust manifold nuts,
- the exhaust manifold.

❏ Mark the position of the exhaust manifold gasket.

❏ Remove the exhaust manifold gasket.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: exhaust manifold seal**.

❏ Use **GREY ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the joint face:

- the cylinder head,
- of the exhaust manifold, if it is to be reused.

❏ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) and **CLEAN CLOTHS** to clean and degrease the joint faces:

- the cylinder head,
- of the exhaust manifold, if it is to be reused.

Note:

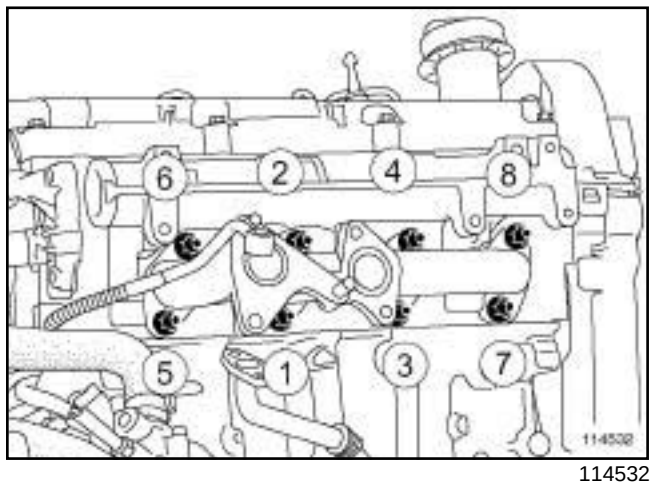
If a stud is loosened during this operation, coat the stud with **HIGH RESISTANCE THREAD LOCK** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

❏ Torque tighten the **exhaust manifold stud (9 N.m)**.

### II - REFITTING OPERATION

❏ Refit:

- a new exhaust manifold gasket in the position marked during removal,
- the exhaust manifold.

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❏ Torque tighten in order the **exhaust manifold nuts (26 N.m)**.

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# Exhaust manifold: Removal - Refitting

K9K

**III - FINAL OPERATION**

❑ Refit:

- the turbocharger (see **12B**, **Turbocharging**, **Turbocharger: Removal - Refitting**, page **12B-1**) ,
- the exhaust gas recirculation assembly (see **14A**, **Antipollution**, **Exhaust gas recirculation assembly: Removal - Refitting**, page **14A-9**) ,
- the catalytic converter (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) ,
- the engine undertray,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Exhaust manifold: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| exhaust manifold studs | **8 N.m** |
| exhaust manifold mounting nuts | **23 N.m** |
| bolts (6) mounting the stay on the cylinder block | **21 N.m** |
| nut (7) mounting the stay on the exhaust manifold | **21 N.m** |
| exhaust manifold upper heat shield mounting bolts | **12 N.m** |
| upstream oxygen sensor | **45 N.m** |
| exhaust bracket mounting bolts | **21 N.m** |

## REMOVAL

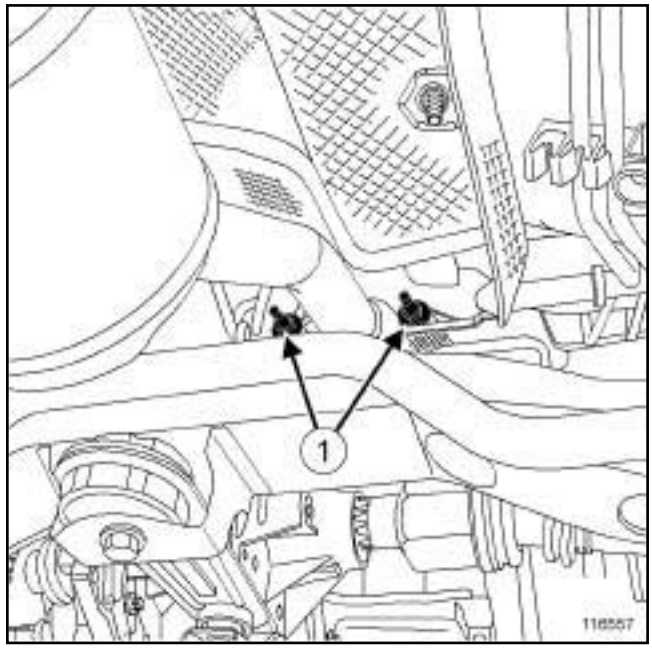
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

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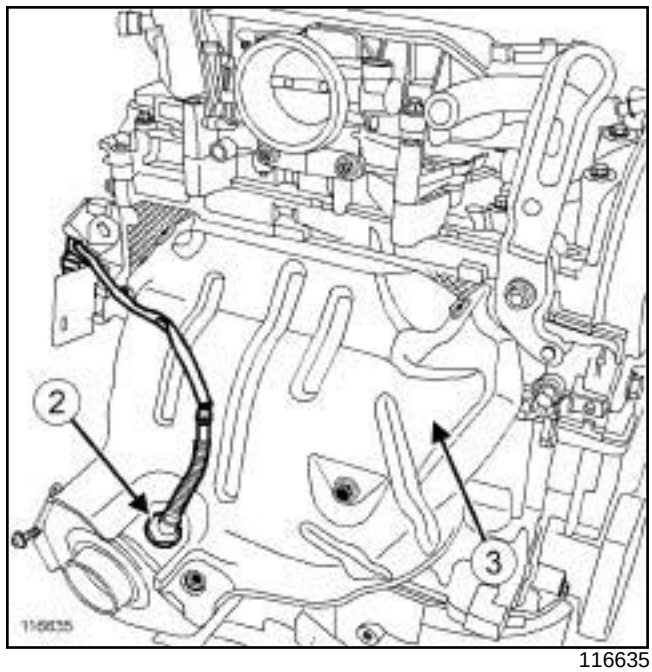
❏ Remove the nuts (**1**) from the exhaust flange.

❏ Push the exhaust pipe towards the rear of the vehicle.




116635

❏ Disconnect the upstream oxygen sensor connector (**2**) .

❏ Remove:

- the upstream oxygen sensor using the,
- the upper heat shield (**3**) from the exhaust manifold.

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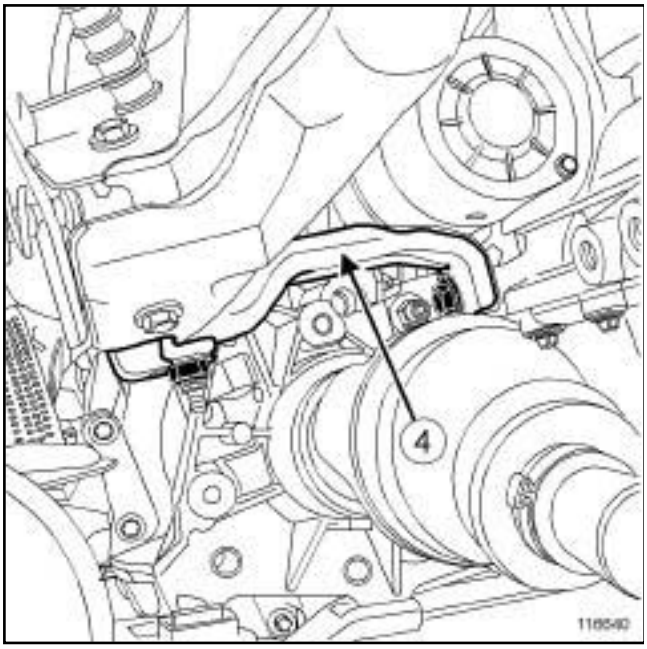
# Exhaust manifold: Removal - Refitting

K4M

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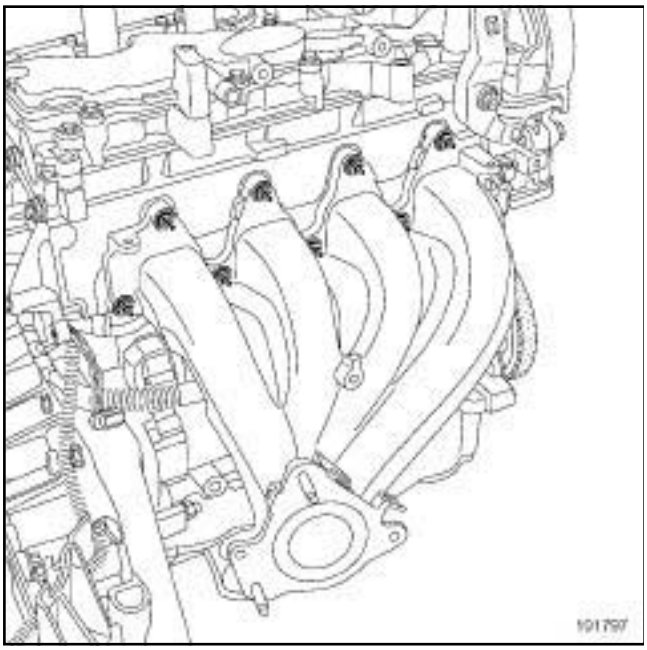
❑ Remove the stay (**4**) between the exhaust manifold and the cylinder block.

### II - REMOVAL OPERATION



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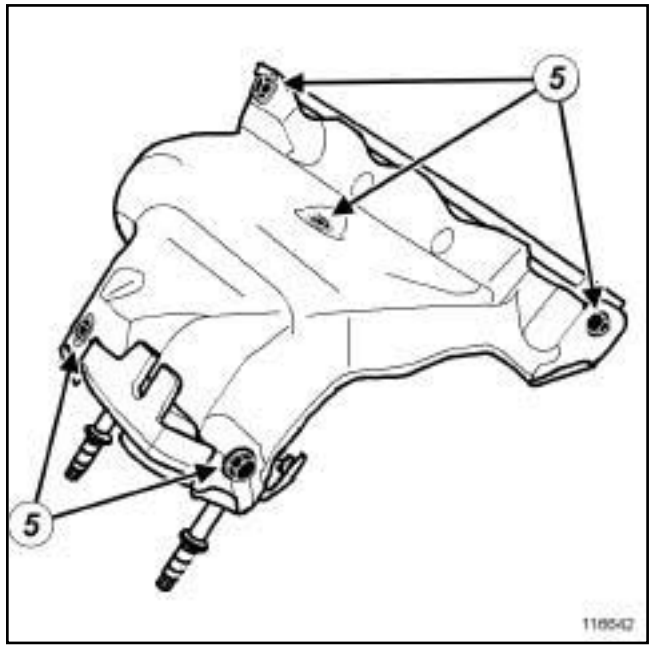
❑ Remove:

- the exhaust manifold nuts,
- the exhaust manifold.




116642

❑ Using the workbench, remove:

- the bolts (**5**) from the exhaust manifold lower heat shield,
- the lower heat shield from the exhaust manifold.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: exhaust manifold seal**.

❑ **parts always to be replaced: ring between exhaust manifold and catalytic converter**.

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the exhaust manifold joint face if it is to be re-used,
- the cylinder head joint face.

Note:

If a stud loosens during removal, coat it with **HIGH RESISTANCE THREADLOCK** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

❑ Tighten to torque the **exhaust manifold studs (8 N.m)**.

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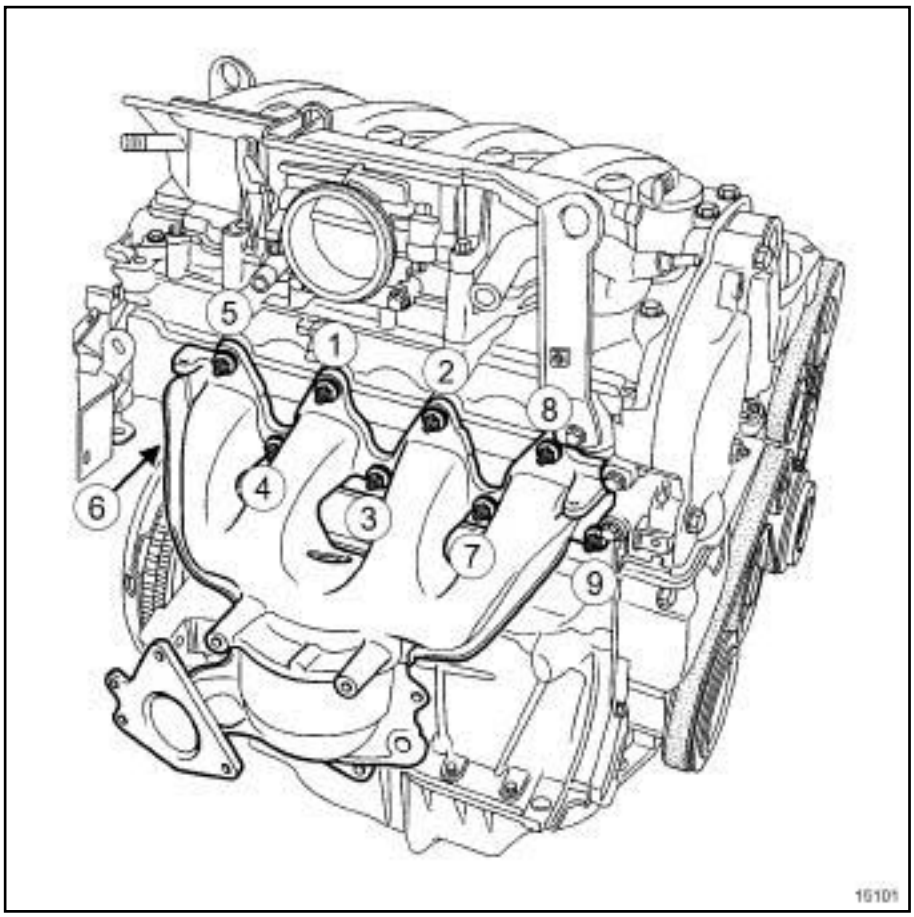
# Exhaust manifold: Removal - Refitting

K4M

**II - REFITTING OPERATION FOR PART CONCERNED**




15101

❑ Refit the exhaust manifold.

❑ Tighten to torque and in order the **exhaust manifold mounting nuts (23 N.m)**.

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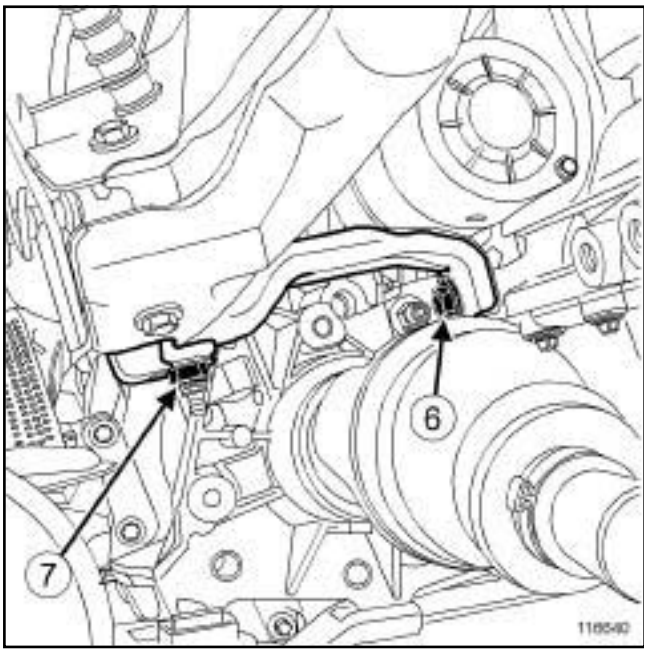
# Exhaust manifold: Removal - Refitting

K4M

**III - FINAL OPERATION**




116640

❑ Refit the stay between the exhaust manifold and the cylinder block.

❑ Tighten to torque and in order:

- the **bolts (6) mounting the stay on the cylinder block (21 N.m)**,
- the **nut (7) mounting the stay on the exhaust manifold (21 N.m)**.

❑ Refit the exhaust manifold upper heat shield.

❑ Torque tighten the **exhaust manifold upper heat shield mounting bolts (12 N.m)**.

❑ Refit the upstream oxygen sensor using the.

❑ Torque tighten the **upstream oxygen sensor (45 N.m)**.

❑ Connect the upstream oxygen sensor connector.

❑ Refit the exhaust bracket mounting bolts.

❑ Torque tighten the **exhaust bracket mounting bolts (21 N.m)**.

❑ Refit:

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

❑ Connect the battery (see **Battery: Removal - Refitting**) (MR 388, 80A, Battery).

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# Turbocharger: Removal - Refitting

K9K

| Equipment required |
|---|
| Diagnostic tool |

| Tightening torques ▽ | |
|---|---|
| new turbocharger studs on the exhaust manifold | **9 N.m** |
| new turbocharger stud on the turbocharger | **9 N.m** |
| turbocharger nuts | **28 N.m** |

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

## REMOVAL

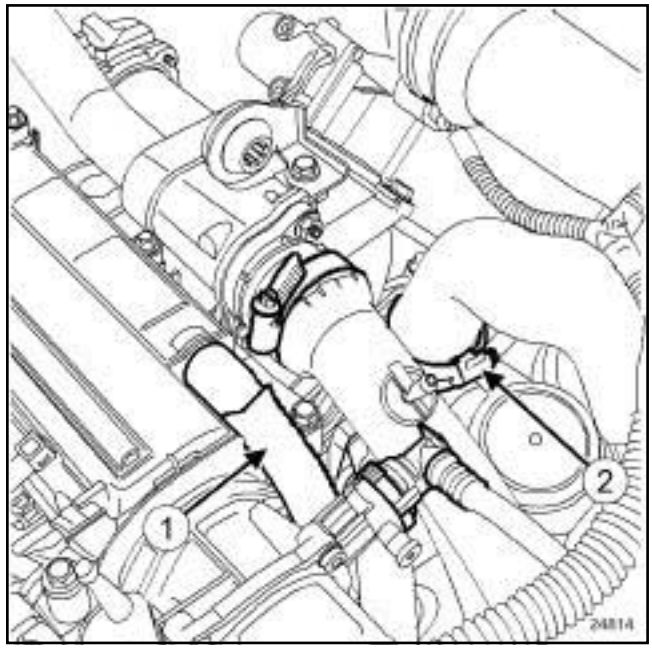
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the engine cover,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

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❏ Disconnect:

- the oil vapour rebreathing pipe (**1**) ,
- the duct between the turbocharger and the intercooler at (**2**) .

❏ Remove:

- the exhaust gas recirculation solenoid valve (see **14A**, **Antipollution**, **Exhaust gas recirculation solenoid valve: Removal - Refitting**, page **14A-4**) ,
- the air duct between the turbocharger and the air filter unit,
- the engine undertray,
- the catalytic converter (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) .

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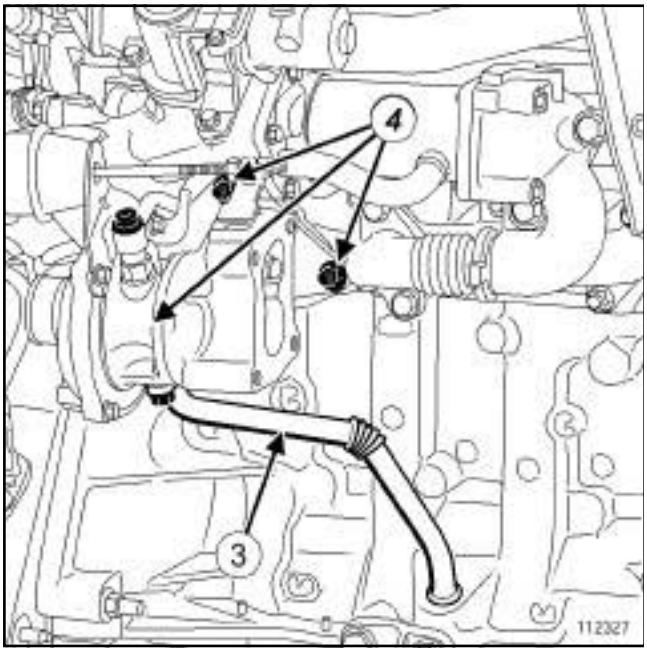
# Turbocharger: Removal - Refitting

K9K

## II - REMOVAL OPERATION




112327

❑ Remove (see **12B**, **Turbocharging**, **Turbocharger oil pipe: Removal - Refitting**, page **12B-4**) :

- the turbocharger oil return pipe (**3**) ,
- the turbocharger oil supply pipe.

❑ Remove:

- the nuts (**4**) from the turbocharger on the exhaust manifold,
- the turbocharger,
- the turbocharger seal.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Turbocharger nut**.

❑ **parts always to be replaced: seal between exhaust manifold and turbocharger**.

❑ **parts always to be replaced: exhaust manifold stud on the turbocharger (if loosened)**.

**WARNING**

Ensure that no foreign bodies enter the turbine or compressor during the refitting operation.

Check that the turbocharger oil return pipe is not partially or completely blocked by scale. Check that there are no leaks. If there are, replace the part.

**WARNING**

Following a turbocharger fault, check that the intercooler and air circuit assembly are not full of oil. If they are, remove them and clean them with a cleaning tray or station and dry them with a compressed air gun.

❑ Use **GREY ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:

- the exhaust manifold joint face,
- the turbocharger gasket face if reused.

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the exhaust manifold joint face,
- the turbocharger joint face if it is to be reused,
- the housing of the turbocharger air outlet pipe seal,
- the joint face of the exhaust gas cooler mounting on the gearbox end.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Torque tighten:

- the **new turbocharger studs on the exhaust manifold (9 N.m)**,
- the **new turbocharger stud on the turbocharger (9 N.m)**.

### II - REFITTING OPERATION

❑ Refit:

- a new turbocharger seal on the exhaust manifold,
- the turbocharger.

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# Turbocharger: Removal - Refitting

K9K

❑ Use an open wrench to fit the new turbocharger nuts without tightening them (the turbocharger must be in contact with the manifold and the wrench should no longer turn without effort).

❑ Torque tighten the **turbocharger nuts (28 N.m)**.

**III - FINAL OPERATION**

❑ Refit (see **12B**, **Turbocharging**, **Turbocharger oil pipe: Removal - Refitting**, page **12B-4**) :

- the turbocharger oil return pipe,
- the turbocharger oil supply pipe.

❑ Refit:

- the catalytic converter (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**)
- the engine undertray,
- the air duct between the turbocharger and the air filter unit,
- the exhaust gas recirculation solenoid valve (see **14A**, **Antipollution**, **Exhaust gas recirculation solenoid valve: Removal - Refitting**, page **14A-4**)

❑ Connect:

- the duct between the turbocharger and the intercooler onto the turbocharger,
- the oil vapour rebreathing pipe .

❑ Refit:

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the engine cover.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

**Check**

❑ Disconnect the flow actuator connector (engine starting inhibition).

❑ Run the starter motor until the oil pressure warning light goes out (wait for a few seconds).

❑ Switch off the ignition.

❑ Reconnect the fuel flow actuator connector.

❑ Make sure that there are no oil leaks.

❑ Connect the **Diagnostic tool** and clear the stored faults.

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# Turbocharger oil pipe: Removal - Refitting

K9K

| Equipment required |
|---|
| self-contained starter |
| Diagnostic tool |

| Tightening torques ▽ | |
|---|---|
| new turbocharger oil supply pipe hollow bolt to the turbocharger | **Torx bolt 18 N.m or Hexagonal bolt 14 N.m** |
| turbocharger oil supply pipe nut on the cylinder head | **shouldered nut 35 N.m or non-shouldered nut 23 N.m** |
| turbocharger oil return pipe bolts | **12 N.m** |

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**IMPORTANT**

Wear cut-resistant gloves during the operation.

**WARNING**

Ensure that no foreign bodies enter the turbine or compressor during the refitting operation.

Check that the turbocharger oil return pipe is not partially or completely blocked by scale. Check that there are no leaks. If there are, replace the part.

**WARNING**

Metal objects may enter the oil and air circuits as a result of a broken turbocharger.

Failure to observe the following instructions will lead to the turbocharger breaking again.

Note:

This procedure deals with removing and refitting the turbocharger oil return pipe and the turbocharger oil supply pipe.

## REMOVING THE TURBOCHARGER OIL SUPPLY PIPE

### I - REMOVAL PREPARATION OPERATION

❑ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

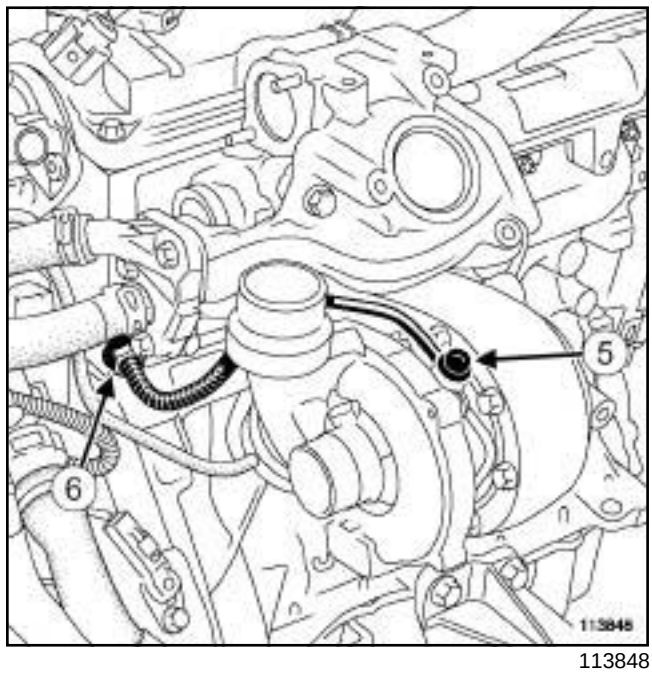
❑ Remove:

- the engine cover,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

❑ Remove:

- the engine undertray,
- the catalytic converter (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) .

### II - REMOVAL OPERATION

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❑ Loosen the nut (**6**) for the turbocharger oil supply pipe on the cylinder head, using the tool.

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# Turbocharger oil pipe: Removal - Refitting

K9K

❑ Remove:

- the turbocharger oil supply pipe hollow boltfrom the turbocharger,
- the turbocharger oil supply pipe.

❑ Wipe away any oil run-off.

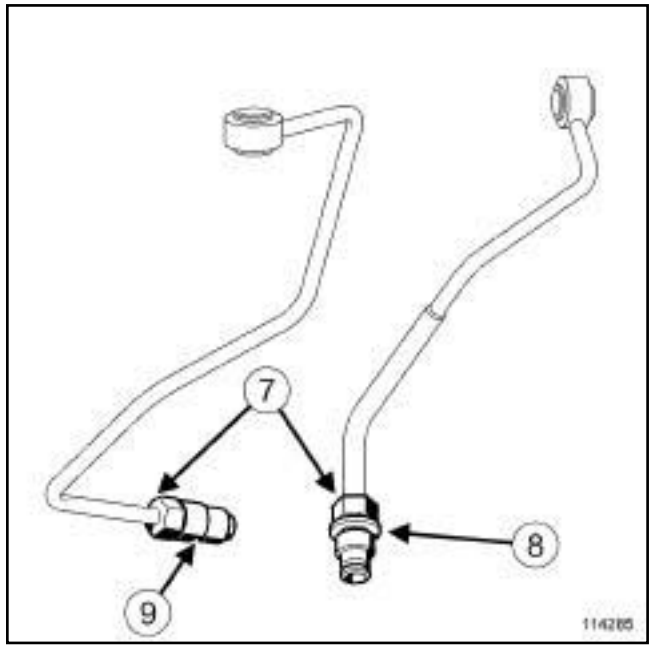
## REFITTING THE TURBOCHARGER OIL SUPPLY PIPE

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: turbocharger oil supply pipe**

❑ **parts always to be replaced: turbocharger oil pipe seal**

❑ **parts always to be replaced: Turbocharger oil supply pipe bolt**

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❑

Note:

These two turbocharger oil supply pipes may be used on the same engine. The tightening torque of the end pieces (**7**) on the cylinder head is different, depending on the following:

- if the end piece is **shouldered** (**8**) ; in this case, there is no need to apply **HIGH RESISTANCE THREADLOCK** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the thread of the end piece,
- if the end piece is **not shouldered** (**9**) ; in this case, it is essential to apply **HIGH RESISTANCE THREADLOCK** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the thread of the end piece.

### II - REFITTING OPERATION

❑ Refit a new turbocharger oil supply pipe.

❑ Fit the turbocharger oil supply pipe nut on the cylinder head, without tightening it.

❑ Refit a new hollow bolt for the turbocharger oil supply pipe on the turbocharger.

❑ Torque tighten:

- a **new turbocharger oil supply pipe hollow bolt to the turbocharger (Torx bolt 18 N.m or Hexagonal bolt 14 N.m)**,

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- the **turbocharger oil supply pipe nut on the cylinder head (shouldered nut 35 N.m or non-shouldered nut 23 N.m)** using toolor tool.

**III - FINAL OPERATION**

❑ Refit:

- the catalytic converter (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) ,
- the engine undertray.

❑ Refit:

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the engine cover.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Disconnect the high pressure pump flow actuator connector and the connector for each diesel fuel injector in order to prevent the engine from starting.

❑ Connect a **self-contained starter**.

❑ Run the starter until the oil pressure warning light goes out on the instrument panel (wait for a few seconds).

❑ Switch off the ignition.

❑ Disconnect the **self-contained starter**.

❑ Connect the high pressure pump flow actuator connector and the connector for each diesel fuel injector.

❑ Start the engine.

❑ Let the engine idle then depress the accelerator several times with no load.

❑ Switch off the ignition.

❑ Check:

- that the turbocharger is operating correctly,
- that there are no oil leaks from the turbocharger.

❑ Use the **Diagnostic tool** to check for an absence of stored faults; deal with these and clear them as necessary.

## REMOVING THE TURBOCHARGER OIL RETURN PIPE

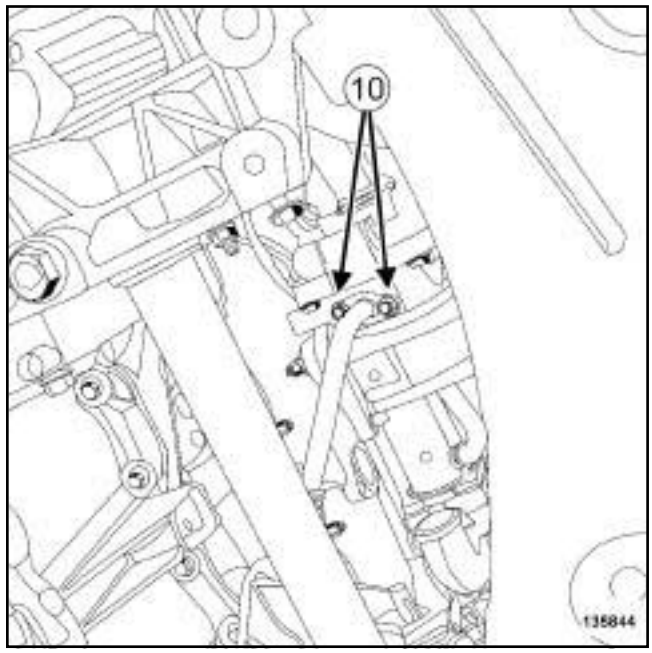
❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❑ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Remove:

- the engine undertray bolts,
- the engine undertray,
- the catalytic converter (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) .

**REMOVAL OPERATION**

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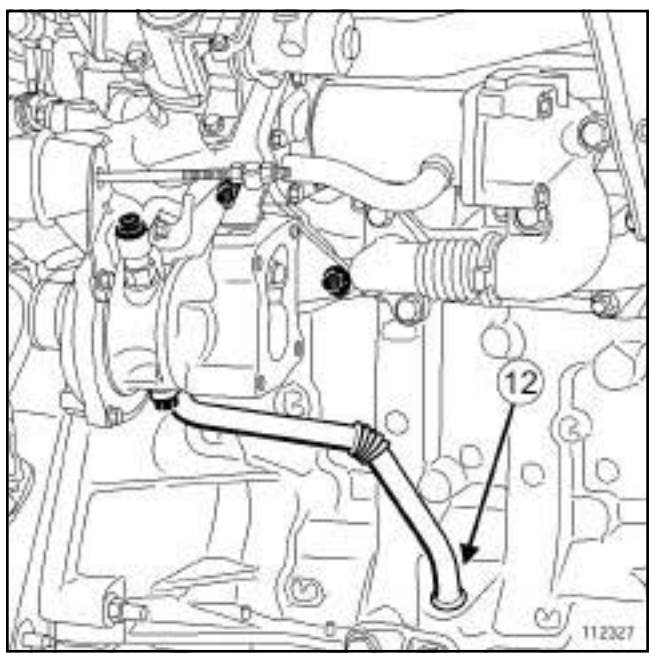
❑ Remove the turbocharger oil return pipe bolts (**10**) .

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❑ Rotate the turbocharger oil return pipe (**12**) to facilitate its removal.

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# Turbocharger oil pipe: Removal - Refitting

K9K

❑ Extract the turbocharger oil return pipe from the cylinder block.

❑ Remove the turbocharger oil return pipe seals.

## REFITTING THE TURBOCHARGER OIL RETURN PIPE

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: turbocharger oil pipe seal**.

❑ Use **SURFACE CLEANER** (see **Vehicle: Towing and lifting**) (04B, Consumables - Products) to clean and degrease:

- the seal housing on the turbocharger oil return pipe if it is to be reused,
- the turbocharger oil return pipe joint face if it is to be reused,
- the turbocharger oil return pipe joint face on the turbocharger,
- the turbocharger oil return pipe housing in the cylinder block.

**WARNING**
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Lubricate the turbocharger oil return pipe O-ring with clean engine oil.

### II - REFITTING OPERATION

❑ Proceed in the reverse order to removal.

❑ Torque tighten the **turbocharger oil return pipe bolts (12 N.m)**.

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# Intercooler: Removal - Refitting

K9K

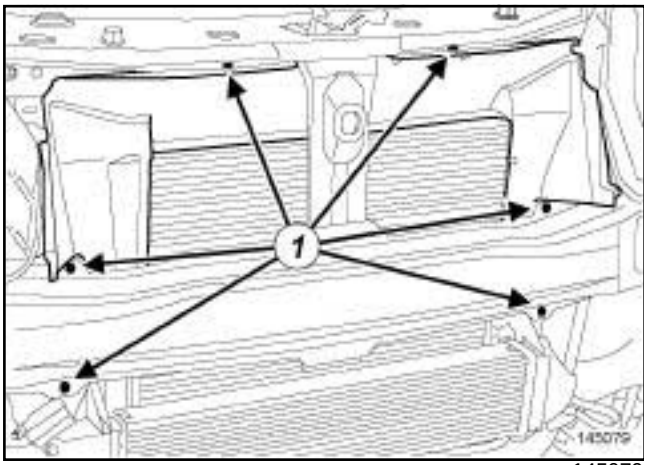
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection).

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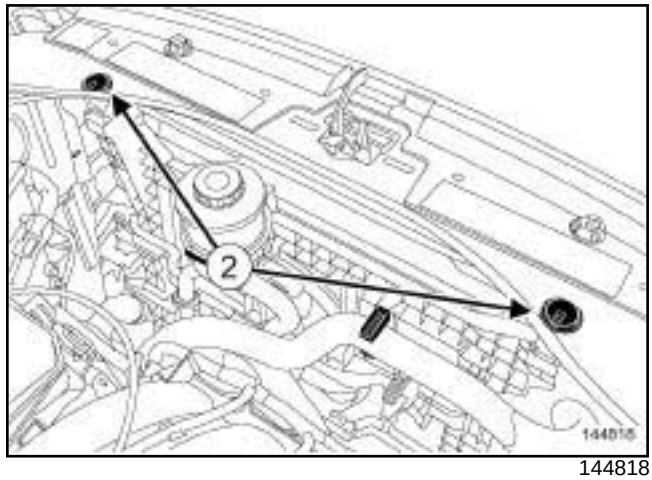
❏ Remove:

- the air deflector mounting pins (**1**) ,
- the air deflector.

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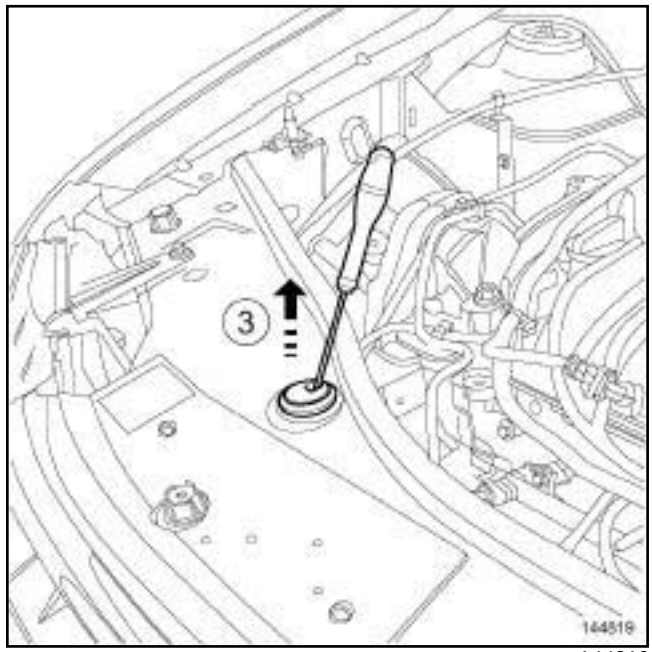


144819

❏ Press the clips of the fan assembly centring pins (**2**) using a screwdriver and pull them in the direction of the arrow (**3**) .

❏ Remove the fan assembly centring pins (**2**) .

### II - REMOVAL OPERATION

❏

Note:

Do not damage the cooling unit vanes (radiator, condenser, etc.) during handling.

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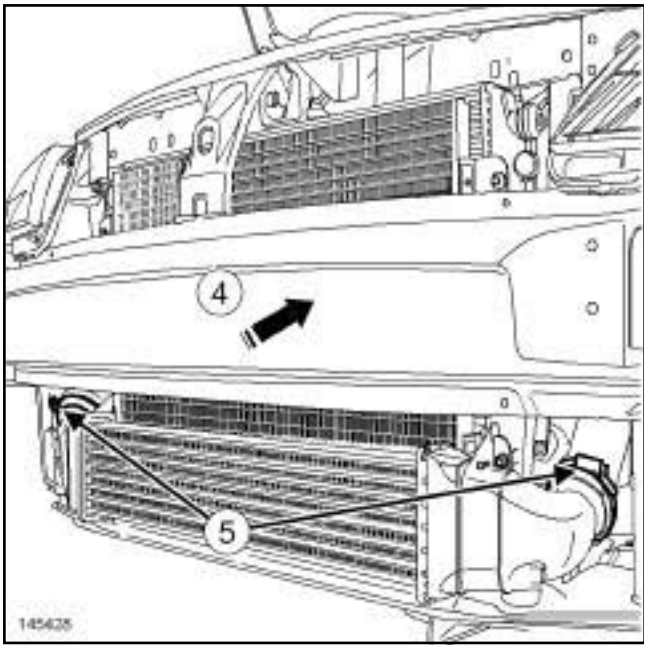
# Intercooler: Removal - Refitting

K9K

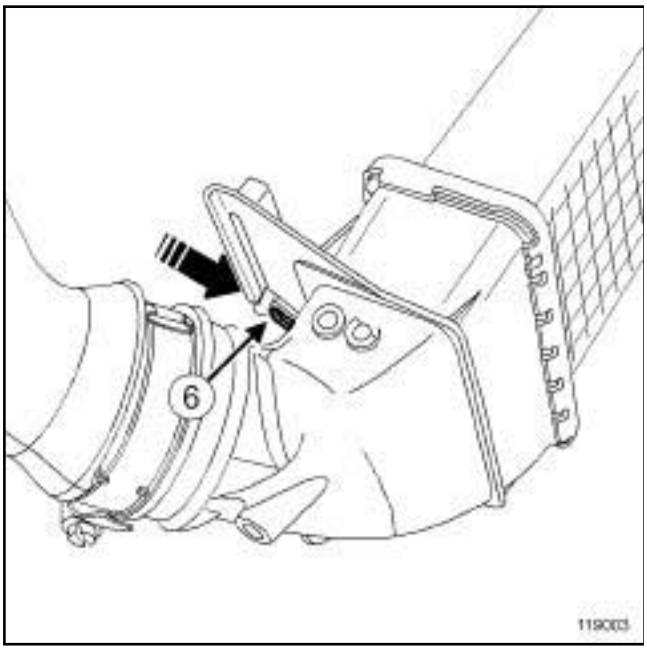



145428

❏ Push the « radiator - fan » assembly in the direction of the arrow (**4**) in order to remove the intercooler.

❏ Remove the clips (**5**) of the intercooler ducts.

❏ Disconnect the intercooler ducts.

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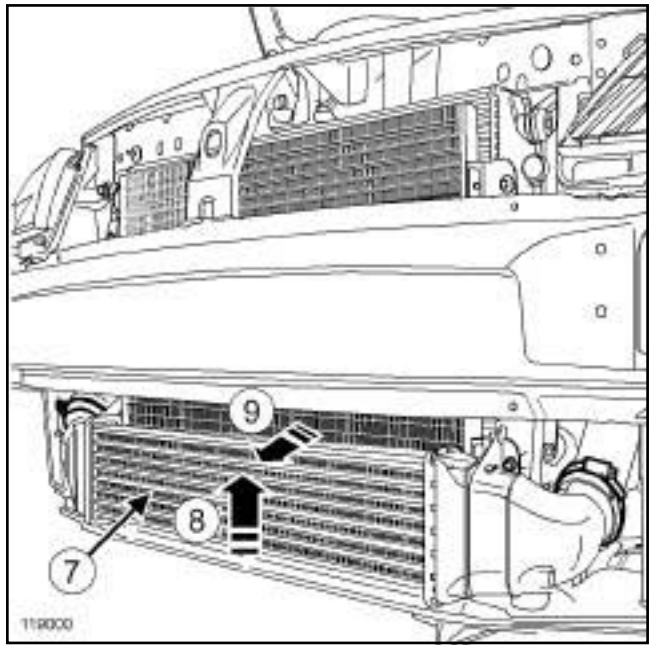
❏ Press the end piece of the intercooler mounting at (**6**) , in the direction of the arrow, to unclip it.




119000

❏ Remove the intercooler (**7**) in the direction of the arrows (**8**) then (**9**) .

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Check that the intercooler is not full of oil. If this is the case, clean it with a cleaning agent and then let it dry.

### II - REFITTING OPERATION

❏ Proceed in the reverse order to removal.

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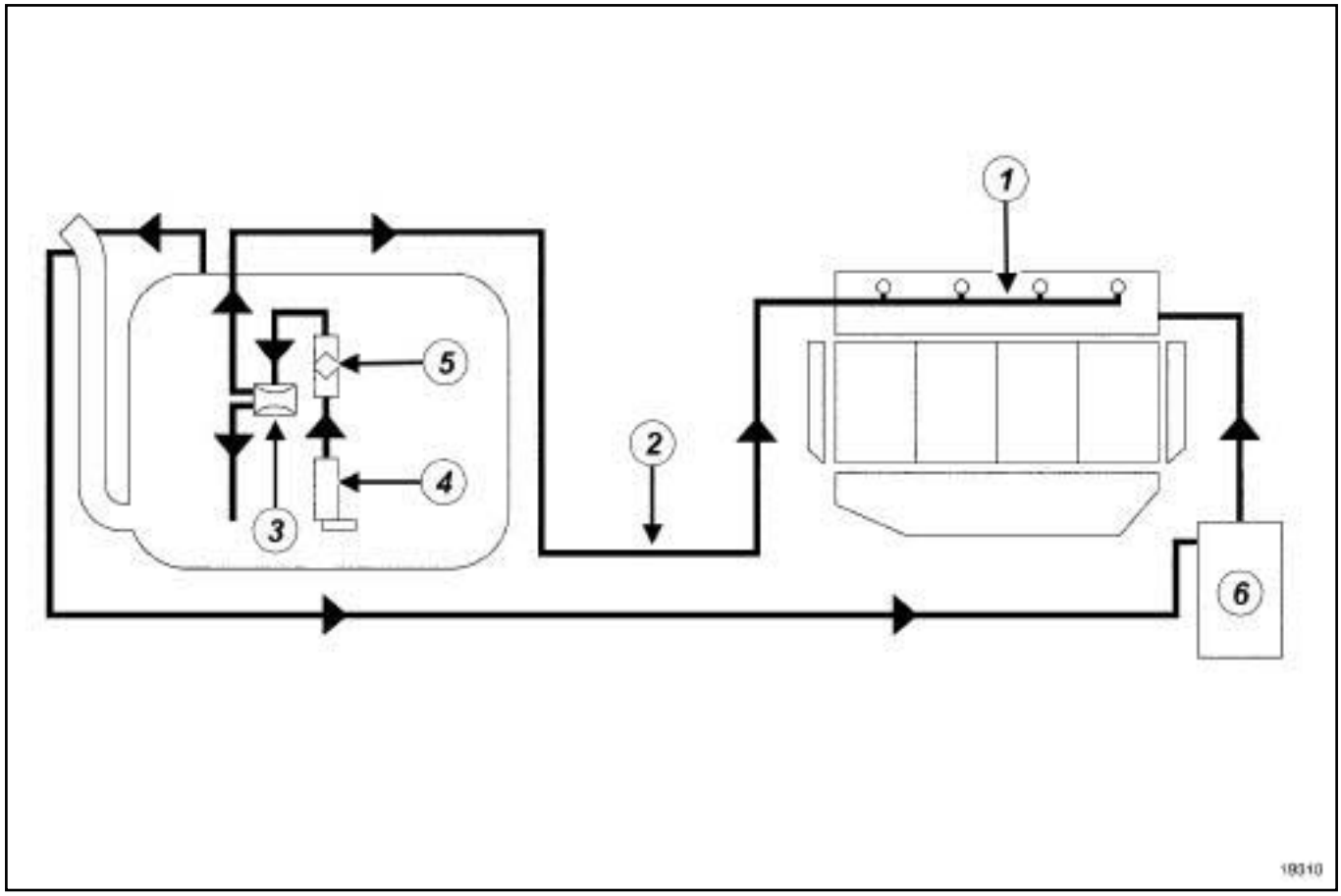
# Fuel circuit: Operating diagram

K4M

**Operating diagram of the fuel supply circuit ( « pump - sender - fuel filter » assembly)**




19310

The fuel supply circuit does not have a return.

The fuel pressure does not vary with engine load.

The circuit comprises:

- a rail (**1**) without a return pipe and without a supply pressure regulator,
- a single pipe (**2**) coming from the tank,
- a « pump-sender-fuel filter » assembly fitted with the pressure regulator (**3**) , the pump (**4**) and the fuel filter (**5**) (all located in the tank),
- a fuel vapour recirculation tank (**6**) .

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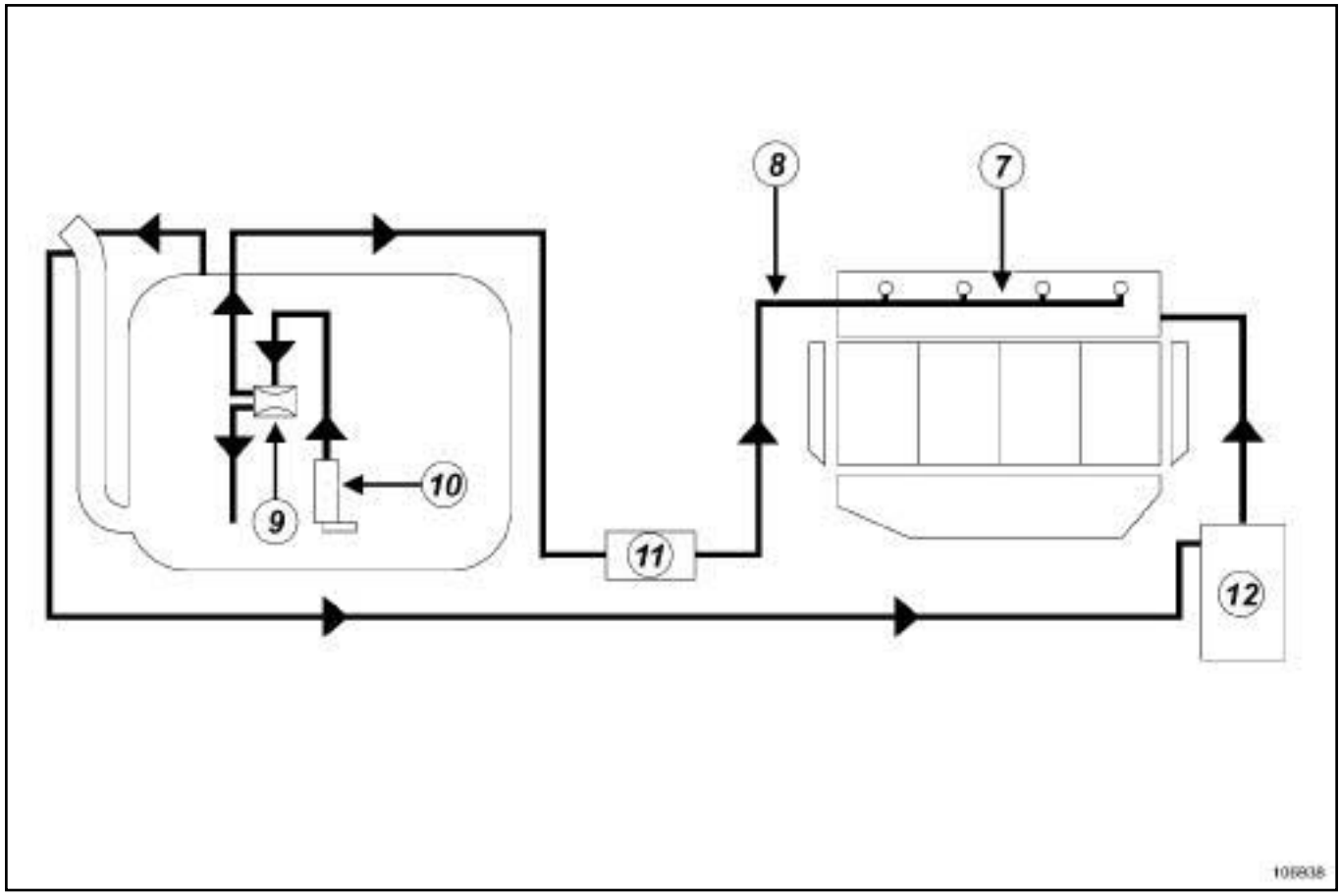
# Fuel circuit: Operating diagram

K4M

**Operating diagram of the fuel supply circuit (external filter)**




106938

The fuel supply circuit does not have a return.

The fuel pressure does not vary with engine load.

The circuit comprises:

- a rail (**7**) without a return pipe union and without a supply pressure regulator,
- a single pipe (**8**) coming from the tank,
- a « pump-fuel sender » supply assembly fitted with the pressure regulator (**9**) , the pump (**10**) and the fuel filter (**11**) ,
- a fuel vapour recirculation tank (**12**) .

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# Manual priming pump: Removal - Refitting

K9K

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **Diesel injection: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

**IMPORTANT**

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

**IMPORTANT**

Wear goggles with side protectors for this operation.

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**WARNING**

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

Note:

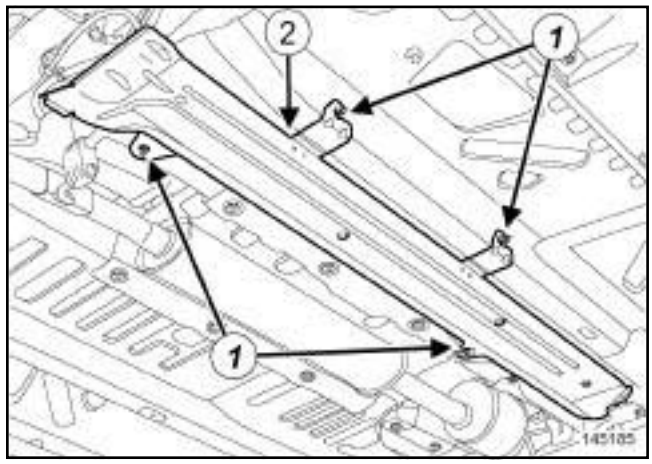
The priming pump is incorporated in the fuel supply pipe.

To remove the priming pump, remove the fuel supply pipe assembly.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

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❑ Remove:

- the fuel supply pipe protector nuts (**1**) ,
- the fuel supply pipe protector (**2**) .

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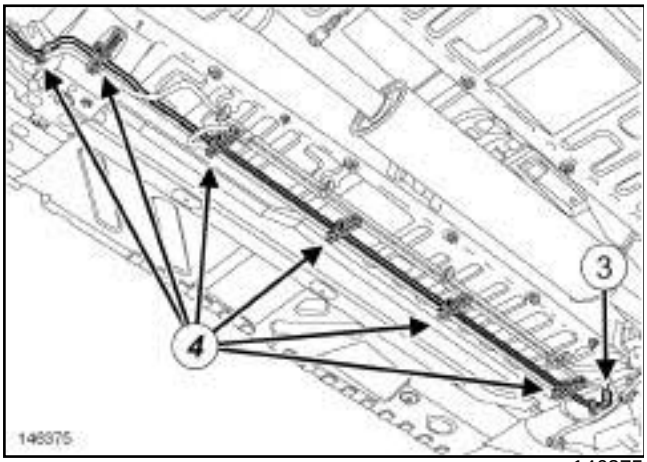
# Manual priming pump: Removal - Refitting

K9K

## II - OPERATION FOR REMOVAL OF PART CONCERNED

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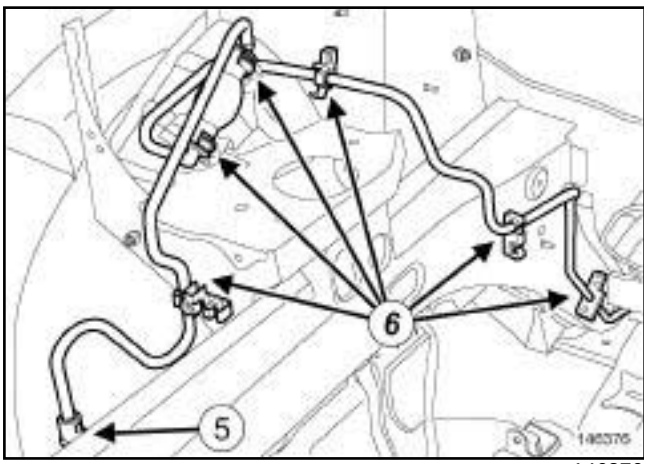
❏ Disconnect the fuel supply pipe at the fuel tank end at (**3**) .

❏ Insert the blanking plugs.

❏ Unclip the fuel supply pipe under the body at (**4**) .




146376

❏ Disconnect the connection (**5**) from the fuel supply pipe on the fuel filter.

❏ Unclip the fuel supply pipe at (**6**) .

❏ Remove the fuel supply pipe through the engine compartment.

## REFITTING

### I - REFITTING OPERATION FOR PART CONCERNED

❏ Proceed in the reverse order to removal.

❏ Ensure that the fuel supply pipe unions are clicked into position properly.

### II - FINAL OPERATION

❏ Prime the fuel circuit using the priming pump.

**WARNING**

Check that there are no leaks:

- run the engine at idle speed for **2 minutes**,
- accelerate several times at no load,
- switch off the ignition,
- check that there is no fuel escaping.

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# Diesel filter: Removal - Refitting

K9K

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **Diesel injection: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**IMPORTANT**

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

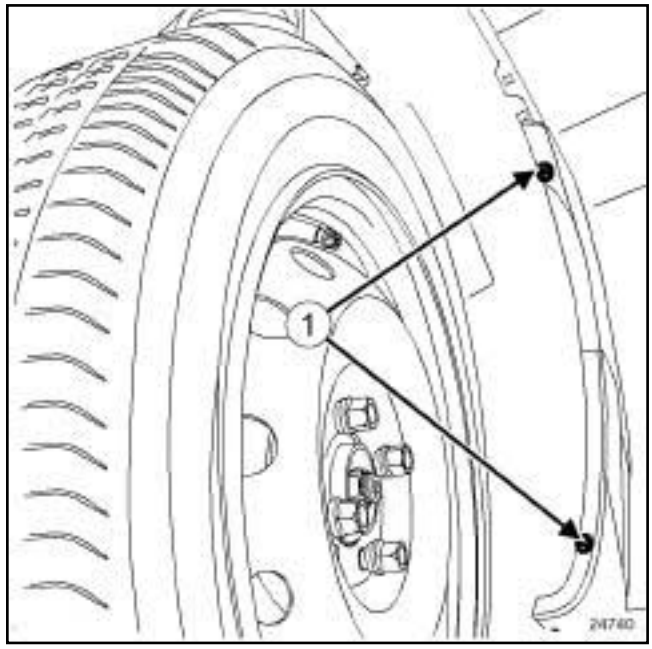
Note:

Make sure you have a new diesel filter before opening the fuel circuit.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

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❑ Remove:

- the plastic screen under the diesel filter,
- the front right-hand wheel arch liner bolts (**1**) .

❑ Move the front right-hand wheel arch liner slightly to one side.

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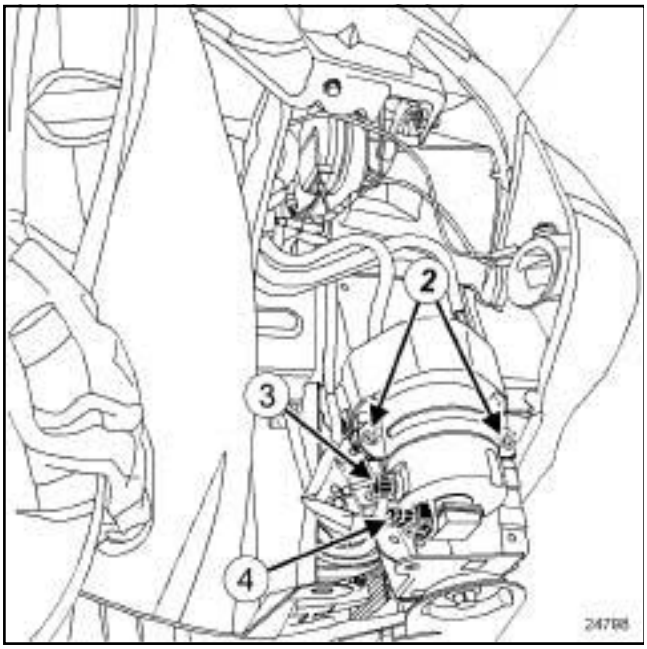
# Diesel filter: Removal - Refitting

K9K

## II - REMOVAL OPERATION

### MAHLE type filter

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❏ Remove:

- the diesel filter protection plate nuts (**2**) ,
- the diesel filter protection plate,
- the diesel filter from its mounting, noting its original position.

❏ Disconnect the water detection sensor connector (**4**) .

❏ Place a container under the diesel filter.

❏ Open the bleed screw (**3**) and let the diesel run out.

**WARNING**

Keep the pipe unions away from contaminated areas.

Note:

Mark the position of the fuel pipe unions in relation to the diesel filter before removing the diesel filter.

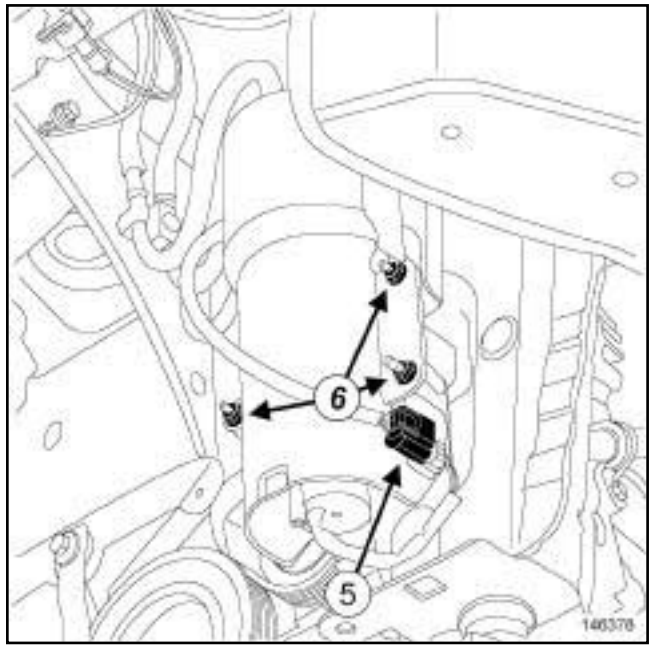
❏ Disconnect the pipe unions on the diesel filter.

❏ Let the diesel fuel flow out from the various pipes into the container.

❏ Fit plugs into the openings.

❏ Remove the water detection sensor, turning it anti-clockwise.

### DELPHI type filter




146378

❏ Disconnect the water detection sensor connector (**5**) .

❏ Remove:

- the diesel filter protection plate nuts (**6**) ,
- the diesel filter protection plate,
- the diesel filter from its mounting, noting its original position.

❏ Place a container under the diesel filter.

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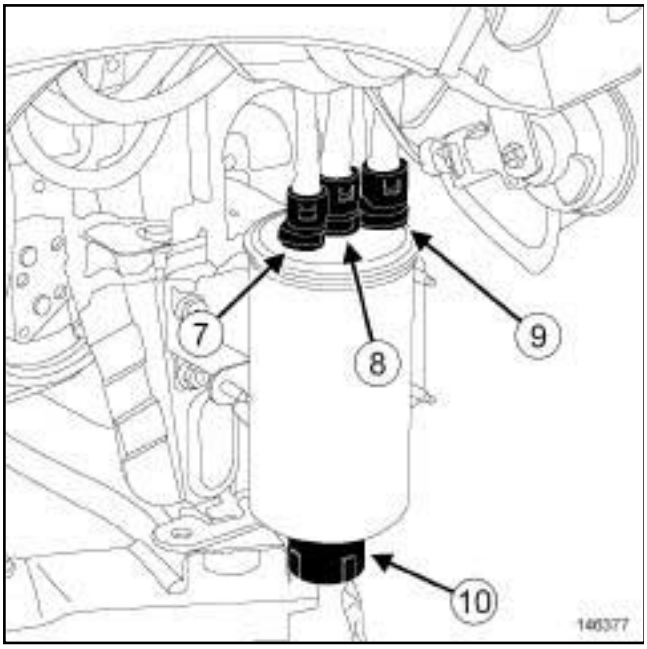
# Diesel filter: Removal - Refitting

K9K



146377

❑ Disconnect:

- the fuel inlet pipe union (**7**) ,
- the fuel outlet pipe union (**8**) ,
- the fuel return pipe union (**9**) .

❑ Let the diesel fuel flow out from the various pipes into the container.

❑ Remove the water detection sensor (**10**) , turning it anti-clockwise.

❑ Fit plugs into the openings.

## REFITTING

### I - REFITTING OPERATION

❑ Refit the water detection sensor, turning it clockwise.

❑ Connect:

- the pipe unions on the diesel filter,
- the water detection sensor connector.

❑ Refit:

- the new diesel filter in its original position,
- the diesel filter protection plate,
- the diesel filter protection plate nuts.

### II - DRAINING THE WATER INSIDE THE DIESEL FILTER

❑

Note:

- Certain vehicles have a sensor for detecting water in the diesel fuel, located in the diesel filter. If water is detected, the injection fault warning light comes on.

❑ Periodically drain any water contained in the diesel filter.

❑ For filters without a water presence sensor:

- open the drain plug,
- let the water flow out,
- close the plug.

❑ For filters with a water presence sensor:

- disconnect the water presence sensor connector,
- unclip the water presense sensor connector,
- loosen the water presence sensor by one turn,
- let the water flow out,
- tighten the water presence sensor,
- connect the water presence sensor connector.

### III - FINAL OPERATION

❑ Refit:

- the front right-hand wheel arch liner,
- the plastic screen under the diesel filter.

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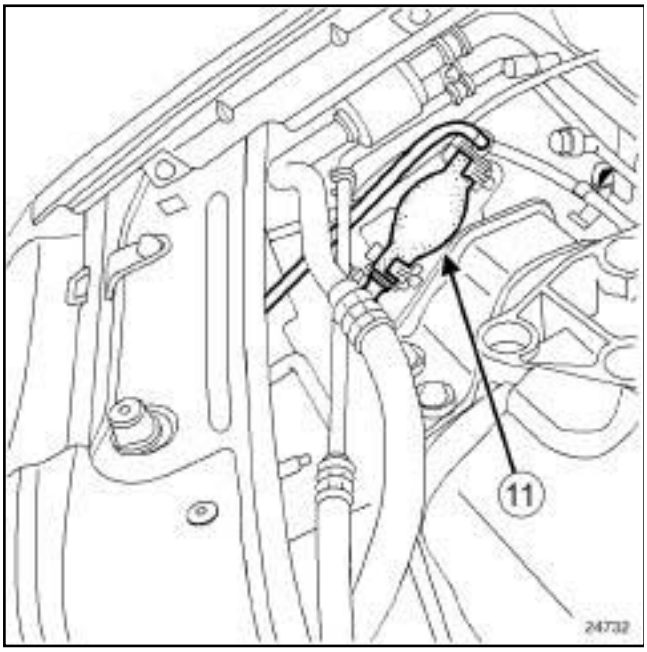
**Priming the supply circuit**




24732

❑ Prime the fuel system with the manual priming pump (**11**) (automatic degassing).

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# Fuel pressure: Check

K4M

| Special tooling required | |
|---|---|
| **Mot. 1311-08** | Union for taking fuel pressure measurements. |

| Tightening torques ▽ | |
|---|---|
| fuel pipe protector nuts | **7 N.m** |
| fuel pipe protector bolt | **7 N.m** |

**IMPORTANT**

During this operation, be sure to:

- refrain from smoking or bringing red hot objects near the working area,
- beware of fuel splashes when disconnecting the union,
- protect sensitive areas from fuel outflow.

**IMPORTANT**

Wear goggles with side protectors for this operation.

**IMPORTANT**

Wear leaktight gloves (nitrile type) for this operation.

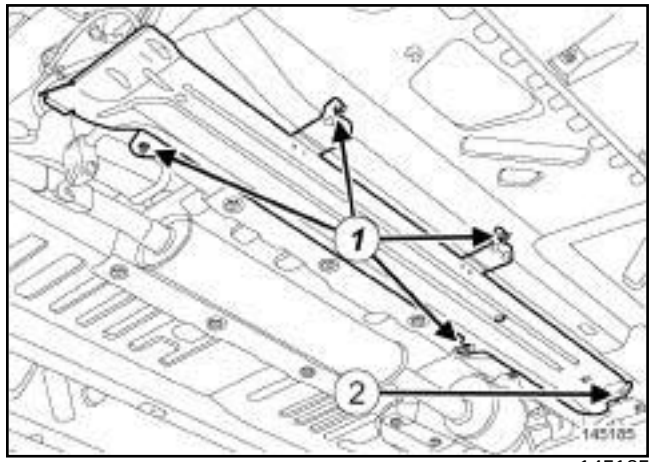
**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

## CHECK

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

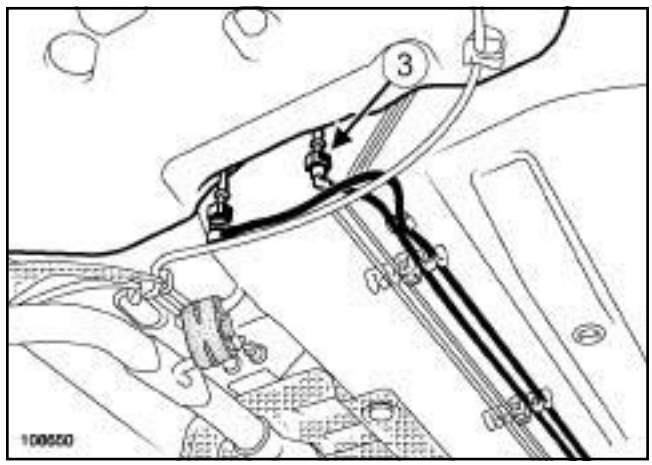
❑ Switch off the ignition.




145185

❑ Remove:

- the nuts (**1**) and the bolt (**2**) from the fuel pipe protector,
- the fuel pipe protector.




108650

❑ Disconnect the fuel supply pipe union (**3**) .

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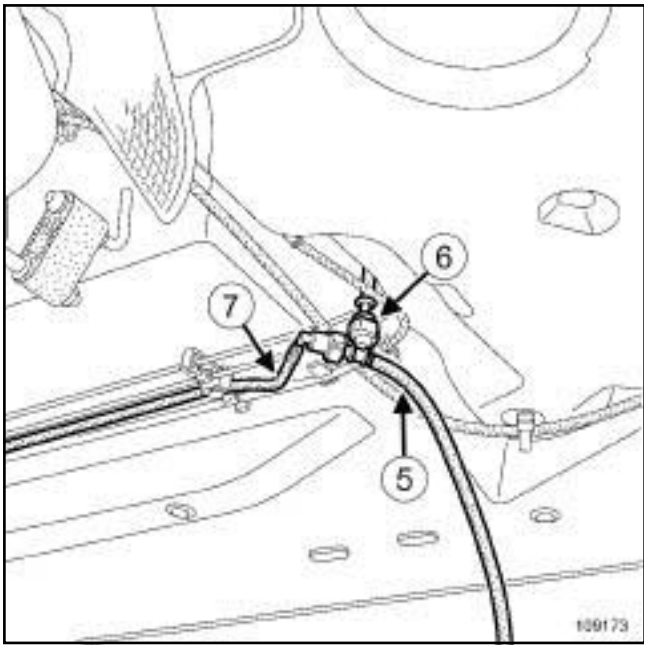
# Fuel pressure: Check

K4M




109173

❏ Connect:

- the « T » union **(Mot. 1311-08)** (**6**) to the fuel tank outlet pipe,
- the pipe (**5**) fitted with a pressure gauge contained in the test kitonto the « T » union (**6**) ,
- the fuel supply pipe (**7**) to the « T » union (**6**) .

❏ Start the vehicle to run the fuel pump.

❏ Determine the pressure:

- the pressure must be constant (approximately **3.5 bar ± 0.2 bar**),
- It may take a few seconds to obtain a correct pressure reading.

❏ Disconnect:

- the pipe fitted with the pressure gauge contained in the test kitfrom the « T » union,
- the « T » union **(Mot. 1311-08)** from the fuel tank outlet pipe.

❏ Connect the fuel supply pipe union to the fuel tank outlet pipe.

❏ Refit the fuel supply pipe protector.

❏ Torque tighten:

- the **fuel pipe protector nuts (7 N.m)**,
- the **fuel pipe protector bolt (7 N.m)**.

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K4M

| Special tooling required | |
|---|---|
| **Mot. 1311-08** | Union for taking fuel pressure measurements. |

| Tightening torques ▽ | |
|---|---|
| fuel pipe protector nuts | **7 N.m** |
| fuel pipe protector bolt | **7 N.m** |

**IMPORTANT**

During this operation, be sure to:

- refrain from smoking or bringing red hot objects near the working area,
- beware of fuel splashes when disconnecting the union,
- protect sensitive areas from fuel outflow.

**IMPORTANT**

Wear goggles with side protectors for this operation.

**IMPORTANT**

Wear leaktight gloves (nitrile type) for this operation.

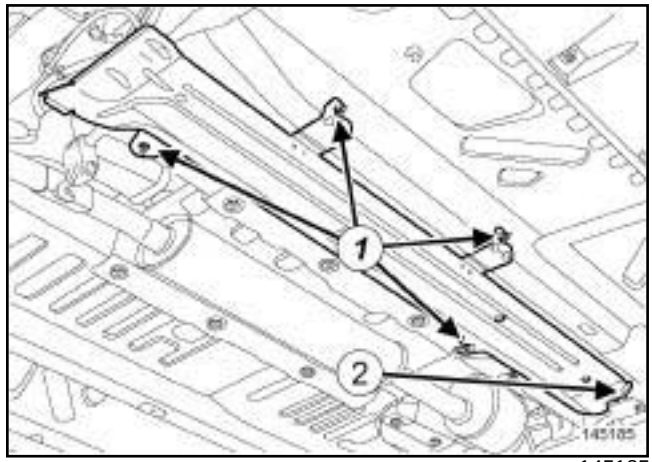
**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

## CHECK

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

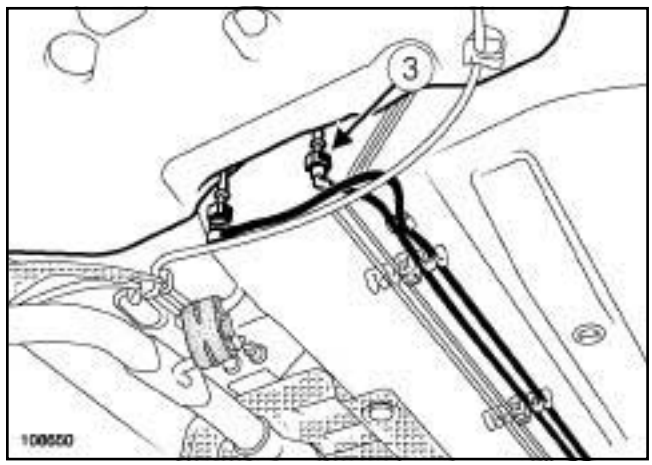
❑ Switch off the ignition.




145185

❑ Remove:

- the nuts (**1**) and the bolt (**2**) from the fuel pipe protector,
- the fuel pipe protector.




108650

❑ Disconnect the fuel supply pipe union (**3**) .

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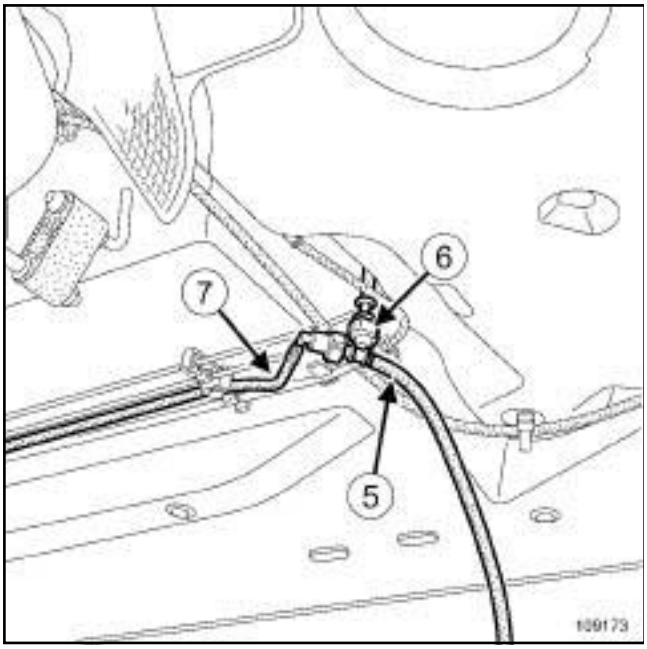
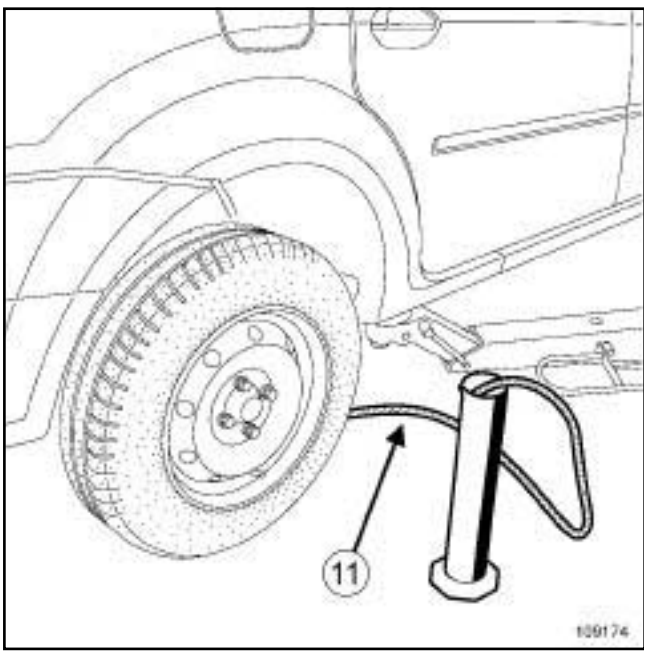
K4M



109173

❏ Connect:

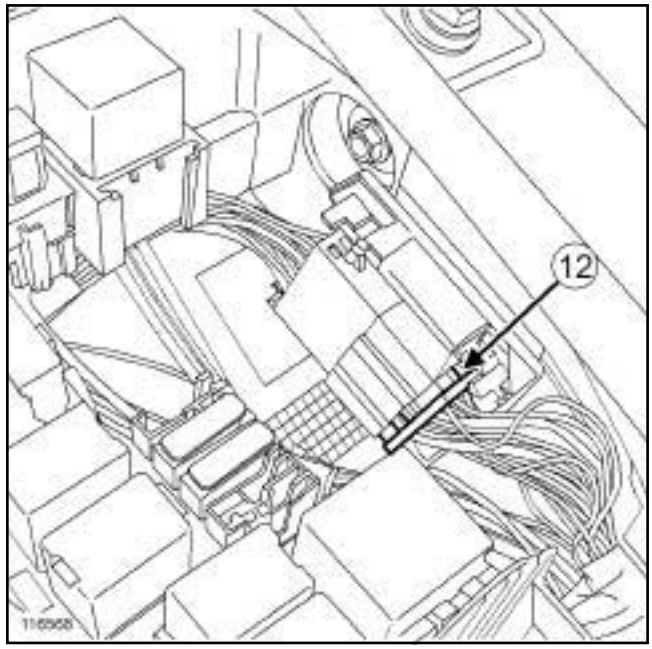
- the « T » union **(Mot. 1311-08)** (**6**) to the fuel tank outlet pipe,
- the pipe (**5**) contained in the test kitonto the « T » union (**6**) ,
- the fuel supply pipe (**7**) to the « T » union (**6**) .



109174

❏ Insert the pipe (**11**) into a graduated measuring cylinder (**2000 ml**).

❏ Remove the Protection and Switching Unit cover.



116568

❏ Disconnect the connector (**12**) from the passenger compartment engine harness.

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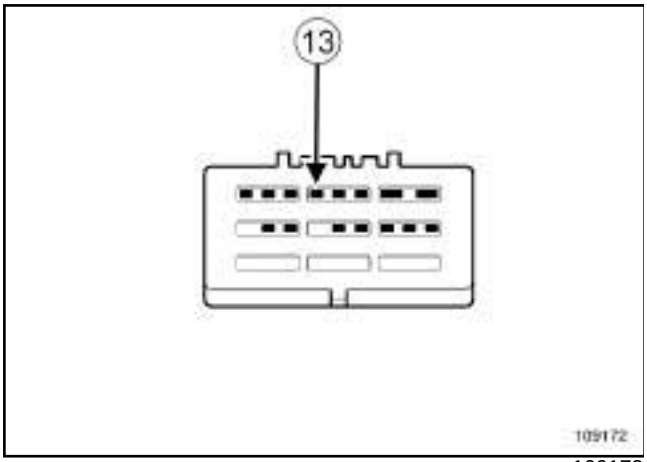
K4M




109172

❏ Connect the connector terminal (**13**) to the + **BATTERY** to operate the fuel pump.

❏ Note the time taken for the measuring cylinder to fill up.

> Note:
>
> The minimum flow rate from the fuel pump is **60 l/h**.

❏ Remove the terminal (**13**) of the + **BATTERY** connector.

❏ Refit the Protection and Switching Unit cover.

❏ Disconnect:

- the pipe fitted with the pressure gauge contained in the test kitfrom the « T » union,
- the « T » union **(Mot. 1311-08)** from the fuel tank outlet pipe.

❏ Connect the fuel supply pipe union to the tank outlet pipe.

❏ Refit the fuel supply pipe protector.

❏ Torque tighten:

- the **fuel pipe protector nuts (7 N.m)**,
- the **fuel pipe protector bolt (7 N.m)**.

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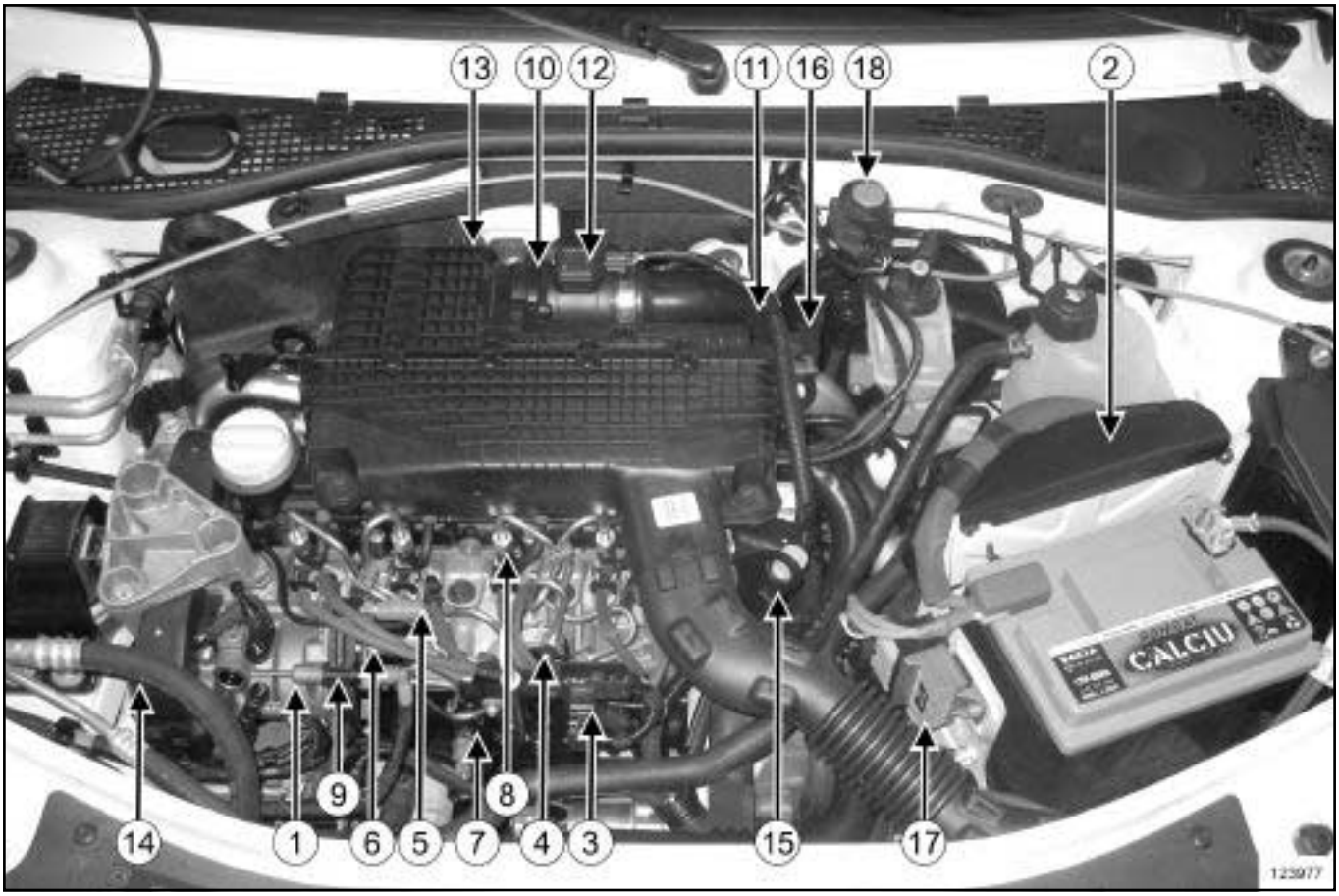
# Diesel injection: List and location of components

K9K, and 796




123977

| No. | Description |
|---|---|
| 1 | High pressure pump |
| 2 | Injection computer |
| 3 | Injector rail pressure sensor |
| 4 | Spherical injector rail |
| 5 | Diesel temperature sensor |
| 6 | Diesel fuel flow actuator |
| 7 | Accelerometer |
| 8 | Injector |
| 9 | Venturi |
| 10 | Exhaust gas recirculation solenoid valve |
| 11 | Turbocharging air pressure sensor |
| 12 | Air flowmeter with integrated temperature sensor |

| No. | Description |
|---|---|
| 13 | Turbocharger |
| 14 | Cylinder reference sensor |
| 15 | Coolant temperature sensor |
| 16 | TDC sensor |
| 17 | Pre-postheating unit |
| 18 | Turbocharger control solenoid valve (only for K9K 796 engine) |
| 19 | Accelerator pedal potentiometer |

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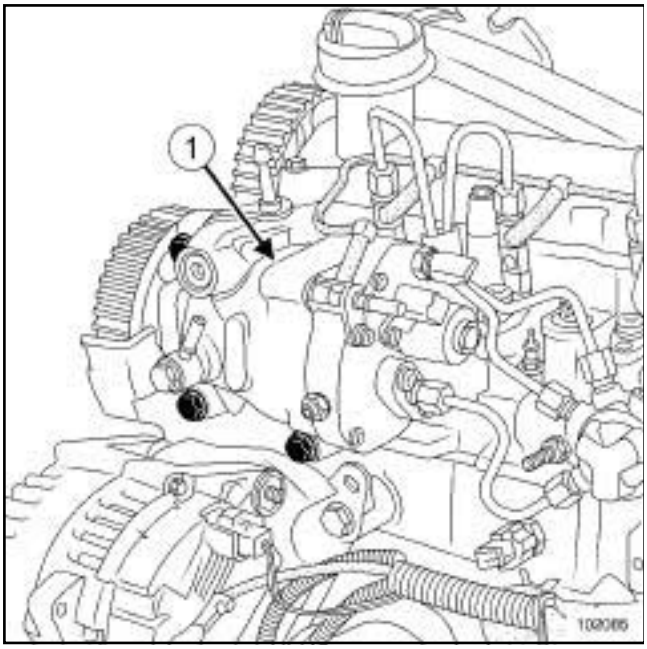
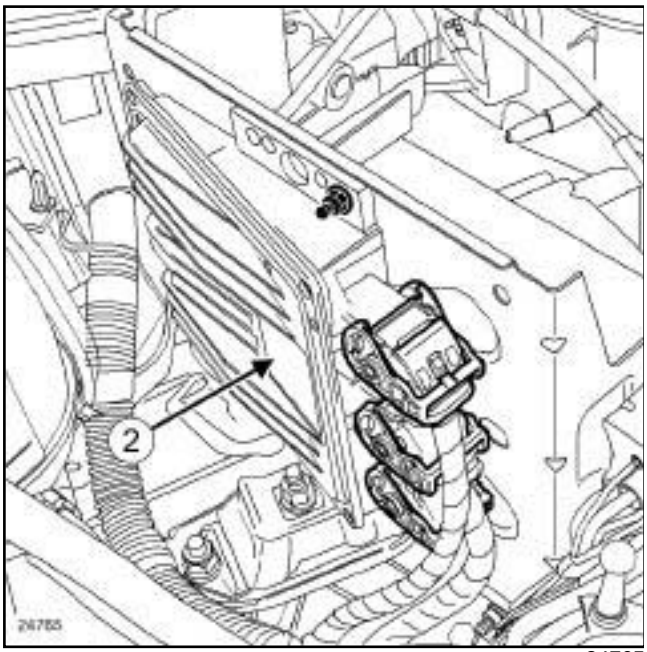
# Diesel injection: List and location of components

K9K, and 796



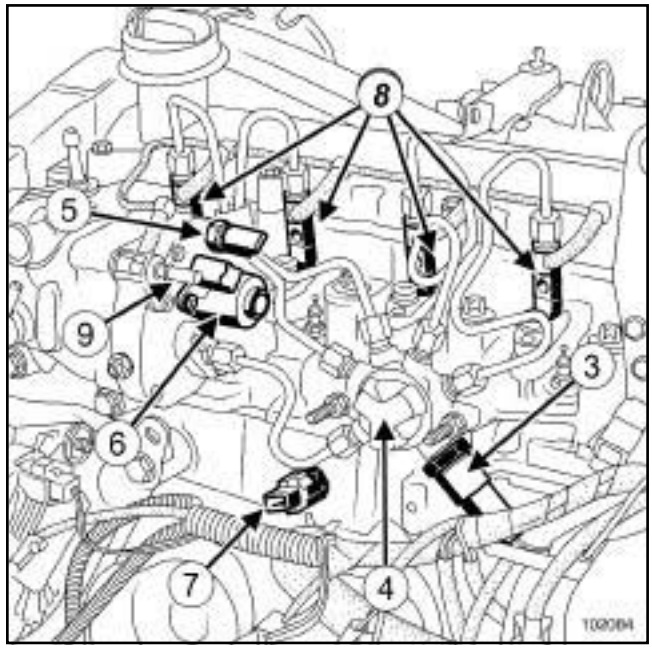

102085

High-pressure pump (**1**) .




24765

Injection computer (**2**) .




102084

Injector rail pressure sensor (**3**) ,

Spherical injector rail (**4**) ,

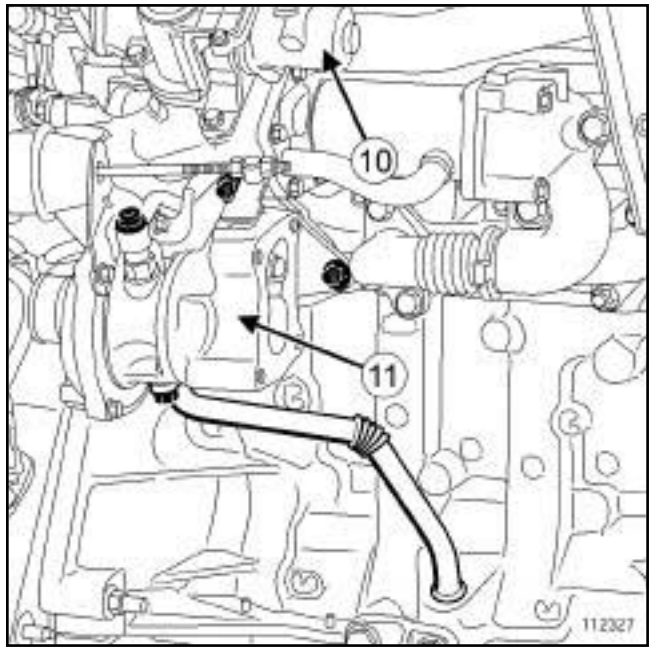
Diesel temperature sensor (**5**) ,

Diesel fuel flow actuator (**6**) ,

Accelerometer (**7**) ,

Injectors (**8**) ,

Venturi (**9**) .




112327

Exhaust gas recirculation solenoid valve (**10**) ,

Turbocharger (**11**) .

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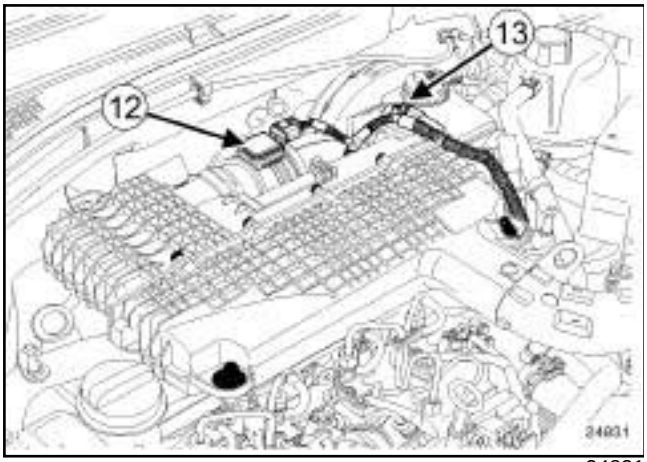
# Diesel injection: List and location of components

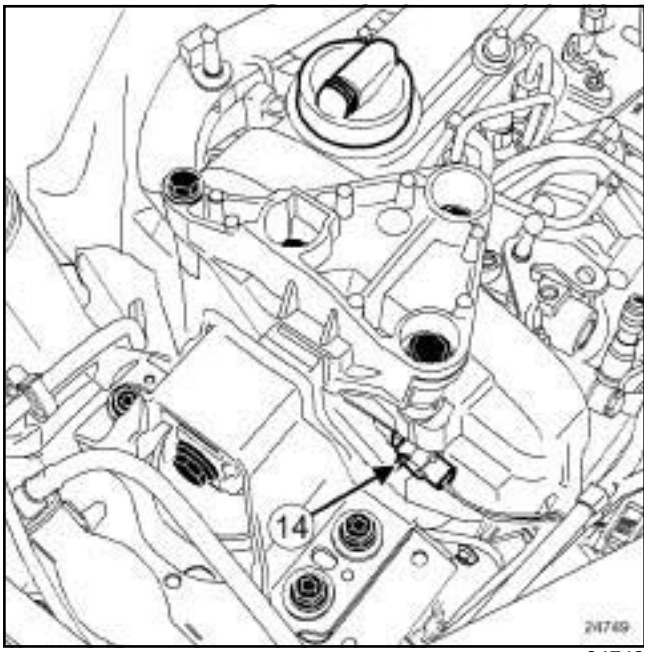
K9K, and 796




24831

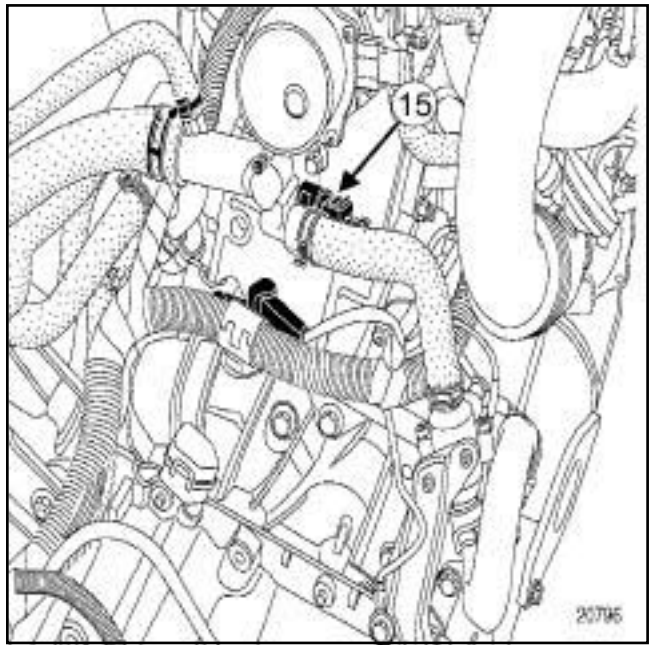
Air flowmeter with integrated temperature sensor (**12**) ,

Turbocharging air pressure sensor (**13**) .



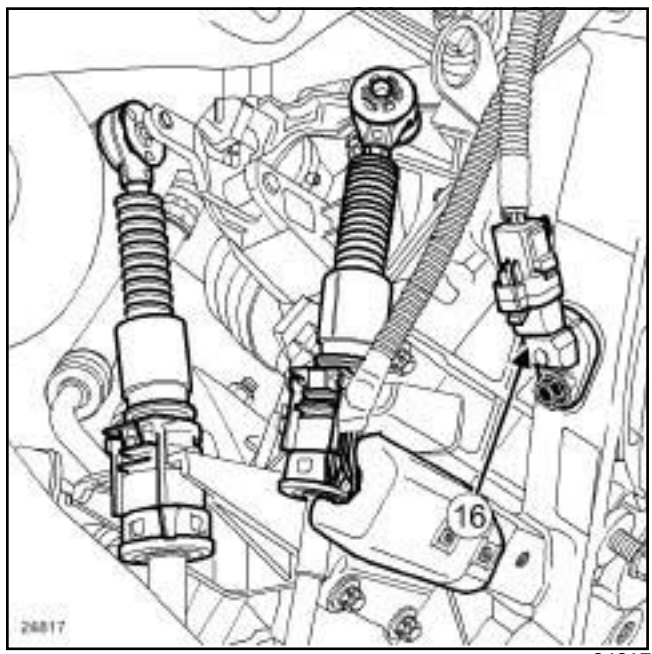

24749

Cylinder marking sensor (**14**) .




20796

Coolant temperature sensor (**15**) .




24817

Top Dead Centre sensor (**16**) .

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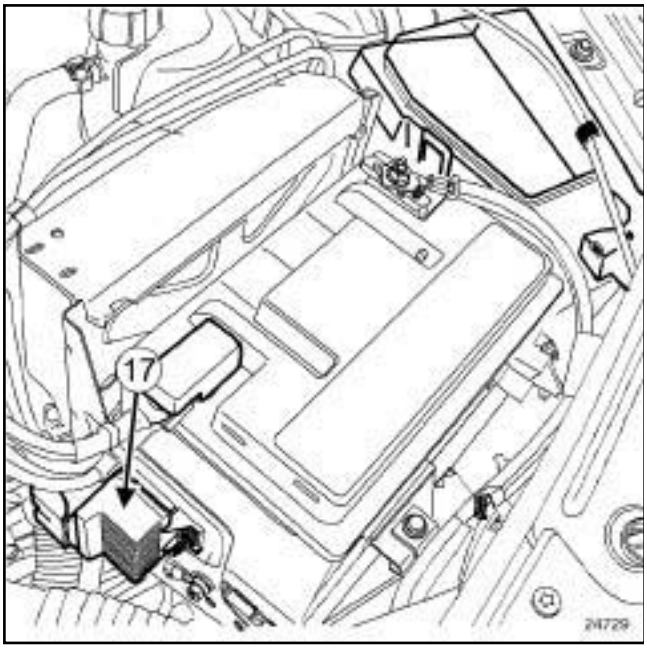
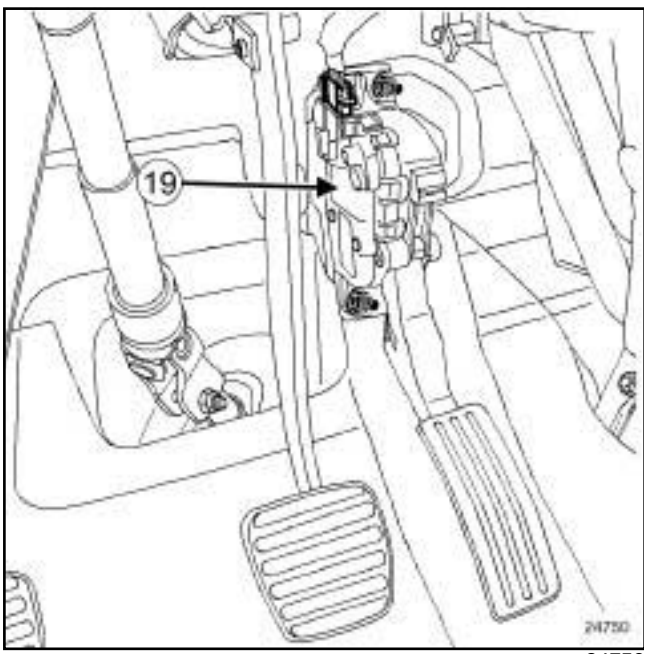
# Diesel injection: List and location of components

K9K, and 796




24729

Pre-postheating unit (**17**) .




24750

Accelerator pedal potentiometer (**19**) .

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# Diesel injection computer: Removal - Refitting

K9K

| Equipment required |
|---|
| Diagnostic tool |

| Tightening torques ▽ | |
|---|---|
| injection computer nuts | **8 N.m** |
| injection computer protector bolts | **8 N.m** |

Note:

When programming, reprogramming or replacing the computer, it is necessary to program the new computer with the C2I parameters (injector flow correction) and the engine adaptives using the **Diagnostic tool**.

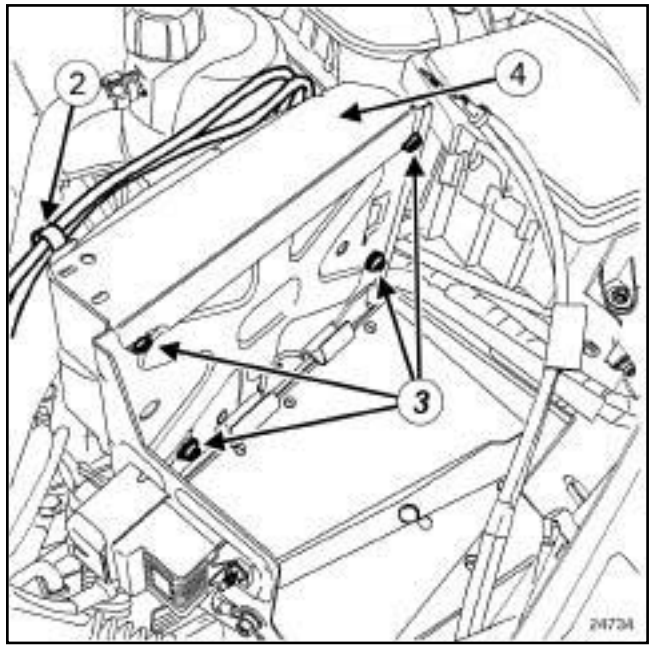
There are two ways to do this (see **Fault finding - Replacement of components**) (13B, Diesel injection):

- an automatic method which can be used if it is possible to read the information contained in the old computer,
- a manual method which is to be used if it is not possible to read the information contained in the old computer.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the battery (see **Battery: Removal - Refitting**) (80A, Battery).



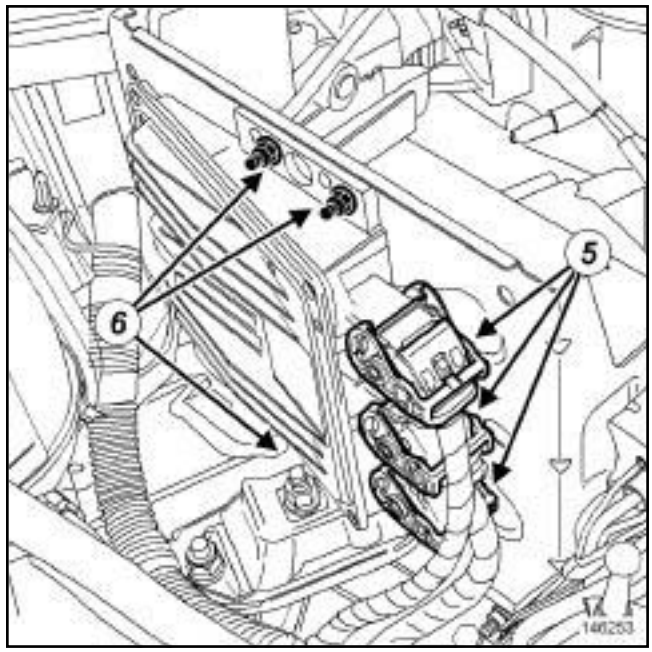

24734

❏ Unclip the positive terminal wiring (**2**) .

❏ Remove:

- the bolts (**3**) from the injection computer protector,
- the injection computer protector (**4**) .

### II - REMOVAL OPERATION




146253

❏ Remove the injection computer nuts (**6**) .

❏ Disconnect the three connectors (**5**) from the injection computer.

❏ Remove the injection computer.

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# Diesel injection computer: Removal - Refitting

K9K

## REFITTING

### I - REFITTING OPERATION

- ❏ Fit the injection computer on its mounting studs.
- ❏ Torque tighten the **injection computer nuts (8 N.m)**.
- ❏ Connect the injection computer connectors.

### II - FINAL OPERATION

- ❏ Refit the injection computer protector.
- ❏ Tighten to torque the **injection computer protector bolts (8 N.m)**.
- ❏ Clip on the positive terminal wiring.
- ❏ Refit the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ❏ Respect the programming settings for the C2I (individual injector correction) parameters and the engine adaptives (see **Fault finding - Replacement of components**) (13B, Diesel injection).
- ❏ Switch on the ignition and read the fault codes using the **Diagnostic tool**.
- ❏ If necessary, repair the faults indicated.
- ❏ Clear the faults.
- ❏ Check that the vehicle is working properly.

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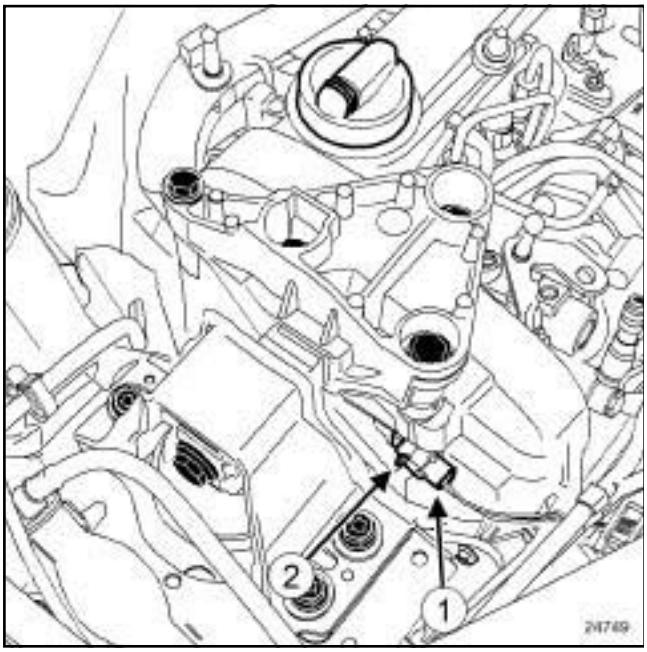
# Camshaft position sensor: Removal - Refitting

K9K

## REMOVAL

### OPERATION FOR REMOVAL OF PART CONCERNED




24749

❏ Disconnect the connector (**1**) from the camshaft position sensor.

❏ Remove:

- the bolt (**2**) from the camshaft position sensor,
- the camshaft position sensor.

## REFITTING

### I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the camshaft position sensor,
- the camshaft position sensor bolt.

### II - FINAL OPERATION

❏ Reconnect the camshaft position sensor connector.

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# Crankshaft position sensor: Removal - Refitting

K9K, and 796

| Tightening torques ▽ | |
|---|---|
| crankshaft position and speed sensor bolt | **8 N.m** |

## REMOVAL

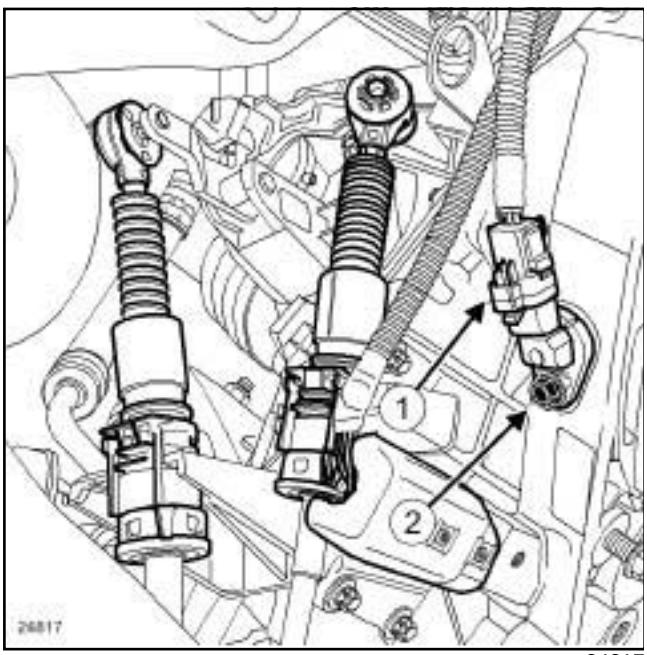
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

- the engine undertray bolts,
- the engine undertray.

### II - REMOVAL OPERATION



24817

❏ Disconnect the crankshaft position sensor connector (**1**) from underneath the vehicle.

❏ From underneath the vehicle, remove:

- the crankshaft position sensor bolt (**2**) ,
- the crankshaft position sensor.

## REFITTING

### I - REFITTING OPERATION

❏ Refit the crankshaft position sensor.

❏ Torque tighten the **crankshaft position and speed sensor bolt (8 N.m)**.

❏ Connect the crankshaft position sensor connector.

### II - FINAL OPERATION

❏ Refit the engine undertray.

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# High pressure pump: Removal - Refitting

K9K, and 796

| Equipment required |
|---|
| Diagnostic tool |

| Tightening torques ▽ | |
|---|---|
| the high pressure pump bolts | **23 N.m** |
| high pressure pump pulley nut | **70 N.m** |
| dipstick guide and filler neck nuts on the high pressure rail | **21 N.m** |

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Diesel injection: Precautions for the repair**) .

**IMPORTANT**

Before carrying out any work on the injection system, use the **Diagnostic tool** to check:

- that the injector rail is not under pressure,

- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system.

Working on the circuit with the engine running is strictly forbidden.

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

Note:

Never run the engine in the opposite direction to that of normal operation.

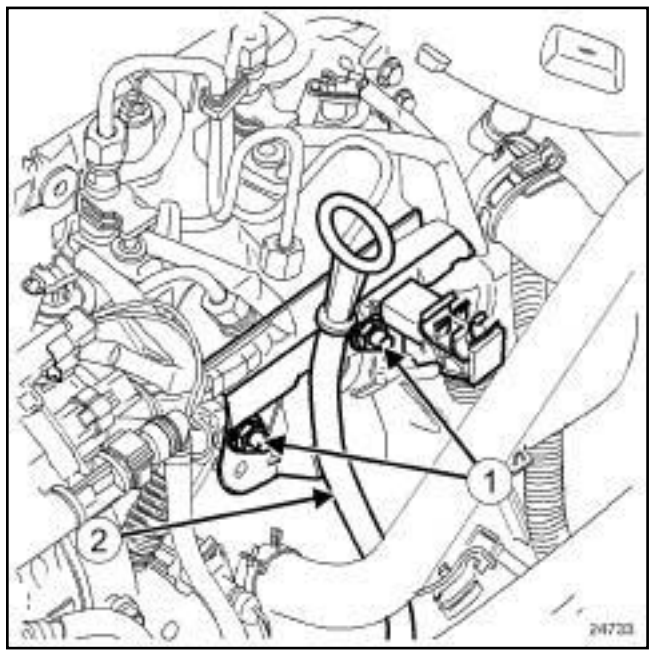
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the front engine cover.




24733

❏ Remove the dipstick guide and filler neck nuts (**1**) .

❏ Put the dipstick guide to one side (**2**) .

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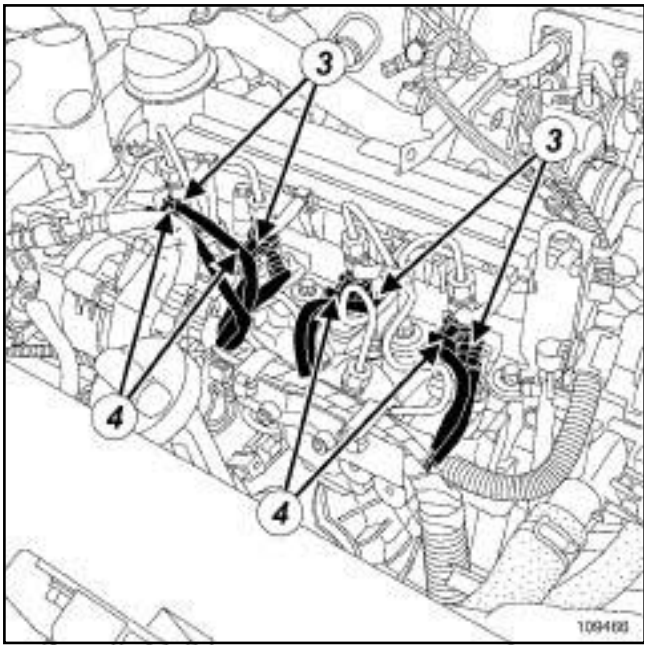
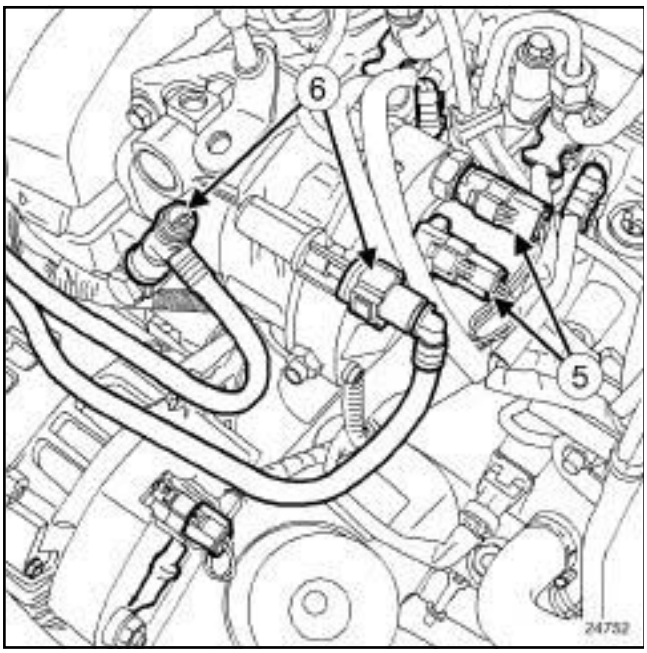
# High pressure pump: Removal - Refitting

K9K, and 796




109466




24752

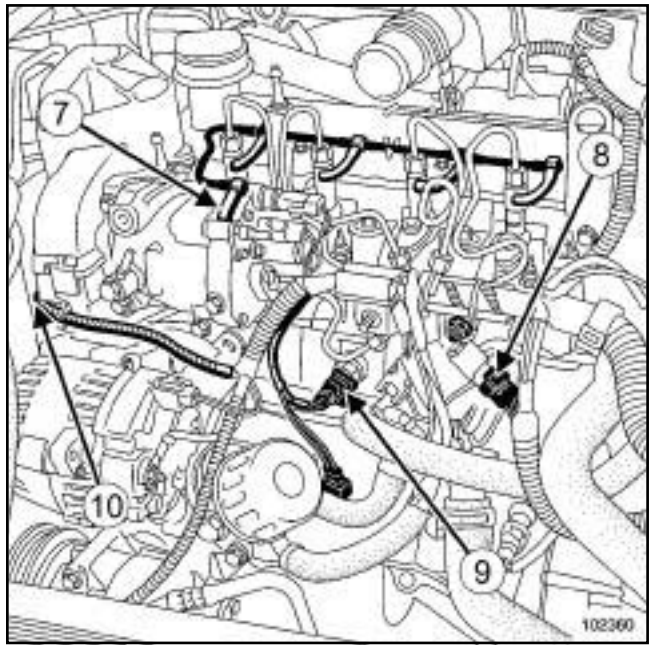
❏ Disconnect:

- the heater plugs (**3**) ,
- the injectors (**4**) ,
- the connectors from the high pressure pump (**5**) .

❏ Clean the diesel supply and return pipes (see **Diesel injection: Precautions for the repair**) .

❏ Disconnect the diesel supply and return pipes (**6**) .

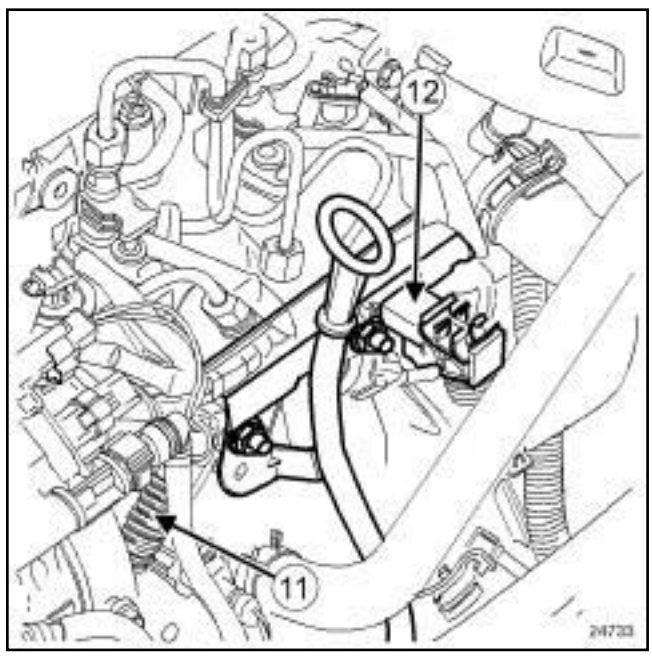
❏ Fit blanking plugs into the openings.




102360

❏ Disconnect:

- the fuel return pipe (**7**) connecting the injectors to the high-pressure pump,
- the injector rail pressure sensor (**8**) ,
- the accelerometer (**9**) ,
- the camshaft position sensor (**10**) .




24733

❏ Unclamp the engine wiring (**11**) and move it to one side.

❏ Remove the channel (**12**) located on the injector rail.

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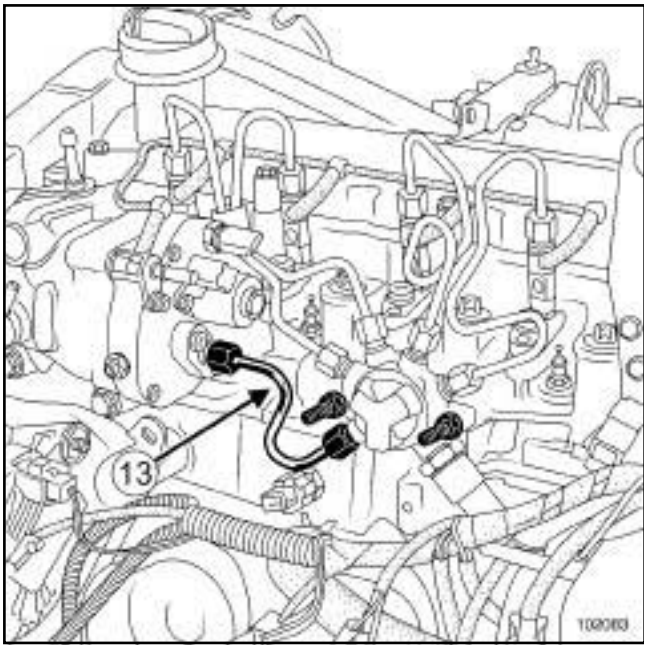
# High pressure pump: Removal - Refitting

K9K, and 796




102083

❏ Remove the high pressure pipe (**13**) between the injector rail and the high pressure pump (see **13B**, **Diesel injection**, **High pressure pipe between pump and rail: Removal - Refitting**, page **13B-19**) .

❏ Put blanking plugs in all the openings of the injection circuit.

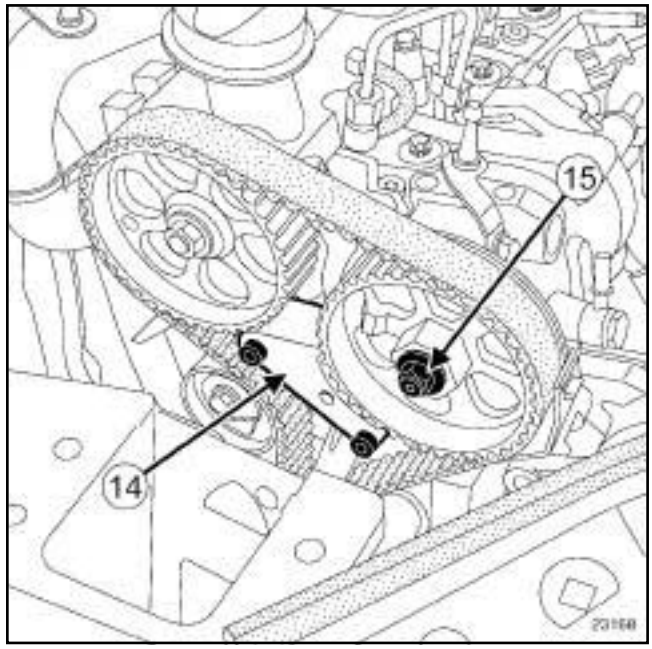
❏ Remove:

- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the camshaft position sensor (see **13B**, **Diesel injection**, **Camshaft position sensor: Removal - Refitting**, page **13B-7**) .

❏ Remove (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) :

- the upper timing cover,
- the lower timing cover,
- the cylinder head suspended mounting.

❏ Position the engine at top dead centre (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) .




23168

❏ Fit the high pressure pump pulley retaining tool (**14**) .

❏ If necessary, turn the engine slowly to adjust the position of the locking tool on the pump pulley teeth.

❏ Remove the high pressure pump pulley nut (**15**) , holding the pulley with a **32 mm** open-jawed spanner.

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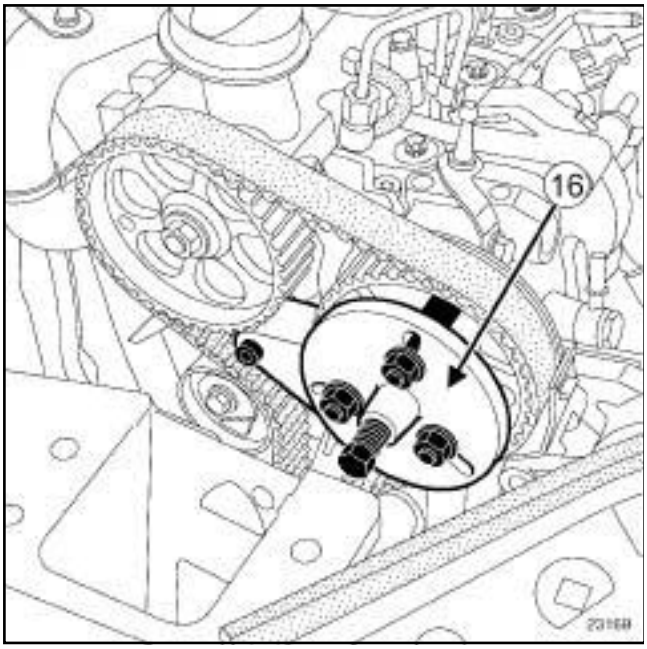
# High pressure pump: Removal - Refitting

K9K, and 796



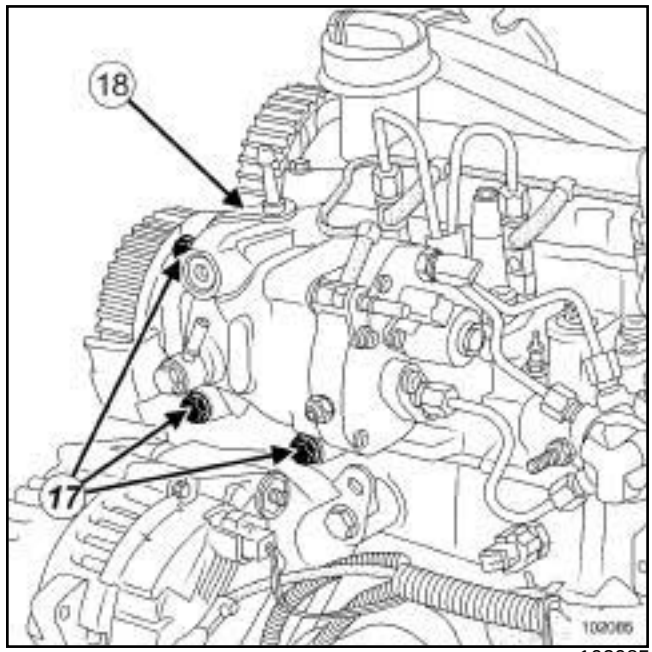
23169

❑ Position the (**16**) fitted with the.

**WARNING**

Ensure that the tool pushrod is correctly oriented and is pressing against the high pressure pump shaft.

## II - REMOVAL OPERATION



102085

❑ Remove:

- the high pressure pump bolts (**17**) ,
- the bracket (**18**) from the engine cover.

❑ Screw the pushrod of the tooluntil the high pressure pump becomes detached.

❑ Remove:

- the high pressure pump,
- the.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Check for an index pin on the high pressure pump shaft.

### II - REFITTING OPERATION

❑ Refit the high pressure pump on the cylinder head by inserting it into the high pressure pump pulley.

Note:

Check that the high pressure pump shaft is correctly orientated in relation to the high pressure pump pulley.

❑ Refit the engine cover bracket.

❑ Fit the high pressure pump bolts without tightening them.

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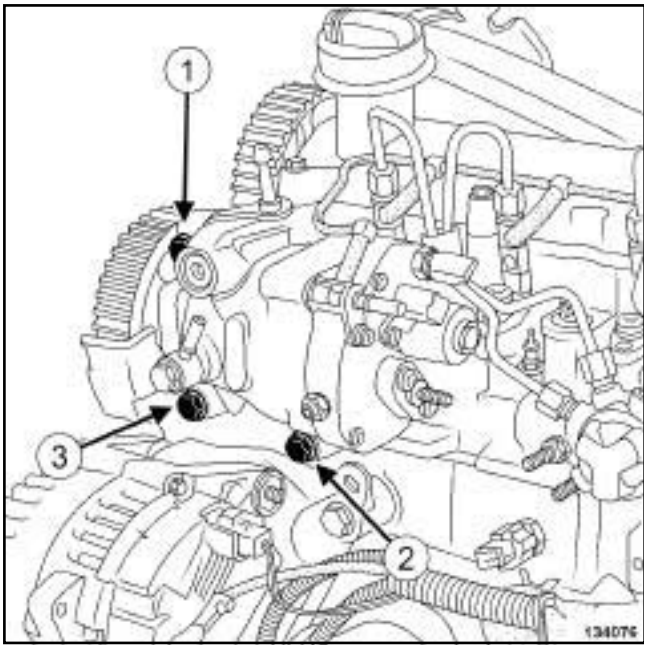
# High pressure pump: Removal - Refitting

K9K, and 796



134076

❏ Torque tighten in order **the high pressure pump bolts (23 N.m)**.

❏ Torque tighten the **high pressure pump pulley nut (70 N.m)** while holding the high pressure pump pulley using a **32 mm** spanner.

Note:

Check that the timing belt is correctly positioned and in good condition.

❏ Remove thefrom the cylinder head.

**III - FINAL OPERATION**

❏ Remove the blanking plugs.

❏ Refit the high pressure pipe between the injector rail and the high pressure pump (see **13B**, **Diesel injection**, **High pressure pipe between pump and rail: Removal - Refitting**, page **13B-19**) .

❏ Refit (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) :

- the suspended mounting on the cylinder head,
- the lower timing cover,
- the upper timing cover.

❏ Refit:

- the camshaft position sensor (see **13B**, **Diesel injection**, **Camshaft position sensor: Removal - Refitting**, page **13B-7**) ,
- the right-hand suspended engine mounting (see **19D**, **Engine mounting**, **Right-hand suspended engine mounting: Removal - Refitting**, page **19D-4**) ,
- the neck located on the injector rail.

❏ Secure the engine wiring on the neck.

❏ Connect:

- the camshaft position sensor,
- the accelerometer,
- the injector rail pressure sensor,
- the fuel return pipe connecting the injectors to the high-pressure pump,
- the supply and return pipes on the high pressure pump,
- the connectors to the high pressure pump,
- the injectors,
- the heater plugs.

❏ Refit the dipstick guide.

❏ Torque tighten the **dipstick guide and filler neck nuts on the high pressure rail (21 N.m)**.

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Start the engine.

❏ Check that there are no fuel leaks.

❏ Refit the engine cover.

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# Flow actuator: Removal - Refitting

K9K

| Equipment required |
| --- |
| Diagnostic tool |

| Tightening torques ▽ | |
| --- | --- |
| flow actuator bolts | **6 N.m** |
| dipstick guide and filler neck nuts on the high pressure rail | **21 N.m** |

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Diesel injection: Precautions for the repair**) .

**IMPORTANT**

Before carrying out any work on the injection system, check using the **Diagnostic tool** :

- that the injector rail is not under pressure,

- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system.

Working on the circuit with the engine running is strictly forbidden.

**WARNING**

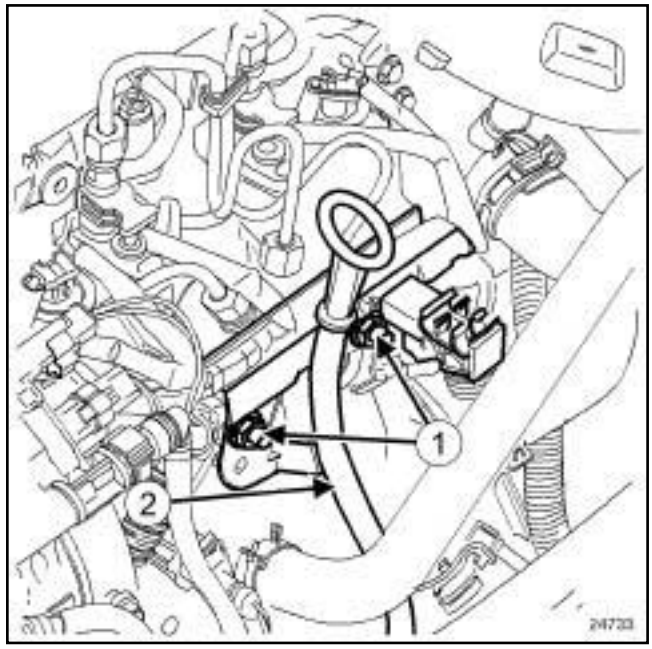
To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the front engine cover.

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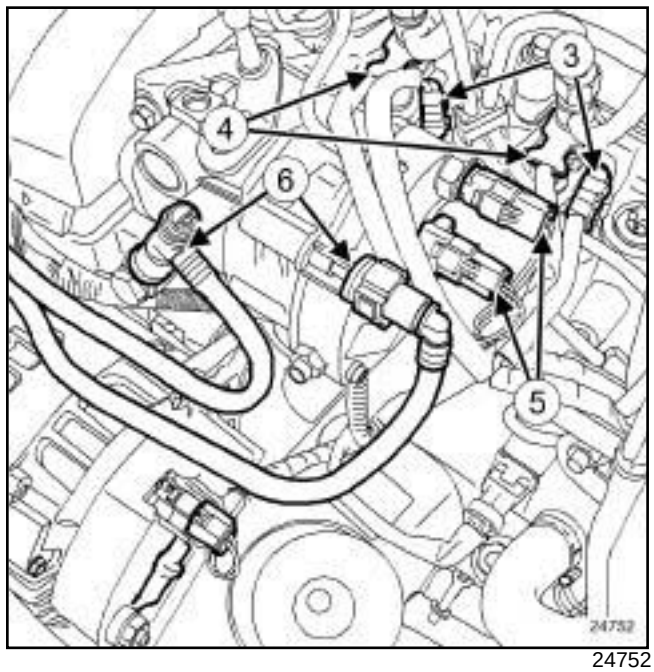
❏ Remove the dipstick guide and filler neck nuts (**1**) .

❏ Put the dipstick guide to one side (**2**) .




24752

❏ Disconnect:

- the heater plugs (**3**) ,

- the injectors (**4**) ,

- the connectors from the high pressure pump (**5**) ,

- the diesel supply and return pipes (**6**) .

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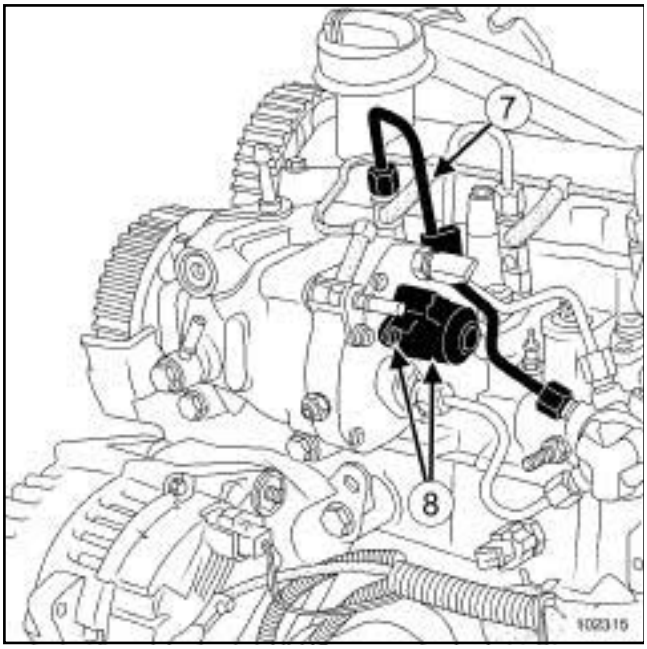
# Flow actuator: Removal - Refitting

K9K




102315

❑ Disconnect:

- the injector rail pressure sensor,
- the accelerometer .

❑ Unclamp the engine wiring and put it to one side.

❑ Remove:

- the neck located on the injector rail,
- the high pressure pipe (**7**) between the injector rail and injector no. **4** (see **13B**, **Diesel injection**, **High pressure pipe between rail and injector: Removal - Refitting**, page **13B-22**) .

❑ Plug the openings.

## II - REMOVAL OPERATION

❑ Loosen the fuel flow actuator bolts ***(8)*** .

**WARNING**

Do not use the electrical connector as a lever arm.

❑ Withdraw the fuel flow actuator (by hand using small successive turns).

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Only unpack the new component when you are ready to fit it.

**WARNING**

Do not remove the blanking plugs from each component until the last moment.

**WARNING**

Do not damage the seal when refitting.

Note:

Do not lubricate the seals with grease or old diesel fuel. Use the applicator provided in the kit for the new part.

### II - REFITTING OPERATION

❑ Position the flow actuator.

❑ Finger tighten the flow actuator bolts.

❑ Torque tighten the **flow actuator bolts (6 N.m)**.

### III - FINAL OPERATION

❑ Refit the new high pressure pipe between the injector rail and injector no. **4** (see **13B**, **Diesel injection**, **High pressure pipe between rail and injector: Removal - Refitting**, page **13B-22**) .

❑ Connect:

- the diesel supply and return pipes on the high pressure pump,
- the electrical connectors on the high-pressure pump,
- the injectors,
- the heater plugs.

❑ Refit the dipstick guide.

❑ Torque tighten the **dipstick guide and filler neck nuts on the high pressure rail (21 N.m)**.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Start the engine.

❑ Check that there are no fuel leaks.

❑ Refit the engine cover.

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# Venturi: Removal - Refitting

K9K

| Equipment required |
| --- |
| Diagnostic tool |

| Tightening torques ▽ | |
| --- | --- |
| Venturi bolt | **6 N.m** |

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Diesel injection: Precautions for the repair**) .

**IMPORTANT**

Before carrying out any work on the injection system, check using the **Diagnostic tool** :

- that the injector rail is not under pressure,

- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system.

Working on the circuit with the engine running is strictly forbidden.

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

Note:

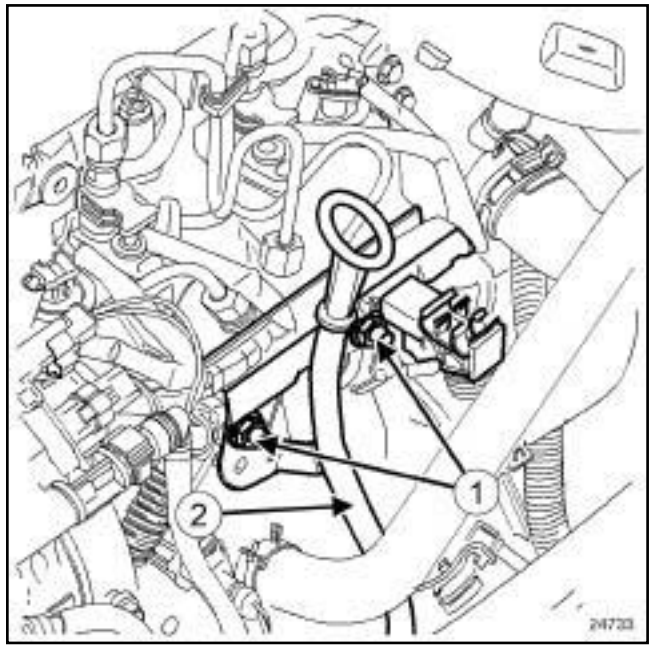
Ensure that you have a new Venturi before opening up the fuel circuit.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

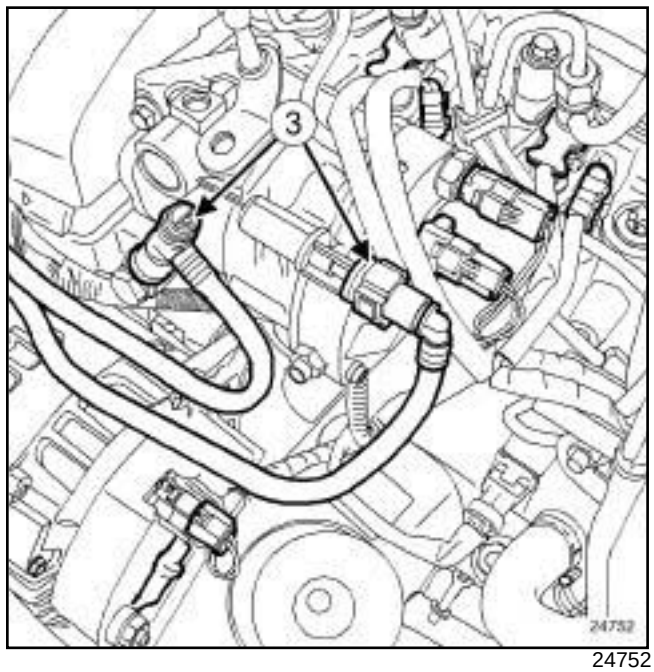
❏ Remove the front engine cover.




24733

❏ Remove the dipstick guide and filler neck nuts (**1**) .

❏ Put the dipstick guide to one side (**2**) .

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❏ Disconnect the diesel supply and return pipes (**3**) .

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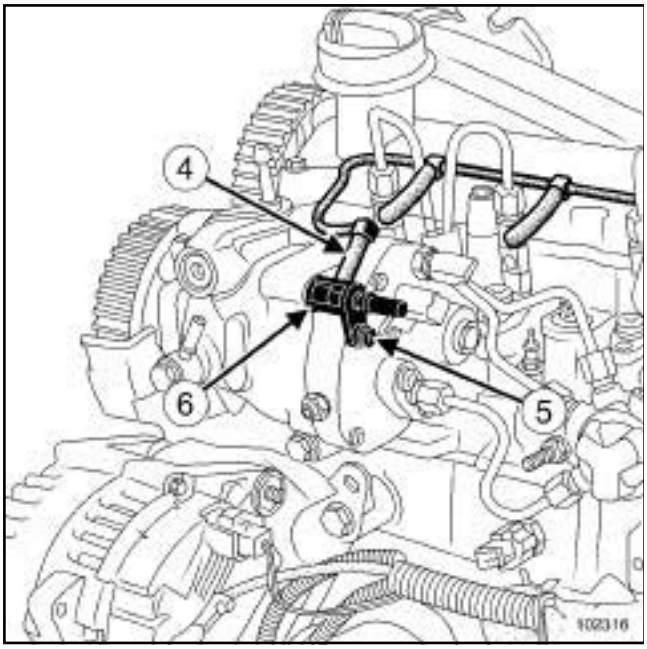

102316

❑ Disconnect the return pipe (**4**) connecting the injector to the high pressure pump.

### II - REMOVAL OPERATION

❑ Remove:

- the bolt ***(5)*** of the Venturi ***(6)*** ,
- the Venturi.

❑ Plug the openings.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑

> **WARNING**
> Do not remove the blanking plugs from each component until the last moment.

❑ Lubricate the O-ring with lubricant from the applicator supplied with the new part.

### II - REFITTING OPERATION

❑ **parts always to be replaced: Venturi**.

> Note:
> Do not damage the seal when refitting.

❑ Fit the Venturi.

❑ Torque tighten the **Venturi bolt (6 N.m)**.

### III - FINAL OPERATION

❑ Connect the return pipe connecting the injector to the high-pressure pump.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Start the engine.

❑ Check that there are no fuel leaks.

❑ Refit the engine cover.

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# High pressure pipe: Check

K9K

| Equipment required |
| --- |
| Diagnostic tool |

❑

**WARNING**
Check that there are no diesel leaks after each operation.

Note:

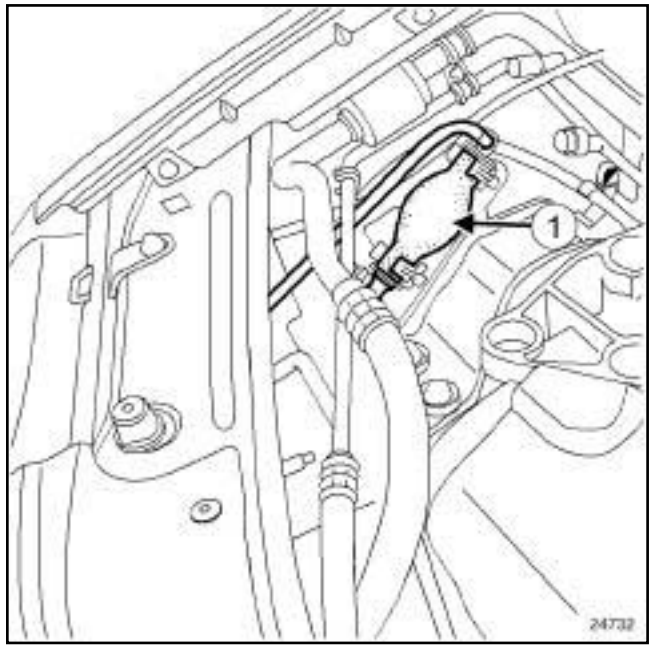
the **Diagnostic tool** can be used for testing the high pressure circuit with the engine running. This command can be used to run fault finding on a leak due to an incorrectly fitted or tightened union. This command only works if the engine coolant temperature is over **60°C**. The fault finding procedure does not reveal small leaks caused by insufficient tightening.

Note:

Respect the repair precautions (see **Diesel injection: Precautions for the repair**) .

## CHECK

❑ Remove the front engine cover.



24732

❑ Prime the fuel circuit using the manual priming pump (**1**) until the transparent pipes are filled with fuel (automatic degassing).

❑ Check that there are no fuel leaks.

❑ Connect the **Diagnostic tool** to the vehicle.

❑ Deal with present faults,

Note:

Certain faults will prevent this test from being carried out: deal with them first.

Note:

The engine automatically runs a cycle of four accelerations and decelerations to lower the rail pressure.

**WARNING**
Do not leave anything on the side of the engine housing during the test phase (significant vibration).

❑ Run command **AC 626 - high pressure circuit sealing test**.

❑ Check that there are no fuel leaks.

❑ Deal with the causes of any possible leaks.

❑ Use the **Diagnostic tool** to check for stored faults; deal with these and clear them as necessary.

❑ Disconnect the **Diagnostic tool**.

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# High pressure pipe between pump and rail: Removal - Refitting

K9K

| Equipment required |
|---|
| Diagnostic tool |

| Tightening torques ▽ | |
|---|---|
| nut of the high pressure pipe between the pump and the injector rail on the high pressure pump | **28 N.m** |
| nut of the high pressure pipe between the pump and the rail on the injector rail | **28 N.m** |
| dipstick guide and filler neck nuts on the high pressure rail | **21 N.m** |

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Diesel injection: Precautions for the repair**) .

**IMPORTANT**

Before carrying out any work on the injection system, check using the **Diagnostic tool** :

- that the rail is not under pressure,

- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system.

Working on the circuit with the engine running is strictly forbidden.

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**WARNING**

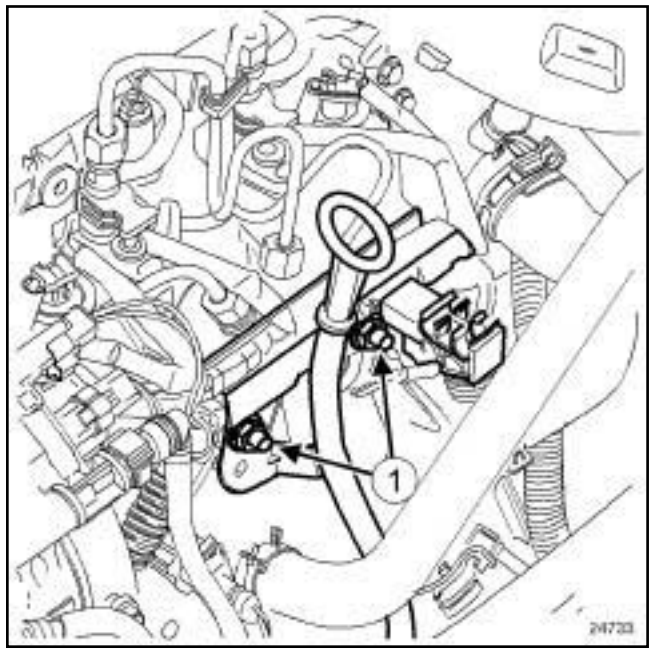
To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the front engine cover.

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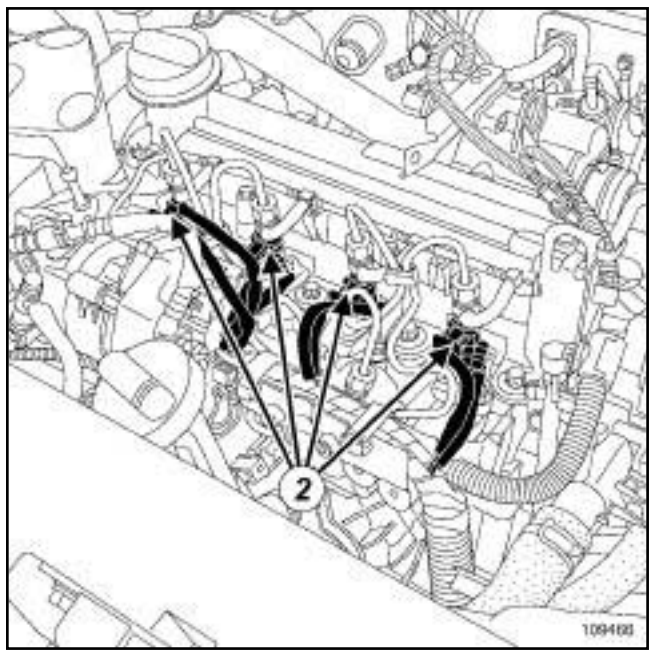
❏ Remove the dipstick guide and filler neck bolts (**1**) .

❏ Put the dipstick to one side.




109466

❏ Disconnect the following connectors (**2**) :

- the heater plugs,

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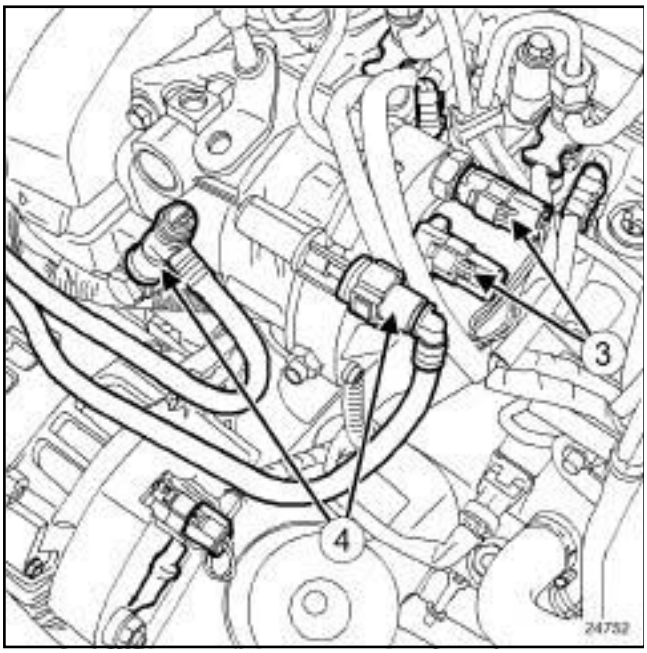
K9K

- the injectors.




24752

❑ Disconnect:

- the high pressure pump connectors (**3**) .
- the injector rail pressure sensor.

❑ Clean the diesel supply and return pipes (see **Diesel injection: Precautions for the repair**) .

❑ Disconnect the diesel supply and return pipes (**4**) .

❑ Disconnect the return pipe connecting the injectors to the high pressure pump.

❑ Fit the correct blanking plugs.

❑ Move the wiring to one side with the neck on the side.

❑ Clean the high pressure pipe unions between the rail and the injectors (see **Diesel injection: Precautions for the repair**) .

### II - REMOVAL OPERATION

❑ Clean the unions of the high pressure pipe between the high pressure pump and the injector rail (see **Diesel injection: Precautions for the repair**) .

❑ Undo:

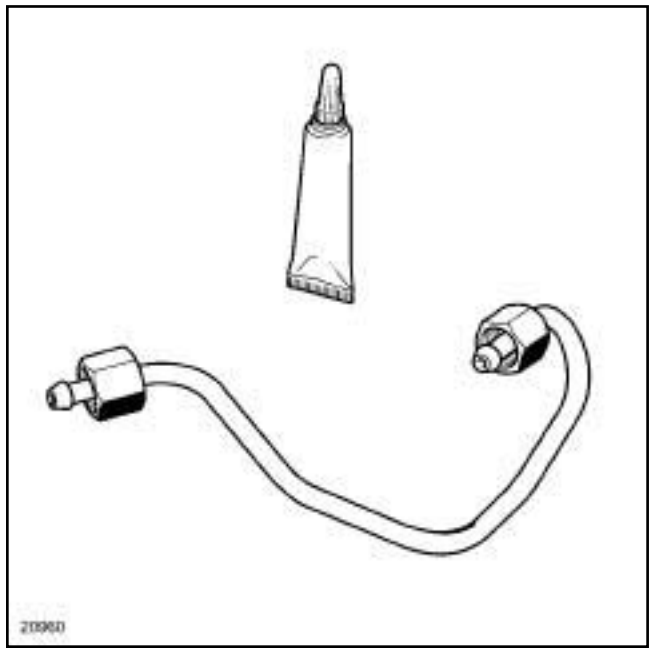
- the high pressure pipe nut at the high pressure pump end,
- the high pressure pipe nut at the injector rail end.

❑ Fit blanking plugs into the openings.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: High pressure pipe between the pump and rail**.

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❑

**WARNING**

Before fitting a new high pressure pipe, lightly lubricate the nut threads with oil from the applicator provided with the new part.

Be careful not to allow oil into the high pressure pipe.

Do not lubricate high pressure pipes supplied without an applicator, as these high pressure pipes are self-lubricating.

**WARNING**

Do not remove the blanking plugs from each component until the last moment.

### II - REFITTING OPERATION

❑ Remove the blanking plugs.

❑ Insert the high pressure pipe olive in the high pressure pump high pressure outlet taper.

❑ Insert the high pressure pipe olive into the injector rail inlet taper.

❑ Finger tighten the high-pressure pipe nuts, starting with the one at the injector rail side.

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K9K

❏ Slightly pretighten the high pressure pipe nuts.

❏ Torque tighten:

- the **nut of the high pressure pipe between the pump and the injector rail on the high pressure pump (28 N.m)**,
- the **nut of the high pressure pipe between the pump and the rail on the injector rail (28 N.m)**.

**III - FINAL OPERATION**

❏ Refit the neck on the injector rail.

❏ Connect:

- the injection rail pressure sensor,
- the diesel return pipe connecting the injectors to the high pressure pump,
- the diesel fuel supply and return pipes,
- the high pressure pump electrical connectors.

❏ Connect the connectors of:

- the injectors,
- the heater plugs.

❏ Insert the dipstick.

❏ Refit the dipstick guide.

❏ Torque tighten the **dipstick guide and filler neck nuts on the high pressure rail (21 N.m)**.

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Prime the diesel circuit using the priming pump.

❏ Check the high pressure circuit (see **13B**, **Diesel injection**, **High pressure pipe: Check**, page **13B-18**) .

❏ Refit the engine cover.

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# High pressure pipe between rail and injector: Removal - Refitting

K9K

| Equipment required |
|---|
| Diagnostic tool |

| Tightening torques ▽ | |
|---|---|
| injector rail nuts | **28 N.m** |
| « pump - rail» high pressure pipe nuts | **28 N.m** |
| dipstick guide and filler neck nuts on the high pressure rail | **21 N.m** |

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Diesel injection: Precautions for the repair**) .

**IMPORTANT**

Before carrying out any work on the injection system, check using the **Diagnostic tool** :

- that the rail is not under pressure,

- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system.

Working on the circuit with the engine running is strictly forbidden.

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

## REMOVAL

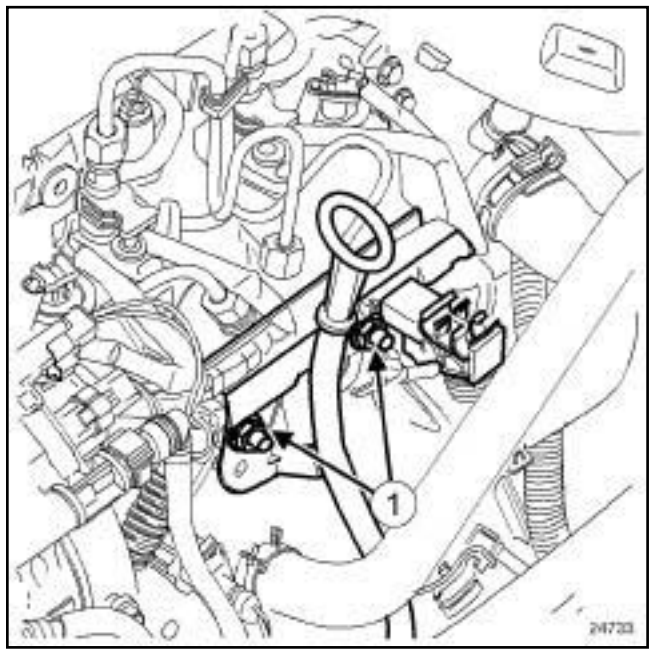
### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the engine cover,

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

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❏ Remove the nuts (**1**) from the dipstick guide and neck.

❏ Put the dipstick to one side.

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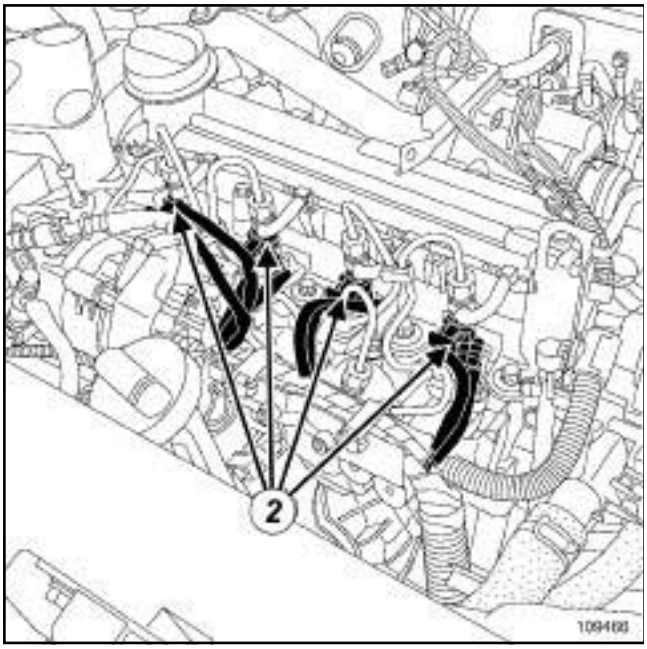
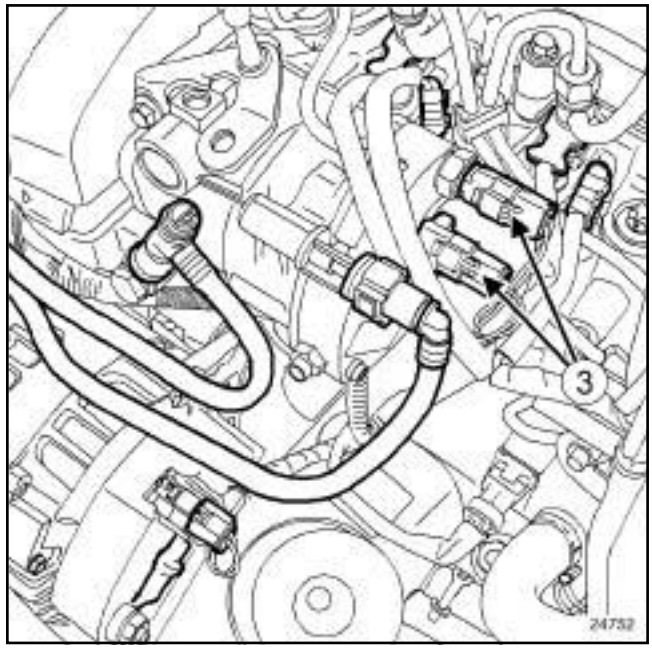



109466

❏ Disconnect the following connectors (**2**) :

- the heater plugs,
- the injectors.




24752

❏ Disconnect the high pressure pump connectors (**3**) .

❏ Remove the bolts mounting the neck onto the injector rail.

❏ Move the wiring to one side with the neck on the side.

❏ Remove the clips connecting the high pressure pipes.

❏ Clean the high pressure pipe unions between the rail and the injectors (see **Diesel injection: Precautions for the repair**) .

### II - REMOVAL OPERATION

❏ Undo:

- the high pressure nut at the injector end,
- the high pressure pipe nut at the injector rail end.

❏ Remove the pipe and discard it.

❏ Fit blanking plugs into the openings.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: High pressure pipe between the rail and injector**.

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# High pressure pipe between rail and injector: Removal - Refitting

K9K

20960

❑

**WARNING**

Before fitting a new high pressure pipe, lightly lubricate the nut threads with oil from the applicator provided with the new part.

Be careful not to allow oil into the high pressure pipe.

Do not lubricate high pressure pipes supplied without an applicator, as these high pressure pipes are self-lubricating.

**WARNING**

Do not remove the blanking plugs from each component until the last moment.

❑ If replacing the four high pressure pipes:

- loosen the injector rail nuts by a few turns (the injector rail should be loose).

## II - REFITTING OPERATION

❑ Remove the blanking plugs.

❑ Insert the high pressure pipe olive in the injector high pressure inlet taper.

❑ Position the high pressure pipe olive in the high pressure outlet taper of the injector rail.

❑ Finger tighten the high pressure pipe nuts, starting with the nut at the injector end.

❑ Slightly pretighten the high pressure pipe nuts.

Note:

The assembly order of the « rail-injector » high pressure pipes is not important.

❑ Mount a new clip provided with the new high pressure pipe.

❑ If replacing the four high pressure pipes, torque tighten the **injector rail nuts (28 N.m)**.

❑ Torque tighten in order the **« pump - rail » high pressure pipe nuts (28 N.m)** :

- injectors end,

- on the injector rail end.

Note:

Tighten each pipe fully before moving on to the next pipe.

## III - FINAL OPERATION

❑ Refit the neck on the injector rail.

❑ Connect the connectors of:

- the injectors,

- the heater plugs.

❑ Insert the dipstick.

❑ Refit the dipstick guide.

❑ Torque tighten the **dipstick guide and filler neck nuts on the high pressure rail (21 N.m)**.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Prime the diesel circuit using the priming pump.

❑ Check the high pressure circuit (see **13B**, **Diesel injection**, **High pressure pipe: Check**, page **13B-18**) .

❑ Refit:

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

- the engine cover,

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# Injector rail: Removal - Refitting

K9K

| Equipment required |
|---|
| Diagnostic tool |

| Tightening torques ▽ | |
|---|---|
| injector rail nuts | **28 N.m** |
| nuts of the neck and dipstick guide on the injector rail | **21 N.m** |

**IMPORTANT**
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Diesel injection: Precautions for the repair**) .

**IMPORTANT**

Before starting any work on the injection circuit, use the **Diagnostic tool** to check:

- that the injector rail is not under pressure,

- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system.

Working on the circuit with the engine running is strictly forbidden.

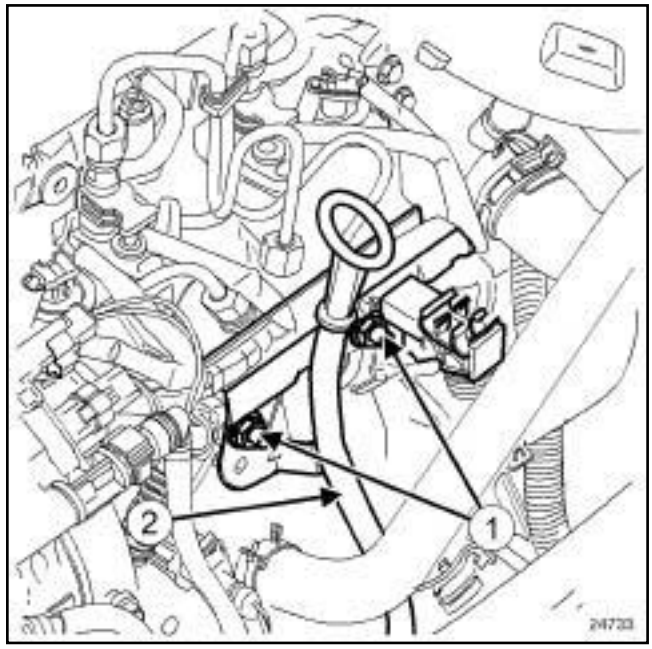
**IMPORTANT**
Wear leaktight gloves (Nitrile type) for this operation.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the front engine cover.



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❏ Remove the nuts (**1**) from the dipstick guide and neck.

❏ Put the engine oil dipstick guide to one side (**2**) .

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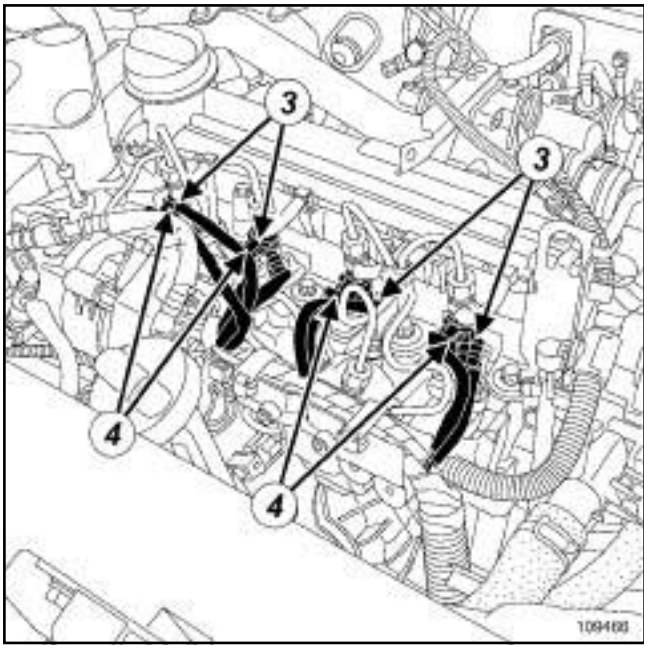
# Injector rail: Removal - Refitting

K9K



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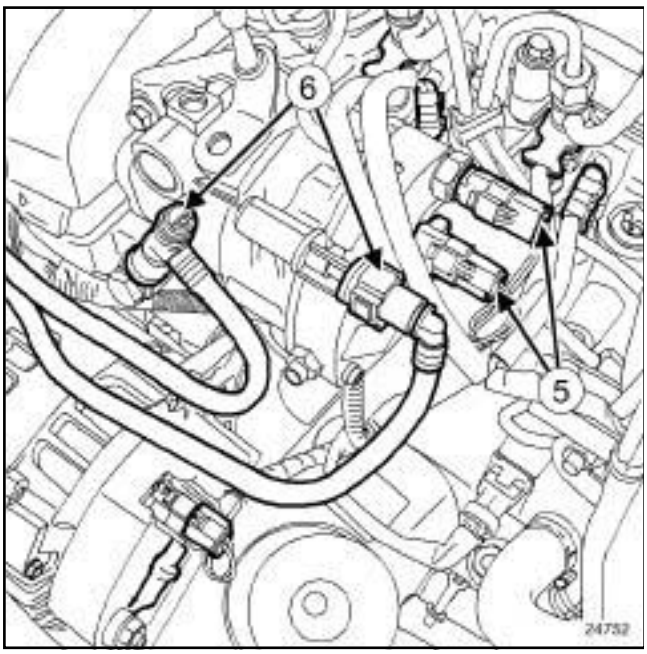


24752

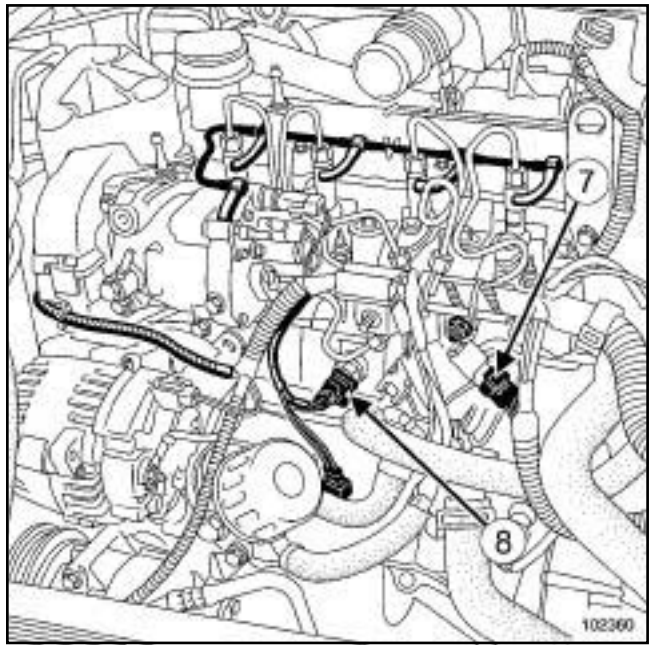
❏ Disconnect:

- the heater plugs (**3**) ,
- the injectors (**4**) ,
- the connectors on the high pressure pump (**5**) ,
- the diesel return pipe connecting the injectors to the high pressure injection pump.

❏ Clean the diesel supply and return pipes (see **Diesel injection: Precautions for the repair**) .

❏ Disconnect the diesel supply and return pipes (**6**) .

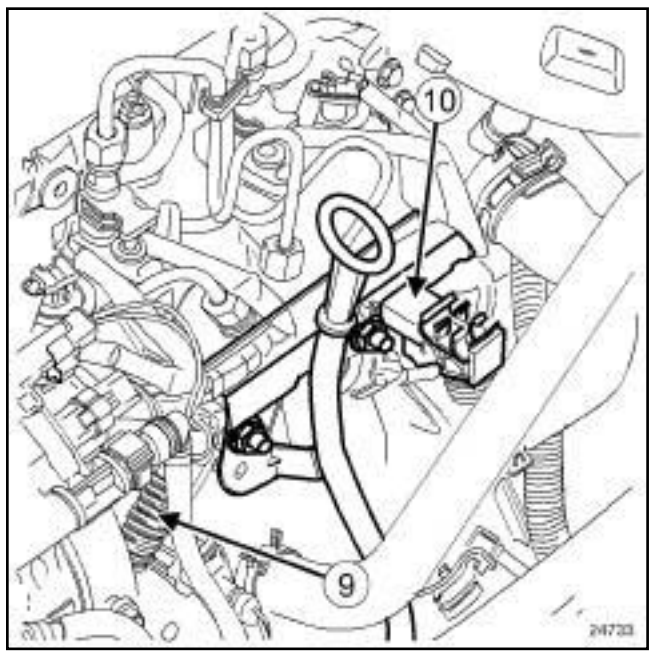
❏ Place blanking plugs on the openings.



102360

❏ Disconnect:

- the pressure sensor (**7**) from the injector rail,
- the accelerometer (**8**) .



24733

❏ Unclamp the engine wiring (**9**) and place it to one side.

❏ Remove:

- the neck (**10**) located on the spherical injector rail,
- the high pressure pipe between the high pressure pump and the injector rail (see **13B**, **Diesel injection**, **High pressure pipe between pump and rail: Removal - Refitting**, page **13B-19**) ,

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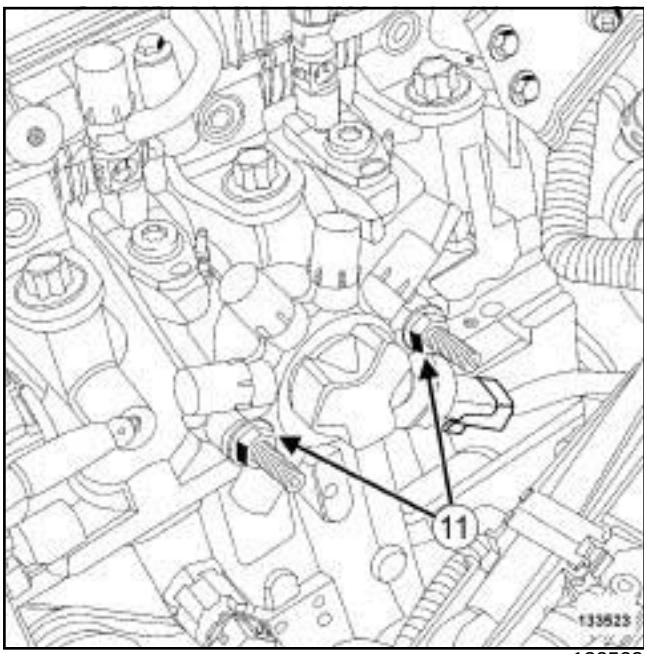
- the high pressure pipes between the injector rail and the injectors (see **13B**, **Diesel injection**, **High pressure pipe between rail and injector: Removal - Refitting**, page **13B-22**) .

### II - OPERATION FOR REMOVAL OF PART CONCERNED



133523

❑ Remove:

- the nuts (**11**) from the injector rail,
- the injector rail.

## REFITTING

### I - REFITTING OPERATION FOR PART CONCERNED

❑

> **WARNING**
> Do not remove the blanking plugs from each component until the last moment.

❑ Fit the injector rail.

❑ Finger tighten the nuts.

❑ Refit:

- the high pressure pipes between the injector rail and the injectors (see **13B**, **Diesel injection**, **High pressure pipe between rail and injector: Removal - Refitting**, page **13B-22**) ,
- the high pressure pipe between the high pressure pump and the injector rail (see **13B**, **Diesel injection**, **High pressure pipe between pump and rail: Removal - Refitting**, page **13B-19**) .

❑ Torque tighten the **injector rail nuts (28 N.m)**.

### II - FINAL OPERATION

❑ Refit the neck located on the injector rail.

❑ Secure the engine wiring on the neck.

❑ Connect:

- the accelerometer,
- the injector rail pressure sensor,
- the diesel return pipe connecting the injectors to the high pressure pump,
- the diesel supply and return pipes on the high pressure pump,
- the connectors to the high pressure pump,
- the injectors,
- the heater plugs.

❑ Refit the dipstick guide.

❑ Torque tighten the **nuts of the neck and dipstick guide on the injector rail (21 N.m)**.

❑ Start the engine.

❑ Check that there are no fuel leaks.

❑ Check the high pressure circuit (see **13B**, **Diesel injection**, **High pressure pipe: Check**, page **13B-18**) .

❑ Refit the engine cover.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Fuel temperature sensor: Removal - Refitting

K9K

| Equipment required |
| --- |
| Diagnostic tool |

| Tightening torques ▽ | |
| --- | --- |
| fuel temperature sensor | **15 N.m** |

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Diesel injection: Precautions for the repair**) .

**IMPORTANT**

Before carrying out any work on the injection system, check using the **Diagnostic tool** :

- that the rail is not under pressure,

- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system.

Working on the circuit with the engine running is strictly forbidden.

## REMOVAL

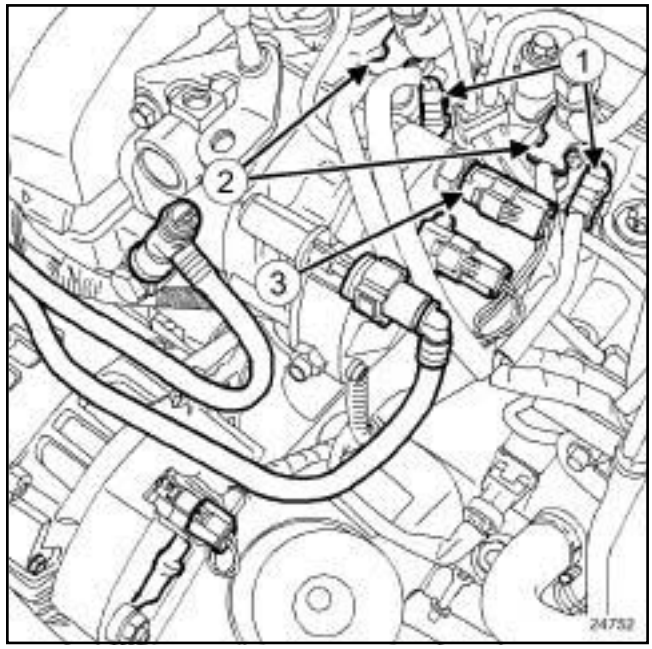
❑

Note:

Make sure you have a new diesel temperature sensor before removal.

### I - REMOVAL PREPARATION OPERATION

❑ Remove the front engine cover.




24752

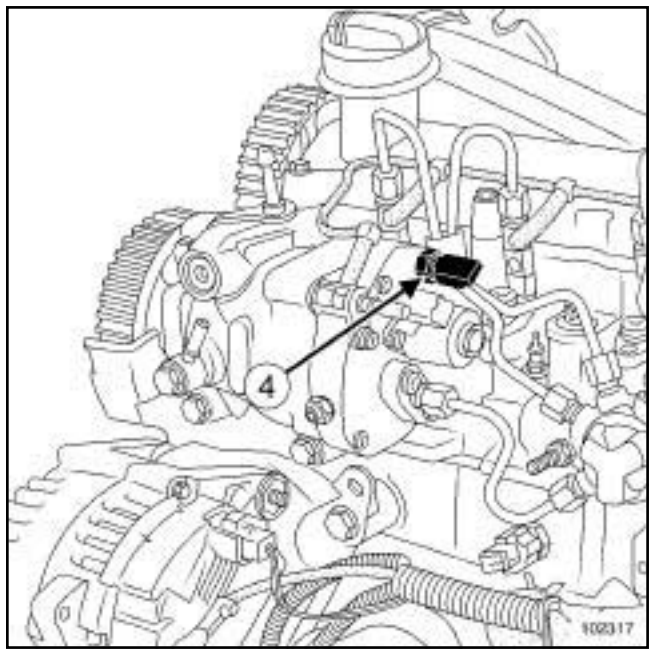
❑ Disconnect:

- the heater plugs (**1**) on cylinders **3** and **4**,

- the injectors (**2**) of cylinders **3** and **4**,

### II - REMOVAL OPERATION

❑ Disconnect the fuel temperature sensor connector ***(3)*** .

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❑ Clean the fuel temperature sensor.

❑ Remove the fuel temperature sensor (**4**) .

❑ Plug the openings.

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# Fuel temperature sensor: Removal - Refitting

K9K

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Lubricate the O-ring with lubricant from the applicator supplied with the new part.

### II - REFITTING OPERATION

❑

> Note:
>
> Do not damage the O-ring when refitting.

❑ Remove the blanking plugs.

❑ Fit the fuel temperature sensor.

❑ Torque tighten the **fuel temperature sensor (15 N.m)**.

❑ Connect the connector ***(3)*** of the fuel temperature sensor.

### III - FINAL OPERATION

❑ Connect:

- the injectors ***(2)*** of cylinders **3** and **4**,
- the heater plugs ***(1)*** on cylinders **3** and **4**.

❑ Start the engine.

❑ Check that there are no fuel leaks.

❑ Refit the engine cover.

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# Injector leak flow: Check

K9K

| Equipment required |
| --- |
| Diagnostic tool |

**PARTS AND CONSUMABLES FOR THE REPAIR**

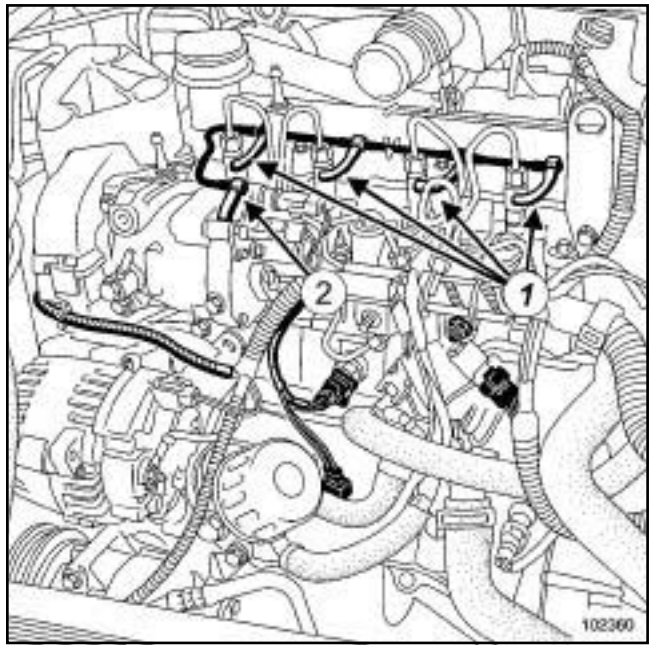
**Consumables:**

- cleaning cloths (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- set of K9K blanking plugs (**DELPHI** injection) (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

**IMPORTANT**
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Diesel injection: Precautions for the repair**) .

## CHECK

❑ Remove the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .



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❑ Disconnect:

- the diesel return pipes (**1**) on the injectors,
- the diesel return pipe (**2**) on the venturi attached to the high pressure pump.

Note:
Make preparations for fuel outflow.

❑ Fit the correct blanking plug on the venturi.

Note:
It is essential to fit an appropriate blanking plug to the Venturi to avoid depriming the diesel return circuit.

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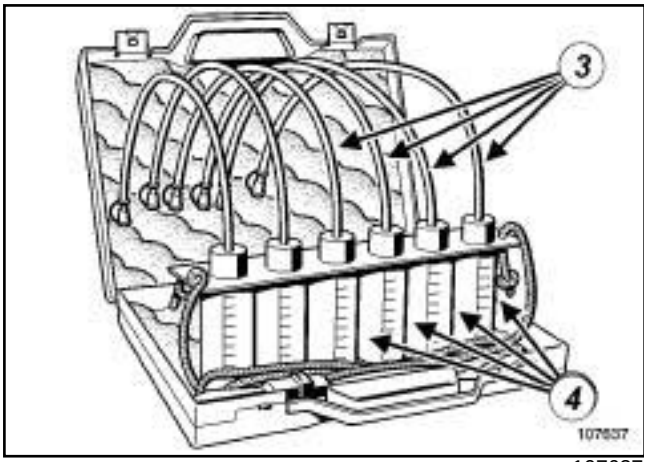
# Injector leak flow: Check

K9K

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- ❏ Connect four of the transparent pipes (**3**) of theonto the diesel injector return.
- ❏ Insert these pipes in the four graduated measuring cylinders (**4**) of the.

> Note:
>
> If necessary, attach the graduated measuring cylinder rail of theto the bonnet.

- ❏ Connect the **Diagnostic tool** to the vehicle.
- ❏ Follow the instructions given in test 9: Injector sealing test (see **Fault finding - Test)** (13B, Diesel injection).
- ❏ Disconnect the transparent pipes from the.
- ❏ Remove the transparent pipes from the graduated measuring cylinder of the.
- ❏ Empty the diesel fuel out of the graduated measuring cylinders.
- ❏ Connect:
  - the diesel return pipes on the injectors,
  - the diesel return pipe to the Venturi attached to the high pressure pump.
- ❏ Replace the faulty injector(s) (see **13B**, **Diesel injection**, **Diesel injector: Removal - Refitting**, page **13B-32**) .
- ❏ Check that there are no fuel leaks.
- ❏ Use the **Diagnostic tool** to check for the absence of stored faults, deal with them and clear them, as necessary.
- ❏ Disconnect the **Diagnostic tool**.
- ❏ Refit the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

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# Diesel injector: Removal - Refitting

K9K

| Equipment required |
| --- |
| Diagnostic tool |

| Tightening torques ▽ | |
| --- | --- |
| diesel injector clamp bolt | **28 N.m** |
| injector rail nuts | **28 N.m** |
| « rail-injector» high pressure pipe nuts | **24 N.m** |
| nuts of the neck and dipstick guide on the injector rail | **21 N.m** |

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Diesel injection: Precautions for the repair**) .

**IMPORTANT**

Before carrying out any work on the injection system, check using the **Diagnostic tool** :

- that the injector rail is not under pressure,

- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system.

Working on the circuit with the engine running is strictly forbidden.

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

Injectors may be replaced individually.

## REMOVAL

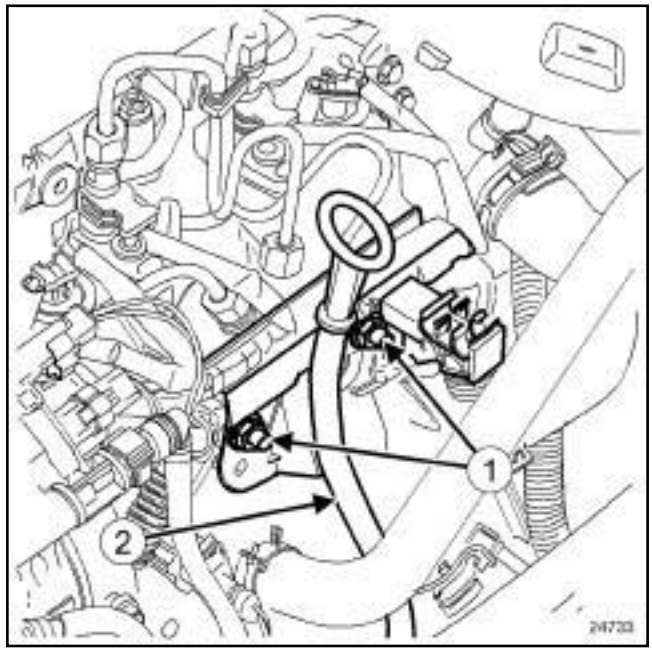
### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the engine cover,

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .



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❏ Remove the nuts (**1**) from the dipstick guide and neck.

❏ Put the engine oil dipstick guide to one side (**2**) .

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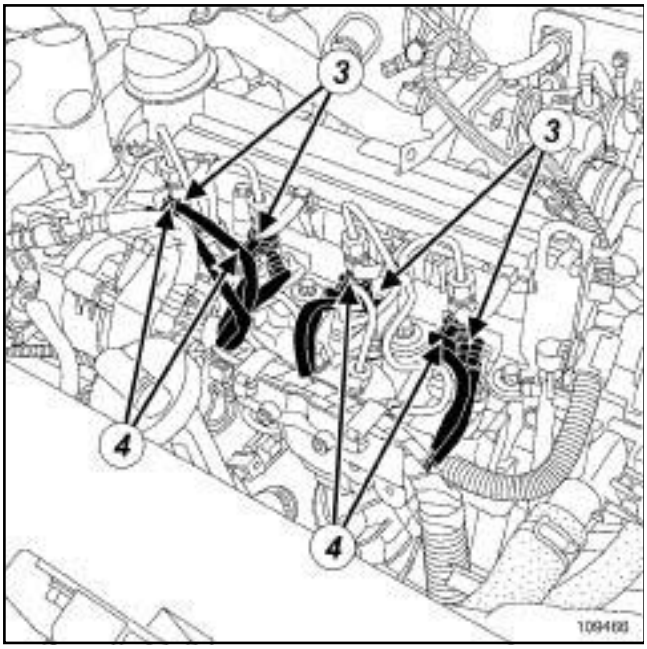
# Diesel injector: Removal - Refitting

K9K

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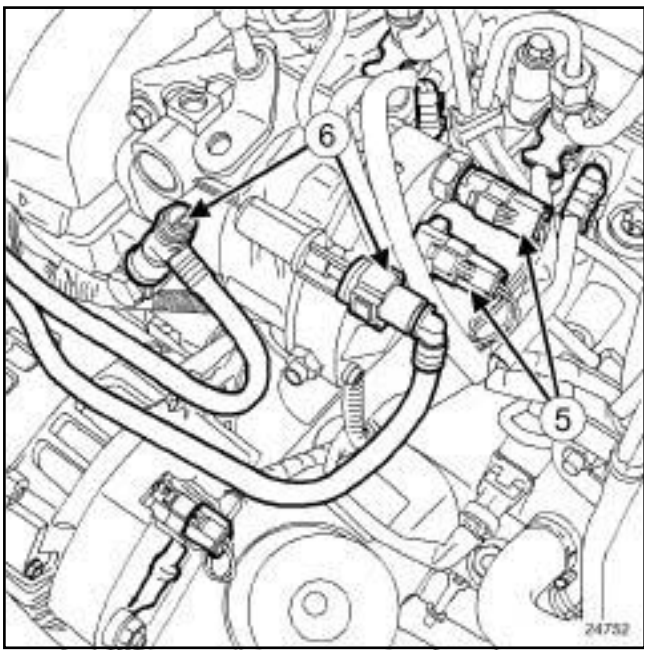



24752

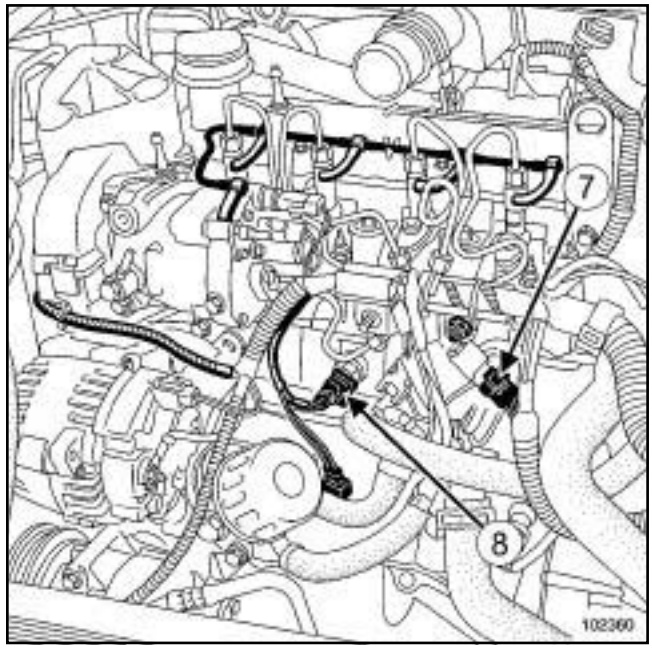
❏ Disconnect:

- the heater plugs (**3**) ,
- the injectors (**4**) ,
- the connectors (**5**) on the high pressure pump,
- the diesel return pipe connecting the injectors to the high pressure injection pump.

❏ Clean the diesel supply and return pipes (see **Diesel injection: Precautions for the repair**) .

❏ Disconnect the diesel supply and return pipes (**6**) .

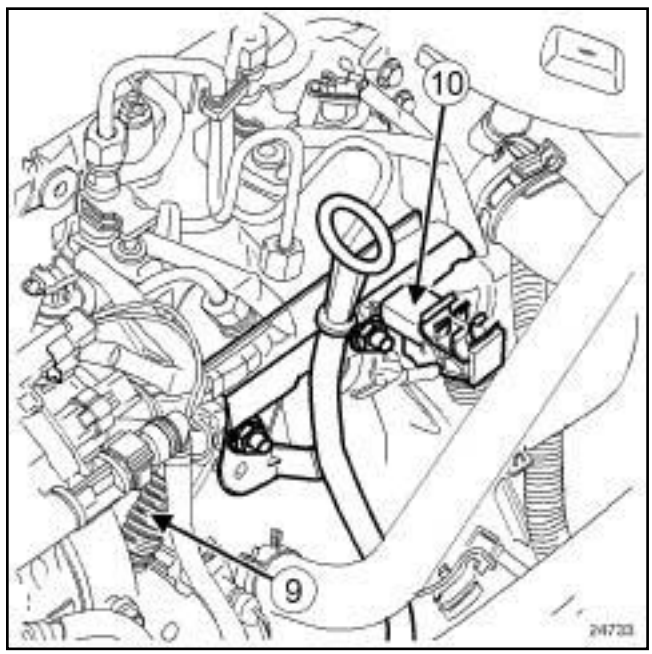
❏ Plug the openings.




102360

❏ Disconnect:

- the pressure sensor (**7**) from the injector rail,
- the accelerometer (**8**) .




24733

❏ Unclamp the engine wiring (**9**) and place it to one side.

❏ Remove the neck (**10**) located on the injector rail.

❏ Remove the « rail-injector » high pressure pipes (see **13B**, **Diesel injection**, **High pressure pipe between rail and injector: Removal - Refitting**, page **13B-22**) .

❏ Plug the openings.

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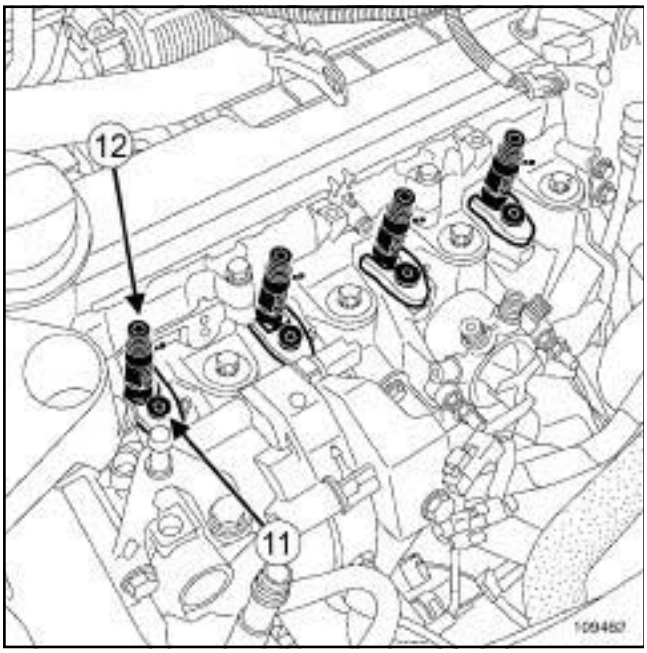
# Diesel injector: Removal - Refitting

K9K

## II - OPERATION FOR REMOVAL OF PART CONCERNED



109462

❏ Loosen the injector clamp bolt (**11**) .

> Note:
>
> If reusing a diesel injector, always mark the removed diesel injector in relation to its cylinder.

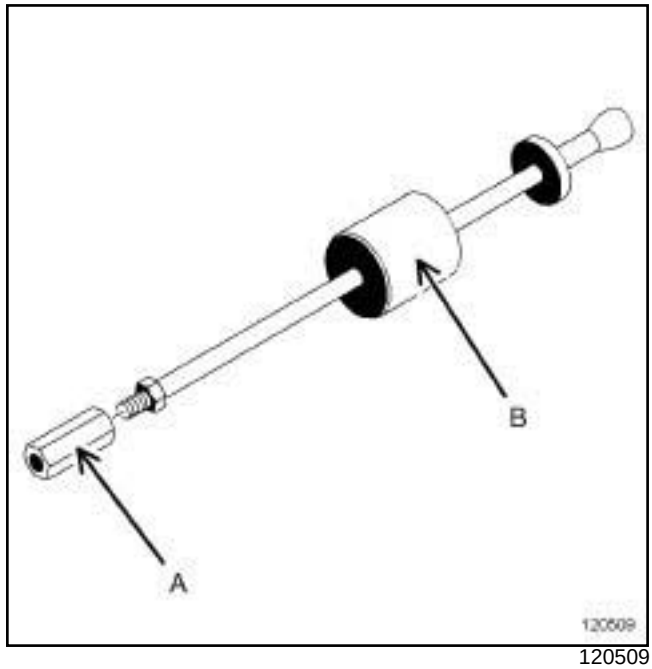
❏ Remove the diesel injector (**12**) .

> Note:
>
> If the diesel injector is jammed, remove the injector using the tooland the tool.

❏ Remove the heat protection washer.

> Note:
>
> If the heat protection washer is stuck at the bottom of the well, use the (see **Injector well cleaning tool: Use**) (Technical Note 6040A, 13B, Diesel injection).

## REMOVING THE INJECTORS USING TOOLS (MOT. 921-01) AND (EMB. 880)



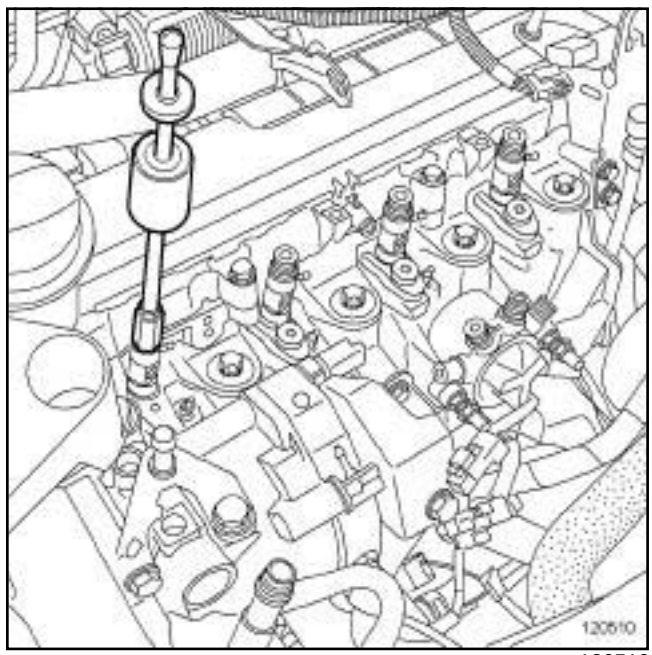
120509

(**A**) Tool for extracting injector holders (Mot. 921-01).

(**B**) Pin extractor (Emb. 880).

❏ Fit the toolon the extractor

❏ Apply releasing agent around the diesel injector.



120510

❏ Fit the slide hammer onto the diesel injector.

❏ Extract the jammed injector using the slide hammer.

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# Diesel injector: Removal - Refitting

K9K

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Always replace the heat protection washer of the diesel injector concerned.

**Cleaning parts**

❑

> **WARNING**
>
> It is strictly forbidden to clean the injectors with:
>
> - a wire brush,
> - an emery cloth,
> - an ultrasonic cleaner.

❑ Always clean the well of the removed injector (see **Injector well cleaning tool: Use**) (Technical Note 6040A, 13B, Diesel injection).

❑ If reusing the removed injector:

- clean the injector using a **CLOTH FOR INJECTION SYSTEM** soaked in **INJECTOR CLEANER** or **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products),
- if necessary, leave the injector nozzle to soak in **INJECTOR CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products),
- wipe the injector with a new **CLOTH FOR INJECTION SYSTEM**, (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) and (see **Diesel injection: Precautions for the repair**) (13B, Diesel injection).

### II - REFITTING OPERATION FOR PART CONCERNED

❑

> **WARNING**
>
> Do not remove the caps from each component until the last moment.

> Note:
>
> If one or more injectors are replaced, note the alphanumeric code (C2I) and the cylinder on which it is fitted.

❑ Refit the injector with its clamp.

❑ Torque tighten the **diesel injector clamp bolt (28 N.m)**.

### III - FINAL OPERATION

❑ Fit the high pressure pipes (see **13B**, **Diesel injection**, **High pressure pipe between rail and injector: Removal - Refitting**, page **13B-22**) .

❑ Torque tighten the **injector rail nuts (28 N.m)**.

❑ Torque tighten in order the **« rail-injector » high pressure pipe nuts (24 N.m)** (see **13B**, **Diesel injection**, **High pressure pipe between rail and injector: Removal - Refitting**, page **13B-22**) .

❑ Refit the neck located on the injector rail.

❑ Secure the engine wiring on the neck.

❑ Connect:

- the accelerometer,
- the high pressure rail pressure sensor,
- the diesel return pipe connecting the injectors to the high pressure pump,
- the diesel supply and return pipes on the high pressure pump,
- the electrical connectors on the high-pressure pump,
- the injectors,
- the heater plugs.

❑ Refit the dipstick guide.

❑ Torque tighten the **nuts of the neck and dipstick guide on the injector rail (21 N.m)**.

❑ Refit:

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .
- the engine cover,

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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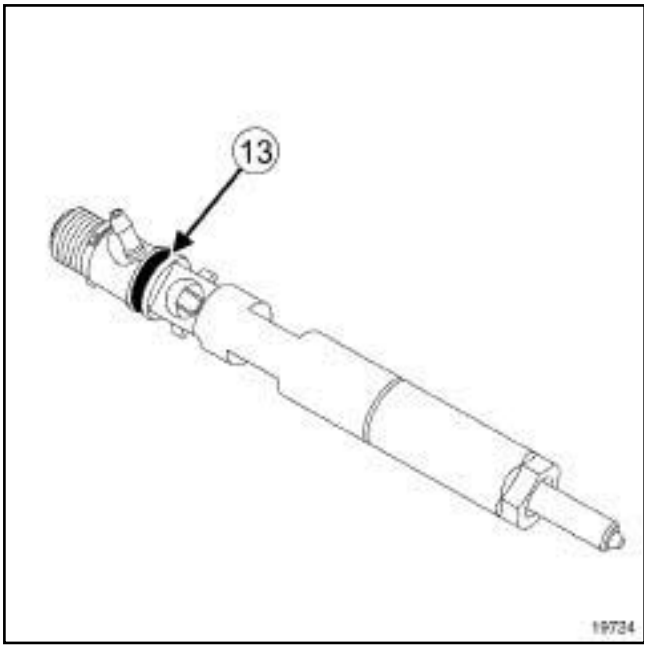
# Diesel injector: Removal - Refitting

K9K

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❏ Program the alphanumeric code (C2I) (**13**) for the replaced injector(s) using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (13B, Diesel injection).

❏ Start the engine.

❏ Check that there are no fuel leaks.

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# Accelerometer: Removal - Refitting

K9K

| Equipment required |
| --- |
| Diagnostic tool |

| Tightening torques ▽ | |
| --- | --- |
| accelerometer | **20 N.m** |
| dipstick guide and filler neck nuts on the high pressure rail | **21 N.m** |

**IMPORTANT**
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Diesel injection: Precautions for the repair**) .

**IMPORTANT**

Before carrying out any work on the injection system, check using the **Diagnostic tool** :

- that the injector rail is not under pressure,

- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system.

Working on the circuit with the engine running is strictly forbidden.

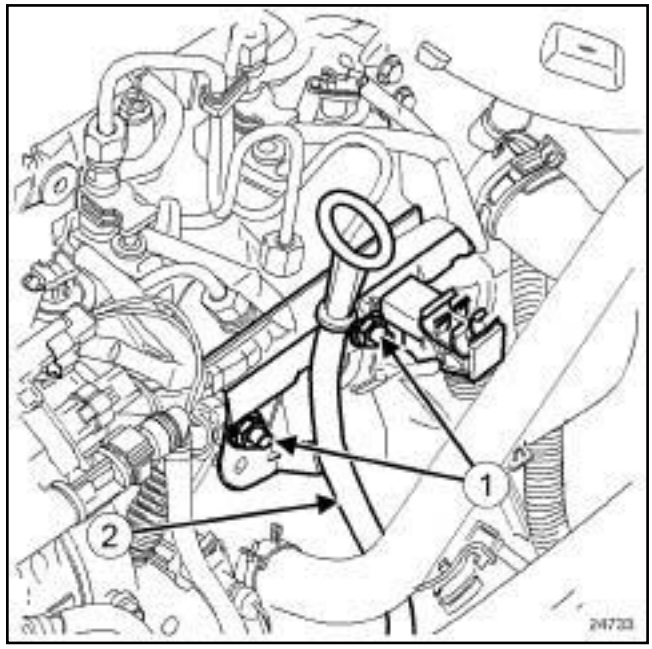
**WARNING**
To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the front engine cover.



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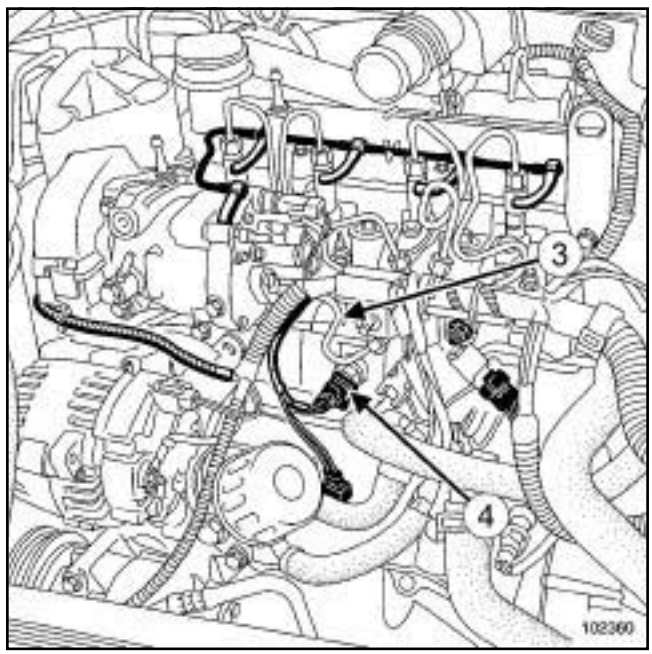
❏ Remove the nuts (**1**) from the dipstick guide and neck.

❏ Put the engine oil dipstick guide to one side (**2**) .



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❏ Remove the « pump-rail » high pressure pipe (**3**) (see **13B**, **Diesel injection**, **High pressure pipe between pump and rail: Removal - Refitting**, page **13B-19**) .

❏ Disconnect the accelerometer connector (**4**) .

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K9K

### II - OPERATION FOR REMOVAL OF PART CONCERNED

❏ Remove the accelerometer using.

## REFITTING

### I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the accelerometer.

❏ Torque tighten the **accelerometer (20 N.m)** using the.

### II - FINAL OPERATION

❏ Connect the accelerometer connector.

❏ Refit:

- the « pump-rail » high pressure pipe (see **13B**, **Diesel injection**, **High pressure pipe between pump and rail: Removal - Refitting**, page **13B-19**) ,
- the dipstick guide.

❏ Torque tighten the **dipstick guide and filler neck nuts on the high pressure rail (21 N.m)**.

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Program the accelerometer if replaced (see **Fault finding - Interpretation of faults**) (13B, Diesel injection).

> Note:
>
> When replacing the accelerometer, run command **RZ004** using the **Diagnostic tool** in order to carry out the necessary programming.

❏ Check the high pressure circuit (see **13B**, **Diesel injection**, **High pressure pipe: Check**, page **13B-18**) .

❏ Refit the engine cover.

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# Pre-postheating unit: Removal - Refitting

K9K

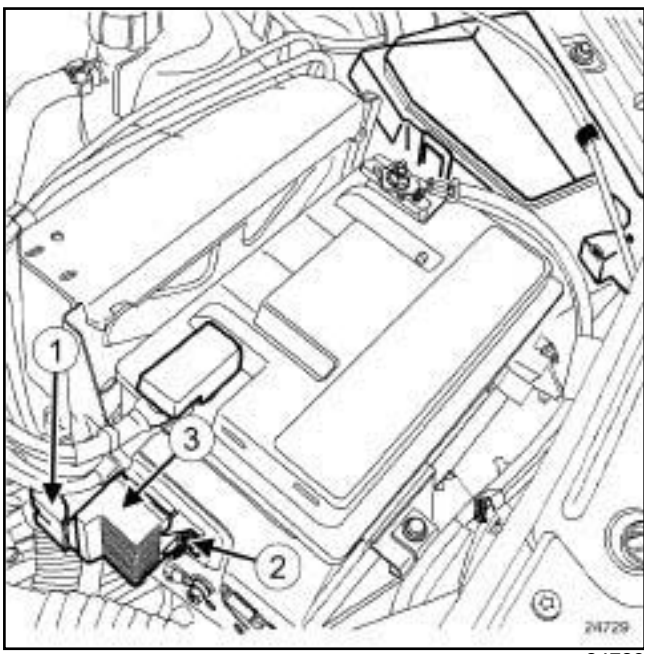
| Tightening torques ▽ | |
|---|---|
| pre-postheating unit bolt | **8 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

### II - REMOVAL OPERATION



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❏ Disconnect the pre-postheating unit connector (**1**) .

❏ Remove:

- the bolt (**2**) from the pre-postheating unit,
- the pre/postheating unit (**3**) .

## REFITTING

### I - REFITTING OPERATION

❏ Refit the pre-postheating unit.

❏ Tighten to torque the **pre-postheating unit bolt (8 N.m)**.

❏ Connect the pre-postheating unit connector.

### II - FINAL OPERATION

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Heater plugs: Removal - Refitting

K9K

| Equipment required |
|---|
| compressed air nozzle |
| hinged wrench for heater plug |

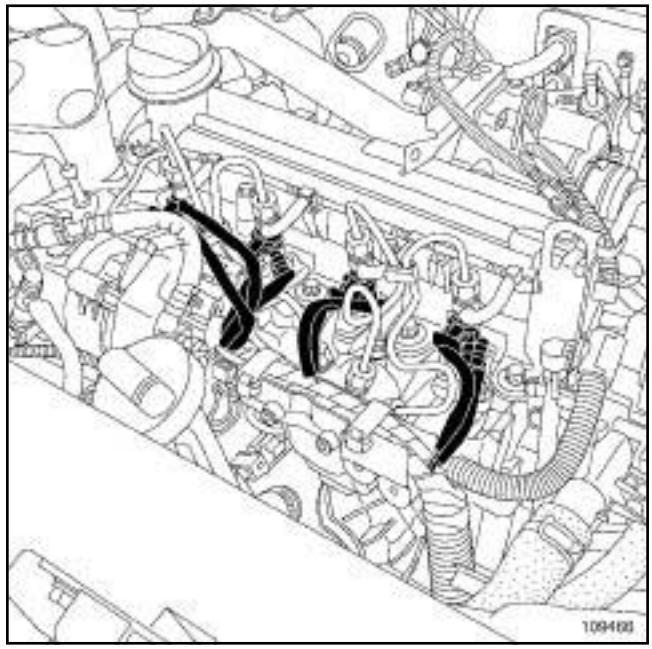
| Tightening torques ▽ | |
|---|---|
| heater plugs | **15 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION STAGE

❏ Remove the front engine cover.

### II - REMOVAL OPERATION



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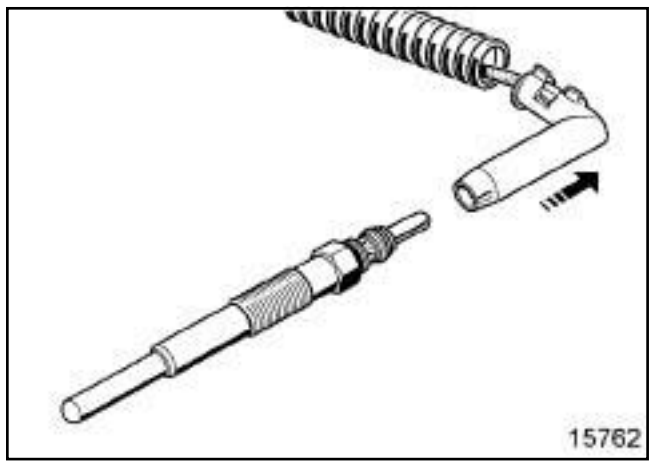


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❏ Disconnect the connector from each heater plug.

**IMPORTANT**
Wear goggles with side protectors for this operation.

❏ Clean around the outside of the heater plugs with a **compressed air nozzle** to prevent any impurities from entering the cylinders.

Note:

If the heater plugs jam, use the heater plug removal tool (see ) (Technical Note 5197A, 06A, Tools).

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# Heater plugs: Removal - Refitting

K9K

❏ Unscrew the heater plugs using a **10 mm** long socket connected to a universal joint or a **hinged wrench for heater plug**.

❏ Use a hose to unscrew the heater plugs completely.

❏ Remove the heater plugs.

## REFITTING

### I - REFITTING OPERATION

❏ Without tightening, fit the heater plugs using the hose.

❏ Torque tighten the **heater plugs (15 N.m)**.

❏ Connect the connector for each heater plug.

### II - FINAL OPERATION

❏ Refit the engine cover.

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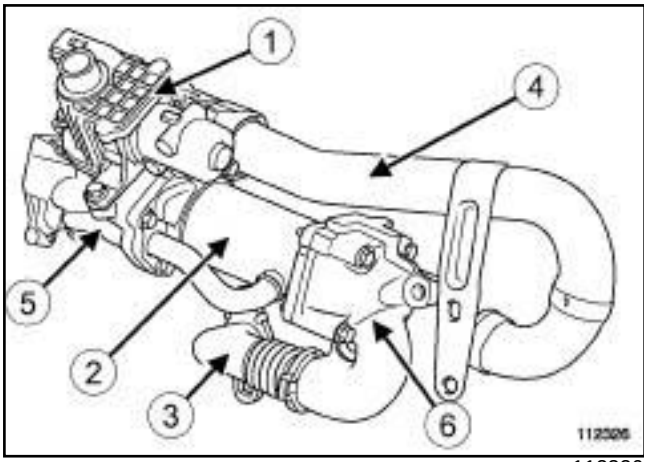
# Exhaust gas recirculation : List and location of components

K9K

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| | |
|---|---|
| (**1**) | Exhaust gas recirculation solenoid valve |
| (**2**) | Intercooler |
| (**3**) | Exhaust gas inlet pipe |
| (**4**) | Metal air inlet tube |
| (**5**) | Intercooler bracket on the flywheel end |
| (**6**) | Intercooler support on the timing end |

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# Fuel vapour absorber: Removal - Refitting

K4M

**IMPORTANT**

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**IMPORTANT**

Wear goggles with side protectors for this operation.

**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

**WARNING**

Keep the pipe unions away from contaminated areas.

**WARNING**

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

Note:

The fuel vapour absorber is located behind the front bumper, on the front right-hand side of the vehicle.

## REMOVAL

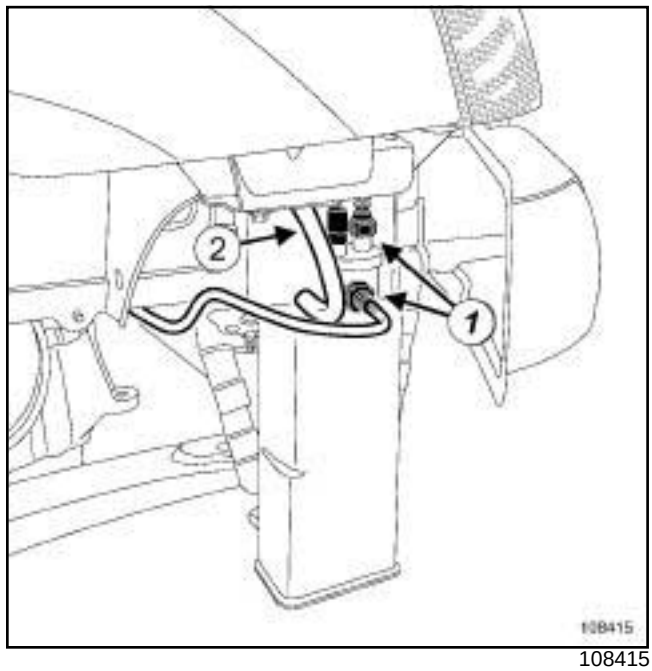
### I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❑ Remove the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❑ Move aside the front section of the front right-hand wheel arch liner.

### II - REMOVAL OPERATION

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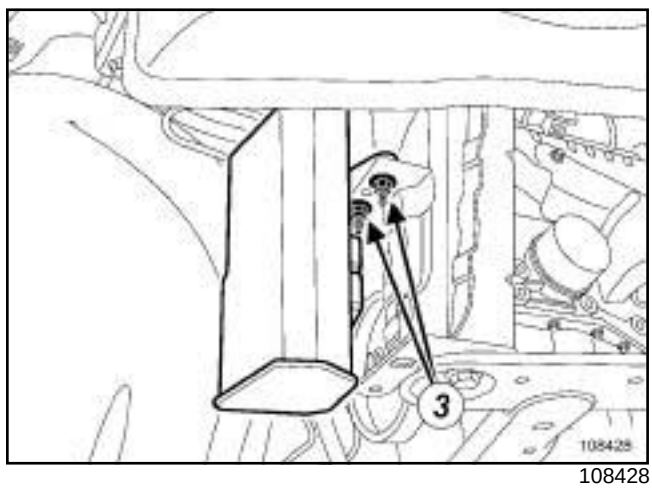
❑ Disconnect:

- the fuel vapour absorber pipes (**1**) ,
- the solenoid valve connector.

❑ Unclip the breather pipe (**2**) .

❑ Insert the blanking plugs.

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❑ Remove:

- the fuel vapour absorber nuts (**3**) ,
- the fuel vapour absorber.

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# Fuel vapour absorber: Removal - Refitting

K4M

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Remove the blanking plugs.

### II - REFITTING OPERATION

❏ Refit:

- the fuel vapour absorber,
- the fuel vapour absorber nuts.

❏ Clip on the breather pipe ***(2)***

❏ Connect:

- the solenoid valve connector,
- the fuel vapour absorber pipes ***(1)*** .

### III - FINAL OPERATION

❏ Fit the front section of the front right-hand wheel arch liner.

❏ Refit the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

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K9K, and 796

| Tightening torques ▽ | |
|---|---|
| exhaust gas recirculation solenoid valve bolts | 10 N.m |

Note:

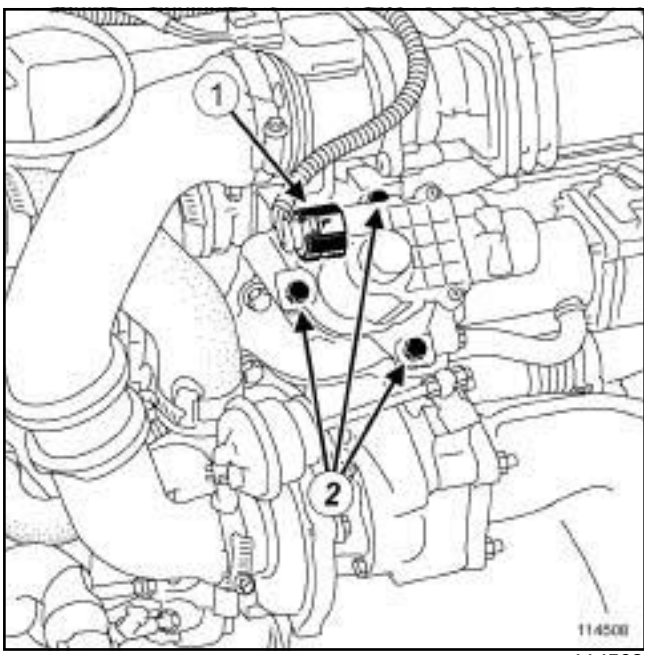
The exhaust gas recirculation solenoid valve is fitted into the exhaust gas recirculation unit.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Remove the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

### II - REMOVAL OPERATION

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❑ Disconnect the connector (**1**) from the exhaust gas recirculation solenoid valve.

❑ Remove:

- the bolts (**2**) from the exhaust gas recirculation solenoid valve,
- the exhaust gas recirculation solenoid valve,
- the exhaust gas recirculation solenoid valve seal.

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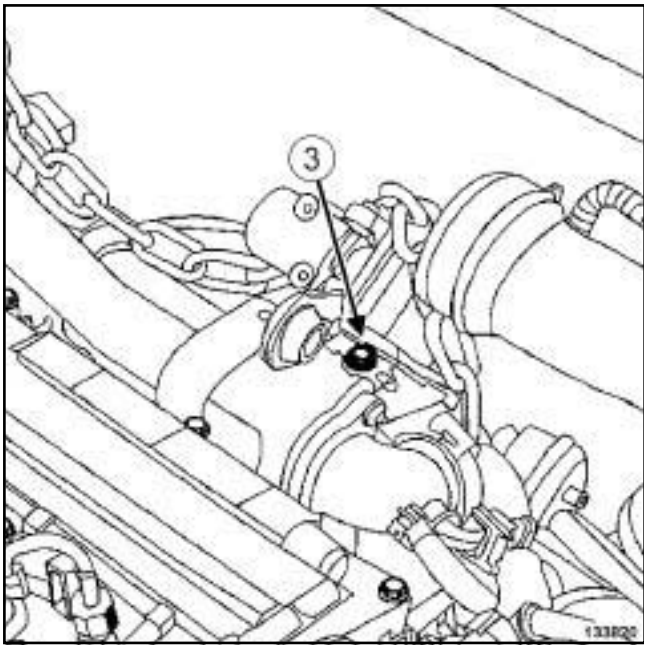
Exhaust gas recirculation solenoid valve: - Removal - Refitting

K9K, and 796

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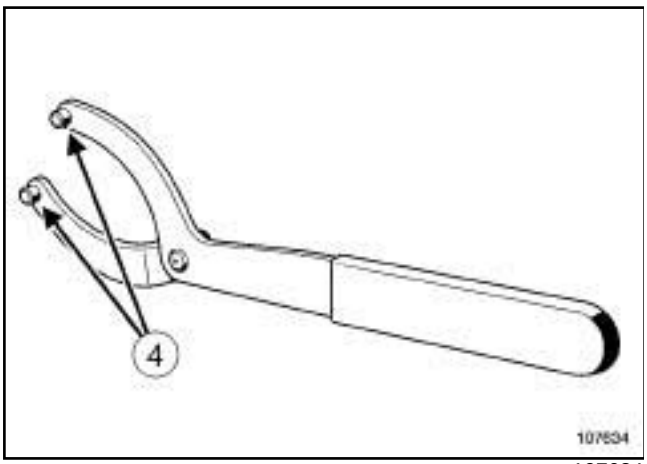


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❑

Note:

Use the toolto detach the exhaust gas recirculation solenoid valves jammed in their exhaust gas cooler mountings on the gearbox end.

Remove:

- the bracket bolt (**3**) from the air filter unit,

- the air filter unit bracket.

Position the lugs (**4**) of the toolin the bracket holes of the exhaust gas recirculation solenoid valve.

Unlock the exhaust gas recirculation solenoid valve by turning it on its axis using the.

Refit:

- the air filter unit bracket,

- the bolt on the air filter unit bracket.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: exhaust gas recirculation solenoid valve seal**.

❑ Use **GREY ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:

- the joint face of the exhaust gas recirculation solenoid valve if it is being reused,

- the joint face of the exhaust gas cooler mounting on the gearbox end.

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the joint face of the exhaust gas recirculation solenoid valve if it is being reused,

- the joint face of the exhaust gas cooler mounting on the gearbox end.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

### II - REFITTING OPERATION

❑ Position the exhaust gas recirculation solenoid valve with a new seal.

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## Exhaust gas recirculation solenoid valve: Removal - Refitting

K9K, and 796

❑ Torque tighten the **exhaust gas recirculation solenoid valve bolts (10 N.m)**.

❑ Connect the exhaust gas recirculation solenoid valve connector.

**III - FINAL OPERATION**

❑ Refit the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

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# Exhaust gas cooler: Removal - Refitting



K9K, and 796

| Tightening torques ▽ | |
|---|---|
| exhaust gas cooler bolts | **12 N.m** |
| exhaust gas recirculation rigid pipe bolts | **12 N.m** |

**IMPORTANT**
Wear leaktight gloves (Nitrile type) for this operation.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

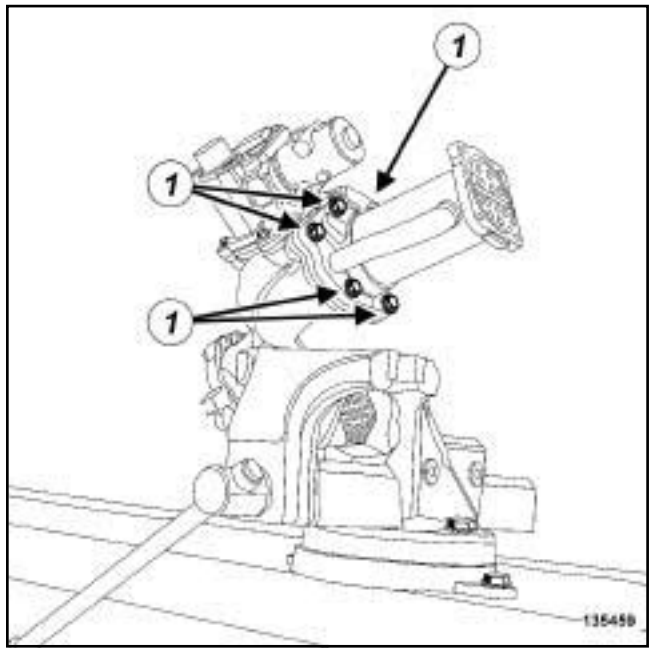
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the engine cover,
- the engine undertray bolts,
- the engine undertray.
- the catalytic converter (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) ,
- the exhaust gas recirculation rigid pipe (see **14A**, **Antipollution**, **Exhaust gas recirculation rigid pipe: Removal - Refitting**, page **14A-12**) ,
- the exhaust gas recirculation assembly (see **14A**, **Antipollution**, **Exhaust gas recirculation assembly: Removal - Refitting**, page **14A-9**) .

### II - REMOVAL OPERATION

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❏ Remove the following on the workbench:

- the exhaust gas cooler bolts (**1**) from the exhaust gas cooler mounting at the gearbox end,
- the exhaust gas cooler from the exhaust gas cooler mounting at the gearbox end,
- the exhaust gas cooler seal at the gearbox end.

## REFITTING

### I - REMOVAL PREPARATION OPERATION

❏ **parts always to be replaced: exhaust gas cooler seal**

Note:
Take care not to damage the joint faces of the exhaust gas cooler to prevent any coolant leaks.

**WARNING**
Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

❏ Use **GREY ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:

- the joint faces of the exhaust gas cooler if it is to be reused,

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K9K, and 796

- the joint face of the exhaust gas cooler mounting on the gearbox end,
- the joint face of the exhaust gas cooler mounting on the timing end.

❏ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the joint faces of the exhaust gas cooler if it is to be reused,
- the joint face of the exhaust gas cooler mounting on the gearbox end,
- the joint face of the exhaust gas cooler mounting on the timing end.

**II - REFITTING OPERATION**

❏ On the workbench, refit:

- the exhaust gas cooler fitted with a new seal on the exhaust gas cooler mounting at the gearbox end,
- fit without tightening the exhaust gas cooler bolts on the exhaust gas cooler mounting at the gearbox end,
- a new exhaust gas recirculation rigid pipe on the exhaust gas recirculation assembly,
- fit without tightening the bolts of the exhaust gas recirculation rigid pipe on the exhaust gas recirculation assembly.

Note:

The exhaust gas cooler must be able to move in relation to the exhaust gas cooler mounting and the exhaust gas recirculation rigid pipe so that it can be adjusted correctly.

❏ Fit the exhaust gas recirculation assembly equipped with the exhaust gas recirculation rigid pipe on the cylinder head.

❏ Tighten:

- the bolts of the exhaust gas recirculation assembly on the cylinder head,
- the bolts of the exhaust gas recirculation rigid pipe bracket on the cylinder head,
- the bolts of the exhaust gas cooler on the exhaust gas recirculation mounting,
- the bolts of the exhaust gas recirculation rigid pipe on the exhaust gas recirculation assembly,

❏ Remove:

- the exhaust gas recirculation assembly bolts,
- the bolts of the exhaust gas recirculation rigid pipe bracket,
- the exhaust gas recirculation assembly fitted with the exhaust gas recirculation rigid pipe.

❏ On the workbench, torque tighten:

- the **exhaust gas cooler bolts (12 N.m)**,
- the **exhaust gas recirculation rigid pipe bolts (12 N.m)**.

**III - FINAL OPERATION**

❏ Proceed in the reverse order to removal.

❏ Bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

# Exhaust gas recirculation assembly: Removal - Refitting

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K9K, and 796

| Special tooling required | |
|---|---|
| **Ms. 583** | Pipe clamps. |

| Tightening torques ▽ | |
|---|---|
| bolts of the exhaust gas recirculation assembly | **21 N.m** |
| bolts on the « timing end lifting eye - air inlet metal tube assembly » | **10 N.m** |

**IMPORTANT**
Wear cut-resistant gloves during the operation.

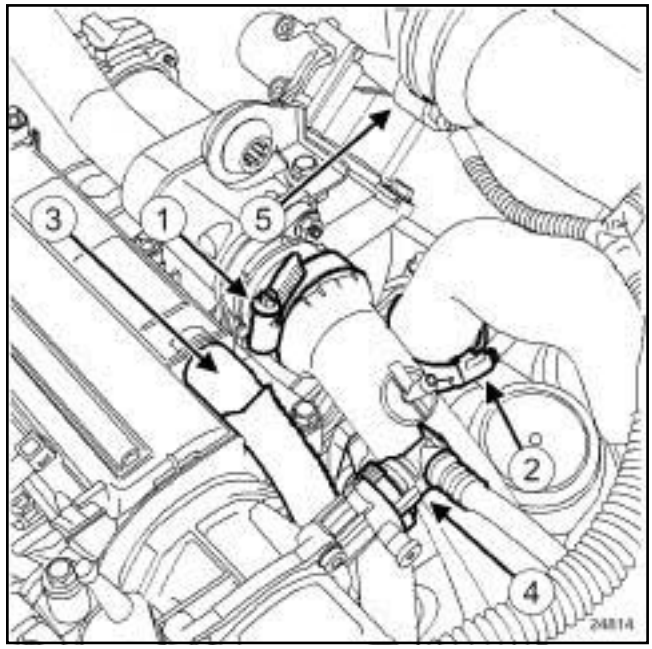
## I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the engine cover,
- the air filter box (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the engine undertray,
- the catalytic converter (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) .

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❏ Remove:

- the clip (**1**) on the air pipe between the intercooler and the exhaust gas recirculation assembly,
- the clip (**2**) on the air pipe between the intercooler and the turbocharger.

❏ Disconnect:

- the air pipe between the intercooler and the exhaust gas recirculation assembly,
- the air pipe between the intercooler and the turbocharger,
- the oil vapour rebreathing pipe (**3**) ,
- the non-return valve (**4**) at the vacuum pump,
- the exhaust gas recirculation solenoid valve connector (**5**) .

# Exhaust gas recirculation assembly: Removal - Refitting

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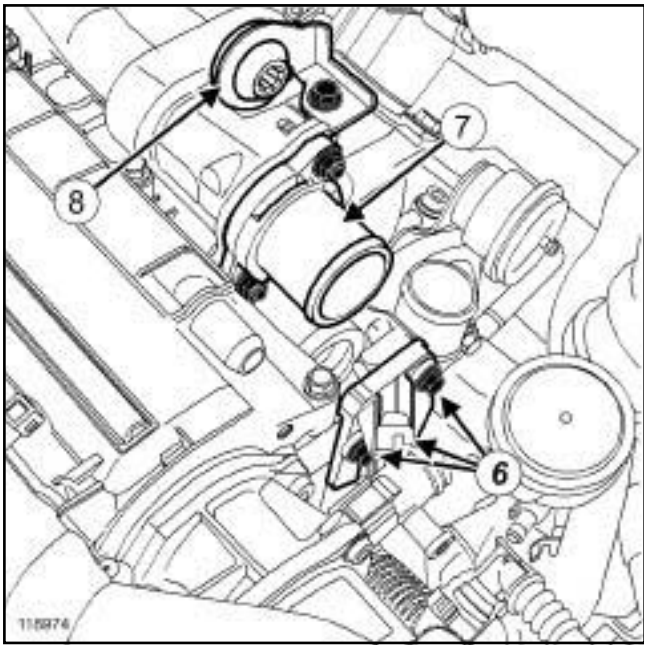
K9K, and 796

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❑ Position the **(Ms. 583)** or the hose clamps on the coolant inlet and outlet hoses of the exhaust gas cooler.

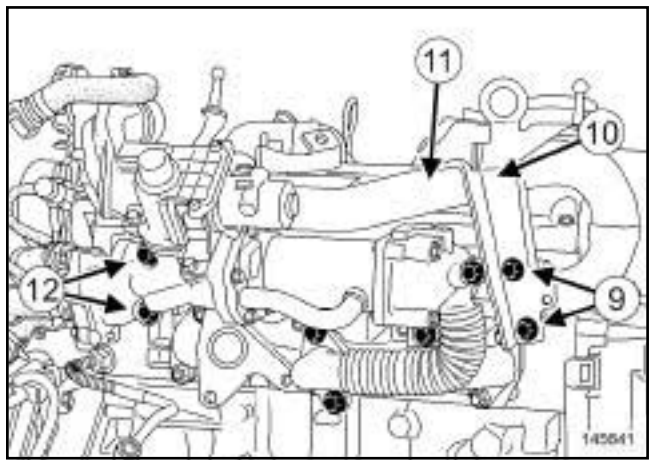
**WARNING**

Prepare for the flow of fluid, and protect the surrounding components.

❑ Remove:

- the bolts (**6**) on the coolant circulation cover,
- the coolant circulation cover,
- the seals of the coolant circulation cover.

### II - REMOVAL OPERATION

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❑ Remove:

- the bolts (**9**) from the lifting eye at the timing end,
- the lifting eye on the timing end (**10**) ,
- the air inlet metal tube (**11**) ,
- the air inlet metal tube seals,
- the exhaust gas recirculation rigid pipe (see **14A**, **Antipollution**, **Exhaust gas recirculation rigid pipe: Removal - Refitting**, page **14A-12**) ,
- the bolts (**12**) of the exhaust gas assembly mounting,
- the exhaust gas recirculation assembly.

❑ Remove the following on the workbench:

- the air duct sleeve ***(7)*** ,
- the centring ring ***(8)*** of the air filter unit.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ On the workbench, refit:

- the air pipe sleeve ***(7)*** ,
- the centring ring of the air filter unit.

❑ Always replace:

- the air inlet metal tube seals,
- the coolant circulation cover seals,
- the turbocharger air outlet pipe seal.

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K9K, and 796

❏ Use **GREY ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the joint faces of the exhaust gas cooler mounting at the gearbox end.

**WARNING**
Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

❏ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the housing of the coolant circulation cover seals,
- the exhaust gas cooler mounting joint faces on the gearbox end,
- the housing of each air inlet metal tube seal,
- the housing of the turbocharger air outlet pipe seal,
- the housing of the air inlet metal tube in the cylinder head,
- the housing of the air inlet metal tube in the exhaust gas cooler mounting on the gearbox end.

**WARNING**
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

**II - REFITTING OPERATION**

❏ Proceed in the reverse order to removal.

❏ Torque tighten:

- the **bolts of the exhaust gas recirculation assembly (21 N.m)**,
- the **bolts on the « timing end lifting eye - air inlet metal tube assembly » (10 N.m)**.

❏ Fill and bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Exhaust gas recirculation rigid pipe: Removal - Refitting

K9K, and 796

| Tightening torques ▽ | |
|---|---|
| bolts of the exhaust gas recirculation rigid pipe bracket on the cylinder head | **21 N.m** |
| bolts of the exhaust gas recirculation rigid pipe on the exhaust manifold | **36 N.m** |
| bolts of the exhaust gas recirculation rigid pipe on the exhaust gas recirculation assembly | **12 N.m** |
| lifting eye bolts | **10 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

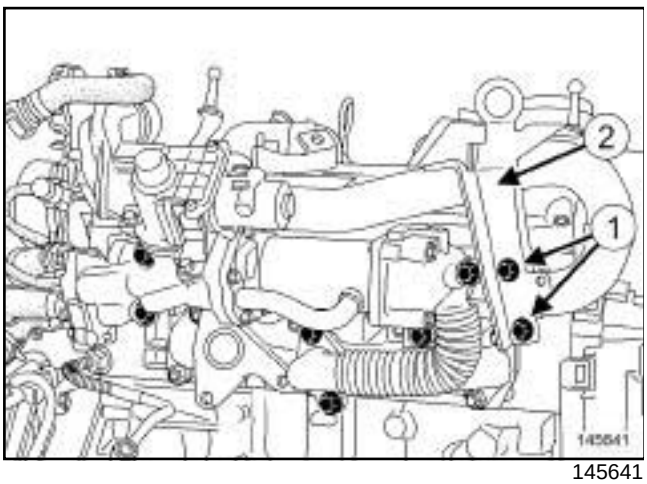
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the engine cover,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the engine undertray.

❏ Remove the catalytic converter (see **19B**, **Exhaust**, **Catalytic converter: Removal - Refitting**, page **19B-10**) .

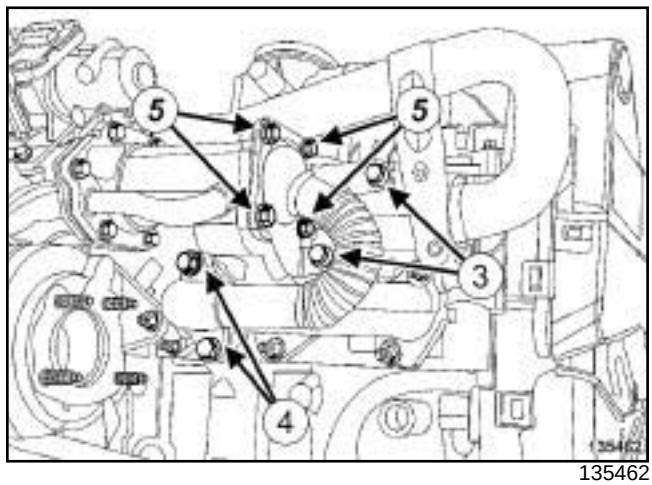



145641

❏ Remove:

- the bolts (**1**) from the lifting eye at the timing end,
- the timing end lifting eye (**2**) ,

### II - REMOVAL OPERATION




135462

❏ Remove:

- the bolts (**3**) of the exhaust gas recirculation rigid pipe bracket from the cylinder head,
- the bolts (**4**) of the exhaust gas recirculation rigid pipe from the exhaust manifold,
- the bolts (**5**) of the exhaust gas recirculation rigid pipe from the exhaust gas recirculation rigid pipe,
- the exhaust gas recirculation rigid pipe,
- the seal between the exhaust gas rigid pipe and the exhaust gas manifold,
- the seal between the exhaust gas recirculation rigid pipe and the exhaust gas cooler.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏

**WARNING**

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

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K9K, and 796

❑ Clean using **ABRASIVE PADS** :

- the joint face of the exhaust gas recirculation assembly,
- the exhaust manifold seal face.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Use **SURFACE CLEANER** (see ) (04B, Consumables - Products) and **CLEAN CLOTHS** to degrease:

- the exhaust manifold joint face,
- the joint face of the exhaust gas recirculation assembly.

❑ **parts always to be replaced: Exhaust gas recirculation rigid pipe**.

❑ **parts always to be replaced: Exhaust gas recirculation pipe seal**.

❑ **parts always to be replaced: exhaust gas recirculation pipe bolt**

**II - REFITTING OPERATION**

❑ Proceed in the reverse order to removal.

❑ Torque tighten:

- the **bolts of the exhaust gas recirculation rigid pipe bracket on the cylinder head (21 N.m)**,
- the **bolts of the exhaust gas recirculation rigid pipe on the exhaust manifold (36 N.m)**,
- the **bolts of the exhaust gas recirculation rigid pipe on the exhaust gas recirculation assembly (12 N.m)**,
- the **lifting eye bolts (10 N.m)**.

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# Alternator: Removal - Refitting

K9K

| Tightening torques ▽ | |
|---|---|
| alternator bolts | **21 N.m** |
| alternator lead nut | **14 N.m** |

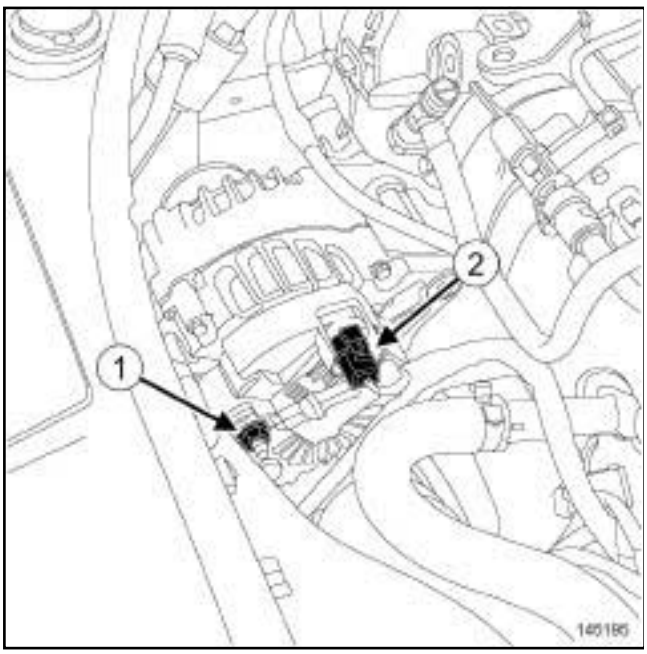
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .

### II - REMOVAL OPERATION

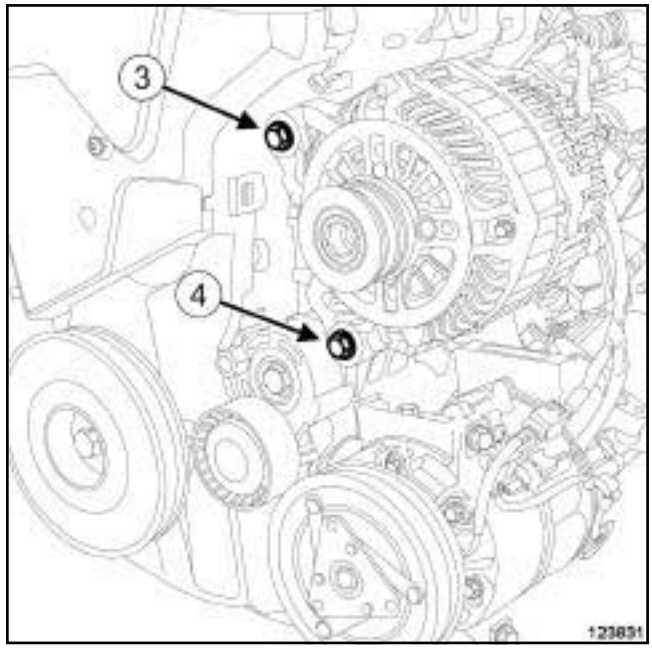



145195

❏ Remove:

- the alternator lead nut (**1**) ,
- the lead from the alternator.

❏ Disconnect the connector (**2**) .




123831

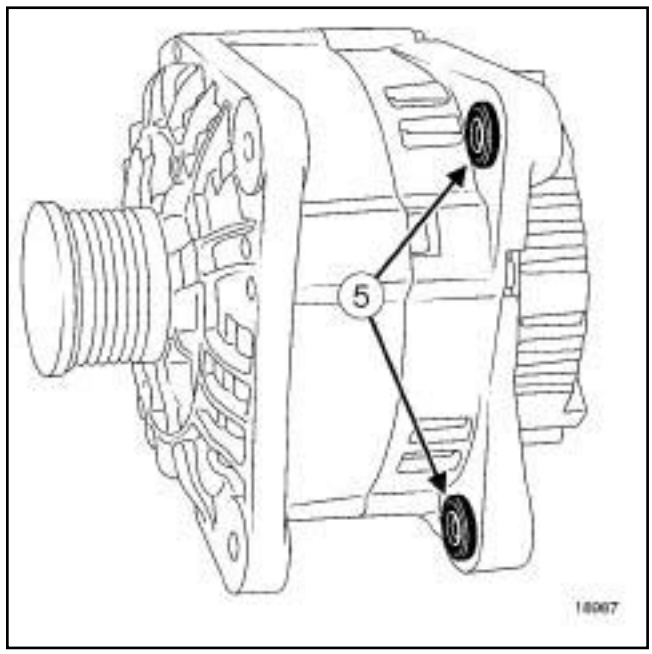
❏ Remove the alternator upper bolt (**3**) .

❏ Loosen the alternator lower bolt (**4**) .

❏ Remove the alternator with its lower bolt.

## REFITTING

### I - REFITTING PREPARATION OPERATION




18987

❏ Push in the alternator rings (**5**) to facilitate fitting.

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# Alternator: Removal - Refitting

K9K

## II - REFITTING OPERATION

❑ Refit:

- the alternator with its lower bolt,
- the alternator upper bolt.

❑ Torque tighten the **alternator bolts (21 N.m)**.

❑ Connect the connector to the alternator.

❑ Refit the alternator lead.

❑ Torque tighten the **alternator lead nut (14 N.m)**.

## III - FINAL OPERATION

❑ Refit the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Alternator: Removal - Refitting

K4M, and POWER ASSISTED STEERING, and AIR CONDITIONING

| Tightening torques ▽ | |
|---|---|
| alternator bolts | **21 N.m** |
| alternator lead nut | **14 N.m** |

## REMOVAL

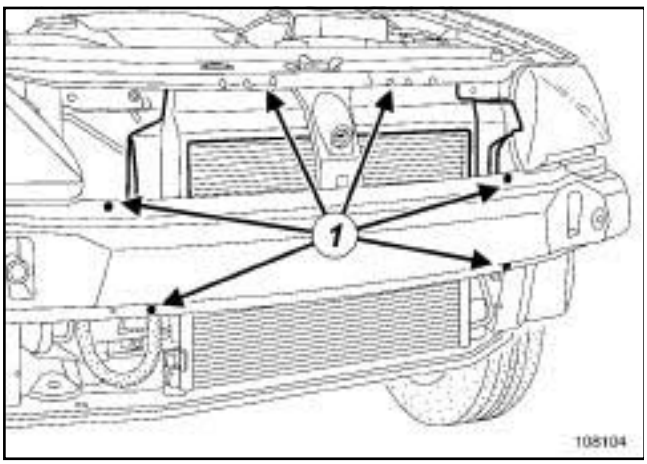
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

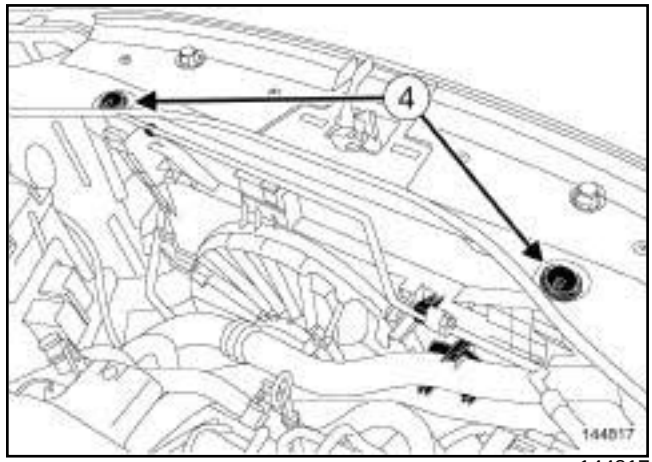
- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .



108104

❏ Remove:

- the air deflector mounting pins (**1**) ,
- the air deflector.



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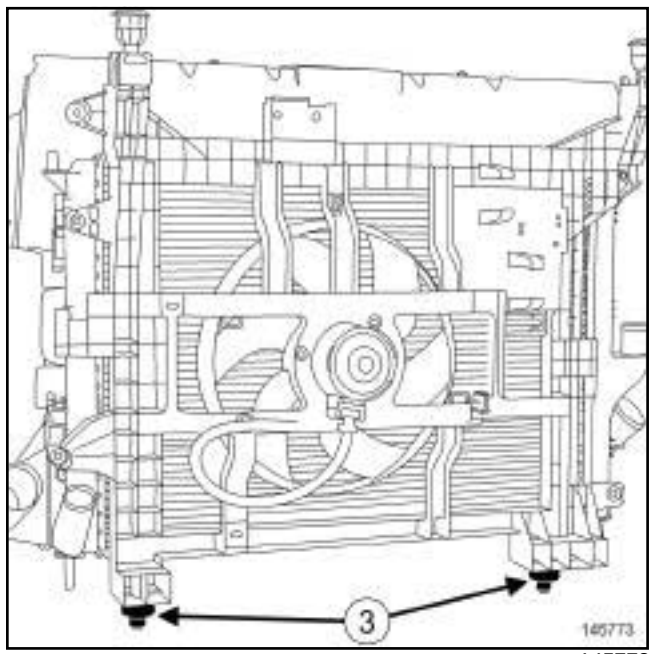

145773

❏ Remove the upper mountings (**4**) from the engine cooling fan assembly (see **19A**, **Cooling**, **Engine cooling fan assembly: Removal - Refitting**, page **19A-27**) .

❏ Extract the « engine cooling fan - cooling radiator - condenser » assembly from its lower mountings ***(3)*** and slide it to the left.

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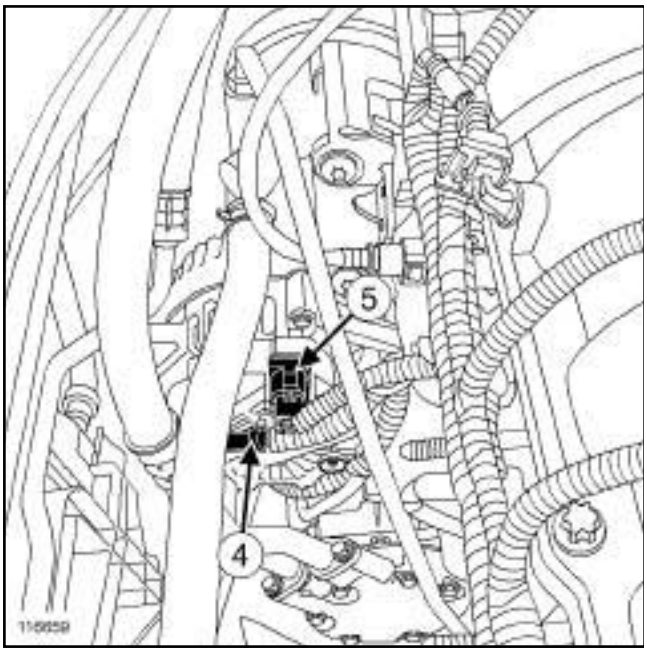
K4M, and POWER ASSISTED STEERING, and AIR CONDITIONING

## II - REMOVAL OPERATION

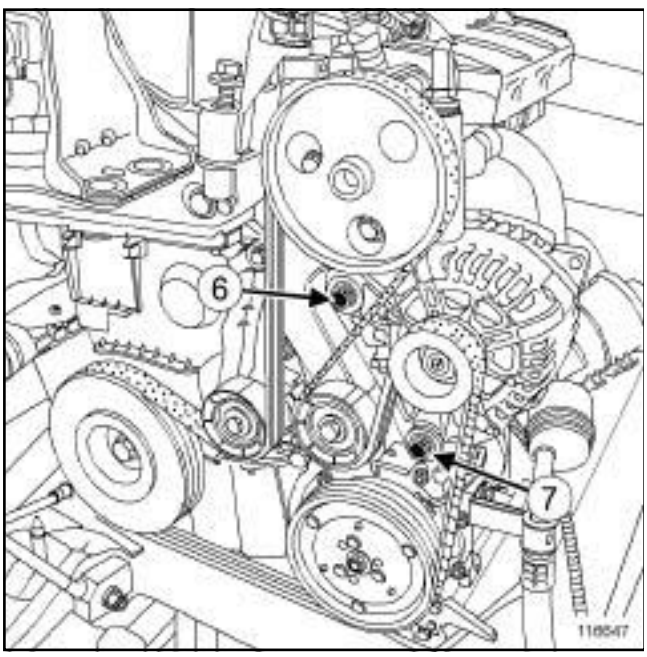


116659

❏ Remove:

- the alternator lead nut,
- the alternator lead (**4**) .

❏ Disconnect the alternator connector (**5**) .



116647

❏ Remove the alternator upper bolt (**6**) .

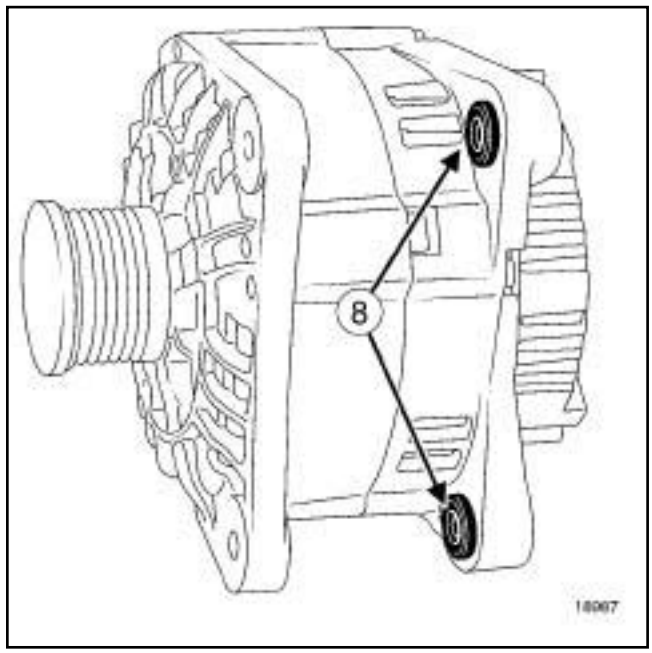
❏ Loosen the alternator lower bolt ***(7)*** .

❏ Move the alternator away from the multifunction support using a screwdriver.

❏ Remove the alternator and its lower mounting bolt.

# REFITTING

## I - REFITTING PREPARATION OPERATION



18987

❏ Push the rings (**8**) to make fitting easier.

## II - REFITTING OPERATION

❏ Refit the alternator.

❏ Torque tighten the **alternator bolts (21 N.m)**.

❏ Connect the connector to the alternator.

❏ Refit:

- the lead to the alternator,
- the alternator lead nut.

❏ Torque tighten the **alternator lead nut (14 N.m)**.

## III - FINAL OPERATION

❏ Slide the « engine cooling fan - cooling radiator - condenser » assembly to the right and fit it in its lower mountings.

❏ Refit the upper mountings of the engine cooling fan assembly (see **19A**, **Cooling**, **Engine cooling fan assembly: Removal - Refitting**, page **19A-27**) .

❏ Refit:

- the air deflector,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,

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- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Alternator: Removal - Refitting

K4M, and STANDARD HEATING RECIRCULATION

| Tightening torques ▽ | |
|---|---|
| alternator bolts | **21 N.m** |
| positive terminal nut on the alternator | **14 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .

❏

**IMPORTANT**

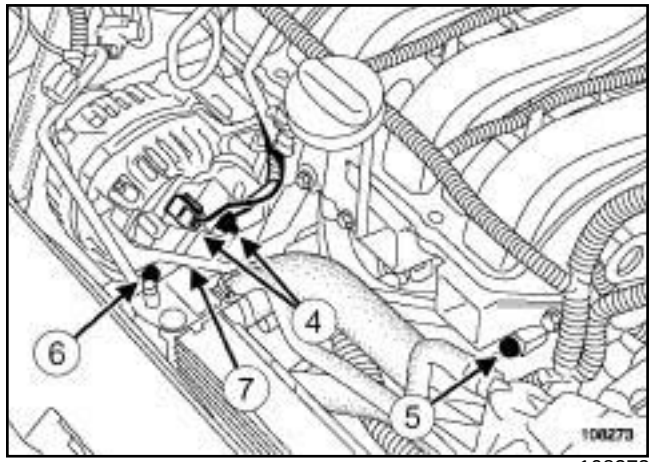
During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

❏ Disconnect the fuel supply pipe union ***(3)*** on the injector rail.



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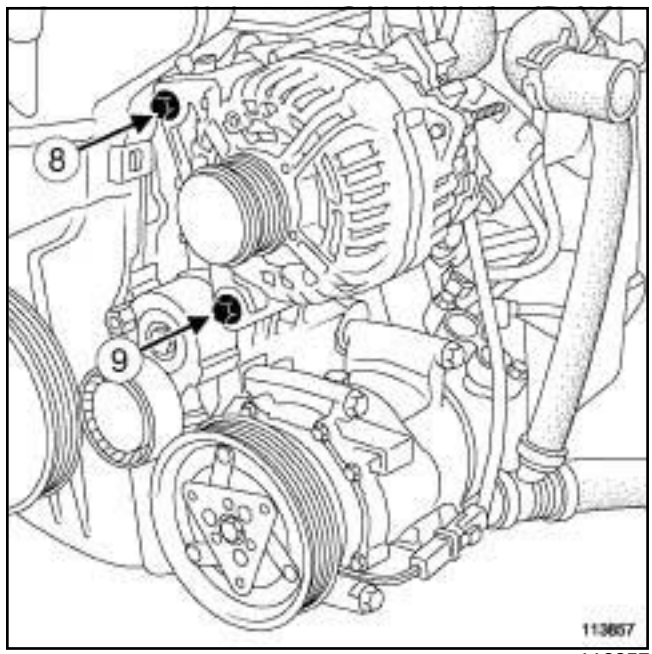
❏ Disconnect the alternator's electrical connections (**4**) .

❏ Move aside the alternator wiring.

### II - REMOVAL OPERATION



113857

❏ Remove the alternator upper bolt (**8**) .

❏ Loosen the alternator lower bolt (**9**) .

❏ Move the alternator away from the multifunction support using a screwdriver.

❏ Remove the alternator with its lower bolt upwards.

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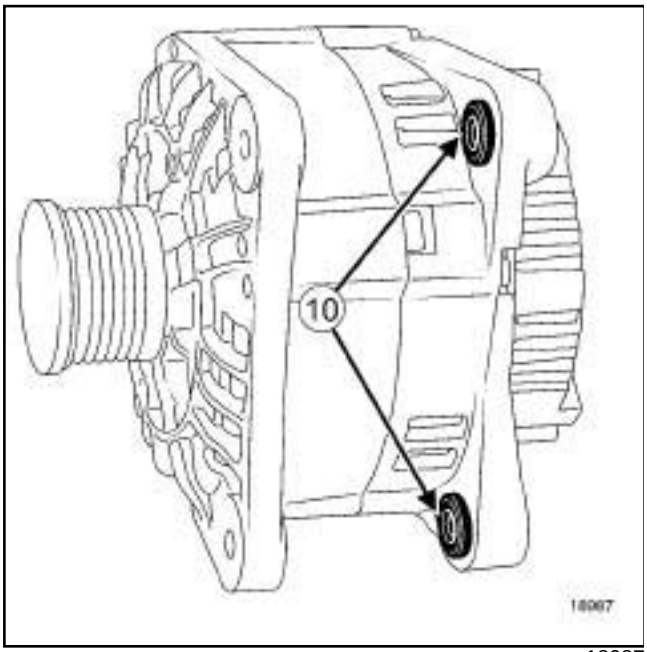
K4M, and STANDARD HEATING RECIRCULATION

## REFITTING

### I - REFITTING PREPARATION OPERATION




18987

❏ Push the rings (**10**) to make fitting easier.

### II - REFITTING OPERATION

❏ Refit the alternator.

❏ Torque tighten the **alternator bolts (21 N.m)**.

### III - FINAL OPERATION

❏ Connect the alternator electrical connections.

❏ Torque tighten the **positive terminal nut on the alternator (14 N.m)**.

❏ Connect the fuel supply pipe union on the injector rail.

❏ Refit:

- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Starter: Removal - Refitting

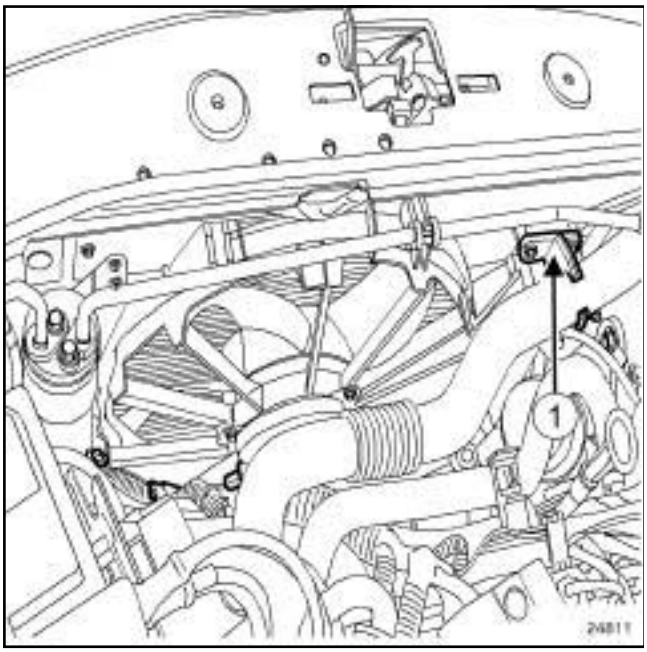
K9K

| Tightening torques ▽ | |
|---|---|
| starter bolts | **44 N.m** |
| nut on the starter solenoid lead | **5 N.m** |
| starter lead nut | **8 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

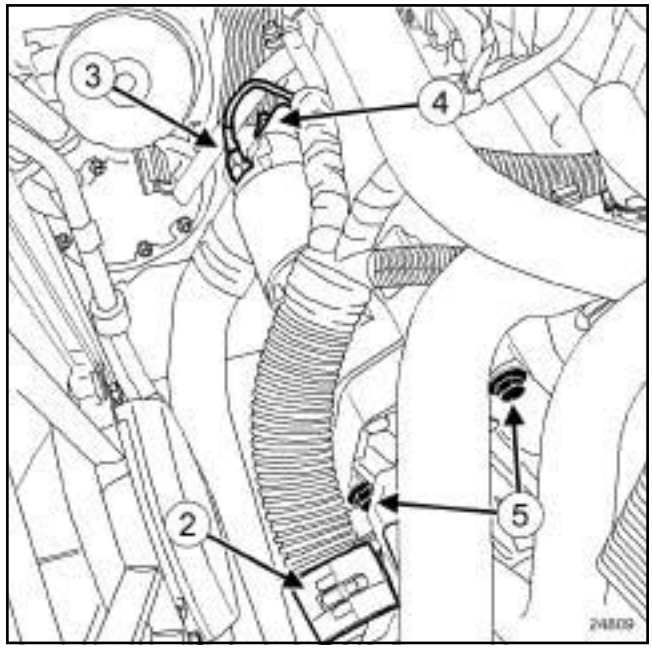
❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).




24811

❏ Unclip the intercooler duct on the fan assembly at (**1**) .

❏ Move aside the intercooler duct.




24809

❏ Unclip the engine wiring at (**2**) .

### II - REMOVAL OPERATION

❏ Remove:

- the nut ***(3)*** on the starter solenoid lead,
- the nut ***(4)*** on the starter lead,
- the starter leads,
- the starter bolts ***(5)*** ,
- the starter.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Check that the starter centring dowel is in place.

### II - REFITTING OPERATION

❏ Refit the starter.

❏ Torque tighten the **starter bolts (44 N.m)**.

❏ Refit the starter leads.

❏ Torque tighten:

- the **nut on the starter solenoid lead (5 N.m)**,
- the **starter lead nut (8 N.m)**.

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# Starter: Removal - Refitting

K9K

**III - FINAL OPERATION**

❏ Clip:

- the engine wiring,
- the intercooler duct on the fan assembly.

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Starter: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| starter bolts | **44 N.m** |
| starter lead nut | **8 N.m** |
| nut on the starter solenoid lead | **5 N.m** |

## REMOVAL

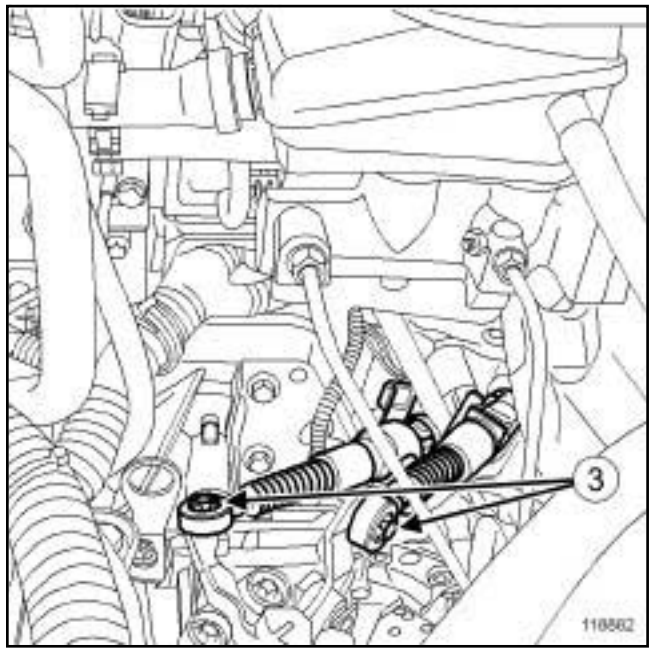
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

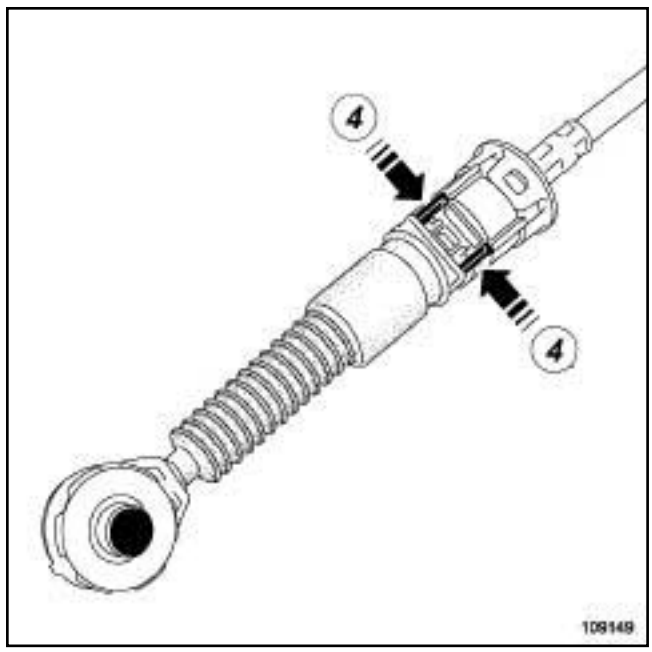
❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

JR5




118882




109149

❏ Unclip:

- the gear control cables on the gearbox at (**3**) using a screwdriver,

- the gearbox control cable sleeve stops by pressing at (**4**) .

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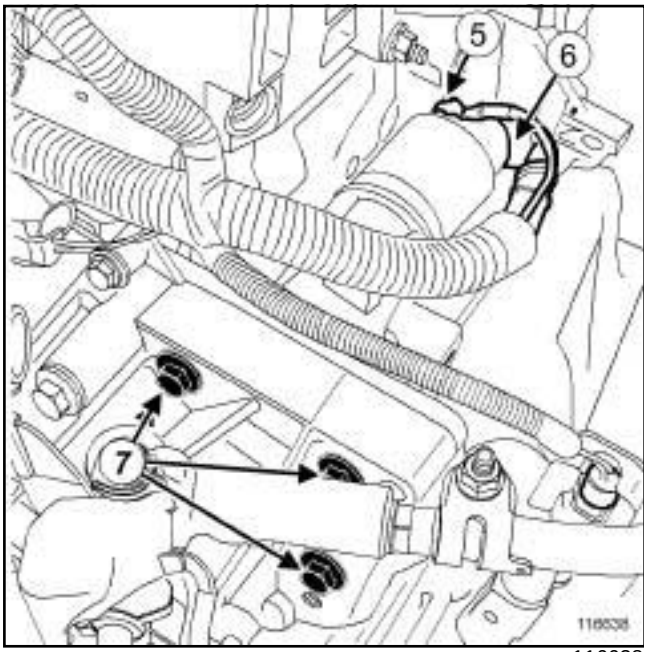
# Starter: Removal - Refitting

K4M

## II - REMOVAL OPERATION




116638

❑ Remove:

- the nut (**5**) on the starter solenoid lead,
- the nut (**6**) on the starter lead,
- the starter bolts (**7**) ,
- the starter from underneath the vehicle.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Check that the centring dowel is in place.

### II - REFITTING OPERATION

❑ Refit:

- the starter from underneath the vehicle,
- the starter bolts.

❑ Torque tighten the **starter bolts (44 N.m)**.

❑ Refit:

- the starter leads,
- the starter lead nut,
- the nut on the starter solenoid lead.

❑ Torque tighten:

- the **starter lead nut (8 N.m)**,
- the **nut on the starter solenoid lead (5 N.m)**.

## III - FINAL OPERATION

JR5

❑ Clip:

- the gearbox control cable sleeve stops on the gearbox,
- the control cables onto the gearbox.

❑ Refit the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Alternator pulley: Removal - Refitting

K4M

| Equipment required |
|---|
| pneumatic or electric wrench |
| torque wrench |
| open-ended spanner for torque wrench |

| Tightening torques ▽ | |
|---|---|
| alternator pulley | **80 N.m** |

## I - REMOVAL PREPARATION OPERATION

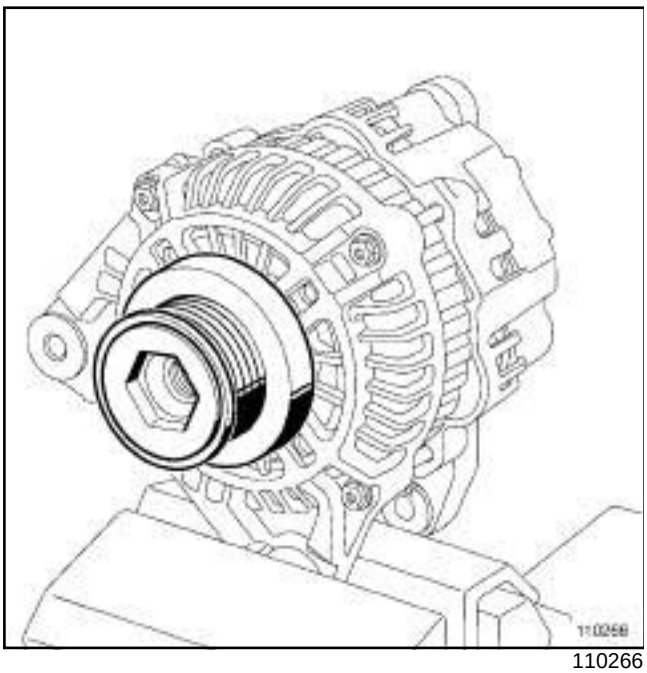
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .

❏ Disconnect the battery (see **Battery: Removal - Refitting**) .

❏ Remove:

- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the alternator (see **16A**, **Starting - Charging**, **Alternator: Removal - Refitting**, page **16A-1**) .

## II - REMOVAL OPERATION FOR ALTERNATOR PULLEY



110266

❏ Unclip the alternator pulley protector (if equipped).

❏ Place the alternator in a vice jaw.

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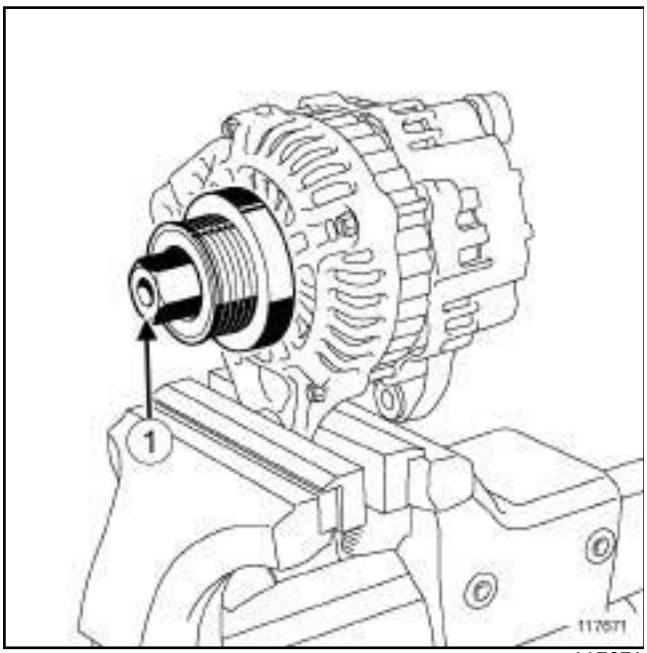
# Alternator pulley: Removal - Refitting

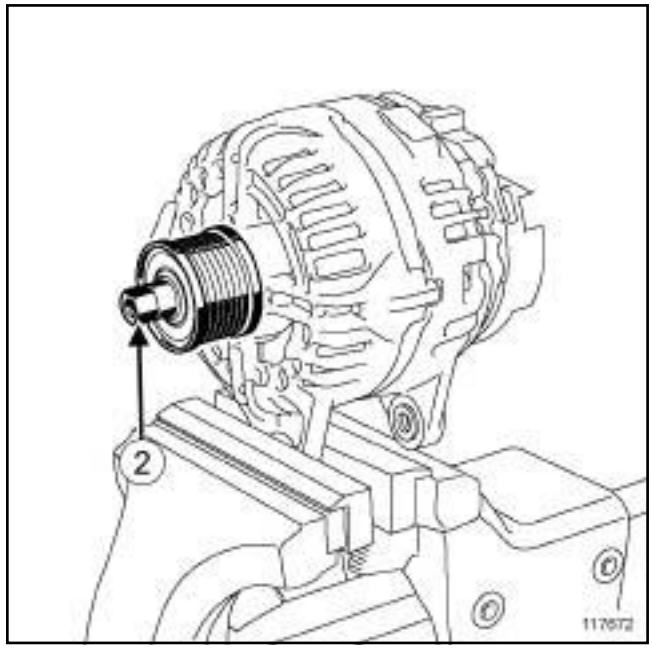
K4M

**Mot. 1732**

110276



117671




117672

❑ Position the hexagonal socket (**1**) or the splined socket (**2**) from the kitorin the alternator pulley (depending on the version).

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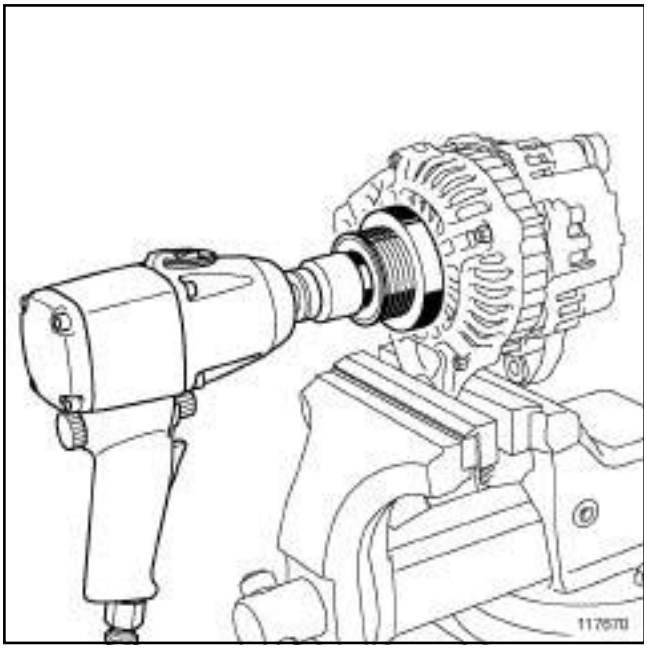
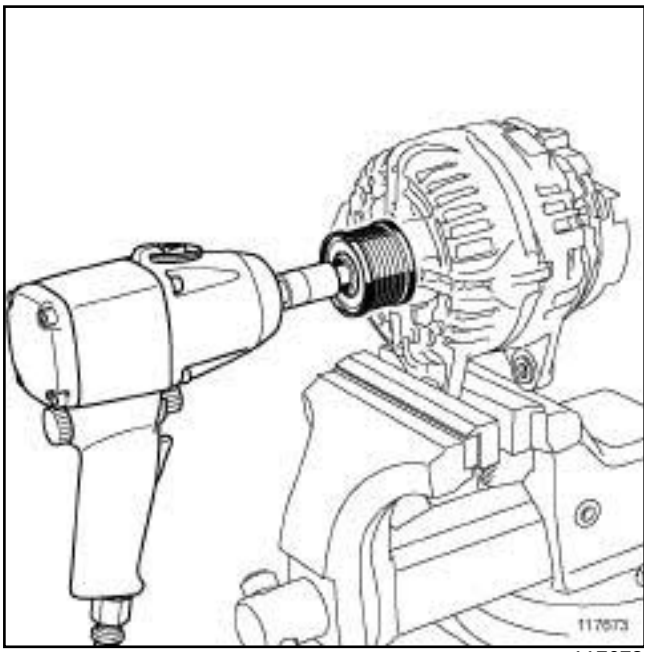
# Alternator pulley: Removal - Refitting

K4M




117670




117673

❑

Note:

Always use a pneumatic or electric impact wrench to loosen the alternator pulley

Loosen the alternator pulley using a **pneumatic or electric wrench**.

❑

Remove:

- the tools,
- the alternator pulley.

**III - REFITTING PREPARATION OPERATION**

❑ **parts always to be replaced: Accessories belt**

**parts always to be replaced: Accessories fixed roller**

**parts always to be replaced: Accessories belt tensioning roller**

**parts always to be replaced: Accessories tensioning roller bolt**

**parts always to be replaced: Alternator pulley**

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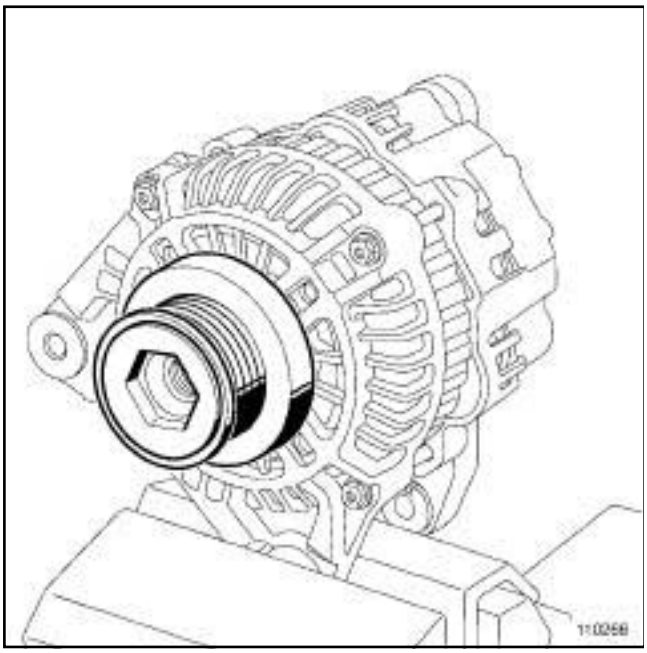
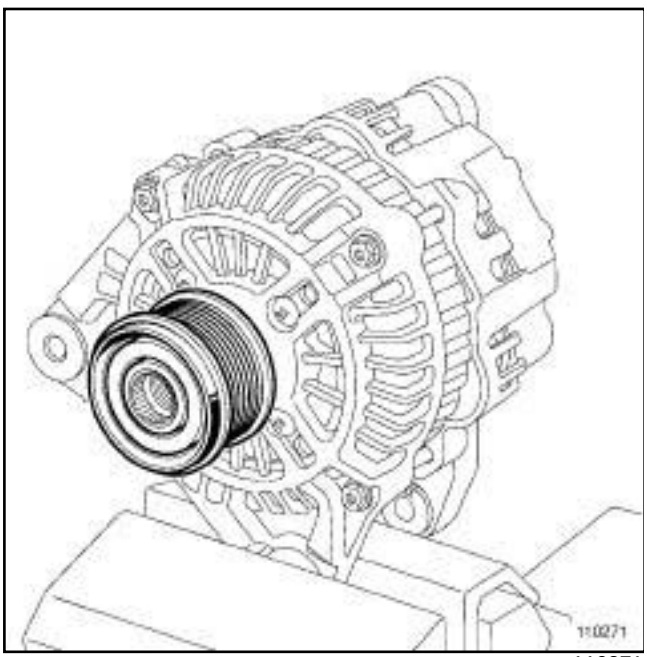
# Alternator pulley: Removal - Refitting

K4M

## IV - REFITTING OPERATION FOR THE ALTERNATOR PULLEY

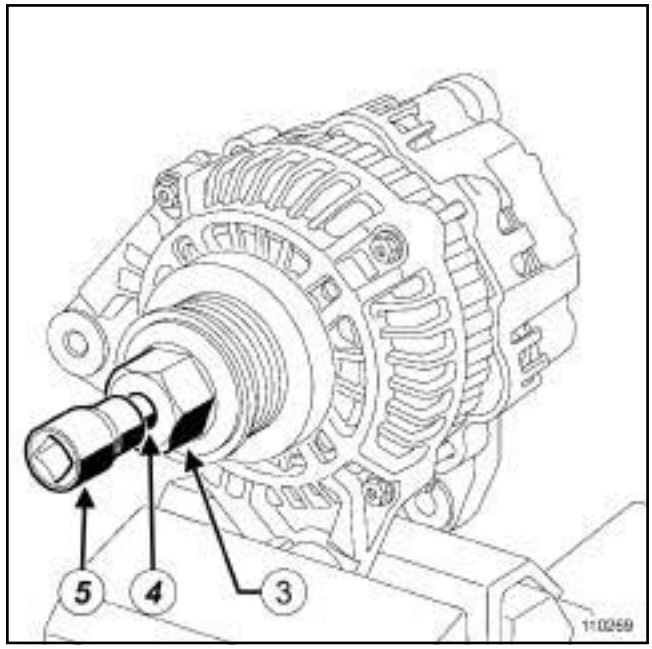


110266

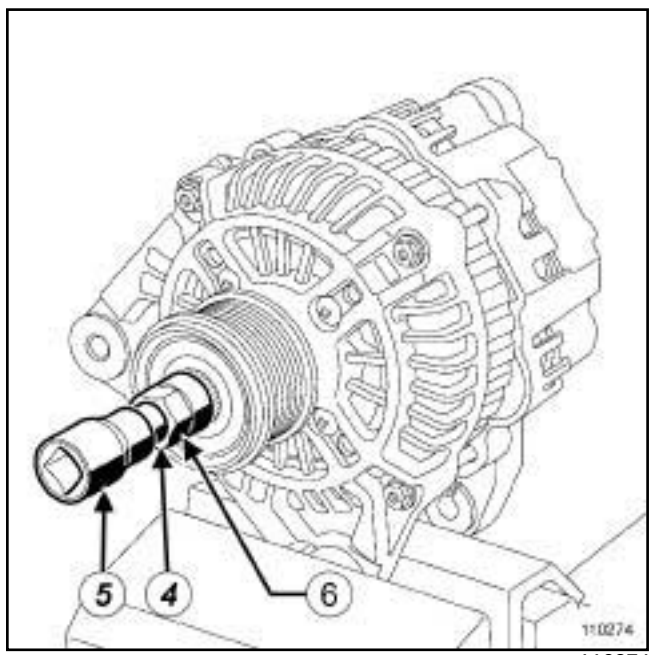


110271

❑ Tighten the new alternator pulley.




110269




110274

❑ Position:

- the hexagonal socket (**3**) or the splined socket (**6**) in the alternator pulley (depending on the version),
- the end piece (**4**) in the recess of the alternator rotor,
- the end piece holder (**5**) on the end piece.

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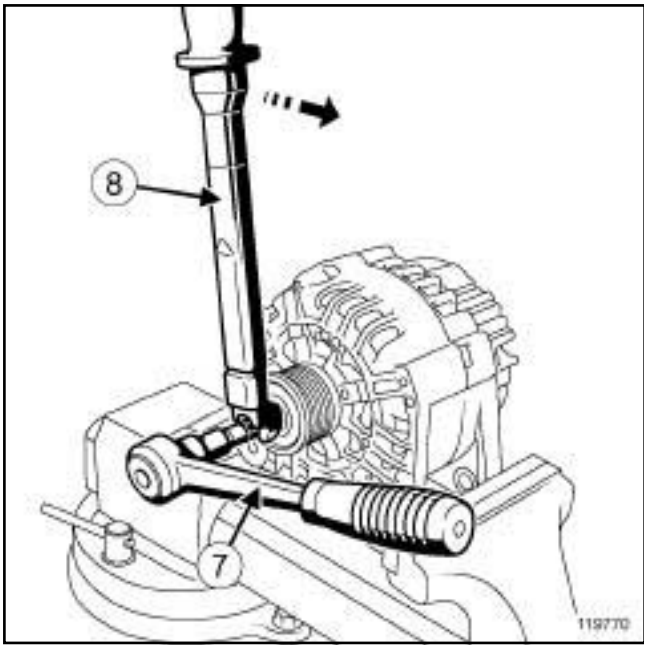
# Alternator pulley: Removal - Refitting

K4M




119770

❏ Immobilise the alternator rotor using the spanner (**7**) .

❏ Torque tighten the **alternator pulley (80 N.m)** using the **torque wrench** (**8**) equipped with a **15mm open-ended spanner for torque wrench**.

❏ Remove the tools.

❏ Clip the new protector onto the alternator pulley (if equipped).

**V - FINAL OPERATION**

❏ Refit:

- the alternator (see **16A**, **Starting - Charging**, **Alternator: Removal - Refitting**, page **16A-1**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .

❏ Connect the battery (see **Battery: Removal - Refitting**) .

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# Alternator pulley: Removal - Refitting

K9K

| Tightening torques ▽ | |
|---|---|
| alternator pulley nut | **80 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

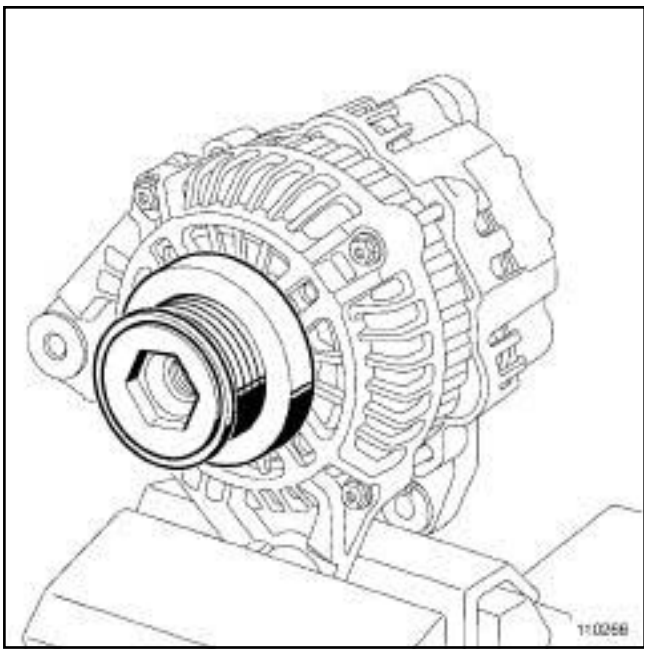
❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the alternator (see **16A**, **Starting - Charging**, **Alternator: Removal - Refitting**, page **16A-1**) .

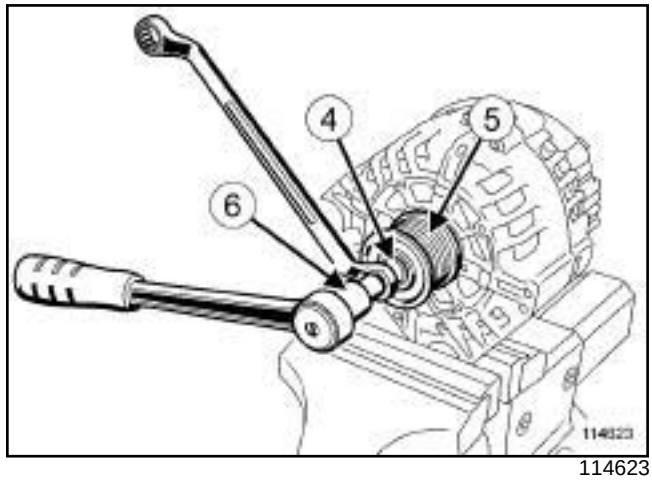
### II - OPERATION FOR REMOVAL OF PART CONCERNED

❏ Unclip the alternator pulley protector (if equipped).



110266

❏ Place the alternator in a vice jaw.




114623

❏ Fit:

- the splined socket (**4**) of thein the free wheel pulley (**5**) ,
- the end piece and holder assembly (**6**) of theon the alternator shaft.

❏ Immobilise the splined socket (**4**) .

❏ Loosen the alternator shaft.

❏

Note:

Do not use a screwdriver to remove or refit the pulley. A damaged or deformed front bearing can lead to damage to the alternator.

❏ Remove the free wheel pulley.

## REFITTING

### I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the pulley to the alternator shaft

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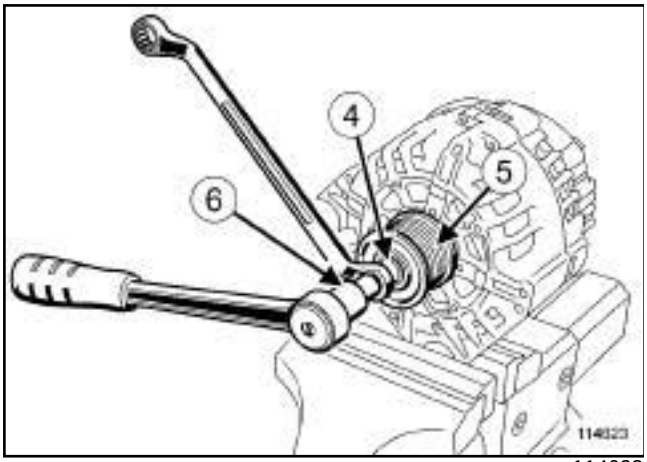
# Alternator pulley: Removal - Refitting

K9K




114623

❑ Fit:

- the splined socket (**4**) of thein the free wheel pulley (**5**) ,
- the end piece and holder assembly (**6**) of theon the alternator shaft.

❑ Immobilise the splined socket (**4**) .

❑ Torque tighten the **alternator pulley nut (80 N.m)**.

❑ Turn the pulley by hand to check that the rotor turns easily.

❑ Clip on the alternator pulley protector (if equipped).

**II - FINAL OPERATION**

❑ Refit:

- the alternator (see **16A**, **Starting - Charging**, **Alternator: Removal - Refitting**, page **16A-1**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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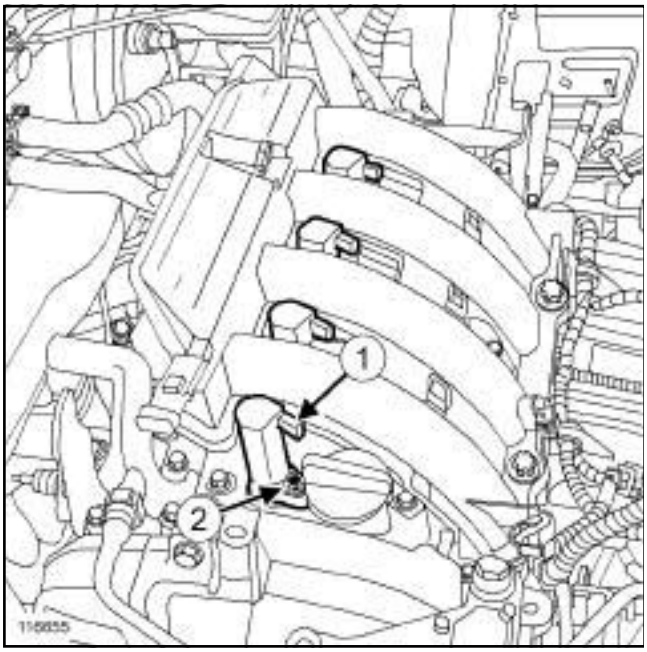
# Coils: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| ignition coil bolts | **14 N.m** |

## REMOVAL

### REMOVAL OPERATION




116655

❏ Disconnect the connectors (**1**) from the ignition coils.

❏ Remove:

- the ignition coil bolts (**2**) ,
- the ignition coils.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Always replace the **ignition coil bolts**.

❏ If necessary, replace the ignition coil O-rings.

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# Coils: Removal - Refitting

K4M

106443

❑ When refitting the ignition harness, it is essential to apply a bead of **FLUOSTAR 2L 2 mm** in diameter around the inner edge of the high-tension caps on the side of the spark plugs and coil (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables-Products).

**II - REFITTING OPERATION**

❑ Refit:

- the ignition coils,
- the new ignition coil bolts.

❑ Torque tighten the **ignition coil bolts (14 N.m)**.

❑ Connect the ignition coil connectors.

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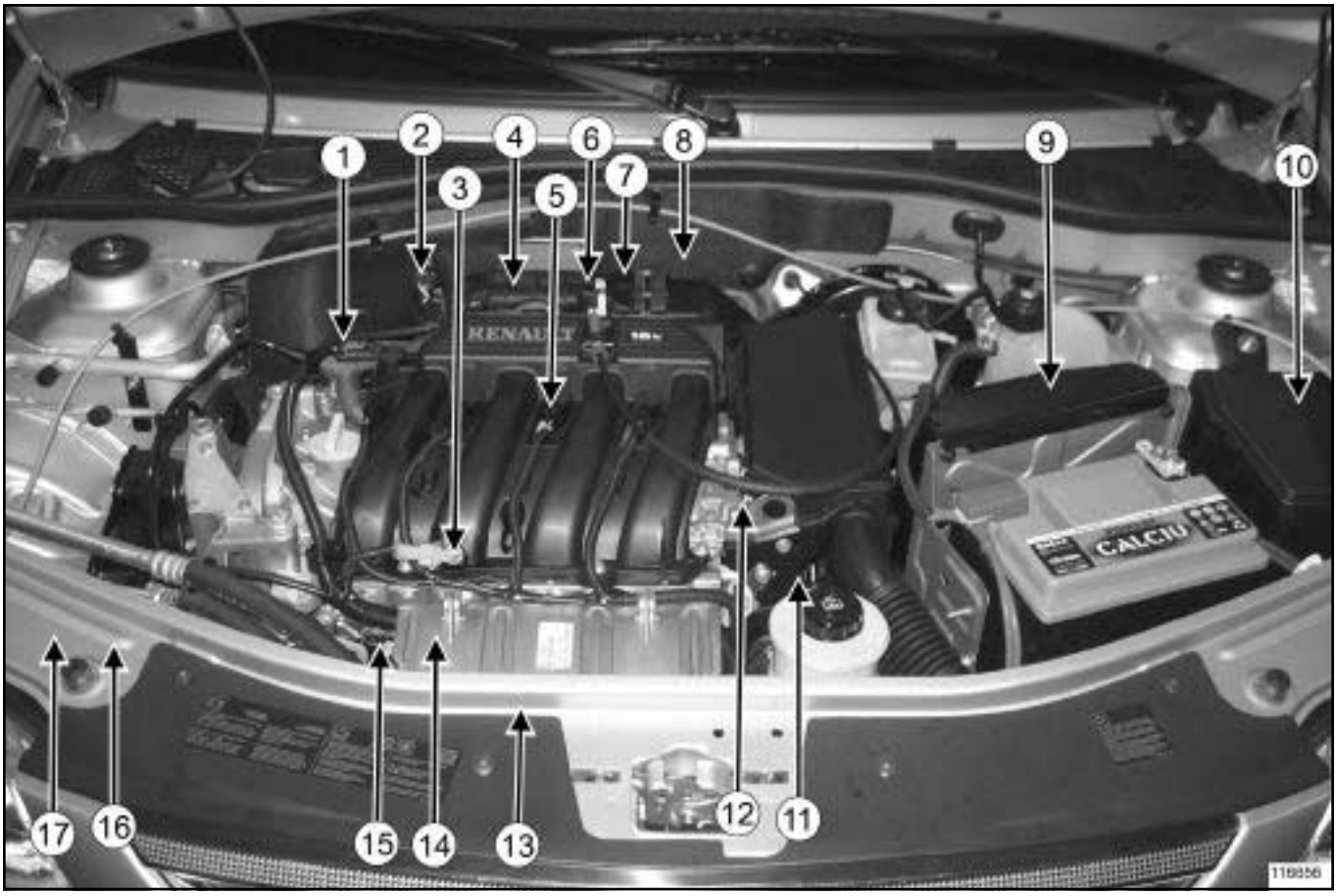
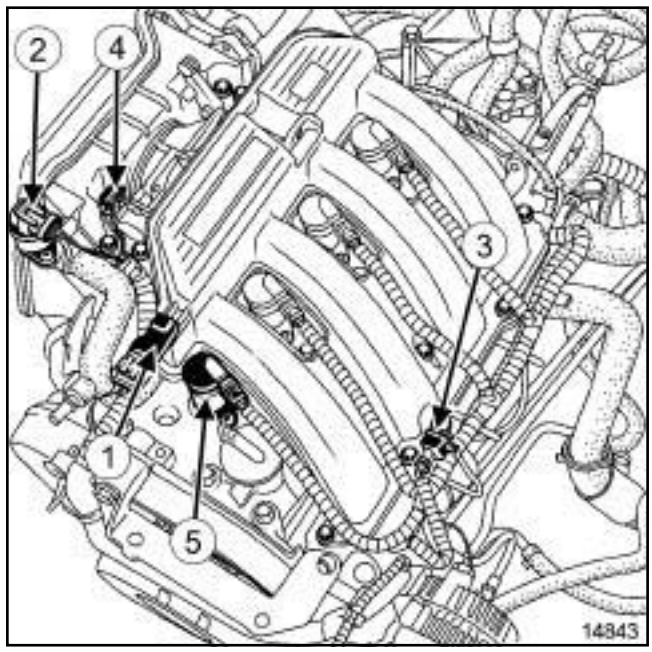
# Petrol injection: List and location of components

K4M




116656

(**1**) Air pressure sensor
(**2**) Idle speed stepper motor
(**3**) Air temperature sensor
(**4**) Throttle position potentiometer
(**5**) Ignition coil
(**6**) Throttle valve
(**7**) Upstream oxygen sensor
(**8**) Downstream oxygen sensor
(**9**) Injection computer
(**10**) Relay unit
(**11**) Crankshaft position sensor
(**12**) Coolant temperature sensor
(**13**) Pinking sensor
(**14**) Injectors
(**15**) Injector rail
(**16**) Fuel vapour recirculation solenoid valve
(**17**) Petrol vapour absorber




14843

(**1**) Air pressure sensor
(**2**) Idle speed stepper motor
(**3**) Air temperature sensor

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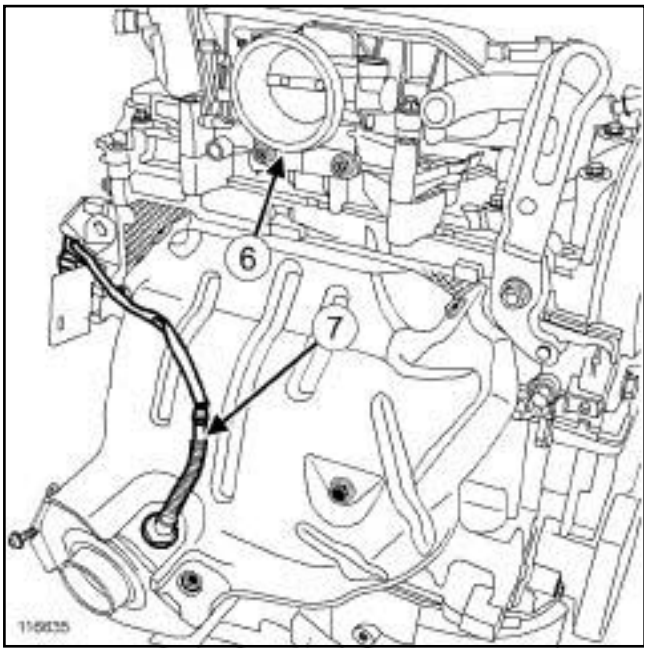
# Petrol injection: List and location of components

K4M

(**4**) Throttle position potentiometer

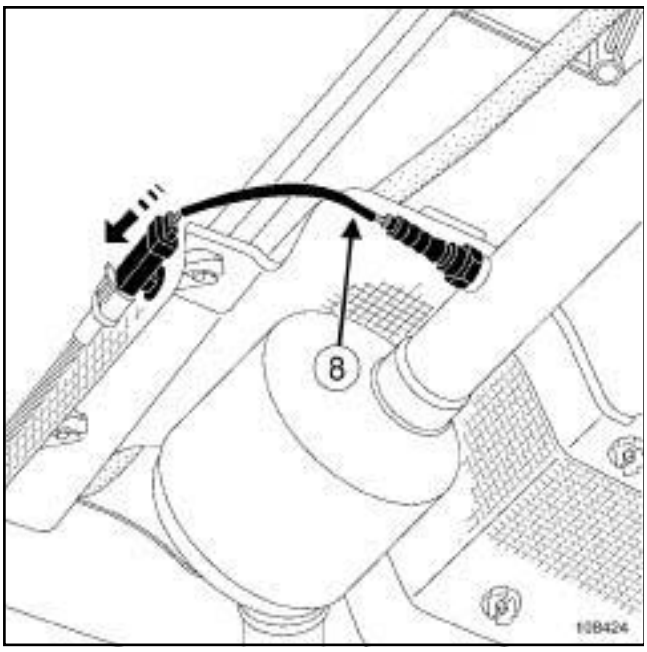
(**5**) Ignition coil




116635

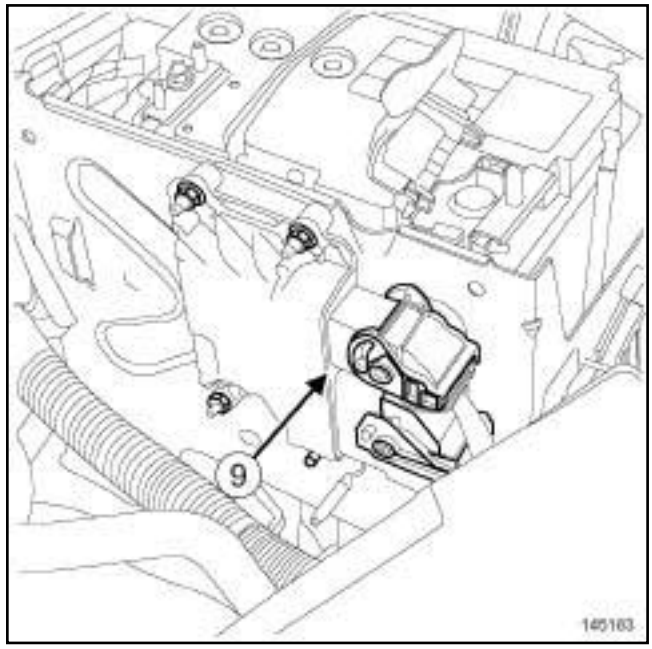
(**6**) Throttle valve

(**7**) Upstream oxygen sensor



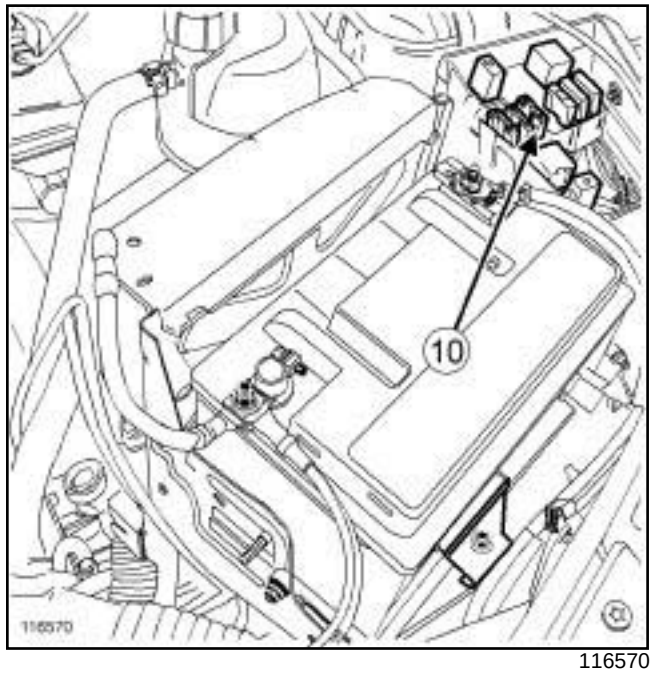

108424

(**8**) Downstream oxygen sensor




145183

(**9**) Injection computer




116570

(**10**) Relay unit

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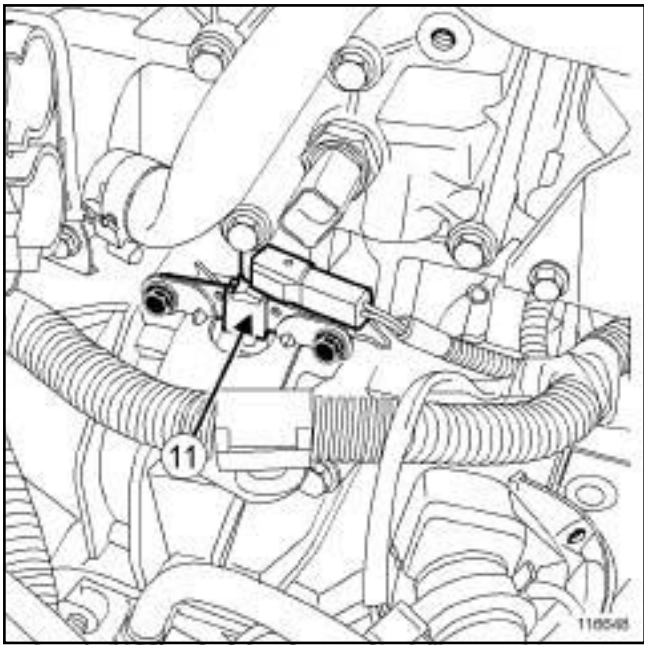
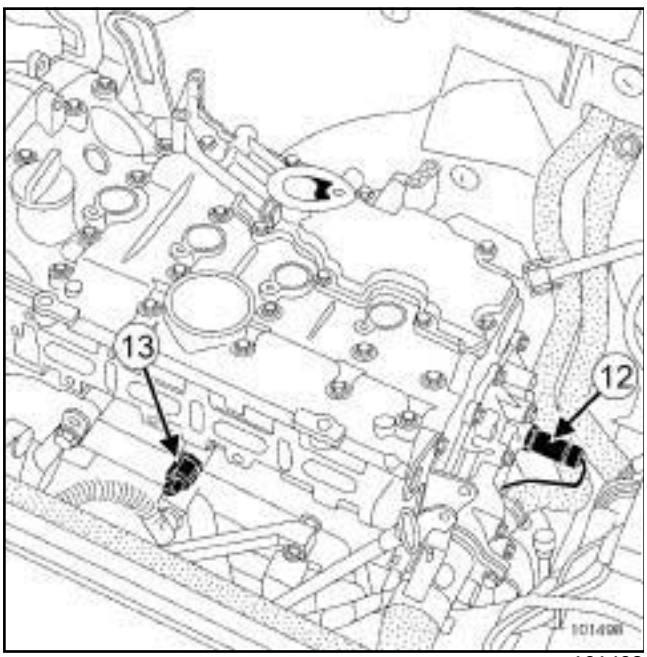
# Petrol injection: List and location of components

K4M




116648

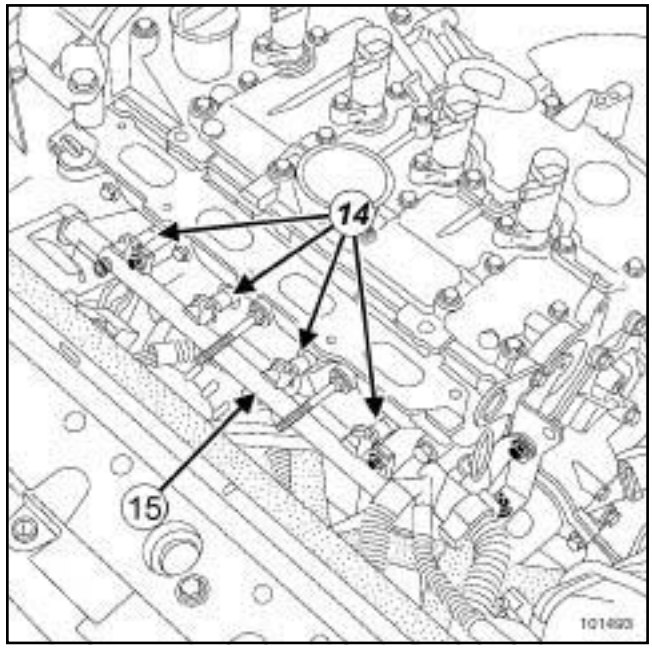
(**11**) Crankshaft position sensor




101498

(**12**) Coolant temperature sensor

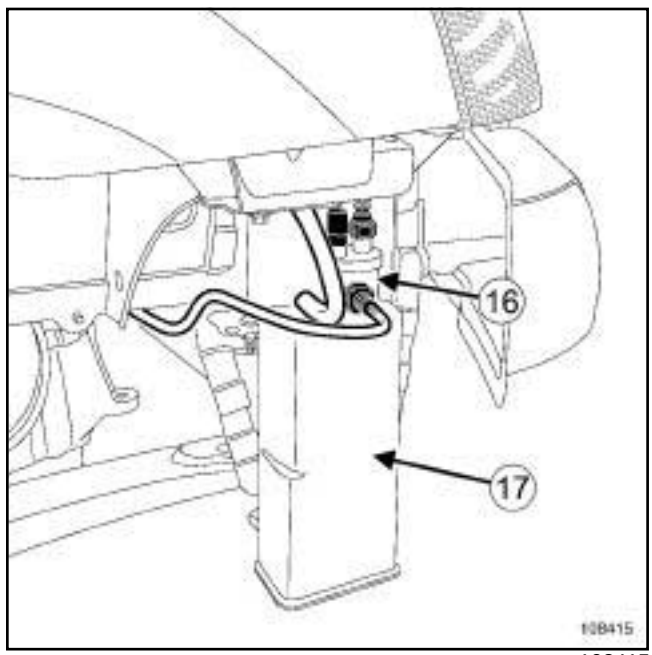
(**13**) Pinking sensor




101493

(**14**) Injectors

(**15**) Injector rail




108415

(**16**) Fuel vapour recirculation solenoid valve

(**17**) Petrol vapour absorber

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# Oxygen sensors: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| upstream oxygen sensor | **45 N.m** |
| downstream oxygen sensor | **45 N.m** |

**WARNING**

Do not use any product designed to improve the electrical contact in the injection computer and oxygen sensor connectors or on the bodies of the oxygen sensors.

Failure to respect this advice causes the oxygen sensor to malfunction and results in failure to comply with the emission control standard.

**WARNING**

If the connections are corroded, repair the wiring (see **Wiring: Precautions for repair**) (Technical Note 6015A, 88A, Wiring).

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

#### 1 - Upstream oxygen sensor

❏ Remove:

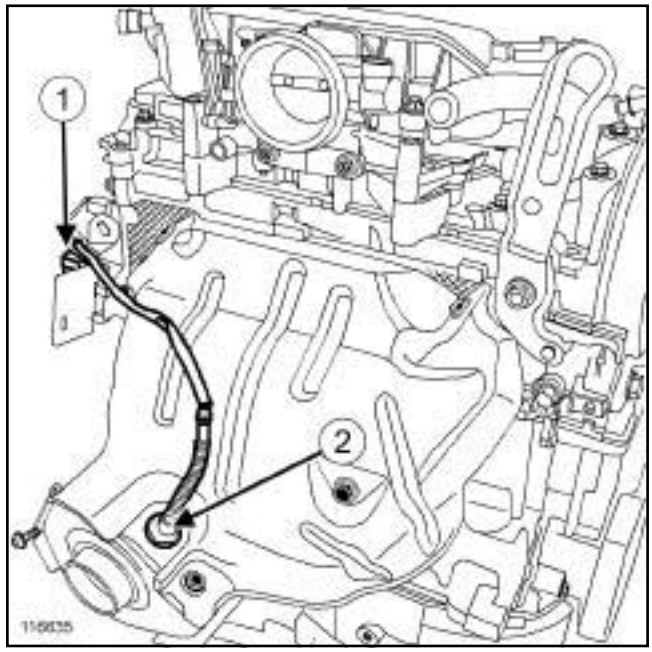
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

#### 2 - Downstream oxygen sensor

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

### II - REMOVAL OPERATION

#### 1 - Upstream oxygen sensor




116635

❏ Disconnect the upstream oxygen sensor connector (**1**) .

❏ Unclip the upstream oxygen sensor wiring.

❏ Remove the upstream oxygen sensor (**2**) using the.

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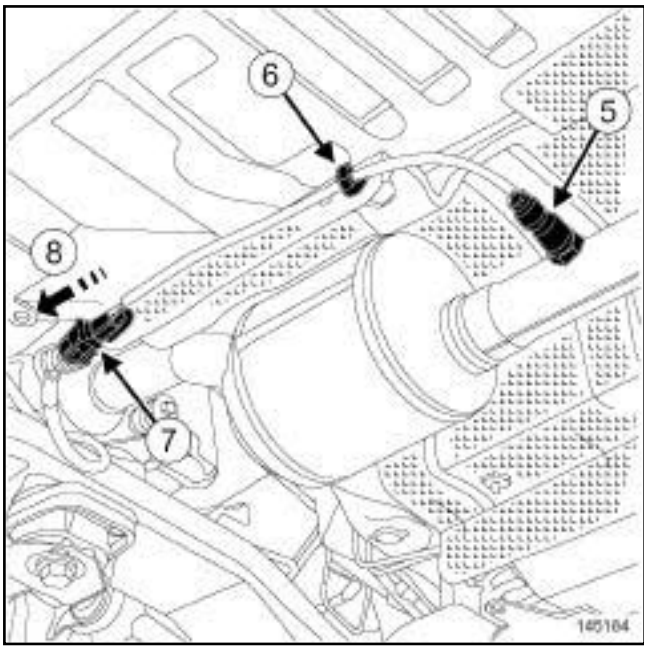
# Oxygen sensors: Removal - Refitting

K4M

**2 - Downstream oxygen sensor**




145184

❏ Unclip the wiring from the downstream oxygen sensor at (**6**) .

❏ Remove the downstream oxygen sensor connector (**7**) from its mounting by sliding it (**8**) .

❏ Disconnect the downstream oxygen sensor connector.

❏ Remove the downstream oxygen sensor ***(5)*** using the.

## REFITTING

### I - REFITTING OPERATION

**1 - Upstream oxygen sensor**

❏ Refit the upstream oxygen sensor.

❏ Torque tighten the **upstream oxygen sensor (45 N.m)** using the.

❏ Attach the upstream oxygen sensor wiring.

❏ Connect the upstream oxygen sensor connector.

**2 - Downstream oxygen sensor**

❏ Refit the downstream oxygen sensor.

❏ Torque tighten the **downstream oxygen sensor (45 N.m)** using the tool.

❏ Connect the downstream oxygen sensor connector.

❏ Refit the downstream oxygen sensor connector in its support.

❏ Clip on the downstream oxygen sensor wiring at ***(6)*** .

### II - FINAL OPERATION

**Upstream oxygen sensor**

❏ Refit:

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

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# Throttle valve potentiometer: Removal - Refitting

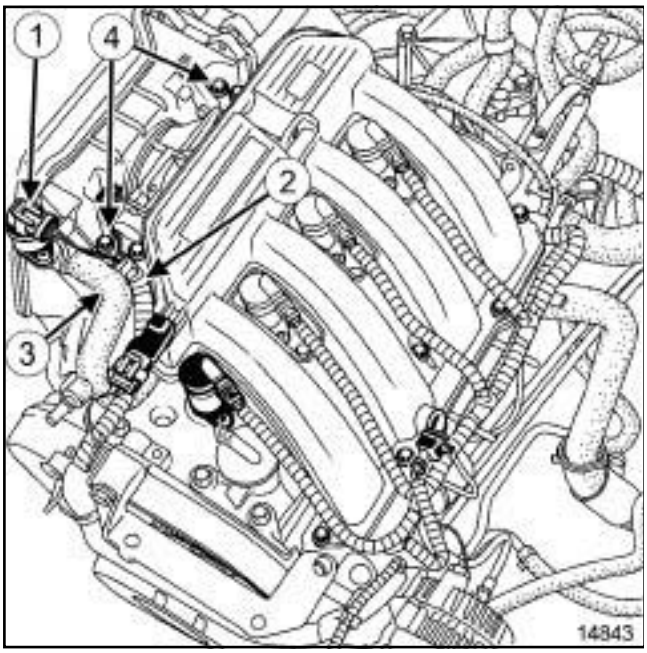
K4M

| Tightening torques ▽ | |
|---|---|
| throttle valve potentiometer bolts | **2.4 N.m** |
| air filter unit bolts | **9 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .




14843

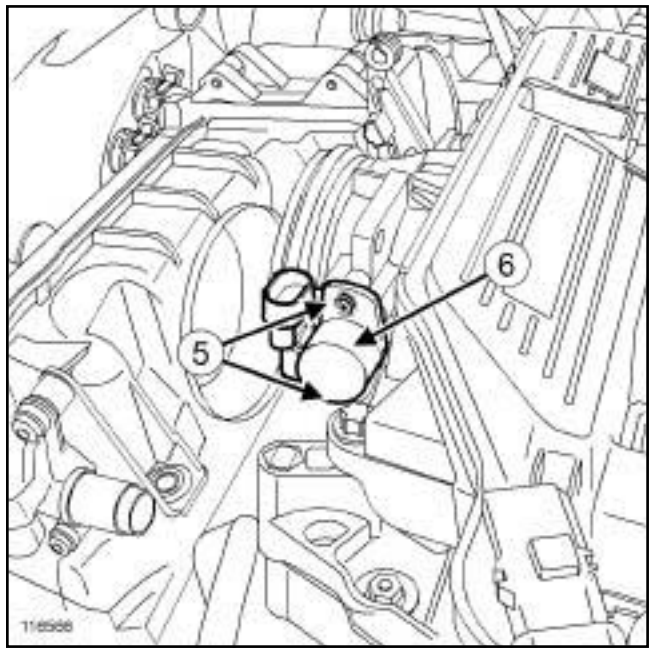
❏ Disconnect:

- the connector (**1**) from the idle speed regulation stepping motor,
- the connector (**2**) from the throttle valve potentiometer,
- the petrol vapour recirculation pipe (**3**) .

❏ Remove the two bolts ***(4)*** from the air filter unit.

❏ Remove the air filter unit from the throttle valve.

### II - REMOVAL OPERATION




116566

❏ Remove:

- the two bolts (**5**) from the throttle valve potentiometer,
- the throttle valve potentiometer (**6**) .

## REFITTING

### I - REFITTING OPERATION

❏ Refit:

- the throttle valve potentiometer,
- the two throttle valve potentiometer bolts.

❏ Torque tighten the **throttle valve potentiometer bolts (2.4 N.m)** using the tool.

### II - FINAL OPERATION

❏ Refit the air filter unit in place.

❏ Refit the two air filter unit bolts.

❏ Torque tighten the **air filter unit bolts (9 N.m)**.

❏ Connect:

- the petrol vapour recirculation pipe,
- the connector from the throttle valve potentiometer,
- the idle speed regulation stepping motor connector.

❏ Refit the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

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# Petrol injection computer: Removal - Refitting

K4M

| Equipment required |
| --- |
| Diagnostic tool |

| Tightening torques ▽ | |
| --- | --- |
| injection computer nuts | **8 N.m** |

**WARNING**

Do not use any product designed to improve the electrical contact in the injection computer and oxygen sensor connectors or on the bodies of the oxygen sensors.

Failure to respect this advice causes the oxygen sensor to malfunction and results in failure to comply with the emission control standard.

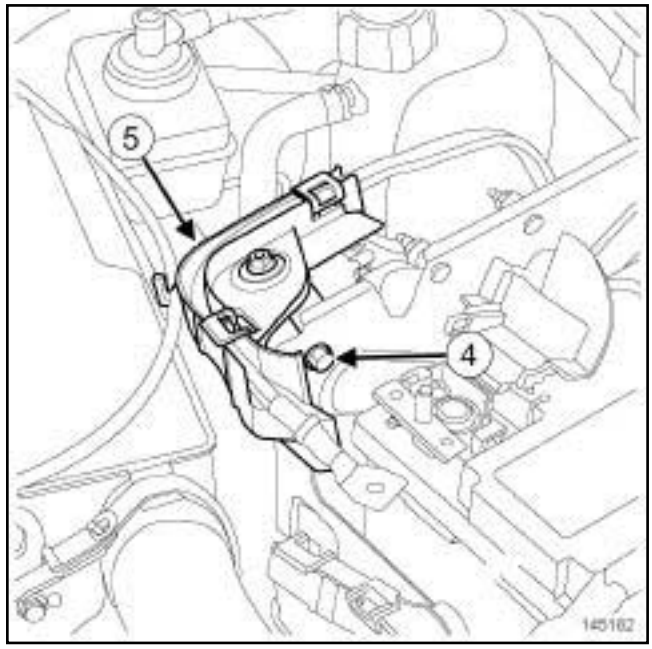
**WARNING**

If the connections are corroded, repair the wiring (see **Wiring: Precautions for repair**) (Technical Note 6015A, 88A, Wiring).

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

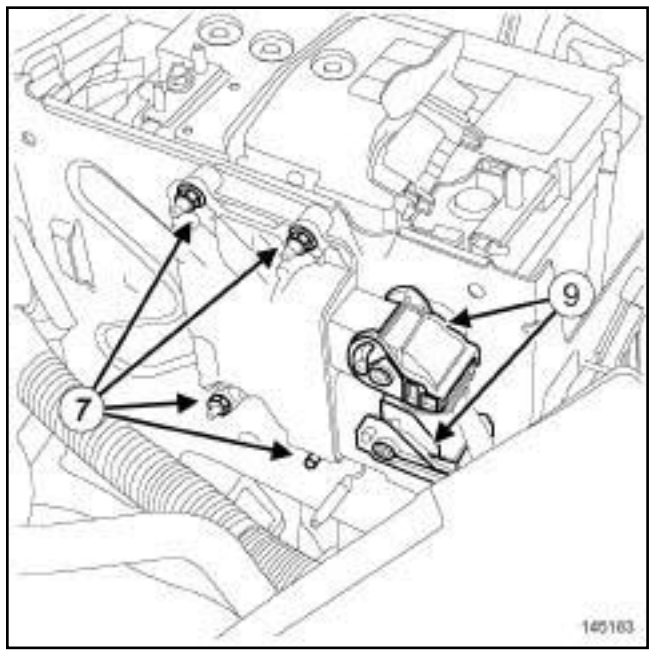



145182

❏ Remove the bolt (**4**) from the channel (**5**) .

❏ Move aside the channel.

### II - REMOVAL OPERATION




145183

❏ Disconnect the two injection computer connectors (**9**) .

❏ Remove:

- the injection computer nuts ***(7)*** ,
- the injection computer.

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# Petrol injection computer: Removal - Refitting

K4M

## REFITTING

### I - REFITTING OPERATION

❏ Refit the injection computer.

❏ Torque tighten the **injection computer nuts (8 N.m)**.

❏ Connect the two connectors of the injection computer.

### II - FINAL OPERATION

❏ Refit the channel.

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

### III - WHEN REPLACING THE INJECTION COMPUTER

❏ The computer supplied as a spare part is not operational (also known as "blank").

❏ After replacing the injection computer, program it using the **Diagnostic tool** (see **Technical Note 9869A, Procedure for programming and reprogramming the computer**).

❏ Carry out the configuration and/or necessary programming (see **Fault finding - Replacement of components)** (17B, Petrol injection).

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# Crankshaft position sensor: Removal - Refitting

K4M

| Equipment required |
|---|
| Diagnostic tool |

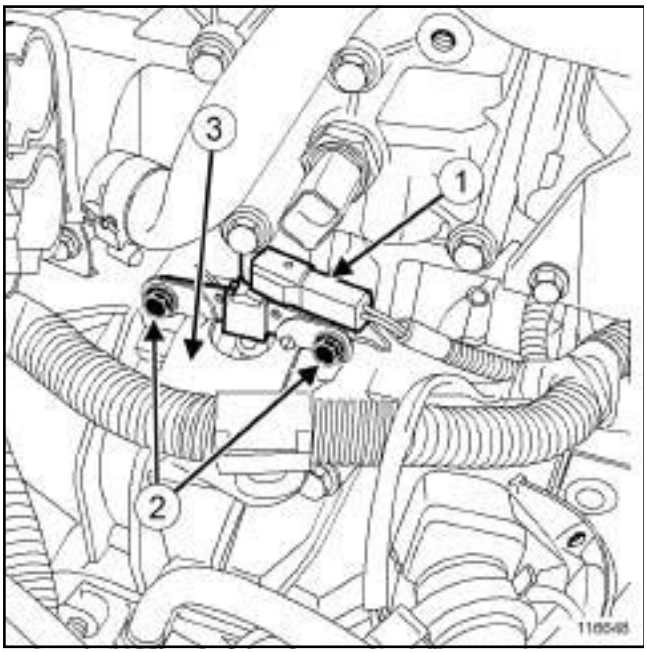
| Tightening torques ▽ | |
|---|---|
| crankshaft position sensor bolts | 8 N.m |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Remove the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

### II - REMOVAL OPERATION




116648

❑ Disconnect the crankshaft position sensor connector (**1**) .

❑ Remove the two bolts (**2**) from the crankshaft position sensor.

❑ Move aside the engine wiring harness mounting support (**3**) .

❑ Remove the crankshaft position sensor.

## REFITTING

### I - REFITTING OPERATION

❑ Refit the crankshaft position sensor.

❑ Refit the engine wiring harness mounting support.

❑ Refit the two bolts of the crankshaft position sensor.

❑ Torque tighten the **crankshaft position sensor bolts (8 N.m)**.

### II - FINAL OPERATION

❑ Refit the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

### III - WHEN REPLACING THE CRANKSHAFT POSITION SENSOR

❑ Program the flywheel target:

- perform a deceleration with injection cut-off in second, third, fourth or fifth gear between **3500** and **3000 rpm**, for at least **2 seconds**,
- perform a deceleration with injection cut-off in second, third, fourth or fifth gear between **2400** and **2000 rpm**, for at least **3 seconds**.

❑ Use the **Diagnostic tool** to check that this programming has been successfully completed, **ET060 Flywheel signal with engine running**.

❑ Read the fault codes.

❑ Repair if necessary.

❑ Clear the fault codes.

❑ Check that the vehicle is working correctly.

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# Injector rail - Injectors: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| injector rail bolts | **9 N.m** |
| injector rail protector nuts | **21 N.m** |

**IMPORTANT**
Wear leaktight gloves (Nitrile type) for this operation.

**IMPORTANT**

During this operation, be sure to:

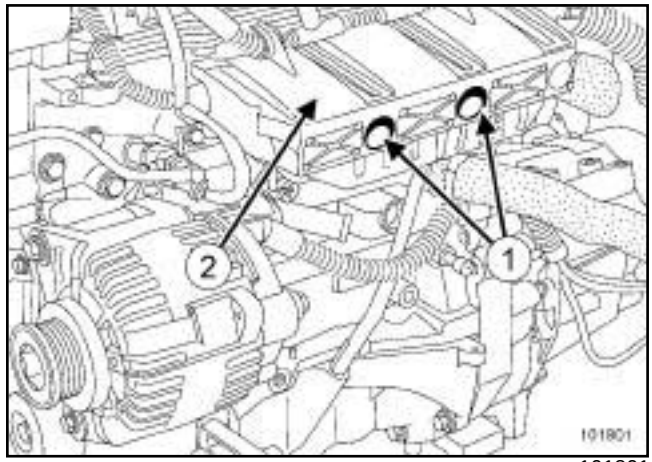
- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

**IMPORTANT**
Be careful when removing the injectors or the injection rail as there will be a quantity of fuel in the rail and the union.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

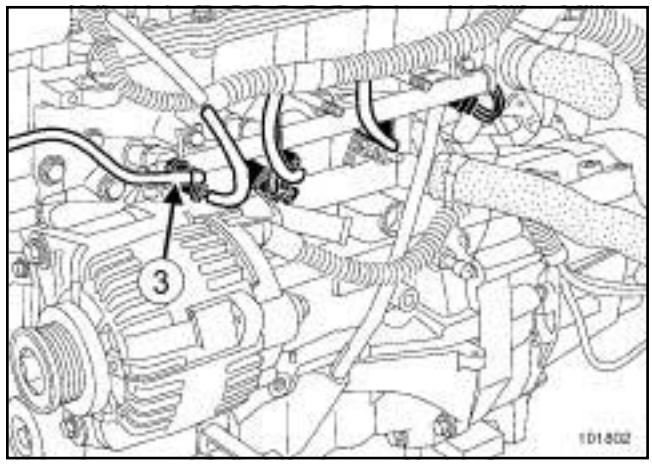
❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).




101801

❏ Remove:

- the two nuts (**1**) from the injector rail protector,
- the injector rail protector (**2**) .




101802

❏ Disconnect the fuel supply pipe union (**3**) on the injector rail.

❏ Fit blanking plugs.

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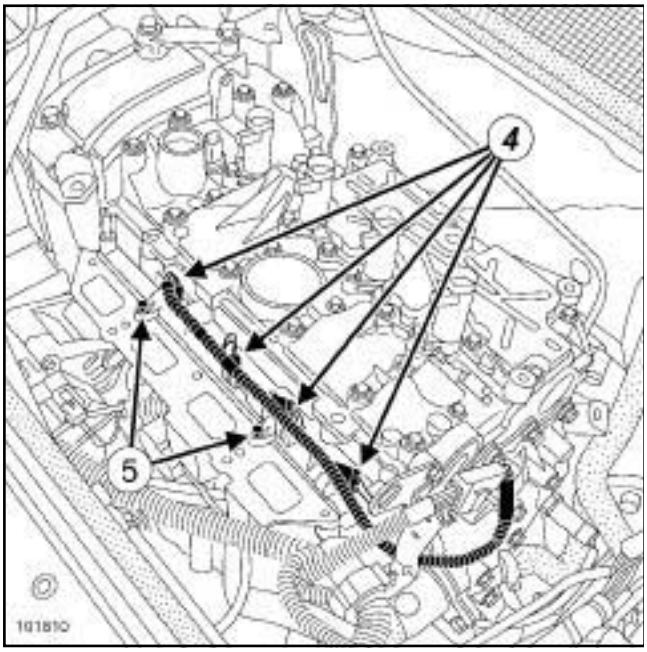
# Injector rail - Injectors: Removal - Refitting

K4M

## II - REMOVAL OPERATION

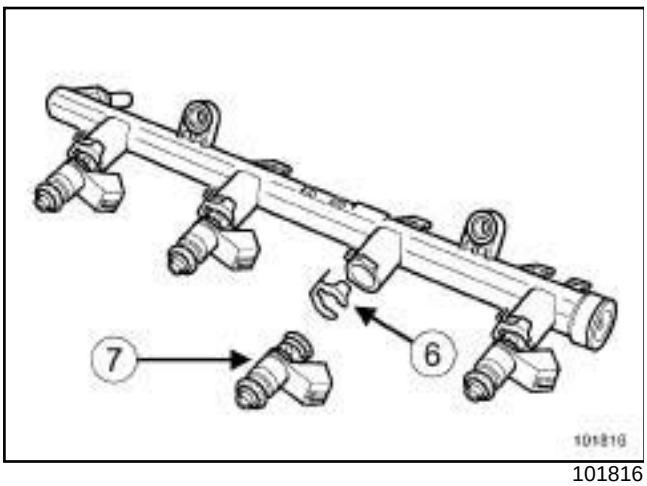



101810

❑ Disconnect the injector connectors (**4**) .

❑ Remove:

- the injector rail bolts (**5**) ,
- the « injector rail-injector» assembly by pulling it carefully towards the front of the vehicle.




101816

❑ Remove:

- the retaining clips (**6**) from the injectors,
- the injectors (**7**) .

❑ Insert the blanking plugs.

# REFITTING

## I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: injector clip on injector rail**.

❑ **parts always to be replaced: injector seal**.

❑ Refit:

- new seals on each injector,
- the injectors on the injector rail,
- a new clip on each injector.

## II - REFITTING OPERATION

❑ Remove the blanking plugs.

❑ Fit the « injector rail-injector » assembly.

❑ Torque tighten the **injector rail bolts (9 N.m)**.

## III - FINAL OPERATION

❑ Connect:

- the injector connectors,
- the fuel supply union onto the injector rail,

❑ Refit the injector rail protector.

❑ Torque tighten the two **injector rail protector nuts (21 N.m)**.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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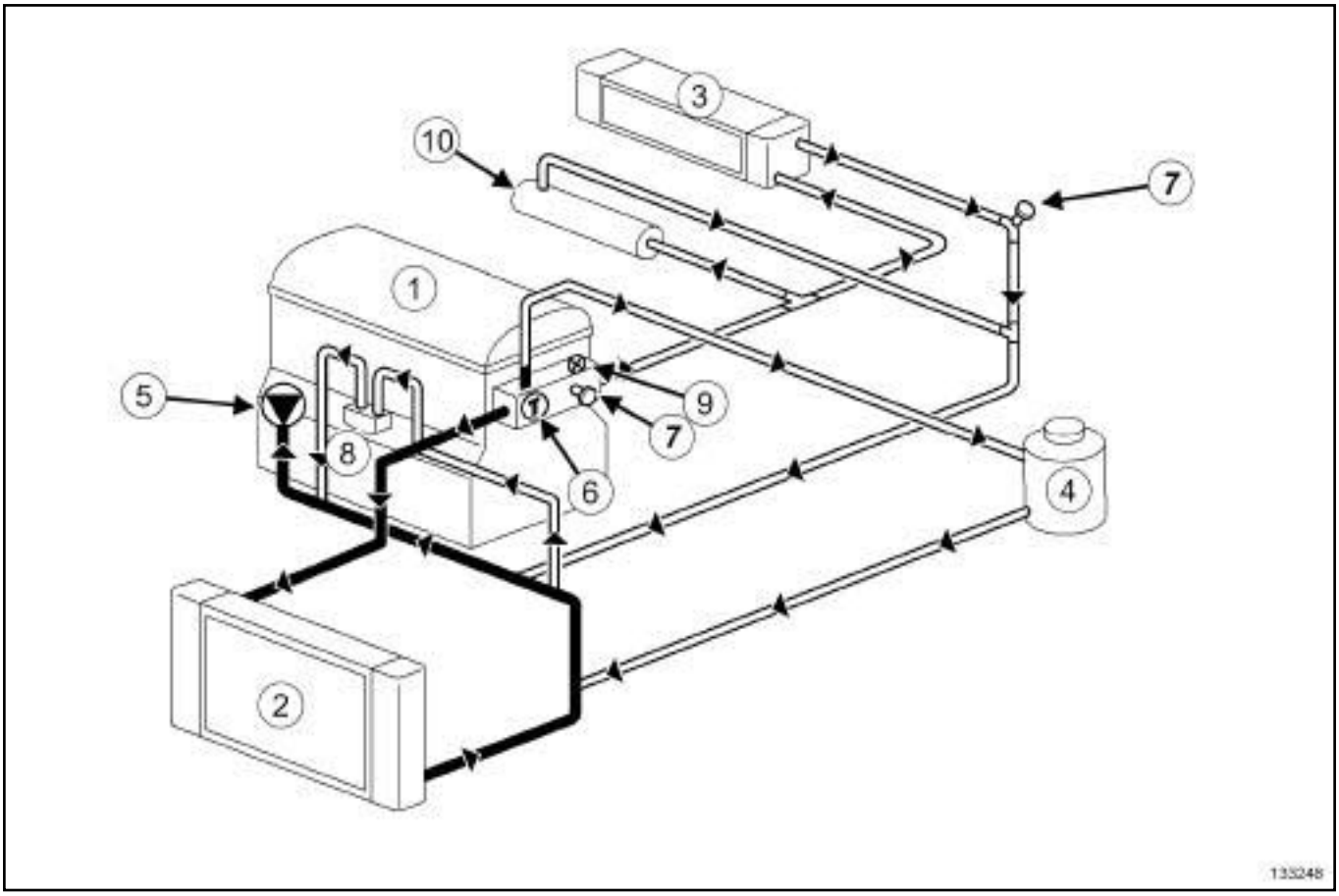
# Engine cooling system: Operating diagram

K9K, and 796




133248

| | |
|---|---|
| (**1**) | Engine |
| (**2**) | Cooling radiator |
| (**3**) | Heater radiator |
| (**4**) | Expansion bottle |
| (**5**) | Water pump |
| (**6**) | Thermostat |
| (**7**) | Bleed screw |
| (**8**) | Oil-water heat exchanger |
| (**9**) | Temperature switch |
| (**10**) | EGR |

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# Engine cooling system: Specifications



Vehicles in the current range have cooling systems with the following basic specifications:

- hermetically-sealed pressurised circuit (expansion chamber valve),
- circuit using a type "D" coolant,
- passenger compartment heating system via a "heater matrix" type radiator under the dashboard.

## I - GRADE AND QUANTITY OF COOLANT

| Engine | Quantity (litres) | Grade |
|---|---|---|
| K4M | Approximately 5.45 (version with AC)<br>Approximately 4.5 (version without AC) | **GLACEOL RX (TYPE D)**<br>Use coolant only. |
| K9K | | |

**Special notes:**

- protection down to **-25°C ± 2** for cold and temperate countries,
- protection down to **-40°C ± 2** for very cold countries

## II - THERMOSTAT

| Engine | Start of opening (°C) | End of opening (°C) |
|---|---|---|
| K4M | 89 | 99 ± 2 |
| K9K | | |

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# Engine cooling system: Check

**IMPORTANT**

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

Note:

There are two procedures for checking the cooling system:

- the procedure using the
- the procedure using the

**Expansion bottle cap valve rating:**

| Expansion bottle cap with ... | Valve rating |
|---|---|
| ... a brown circle | **1.2 bar** |
| ... a yellow marking | **1.4 bar** |
| ... a white marking | **1.6 bar** |
| ... a grey marking | **1.8 bar** |

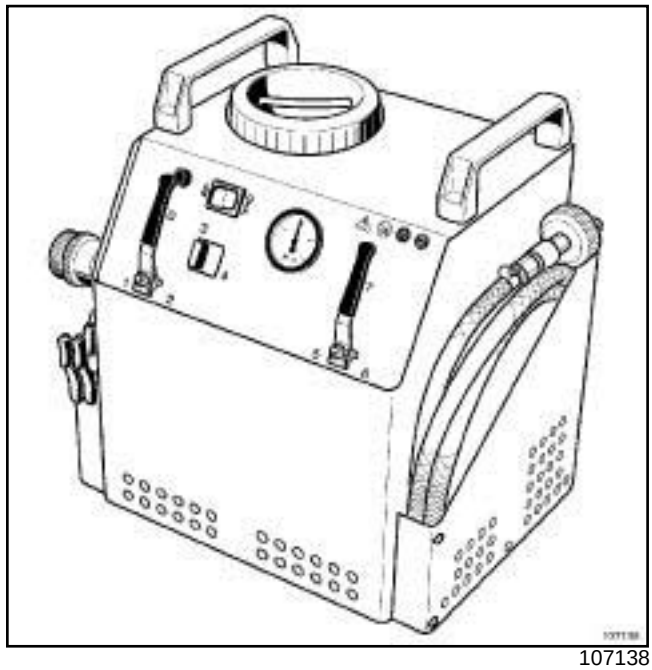
**I - CHECKING THE COOLING SYSTEM USING THE TOOL (MOT. 1700)**

❑

**WARNING**

If the coolant is leaking from the expansion bottle cap, replace the valve.

**1 - Checking the expansion bottle cap valve**



107138

❑ Use the cooling system filling and diagnostic tool. Consult the user's manual for this tool (see **Cooling system filling and diagnostic tool: Use**) (Technical Note 3857A, 19A, Cooling).

**2 - Checking the sealing of the cooling circuit**

❑ Use the cooling system filling and diagnostic tool. Consult the user's manual for this tool (see **Cooling system filling and diagnostic tool: Use**) (Technical Note 3857A, 19A, Cooling).

**II - CHECKING THE COOLING SYSTEM USING THE TOOL (MS. 554-07)**

❑

**WARNING**

If the coolant is leaking from the expansion bottle cap, replace the valve.

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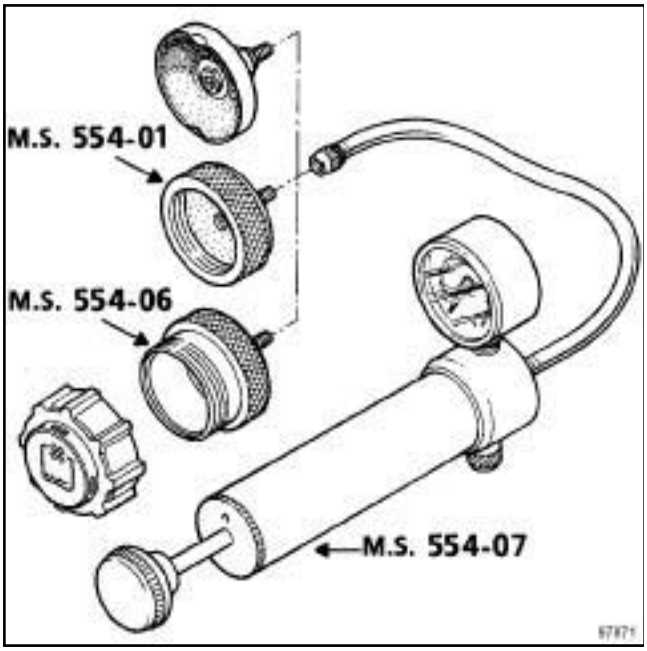
# Engine cooling system: Check

**1 - Checking the expansion bottle cap valve**




97871

❏ Fit onto the tester, the adapter **(Ms. 554-06)**.

❏ Fit the expansion bottle cap to the adapter **(Ms. 554-06)**.

> Note:
>
> The pressure should not drop; if it does, look for the leak.

❏ Pump with the, the pressure should stabilise at the expansion bottle cap valve rating with a test tolerance of ± **0.1 bar.**

**2 - Checking the sealing of the cooling circuit**

❏ Replace the expansion bottle cap with the adapter **(Ms. 554-01)**.

❏ Connect on the adapter **(Ms. 554-01)** the tool.

❏ Pump with theto put the cooling circuit under pressure.

❏ Stop pumping at **0.1 bar** below the valve rating for the expansion bottle cap valve.

> Note:
>
> The pressure should not drop; if it does, look for the leak.

❏ Gradually unscrew the union of theto decompress the cooling system then remove the adapter **(Ms. 554-01)** and refit the expansion bottle cap.

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# Engine cooling circuit: List and location of components

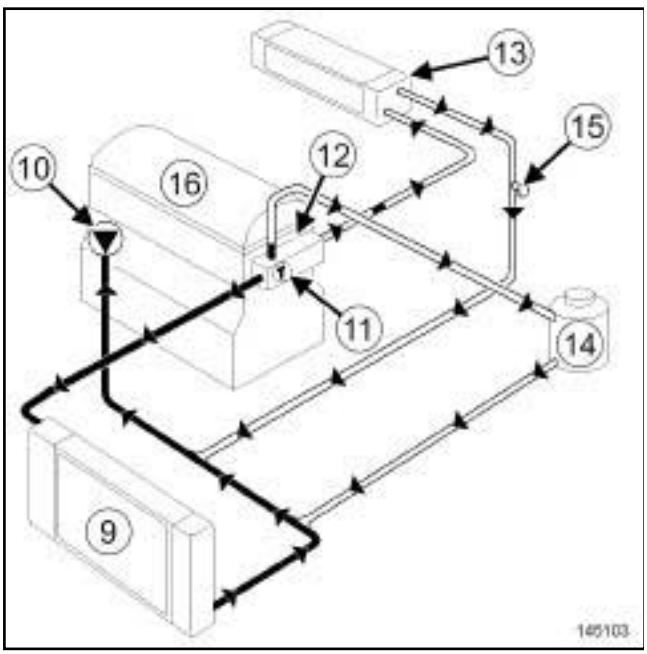
K4M

## I - LIST OF COMPONENTS

The engine cooling system is composed of:

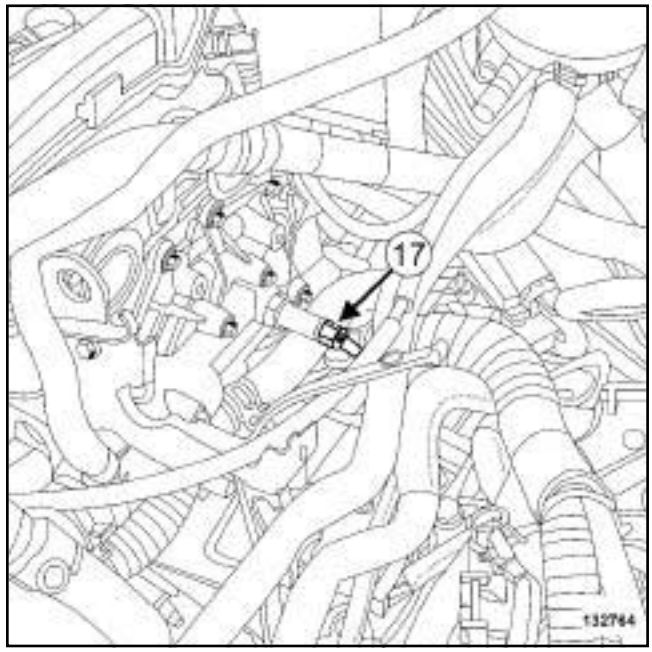
- an engine cooling fan assembly (see **19A**, **Cooling**, **Engine cooling fan assembly: Removal - Refitting**, page **19A-27**) ,
- a cooling radiator (see **19A**, **Cooling**, **Cooling radiator: Removal - Refitting**, page **19A-9**) ,
- a coolant pump (see **19A**, **Cooling**, **Coolant pump: Removal - Refitting**, page **19A-13**) ,
- a thermostat (see **19A**, **Cooling**, **Thermostat: Removal - Refitting**, page **19A-19**) ,
- a water chamber (see **19A**, **Cooling**, **Water chamber: Removal - Refitting**, page **19A-22**) ,
- a coolant pump inlet pipe (see **19A**, **Cooling**, **Coolant pump inlet pipe: Removal - Refitting**, page **19A-34**) ,
- an expansion bottle (see **19A**, **Cooling**, **Expansion bottle: Removal - Refitting**, page **19A-38**) ,
- a coolant temperature sensor (see **19A**, **Cooling**, **Coolant temperature sensor: Removal - Refitting**, page **19A-40**) .

## II - LOCATION OF COMPONENTS




145103

(**9**) Cooling radiator
(**10**) Water pump
(**11**) Thermostat
(**12**) Water chamber
(**13**) Heater radiator
(**14**) Expansion bottle
(**15**) Bleed screw
(**16**) Engine




132764

(**17**) Coolant temperature sensor

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# Cooling system: Draining - Refilling

| Special tooling required | |
|---|---|
| **Mot. 1448** | Remote operation pliers for hose clips. |
| **Car. 1363** | Set of trim removal levers. |

| Equipment required |
|---|
| coolant recovery tray |
| compressed air nozzle |

**IMPORTANT**

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

## I - DRAINING

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

- the expansion bottle cap,
- the engine undertray.

❏ Remove the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection).

❏ Position the **coolant recovery tray** under the vehicle.

❏ Remove the cooling radiator bottom hose clip using theoror **(Mot. 1448)**.

❏ Open the cooling system by removing the cooling radiator bottom hose using the tool **(Car. 1363)**.

❏ Use a **compressed air nozzle** to blow air into the system through the expansion bottle opening to remove as much coolant as possible.

## II - CLEANING

❏ Fill the cooling system with water through the expansion bottle.

❏ Let the water run until the water collected from the cooling radiator bottom hose becomes clear.

❏ Use a **compressed air nozzle** to blow air into the system through the expansion bottle opening to remove as much coolant as possible.

❏ Refit the cooling radiator bottom hose.

## III - FILLING

❏

Note:

There are two procedures for filling the cooling system:

- the method using the tool, is recommended by Renault. It saves a considerable amount of time because it does not require the cooling system bleed screws to be opened,
- the procedure without a special tool.

### 1 - Filling procedure with the tool (Mot. 1700)

❏ Fill the cooling system with engine coolant recommended by the manufacturer (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) using the tool. Consult the user's manual for this tool (see ) (Technical Note 3857A, 19A, Cooling).

### 2 - Filling method without special tools

❏

**WARNING**

It is essential to open all of the bleed screws to remove as much as air as possible in the cooling system. Failure to perform this procedure may prevent the cooling system from filling properly and may damage the engine.

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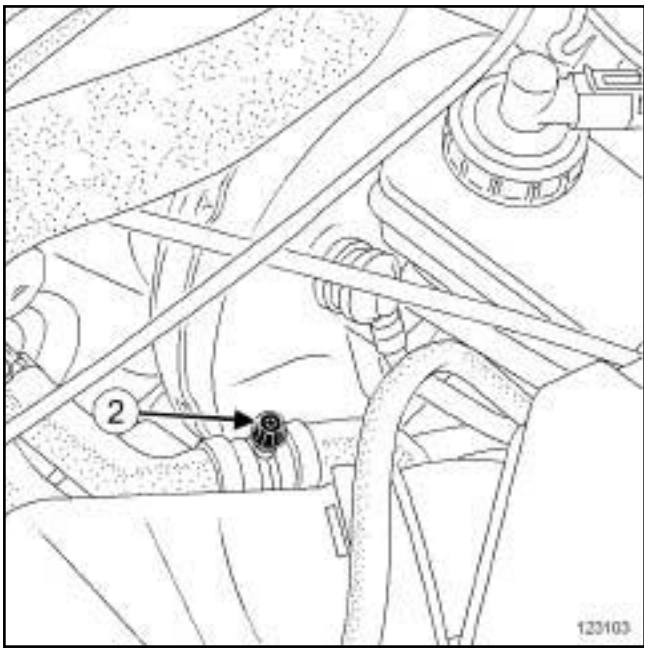
# Cooling system: Draining - Refilling

K4M

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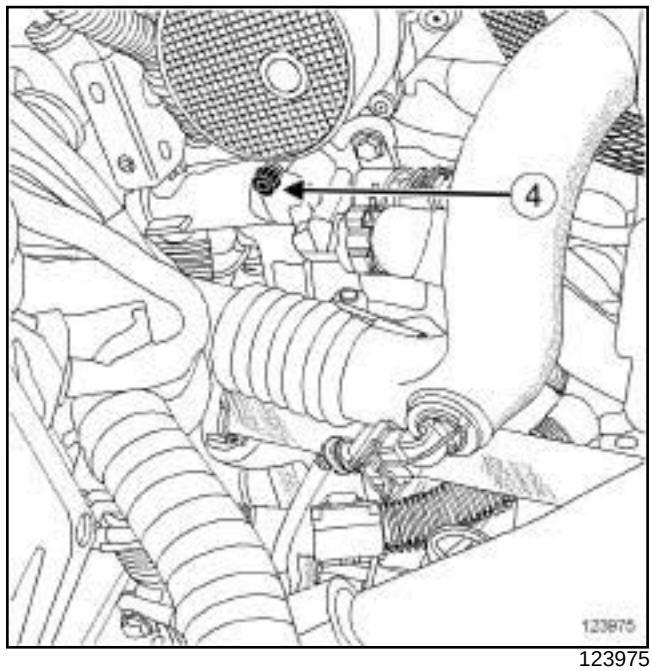
❏ Open the bleed screw (**2**) .

K9K

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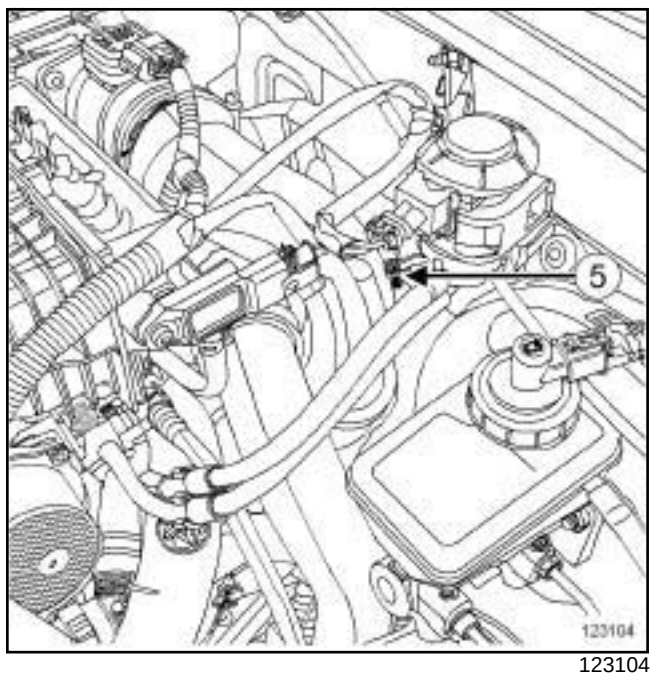


123104

❏ Open the bleed screws (**4**) and (**5**) .

❏ Fill the cooling system with engine coolant recommended by the manufacturer (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) via the expansion bottle until it overflows.

❏ Close all the bleed screws as soon as the coolant starts to flow in a continuous stream.

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❑ Pressurise the system using the toolto check that there are no leaks (see **19A**, **Cooling**, **Engine cooling system: Check**, page **19A-3**) .

❑ Refit the expansion bottle cap.

❑ Clean any surfaces soiled by the coolant.

**IV - BLEEDING**

❑

**WARNING**
Do not open the bleed screw whilst the engine is running; this would damage the engine.

Start the engine.

K4M

❑ Maintain the engine speed at **2,500 rpm** until the engine cooling fan starts for the third time (time required for automatic degassing).

K9K

❑ Maintain the engine speed at **1500 rpm** varying the engine speed rapidly (until the maximum engine speed is reached) 2 to 3 times approximately every **2 minutes** until the engine cooling fan starts for the second time.

❑ Check that the heating is operating correctly.

❑ Let the engine cool until it reaches a coolant temperature below **50°C**.

❑ Make sure the coolant fluid level is at the « Maximum » mark.

❑ Refit the expansion bottle cap.

**V - FINAL OPERATION**

❑ Remove the **coolant recovery tray**.

❑ Refit the engine undertray.

❑ Refit the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection).

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# Cooling radiator: Removal - Refitting

K4M

| Special tooling required | |
|---|---|
| **Mot. 1448** | Remote operation pliers for hose clips. |
| **Car. 1363** | Set of trim removal levers. |

**IMPORTANT**

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

**WARNING**

Prepare for the flow of fluid, and protect the surrounding components.

**WARNING**

When carrying out a repair that requires a complete change, it is essential to flush the circuit with clean water, blast compressed air through the circuit to drive out the water, fill and bleed the circuit and then measure the effective protection.

The criteria to be met are:

- protection down to **-25°C ± 2** for cold and temperate countries,
- protection down to **-40°C ± 2** for "extreme cold" countries.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❑ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

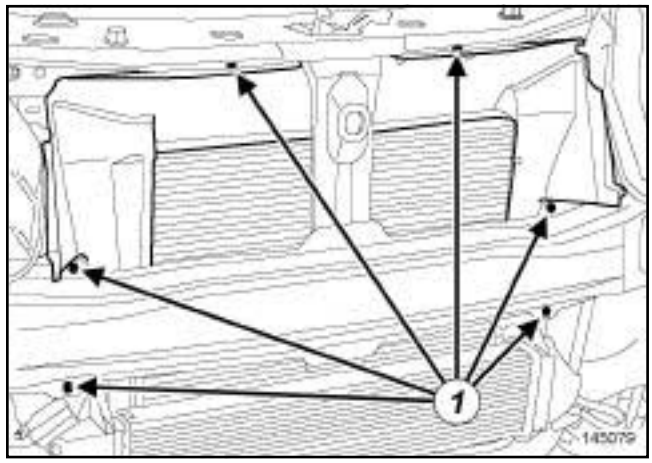
❑ Remove:

- the engine undertray,
- the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection),
- the injector rail protector (see **13B**, **Diesel injection**, **Injector rail: Removal - Refitting**, page **13B-25**) ,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the fan assembly (see **19A**, **Cooling**, **Engine cooling fan assembly: Removal - Refitting**, page **19A-27**) .

❑ Drain the engine cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

### II - REMOVAL OPERATION

AIR CONDITIONING




145079

❑ Remove:

- the air deflector mounting pins (**1**) ,
- the air deflector.

❑ Attach the condenser to the front impact cross member using a safety strap.

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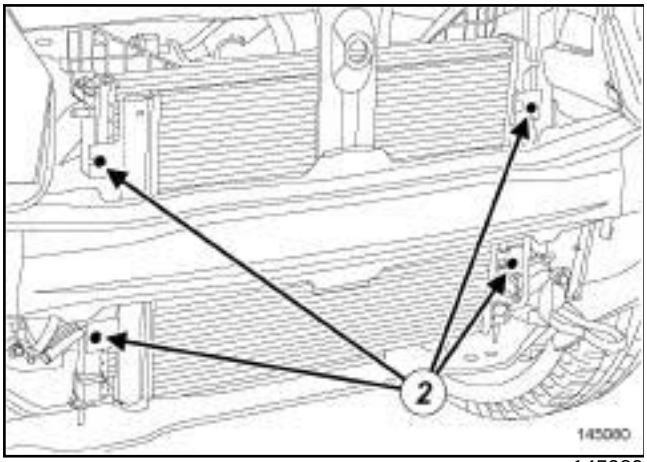
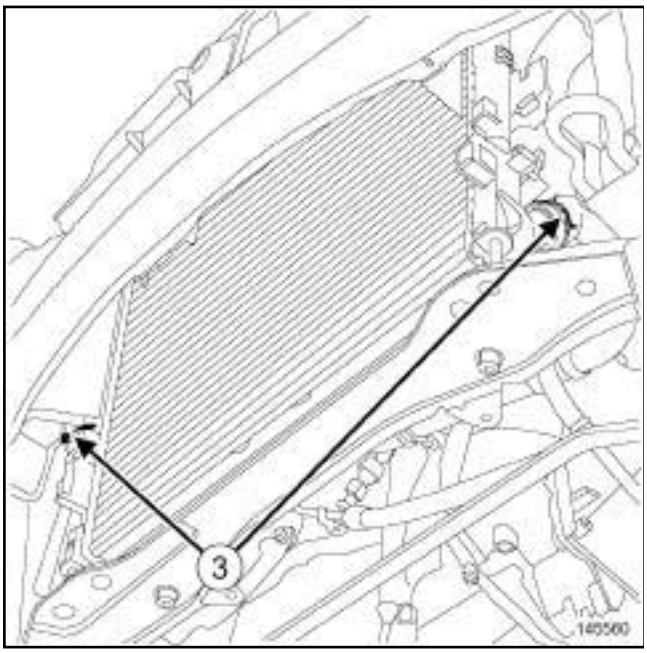
# Cooling radiator: Removal - Refitting

K4M




145080

❏ Remove the condenser bolts (**2**) .




145560

❏ Remove the cooling radiator hose clips (**3**) using the tool **(Mot. 1448)**.

❏ Disconnect the cooling radiator hoses using the **(Car. 1363)**.

❏ Remove the engine cooling radiator from above the vehicle.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Always replace the cooling radiator hose clips.

### II - REFITTING OPERATION

❏ Proceed in the reverse order to removal.

❏ Refill and bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Cooling radiator: Removal - Refitting

K9K

| Special tooling required | |
|---|---|
| **Mot. 1448** | Remote operation pliers for hose clips. |
| **Car. 1363** | Set of trim removal levers. |

**IMPORTANT**

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

**WARNING**

Prepare for the flow of fluid, and protect the surrounding components.

**WARNING**

When carrying out a repair that requires a complete change, it is essential to flush the circuit with clean water, blast compressed air through the circuit to drive out the water, fill and bleed the circuit and then measure the effective protection.

The criteria to be met are:

- protection down to **-25°C ± 2** for cold and temperate countries,
- protection down to **-40°C ± 2** for "extreme cold" countries.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❑ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

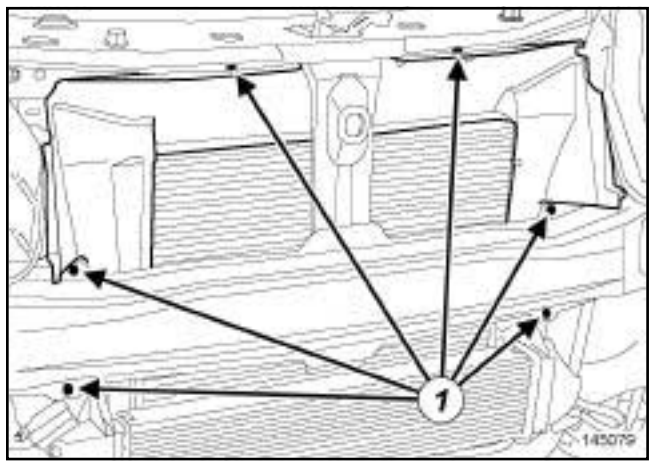
❑ Remove:

- the engine undertray,
- the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection),
- the engine cover,
- the air intake sleeve,
- the intercooler (see **12B**, **Turbocharging**, **Intercooler: Removal - Refitting**, page **12B-8**) ,
- the fan assembly (see **19A**, **Cooling**, **Engine cooling fan assembly: Removal - Refitting**, page **19A-27**) .

❑ Drain the engine cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

### II - REMOVAL OPERATION

AIR CONDITIONING




145079

❑ Remove:

- the air deflector mounting pins (**1**) ,
- the air deflector.

❑ Attach the condenser to the front impact cross member using a safety strap.

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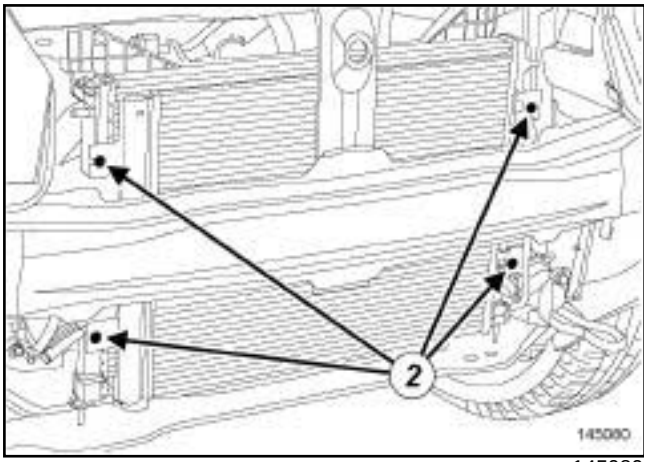
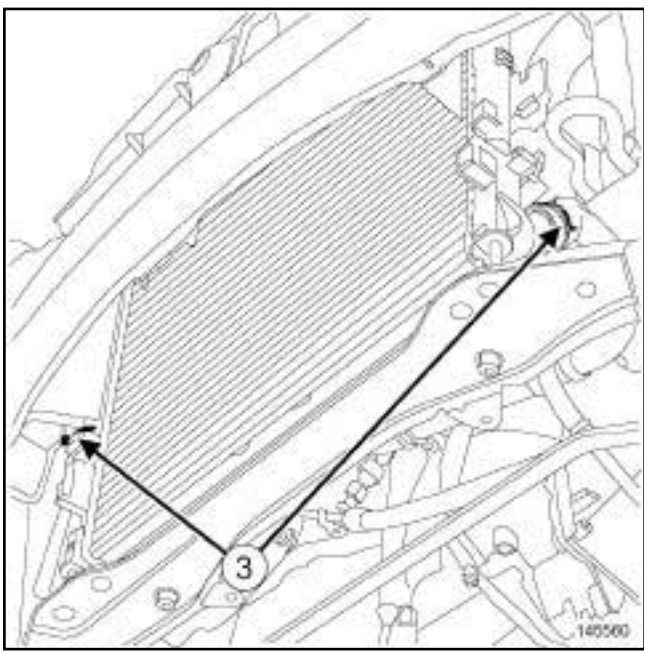
# Cooling radiator: Removal - Refitting

K9K




145080

❏ Remove the condenser bolts (**2**) .




145560

❏ Remove the cooling radiator hose clips (**3**) using the tool **(Mot. 1448)**.

❏ Disconnect the cooling radiator hoses using the **(Car. 1363)**.

❏ Remove the engine cooling radiator from above the vehicle.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Always replace the cooling radiator hose clips.

### II - REFITTING OPERATION

❏ Proceed in the reverse order to removal.

❏ Refill and bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Coolant pump: Removal - Refitting

K9K, and 796

| Tightening torques ▽ | |
|---|---|
| bolts of the coolant pump | **10 N.m** |
| inner timing cover bolts | **9 N.m** |
| alternator bolts | **21 N.m** |

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**IMPORTANT**

Wear heat protective gloves during the operation.

**IMPORTANT**

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

**WARNING**

Prepare for the flow of fluid, and protect the surrounding components.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

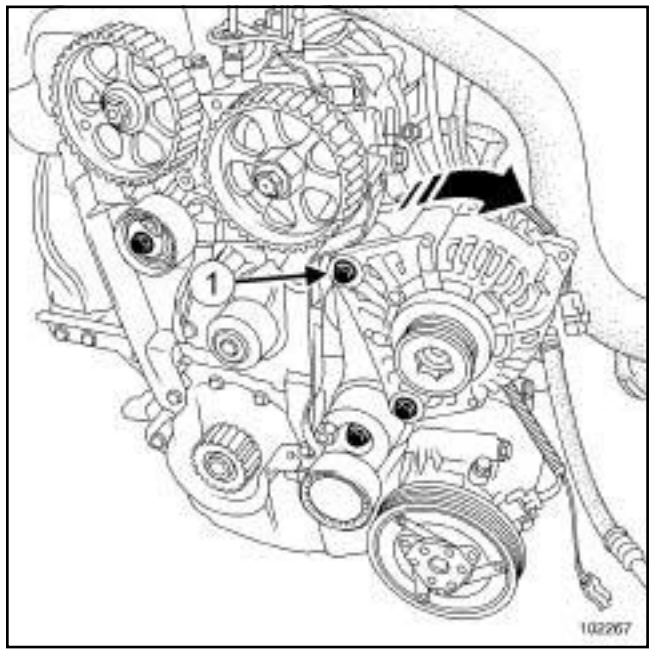
- the engine cover,
- the engine undertray bolts,
- the engine undertray.

❏ Remove the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

❏ Drain the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❏ Remove:

- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) .




102267

❏ Disconnect the electrical connections from the alternator.

❏ Remove the alternator upper bolt (**1**) .

❏ Loosen the alternator lower bolt.

❏ Tilt the alternator forward.

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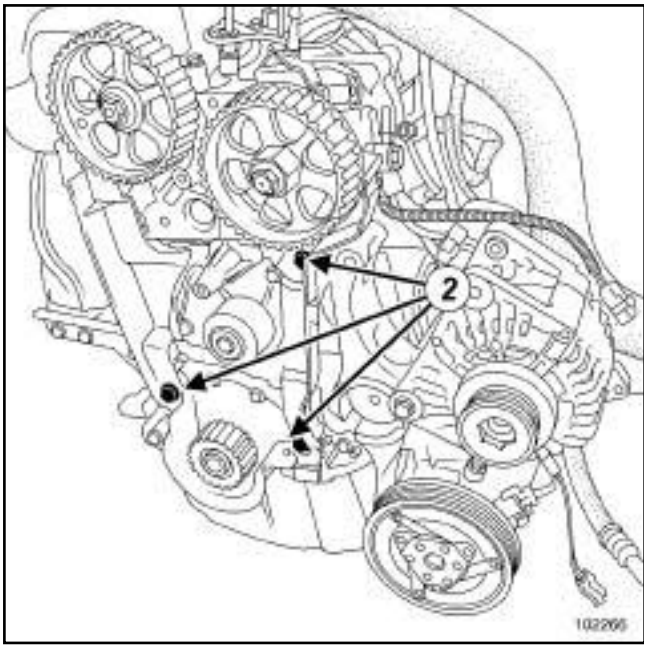
# Coolant pump: Removal - Refitting

K9K, and 796

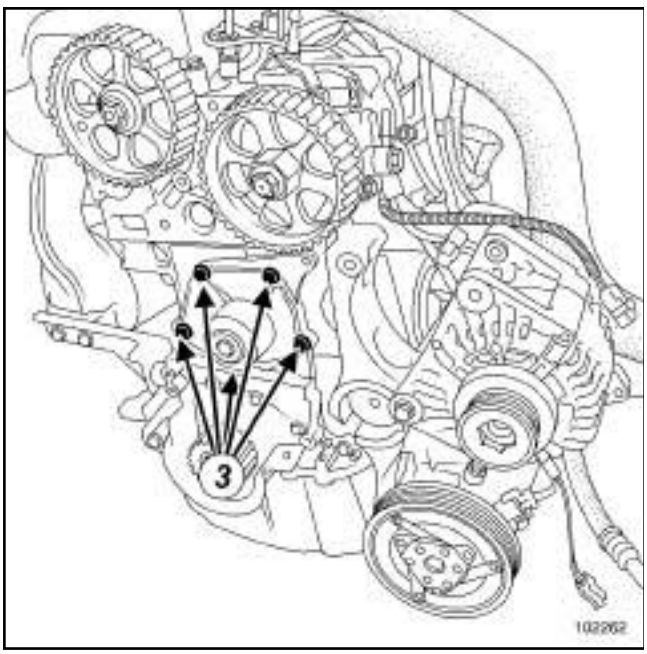



102266

❑ Remove:

- the inner timing cover bolts (**2**) ,
- the inner timing cover.

## II - REMOVAL OPERATION




102262

❑ Remove:

- the coolant pump bolts (**3**) ,
- the coolant pump,
- the coolant pump seal.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: coolant pump seal**.

❑ Use **SURFACE CLEANER** (see ) (04B, Consumables - Products) to clean and degrease:

- the coolant pump sealing face if it is to be reused,
- the cylinder block gasket face.

**WARNING**

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Apply **SUPER CLEANER FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the areas to be cleaned.

❑ Leave for approximately ten minutes.

❑ Remove the residue using a wooden spatula.

❑ Complete the cleaning of the parts using an abrasive pad.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease the joint faces.

❑ Always replace the coolant pump seal.

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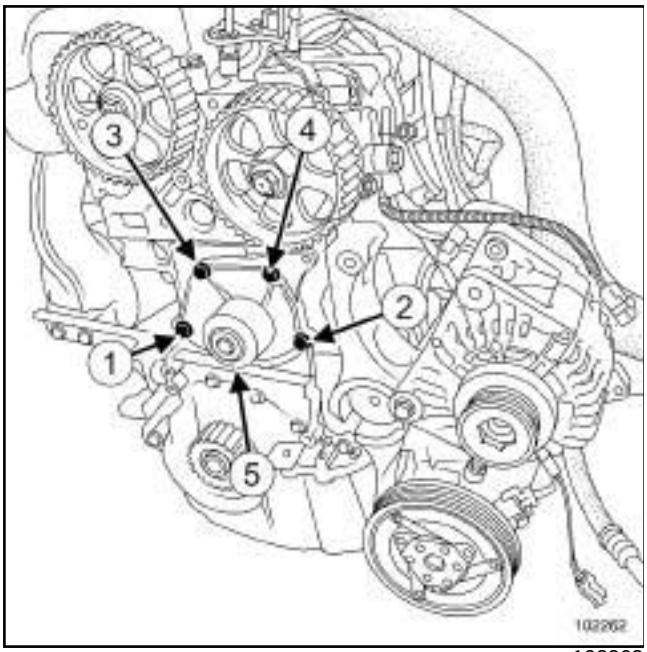
# Coolant pump: Removal - Refitting

K9K, and 796

## II - REFITTING OPERATION




102262

❑ Refit:

- the coolant pump fitted with a new seal,
- the coolant pump bolts.

❑ Torque tighten in order **(1) (2) (3) (4) (5)** the **bolts of the coolant pump (10 N.m)**.

❑ Apply one or two drops of FRENETANCHE (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the coolant pump bolts.

## III - FINAL OPERATION

❑ Refit the inner timing cover.

❑ Tighten to torque the **inner timing cover bolts (9 N.m)**.

❑ Refit the alternator.

❑ Torque tighten the **alternator bolts (21 N.m)**.

❑ Connect the alternator electrical connections.

❑ Refit:

- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) .

❑ Fill the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❑ Refit the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

❑ Refit:

- the engine undertray,
- the engine undertray bolts,
- the engine cover.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Coolant pump: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| coolant pump M8 bolt | **27 N.m** |
| coolant pump M6 bolts | **10 N.m** |

**IMPORTANT**

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

**WARNING**

Prepare for the flow of fluid, and protect the surrounding components.

**WARNING**

When carrying out a repair that requires a complete change, it is essential to flush the circuit with clean water, blast compressed air through the circuit to drive out the water, fill and bleed the circuit and then measure the effective protection.

The criteria to be met are:

- protection down to **-25°C ± 2** for cold and temperate countries,
- protection down to **-40°C ± 2** for "extreme cold" countries.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

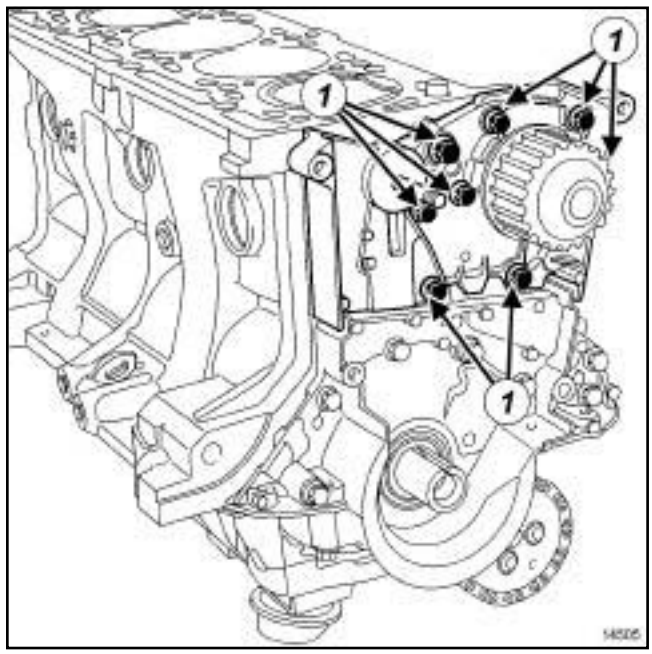
❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) .

❏ Drain the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

### II - REMOVAL OPERATION




14505

❏ Remove:

- the coolant pump bolts (**1**) ,
- the coolant pump.

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# Coolant pump: Removal - Refitting

K4M

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑

**IMPORTANT**
Wear leaktight gloves (Nitrile type) for this operation.

**IMPORTANT**
Wear goggles with side protectors for this operation.

**WARNING**
Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

❑ Use **SUPER CLEANING AGENT FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:

- the coolant pump sealing face if it is to be reused,
- the cylinder block gasket face.

❑ Apply the product to the surfaces to be cleaned.

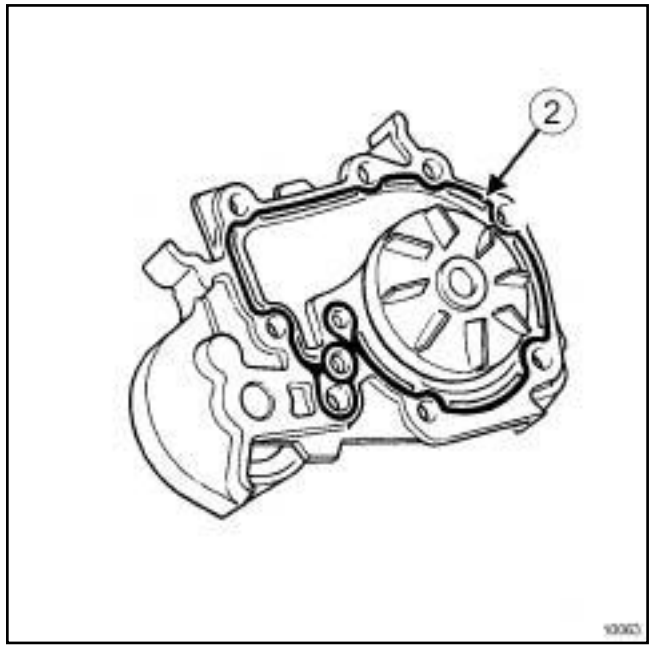
❑ Leave for approximately ten minutes.

❑ Remove the residue using a wooden spatula.

❑ Complete the cleaning of the parts using an abrasive pad.

**WARNING**
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease the joint faces.




10063

❑

**WARNING**
Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

❑ Apply at (**2**) a bead of **RESIN ADHESIVE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) **0.6** to **1 mm** wide.

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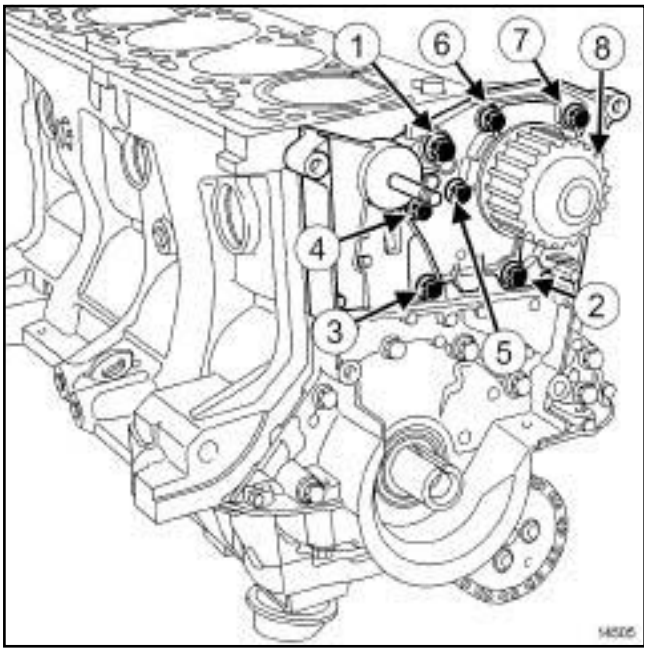
# Coolant pump: Removal - Refitting

K4M

## II - REFITTING OPERATION




14505

❏ Apply one to two drops of **FRENETANCHE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the coolant pump bolts (**1**) and (**4**) .

❏ Refit the coolant pump.

❏ Fit the coolant pump bolts in order until contact is made.

❏ Torque tighten in order:

- the **coolant pump M8 bolt (27 N.m)** (**1**) .
- the **coolant pump M6 bolts (10 N.m)** (**2**) to (**8**) .

## III - FINAL OPERATION

❏ Refit:

- the timing belt (see **11A**, **Top and front of engine**, **Timing belt: Removal - Refitting**, page **11A-17**) ,
- the accessories belt (see **11A**, **Top and front of engine**, **Accessories belt: Removal - Refitting**, page **11A-2**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❏ Fill the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Thermostat: Removal - Refitting

K9K

❑ The thermostat is integral with the coolant outlet unit. The coolant outlet unit must be replaced to replace it (see **19A**, **Cooling**, **Water chamber: Removal - Refitting**, page **19A-22**) .

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# Thermostat: Removal - Refitting

K4M

| Special tooling required | |
|---|---|
| **Mot. 1448** | Remote operation pliers for hose clips. |

**IMPORTANT**

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

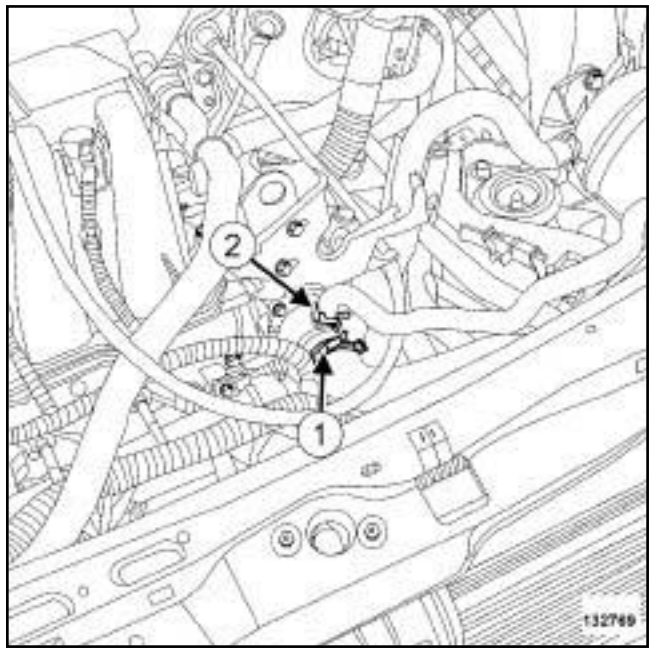
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) ,
- the engine undertray bolts,
- the engine undertray.

❏ Drain the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

### II - OPERATION FOR REMOVAL OF PART CONCERNED



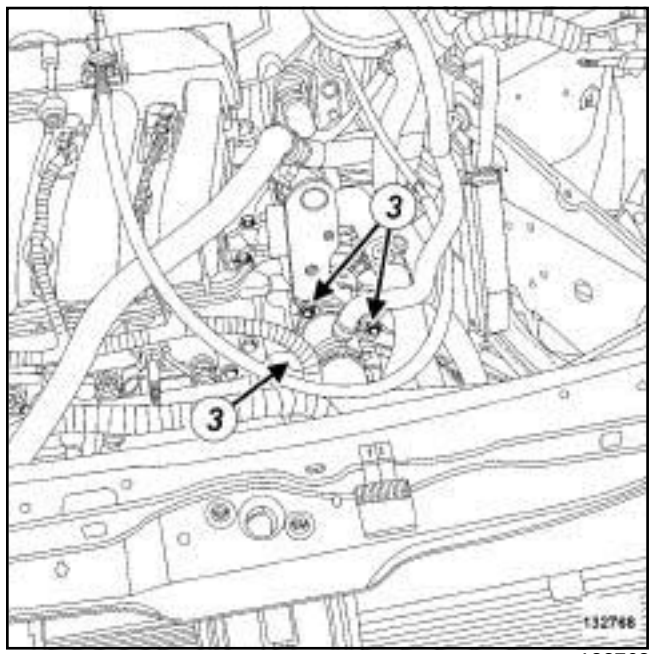

132769

❏ Using the **(Mot. 1448)** orорremove:

- the cooling radiator top hose clip (**1**) ,
- the clip (**2**) from the expansion bottle hose.

❏ Disconnect from the thermostat cover:

- the cooling radiator top hose,
- the expansion bottle hose.




132768

❏ Remove:

- the thermostat cover bolts (**3**) ,

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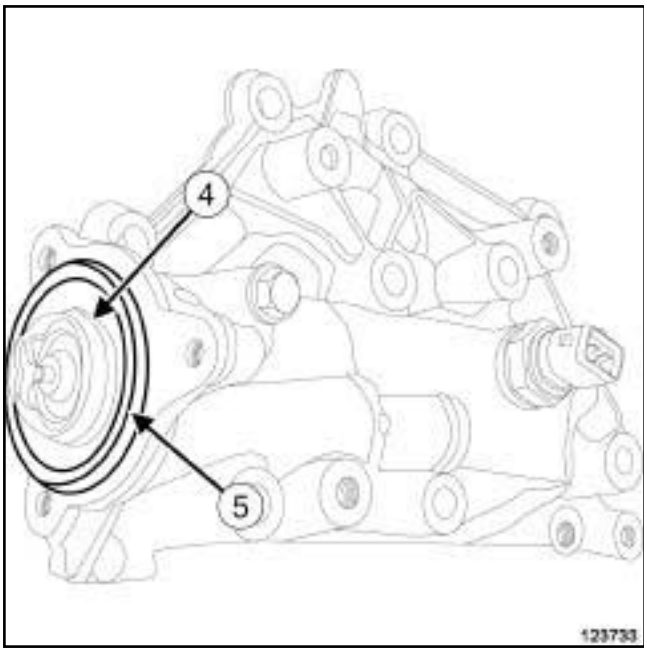
K4M

- the thermostat cover.



123733

❑ Remove:

- the thermostat (**4**) ,
- the thermostat seal (**5**) .

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease the thermostat housing.

❑ The thermostat seal must be replaced.

### II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- a new seal on the thermostat,
- the thermostat,
- the thermostat cover.

❑ Connect the following to the thermostat cover:

- the expansion bottle hose,
- the cooling radiator top hose.

❑ Using the **(Mot. 1448)** ororfit:

- the expansion bottle hose clip,
- the cooling radiator top hose clip.

### III - FINAL OPERATION

❑ Fill and bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❑ Refit:

- the engine undertray,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

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# Water chamber: Removal - Refitting

K9K, and 796

| Tightening torques ▽ | |
|---|---|
| water chamber bolts | **11 N.m** |
| expansion bottle nuts | **8 N.m** |

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**IMPORTANT**

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

**WARNING**

Prepare for the flow of fluid, and protect the surrounding components.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

- the engine cover,
- the engine undertray bolts,
- the engine undertray.

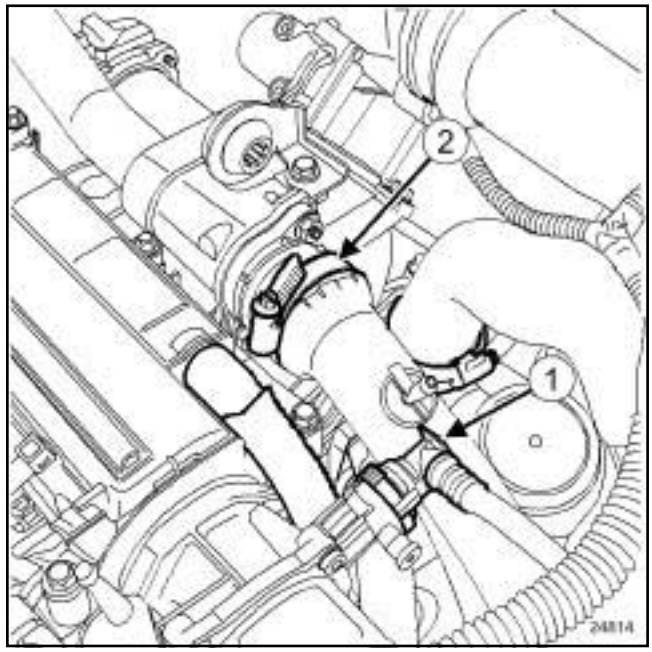
❏ Remove the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

❏ Drain the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❏ Remove:

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the expansion bottle nuts.

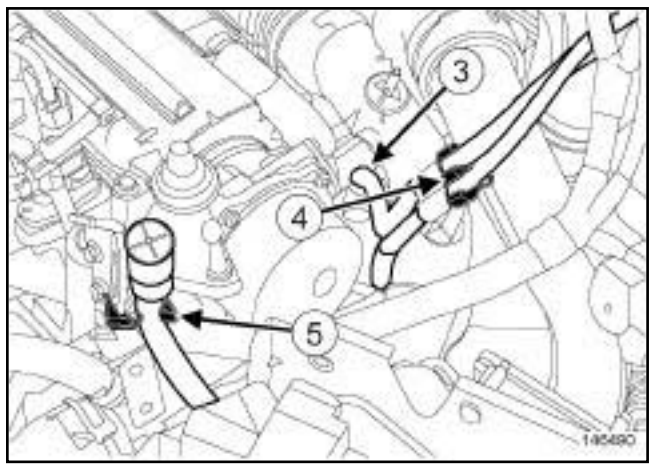
❏ Move aside the expansion bottle.




24814

❏ Disconnect:

- the union (**1**) on the vacuum pump,
- the air duct between the intercooler and the EGR assembly at (**2**) .




146490

❏ Disconnect the EGR solenoid valve pipe at (**3**) .

❏ Unclip:

- the EGR solenoid valve pipes at (**4**) ,
- the gearbox breather pipe at (**5**) .

❏ Move aside the air duct between the intercooler and the EGR assembly.

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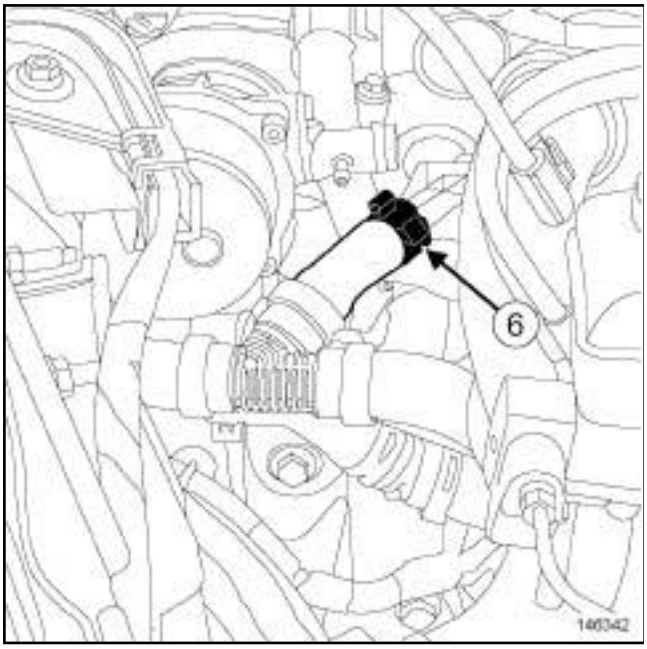
# Water chamber: Removal - Refitting

K9K, and 796

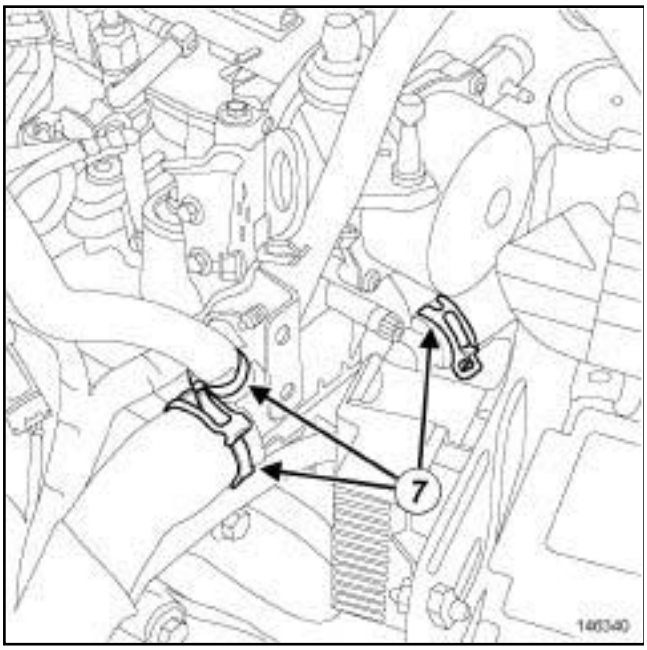



146342

❏ Disconnect the EGR assembly outlet pipe at (**6**) .

❏ Move the EGR assembly outlet pipe aside.

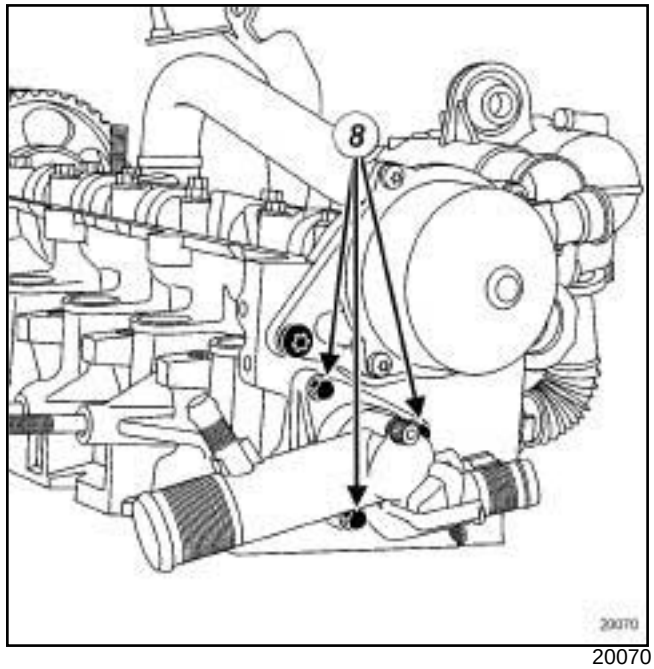
❏ Disconnect the coolant temperature sensor connector.




146340

❏ Disconnect the cooling hoses on the water chamber at (**7**) .

## II - REMOVAL OPERATION




20070

❏ Remove:

- the water chamber bolts (**8**) ,
- the water chamber,
- the water chamber seal.

# REFITTING

## I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: Cylinder head coolant outlet unit seal**.

❏ Use **SURFACE CLEANER** (see ) to clean and degrease:

- the cylinder head joint face,
- the water chamber seal housing if it is to be reused.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

**WARNING**

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

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# Water chamber: Removal - Refitting

K9K, and 796

## II - REFITTING OPERATION

❑ Refit:

- a new water chamber seal in the water chamber housing,
- the water chamber.

❑ Torque tighten the **water chamber bolts (11 N.m)**.

❑ Connect:

- the cooling hoses to the water chamber,
- the coolant temperature sensor connector,
- the EGR assembly outlet pipe,

❑ Position the air duct between the intercooler and the EGR assembly.

❑ Connect:

- the air duct on the EGR assembly,
- the union to the vacuum pump.

❑ Connect the EGR solenoid valve pipe to the vacuum pump.

❑ Clip on:

- the breather pipe from the gearbox,
- the EGR solenoid valve pipes.

❑ Position the expansion bottle.

❑ Torque tighten the **expansion bottle nuts (8 N.m)**.

## III - FINAL OPERATION

❑ Refit the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

❑ Refit:

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the engine undertray,
- the engine cover.

❑ Fill and bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Water chamber: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| coolant outlet unit bolts (initial torque) | **4 N.m** |
| water chamber bolts | **12 N.m** |

## REMOVAL

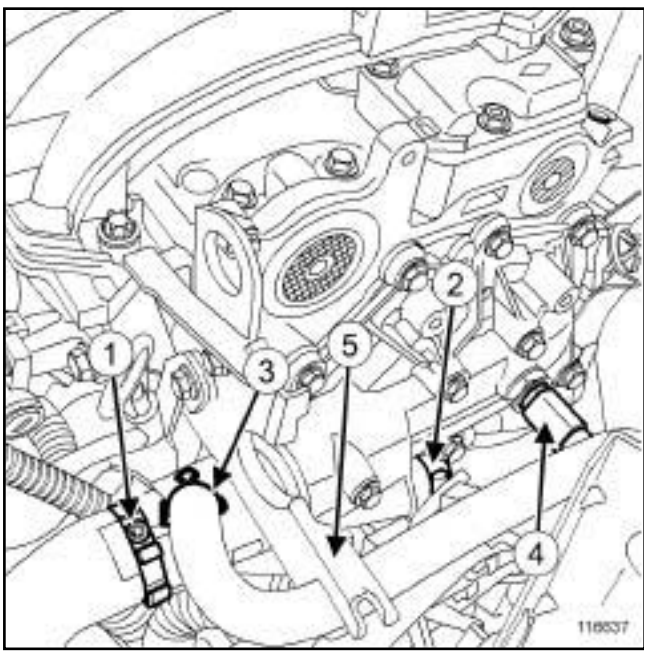
### I - OPERATION FOR REMOVAL OF PART CONCERNED

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

❏ Drain the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .



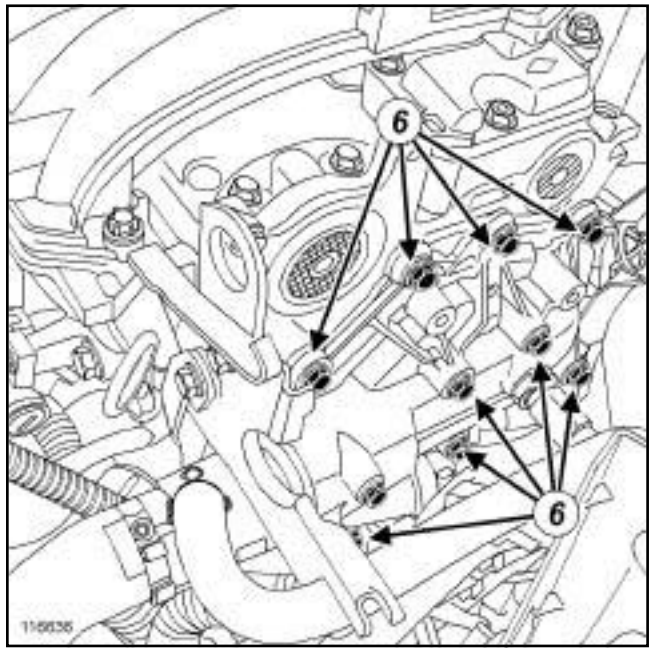

116637

❏ Disconnect:

- the radiator top hose (**1**) from the water chamber,
- the passenger compartment heater hose (**2**) ,
- the expansion bottle hose (**3**) ,
- the coolant temperature sensor (**4**) .

❏ Unclip the hoses from their support at (**5**) .

### II - REMOVAL OPERATION




116636

❏ Remove:

- the water chamber bolts (**6**) ,
- the water chamber.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: Cylinder head coolant outlet unit seal**

> **WARNING**
> To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❏ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the cylinder head joint face,
- the water chamber joint face, if being reused.

### II - REFITTING OPERATION

❏ Refit the water chamber.

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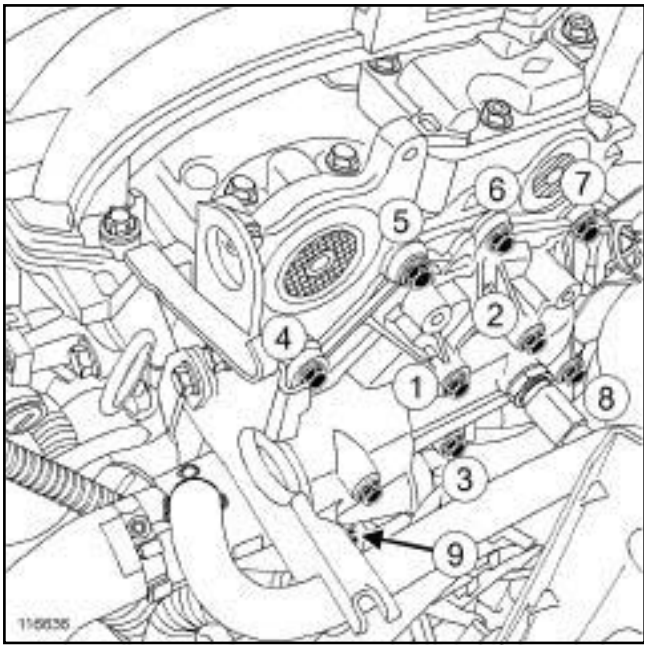
# Water chamber: Removal - Refitting

K4M




116636

❏ Screw on the water chamber bolts without tightening them.

❏ Torque tighten in order:

- the **coolant outlet unit bolts (initial torque) (4 N.m)**,
- the **water chamber bolts (12 N.m)**.

**III - FINAL OPERATION**

❏ Connect:

- the coolant temperature sensor,
- the expansion bottle hose,
- the passenger compartment heater hose,
- the top hose to the water chamber.

❏ Refit the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

❏ Fill the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Engine cooling fan assembly: Removal - Refitting

K4M

## REMOVAL

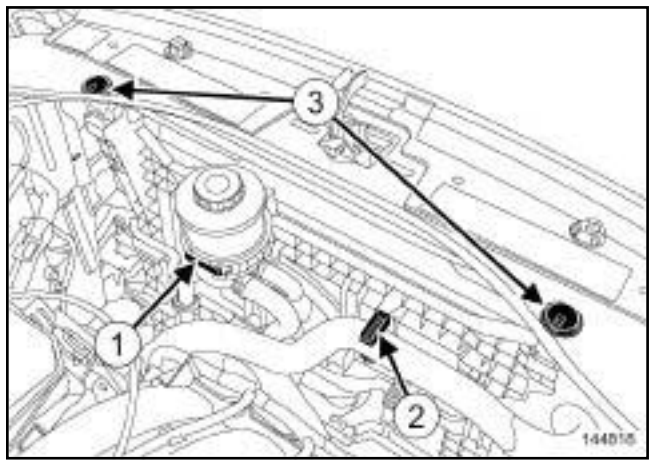
### I - REMOVAL PREPARATION OPERATION

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

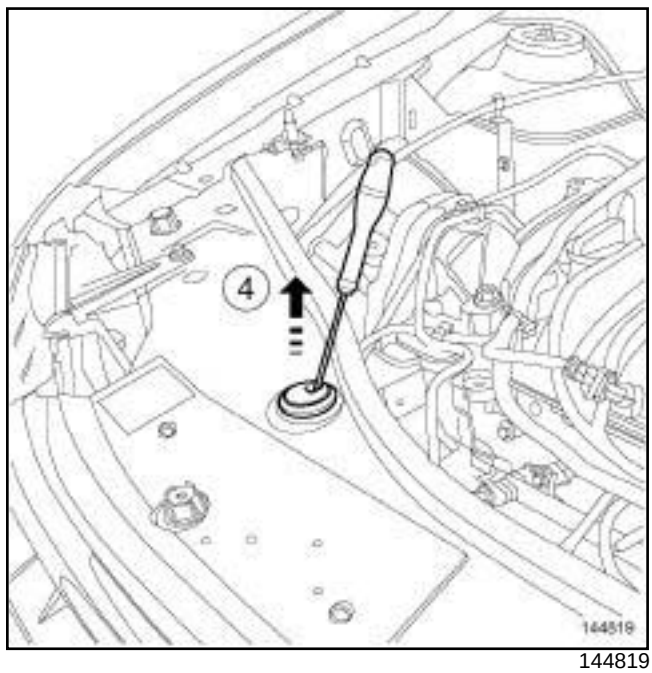
❏ Remove:

- the injector rail protector (see **13B**, **Diesel injection**, **Injector rail: Removal - Refitting**, page **13B-25**) ,
- the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

### II - REMOVAL OPERATION




144818




144819

❏ Unclip:

- the power-assisted steering hoses on the fan assembly,
- the power-assisted steering fluid reservoir from its support at (**1**) ,
- the engine coolant hose at (**2**) .

❏ Press on the clips of the centring pins (**3**) on the engine cooling fan assembly using a screwdriver and pull them according to the direction of the arrow (**4**) .

❏ Secure the power-assisted steering fluid reservoir to the engine.

❏ Remove the power assisted steering fluid reservoir bracket.

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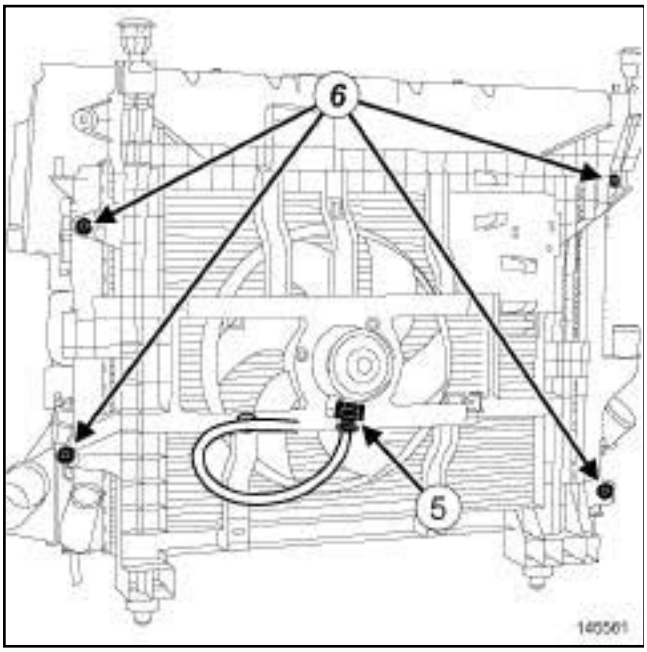
# Engine cooling fan assembly: Removal - Refitting

K4M

## STANDARD HEATING RECIRCULATION




145561

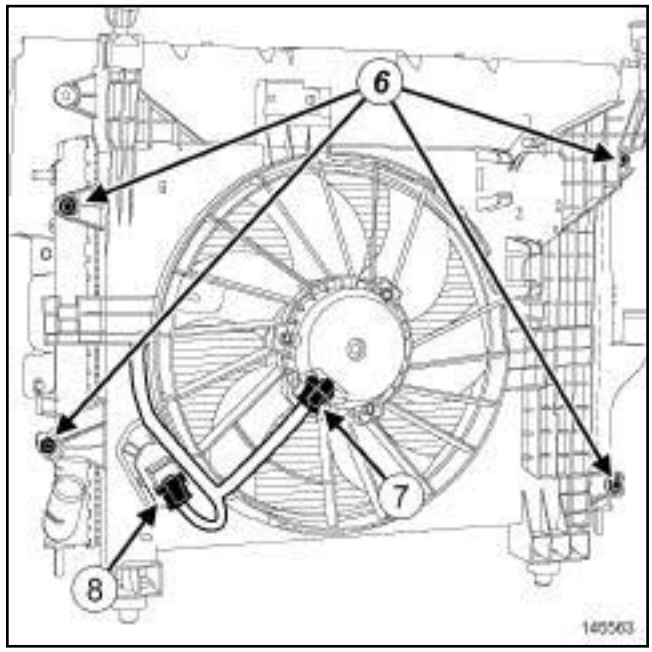
❏ Disconnect the cooling fan assembly connector (**5**) .

❏ Unclip the engine cooling fan assembly wiring.

❏ Move aside the wiring of the engine cooling fan assembly.

❏ Remove the engine cooling radiator bolts (**6**) .

## AIR CONDITIONING




145563

❏ Disconnect:

- the engine cooling fan assembly connector (**7**) ,
- the engine cooling fan assembly resistor connector (**8**) .

❏ Unclip the engine cooling fan assembly wiring.

❏ Move aside the wiring of the engine cooling fan assembly.

❏ Remove the engine cooling radiator bolts (**6**) .

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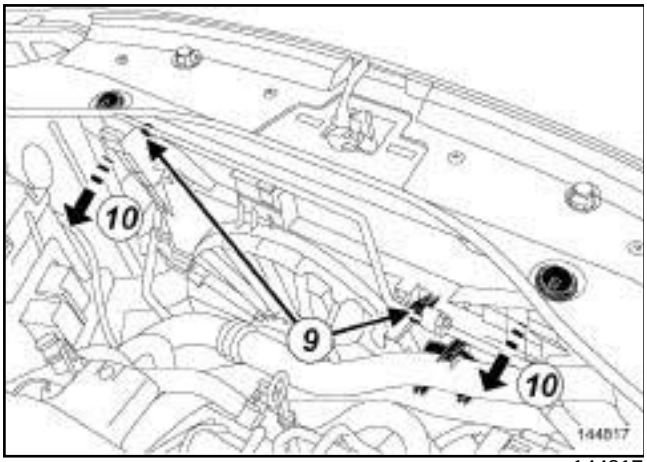
# Engine cooling fan assembly: Removal - Refitting

K4M




144817

❑ Unclip the « condenser - expansion valve » connecting pipe at (**9**) .

**WARNING**

In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

❑ Pull the fan assembly according to the arrows (**10**) passing it under the «condenser - expansion valve » connecting pipe.

❑

Note:

Do not damage the cooling unit vanes (radiator, condenser, etc.) during handling.

❑ Remove the engine cooling fan assembly from above the vehicle.

**In the event of replacement**

❑ Remove from the fan assembly:

- the power-assisted steering hose clips,
- the wiring clip.

## REFITTING

### I - REFITTING PREPARATION OPERATION

**In the event of replacement**

❑ Refit on the fan assembly:

- the power-assisted steering hose clips,
- the wiring clip.

### II - REFITTING OPERATION

❑ Proceed in the reverse order to removal.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

### III - CHECKING THE OPERATION OF THE FAN UNIT

❑ Start the engine.

❑ Disconnect the coolant temperature sensor connector.

❑ Check the operation of the fan assembly.

❑ Connect the coolant temperature sensor connector.

❑ Switch off the engine.

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# Engine cooling fan assembly: Removal - Refitting

K9K

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

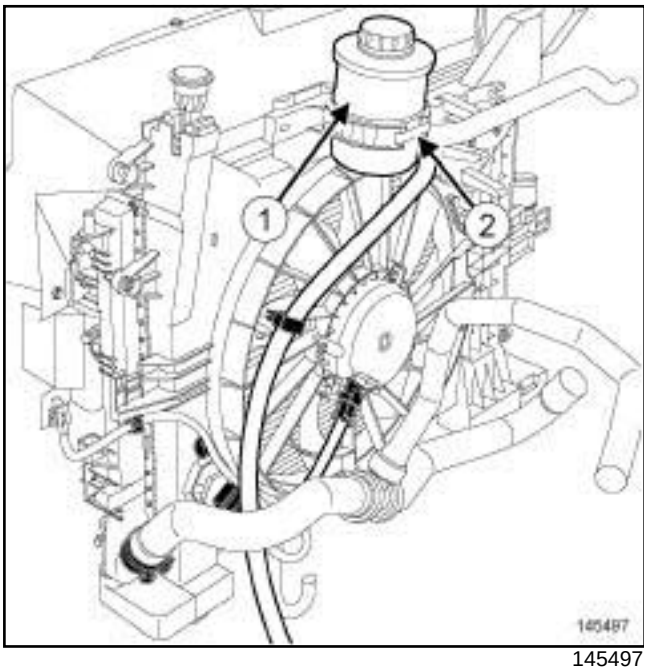
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

- the engine cover,
- the air intake sleeve,
- the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection).

STANDARD HEATING RECIRCULATION



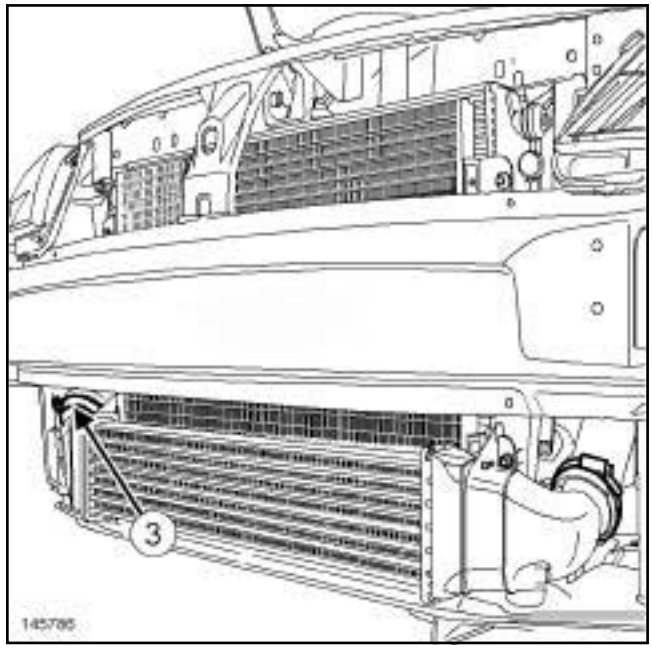

145497

❏ Unclip:

- the power-assisted steering hoses on the fan assembly,
- the power-assisted steering fluid reservoir (**1**) from its support at (**2**) .

❏ Secure the power-assisted steering fluid reservoir to the engine.

❏ Remove the power assisted steering fluid reservoir bracket.




145786

❏ Disconnect the intercooler duct at (**3**) .

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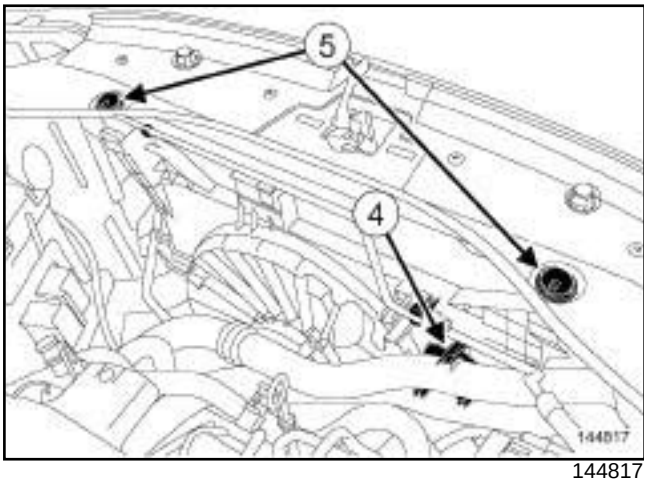
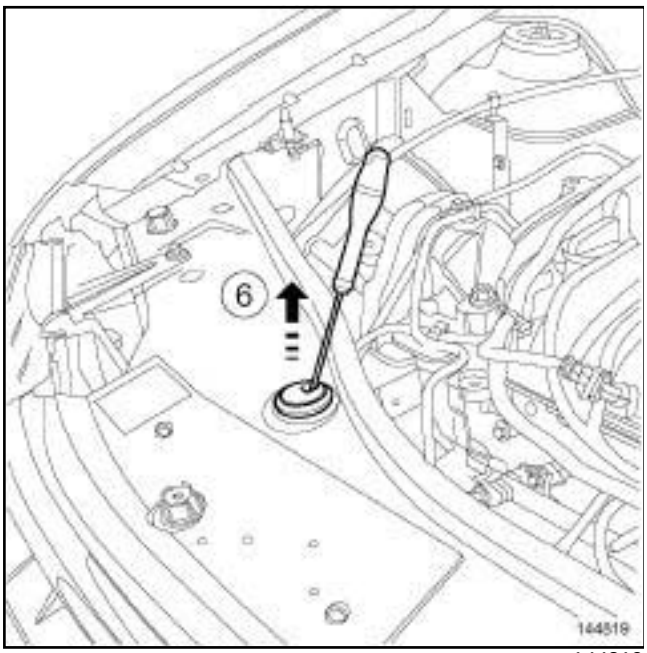
# Engine cooling fan assembly: Removal - Refitting

K9K

## II - REMOVAL OPERATION




144817



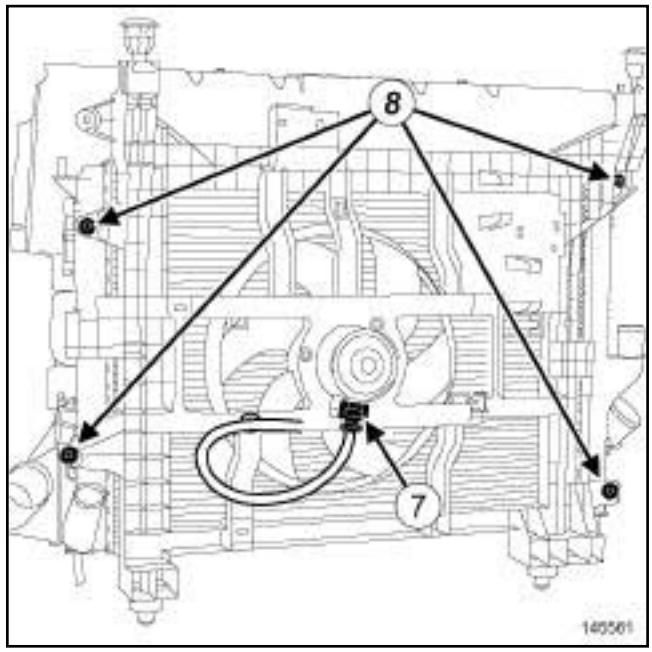

144819

❑ Unclip the following from the support (**4**) :

- the intercooler duct on the fan assembly,
- the engine coolant hose.

❑ Press on the clips of the centring pins (**5**) on the engine cooling fan assembly using a screwdriver and pull them according to the direction of the arrow (**6**) .

STANDARD HEATING RECIRCULATION




145561

❑ Disconnect the cooling fan assembly connector (**7**) .

❑ Unclip the engine cooling fan assembly wiring.

❑ Move aside the wiring of the engine cooling fan assembly.

❑ Remove the engine cooling radiator bolts (**8**) .

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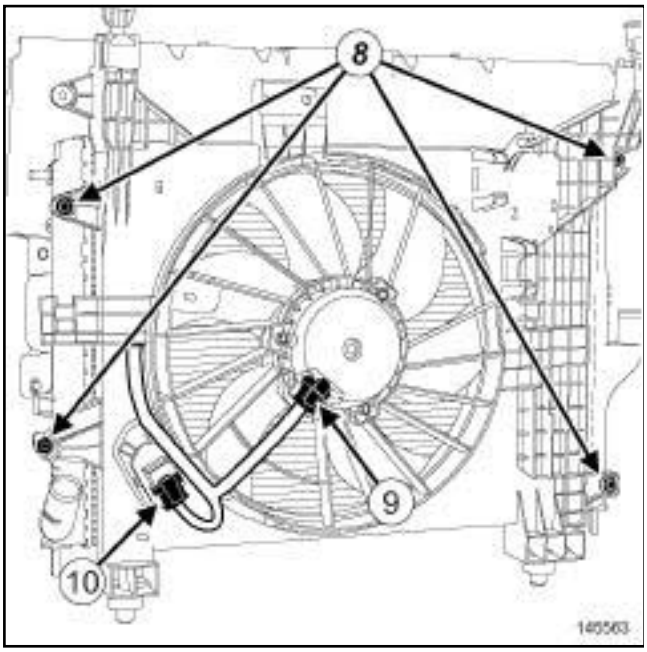
# Engine cooling fan assembly: Removal - Refitting

K9K

## AIR CONDITIONING




145563

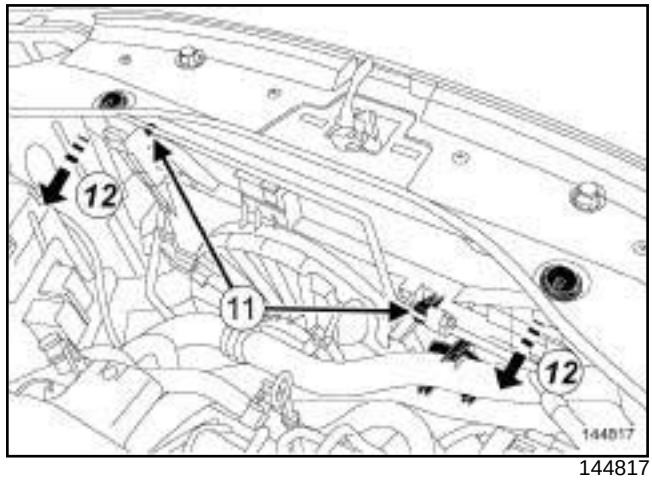
❑ Disconnect:

- the engine cooling fan assembly connector (**9**) ,
- the engine cooling fan assembly resistor connector (**10**) .

❑ Unclip the engine cooling fan assembly wiring.

❑ Move aside the wiring of the engine cooling fan assembly.

❑ Remove the engine cooling radiator bolts (**8**) .




144817

❑ Unclip the « condenser - expansion valve » connecting pipe at (**11**) .

**WARNING**

In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

❑ Pull the fan assembly according to the arrows (**12**) passing it under the « condenser - expansion valve » connecting pipe.

❑

Note:

Do not damage the cooling unit vanes (radiator, condenser, etc.) during handling.

❑ Remove the engine cooling fan assembly from above the vehicle.

**In the event of replacement**

❑ Remove from the fan assembly:

- the power-assisted steering hose clips,
- the wiring clip,
- the support of the intercooler duct and coolant hose on the fan assembly.

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# Engine cooling fan assembly: Removal - Refitting

K9K

## REFITTING

### I - REFITTING PREPARATION OPERATION

**In the event of replacement**

❏ Refit on the fan assembly:

- the power-assisted steering hose clips,
- the wiring clip,
- the support of the intercooler duct and coolant hose on the fan assembly.

### II - REFITTING OPERATION

❏ Proceed in the reverse order to removal.

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

### III - CHECKING THE OPERATION OF THE FAN UNIT

❏ Start the engine.

❏ Disconnect the coolant temperature sensor connector.

❏ Check the operation of the fan assembly.

❏ Connect the coolant temperature sensor connector.

❏ Switch off the engine.

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# Coolant pump inlet pipe: Removal - Refitting

K9K, and 796

| Tightening torques ▽ | |
|---|---|
| coolant pump inlet pipe bolt | **22 N.m** |
| accelerometer | **20 N.m** |

**IMPORTANT**
Wear leaktight gloves (Nitrile type) for this operation.

**IMPORTANT**
Wear heat protective gloves during the operation.

**IMPORTANT**
The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

**WARNING**
Prepare for the flow of fluid, and protect the surrounding components.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

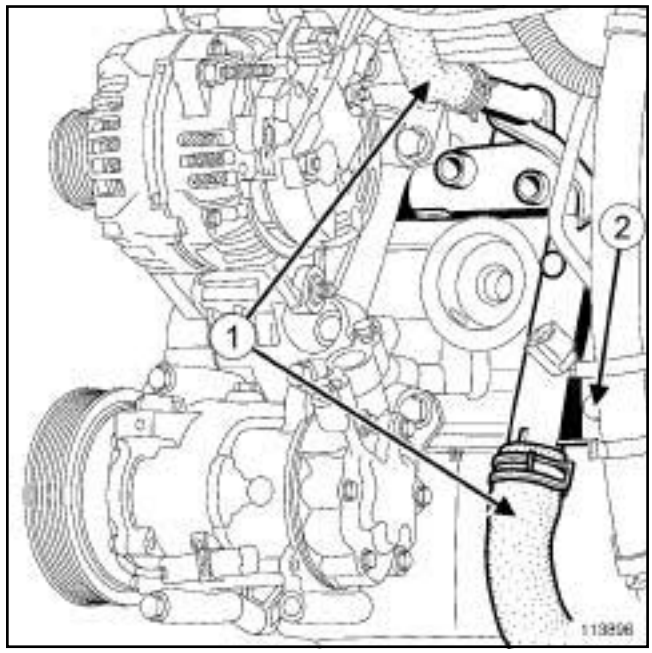
- the engine cover,
- the engine undertray bolts,
- the engine undertray.

❏ Remove the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

❏ Drain the engine cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❏ Remove the oil-water heat exchanger (see **10A**, **Engine and cylinder block assembly**, **Oil-coolant heat exchanger: Removal - Refitting**, page **10A-37**) .

### II - REMOVAL OPERATION




113896

❏ Disconnect:

- the coolant hoses (**1**) from the coolant pump inlet pipe,
- the accelerometer connector.

❏ Remove the accelerometer using.

❏ Remove:

- the water pump inlet pipe bolt (**2**) ,
- the coolant pump inlet pipe.
- the coolant pump inlet pipe seal.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: seal between coolant pump inlet pipe and coolant pump**

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# Coolant pump inlet pipe: Removal - Refitting

K9K, and 796

❑ Use **SURFACE CLEANER** (see ) (04B, Consumables - Products) to clean and degrease:

- the coolant pump inlet pipe seal housing if it is being reused,
- the seal housing in the cylinder block.

**WARNING**

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

**WARNING**

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

❑ Replace the removed clips.

**II - REFITTING OPERATION**

❑ Refit the coolant pump inlet pipe to the cylinder block.

❑ Torque tighten the **coolant pump inlet pipe bolt (22 N.m)**.

❑ Refit the accelerometer using the tool.

❑ Tighten to torque the **accelerometer (20 N.m)**.

❑ Connect:

- the accelerometer connector,
- the coolant hoses onto the coolant pump inlet pipe.

**III - FINAL OPERATION**

❑ Refit the oil-water heat exchanger (see **10A**, **Engine and cylinder block assembly**, **Oil-coolant heat exchanger: Removal - Refitting**, page **10A-37**) .

❑ Fill the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❑ Refit the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

❑ Refit:

- the engine undertray,
- the engine undertray bolts,
- the engine cover.

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Coolant pump inlet pipe: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| coolant pump inlet pipe bolt | 22 N.m |

## REMOVAL

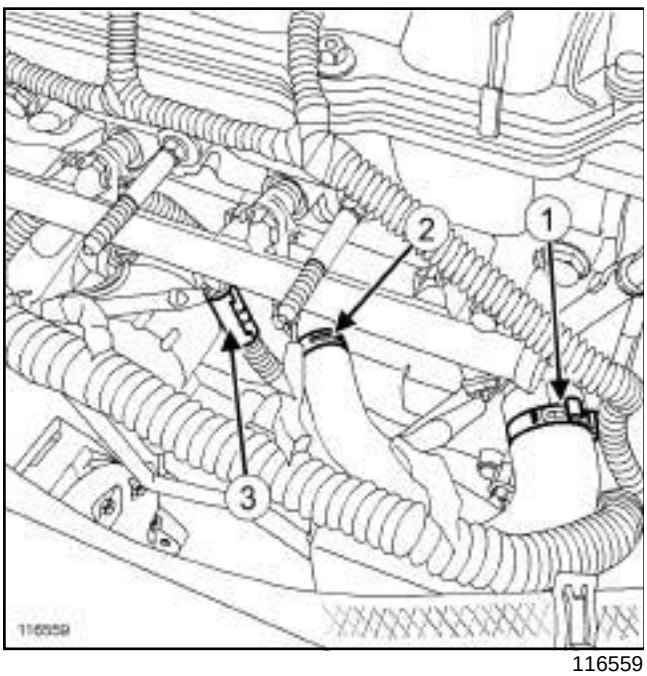
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove the injector rail protector.

❏ Drain the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .




116559

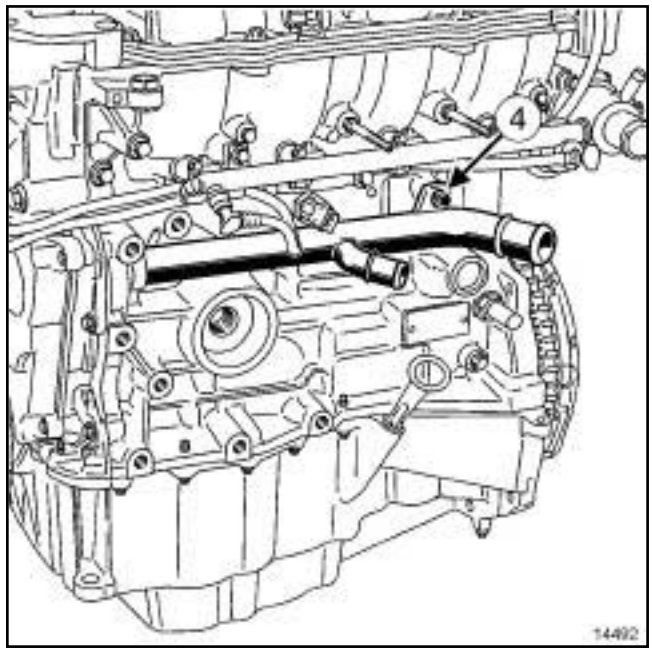
❏ Disconnect:

- the cooling radiator bottom hose (**1**) ,
- the heater hose (**2**) .

❏ Unclip the wiring on the coolant pump inlet pipe at (**3**) .

❏ Disconnect the connector from cylinder injector no. 3.

### II - OPERATION FOR REMOVAL OF PART CONCERNED




14492

❏ Remove:

- the bolt (**4**) from the coolant pump inlet pipe,
- the coolant pump inlet pipe,
- the coolant pump inlet pipe seal.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: seal between coolant pump inlet pipe and coolant pump**

❏ Always replace the cooling hose clips.

### II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit the coolant pump inlet pipe fitted with a new seal.

❏ Torque tighten the **coolant pump inlet pipe bolt (22 N.m)**.

### III - FINAL OPERATION

❏ Connect:

- the connector to cylinder injector no. 3.
- the heater hose on the coolant pump inlet pipe,
- the cooling radiator bottom hose.

❏ Clip the wiring onto the coolant pump inlet pipe.

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# Coolant pump inlet pipe: Removal - Refitting

K4M

❑ Refit the injector rail protector.

❑ Fill the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Expansion bottle: Removal - Refitting

| Special tooling required | |
|---|---|
| **Ms. 583** | Pipe clamps. |
| **Mot. 1448** | Remote operation pliers for hose clips. |

| Tightening torques ▽ | |
|---|---|
| expansion bottle nuts | **8 N.m** |

**IMPORTANT**

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

**WARNING**

The coolant helps to keep the engine running properly (heat exchange).

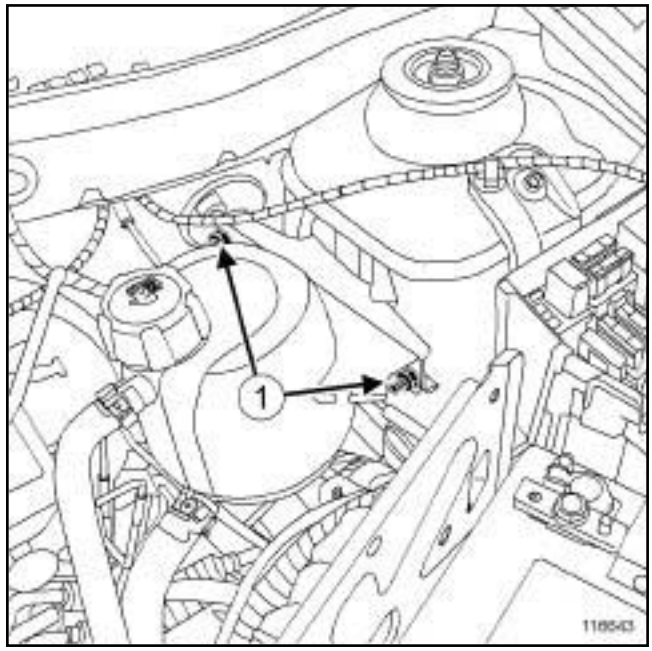
The system does not operate using pure water.

**WARNING**

If the coolant is leaking from the expansion bottle cap, replace the valve.

## REMOVAL

### REMOVAL OPERATION




116643

❏ Remove the expansion bottle nuts (**1**) .

❏ Move aside the expansion bottle.

❏ Position hose clamps **(Ms. 583)** on the expansion bottle hoses.

❏ Remove the expansion bottle cap.

❏ Drain the coolant from the expansion bottle.

❏ Remove the following using the tool **(Mot. 1448)** or « CLIC » clip pliers:

- the clamp of the top hose of the expansion bottle,
- the clamp of the bottom hose of the expansion bottle.

❏ Disconnect:

- the expansion bottle bottom hose,
- the expansion bottle top hose.

❏ Remove the expansion bottle .

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Always replace the « CLIC » type clips.

### II - REFITTING OPERATION

❏ Connect:

- the expansion bottle top hose,

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- the expansion bottle bottom hose.

❏ Refit the following using the tool **(Mot. 1448)** or « CLIC » clip pliers:

- the clamp of the top hose of the expansion bottle,
- the clamp of the bottom hose of the expansion bottle.

❏ Fill the expansion bottle with coolant.

❏ Remove the hose clamps **(Ms. 583)**.

❏ Refit the expansion bottle.

❏ Torque tighten the **expansion bottle nuts (8 N.m)**.

**III - FINAL OPERATION**

❏ Top up the coolant level in the expansion bottle.

❏ Refit the expansion bottle cap.

❏ Bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Coolant temperature sensor: Removal - Refitting

K9K

| Tightening torques ▽ | |
|---|---|
| expansion bottle nuts | **8 N.m** |

**IMPORTANT**
Wear leaktight gloves (Nitrile type) for this operation.

**IMPORTANT**
The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

**WARNING**
Prepare for the flow of fluid, and protect the surrounding components.

## REMOVAL

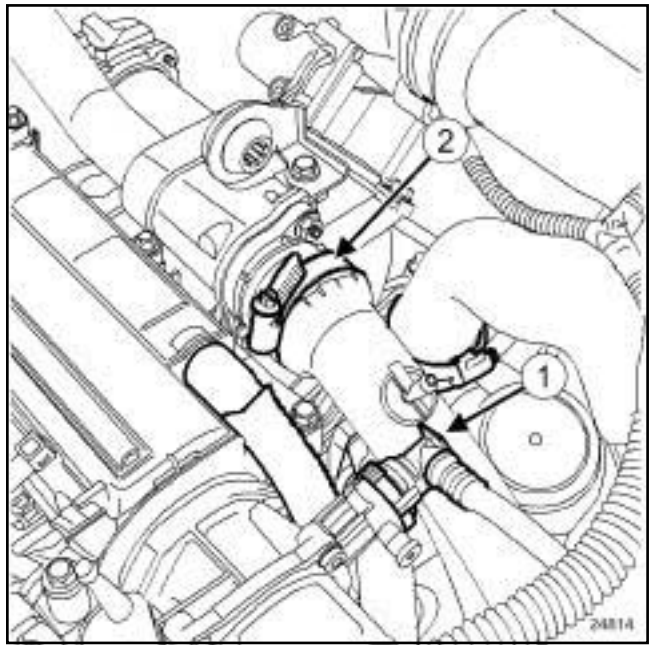
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .

❏ Remove:

- the engine cover,
- the engine undertray bolts,
- the engine undertray,
- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the expansion bottle nuts.

❏ Move aside the expansion bottle.

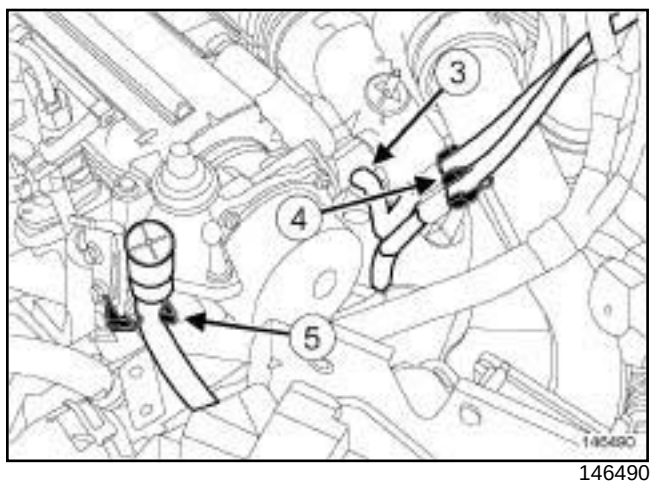



24814

❏ Disconnect:

- the union (**1**) on the vacuum pump,
- the air duct between the intercooler and the EGR assembly at (**2**) .

K9K, and 796




146490

❏ Disconnect the EGR solenoid valve pipe at (**3**) .

❏ Unclip:

- the EGR solenoid valve pipes at (**4**) ,
- the gearbox breather pipe at (**5**) .

❏ Move aside the air duct between the intercooler and the EGR assembly.

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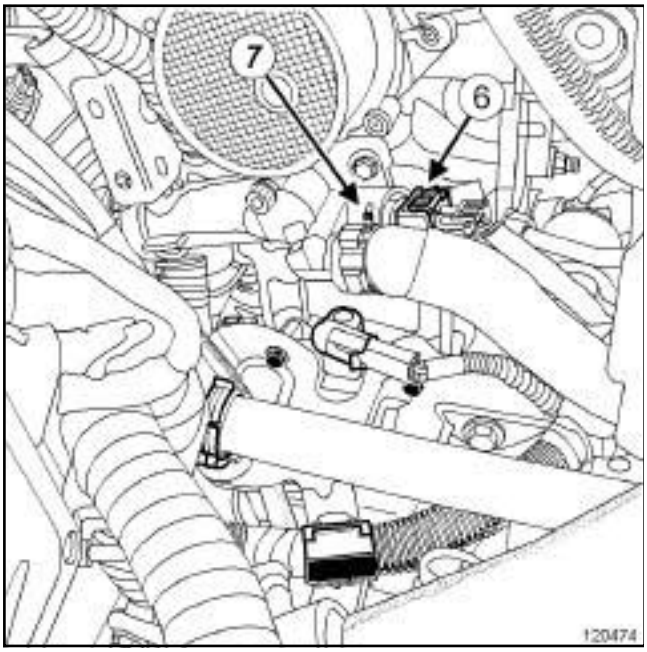
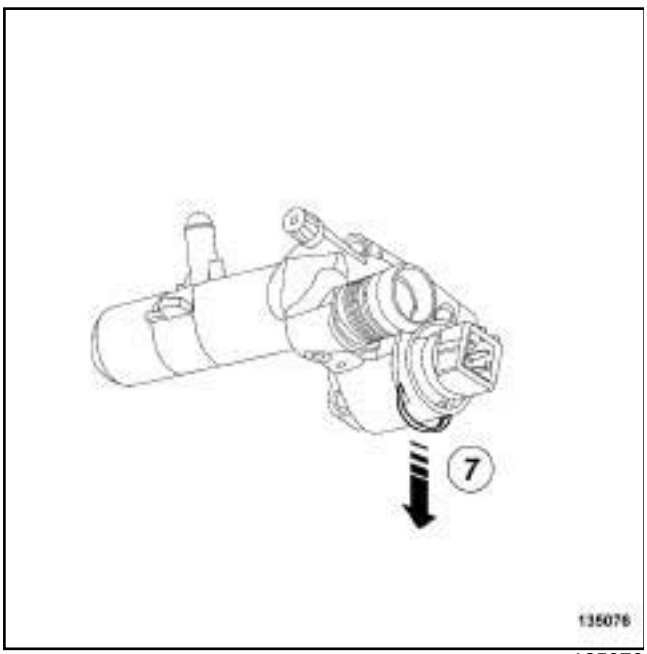
# Coolant temperature sensor: Removal - Refitting

K9K

## II - REMOVAL OPERATION




120474




135076

❑ Disconnect the coolant temperature sensor connector (**6**) .

❑ Remove:

- the coolant temperature sensor retaining clip (**7**) ,
- the coolant temperature sensor,
- the coolant temperature sensor O-ring.

# REFITTING

## I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: coolant temperature sensor seal**.

❑ Use **SURFACE CLEANER** (see ) to clean and degrease:

- the mating face of the coolant temperature sensor if it is to be reused,
- the coolant outlet unit.

## II - REFITTING OPERATION

❑ Refit:

- a new coolant temperature sensor seal on the coolant temperature sensor,
- the coolant temperature sensor,
- the coolant temperature sensor clip.

❑ Connect the coolant temperature sensor connector.

## III - FINAL OPERATION

❑ Position the air duct between the intercooler and the EGR assembly.

❑ Connect:

- the air duct on the EGR assembly,
- the union to the vacuum pump.

K9K, and 796

❑ Connect the EGR solenoid valve pipe to the vacuum pump.

❑ Clip on:

- the breather pipe from the gearbox,
- the EGR solenoid valve pipes.

❑ Position the expansion bottle.

❑ Torque tighten the **expansion bottle nuts (8 N.m)**.

❑ Refit:

- the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) ,
- the engine undertray,
- the engine undertray bolts,
- the engine cover.

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# Coolant temperature sensor: Removal - Refitting

K9K

❑ Perform the following operations:

- top up the cooling system,
- bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Coolant temperature sensor: Removal - Refitting

K4M

| Tightening torques ▽ | |
|---|---|
| coolant temperature sensor | 30 N.m |

**IMPORTANT**

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

**WARNING**

Before the operation, protect the electrical accessories to prevent any risk of short circuiting and protect the belts to avoid damaging them.

**WARNING**

The coolant helps to keep the engine running properly (heat exchange).

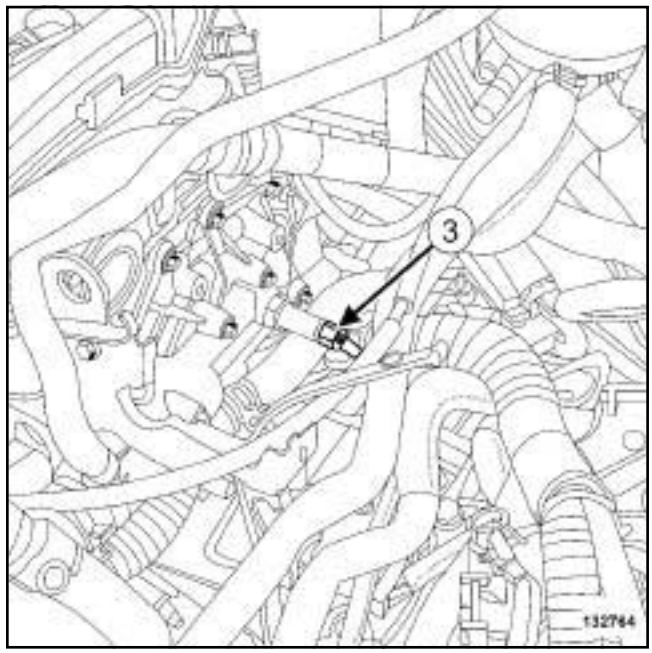
The system does not operate using pure water.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Remove the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

### II - OPERATION FOR REMOVAL OF PART CONCERNED




132764

❑ Disconnect the coolant temperature sensor connector (**3**) .

❑ Remove the coolant temperature sensor.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑

Note:

Apply 1 to 2 drops of **FRENETANCHE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the coolant temperature sensor thread (only if the sensor is to be reused).

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease the mating face of the coolant temperature sensor on the water chamber.

### II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the coolant temperature sensor.

❑ Torque tighten the **coolant temperature sensor (30 N.m)**.

❑ Connect the coolant temperature sensor connector.

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# Coolant temperature sensor: Removal - Refitting

K4M

**III - FINAL OPERATION**

❑ Refit the air resonator (see **12A**, **Fuel mixture**, **Air resonator: Removal - Refitting**, page **12A-2**) .

❑ Perform the following operations:

- top up the coolant level,
- bleed the cooling system (see **19A**, **Cooling**, **Cooling system: Draining - Refilling**, page **19A-6**) .

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# Exhaust: List and location of components

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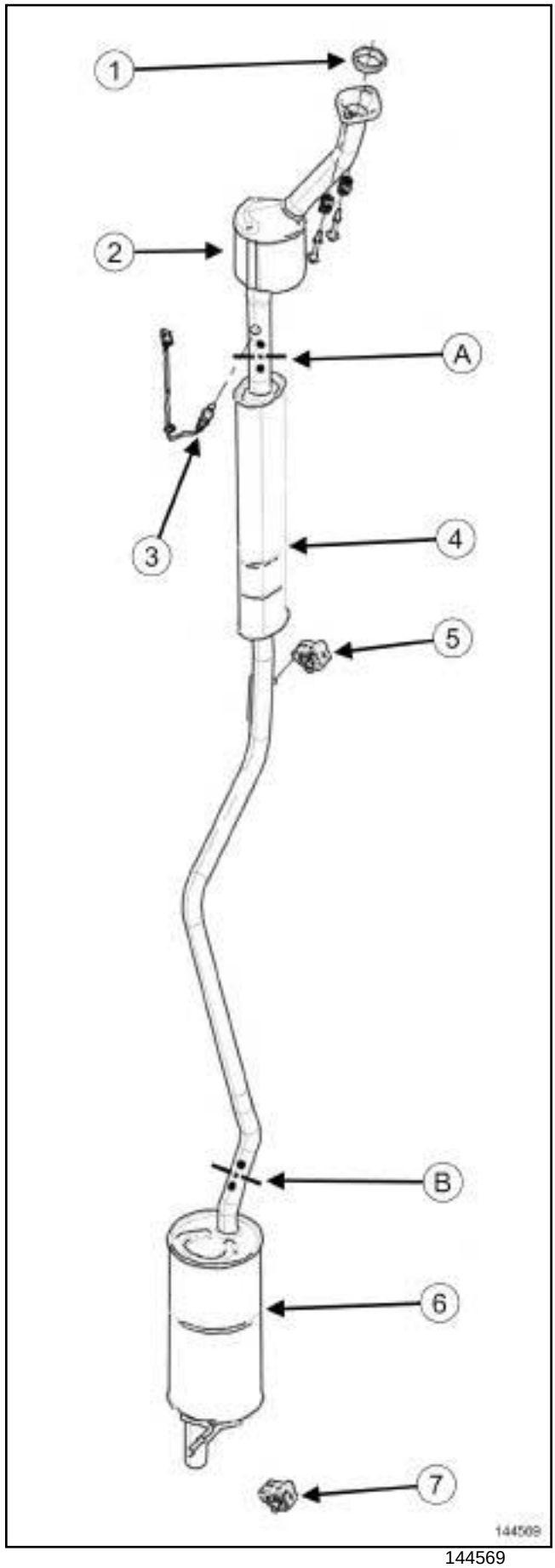
# Exhaust: List and location of components

K4M

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# Exhaust: List and location of components

| | |
|---|---|
| (**A**) | Area to be cut A |
| (**B**) | Area to be cut B |
| (**1**) | Exhaust system sealing ring |
| (**2**) | Catalytic converter |
| (**3**) | Downstream oxygen sensor |
| (**4**) | Expansion chamber |
| (**5**) | Expansion chamber rubber pad |
| (**6**) | Silencer |
| (**7**) | Silencer rubber pad |

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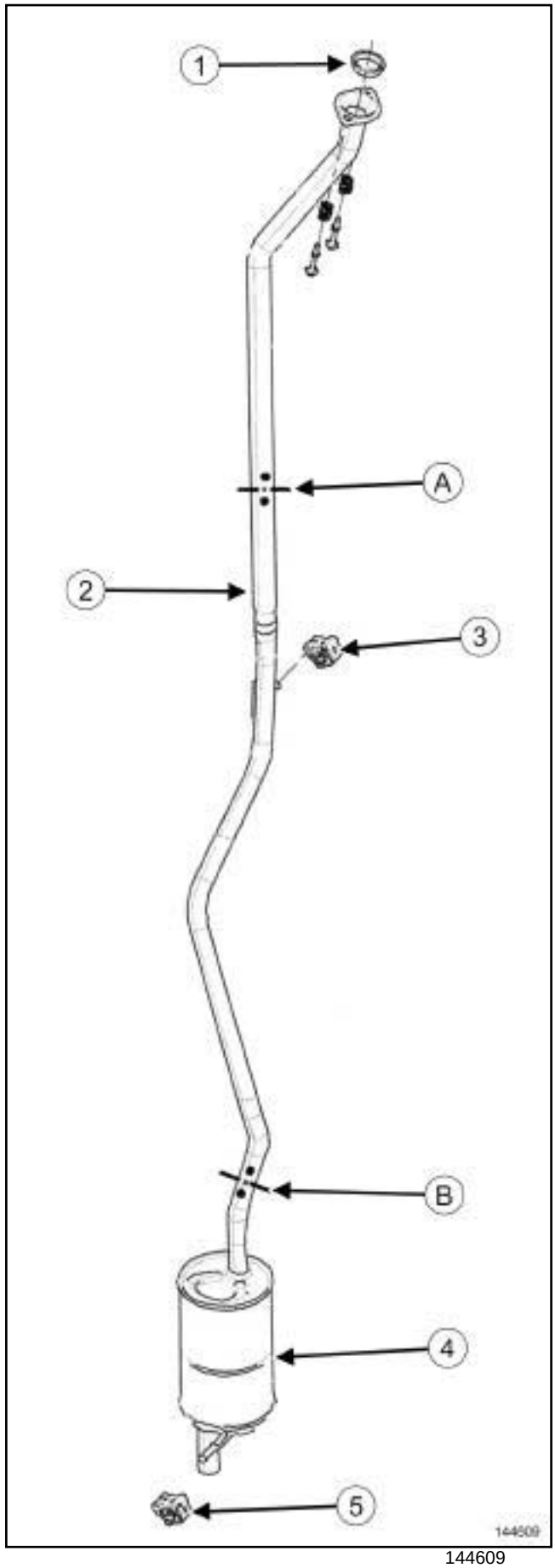
# Exhaust: List and location of components

K9K

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# Exhaust: List and location of components

| | |
|---|---|
| (**A**) | Area to be cut A |
| (**B**) | Area to be cut B |
| (**1**) | Exhaust system sealing ring |
| (**2**) | Intermediate pipe |
| (**3**) | Intermediate pipe rubber pad |
| (**4**) | Silencer |
| (**5**) | Silencer rubber pad |

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# Exhaust: Precautions for the repair

| Special tooling required | |
|---|---|
| **Mot. 1199-01** | Exhaust pipe cutter (diameter 35/50 mm and diameter 50/65mm). Complete kit in a case. |

| Equipment required |
|---|
| component jack |

## I - PARTS AND CONSUMABLES FOR THE REPAIR

### 1 - Parts always to be replaced:

- the exhaust sleeve (if fitted)

- the seal or sealing ring on the connection between the catalytic converter or catalytic pre-converter and the rest of the exhaust system

- the exhaust clip(s) (if fitted)

### 2 - Consumables (see Part number in Technical Note 5068, 04B, Consumables - Products):

- exhaust mastic

- surface cleaner

- grey abrasive pads

## II - ADVICE TO OBSERVE

**IMPORTANT**

Do not park and run the engine in a place where combustible substances and materials such as grass or leaves can come into contact with the hot exhaust system.

**IMPORTANT**

Catalytic converters contain ceramic fibres, these are contained within a closed unit, and cannot disperse. Drilling or cutting catalytic converters is prohibited.

1 - During removal and refitting, the catalytic converter or catalytic pre-converter must not receive any knocks or impacts as this could damage it.

2 - The whole exhaust pipe is made of stainless steel.

3 - After working on the bracket between the catalytic converter or catalytic pre-converter and the rest of the exhaust system, ensure that the connection is perfectly sealed.

To do this:

- clean the bearing faces of the connection using **GREY ABRASIVE PADS**,

- degrease the bearing faces of the connection using **SURFACE CLEANER** and clean cloths,

- always replace the seal or sealing ring on the connection.

## III - SPECIAL NOTES ON THE SINGLE UNIT EXHAUST PIPE

### 1 - Cutting the single unit exhaust pipe

The exhaust pipe is a « single unit type » .

To replace different parts of the exhaust system it must be cut.

To do this be sure to carry out these precautions in the following order:

- correctly identify the area to be cut, as explained below,

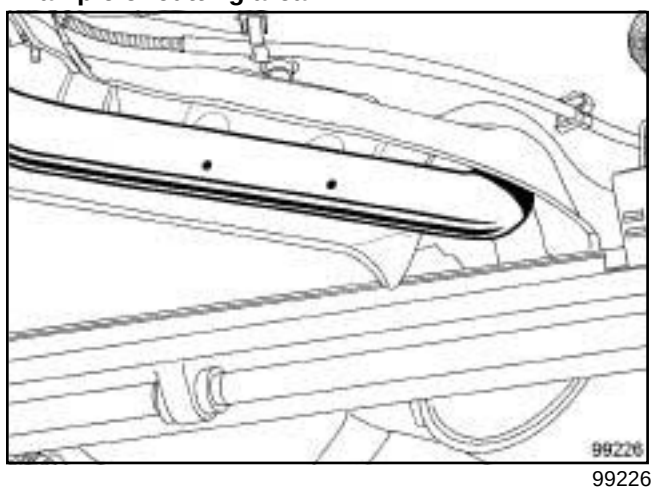
- use the cutting tool correctly **(Mot. 1199-01)**,

- position the exhaust sleeve correctly.

### 2 - Identifying the area of the exhaust system to be cut

Two marks made on the exhaust system define the area to be cut (see **Exhaust: Parts and consumables for the repair**) (see MR for vehicle concerned, 19B, Exhaust).

**Example of cutting area**

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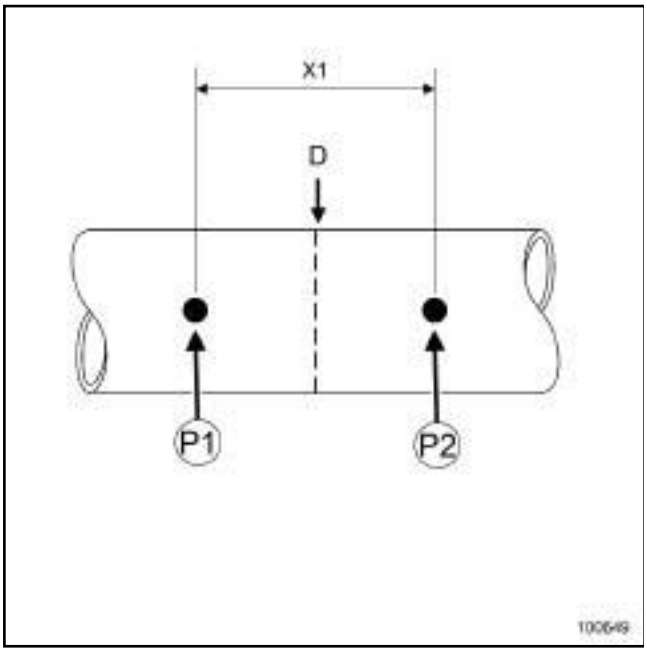
# Exhaust: Precautions for the repair

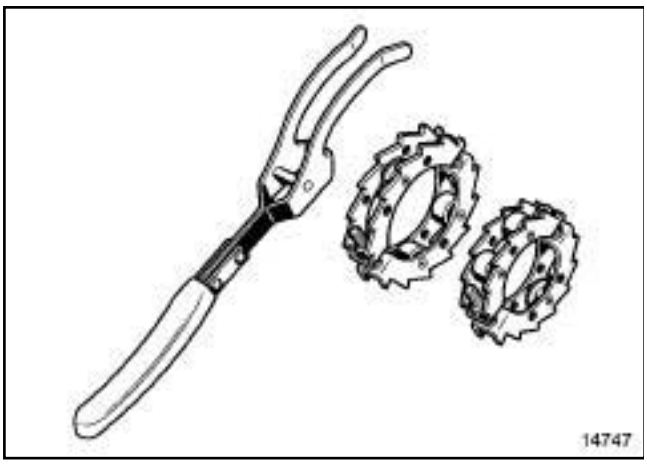



100649

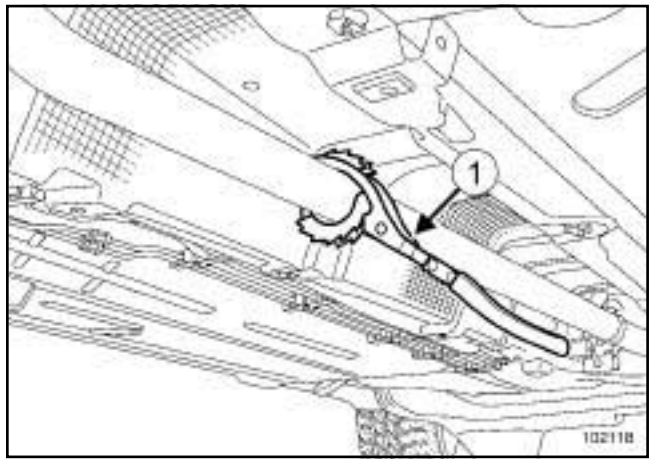
Before cutting the exhaust system, draw a line (**D**) between the two marks (**P1**) and (**P2**) .

The distance between the two marks on the exhaust pipe is (**X1**) : **80 mm**.

**3 - Operate tool Mot. 1199-01**




14747




102118

Fit the **(Mot. 1199-01)** (**1**) on the exhaust pipe.

Tighten the two bolts on the tool until they touch the pipe in order to clamp the tool onto the pipe.

Turn the cutting tool using the handle and pressing it against the pipe (as indicated in the diagram above).

Tighten the two bolts on the tool whilst cutting, until the pipe is completely cut.

Note:

Do not over-tighten the tool onto the pipe to avoid deforming it.

Once the pipe is cut, file and deburr the end of the pipe to be used on the vehicle again.

**4 - Positioning the exhaust sleeve**

**WARNING**

Do not reuse an old exhaust sleeve.

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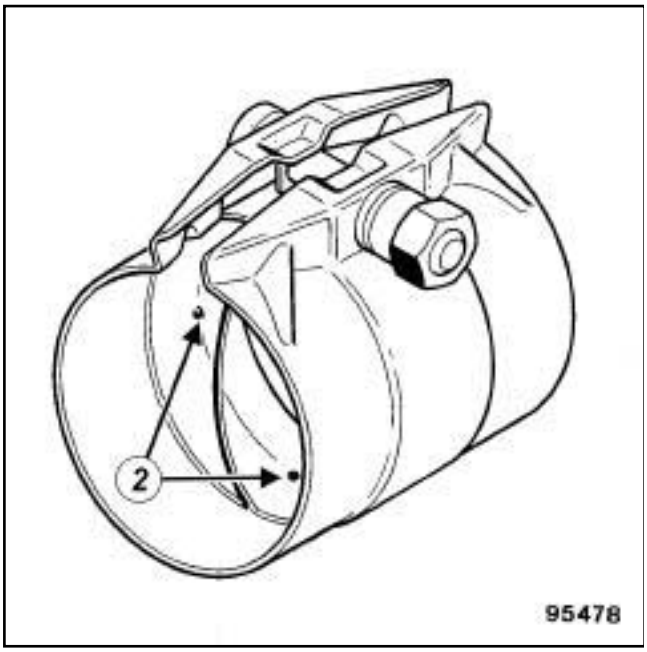
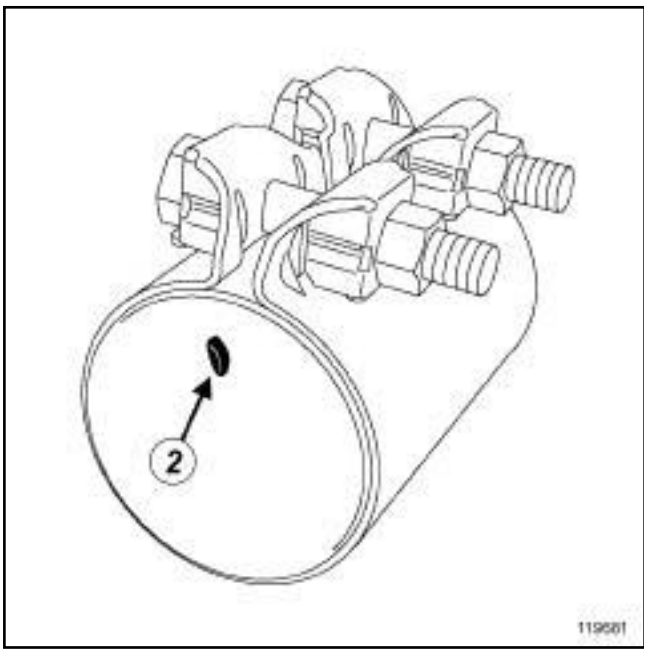
# Exhaust: Precautions for the repair

**Exhaust sleeve with 1 bolt**




95478

**Exhaust sleeve with 2 bolts**




119681

Fit the exhaust sleeve onto the part of the exhaust system fitted to the vehicle.

Position the pipe onto the lugs (**2**) inside the exhaust sleeve.

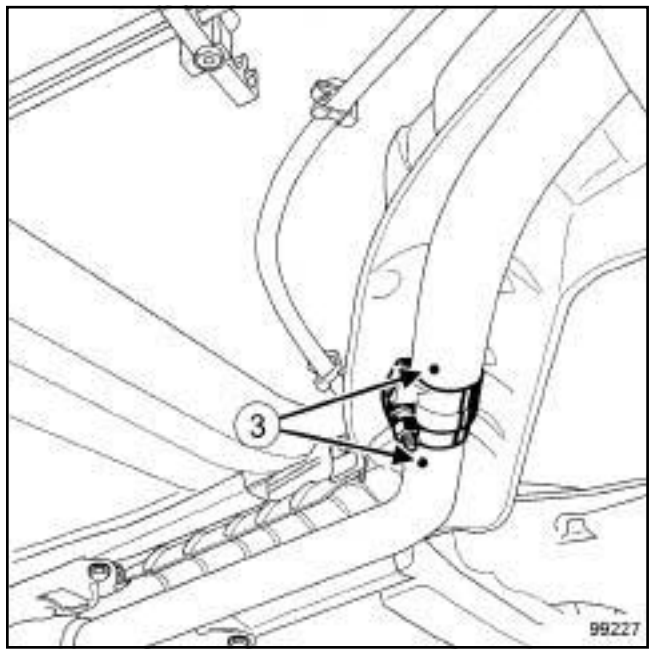
Tighten the exhaust sleeve bolt(s) slightly (depending on the version).

Position the second part of the exhaust system under the vehicle, fitting it in the exhaust sleeve.

Note:

If necessary, use a **component jack** to lift and hold the heavy and bulky components of the exhaust system.

Position the second exhaust pipe onto the lugs inside the exhaust sleeve.




99227

Check that the two cut marks (**3**) are aligned (if applicable).

Position the sleeve so that there is no risk of contact between its bolt or bolts and the heat shields.

Torque tighten:

- the **exhaust sleeve nut with 1 bolt (25 N.m)** (if fitted),
- the **exhaust sleeve nuts with 2 bolts (18 N.m)** (if fitted).

Check the following and deal with if necessary:

- no underbody contact between the exhaust system and the heat shields,
- all of the heat shields are present and secure.

Note:

Any damaged heat shields must be replaced.

Start the engine.

Check that there are no leaks: deal with any leaks.

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# Exhaust: Precautions for the repair

Note:

If there are leaks from the **EXHAUST SLEEVES WITH 1 BOLT**, apply **EXHAUST MASTIC** to the sleeve (see part no. in Technical Note 5068, 04B, Consumables - Products).

If the application of exhaust mastic does not fix the leak:

- remove and replace the used exhaust sleeve,
- check the condition of the exhaust pipes (condition of the pipe surface, deburring of the area cut, damage to the pipes).
- fit the new sleeve in accordance with the instructions given before.

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# Catalytic converter: Removal - Refitting



K9K, and 796

| Tightening torques ▽ | |
|---|---|
| turbocharger output studs | **9 N.m** |
| catalytic converter nuts on the turbocharger | **28 N.m** |
| upstream strut bolts on the engine | **44 N.m** |
| downstream strut bolt and nut on the gearbox | **21 N.m** |
| upstream strut bolts on the catalytic converter | **26 N.m** |
| downstream strut bolt on the catalytic converter | **21 N.m** |
| exhaust flange bolts | **21 N.m** |

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

**IMPORTANT**

Wear cut-resistant gloves during the operation.

**IMPORTANT**

Catalytic converters contain ceramic fibres, these are contained within a closed unit, and cannot disperse. Drilling or cutting catalytic converters is prohibited.

**WARNING**

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

## REMOVAL

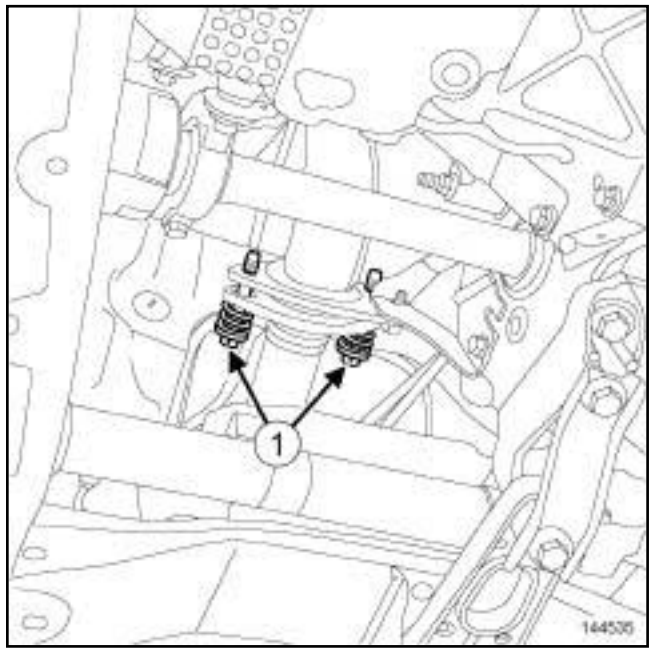
### I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❑ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Remove the air filter unit (see **12A**, **Fuel mixture**, **Air filter unit: Removal - Refitting**, page **12A-6**) .

### II - REMOVAL OPERATION




144535

❑ Remove the exhaust flange bolts (**1**) .

❑ Withdraw the exhaust pipe.

❑ Attach the exhaust pipe to the front left-hand lower arm.

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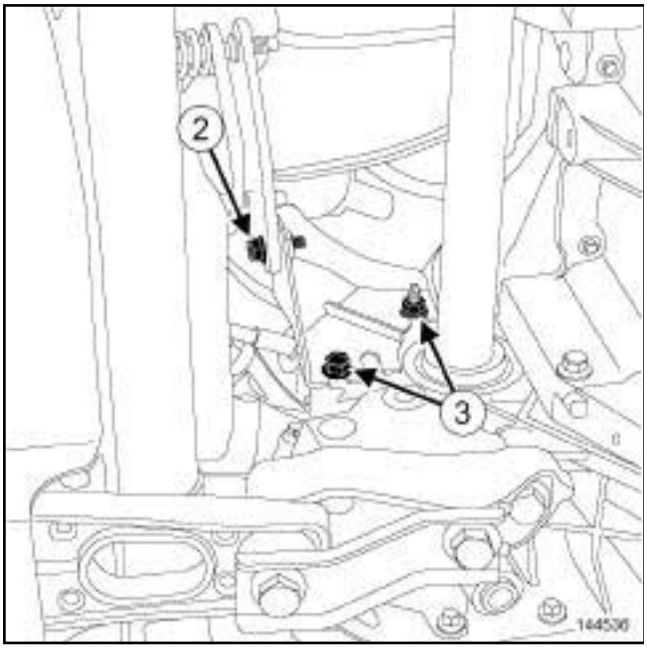
# Catalytic converter: Removal - Refitting

K9K, and 796

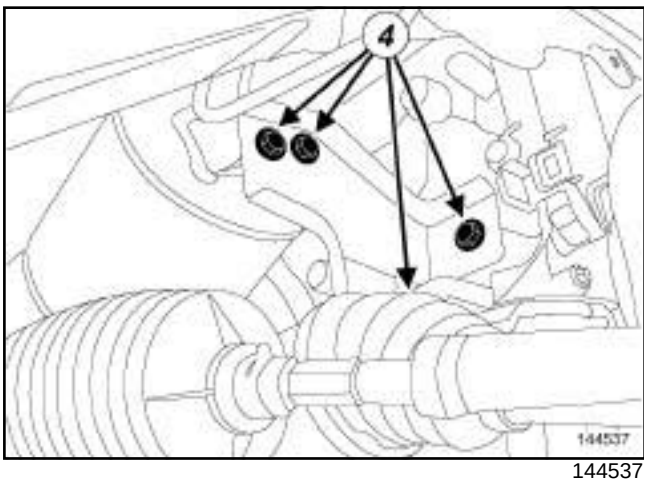



144536

❏ Remove the bolt from the downstream strut on the catalytic converter (**2**) .

❏ Loosen the downstream strut bolt and nut on the gearbox (**3**) .

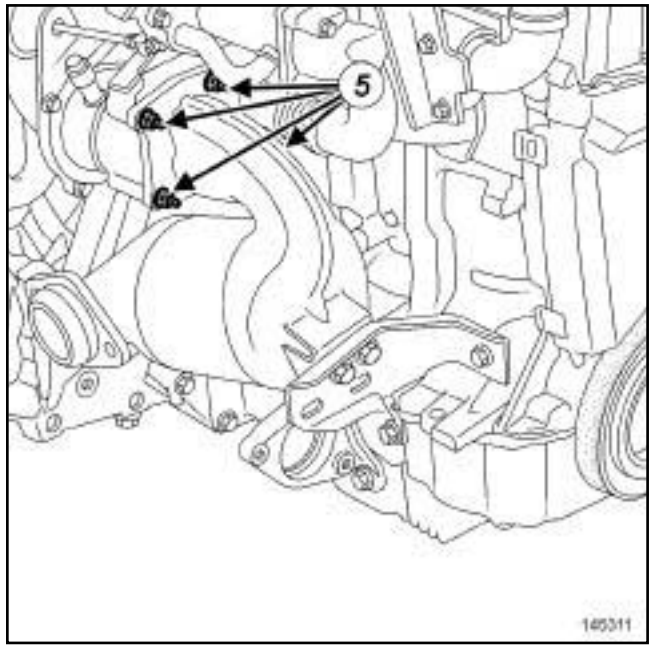
❏ Remove the downstream strut.




144537

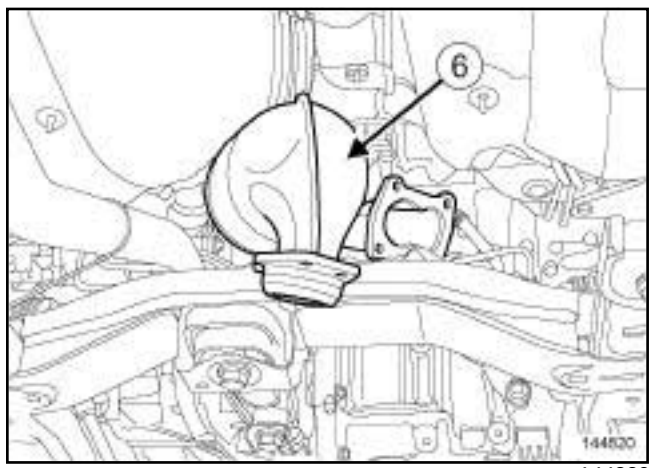
❏ Remove:

- the bolts of the upstream strut (**4**) ,
- the upstream strut.




145311

❏ Remove the catalytic converter nuts on the turbocharger (**5**) .




144820

❏ Remove:

- the catalytic converter (**6**) ,
- the seal between the turbocharger and the catalytic converter,
- the exhaust flange sealing ring.

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K9K, and 796

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑

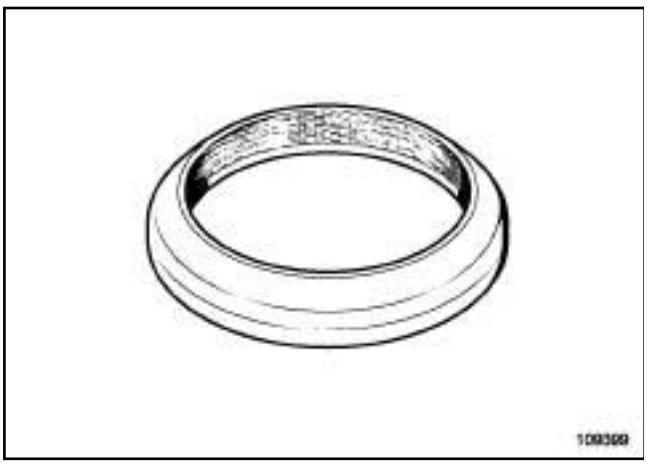
**WARNING**
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Use **ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the joint face of:

- the intermediate pipe,
- the catalytic converter in case of reuse,
- the turbocharger.

❑ Use **SURFACE CLEANER** and **CLEAN CLOTHS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease the joint face of:

- the intermediate pipe,
- the catalytic converter in case of reuse,
- the turbocharger.



109399

❑ Always replace the exhaust flange sealing ring.

❑ **parts always to be replaced: seal between turbocharger and catalytic converter**

### II - REFITTING OPERATION

❑

Note:
If a stud loosens during this operation, coat it with **HIGH STRENGTH THREAD LOCK** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
Torque tighten the **turbocharger output studs (9 N.m)**.

❑ Fit:

- a new seal between the turbocharger and the catalytic converter,
- the catalytic converter on the turbocharger.

❑ Pretighten in order:

- the bolt and nut of the upstream strut on the engine,
- the downstream strut bolt and nut on the gearbox,
- the upstream strut bolts on the catalytic converter,
- the downstream strut bolt on the catalytic converter,
- the catalytic converter nuts on the turbocharger.

❑ Torque tighten in order:

- the **catalytic converter nuts on the turbocharger (28 N.m)**,
- the **upstream strut bolts on the engine (44 N.m)**,
- the **downstream strut bolt and nut on the gearbox (21 N.m)**,
- the **upstream strut bolts on the catalytic converter (26 N.m)**,
- the **downstream strut bolt on the catalytic converter (21 N.m)**.

❑ Make sure there is no contact between the catalytic converter and the turbocharger oil return pipe.

❑ Proceed in the reverse order to removal.

❑ Torque tighten the **exhaust flange bolts (21 N.m)**.

### III - FINAL OPERATION

❑ Check:

- that all the exhaust pipe heat shields are in place and properly attached,
- that there is no contact with the underbody.

❑ Start the vehicle.

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# Catalytic converter: Removal - Refitting

K9K, and 796

❑ Check that there are no leaks and deal with them if necessary.

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# Catalytic converter: Removal - Refitting



K4M, and 4X2 TRANSMISSION

| Special tooling required | |
|---|---|
| **Mot. 1199-01** | Exhaust pipe cutter (diameter 35/50 mm and diameter 50/65mm). Complete kit in a case. |

| Equipment required |
|---|
| component jack |

| Tightening torques ▽ | |
|---|---|
| bolt of the exhaust flange | **21 N.m** |
| oxygen sensor | **45 N.m** |

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

**IMPORTANT**

Wear cut-resistant gloves during the operation.

**IMPORTANT**

Catalytic converters contain ceramic fibres, these are contained within a closed unit, and cannot disperse. Drilling or cutting catalytic converters is prohibited.

**WARNING**

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

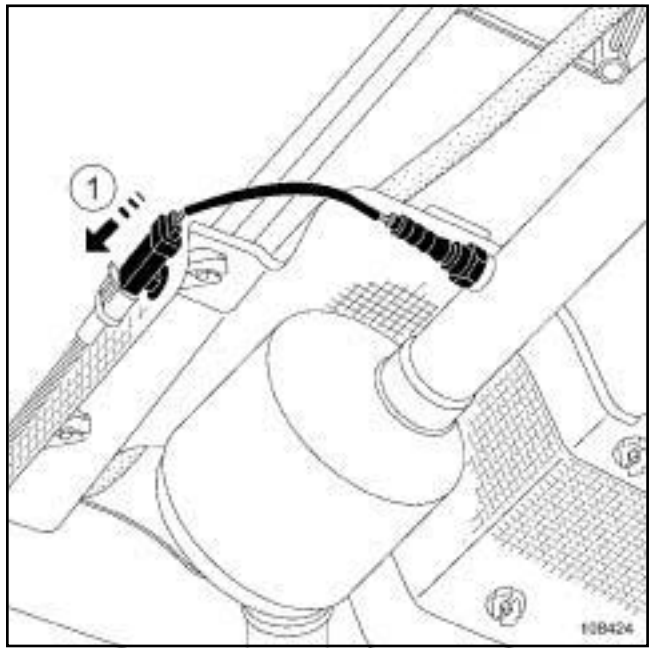
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

### II - REMOVAL OPERATION




108424

❏ Remove the downstream oxygen sensor connector from its mounting by sliding it (**1**) .

❏ Disconnect the downstream oxygen sensor connector.

❏ Put a **component jack** under the catalytic converter.

❏ Locate the area of the catalytic converter to be cut (see **19B**, **Exhaust**, **Exhaust: List and location of components**, page **19B-1**) .

❏ Use the tool **(Mot. 1199-01)** to cut the exhaust pipe in the area to be cut (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

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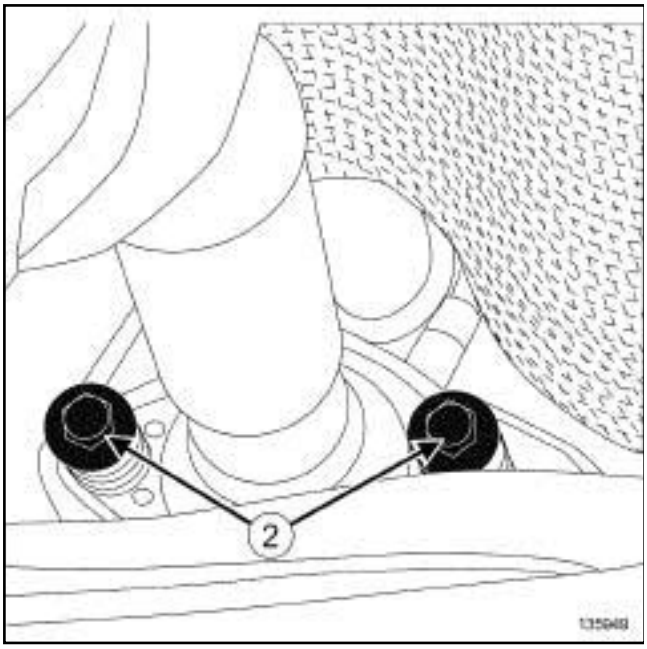
# Catalytic converter: Removal - Refitting






135949

❑ Remove:

- the exhaust flange bolts (**2**) ,
- the catalytic converter,
- the exhaust flange ring.

**IF REPLACING THE CATALYTIC CONVERTER**

❑ Remove the downstream oxygen sensor on the catalytic converter (see ) .

## REFITTING

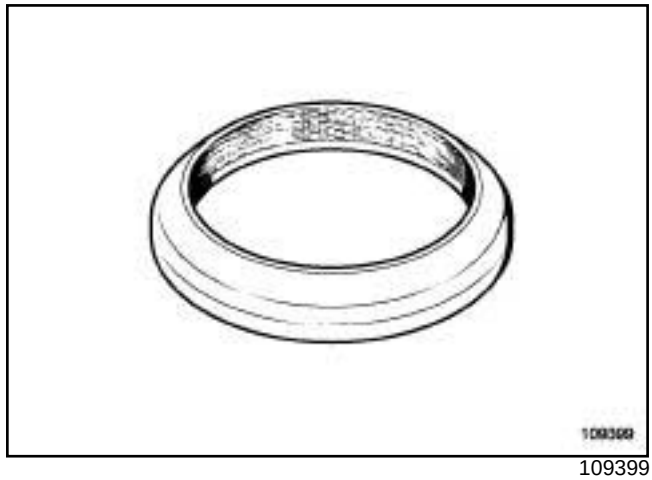
**I - REFITTING PREPARATION OPERATION**

❑

> **WARNING**
> To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

❑ Clean the bearing faces of the catalytic converter using **ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

❑ Degrease the bearing faces of the catalytic converter using **SURFACE CLEANER** and clean cloths (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).



109399

❑ **parts always to be replaced: ring between exhaust manifold and catalytic converter**

**II - REFITTING OPERATION**

❑ Refit:

- the downstream oxygen sensor (if replacing the catalytic converter),
- the catalytic converter.

❑ Fit a new After-Sales sleeve between the catalytic converter and the expansion chamber (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

> **IMPORTANT**
> Position the « nut and bolt securing the sleeve » assembly so that the assembly cannot come into contact with the underbody.

❑ Tighten the sleeve bolt while guiding the exhaust pipe to ensure correct alignment.

❑ Torque tighten:

- the **bolt of the exhaust flange (21 N.m)**,
- the **oxygen sensor (45 N.m)**.

**III - FINAL OPERATION**

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Check:

- that all the exhaust pipe heat shields are in place and properly attached,
- that there is no contact with the underbody.

❑ Start the vehicle.

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K4M, and 4X2 TRANSMISSION

❑ Check that there are no leaks and deal with them if necessary.

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# Expansion chamber: Removal - Refitting

K4M, and 4X2 TRANSMISSION

| Special tooling required | |
|---|---|
| **Mot. 1199-01** | Exhaust pipe cutter (diameter 35/50 mm and diameter 50/65mm). Complete kit in a case. |
| **Mot. 1857** | Pliers for removing exhaust pipe rubber mounting bushes |

| Equipment required |
|---|
| component jack |

**IMPORTANT**
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

**WARNING**
To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

**IMPORTANT**
Wear heat protective gloves during the operation.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Place a **component jack** under the expansion chamber.

### II - REMOVAL OPERATION

❏ Locate the areas of the expansion chamber to be cut (see **19B**, **Exhaust**, **Exhaust: List and location of components**, page **19B-1**) .

❏ Cut the exhaust pipe using the tool **(Mot. 1199-01)** in the designated areas to be cut (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

❏ Remove the rubber pad from the expansion chamber using the tool **(Mot. 1857)**.

Note:
If the rubber pad is damaged, replace the rubber pad.

❏ Remove the expansion chamber.

## REFITTING

### I - REFITTING OPERATION

❏ Refit:

- the expansion chamber,
- the expansion chamber rubber pad.

❏ Fit new after-sales sleeves (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

**IMPORTANT**
Position the « nut and bolt securing the sleeve » assembly so that the assembly cannot come into contact with the underbody.

❏ Torque tighten the sleeve bolts while supporting the exhaust pipe to ensure alignment.

### II - FINAL OPERATION

❏ Check:

- all the exhaust pipe heat shields are in place and properly attached.
- that there is no contact with the underbody,

❏ Start the vehicle.

❏ Check that there are no leaks and deal with them if necessary.

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# Intermediate pipe: Removal - Refitting

K9K

| Special tooling required | |
|---|---|
| **Mot. 1199-01** | Exhaust pipe cutter (diameter 35/50 mm and diameter 50/65mm). Complete kit in a case. |
| **Mot. 1857** | Pliers for removing exhaust pipe rubber mounting bushes |

| Equipment required |
|---|
| component jack |

| Tightening torques ▽ | |
|---|---|
| exhaust sleeve bolts | **25 N.m** |

**IMPORTANT**

To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**)

**WARNING**

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

**IMPORTANT**

Wear heat protective gloves during the operation.

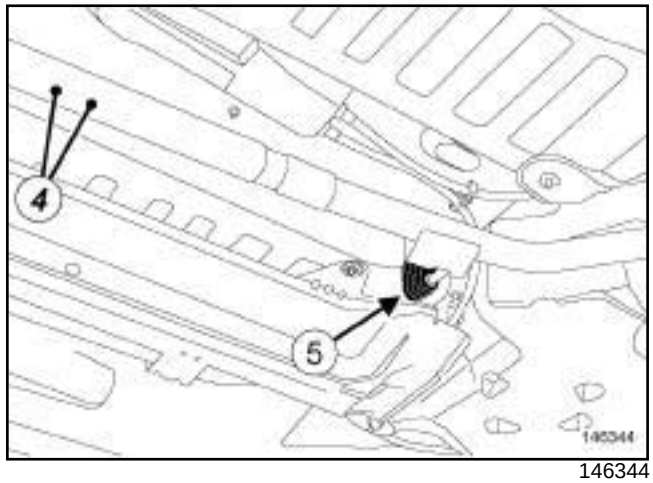
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

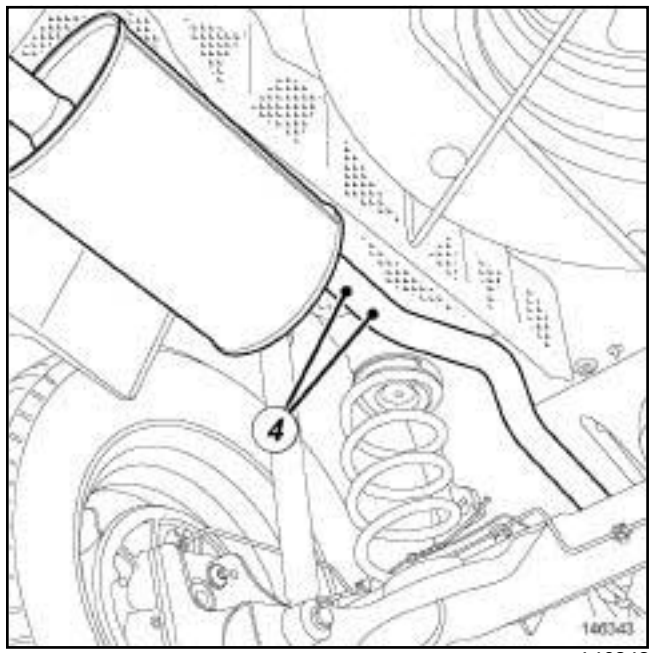
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Fit a **component jack** under the intermediate pipe.

### II - REMOVAL OPERATION




146344




146343

❏ Cut the exhaust pipe using the tool **(Mot. 1199-01)** in the centre of the areas to be cut (**4**) (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

❏ Remove the rubber mounting bush (**5**) from the intermediate pipe using the tool **(Mot. 1857)**.

Note:

If the rubber mounting bush is damaged, it must always be replaced.

❏ Remove the intermediate pipe.

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# Intermediate pipe: Removal - Refitting

K9K

## REFITTING

### I - REFITTING OPERATION

❏ Refit the intermediate pipe.

❏ Refit the exhaust sleeves (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

**WARNING**

Make sure:

- that the sleeve nut-bolt tightening assembly is vertical, with the nut facing downwards, to prevent any risk of underbody contact,
- that you position the new component in a way that the cutting area marks are aligned,
- that the two marks are flush with the two ends of the sleeve,
- that an old sleeve is not reused.

❏ Torque tighten the **exhaust sleeve bolts (25 N.m)**.

❏ Refit the rubber mounting bush of the intermediate pipe.

### II - FINAL OPERATION

❏ Check:

- that all the exhaust pipe heat shields are in place and properly attached,
- that there is no contact with the underbody.

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# Silencer: Removal - Refitting

4X2 TRANSMISSION

| Special tooling required | |
|---|---|
| **Mot. 1199-01** | Exhaust pipe cutter (diameter 35/50 mm and diameter 50/65mm). Complete kit in a case. |
| **Mot. 1857** | Pliers for removing exhaust pipe rubber mounting bushes |

| Equipment required |
|---|
| component jack |

**IMPORTANT**
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

**WARNING**
To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

**IMPORTANT**
Wear heat protective gloves during the operation.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Place a **component jack** under the silencer.

### II - REMOVAL OPERATION

❏ Locate the area of the silencer to be cut (see **19B**, **Exhaust**, **Exhaust: List and location of components**, page **19B-1**) .

❏ Use the tool **(Mot. 1199-01)** to cut the exhaust pipe in the area to be cut (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

❏ Remove the rubber pad from the silencer using the tool **(Mot. 1857)**.

Note:
If the rubber pad is damaged, replace the rubber pad.

❏ Remove the silencer.

## REFITTING

### I - REFITTING OPERATION

❏ Refit:

- the silencer,
- the silencer rubber pad.

❏ Fit a new After-Sales exhaust sleeve (see **19B**, **Exhaust**, **Exhaust: Precautions for the repair**, page **19B-6**) .

**IMPORTANT**
Position the « nut and bolt securing the sleeve » assembly so that the assembly cannot come into contact with the underbody.

❏ Tighten the sleeve while relieving the exhaust to ensure alignment.

### II - FINAL OPERATION

❏ Check:

- that all the exhaust pipe heat shields are in place and properly attached,
- that there is no contact with the underbody.

❏ Start the vehicle.

❏ Check that there are no leaks and deal with them if necessary.

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# Fuel tank: Draining

| Special tooling required | |
|---|---|
| **Mot. 1311-08** | Union for taking fuel pressure measurements. |

| Equipment required |
|---|
| pneumatic transfer pump for fuels |

**IMPORTANT**

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**IMPORTANT**

Wear goggles with side protectors for this operation.

**WARNING**

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

## DRAINING

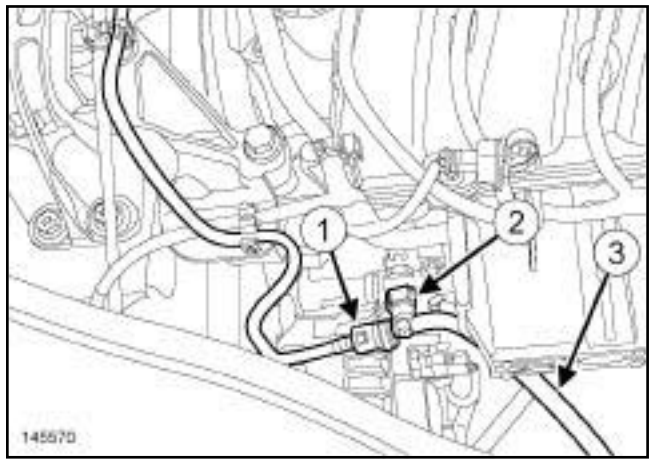
### I - DRAINING PREPARATION OPERATION

❑ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

### II - DRAINING OPERATION

K4M

❑ Disconnect the fuel supply union from the injector rail ***(1)*** .




145570

❑ Fit a T-union **(Mot. 1311-08)** at (**2**) .

❑ Connect a **pneumatic transfer pump for fuels** to the T-union outlet (**3**) .

K9K

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

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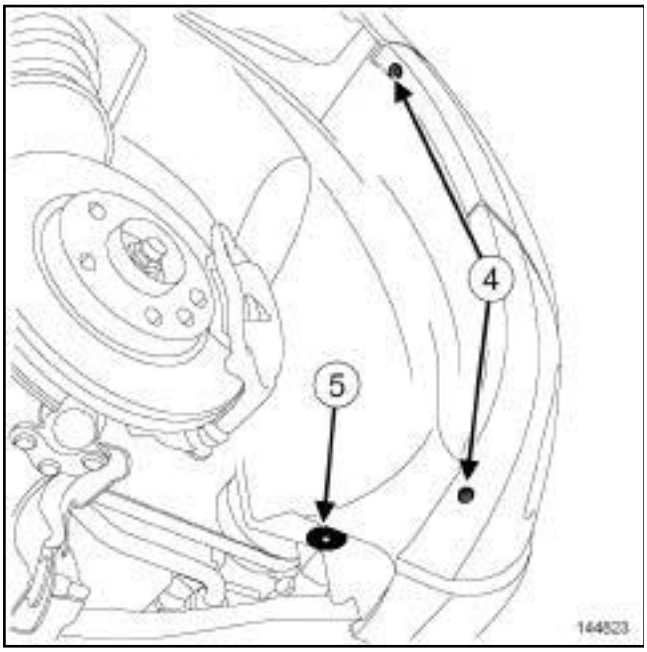
# Fuel tank: Draining

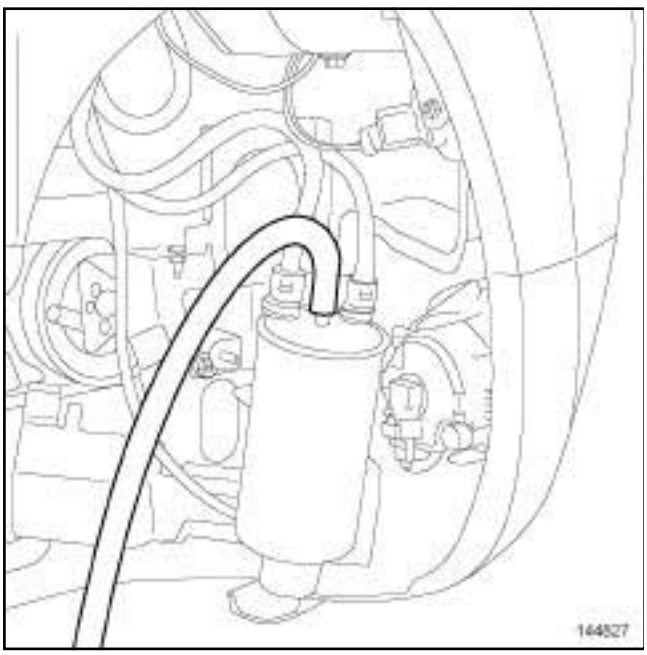


144823

❏ Remove:

- the front right-hand wheel arch liner bolts (**4**) ,
- the clip of the wheel arch liner (**5**) ,
- the diesel filter protector (see ) .

❏ Disconnect the fuel outlet pipe from the fuel filter.



144827

❏ Connect a **pneumatic transfer pump for fuels** to the fuel filter.

❏ Prepare for fuel outflow.

❏ Drain the fuel tank.

## REFITTING

❏ Proceed in the reverse order to removal.

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# Fuel tank: Removal - Refitting

4X2 TRANSMISSION

| Tightening torques ▽ | |
|---|---|
| fuel tank bolts | **21 N.m** |
| exhaust pipe bolts on the catalytic converter | **21 N.m** |
| catalytic converter bolts on the exhaust manifold | **21 N.m** |
| earth cable nut on the body | **8 N.m** |

**This method describes the removal - refitting procedure for the plastic tank**

**IMPORTANT**

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

**IMPORTANT**

Wear goggles with side protectors for this operation.

**IMPORTANT**

Wear leaktight gloves (nitrile type) for this operation.

**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

**WARNING**

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

## REMOVAL

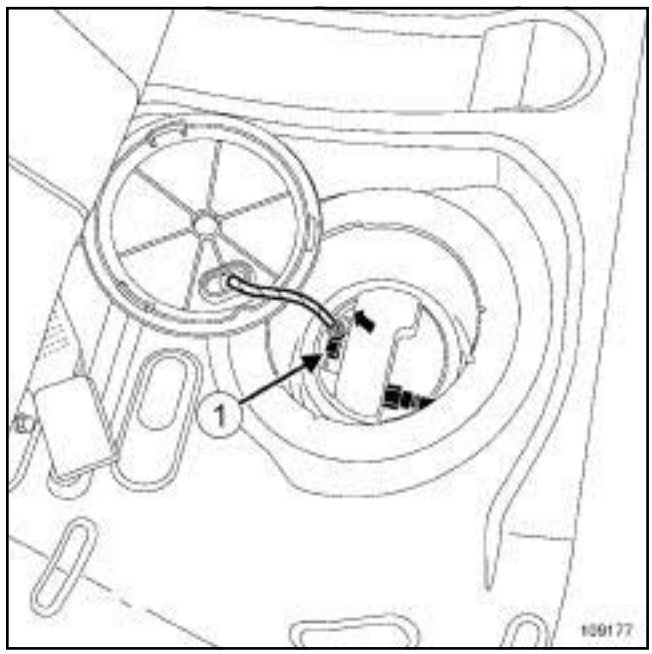
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Drain the tank (see **19C**, **Tank**, **Fuel tank: Draining**, page **19C-1**) .

❏ Tilt the rear bench seat base (see ) (76A, Rear seat frames and runners).




109177

❏ Remove the access flap to the fuel level sensor module on the floor.

❏ Disconnect the connector (**1**) from the fuel pump.

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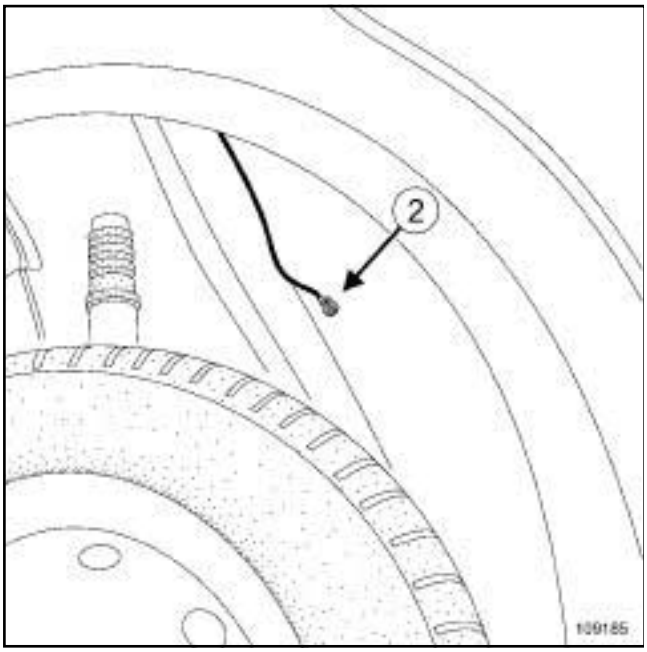
# Fuel tank: Removal - Refitting



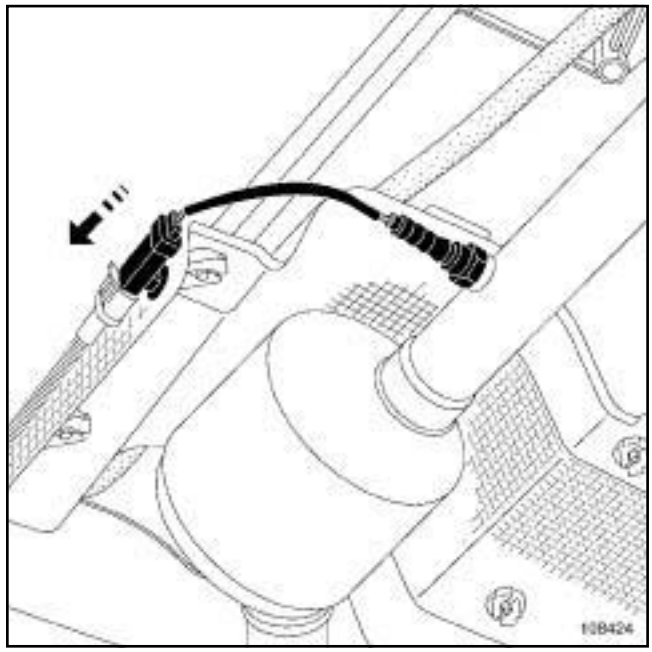
K4M




109185

❏ Remove the body earth cable at (**2**) .

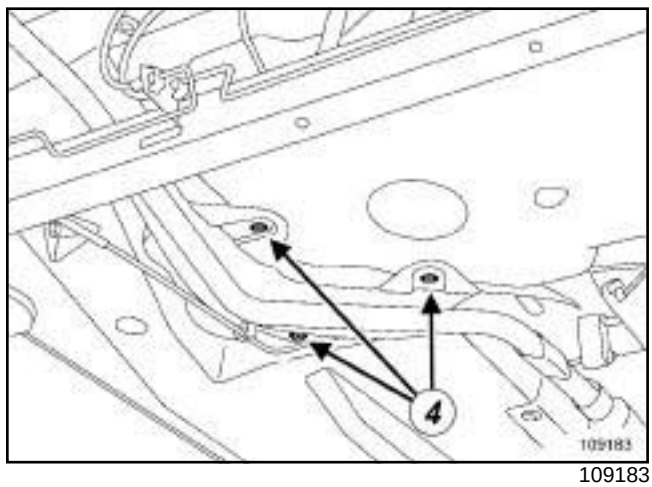
K4M




108424

❏ Remove the oxygen sensor connector by sliding it from its support (in the direction of the arrow).

❏ Disconnect the oxygen sensor connector.




109183

❏ Remove:

- the heat shield pins (**4**) ,
- the fuel tank heat shield.

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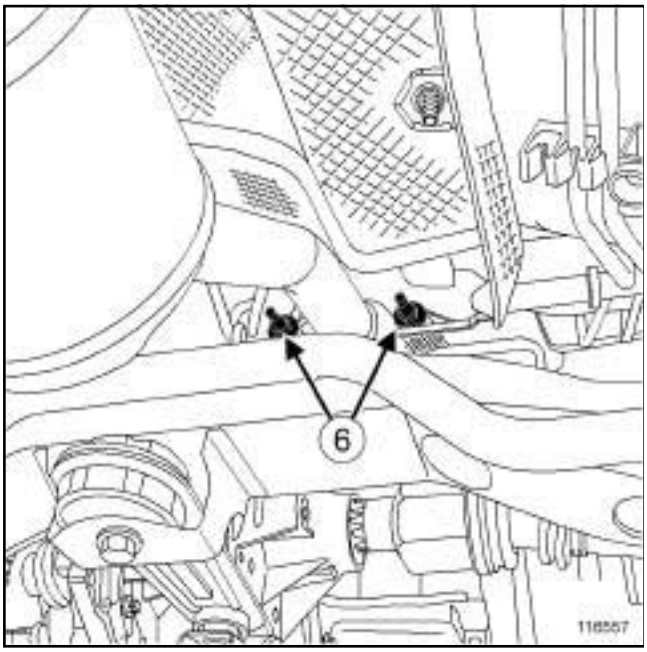
# Fuel tank: Removal - Refitting



## K4M



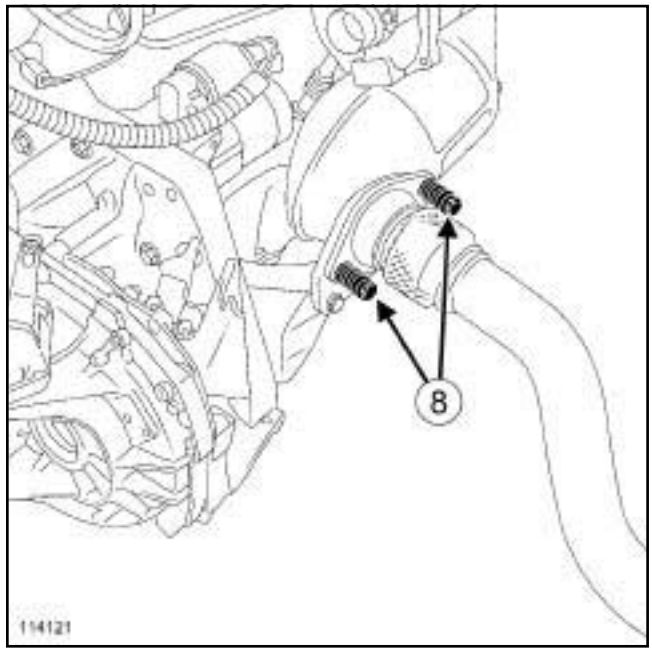

116557

❏ Remove the catalytic converter mountings (**6**) on the exhaust manifold.

❏ Detach the exhaust line assembly on the left-hand side.

❏ Attach the front section of the exhaust line assembly to the front lower arm on the left-hand side.

## K9K




114121

❏ Remove the exhaust pipe mountings (**8**) from the catalytic converter.

❏ Place the exhaust line assembly on the left-hand side.

❏ Attach the front section of the exhaust line assembly to the front lower arm on the left-hand side.

❏ Unclip the parking brake cables from:

- the fuel tank,
- on the body.

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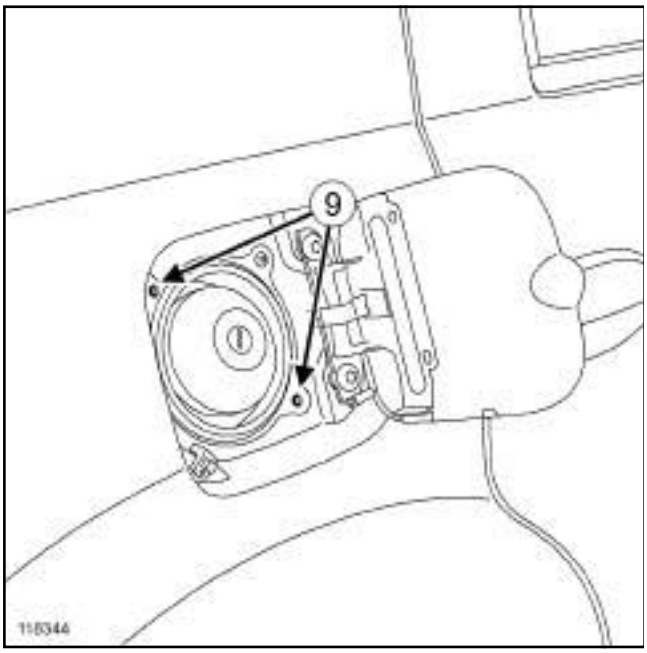
# Fuel tank: Removal - Refitting

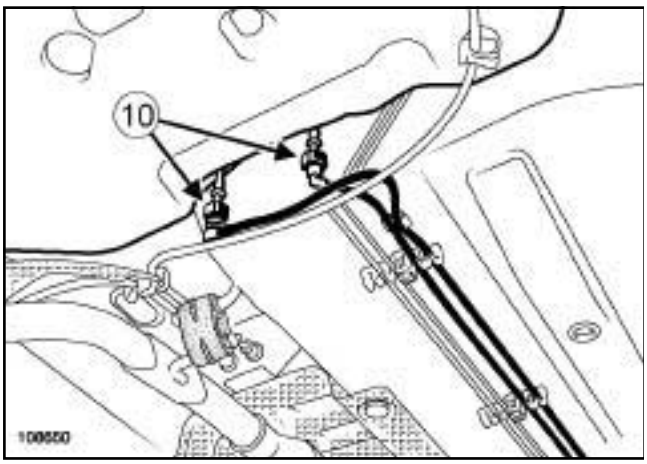
4X2 TRANSMISSION

## II - OPERATION FOR REMOVAL OF PART CONCERNED




118344

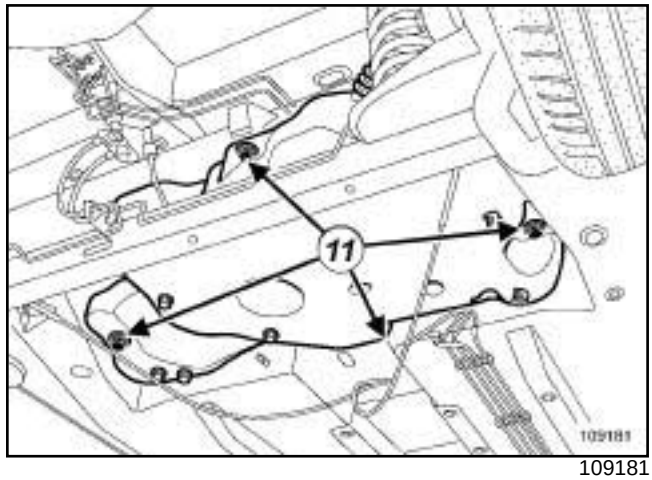
❏ Remove the bolts (**9**) from the filler neck.




108650

❏ Disconnect the snap-on unions (**10**) from the tank outlet pipes.

❏ Remove the external fuel filter (if fitted to the vehicle) (see **Fuel filter: Removal - Refitting**) .




109181

❏

Note:
This operation requires two people.

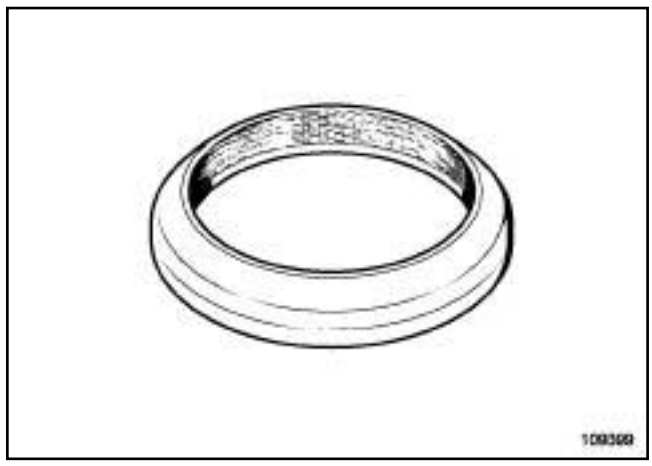
❏ Remove the bolts (**11**) from the fuel tank.

❏ Lower the tank slightly.

❏ Remove the fuel tank.

# REFITTING

## I - REFITTING PREPARATION OPERATION




109399

❏ It is essential to replace the sealing ring between the exhaust manifold and the catalytic converter.

## II - REFITTING OPERATION FOR PART CONCERNED

❏

Note:
This operation requires two people.

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4X2 TRANSMISSION

❏ Refit the fuel tank.

❏ Refit the fuel tank bolts.

❏ Torque tighten the **fuel tank bolts (21 N.m)**.

❏ Refit the external fuel filter (if fitted to the vehicle) (see **Fuel filter: Removal - Refitting**) .

❏ Reconnect the snap-on unions to the tank outlet fuel pipes.

❏ Refit the filler neck bolts.

**III - FINAL OPERATION**

❏ Clip the parking brake cables:

- onto the body,
- onto the fuel tank.

K9K

❏ Refit the exhaust system assembly onto the catalytic converter.

❏ Torque tighten the **exhaust pipe bolts on the catalytic converter (21 N.m)**.

K4M

❏ Refit the exhaust system assembly onto the exhaust manifold.

❏ Torque tighten the **catalytic converter bolts on the exhaust manifold (21 N.m)**.

❏ Connect the oxygen sensor connector.

❏ Refit:

- the oxygen sensor connector to its support,
- the earth cable on the body.

❏ Torque tighten the **earth cable nut on the body (8 N.m)**.

❏ Refit:

- the fuel tank heat shield,
- the heat shield pins.

❏ Reconnect the fuel level sensor module connector.

❏ Refit the access flap for the fuel level sensor module on the floor.

❏ Refit the rear bench seat base (see ) (76A, Rear seat frames and runners).

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

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# Fuel level sensor module: Removal - Refitting

K4M or K9K

| Special tooling required | |
|---|---|
| **Car. 1363** | Set of trim removal levers. |
| **Mot. 1397** | Universal spanner for removing fuel gauge nuts. |

**IMPORTANT**

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

**IMPORTANT**

Wear goggles with side protectors for this operation.

**IMPORTANT**

Wear leaktight gloves (Nitrile type) for this operation.

**WARNING**

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Tilt the rear bench seat base.

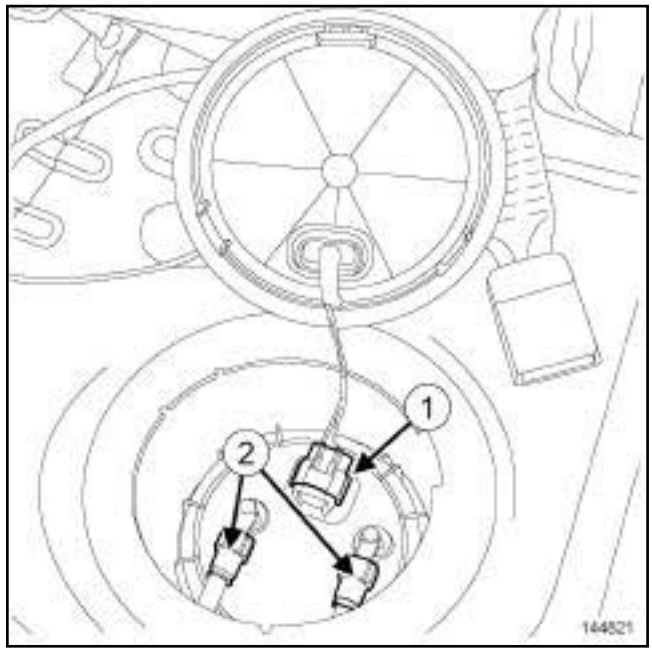
### II - REMOVAL OPERATION

❑ Remove the blanking cover from the inspection flap using the tool **(Car. 1363)**.

Note:

Make provisions for the flow of fuel from the fuel supply and return pipes.

K9K




144821

❑ Disconnect:

- the connector (**1**) ,
- the unions (**2**) .

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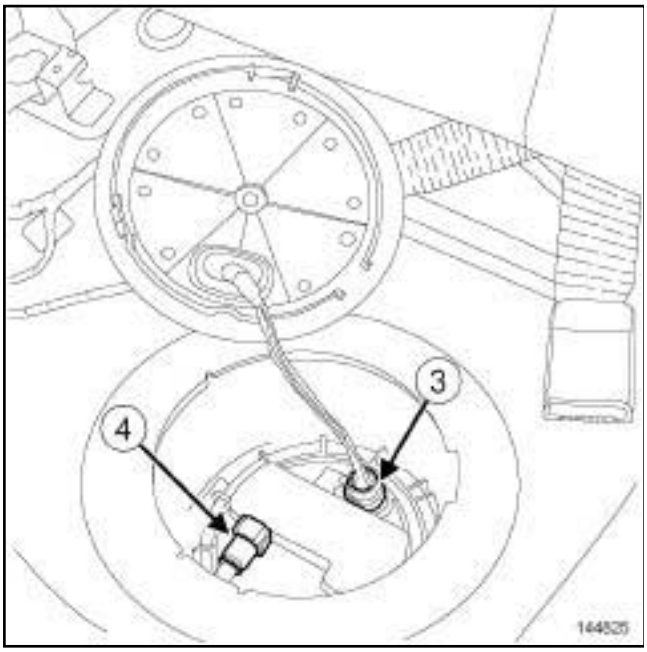
# Fuel level sensor module: Removal - Refitting

K4M or K9K

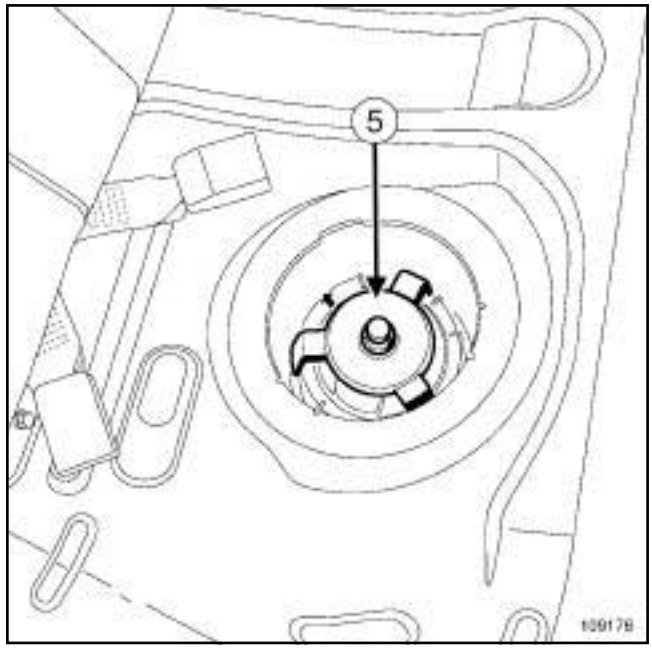
K4M




144825

❑ Disconnect:

- the connector (**3**) ,
- union (**4**) .




109176

❑ Remove the nut from the fuel level sensor module using the tool **(Mot. 1397)** (**5**) ,

❑ Let the fuel drain from the fuel level sensor module.

❑ Remove:

- the fuel level sensor module, taking care not to damage the float,
- the fuel level sensor module seal.

**WARNING**

To prevent the tank from deforming, refit the fuel sender unit nut to the tank well immediately.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Fuel level sensor module nut**

❑ **parts always to be replaced: Fuel level sensor module seal**

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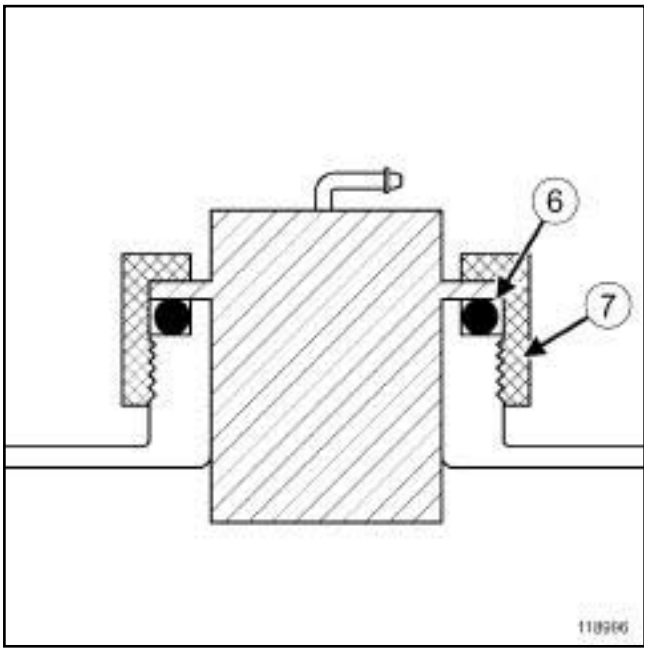
# Fuel level sensor module: Removal - Refitting

K4M or K9K

## II - REFITTING OPERATION

K4M

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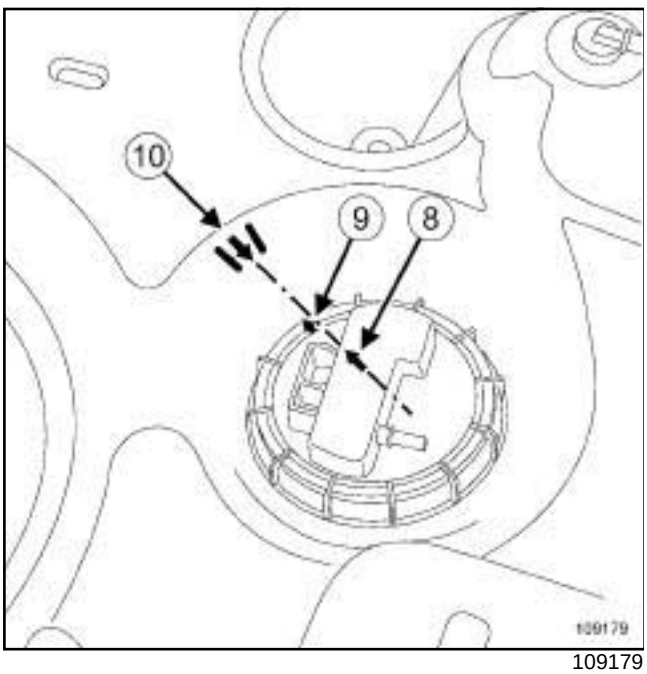


109179

❑ Position:

- the new seal (**6**) in the neck correctly,
- the fuel level sensor module on the fuel tank. A lug on the fuel level sensor module and a recess in the fuel tank ensure correct positioning in the fuel tank; the mark (**8**) on the fuel level sensor module must be positioned opposite the mark on the fuel tank (**10**) .

❑ Press the fuel level sensor module by hand (to prevent the seal from moving) and finger tighten the nut on the fuel tank.

❑ Then use the tool **(Mot. 1397)** to tighten the nut of the fuel level sensor module to the mark on the fuel tank.

K4M

❑ Tighten the nut ***(7)*** until the mark ***(9)*** on the nut is located opposite the mark ***(10)*** on the fuel tank using the tool **(Mot. 1397)**.

❑ Proceed in the reverse order to removal.

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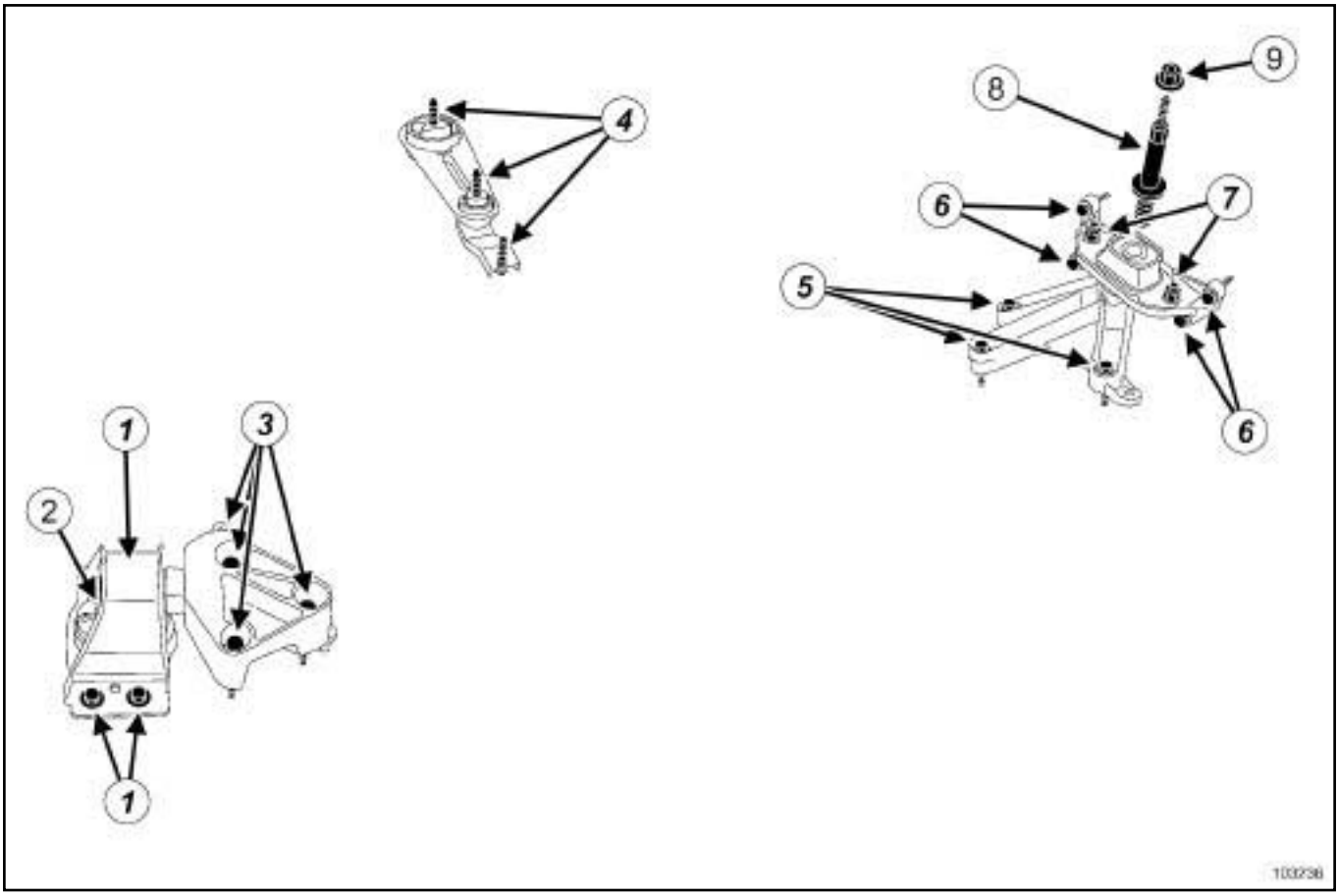
# Suspended engine mounting: Tightening torque

K9K




103236

| No. | Description | Tightening torque (N.m) |
|---|---|---|
| (**1**) | Right-hand suspended mounting support bolt on the body | **62** |
| (**3**) | Right-hand suspended mounting support bolt on the engine | **62** |
| (**5**) | Left-hand mounting bolt on the gearbox | **62** |
| (**6**) | Left-hand rubber pad mounting bolt on the body | **21** |
| (**7**) | Left-hand rubber pad bolt on the mounting | **105** |
| (**8**) | Stud on the gearbox mounting | **180** |
| (**9**) | Gearbox mounting nut on the rubber pad | **62** |

| No. | Description | Tightening torque (N.m) |
|---|---|---|
| ***(4)*** | Engine tie-bar bolt | **180** |

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# Left-hand suspended engine mounting: Removal - Refitting

| Special tooling required | |
|---|---|
| **Mot. 1453** | Engine anchorage support with multiple adjustments and retaining straps. |

| Tightening torques ▽ | |
|---|---|
| bolts mounting the left-hand suspended mounting on the gearbox | **62 N.m** |
| bolt of the power-assisted steering pipe on the left-hand suspended mounting | **21 N.m** |
| stud on the gearbox support | **180 N.m** |
| left-hand rubber pad mounting bolts on the body | **21 N.m** |
| rubber pad nuts on the left-hand suspended mounting | **105 N.m** |
| nut of the gearbox support on the rubber pad | **62 N.m** |

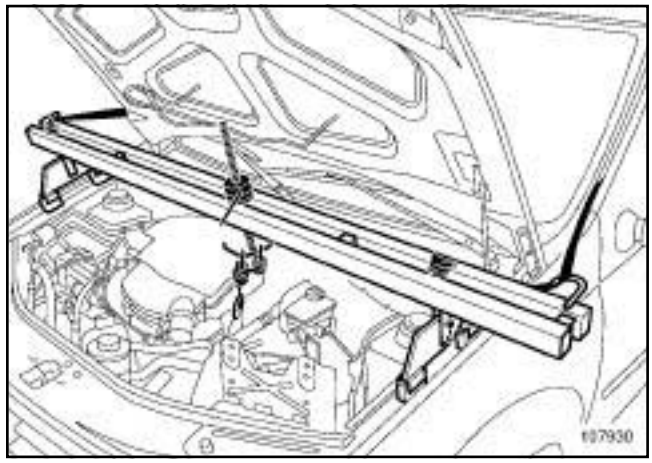
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

- the air inlet sleeve,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the battery tray,
- the injection computer (see **17B**, **Petrol injection**, **Petrol injection computer: Removal - Refitting**, page **17B-7**) ,
- the engine undertray.

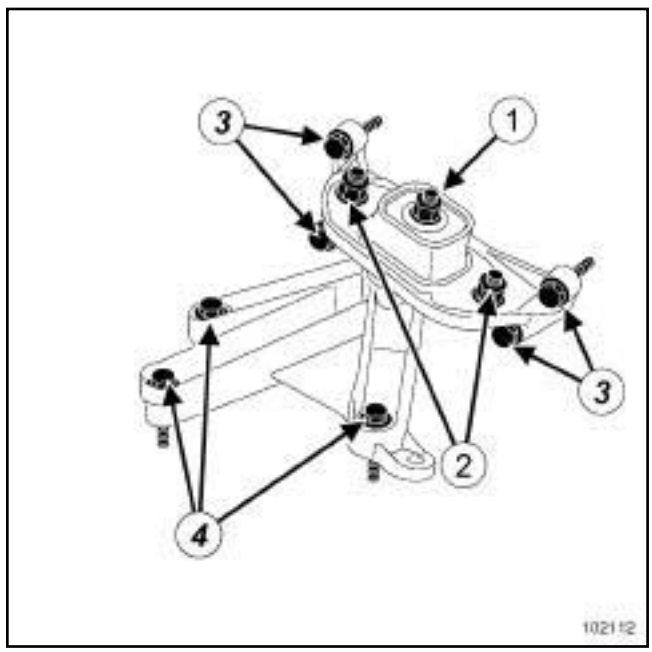



107930

❏ Fit the engine support tool **(Mot. 1453)** with the retaining belt, taking the flywheel end lifting eye as an anchoring point.

❏ Mark the position of the left-hand suspended engine mounting on the body.

### II - REMOVAL OPERATION




102112

❏ Remove the nut (**1**) from the gearbox support on the rubber pad.

❏ Strike the gearbox stud with a copper hammer to separate the engine and gearbox assembly from the body.

❏ Remove:

- the nuts (**2**) from the rubber pad,
- the rubber pad,

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- the bolts (**3**) from the left-hand rubber pad mounting on the body,
- the left-hand rubber pad mounting,
- the power-assisted steering pipe bolt on the suspended mounting (if fitted to the vehicle),
- the left-hand suspended mounting bolts (**4**) on the gearbox,
- the left-hand suspended mounting on the gearbox.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Always replace the self-locking nuts.

### II - REFITTING OPERATION

❏ Refit:

- the left-hand suspended mounting on the gearbox,
- the power-assisted steering pipe bolt on the suspended mounting (if fitted to the vehicle),
- the left-hand rubber pad mounting,
- the rubber pad,
- the rubber pad nuts on the left-hand suspended mounting,
- the gearbox support nut on the rubber pad.

❏ Torque tighten:

- the **bolts mounting the left-hand suspended mounting on the gearbox (62 N.m)**,
- the **bolt of the power-assisted steering pipe on the left-hand suspended mounting (21 N.m)**,
- the **stud on the gearbox support (180 N.m)**,
- the **left-hand rubber pad mounting bolts on the body (21 N.m)**,
- the **rubber pad nuts on the left-hand suspended mounting (105 N.m)**,
- the **nut of the gearbox support on the rubber pad (62 N.m)**.

### III - FINAL OPERATION

❏ Remove the engine support tool **(Mot. 1453)**.

❏ Refit:

- the engine undertray,
- the injection computer (see **17B**, **Petrol injection**, **Petrol injection computer: Removal - Refitting**, page **17B-7**) ,
- the battery tray,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the air intake sleeve.

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# Right-hand suspended engine mounting: Removal - Refitting

K9K

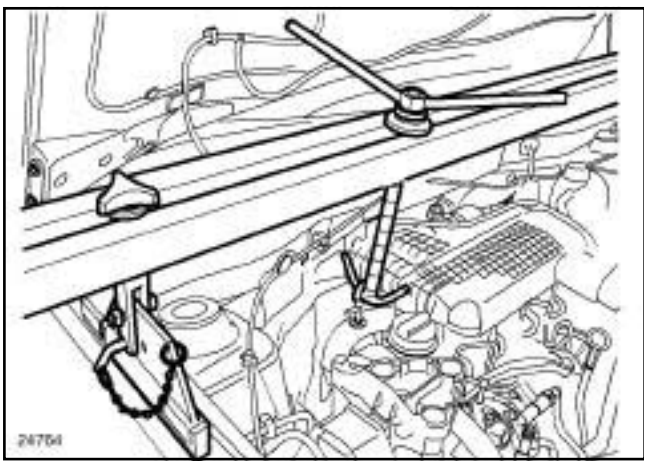
| Special tooling required | |
|---|---|
| **Mot. 1453** | Engine anchorage support with multiple adjustments and retaining straps. |

| Tightening torques ▽ | |
|---|---|
| right-hand suspended engine mounting bolts on the engine | **62 N.m** |
| right-hand suspended engine mounting bolts on the body | **62 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the front engine cover.

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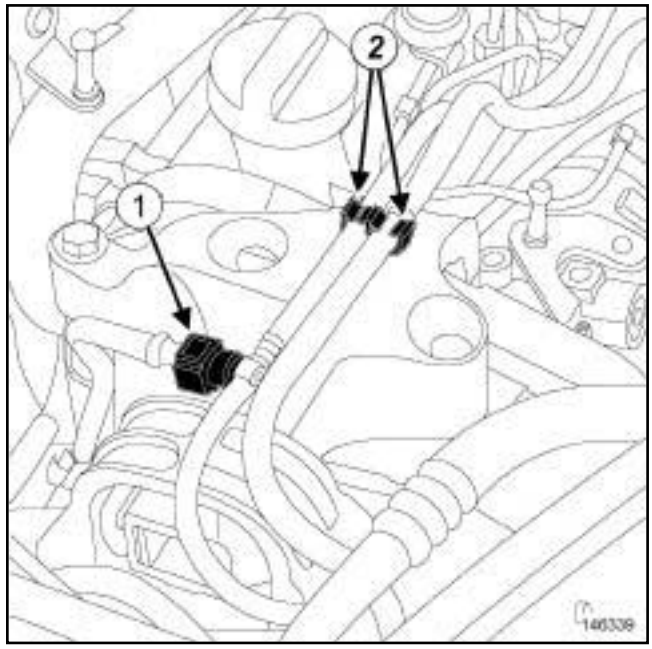
❏ Fit the engine support tool **(Mot. 1453)** with the retaining belt, taking the timing end lifting eye as an anchoring point.

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❏ Disconnect the fuel pipe at (**1**) ,

❏ Insert the blanking plugs.

❏ Unclip the fuel pipes at (**2**) ,

❏ Move the fuel pipes aside.

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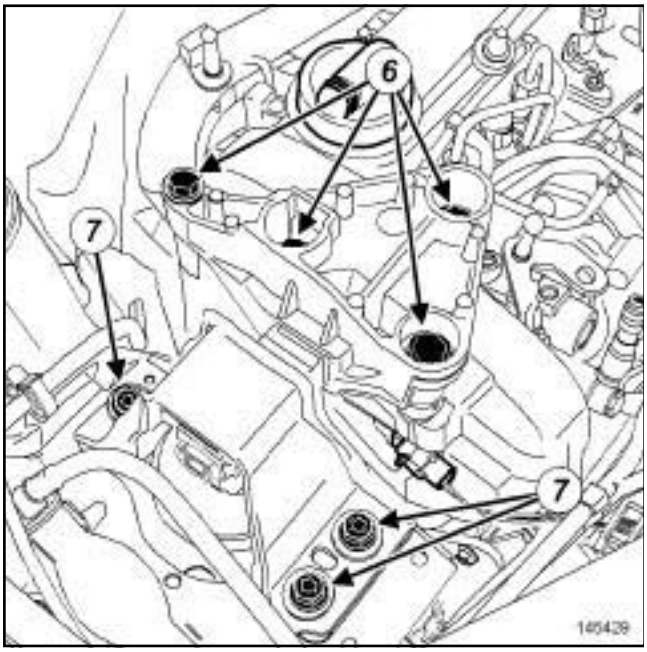
# Right-hand suspended engine mounting: Removal - Refitting

K9K

## II - REMOVAL OPERATION




145429

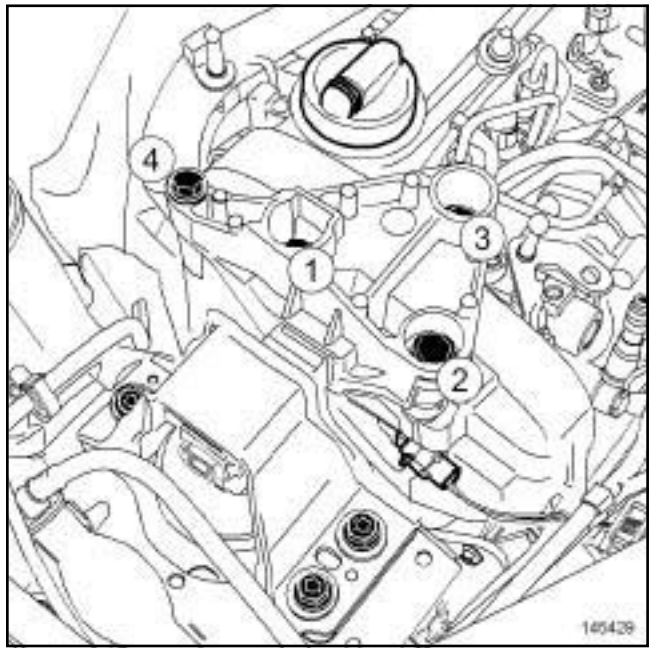
❑ Mark the position of the right-hand suspended engine mounting on the body.

❑ Remove:

- the bolts (**6**) from the right-hand suspended engine mounting on the engine,
- the right-hand suspended engine mounting bolts (**7**) on the body,
- the right-hand suspended engine mounting.

## REFITTING

### I - REFITTING OPERATION




145429

❑ Refit:

- the right-hand suspended engine mounting observing the marks made on the body during removal,
- the right-hand suspended engine mounting bolts on the engine,
- the right-hand suspended engine mounting bolts on the body.

❑ Torque tighten in order the **right-hand suspended engine mounting bolts on the engine (62 N.m)**.

❑ Torque tighten the **right-hand suspended engine mounting bolts on the body (62 N.m)**.

### II - FINAL OPERATION

❑ Position the fuel pipes.

❑ Clip on the fuel pipes at ***(2)*** .

❑ Remove the blanking plugs.

❑ Connect the fuel pipe at ***(1)*** .

❑ Remove the engine support tool **(Mot. 1453)** and the retaining strap.

❑ Refit the engine cover.

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# Right-hand suspended engine mounting: Removal - Refitting

K4M

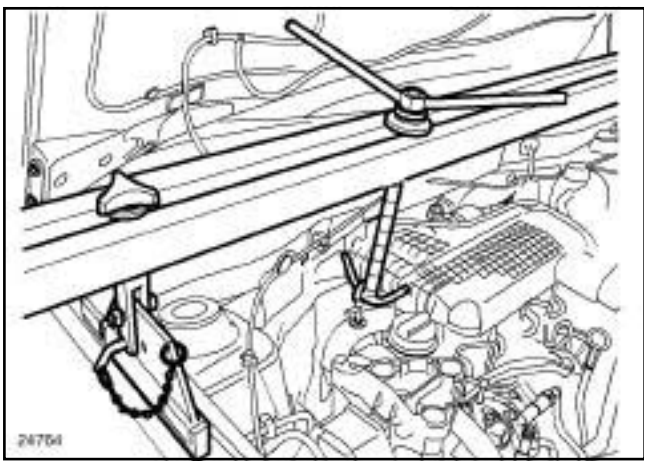
| Special tooling required | |
|---|---|
| **Mot. 1453** | Engine anchorage support with multiple adjustments and retaining straps. |

| Tightening torques ▽ | |
|---|---|
| right-hand suspended engine mounting bolts on the engine | **62 N.m** |
| right-hand suspended engine mounting bolts on the body | **62 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the front engine cover.



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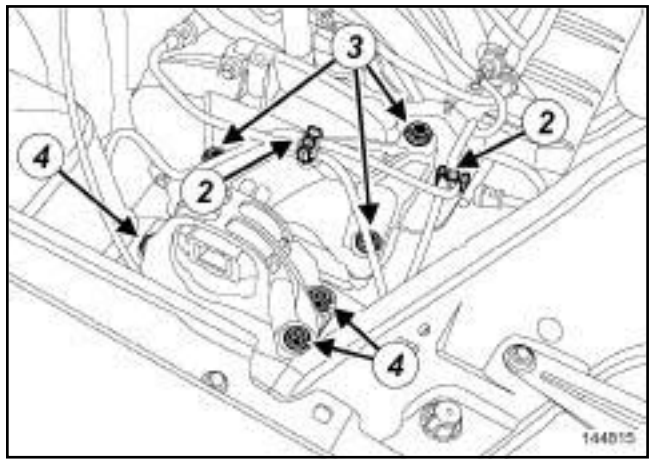
❏ Fit the engine support tool **(Mot. 1453)** with the retaining belt, taking the timing end lifting eye as an anchoring point.

### II - REMOVAL OPERATION




144815

❏ Detach at (**2**) :

- the fuel supply pipe,
- the petrol vapour recirculation pipe.

❏ Mark the position of the right-hand suspended engine mounting on the body.

❏ Remove:

- the bolts ***(3)*** from the right-hand suspended engine mounting on the engine,
- the right-hand suspended engine mounting bolts ***(4)*** on the body,
- the right-hand suspended engine mounting.

## REFITTING

### I - REFITTING OPERATION

❏ Refit:

- the right-hand suspended engine mounting observing the marks made on the body during removal,
- the right-hand suspended engine mounting bolts on the engine,
- the right-hand suspended engine mounting bolts on the body.

❏ Torque tighten:

- the **right-hand suspended engine mounting bolts on the engine (62 N.m)**,
- the **right-hand suspended engine mounting bolts on the body (62 N.m)**.

❏ Clip:

- the fuel supply pipe,
- the petrol vapour recirculation pipe.

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# Right-hand suspended engine mounting: Removal - Refitting

K4M

**II - FINAL OPERATION**

❑ Remove the engine support tool **(Mot. 1453)**.

❑ Refit the engine cover.

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# Lower engine tie-bar: Removal - Refitting

| Tightening torques ▽ | |
|---|---|
| rear suspended engine mounting bolt on the subframe | **105 N.m** |
| rear suspended engine mounting bolts on the gearbox | **105 N.m** |

## REMOVAL

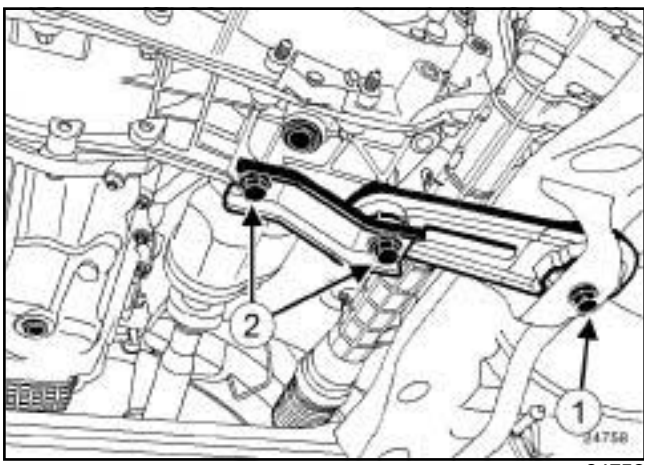
### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove the engine undertray.

### II - REMOVAL OPERATION

JR5




24758

❏ Remove:

- the rear suspended engine mounting bolt (**1**) from the subframe,
- the rear suspended engine bolts (**2**) from the gear-box,
- the rear suspended engine mounting.

## REFITTING

### I - REFITTING OPERATION

❏ Refit:

- the rear suspended engine mounting,
- the rear suspended engine mounting bolts.

❏ Torque tighten:

- the **rear suspended engine mounting bolt on the subframe (105 N.m)**,
- the **rear suspended engine mounting bolts on the gearbox (105 N.m)**.

### II - FINAL OPERATION

❏ Refit the engine undertray.

❏ Tighten the engine undertray bolts.

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RENAULT

# 5 Mechanisms and accessories


51A SIDE OPENING ELEMENT MECHANISMS

52A NON-SIDE OPENING ELEMENT MECHANISMS

54A WINDOWS

55A EXTERIOR PROTECTION

56A EXTERIOR EQUIPMENT

57A INTERIOR EQUIPMENT



*X79*

**NOVEMBER 2009** **EDITION ANGLAISE**



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The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which the vehicles are constructed".

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# DUSTER - Section 5

## Contents


Pages

**51A SIDE OPENING ELEMENT MECHANISMS**

Front side door window winder handle: Removal - Refitting 51A-1

Rear side door window winder handle: Removal - Refitting 51A-2

Front side door check strap: Removal - Refitting 51A-3

Front side door striker panel: Removal - Refitting 51A-4

Front side door lock: Removal - Refitting 51A-5

Front side door lock barrel: Removal - Refitting 51A-7

Exterior door handle: Removal - Refitting 51A-8

Front side door interior opening control: Removal - Refitting 51A-9

Front side door electric window mechanism: Removal - Refitting 51A-10

Front side door manual window winder mechanism: Removal - Refitting 51A-12

Rear side door striker panel: Removal - Refitting 51A-14

Rear side door lock: Removal - Refitting 51A-15

**51A SIDE OPENING ELEMENT MECHANISMS**

Rear side door interior opening control: Removal - Refitting 51A-17

Rear side door manual window winder mechanism: Removal - Refitting 51A-18

Rear side door slide mounting: Removal - Refitting 51A-20

Front side door slide mounting: Removal - Refitting 51A-21

Rear side door check strap: Removal - Refitting 51A-23

**52A NON-SIDE OPENING ELEMENT MECHANISMS**

Exterior rear opening element assembly: Exploded view 52A-1

Bonnet release control: Removal - Refitting 52A-4

Bonnet lock: Removal - Refitting 52A-5

Bonnet release cable: Removal - Refitting 52A-6

Bonnet strut: Removal - Refitting 52A-7

Tailgate lock: Removal - Refitting 52A-8

# Contents

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**52A NON-SIDE OPENING ELEMENT MECHANISMS**

Tailgate strut: Removal - Refitting 52A-9

Tailgate exterior opening control: Removal - Refitting 52A-10

**54A WINDOWS**

Windscreen: Removal - Refitting 54A-1

Front side door sliding window: Removal - Refitting 54A-3

Rear side door sliding window: Removal - Refitting 54A-5

Rear quarter panel window: Removal - Refitting 54A-7

Rear screen: Removal - Refitting 54A-8

**55A EXTERIOR PROTECTION**

Front bumper assembly: Exploded view 55A-1

Rear bumper assembly: Exploded view 55A-3

Exterior body front trim assembly: Exploded view 55A-5

Front bumper: Removal - Refitting 55A-8

Rear bumper: Removal - Refitting 55A-9

Front wheel arch liner: Removal - Refitting 55A-10

Rear wheel arch liner: Removal - Refitting 55A-11

**56A EXTERIOR EQUIPMENT**

Exterior body side trim assembly: Exploded view 56A-1

Door mirror: Removal - Refitting 56A-2

Door mirror glass: Removal - Refitting 56A-3

Rear badges: Removal - Refitting 56A-4

**57A INTERIOR EQUIPMENT**

Dashboard: Removal - Refitting 57A-1

Dashboard: Stripping - Rebuilding 57A-6

Dashboard air vent: Removal - Refitting 57A-7

Glovebox cover: Removal - Refitting 57A-9

Centre console: Removal - Refitting 57A-10

Interior rear-view mirror: Removal - Refitting 57A-12

Sun visor: Removal - Refitting 57A-13

Grab handle: Removal - Refitting 57A-14

# Front side door window winder handle: Removal - Refitting

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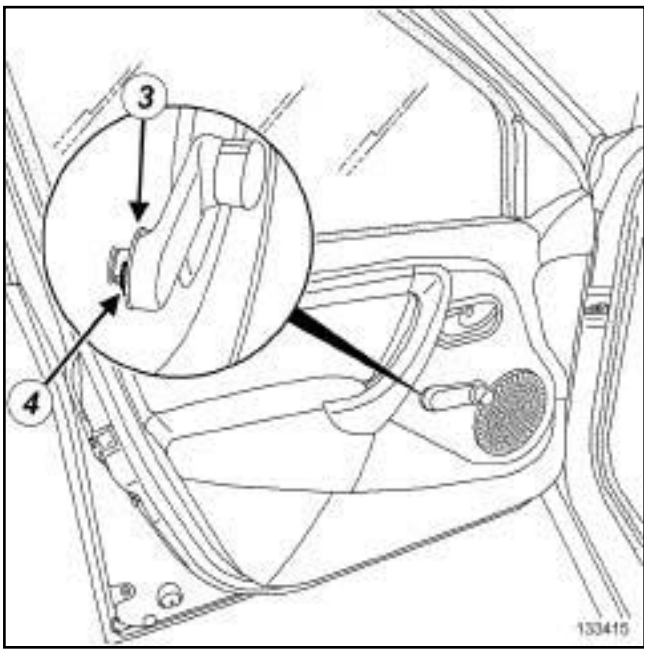
MANUAL FRONT WINDOW

## REMOVAL

### REMOVAL OPERATION

**Clipped on window winder handle**

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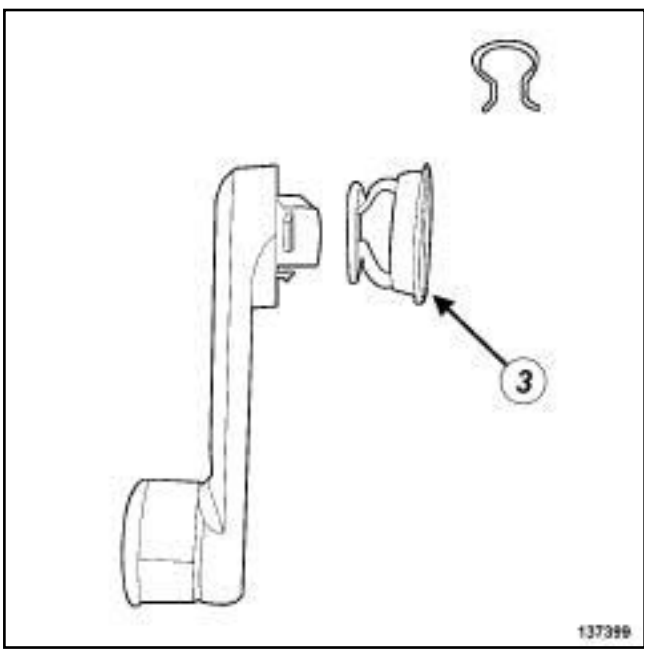


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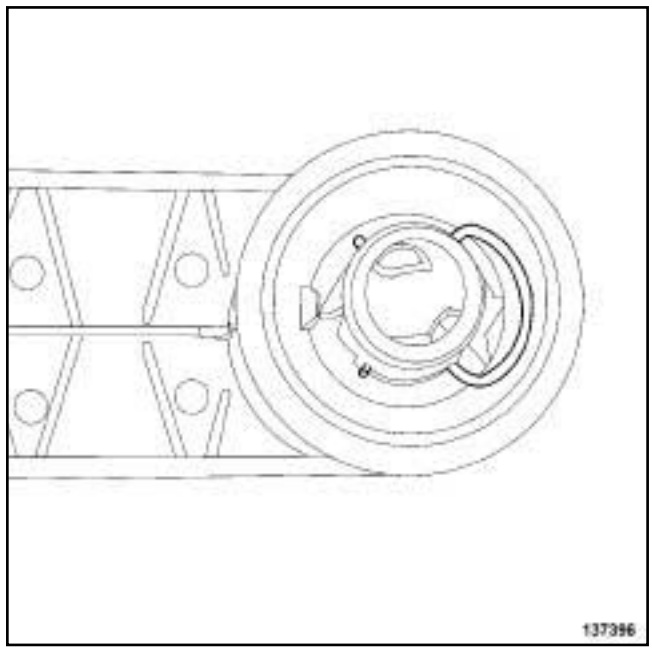


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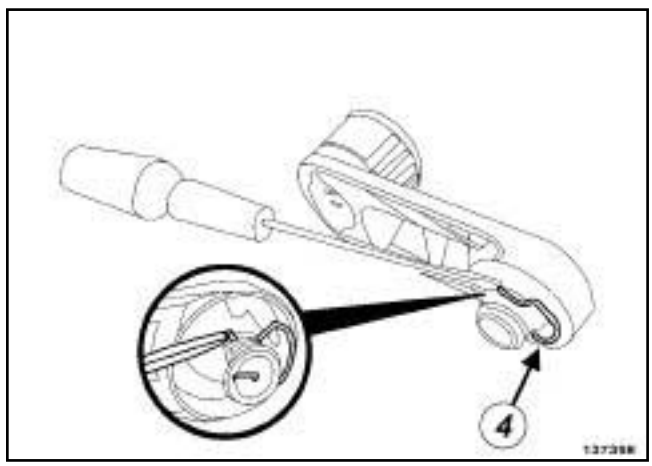


137398

❏ Pull the ring (**3**) towards the vehicle interior.

❏ Unclip the clip (**4**) .

❏ Remove the front side door window winder handle.

## REFITTING

### REFITTING OPERATION

**Clipped on window winder handle**

❏ Refit:

- the ring on the front side door window winder handle,
- the front side door window winder handle.

❏ Pull the ring and clip the clip onto the shaft of the front side door window winder handle.

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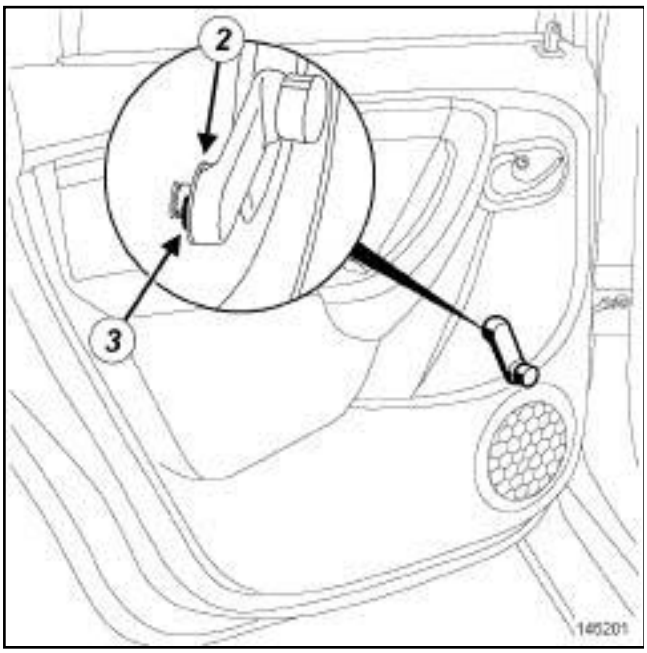
# Rear side door window winder handle: Removal - Refitting

MANUAL REAR WINDOW

## REMOVAL

### REMOVAL OPERATION

**Clipped on window winder handle**

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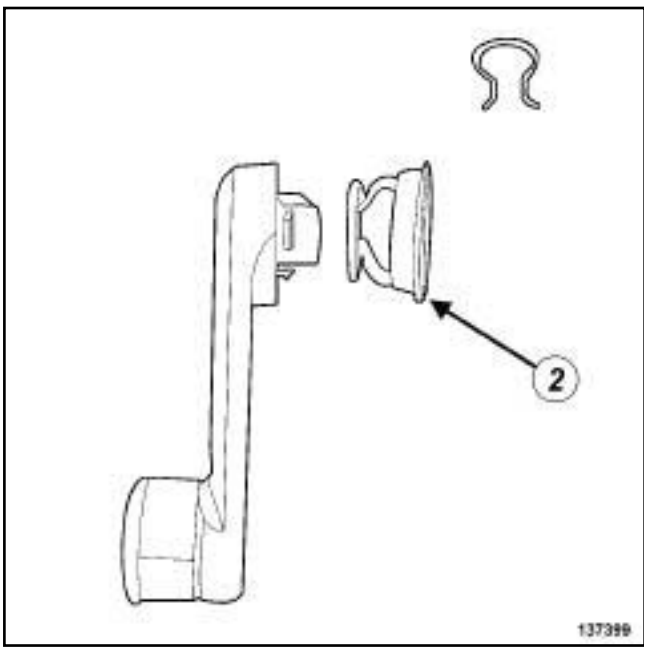


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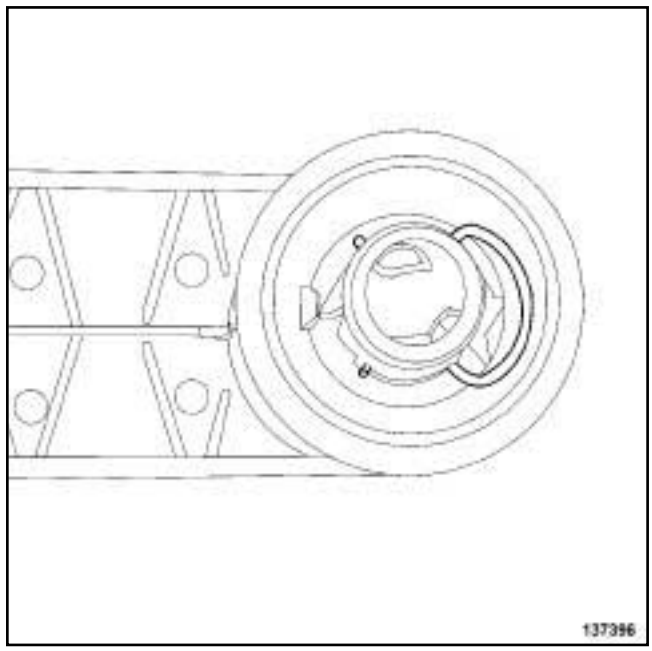


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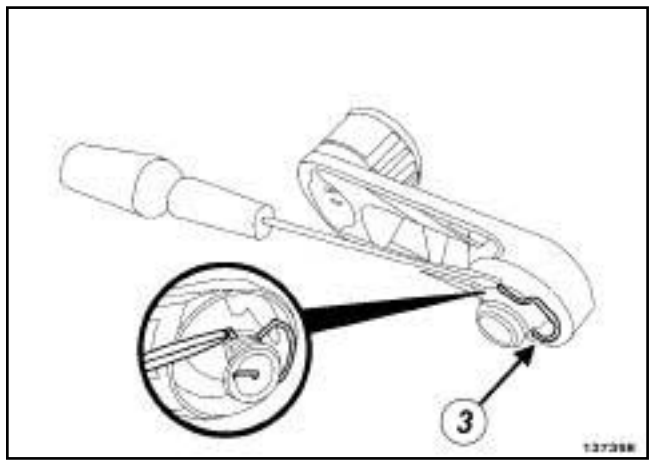


137398

❑ Pull the ring (**2**) towards the vehicle interior.

❑ Unclip the clip (**3**) .

❑ Remove the rear side door window winder handle.

## REFITTING

### REFITTING OPERATION

**Clipped on window winder handle**

❑ Refit:

- the ring on the rear side door window winder handle,
- the rear side door window winder handle.

❑ Pull the ring and clip the clip onto the shaft of the rear side door window winder handle.

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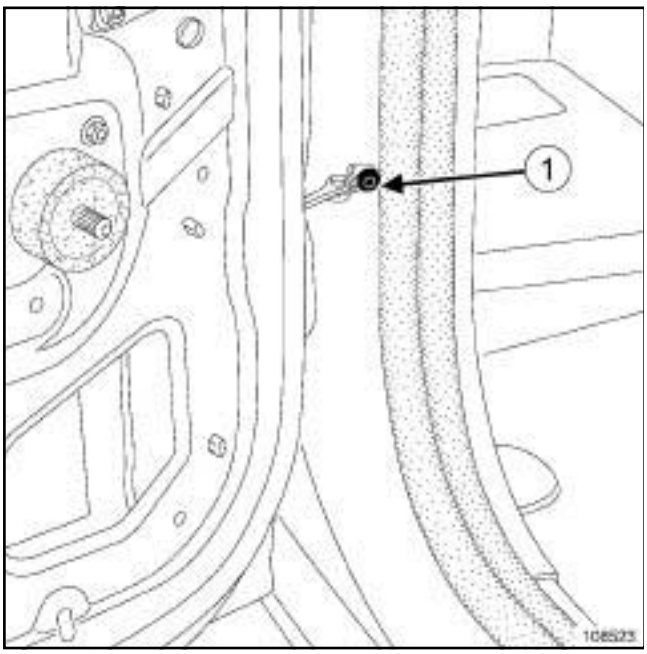
# Front side door check strap: Removal - Refitting

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

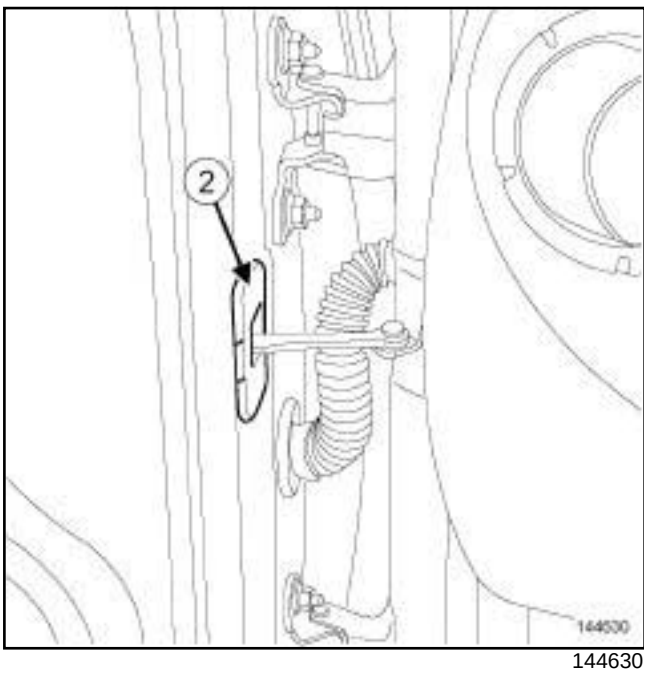
❑ Remove the front side door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening elements trim).

### II - REMOVAL OPERATION



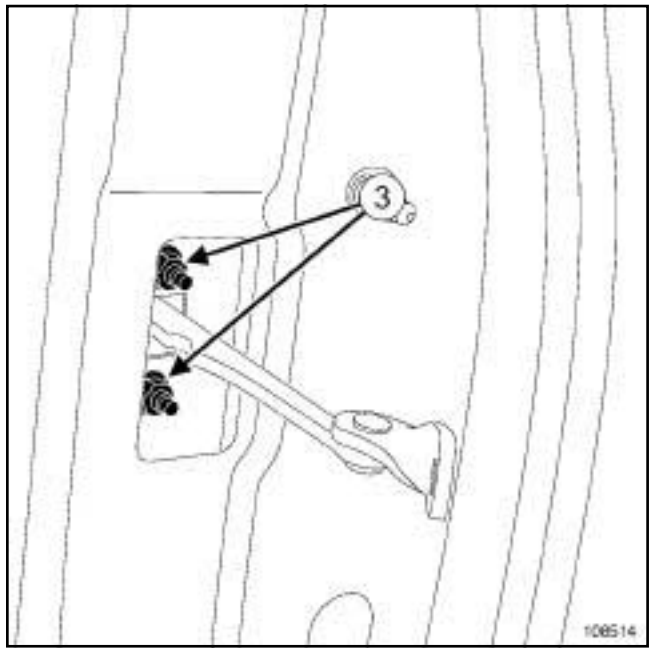

108523

❑ Remove the front side door check strap bolt (**1**) .




144630

❑ Remove the front side door check strap seal (**2**) .




108514

❑ Remove the front side door check strap bolts (**3**) .

❑ Remove the front side door check strap from inside the front side door box section.

## REFITTING

❑ Proceed in the reverse order to removal.

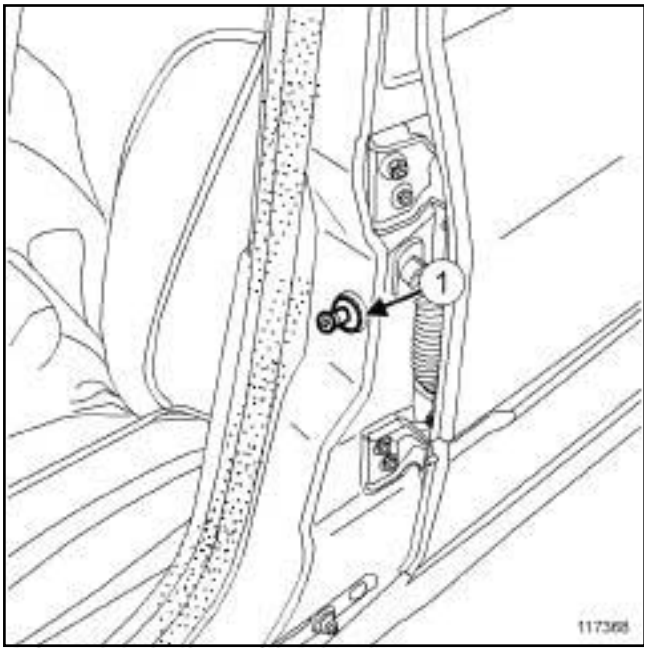
Simply PDF Merge and Split Unregistered Version - http://www.simplypdf.com

# Front side door striker panel: Removal - Refitting

| Tightening torques ▽ | |
|---|---|
| front side door striker panel | **21 N.m** |

## REMOVAL

### REMOVAL OPERATION

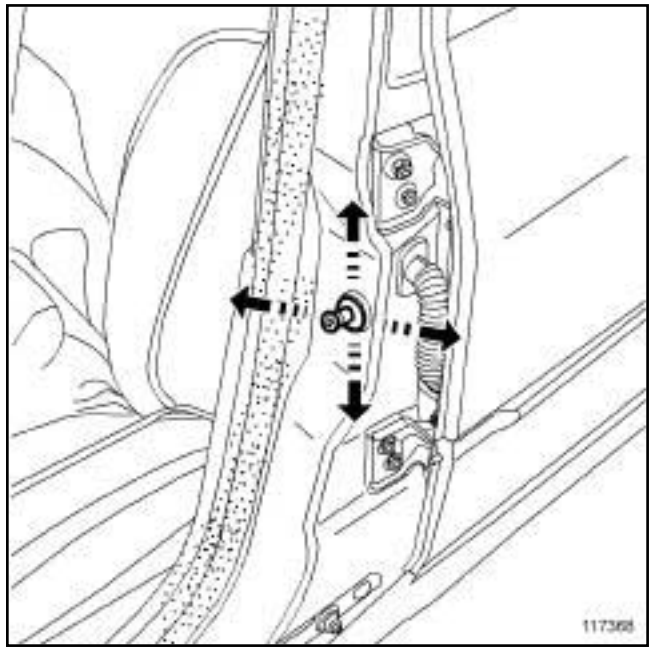



117368

❏ Remove the front side door striker panel (**1**) .

## REFITTING

### REFITTING OPERATION




117368

❏ Refit the front side door striker panel.

❏ Adjust the front side door striker panel.

❏ Check whether it is possible to close the door.

❏ Torque tighten the **front side door striker panel (21 N.m)**.

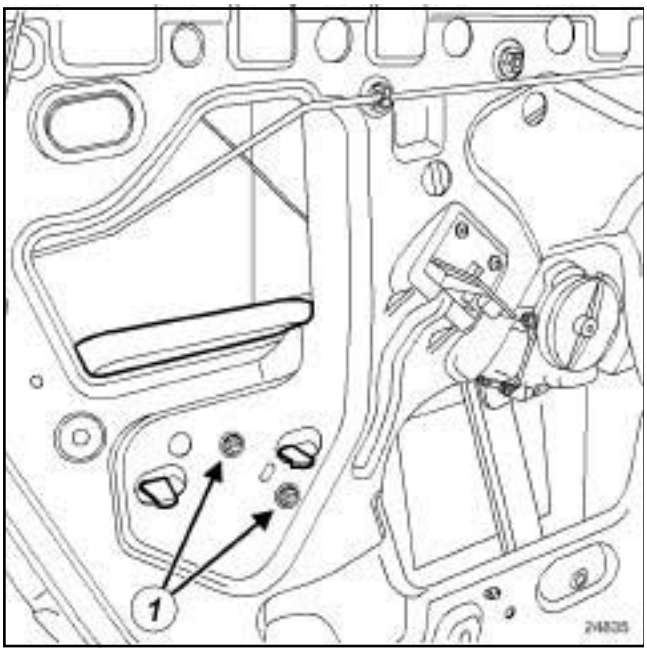
Simpo PDF Merge and Split Unregistered Version - http://www.simpopdf.com

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Remove:

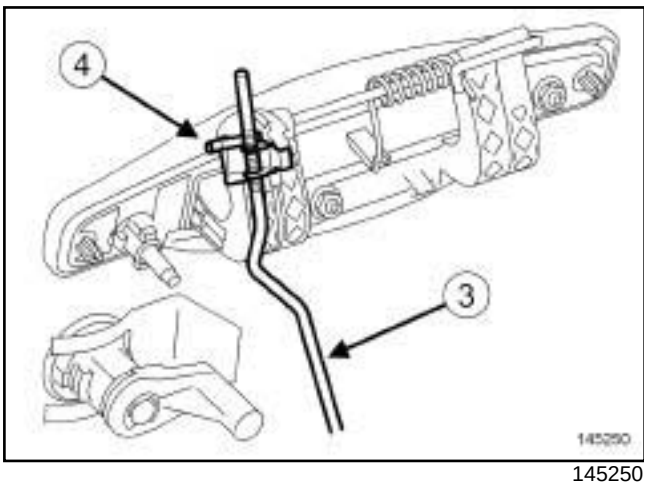
- the front side door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening element trim).
- the support of the front side door run channel (see **51A**, **Side opening element mechanisms**, **Front side door slide mounting: Removal - Refitting**, page **51A-21**) .




24835

❑ Remove the bolts (**1**) from the impact padding without removing it.

### II - REMOVAL OPERATION



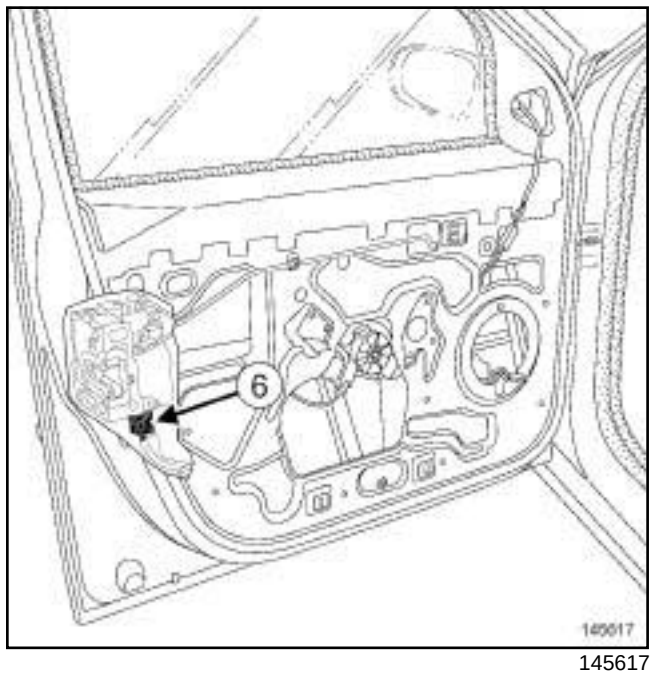

145250

❑ Unclip the exterior opening control linkage (**3**) from the clip (**4**) on the exterior door handle.

145495

❑ Remove the front side door lock catch (**5**) .

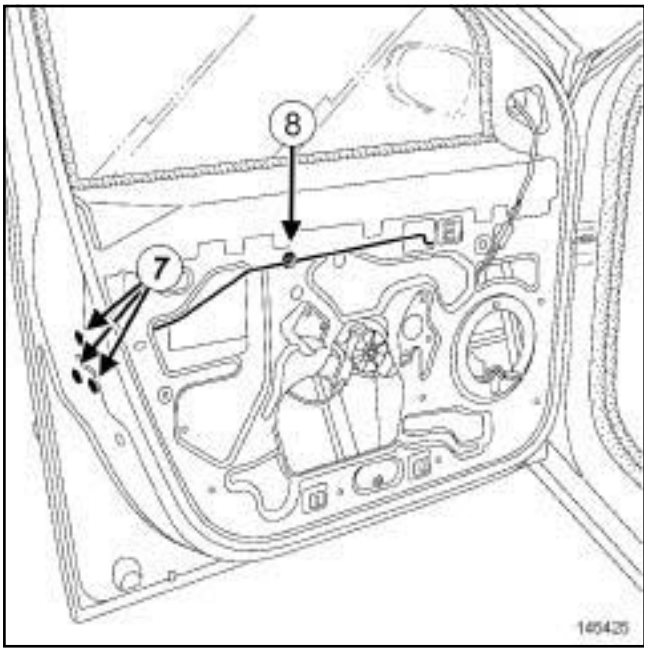
DOOR OPENING SYSTEM 02




145617

❑ Disconnect the connector (**6**) from the lock motor.

Simpo PDF Merge and Split Unregistered Version - http://www.simpopdf.com



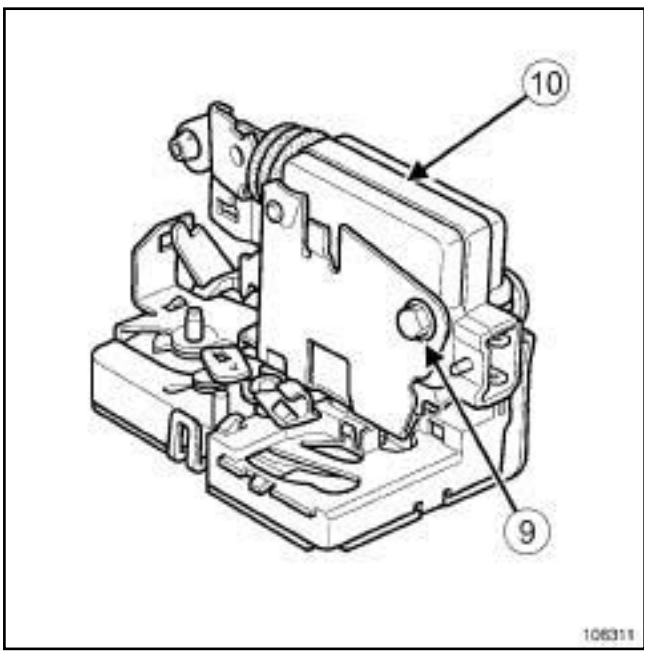

145425

❏ Remove the bolts (**7**) from the front side door lock.

❏ Unclip the interior opening control linkage at (**8**) .

❏ Remove the front side door lock and the interior opening control linkage.

DOOR OPENING SYSTEM 02




108311

❏ Remove:

- the locking motor bolt (**9**) .
- the locking motor (**10**) .

## REFITTING

❏ Proceed in the reverse order to removal.

❏ Refit the front side door impact padding (see **Front side door impact padding: Removal - Refitting**) (59A, Safety accessories).

❏ Carry out a function test.

Simple PDF Merge and Split Unregistered Version - http://www.simpopdf.com

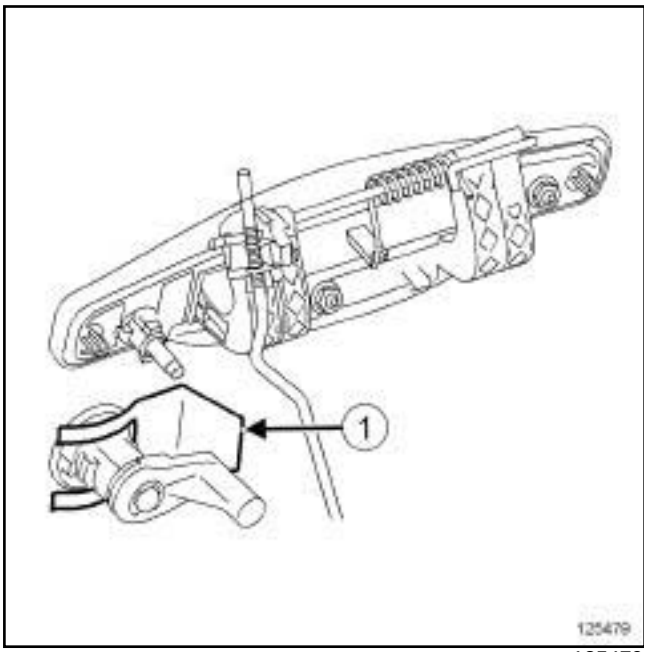
# Front side door lock barrel: Removal - Refitting

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the front side door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening elements trim).

### II - REMOVAL OPERATION



125479

❏ Remove:

- the fork (**1**) ,
- the front side door lock barrel.

## REFITTING

❏ Proceed in the reverse order to removal.

❏ Carry out a function test on the front side door lock barrel.

Simpo PDF Merge and Split Unregistered Version - http://www.simpopdf.com

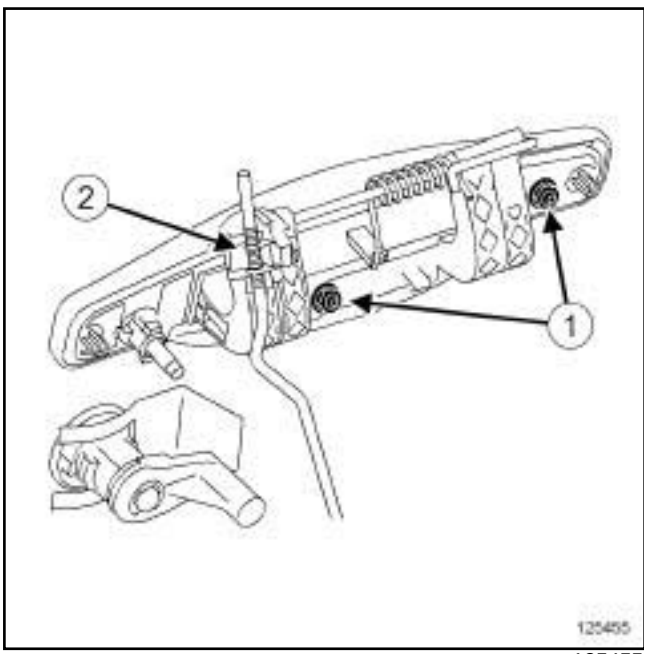
| Tightening torques ▽ | |
|---|---|
| the nuts of the exterior door handle | 7 N.m |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the front door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening elements trim) or the rear side door trim (see **Rear side door trim: Removal - Refitting**) (72A, Side opening elements trim).

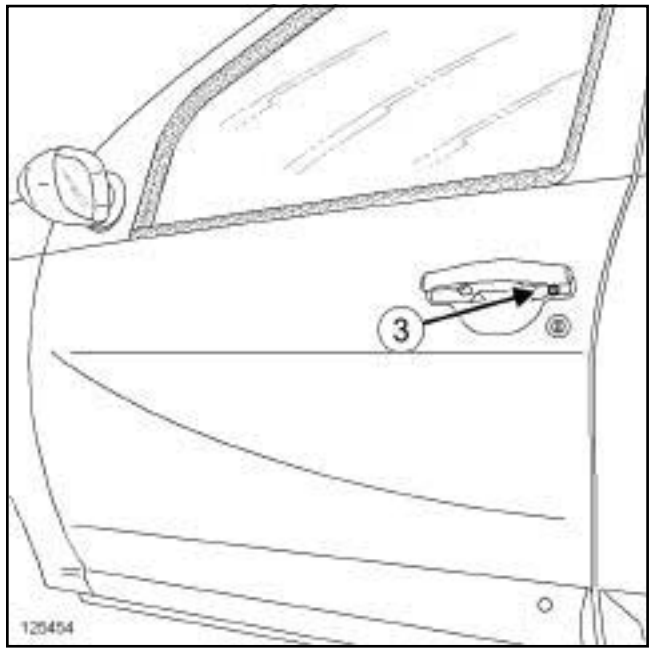
### II - REMOVAL OPERATION



125455

❏ Remove nuts (**1**) .

❏ Unclip the opening control linkage from the clip (**2**) .



125454

❏ Remove:

- the bolt (**3**) ,
- the door exterior handle.

## REFITTING

❏ Proceed in the reverse order to removal.

❏ Torque tighten **the nuts of the exterior door handle (7 N.m)**

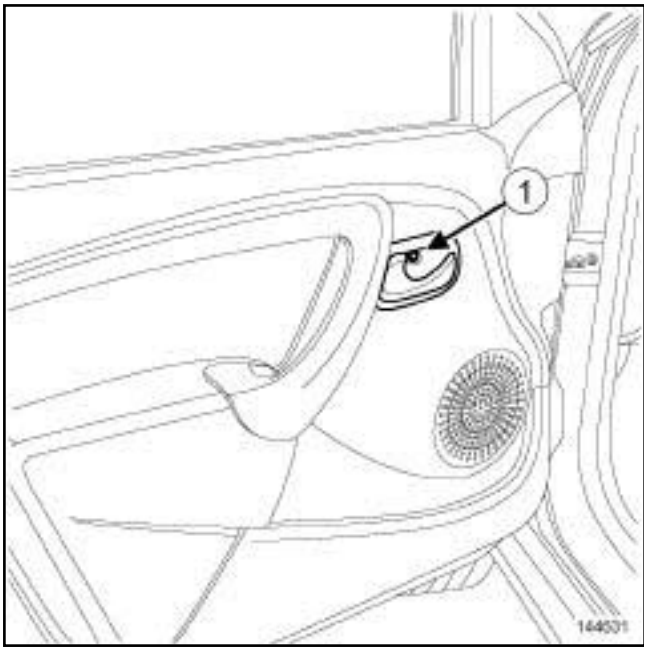
❏ Carry out a function test.

Simon PSA Megane III Saloon Unregistered Version - http://www.simon-repair.com

# Front side door interior opening control: Removal - Refitting

## REMOVAL

### REMOVAL OPERATION




144631

❑ Remove:

- the bolt (**1**) ,
- the front side door interior handle.

## REFITTING

❑ Proceed in the reverse order to removal.

Simple PDF Merge and Split Unregistered Version - http://www.simplepdf.com

## Front side door electric window mechanism: Removal - Refitting

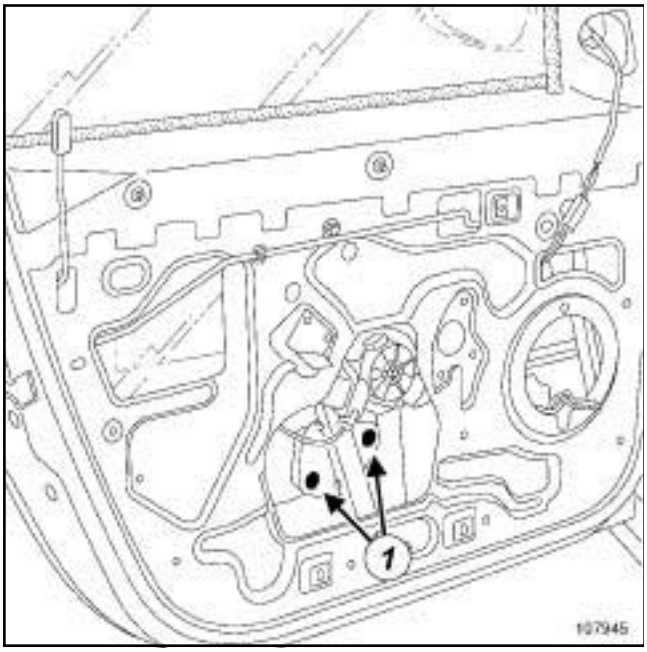
### REMOVAL

#### I - REMOVAL PREPARATION OPERATION

❏ Remove the front side door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening elements trim).

#### II - REMOVAL OPERATION

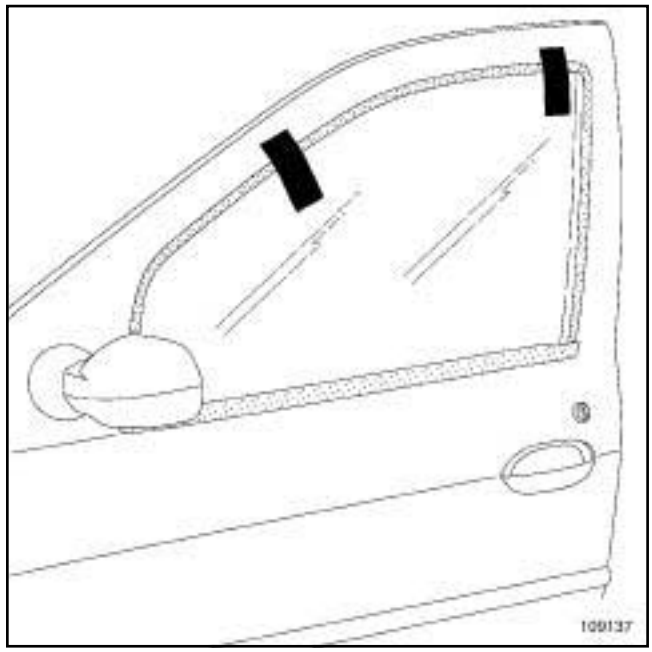
❏ Lower the window.




107945

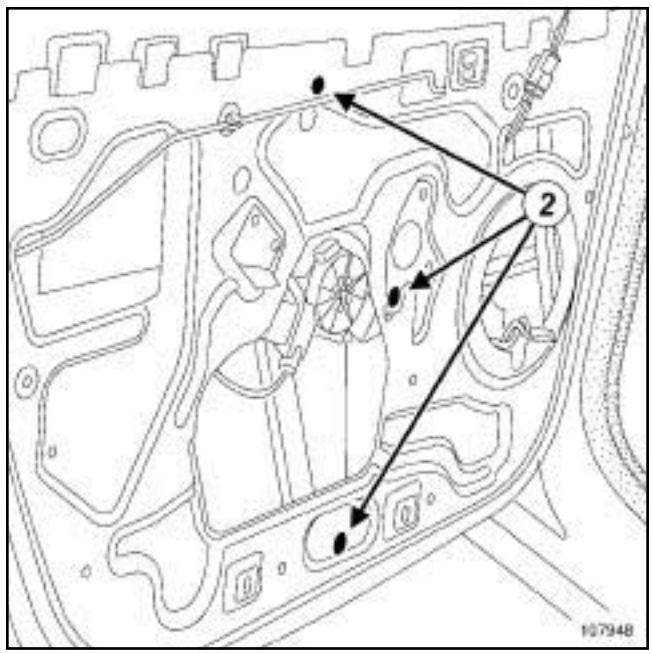
❏ Remove the bolts (**1**)

❏ Raise the window fully.




109137

❏ Keep the window in the raised position using adhesive tape.




107948

❏ Remove nuts (**2**) .

❏ Disconnect the electric window motor connector.

❏ Remove the window winder mechanism.

Simply PDF Merge and Split Unregistered Version - http://www.simplypdf.com

## REFITTING

### I - REFITTING OPERATION

❏ Refit the window lift mechanism.

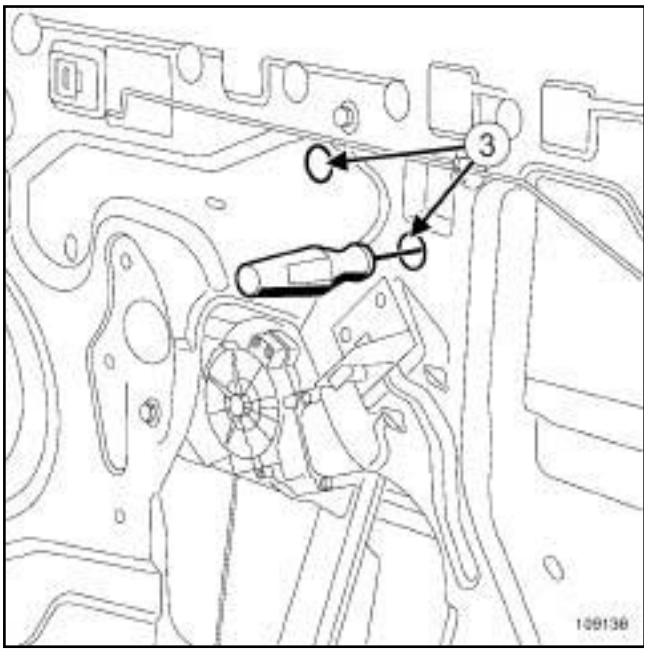
❏ Connect the electric window motor connector.

❏ Refit the nuts ***(2)*** .

❏ Position the sliding window.

❏ Refit the bolts ***(1)*** without tightening them.

❏ Raise the window.




109136

❏ Tighten the bolts ***(1)*** through the holes (**3**) .

### II - FINAL OPERATION

❏ Carry out a function test.

❏ Refit the front side door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening elements trim).

Simpo PDF Merge and Split Unregistered Version - http://www.simpopdf.com

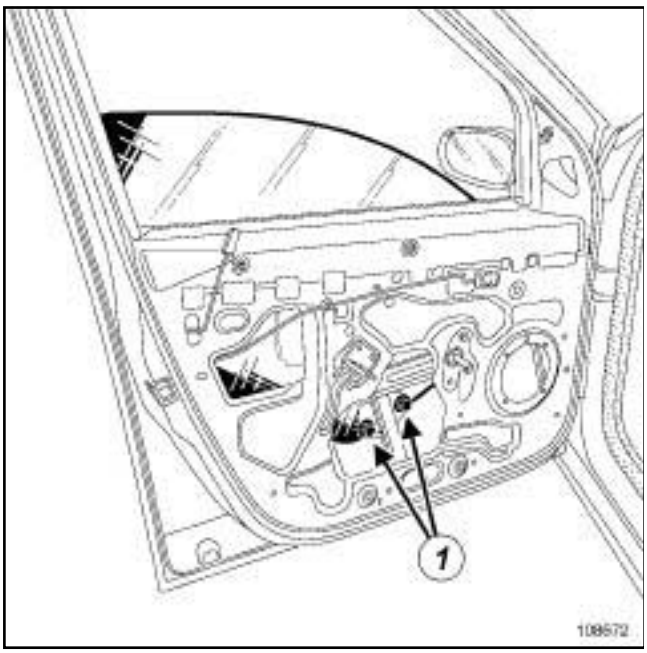
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the front side door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening elements trim).

### II - REMOVAL OPERATION

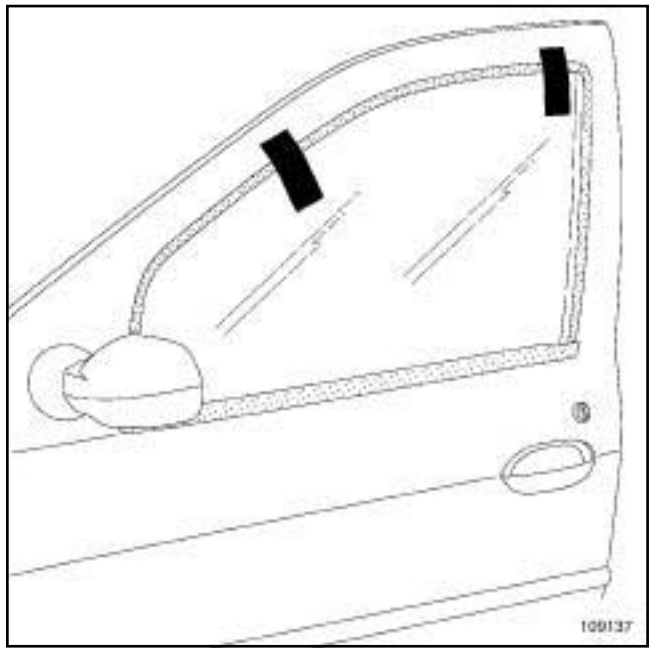
❏ Lower the window.




108672

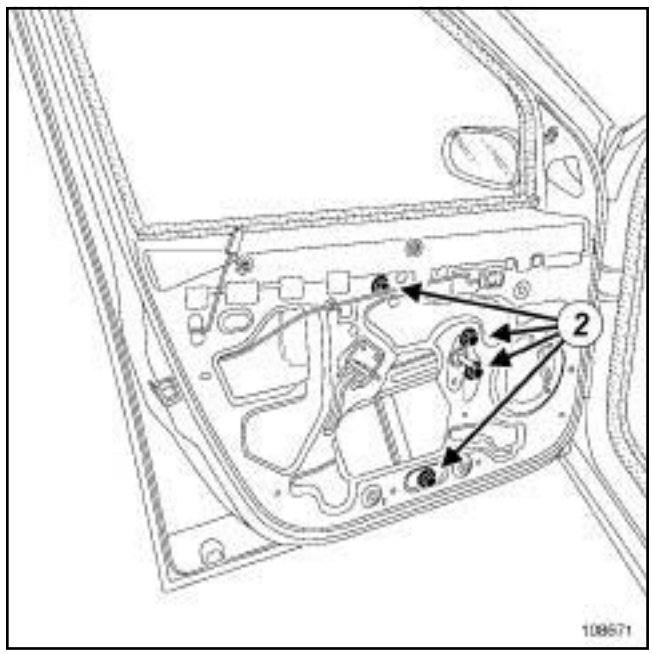
❏ Remove the bolts (**1**) .

❏ Raise the window fully.




109137

❏ Keep the window in the raised position using adhesive tape.




108671

❏ Remove nuts (**2**) .

❏ Remove the window winder mechanism.

Simpo PDF Merge and Split Unregistered Version - http://www.simpopdf.com

## REFITTING

### I - REFITTING OPERATION

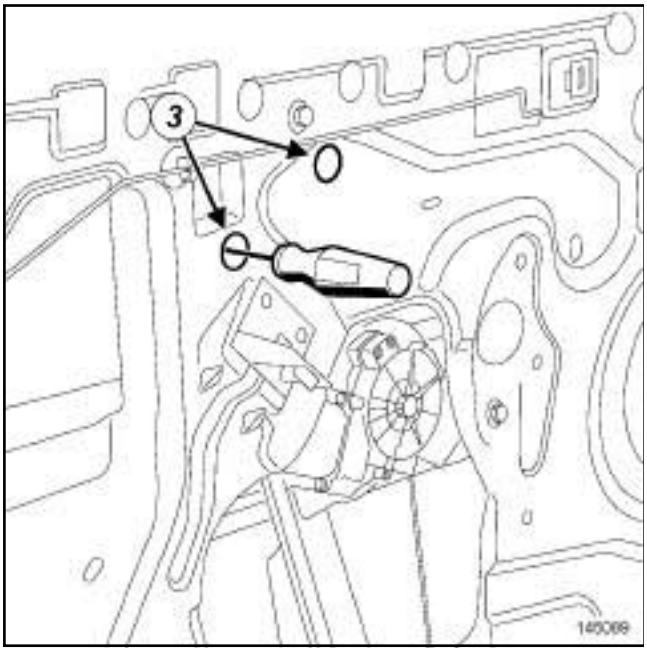
❏ Fit the window winder mechanism.

❏ Refit the nuts ***(2)*** .

❏ Position the sliding window.

❏ Refit the bolts ***(1)*** without tightening them.

❏ Raise the sliding window.




145089

❏ Tighten the bolts ***(1)*** through the holes (**3**) .

### II - FINAL OPERATION

❏ Carry out a function test.

❏ Refit the front side door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening elements trim).

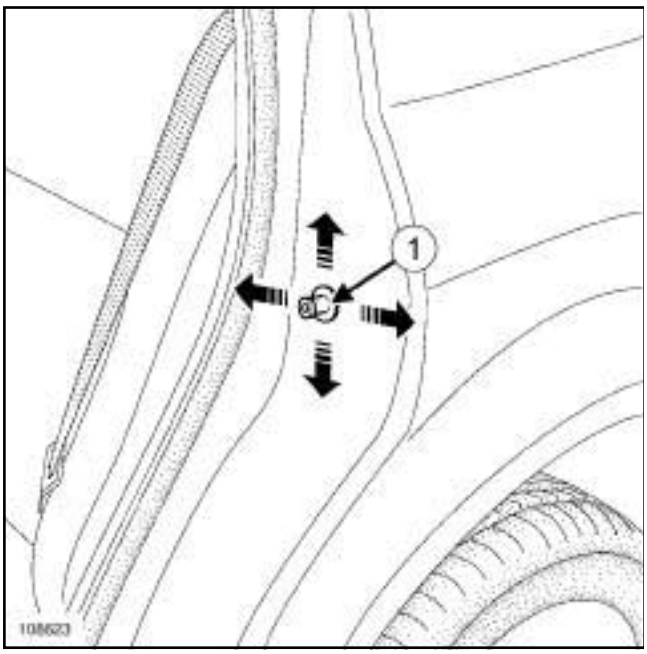
Simple PDF Merge and Split Unregistered Version - http://www.simplepdf.com

# Rear side door striker panel: Removal - Refitting

| Tightening torques ▽ | |
|---|---|
| rear side door striker panel | 21 N.m |

## REMOVAL

### REMOVAL OPERATION

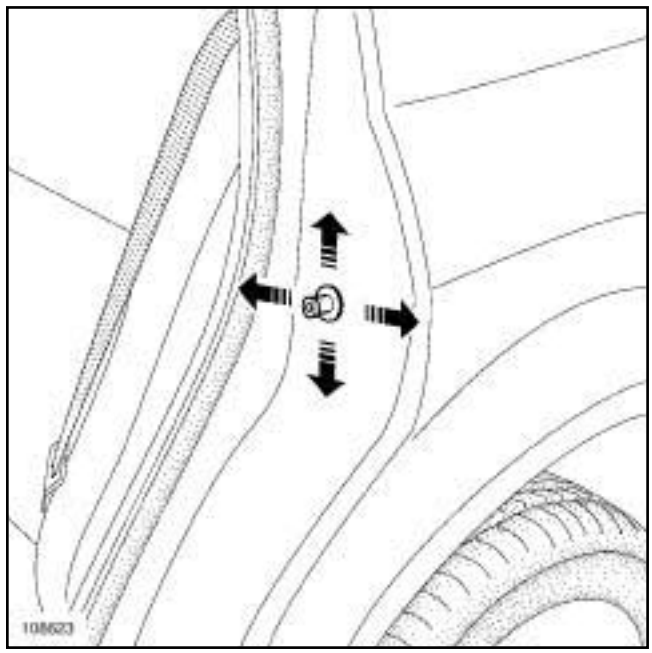



108623

❏ Remove the rear side door striker panel (**1**) .

## REFITTING

### REFITTING OPERATION




108623

❏ Refit the rear side door striker panel.

❏ Adjust the rear side door striker panel.

❏ Check whether it is possible to close the door.

❏ Torque tighten the **rear side door striker panel (21 N.m)**.

Simpo PDF Merge and Split Unregistered Version - http://www.simpopdf.com

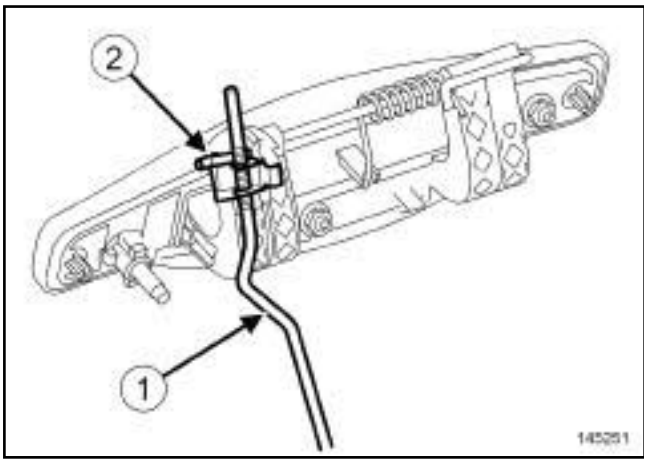
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove:

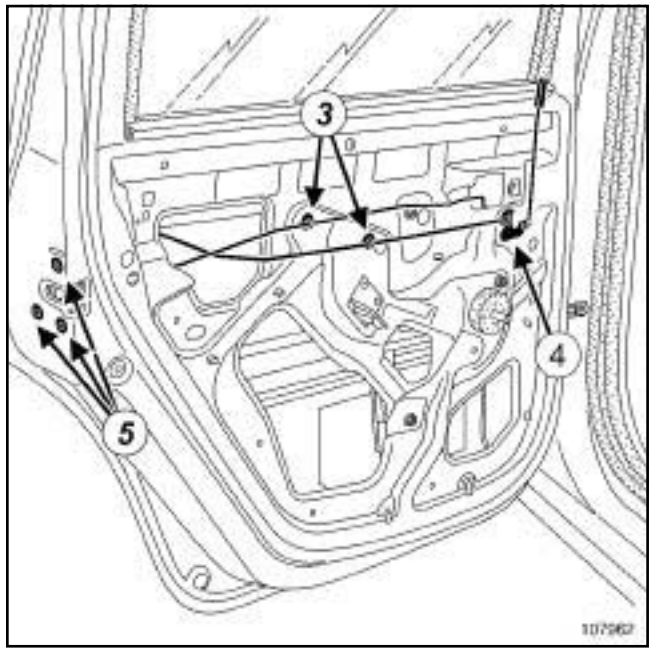
- the rear side door trim (see **Rear side door trim: Removal - Refitting**) (72A, Side opening element trim),
- the support of the rear side door run channel (see **51A**, **Side opening element mechanisms**, **Front side door slide mounting: Removal - Refitting**, page **51A-21**) .

### II - REMOVAL OPERATION




145251

❏ Unclip the exterior opening control linkage (**1**) from the clip (**2**) on the exterior door handle.



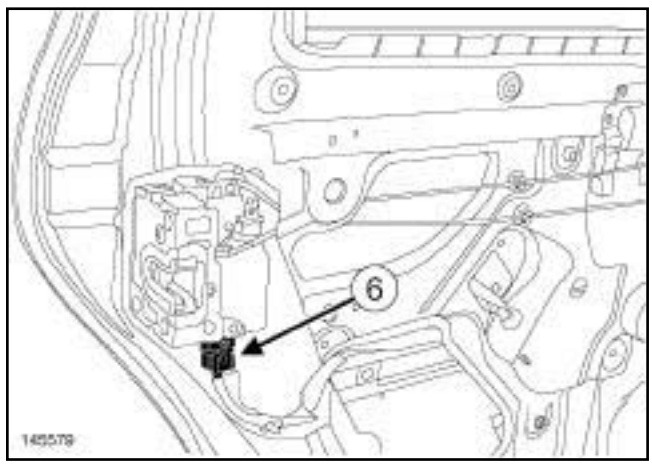

107962

❏ Unclip:

- the control linkages at (**3**) ,
- the control linkage support (**4**) ,

❏ Remove the bolts (**5**) from the rear side door lock.

DOOR OPENING SYSTEM 02




145579

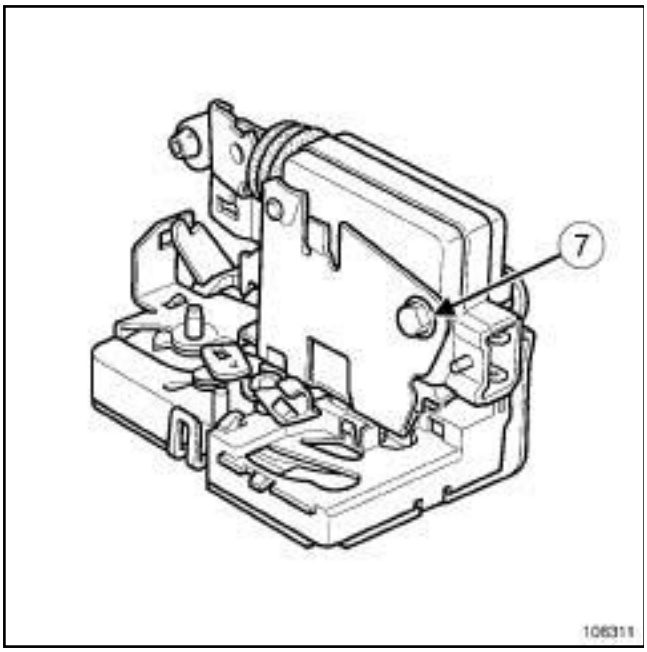
❏ Disconnect the connector (**6**) from the rear side door lock.

❏ Remove the "rear side door lock - control linkages" assembly.

Simpo PDF Merge and Split Unregistered Version - http://www.simpopdf.com

# Rear side door lock: Removal - Refitting

DOOR OPENING SYSTEM 02




108311

❑ Remove:

- the bolt (**7**) ,
- the lock motor.

## REFITTING

❑ Proceed in the reverse order to removal.

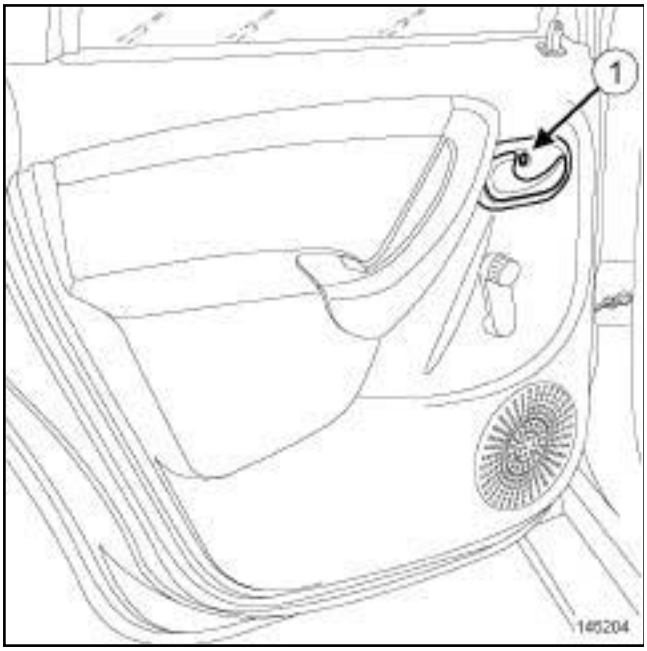
❑ Carry out a function test.

Site : PSA Manuals Unregistered Version - http://www.simplypdf.com

# Rear side door interior opening control: Removal - Refitting

## REMOVAL

### REMOVAL OPERATION




145204

❑ Remove:

- the bolt (**1**) ,
- the rear side door interior handle.

## REFITTING

❑ Proceed in the reverse order to removal.

Step 2 PDF Merge and Split Unregistered Version - http://www.step2.com.cn

Rear side door manual window mechanism: Removal - Refitting

MANUAL REAR WINDOW

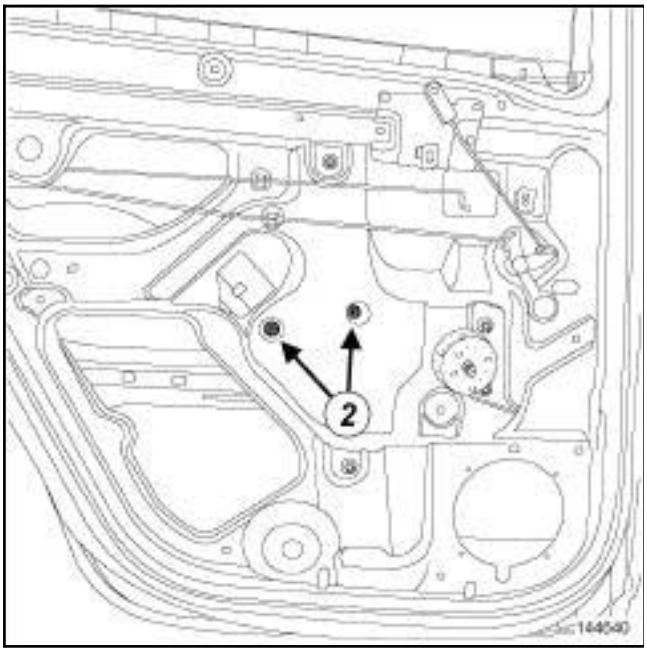
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❑ Remove the rear side door trim (see **Rear side door trim: Removal - Refitting**) (72A, Side opening element trim).

### II - REMOVAL OPERATION

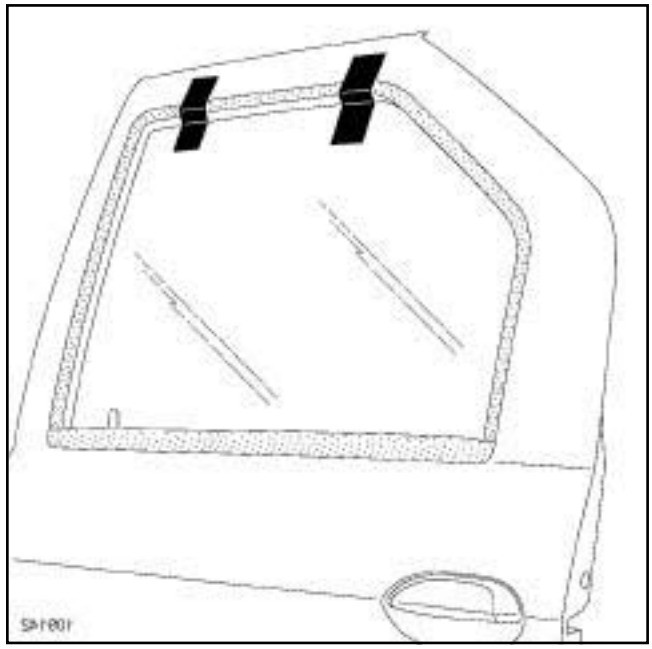
❑ Lower the window.




144640

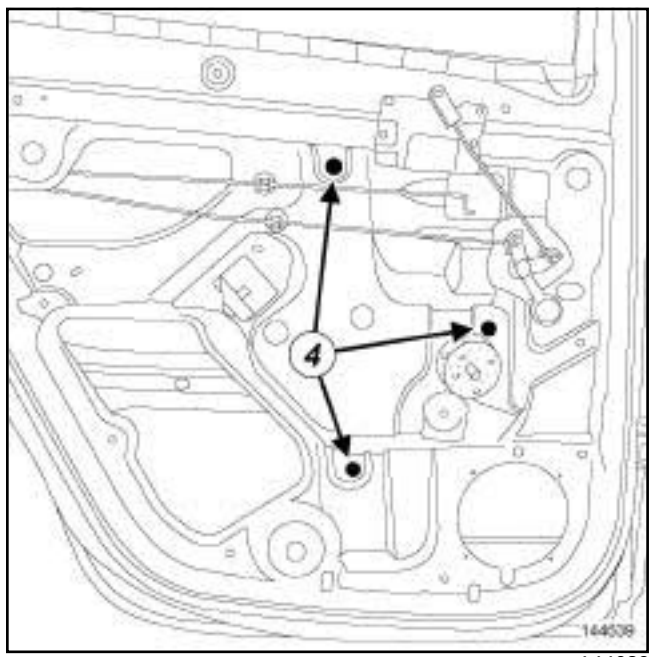
❑ Remove the bolts (**2**) .

❑ Raise the window fully.



109142

❑ Keep the window in the raised position using adhesive tape.




144639

❑ Remove nuts (**4**) .

❑ Remove the rear side door manual window mechanism.

Step by Step Manuals - Unregistered Version - http://www.step-by-step.com

Rear side door manual window mechanism: Removal - Refitting

MANUAL REAR WINDOW

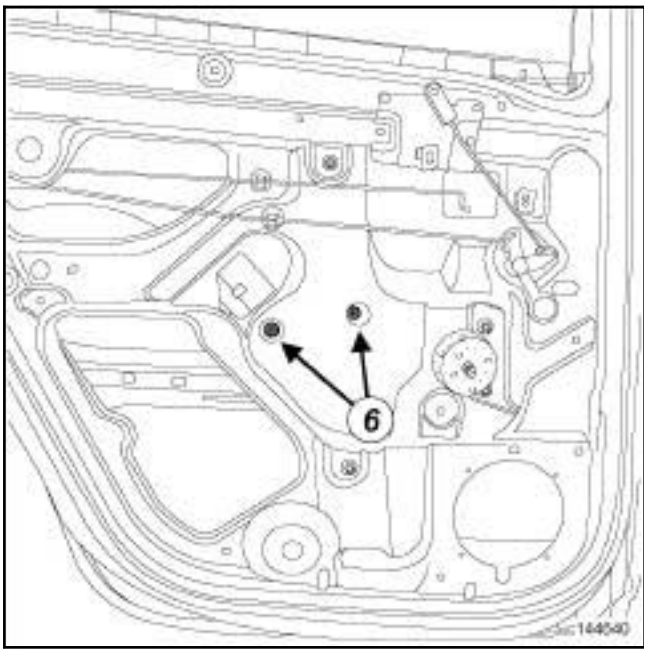
## REFITTING

### I - REFITTING OPERATION

❏ Fit the rear side door manual window mechanism.

❏ Refit the nuts of the rear side door manual window mechanism.

❏ Position the rear side door sliding window.




144640

❏ Refit the sliding window bolts through the holes (**6**) .

### II - FINAL OPERATION

❏ Carry out a function test.

❏ Refit the rear side door trim (see **Rear side door trim: Removal - Refitting**) (72A, Side opening element trim).

Simply PDF Merge and Split Unregistered Version - http://www.simplypdf.com

# Rear side door slide mounting: Removal - Refitting

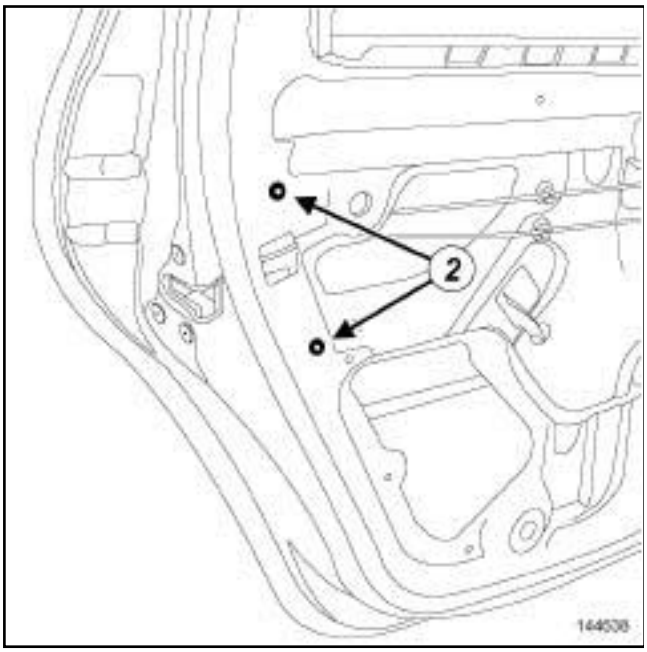
## REFITTING

### I - REMOVAL PREPARATION OPERATION

❑ Remove the rear side door trim (see **Rear side door trim: Removal - Refitting**) (72A, Side opening element trim).

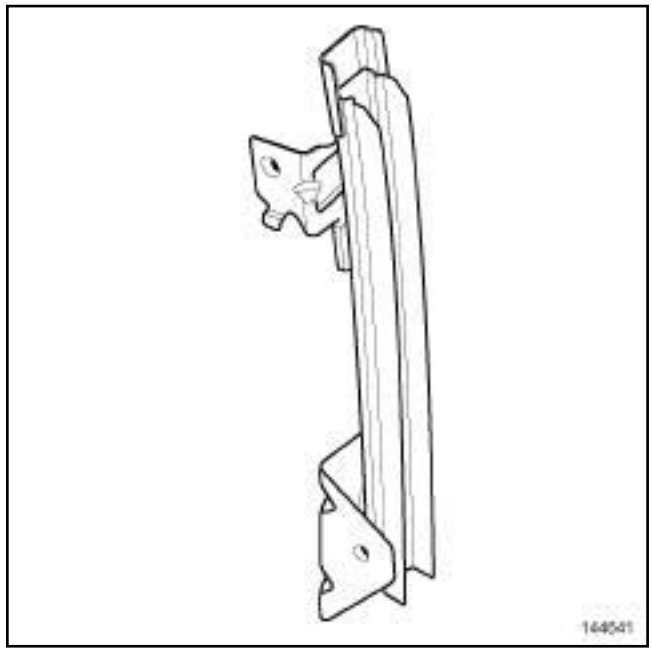
### II - REMOVAL OPERATION

❑ Partially remove the glass run channel from its mounting.




144638

❑ Remove the bolts (**2**) .




144641

❑ Remove the mounting of the rear side door run channel.

## REFITTING

❑ Proceed in the reverse order to removal.

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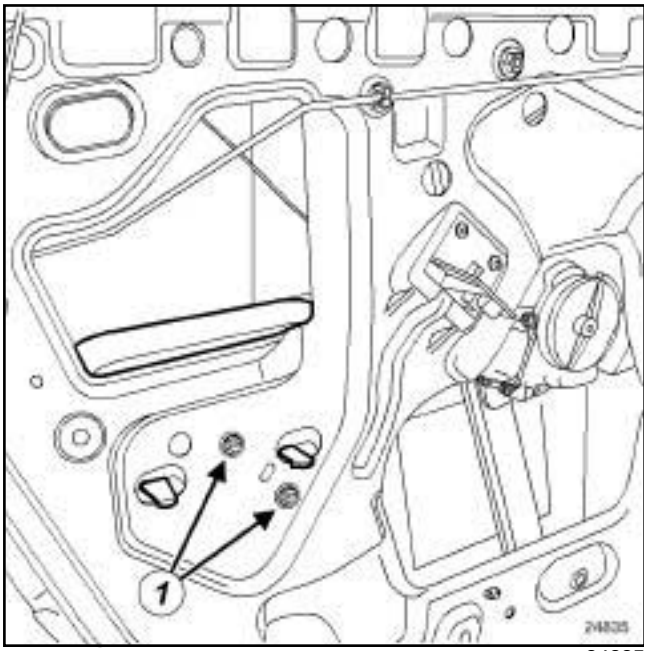
# Front side door slide mounting: Removal - Refitting

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the front side door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening elements trim).

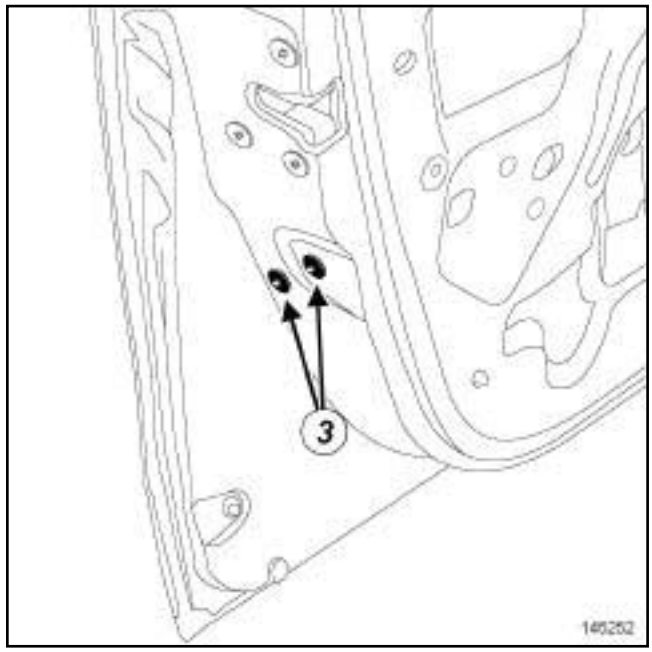



24835

❏ Remove the bolts (**1**) from the impact padding without extracting it.

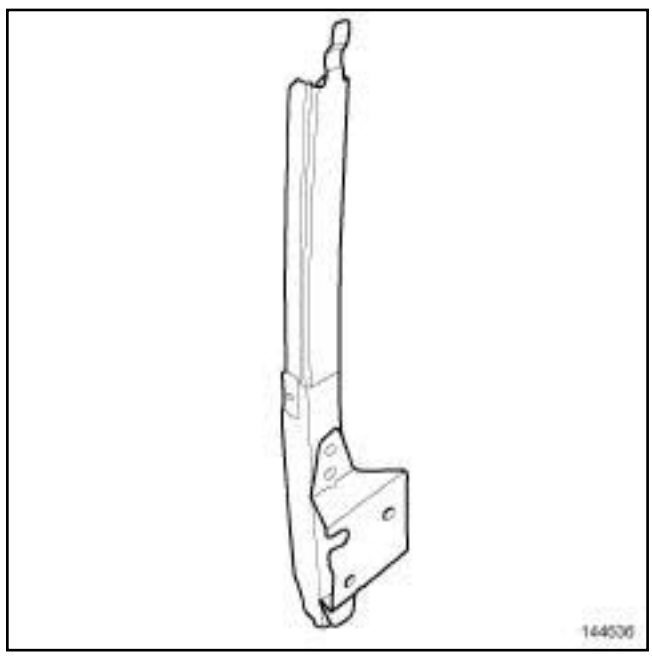
### II - REMOVAL OPERATION

❏ Partially remove the glass run channel from its mounting.




145252

❏ Remove the bolts (**3**) .




144636

❏ Remove the support of the front side door run channel.

## REFITTING

### REFITTING OPERATION

❏ Refit the front side door impact padding (see **Front side door impact padding: Removal - Refitting**) (59A, Safety accessories).

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# Front side door slide mounting: Removal - Refitting

**FINAL OPERATION**

❏ Proceed in the reverse order to removal.

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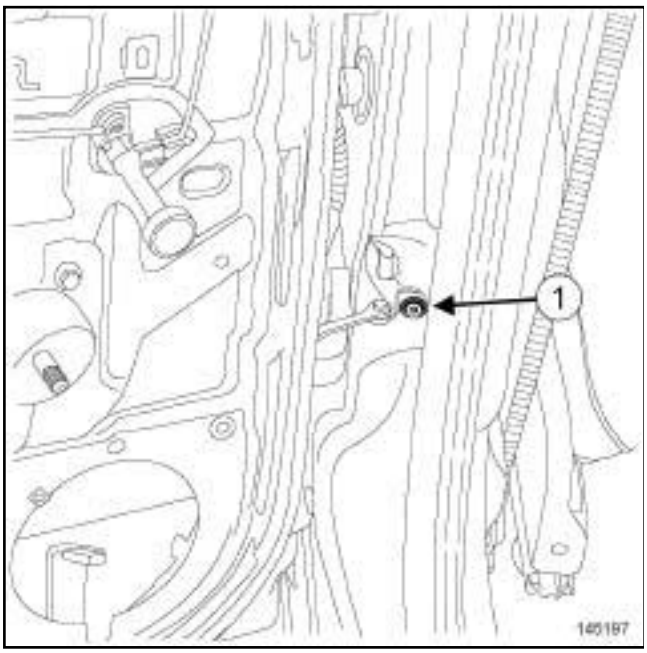
# Rear side door check strap: Removal - Refitting

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

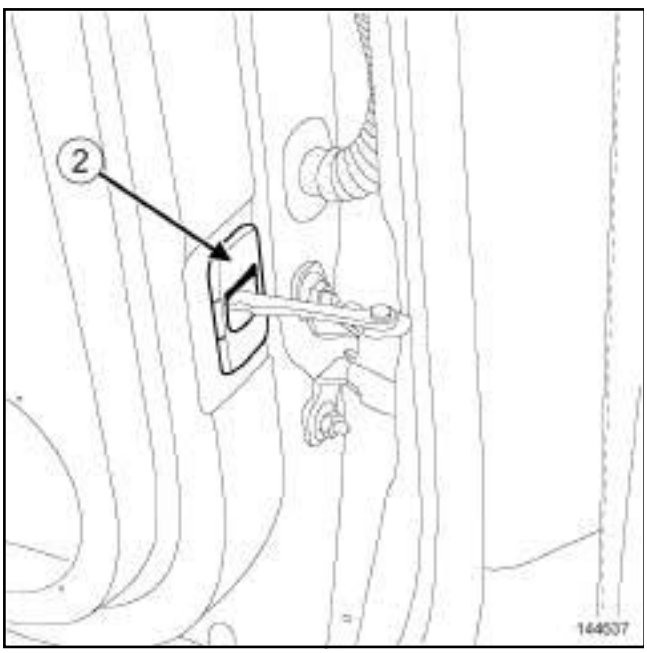
❏ Remove the rear side door trim (see **Rear side door trim: Removal - Refitting**) (72A, Side opening element trim).

### II - REMOVAL OPERATION



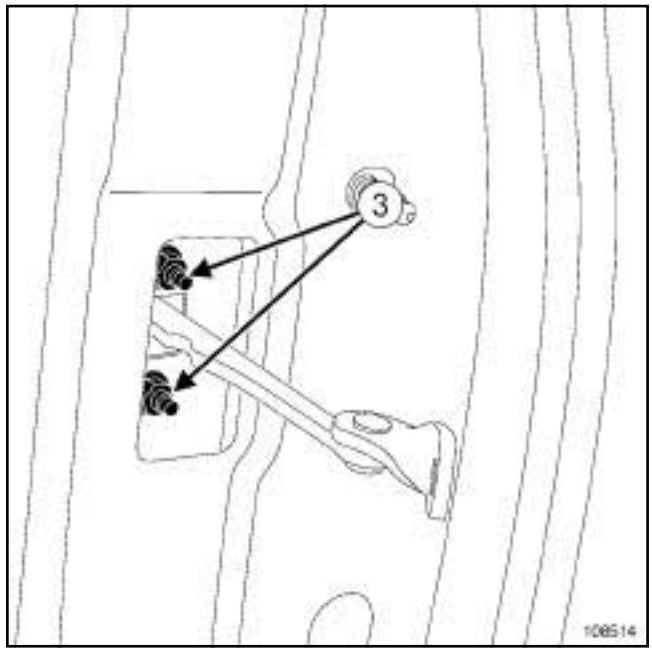

145197

❏ Remove the bolt (**1**) from the rear side door check strap.




144637

❏ Remove the rear side door check strap seal (**2**) .




108514

❏ Remove the bolts (**3**) .

❏ Remove the rear side door check strap from inside the rear side door box section.

## REFITTING

❏ Proceed in the reverse order to removal.

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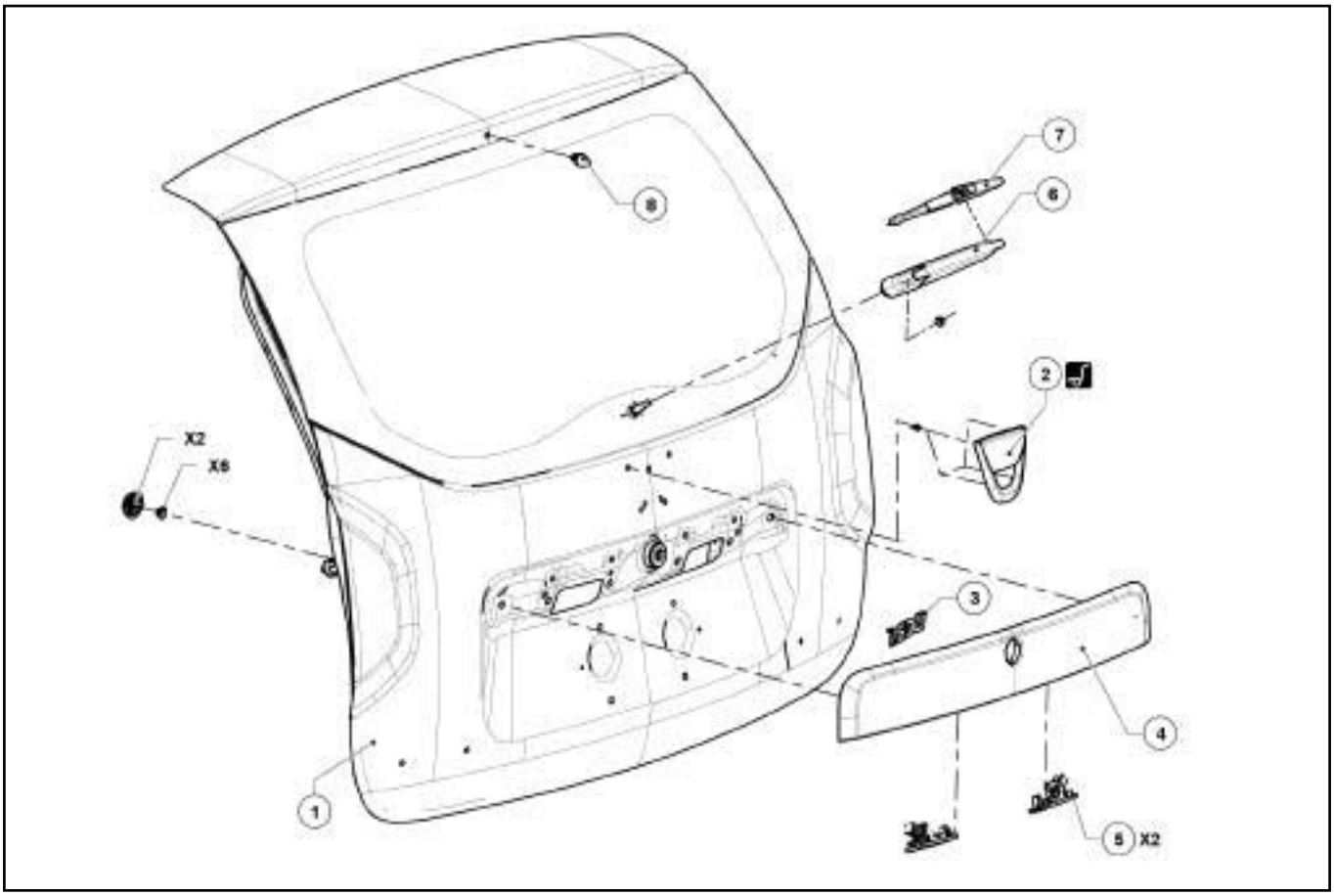
# Exterior rear opening element assembly: Exploded view




146094

(see **Illustration key: Description**) (01D, Mechanical introduction).

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## Exterior rear opening element assembly: Exploded view

| Mark | Description | Information |
|---|---|---|
| 1 | Bonnet | Material: Steel<br>(see **Bonnet: Removal - Refitting**) (48A, Non-side opening elements).<br>(see **Steel bodywork component: Preparation and paint range**) (Technical Note 0592A, Paint application range for panels). |
| 2 | Front bumper | Material: P/E<br>(see **55A**, **Exterior protection**, **Front bumper: Removal - Refitting**, page **55A-8**)<br>(see **55A**, **Exterior protection**, **Front bumper assembly: Exploded view**, page **55A-1**)<br>(see **Polypropylene bodywork component: Preparation and paint range**) (Technical Note 0592A, Paint application range for plastic).<br>(see **Plastic material bodywork component: Repair**) (50A, General information). |
| 3 | Bonnet hinge | |
| 4 | Front wing | Material: Steel<br>(see **Front wing: Removal - Refitting**) (42A, Upper front structure).<br>(see **Steel bodywork component: Preparation and paint range**) (Technical Note 0592A, Paint application range for panels). |
| 5 | Side pressure piece of front bumper | |
| 6 | Rivet of side pressure piece of front bumper | |
| 7 | Front section of sill panel extender | (see **56A**, **Exterior equipment**, **Exterior body side trim assembly: Exploded view**, page **56A-1**) |
| 8 | Front wheel arch liner | Material: P/E |
| 9 | Fog light | (see **Front fog light bulb: Removal - Refitting**) (80B Headlights). |

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## Exterior rear opening element assembly: Exploded view

| Mark | Description | Information |
|---|---|---|
| 10 | Side indicator | (see **Side indicator: Removal - Refitting**) (80B Headlights). |
| 11 | Headlight | (see **Headlight assembly: Exploded view**) (80B Headlights). |

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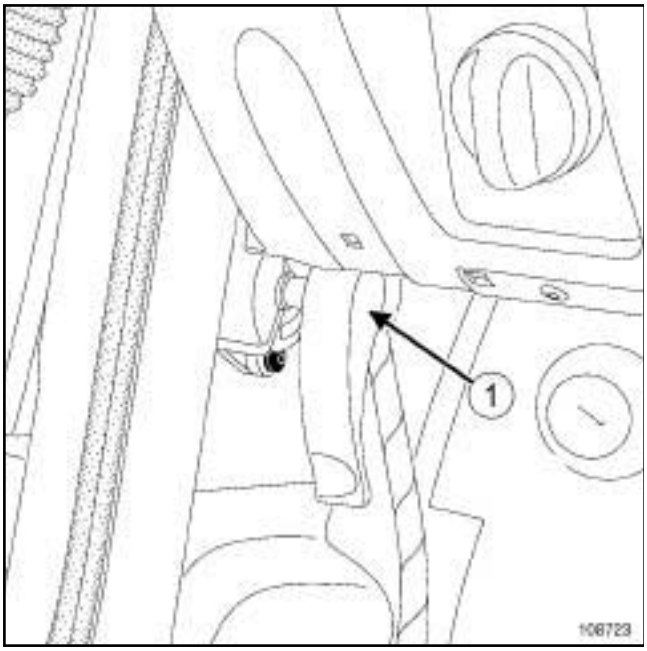
# Bonnet release control: Removal - Refitting

## REMOVAL

### REMOVAL OPERATION



108723

❏ Remove the bonnet release control (**1**) .

## REFITTING

❏ Proceed in the reverse order to removal.

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# Bonnet lock: Removal - Refitting

| Tightening torques ▽ | |
|---|---|
| bonnet catch nuts | **21 N.m** |

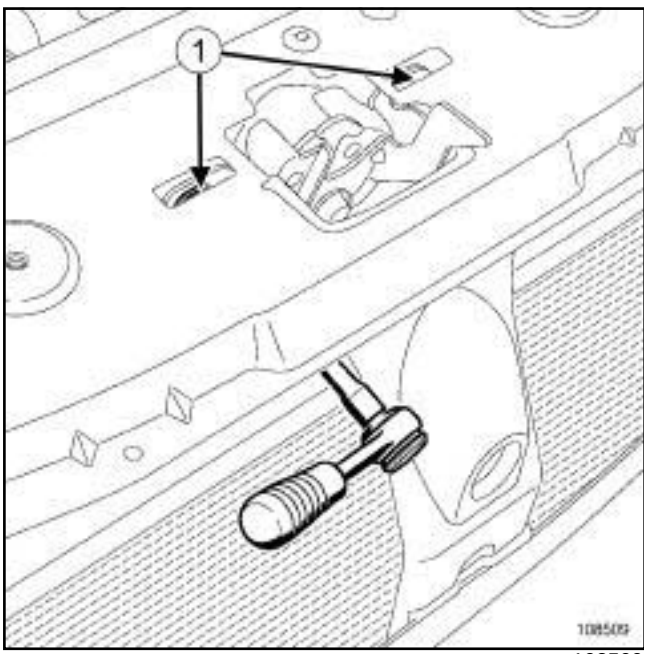
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove:

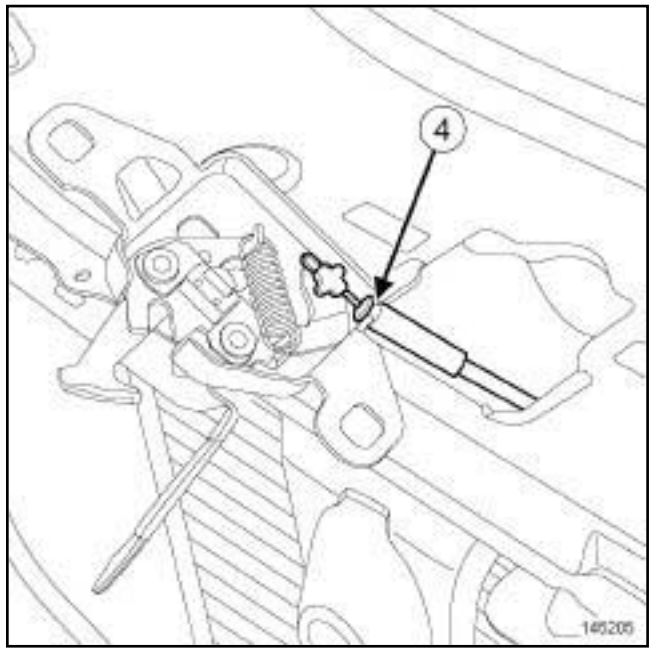
- the front bumper (see **55A**, **Exterior protection**, **Front bumper: Removal - Refitting**, page **55A-8**) ,
- the air deflector.

### II - REMOVAL OPERATION



108509

❏ Remove nuts (**1**) .



145205

❏ Remove the bonnet catch.

❏ Remove the opening release cable (**4**) .

## REFITTING

❏ Proceed in the reverse order to removal.

❏ Torque tighten the **bonnet catch nuts (21 N.m)**.

❏ Carry out a function test.

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# Bonnet release cable: Removal - Refitting

## REMOVAL

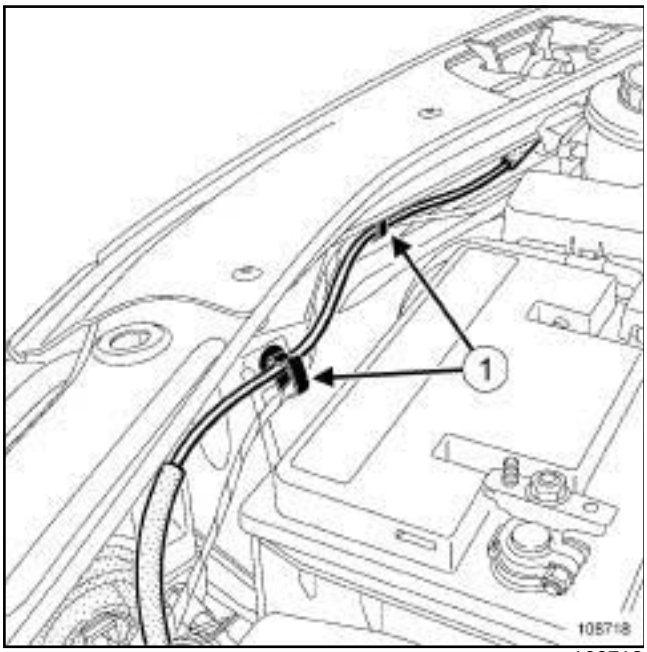
### I - REMOVAL PREPARATION OPERATION

❏ Remove:

- the front bumper (see **55A**, **Exterior protection**, **Front bumper: Removal - Refitting**, page **55A-8**) ,
- the bonnet catch (see **52A**, **Non-side opening element mechanisms**, **Bonnet lock: Removal - Refitting**, page **52A-5**) ,
- the bonnet release catch (see **52A**, **Non-side opening element mechanisms**, **Bonnet release control: Removal - Refitting**, page **52A-4**) .

### II - REMOVAL OPERATION

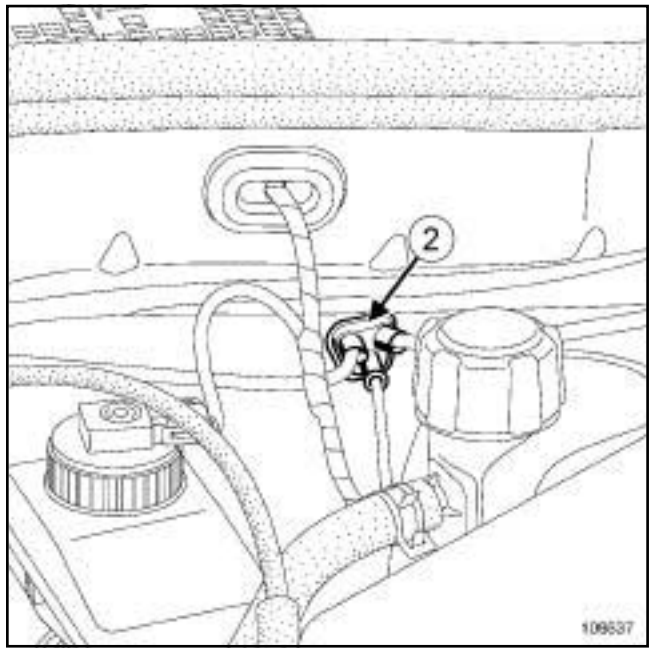
❏ Note the route of the bonnet release cable.




108718

❏ Unclip the bonnet opening cable at (**1**) .

❏ Remove the remote headlight beam adjustment control cables (see **Remote headlight beam adjustment control: Removal - Refitting**) (84A, Control - Signals).




108637

❏ Remove the blanking piece cable (**2**) .

❏ Remove the bonnet release cable from inside the vehicle.

## REFITTING

❏ Proceed in the reverse order to removal.

❏ Carry out a function test.

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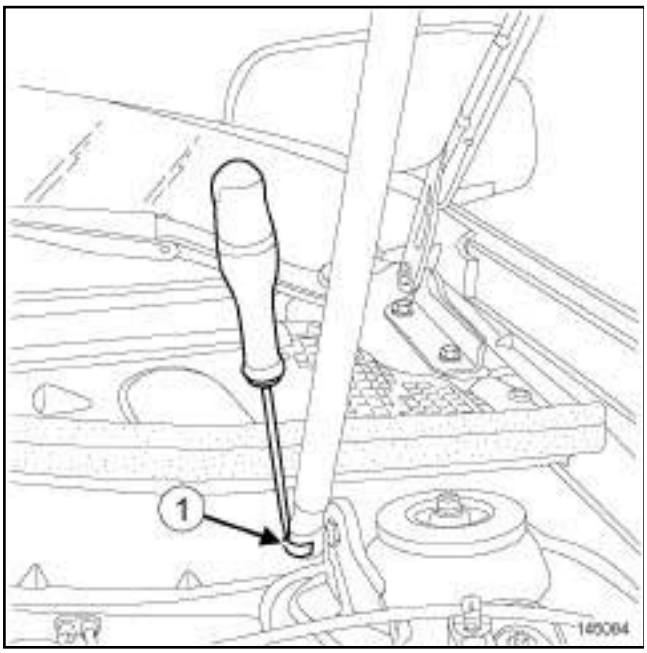
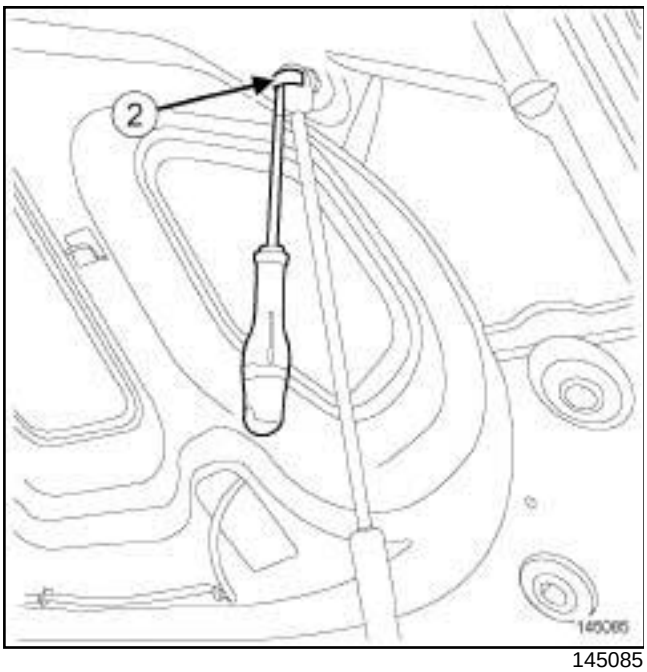
# Bonnet strut: Removal - Refitting

## REMOVAL

### REMOVAL OPERATION




145084



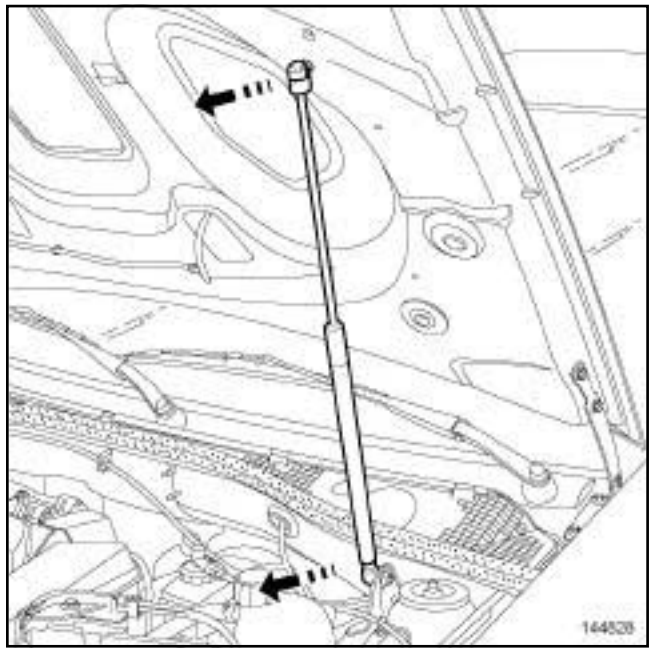

145085

❑

**WARNING**

The strut is fitted in such a way as to prevent leaks. Note the strut's direction of fitting (position of the body and cylinder rod) before removing it, in order to refit the strut identically.

❑ Unclip the clips (**1**) and (**2**) without removing them.




144828

❑ Remove the bonnet strut while holding the bonnet.

## REFITTING

❑ Position the clips on the bonnet strut.

❑ Proceed in the reverse order to removal

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# Tailgate lock: Removal - Refitting

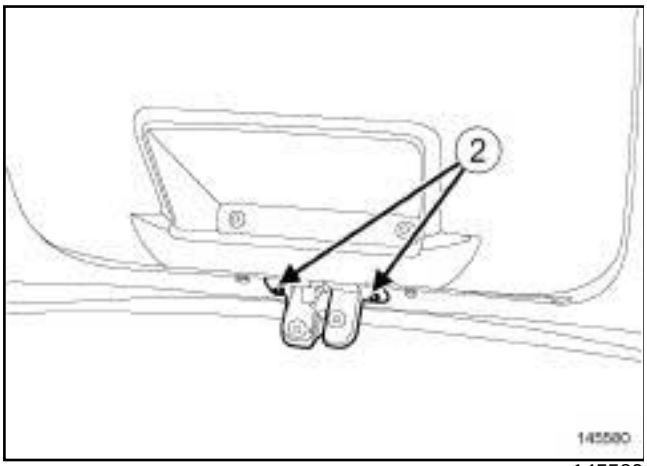
| Tightening torques ▽ | |
|---|---|
| tailgate lock bolts | **8 N.m** |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the tailgate trim (see **Tailgate trim: Removal - Refitting**) (73A, Tailgate trim).

### II - REMOVAL OPERATION

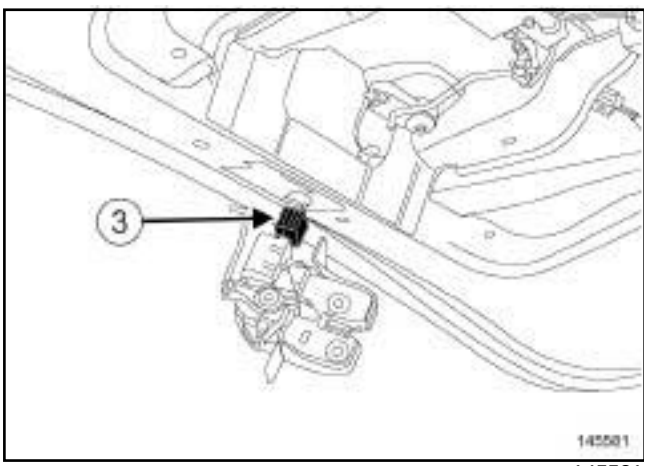



145580

❏ Remove:

- the bolts (**2**) ,
- the tailgate lock.

❏ Remove the tailgate lock control linkage.




145581

❏ Disconnect the tailgate lock connector (**3**) .

## REFITTING

❏ Proceed in the reverse order to removal.

❏ Torque tighten the **tailgate lock bolts (8 N.m)**.

❏ Carry out a function test.

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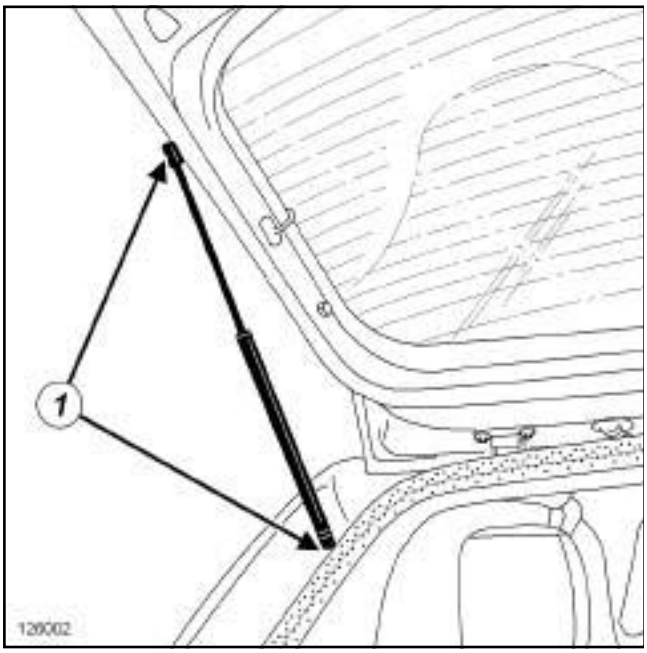
# Tailgate strut: Removal - Refitting

## REMOVAL

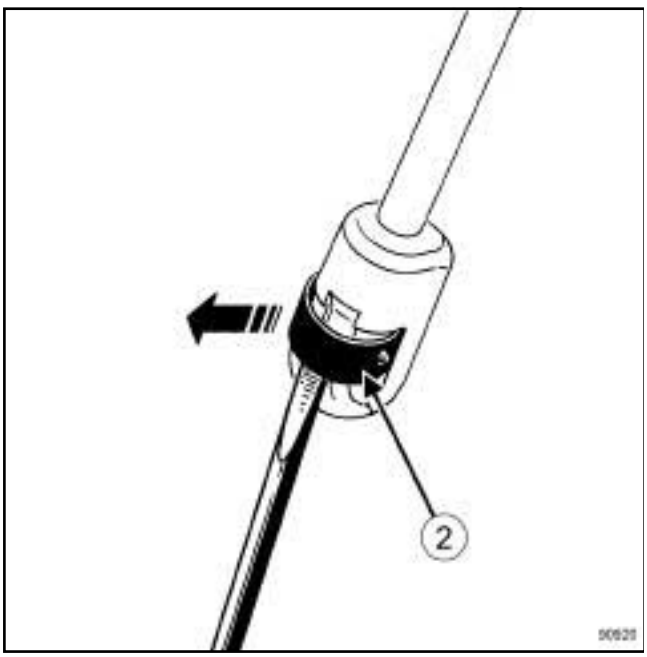
### I - REMOVAL PREPARATION OPERATION

❏ Note the direction in which the tailgate gas strut is fitted before removal.

### II - REMOVAL OPERATION




126002




90920

❏ At (**1**) , unclip the clips (**2**) using a flat-blade screwdriver without removing them.

❏ Remove the tailgate strut while holding the tailgate.

## REFITTING

❏ Position the clips on the tailgate strut.

❏ Proceed in the reverse order to removal.

Stamp PDF Merge and Split Unregistered Version - http://www.stamppdf.com

# Tailgate exterior opening control: Removal - Refitting

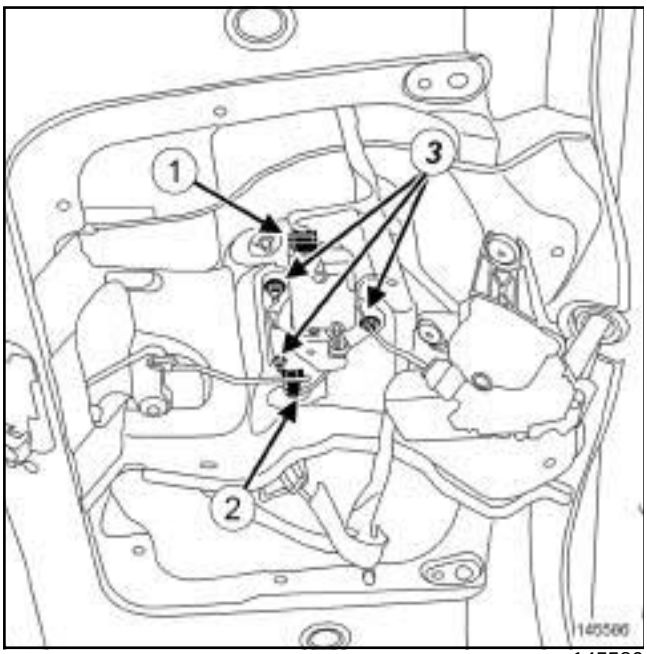
| Tightening torques ▽ | |
|---|---|
| the bolts of the tailgate control | 8 N.m |

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the tailgate trim (see **Tailgate trim: Removal - Refitting**) (73A, Non-side opening elements trim).

### II - REMOVAL OPERATION

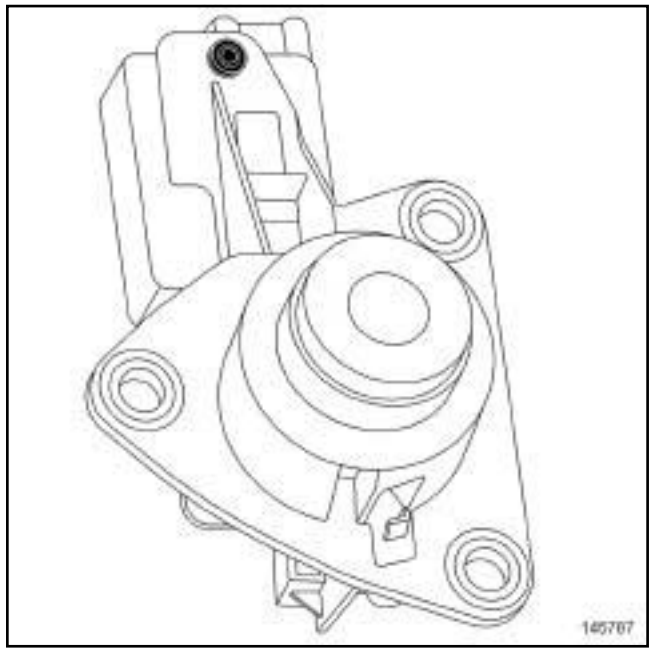



145586

❏ Disconnect the connector (**1**) of the tailgate exterior opening control.

❏ Unclip the linkage of the tailgate exterior opening control at (**2**) using a screwdriver.

❏ Remove the bolts of the tailgate exterior opening control (**3**) .




145787

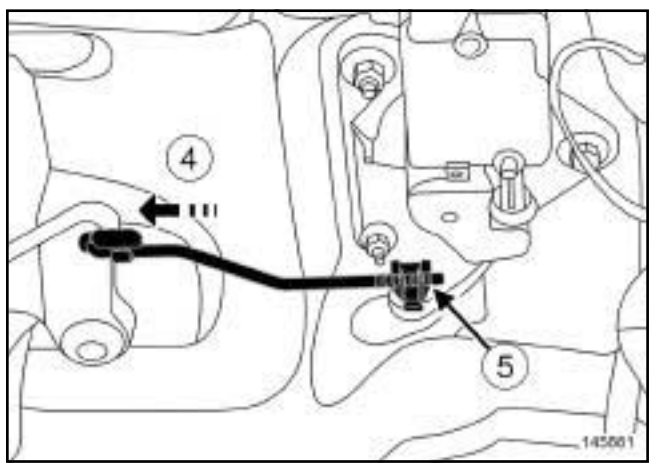
❏ Remove the tailgate exterior opening control.

## REFITTING

### REFITTING OPERATION

❏ Refit the tailgate exterior opening control.

❏ Torque tighten **the bolts of the tailgate control (8 N.m)**.




145881

❏ Pull the tailgate opening control linkage at (**4**) and clip on the linkage at (**5**) .

❏ Connect the tailgate opening control connector.

❏ Carry out a function test.

### FINAL OPERATION

❏ Proceed in the reverse order to removal.

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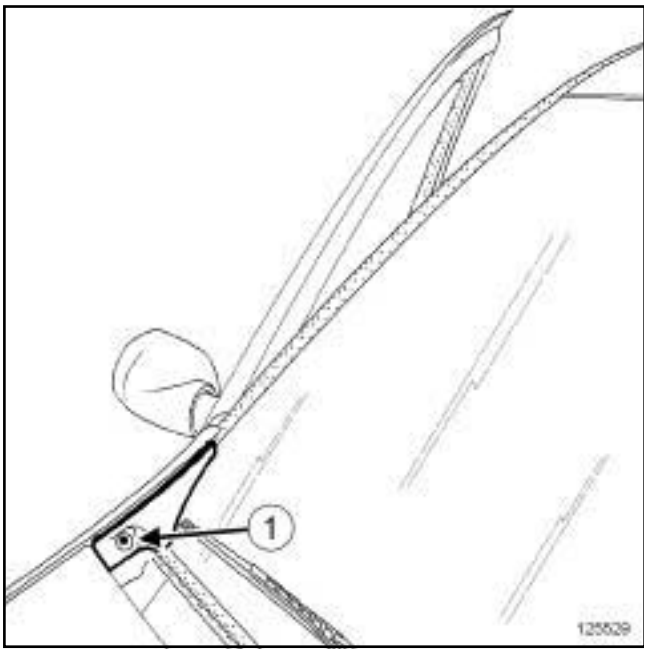
# Windscreen: Removal - Refitting

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove:

- the interior rear-view mirror (see **57A**, **Interior equipment**, **Interior rear-view mirror: Removal - Refitting**, page **57A-12**) (57A, Interior equipment),
- the windscreen pillar trims (see **Windscreen pillar trim: Removal - Refitting**) (71A, Body internal trim).

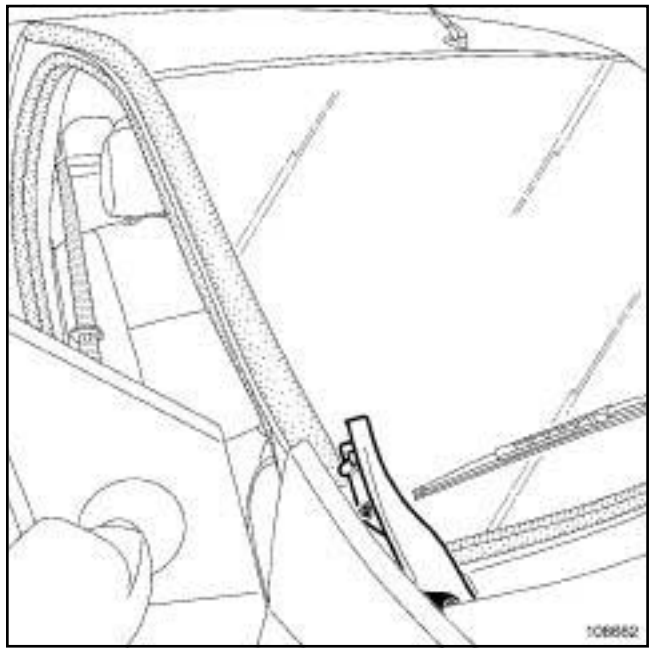



125529

❏ Remove the bolt (**1**) .

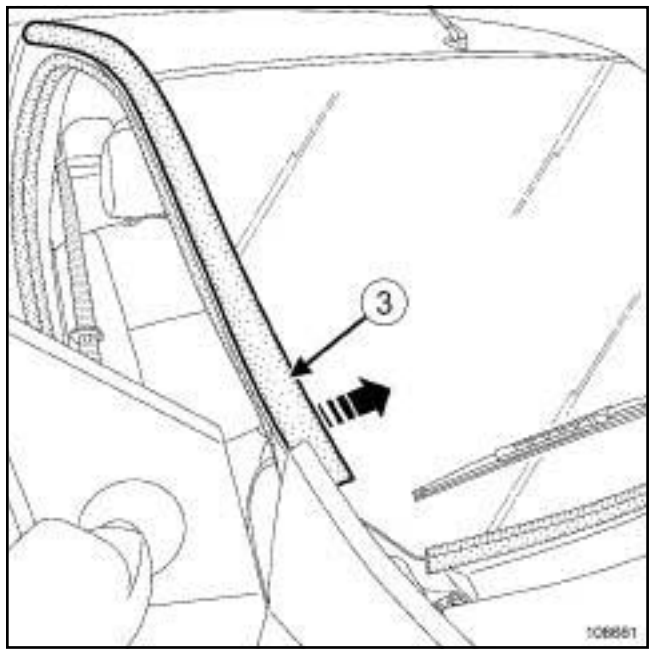
108663

❏ Unclip the trim (**2**) .



108662

❏ Remove the trim.




108661

❏ Partially remove the seals (**3**) .

❏ Remove the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing).

❏ Protect the windscreen surround and the headlining with masking tape.

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# Windscreen: Removal - Refitting

H79

❑ Fit the toolon the dashboard.

### II - REMOVAL OPERATION

❑ Cut the cement bead (see **Technical Note 0560A**).

❑ Remove the windscreen (this operation requires two people).

## REFITTING

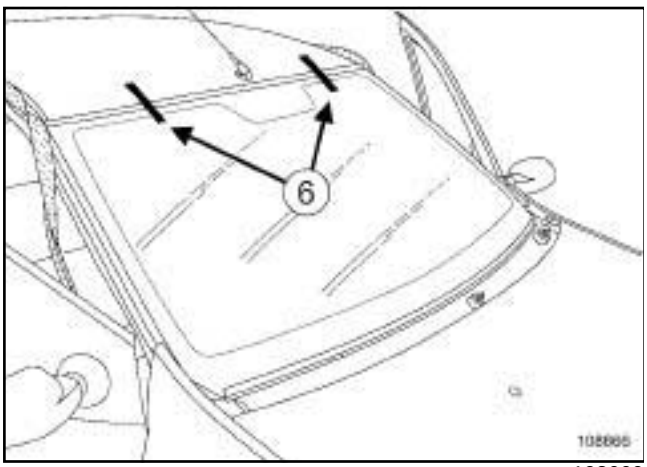
### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Windscreen adjusting shim**

❑ Fit new shims and retaining stops.

❑ For preparation and bonding, (see **Technical Note 0560A**).

### II - REFITTING OPERATION



108666

❑ Bond the windscreen (this operation requires two people).

❑ Respect the following clearances and flush fitting:

- « windscreen - roof »
- « windscreen - windscreen pillar »

❑ Stick on strips of masking tape ***(6)*** to hold the windscreen in position while the cement is drying.

❑ Proceed in the reverse order to removal.

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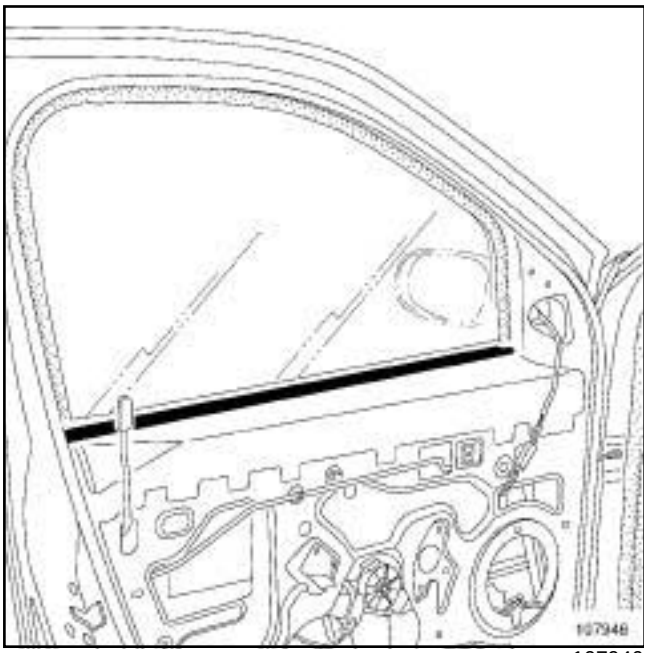
# Front side door sliding window: Removal - Refitting



## REMOVAL

### I - REMOVAL PREPARATION OPERATION

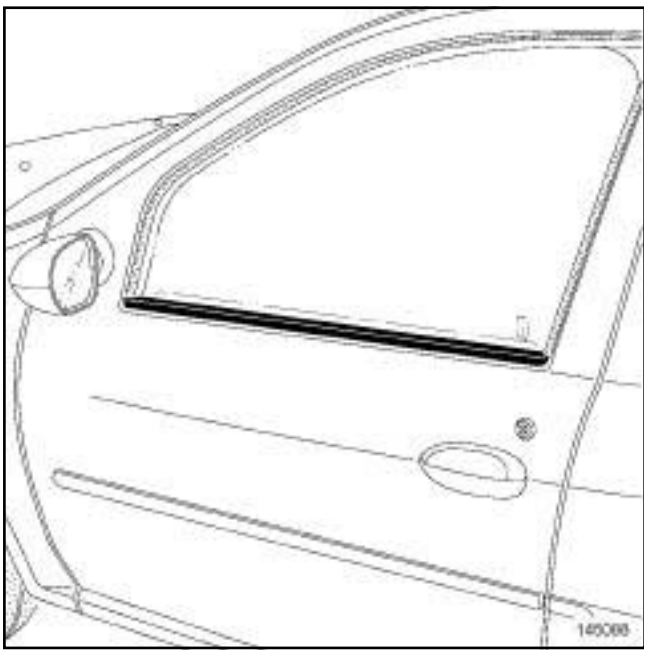
❏ Remove the front side door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening elements trim).




107946

❏ Remove the interior weatherstrip.

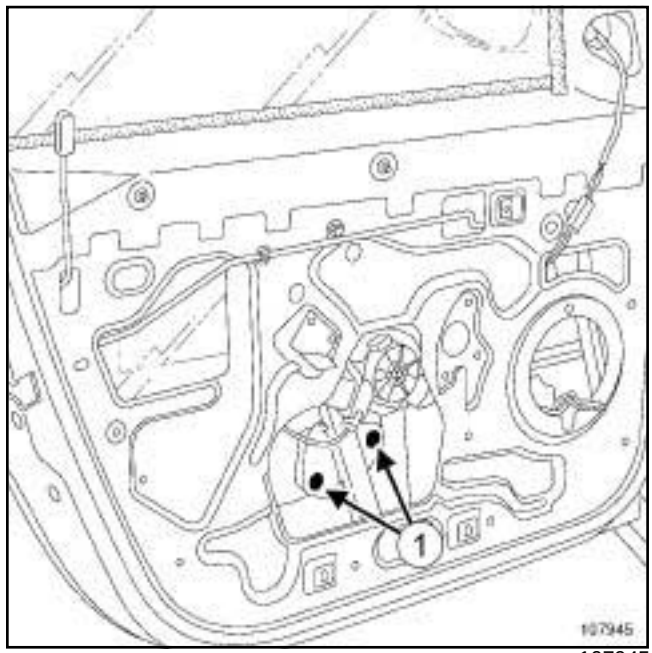
❏ Lower the window.




145088

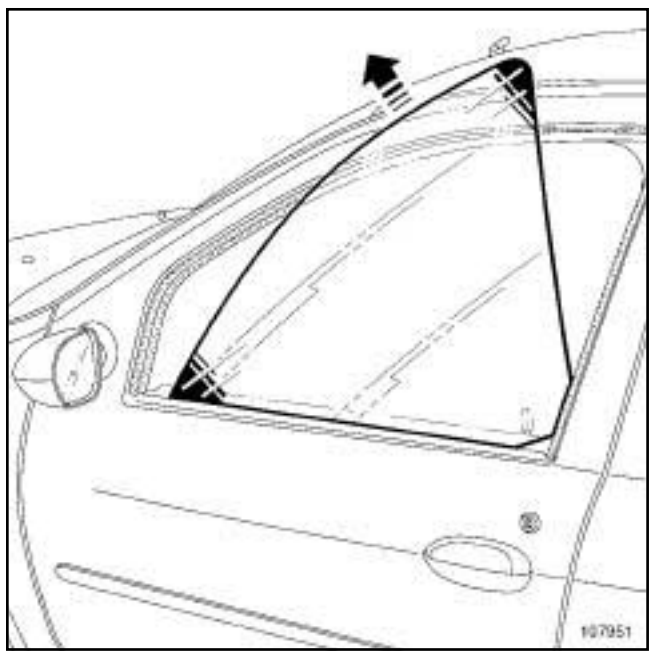
❏ Remove the exterior weatherstrip.

### II - REMOVAL OPERATION




107945

❏ Remove the bolts (**1**) .




107951

❏ Remove the window.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: front side opening element sliding window bolt**

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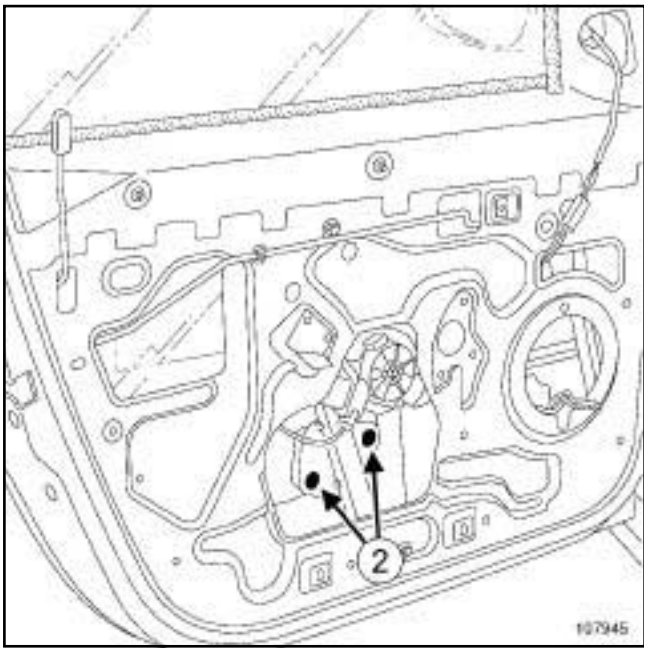
# Front side door sliding window: Removal - Refitting

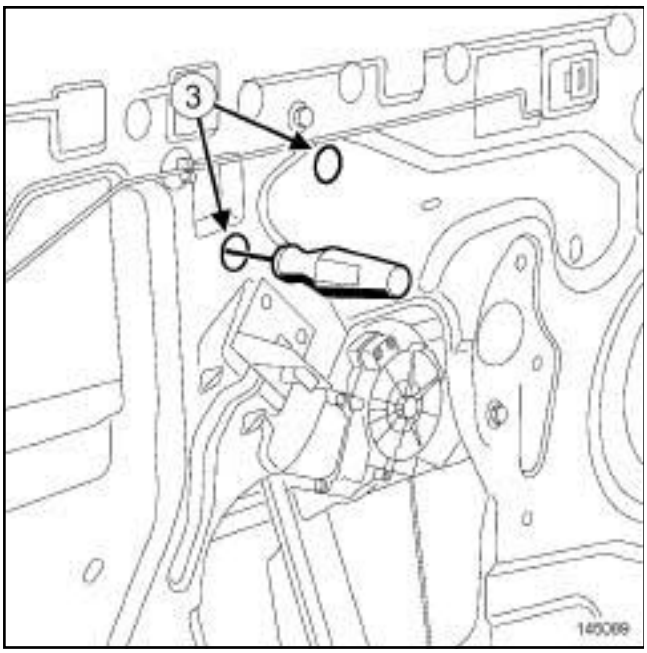
**II - REFITTING OPERATION**

❏ Refit the window.




107945

❏ Refit the bolts (**2**) without tightening them.




145089

❏ Tighten the bolts ***(2)*** through the holes (**3**) .

❏ Carry out a function test.

**III - FINAL OPERATION**

❏ Proceed in the reverse order to removal.

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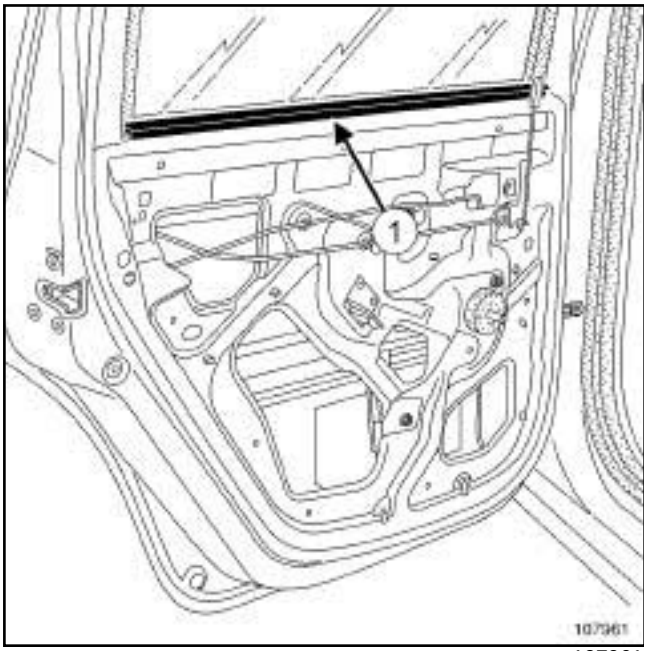
# Rear side door sliding window: Removal - Refitting



## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the rear side door trim (see **Rear side door trim: Removal - Refitting**) (72A, Side opening element trim).

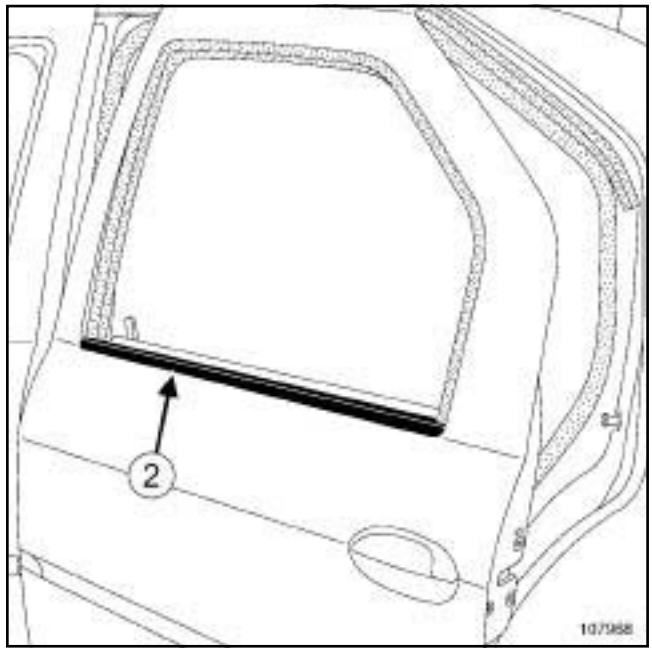



107961

❏ Remove the interior weatherstrip (**1**) .

❏ Remove the channel from its mounting.

❏ Remove the channel mounting (see **51A**, **Side opening element mechanisms**, **Rear side door slide mounting: Removal - Refitting**, page **51A-20**) (51A, Side opening element mechanisms).

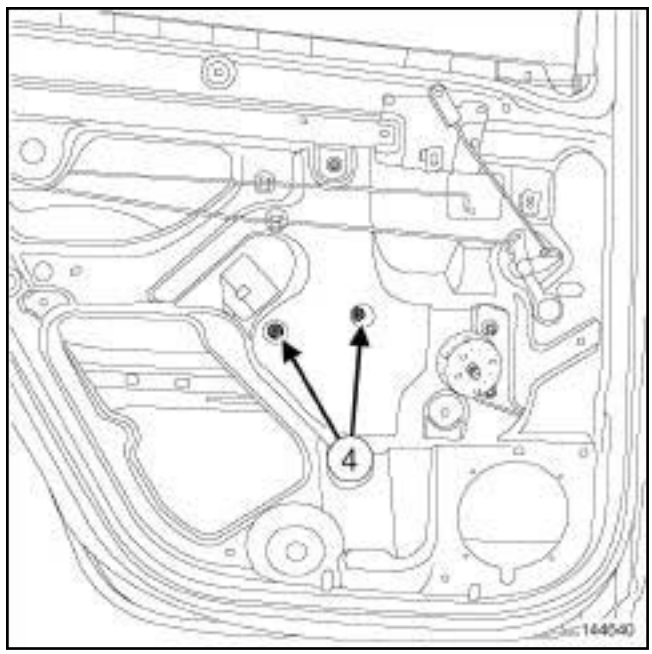



107968

❏ Lower the window.

❏ Remove the exterior weatherstrip (**2**) .

### II - REMOVAL OPERATION




144640

❏ Remove the bolts (**4**) .

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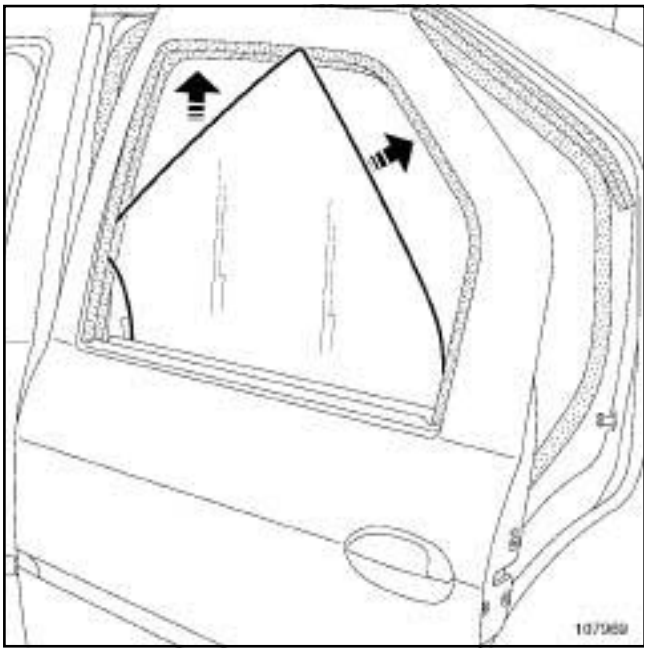
# Rear side door sliding window: Removal - Refitting






107969

❑ Remove the window.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: rear side opening element sliding window bolt**

### II - REFITTING OPERATION

❑ Refit the window.

❑ Refit the bolts ***(4)*** .

❑ Carry out a function test.

### III - FINAL OPERATION

❑ Proceed in the reverse order to removal.

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# Rear quarter panel window: Removal - Refitting



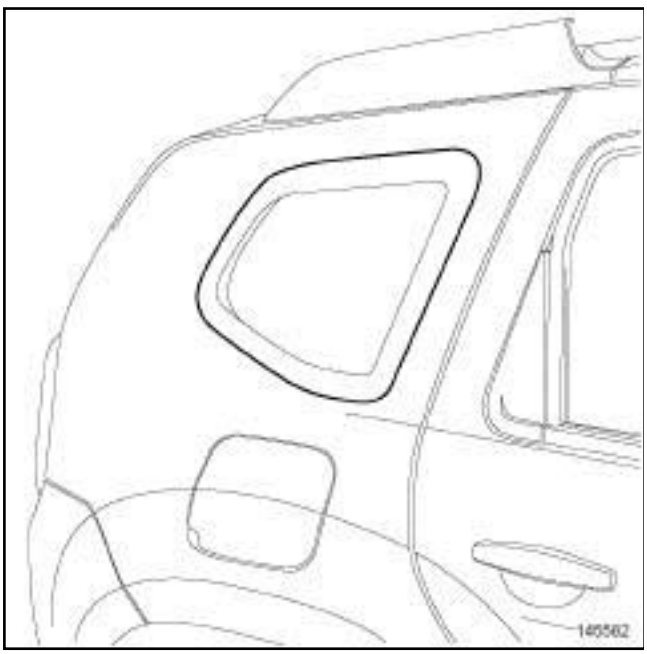
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove (see **Interior body side trim assembly: Exploded view**) :

- the C-pillar trim,
- the parcel shelf side trim,
- the C-pillar upper trim.

### II - REMOVAL OPERATION




145582

❏ Protect the edges of the quarter panel window using masking tape.

❏ Cut the cement bead **(see Technical Note 0560A)**.

❏ Remove the rear quarter panel window (this operation requires two people).

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: Windscreen adjusting shim**.

❏ Fit new shims and retaining stops.

❏ For preparation and bonding **(see Technical Note 0560A)**.

### II - REFITTING OPERATION

❏ Bond the rear quarter panel window (this operation requires two people).

❏ Equal out the clearances and shut lines.

❏ Remove the tabs from the stops when the adhesive has dried.

### III - FINAL OPERATION

❏ Proceed in the reverse order to removal.

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# Rear screen: Removal - Refitting

## REMOVAL

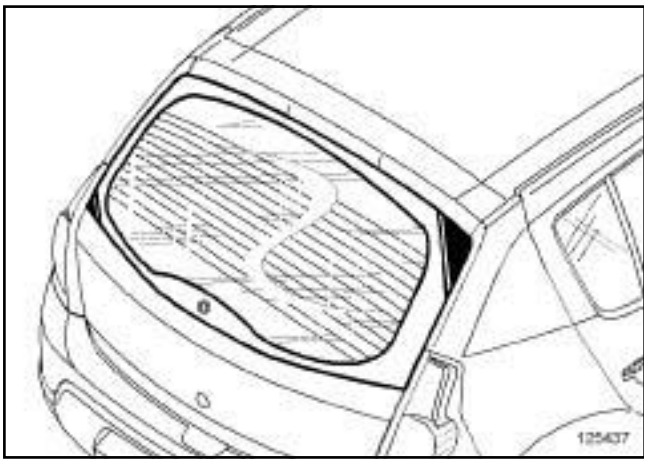
### I - REMOVAL PREPARATION OPERATION

❏ Remove:

- the tailgate trim (see **Tailgate trim: Removal - Refitting**) (73A, Non-side opening elements trim),
- the rear screen wiper arm (see **Rear screen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
- the rear screen wiper motor (see **Rear screen wiper motor: Removal - Refitting**) (85A, Wiping - Washing),
- the high level brake light (see **3rd brake light: Removal - Refitting**) (81A, Rear lighting).

❏ Disconnect the heated rear screen wiring harness.

### II - REMOVAL OPERATION




125437

❏ Protect the edges of the rear screen using masking tape.

❏ Cut the cement bead (see **Technical Note 0560A**).

❏ Remove the rear screen window (this operation requires two people).

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ **parts always to be replaced: Rear screen adjusting shim**

❏ Refit the rear screen wiper motor (see **Rear screen wiper motor: Removal - Refitting**) (85A, Wiping - Washing) to act as a guide for positioning the rear screen.

❏ For preparation and bonding (see **Technical Note 0560A**).

### II - REFITTING OPERATION FOR PART CONCERNED

❏ Bond the rear screen (two people are required for this operation).

❏ Equal out the clearances and shut lines.

❏ Remove the tabs from the stops once the adhesive has dried.

### III - FINAL OPERATION

❏ Connect the heated rear screen wiring harness connectors.

❏ Refit:

- the high level brake light (see **3rd brake light: Removal - Refitting**) (81A, Rear lighting),
- the rear screen wiper arm (see **Rear screen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
- the rear screen wiper blade (see **Rear screen wiper blade: Removal - Refitting**) (85A, Wiping - Washing),
- the tailgate trim (see **Tailgate trim: Removal - Refitting**) (73A, Non-side opening elements trim).

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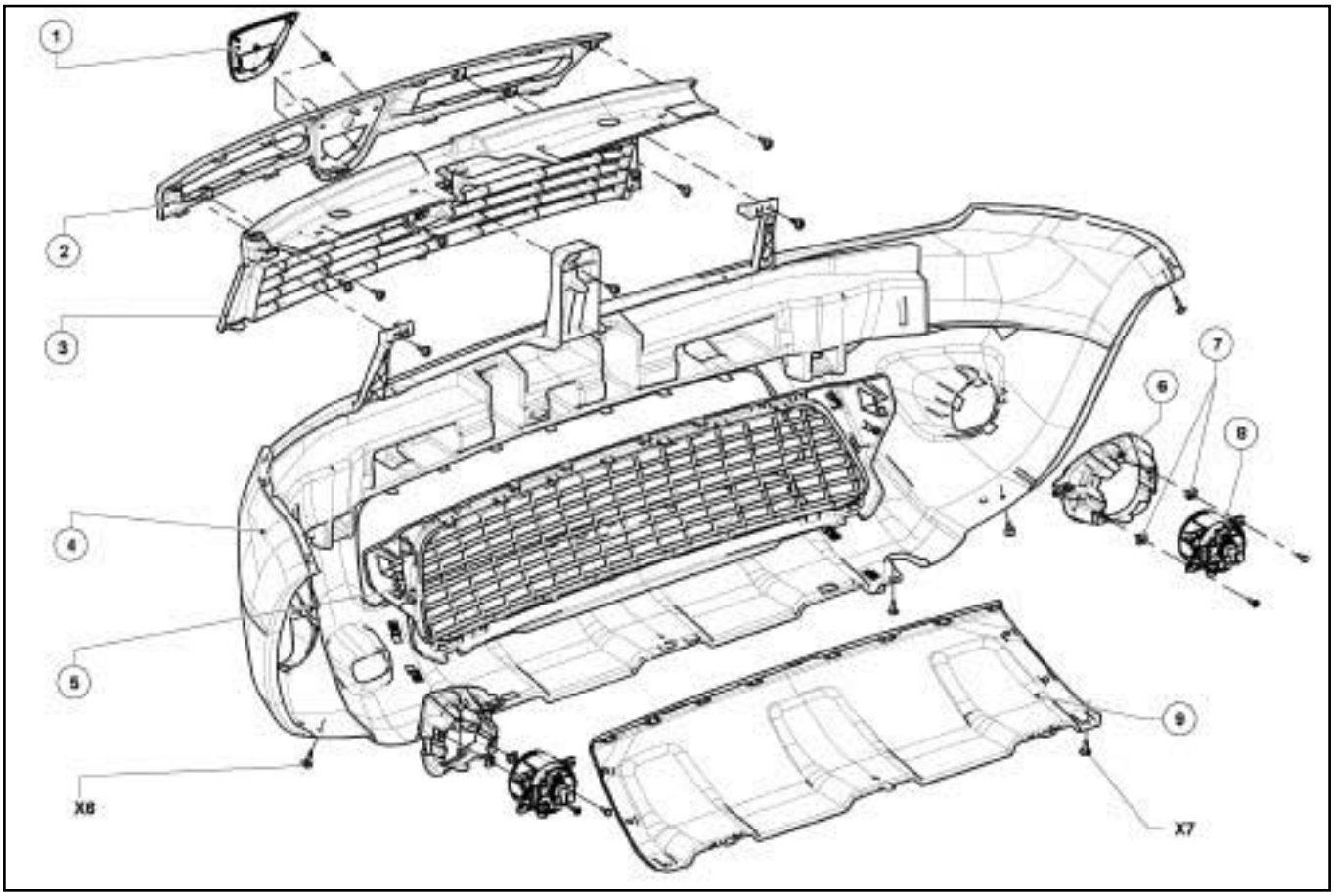
# Front bumper assembly: Exploded view




146092

(see **Illustration key: Description**) (01D, Mechanical introduction).

| Mark | Description | Information |
|---|---|---|
| 1 | Front badge | |
| 2 | Front bumper upper trim | Material: ABS |
| 3 | Radiator grille | Material: ASA |
| 4 | Front bumper | Material: P/E<br>(see **55A**, **Exterior protection**, **Front bumper: Removal - Refitting**, page **55A-8**)<br>(see **55A**, **Exterior protection**, **Exterior body front trim assembly: Exploded view**, page **55A-5**)<br>(see **Polypropylene bodywork component: Preparation and paint range**) (Technical Note 0592A, Paint application range for plastic).<br>(see **Plastic material bodywork component: Repair**) (50A, General information). |

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# Front bumper assembly: Exploded view

| Mark | Description | Information |
|---|---|---|
| 5 | Front bumper lower grille | Material: P/E+EPDM |
| 6 | Fog light mounting | |
| 7 | Fog light mounting clip | |
| 8 | Fog light | (see **Front fog light bulb: Removal - Refitting**) (80B Headlights). |
| 9 | Front bumper centre trim | Material: P/E |

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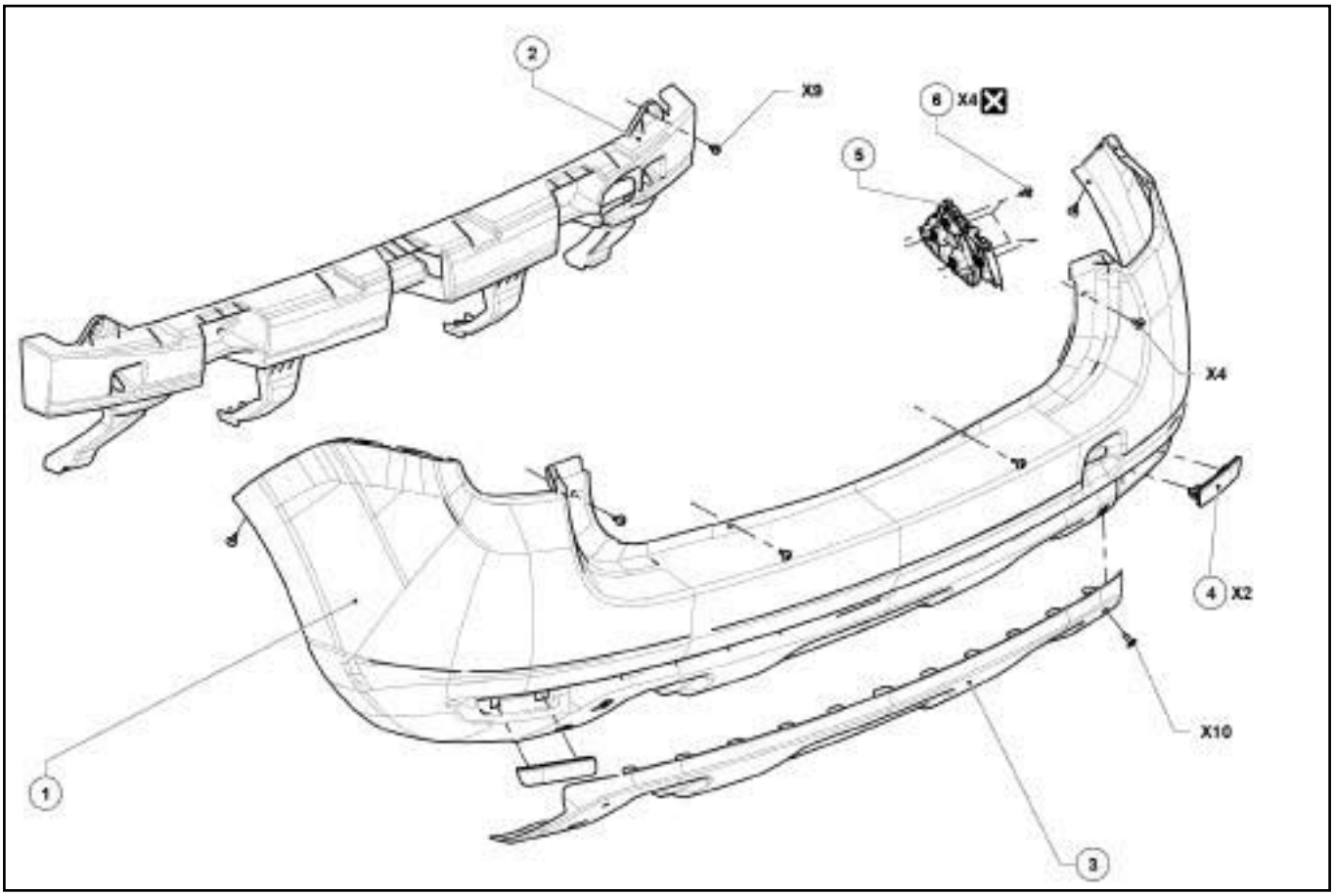
# Rear bumper assembly: Exploded view




146093

(see **Illustration key: Description**) (01D, Mechanical introduction).

| Mark | Description | Information |
|---|---|---|
| 1 | Rear bumper | Material: P/E<br>(see **55A**, **Exterior protection**, **Rear bumper: Removal - Refitting**, page **55A-9**)<br>(see **Polypropylene bodywork component: Preparation and paint range**) (Technical Note 0592A, Paint application range for plastic).<br>(see **Plastic material bodywork component: Repair**) (50A, General information). |
| 2 | Rear bumper absorber | |
| 3 | Rear bumper trim | Material: PP |
| 4 | Reflector | |

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# Rear bumper assembly: Exploded view

| Mark | Description | Information |
|---|---|---|
| 5 | Side pressure piece of rear bumper | |
| 6 | Rivet of side pressure piece of rear bumper | |

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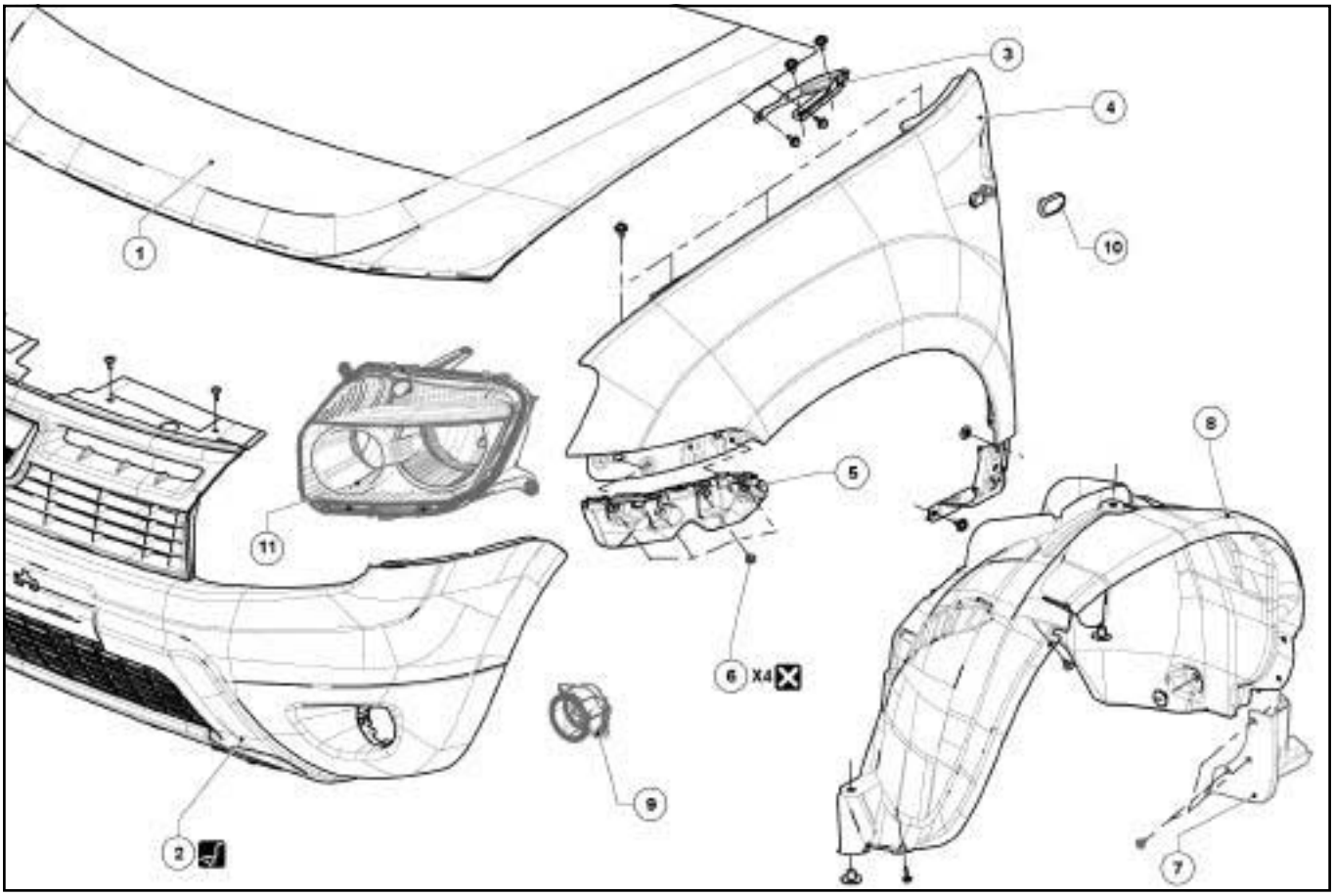
# Exterior body front trim assembly: Exploded view




146095

(see **Illustration key: Description**) (01D, Mechanical introduction).

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# Exterior body front trim assembly: Exploded view

| Mark | Description | Information |
|---|---|---|
| 1 | Bonnet | Material: Steel<br>(see **Bonnet: Removal - Refitting**) (48A, Non-side opening elements).<br>(see **Steel bodywork component: Preparation and paint range**) (Technical Note 0592A, Paint application range for panels). |
| 2 | Front bumper | Material: P/E<br>(see **55A**, **Exterior protection**, **Front bumper: Removal - Refitting**, page **55A-8**)<br>(see **55A**, **Exterior protection**, **Front bumper assembly: Exploded view**, page **55A-1**)<br>(see **Polypropylene bodywork component: Preparation and paint range**) (Technical Note 0592A, Paint application range for plastic).<br>(see **Plastic material bodywork component: Repair**) (50A, General information). |
| 3 | Bonnet hinge | |
| 4 | Front wing | Material: Steel<br>(see **Front wing: Removal - Refitting**) (42A, Upper front structure).<br>(see **Steel bodywork component: Preparation and paint range**) (Technical Note 0592A, Paint application range for panels). |
| 5 | Side pressure piece of front bumper | |
| 6 | Rivet of side pressure piece of front bumper | |
| 7 | Front section of sill panel extender | (see **56A**, **Exterior equipment**, **Exterior body side trim assembly: Exploded view**, page **56A-1**) |
| 8 | Front wheel arch liner | Material: P/E |
| 9 | Fog light | (see **Front fog light bulb: Removal - Refitting**) (80B Headlights). |

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# Exterior body front trim assembly: Exploded view

| Mark | Description | Information |
|---|---|---|
| 10 | Side indicator | (see **Side indicator: Removal - Refitting**) (80B Headlights). |
| 11 | Headlight | (see **Headlight assembly: Exploded view**) (80B Headlights). |

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# Front bumper: Removal - Refitting

| Special tooling required | |
|---|---|
| **Car. 1363** | Set of trim removal levers. |

Location and specifications (tightening torques, parts always to be replaced, etc.) (see **55A**, **Exterior protection**, **Front bumper assembly: Exploded view**, page **55A-1**) and (see **55A**, **Exterior protection**, **Exterior body front trim assembly: Exploded view**, page **55A-5**) .

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

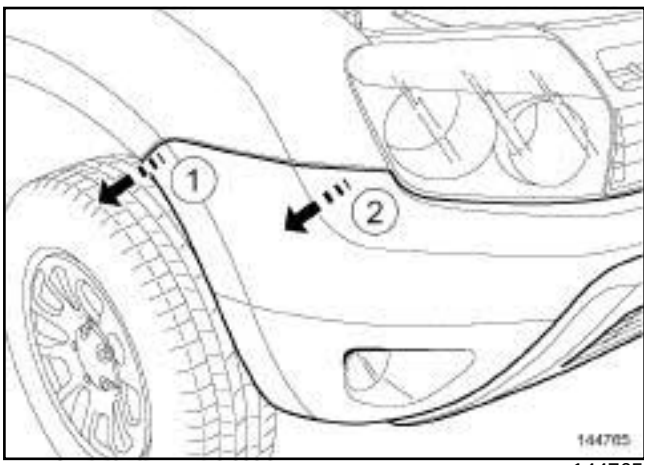
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

### II - REMOVAL OPERATION

❏ Remove (see **55A**, **Exterior protection**, **Front bumper assembly: Exploded view**, page **55A-1**) :

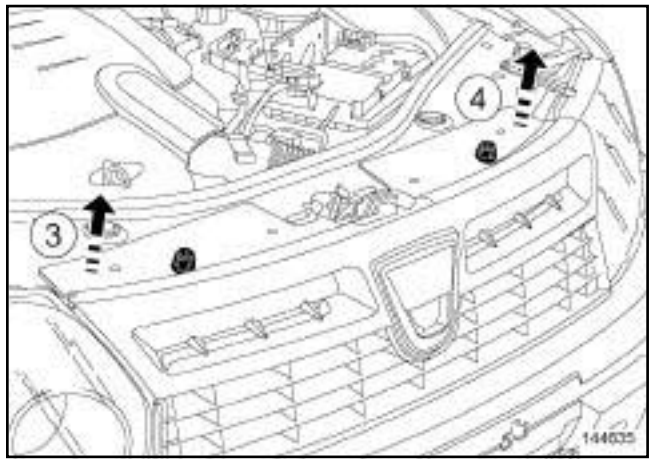
- the front wheel arch liner bolts on the front bumper on each side of the vehicle,
- the lower bolts of the front bumper.

❏ Remove the upper bolts of the front bumper (see **55A**, **Exterior protection**, **Exterior body front trim assembly: Exploded view**, page **55A-5**) .




144765

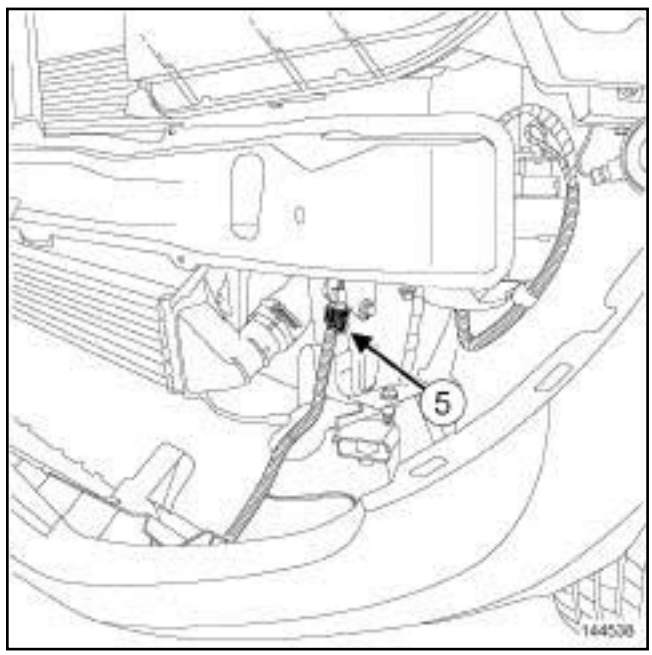
❏ Unclip the side sections of the front bumper at (**1**) and (**2**) using the tool **(Car. 1363)**.




144635

❏ Slightly raise the upper section of the front bumper at (**3**) and (**4**) (this operation requires two people).

FOG LIGHTS




144538

❏ Partially remove the front bumper (this operation requires two people).

❏ Unclip the fog lights connector (**5**) .

❏ Disconnect the fog lights connector.

❏ Remove the front bumper (this operation requires two people).

## REFITTING

❏ Proceed in the reverse order to removal.

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Location and specifications (tightening torques, parts always to be replaced, etc.) (see **55A**, **Exterior protection**, **Rear bumper assembly: Exploded view**, page **55A-3**) .

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

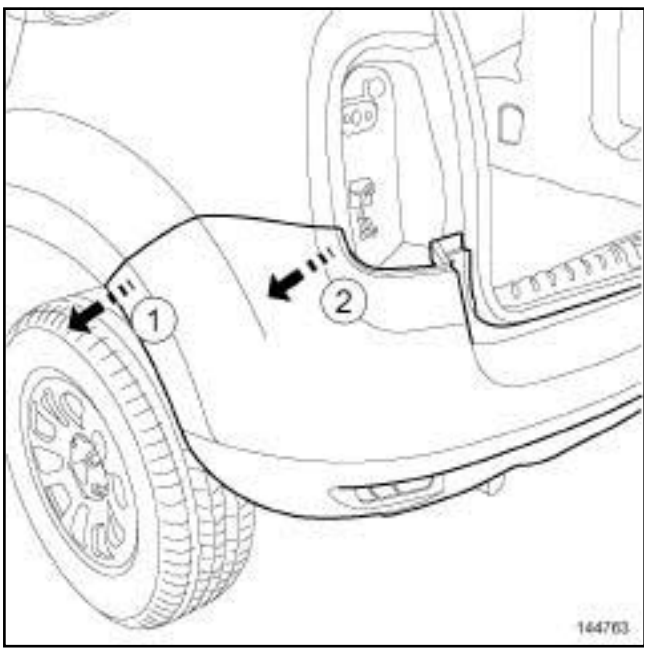
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove the rear wing lights (see **Rear light assembly: Exploded view**) (81A, Rear lighting).

### II - REMOVAL OPERATION

❏ Remove (see **55A**, **Exterior protection**, **Rear bumper assembly: Exploded view**, page **55A-3**) :

- the rear wheel arch liner bolts on the rear bumper on each side of the vehicle,
- the lower bolts of the rear bumper,
- the upper bolts of the rear bumper.



144763

❏ Unclip the side sections of the rear bumper at (**1**) and (**2**) .

❏ Remove the rear bumper (this operation requires two people).

## REFITTING

❏ Proceed in the reverse order to removal.

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# Front wheel arch liner: Removal - Refitting

Location and specifications (tightening torques, parts always to be replaced, etc.) (see **55A**, **Exterior protection**, **Exterior body front trim assembly: Exploded view**, page **55A-5**) .

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove the front wheel on the side concerned (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

### II - REMOVAL OPERATION

❏ Remove (see **55A**, **Exterior protection**, **Exterior body front trim assembly: Exploded view**, page **55A-5**) :

- the front wheel arch liner bolts,
- the front wheel arch liner clips,
- the front wheel arch liner.

## REFITTING

❏ Proceed in the reverse order to removal.

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# Rear wheel arch liner: Removal - Refitting

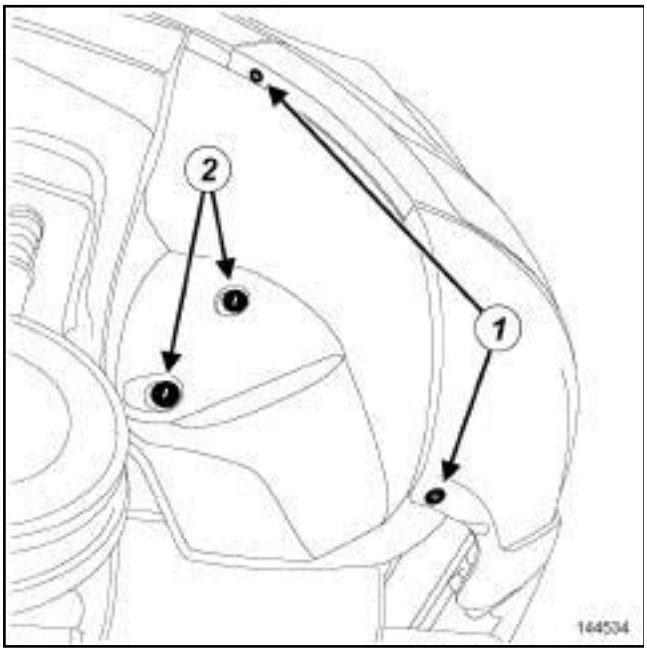
## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove the rear wheel on the side concerned (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

### II - REMOVAL OPERATION




144534

❏ Remove:

- the bolts (**1**) ,
- the clips (**2**) .
- the rear wheel arch liner.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Check the condition of the clipsand replace them if necessary.

### II - REFITTING OPERATION

❏ Proceed in the reverse order to removal.

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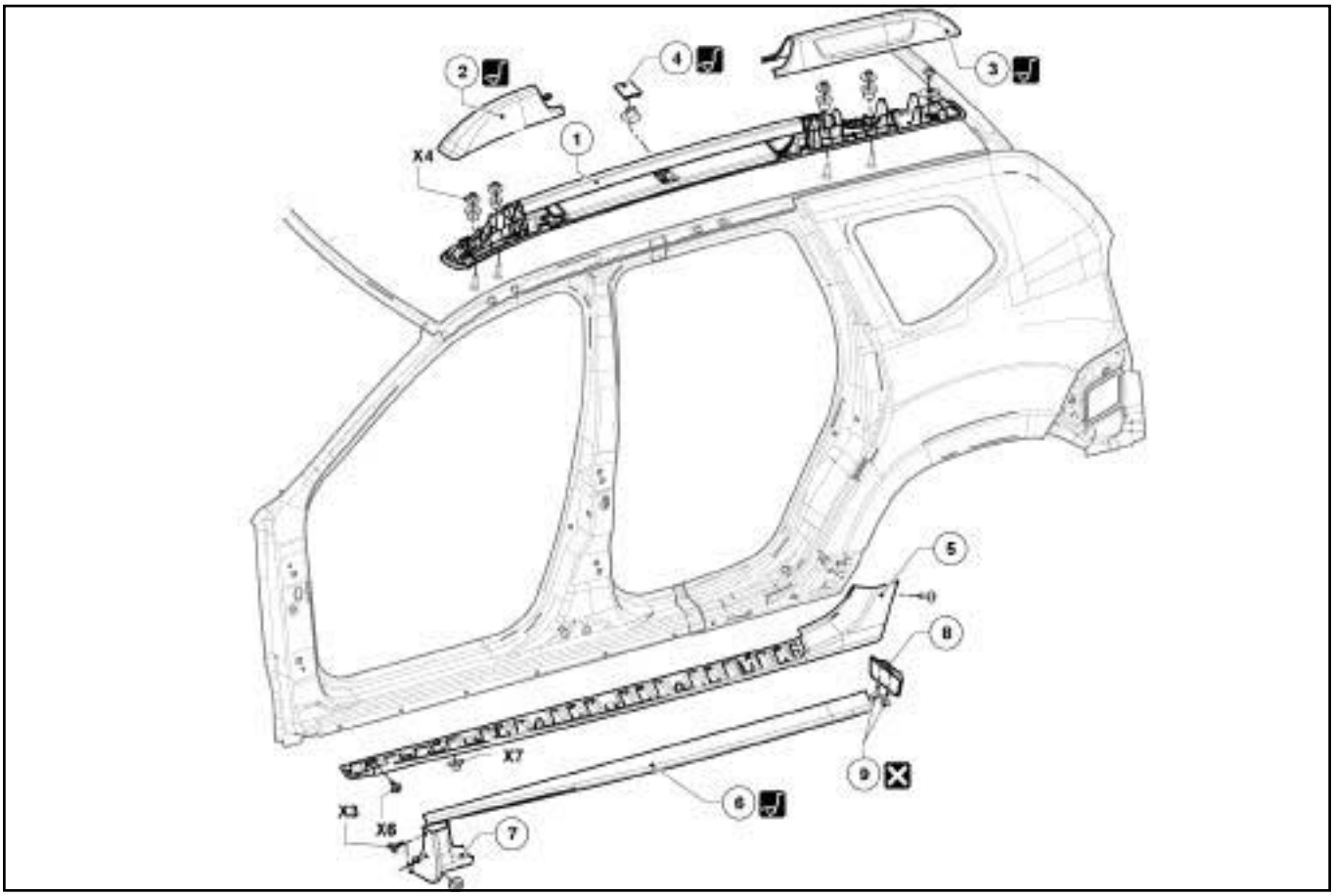
# Exterior body side trim assembly : Exploded view




146188

(see **Illustration key: Description**) (01D, Mechanical introduction).

| Mark | Description | Information |
|---|---|---|
| 1 | Roof bar | |
| 2 | Roof bar front trim | (Car.1363) |
| 3 | Roof bar rear trim | (Car.1363) |
| 4 | Central mounting access flap | (Car.1363) |

| Mark | Description | Information |
|---|---|---|
| 5 | Sill panel extender | Material: P/E |
| 6 | Sill panel extender trim | Material: P/E<br>(Car.1363) |
| 7 | Front section of sill panel extender | Material: P/E |
| 8 | Flap | |
| 9 | Flap rivet | |

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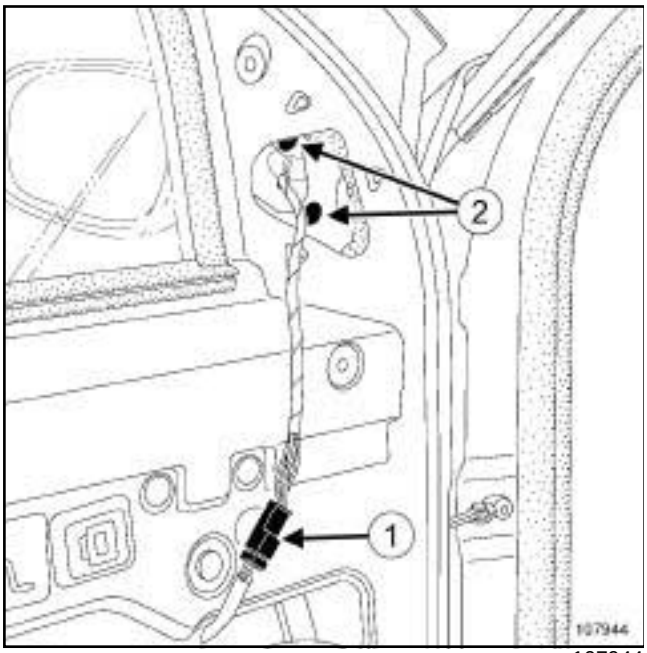
# Door mirror: Removal - Refitting

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

❏ Remove the front side door trim (see **Front side door trim: Removal - Refitting**) (72A, Side opening elements trim).

### II - REMOVAL OPERATION



107944

❏ Disconnect the connector (**1**) (depending on equipment level).

❏ Remove the bolts (**2**) .

❏ Remove the door mirror.

## REFITTING

❏ Proceed in the reverse order to removal.

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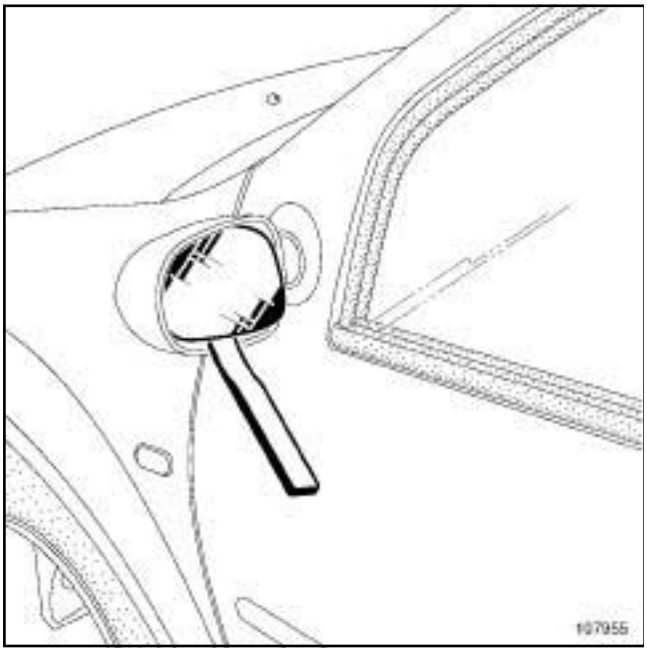
# Door mirror glass: Removal - Refitting

| Special tooling required | |
|---|---|
| **Car. 1363** | Set of trim removal levers. |

## REMOVAL



107955

❏ Protect the edge of the rear-view mirror (masking tape).

❏ Use the **(Car. 1363)** as a lever to unclip the glass.

❏ Disconnect the supply terminals (depending on equipment level).

## REFITTING

❏ Offer up the glass.

❏ Clip the mirror.

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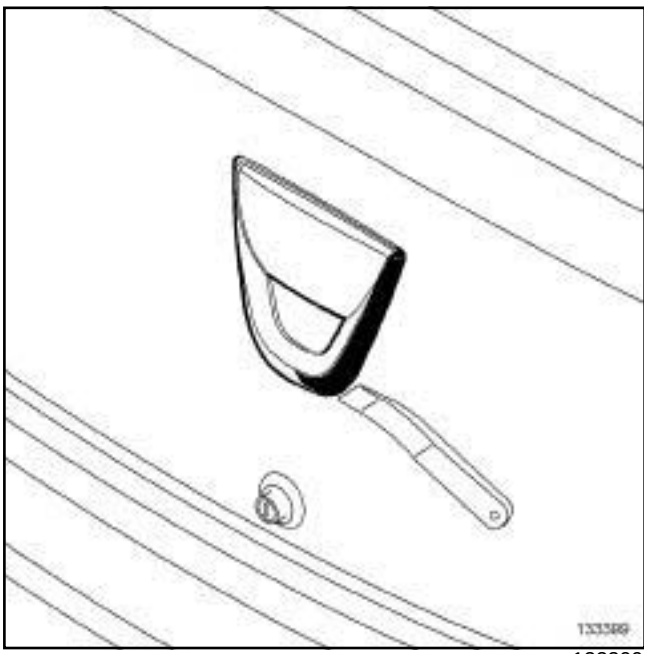
# Rear badges: Removal - Refitting

| Special tooling required | |
|---|---|
| **Car. 1363** | Set of trim removal levers. |

## REMOVAL

### OPERATION FOR REMOVAL OF PART CONCERNED



133399

❑ Unclip the rear badge using the tool **(Car. 1363)**.

## REFITTING

### REFITTING OPERATION FOR PART CONCERNED

❑ Clip on the rear badge.

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# Dashboard: Removal - Refitting

| Equipment required |
| --- |
| Diagnostic tool |

**IMPORTANT**

To avoid any risk of triggering when working on or near a pyrotechnic component (airbags or pretensioners), lock the airbag computer using the diagnostic tool.

When this function is activated, all the trigger lines are inhibited and the airbag warning light on the instrument panel lights up continuously (ignition on).

**IMPORTANT**

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

## REMOVAL

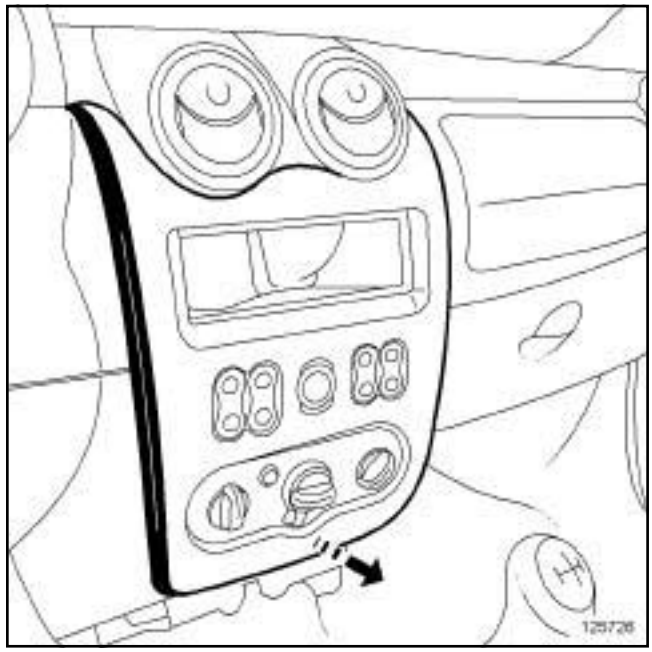
### I - REMOVAL PREPARATION OPERATION

❏ Lock the airbag computer using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (88C, Airbags and pretensioners).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Remove:

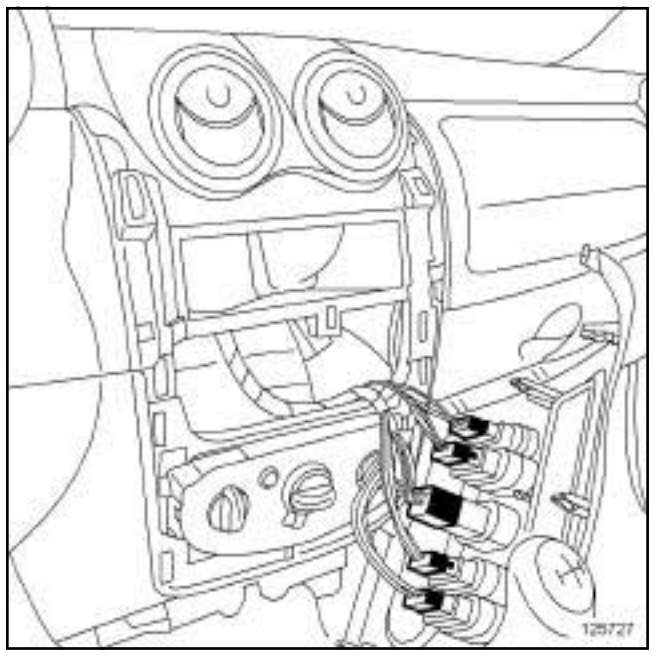
- the windscreen pillar trims (see **Windscreen pillar trim: Removal - Refitting**) (71A, Body internal trim),
- the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (88C, Airbags and pretensioners),
- the steering wheel (see **Steering wheel: Removal - Refitting**) (36A, Steering assembly),
- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (84A, Control - Signals),
- the instrument panel (see **Instrument panel: Removal - Refitting**) (83A, Instrument panel),
- the centre console (see **57A**, **Interior equipment**, **Centre console: Removal - Refitting**, page **57A-10**) ,
- the radio (see **Radio: Removal - Refitting**) (86A, Radio).




125726

❏ Unclip the central trim assembly at the bottom.

❏ Withdraw the central trim assembly.




125727

❏ Disconnect the central trim connectors.

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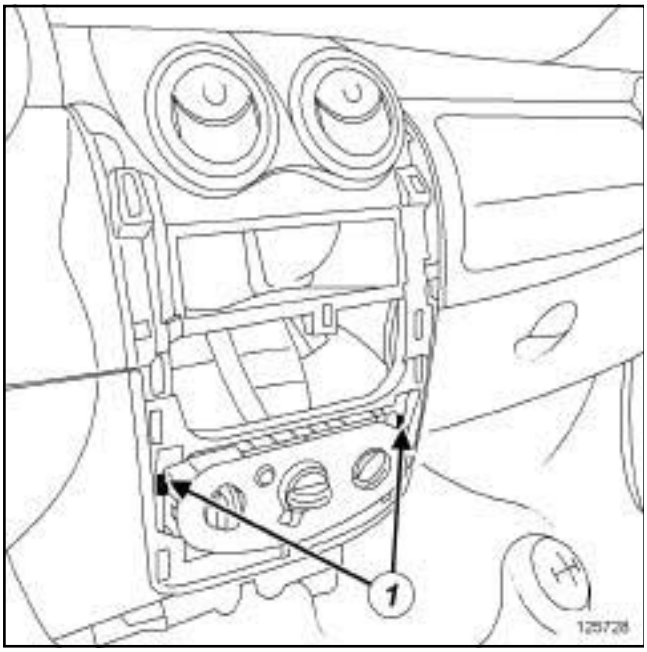
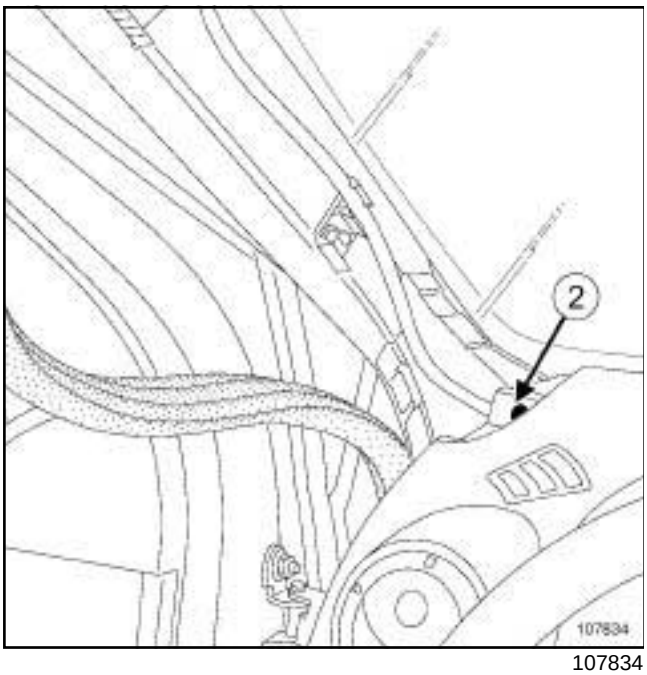



125728

❏ Unclip the (**1**) control panel on the dashboard.

**II - OPERATION FOR REMOVAL OF PART CONCERNED**

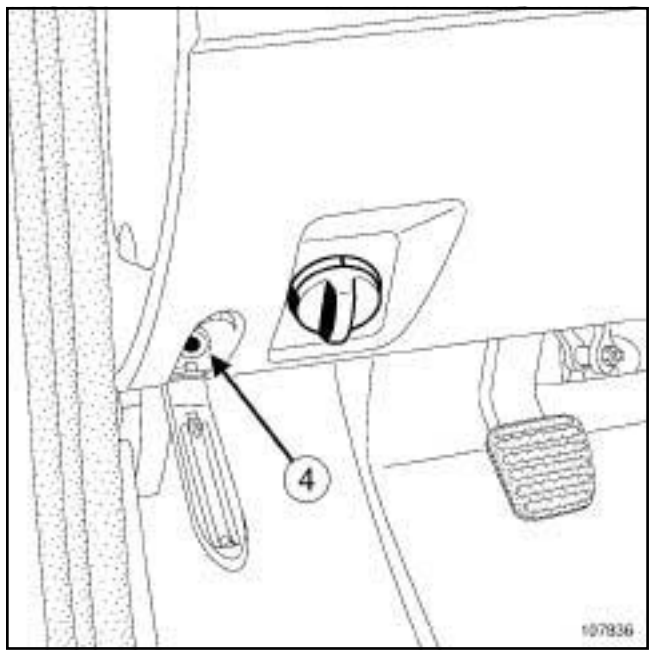



107834

❏ Remove the bolts (**2**) from both sides of the dashboard.

107835

❏ Unclip the covers (**3**) on both sides of the dashboard.




107836

❏ Remove the bolts (**4**) from both sides of the dashboard.

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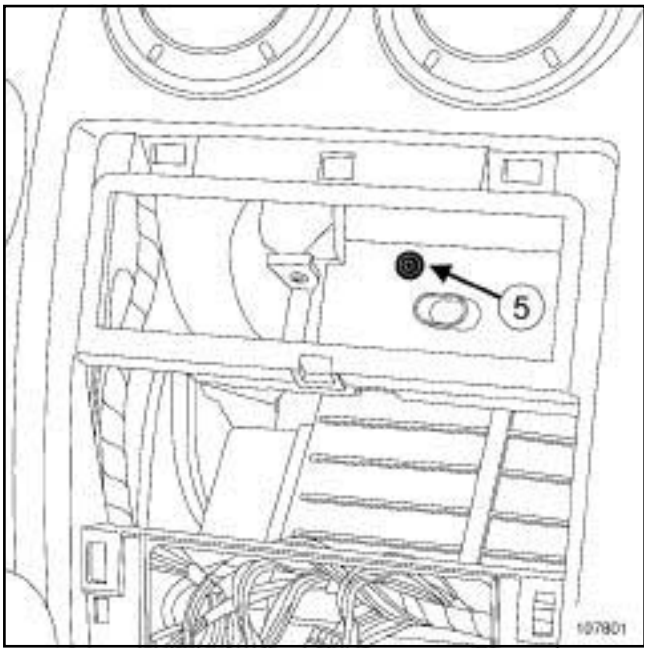
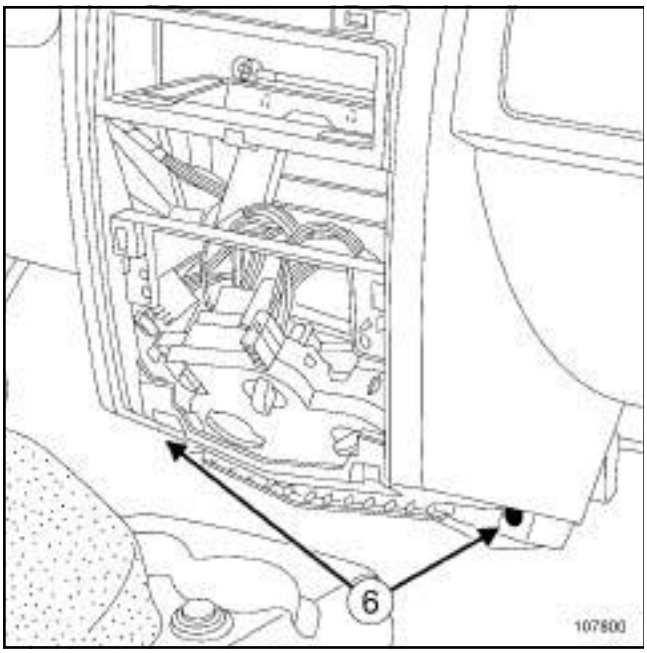


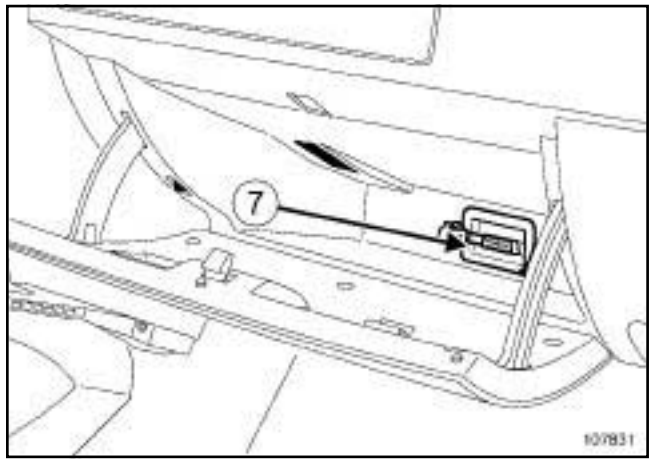
107801

❏ Remove the bolt (**5**) .

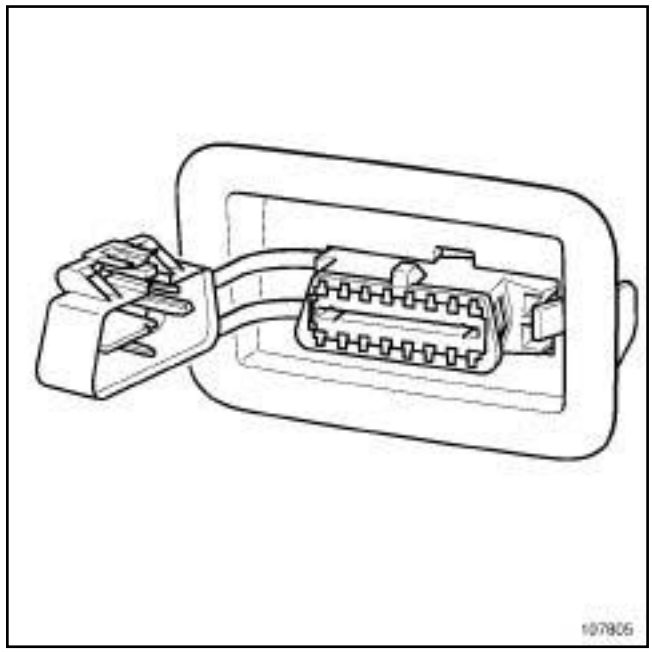


107800

❏ Remove the bolts (**6**) .

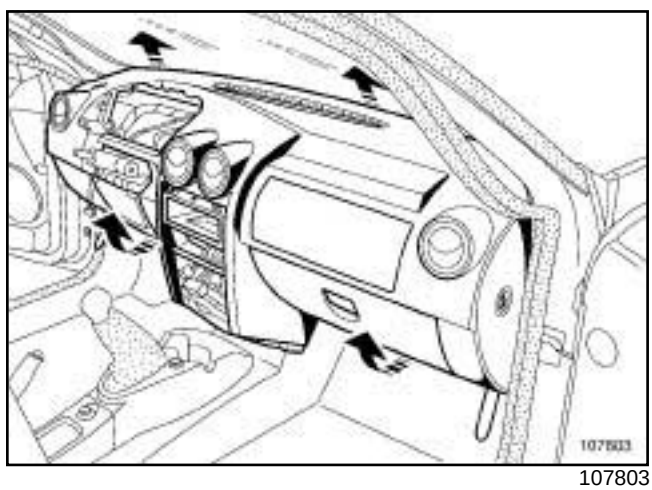


107831



107805

❏ Remove the diagnostic socket (**7**) .



107803

❏ Partially remove the dashboard (this operation requires two people).

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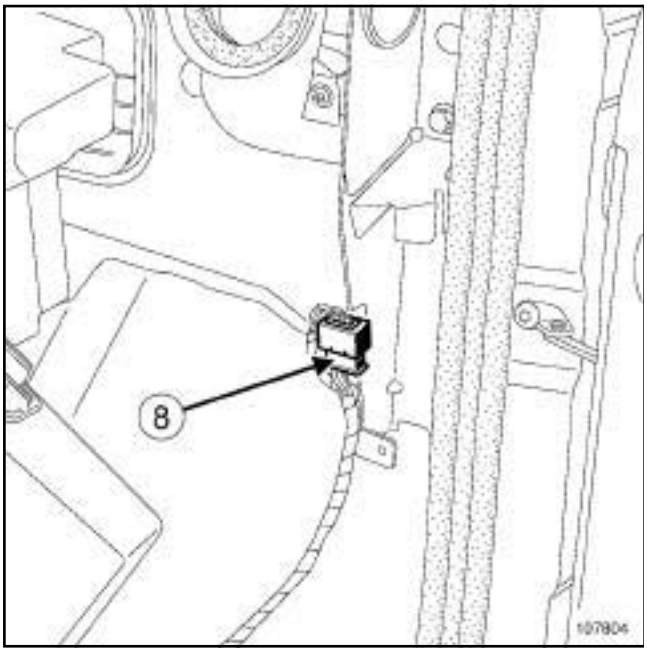
# Dashboard: Removal - Refitting

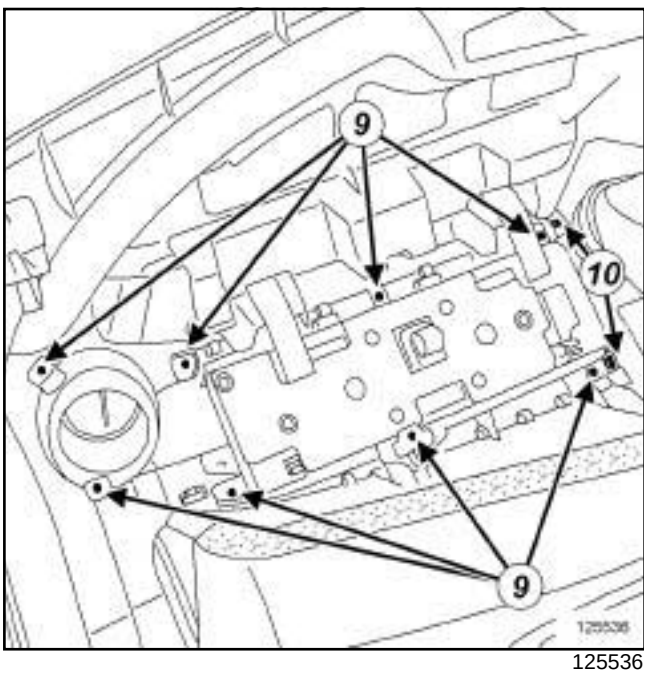


107804

❏ Disconnect the connector (**8**) .

❏ Remove:

- the dashboard (this operation requires two people),
- the passenger front airbag (depending on equipment level) (see **Passenger's frontal airbag: Removal - Refitting**) (88C, Airbags and pretensioners).

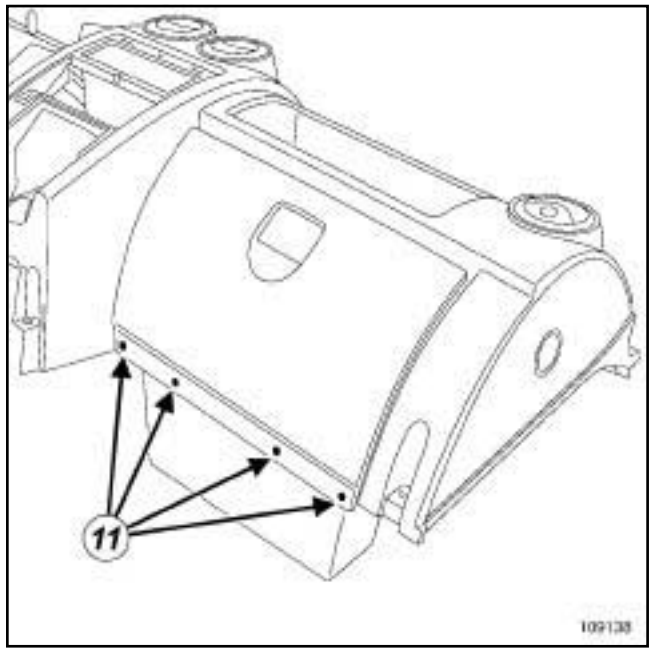


125536

❏ Remove the bolts (**9**) .

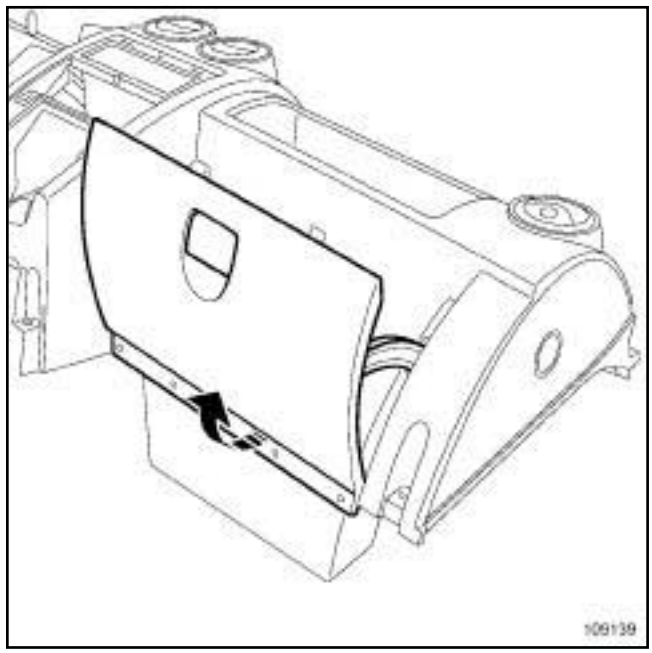
❏ Unclip the right-hand side trim at (**10**) .

❏ Remove the right-hand side trim.



109138

❏ Remove the rivets (**11**) .



109139

❏ Remove the glove box lid.

## REFITTING

### I - REFITTING PREPARATION OPERATION

❏ Ensure that the wiring is in good condition.

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**II - REFITTING OPERATION FOR PART CONCERNED**

❏ Refit:

- the glovebox cover,
- the rivets,
- the right-hand side trim,
- the right-hand side trim bolts,
- the passenger front airbag (depending on equipment level) (see **Passenger's frontal airbag: Removal - Refitting**) (88C, Airbags and pretensioners),
- the dashboard (partially) (this operation requires two people).

❏ Connect the connector ***(8)*** .

❏ Refit:

- the diagnostic socket,
- the dashboard (this operation requires two people),
- the dashboard bolts.

❏ Replace the control panel on the dashboard.

❏ Clip the covers ***(3)*** onto both sides of the dashboard.

**III - FINAL OPERATION**

❏ Connect the central trim connectors.

❏ Fit the central trim assembly.

❏ Clip on the central trim.

❏ Refit:

- the radio (see **Radio: Removal - Refitting**) (86A, Radio),
- the centre console (see **57A**, **Interior equipment**, **Centre console: Removal - Refitting**, page **57A-10**) ,
- the instrument panel (see **Instrument panel: Removal - Refitting**) (83A, Instrument panel),
- the steering column switch assembly (see **Steering column switch assembly: Removal - Refitting**) (84A, Control - Signals),
- the steering wheel (see **Steering wheel: Removal - Refitting**) (36A, Steering assembly),
- the driver's front airbag (see **Driver's frontal airbag: Removal - Refitting**) (88C, Airbags and pretensioners),
- the windscreen pillar trims (see **Windscreen pillar trim: Removal - Refitting**) (71A, Body internal trim).

❏ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

**IMPORTANT**

To avoid a fault with or even triggering of pyrotechnic components (airbags or pretensioners), check the airbag computer using the diagnostic tool.

❏ Unlock the airbag computer using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (88C, Airbags and pretensioners).

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# Dashboard: Stripping - Rebuilding

## STRIPPING

### STRIPPING OPERATION

❏ Remove:

- the dashboard trims on the driver's side (see **Instrument panel: Removal - Refitting**) (83A, Instrument panel),
- the dashboard air vents (see **57A**, **Interior equipment**, **Dashboard air vent: Removal - Refitting**, page **57A-7**) ,
- the glovebox cover (see **57A**, **Interior equipment**, **Glovebox cover: Removal - Refitting**, page **57A-9**) ,
- the central trim (see **57A**, **Interior equipment**, **Dashboard: Removal - Refitting**, page **57A-1**) .

Note:

When removing the dashboard trim on the passenger side, it is necessary to remove the dashboard.

## REBUILDING

❏ Proceed in the reverse order to removal.

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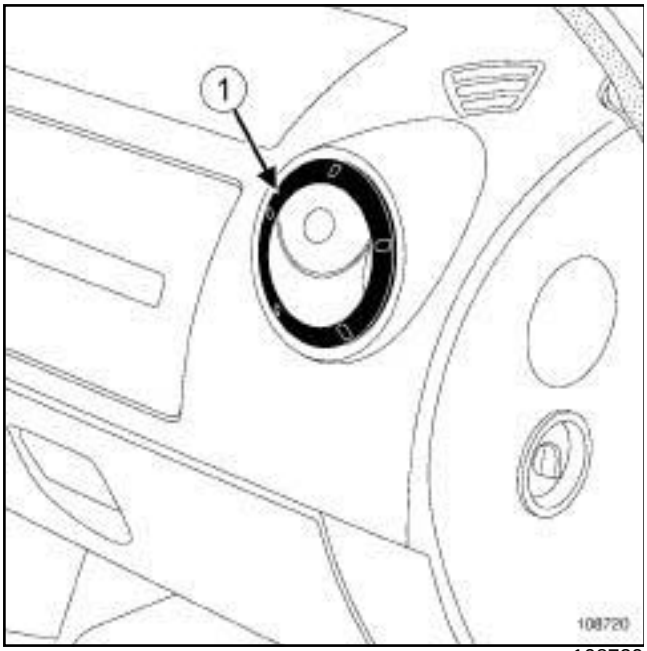
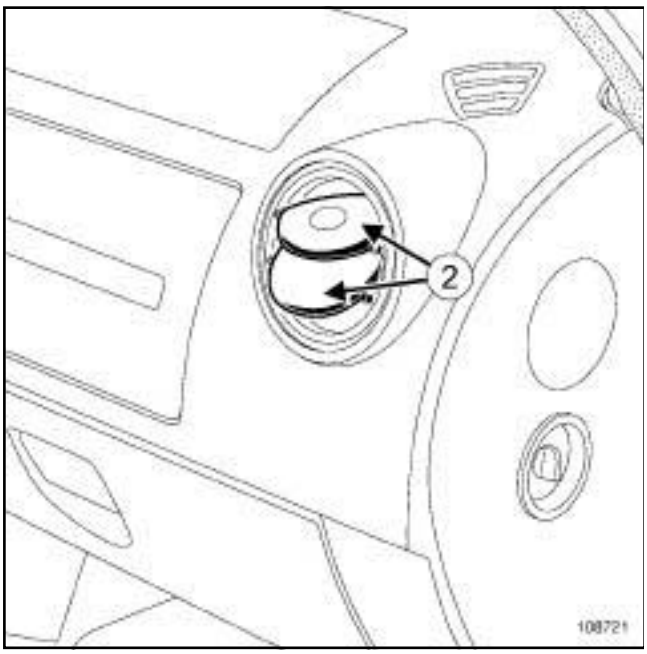
# Dashboard air vent: Removal - Refitting

## REMOVAL



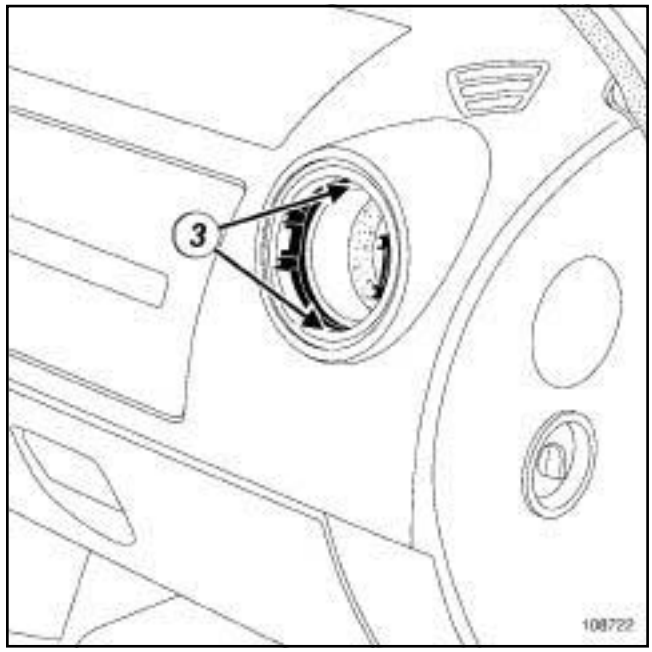

108720

❏ Using a flat screwdriver, remove the air vent surround (**1**) .




108721

❏ Unclip grilles (**2**) .




108722

❏ Unclip inner band (**3**) .

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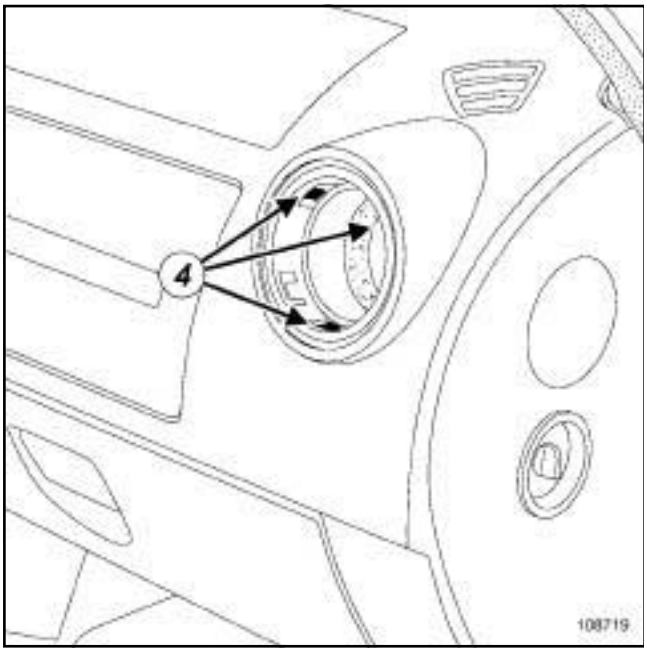
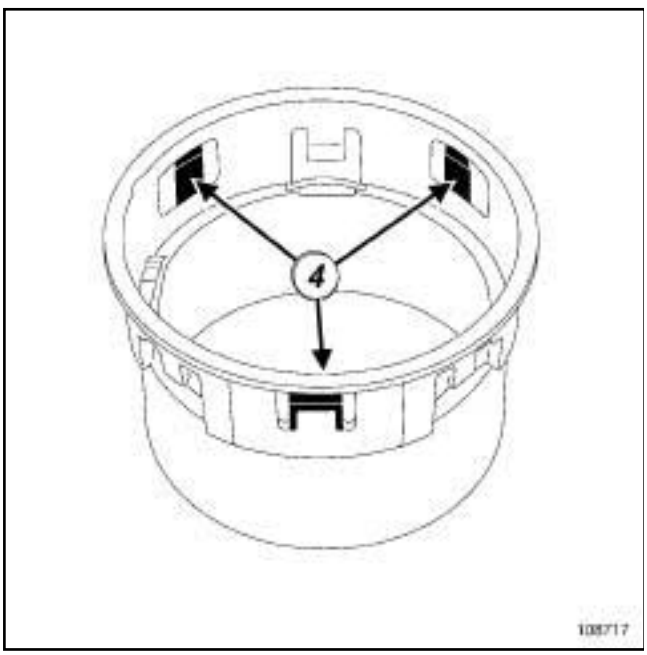
# Dashboard air vent: Removal - Refitting




108719




108717

❏ Unclip clips (**4**) .

❏ Withdraw the vent.

## REFITTING

❏ Proceed in the reverse order to removal.

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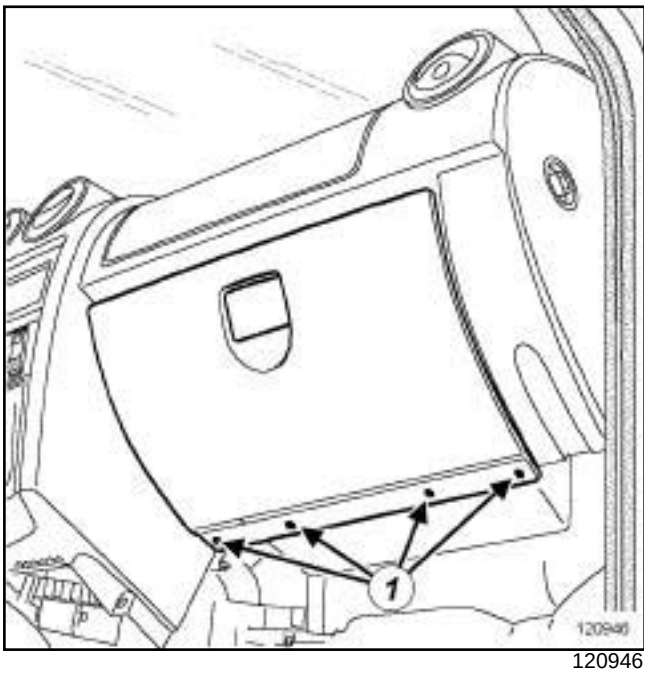
# Glovebox cover: Removal - Refitting

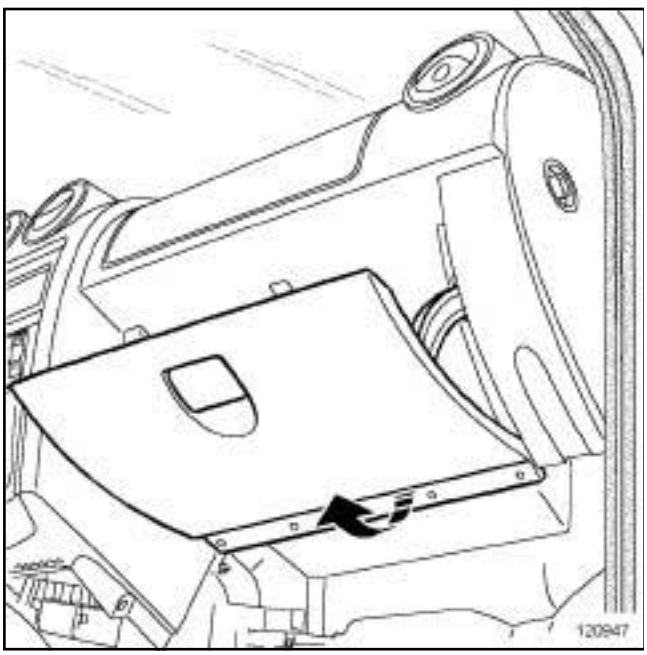
## REMOVAL

### OPERATION FOR REMOVAL OF PART CONCERNED



120946

❑ Remove the rivets (**1**) .



120947

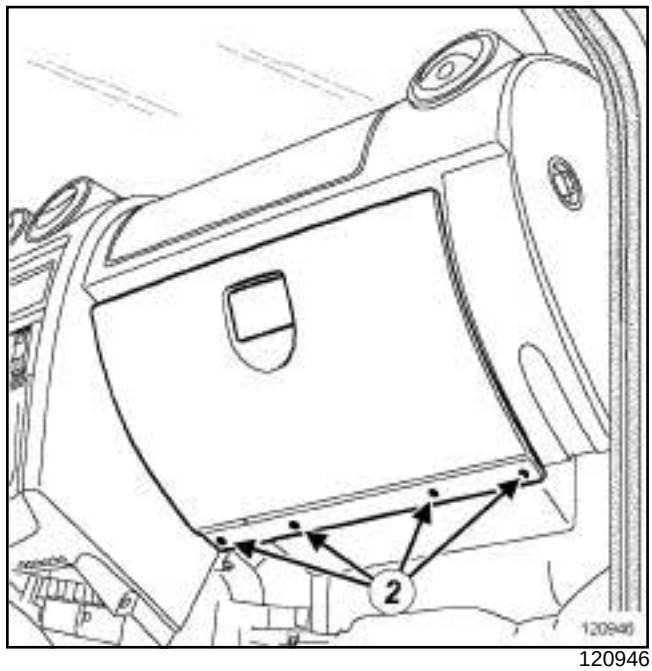
❑ Remove the glove box lid.

## REFITTING

### REFITTING OPERATION FOR PART CONCERNED

❑ Fit the glove box cover.

❑ Position the glove box cover with rivets.



120946

❑ Refit the rivets (**2**) .

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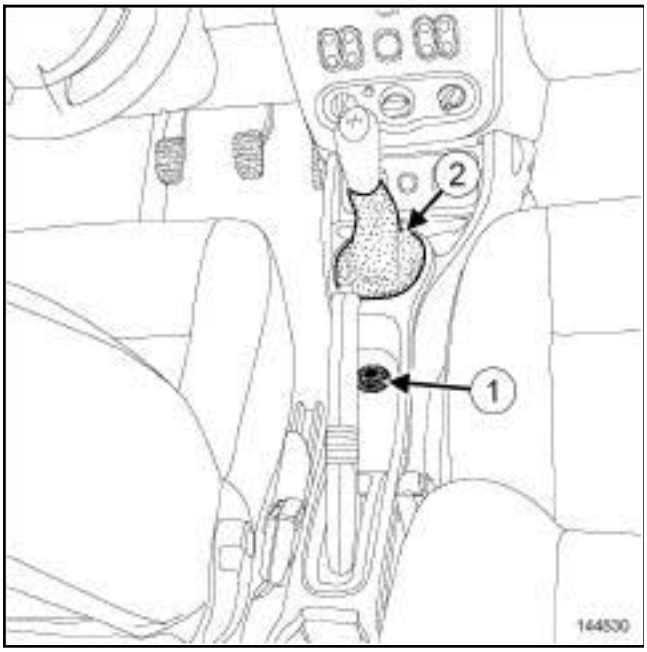
# Centre console: Removal - Refitting

| Special tooling required | |
|---|---|
| **Car. 1363** | Set of trim removal levers. |

## REMOVAL

### REMOVAL OPERATION

2 ELECTRICALLY ADJUSTABLE EXTERNAL REAR VIEW MIRRORS

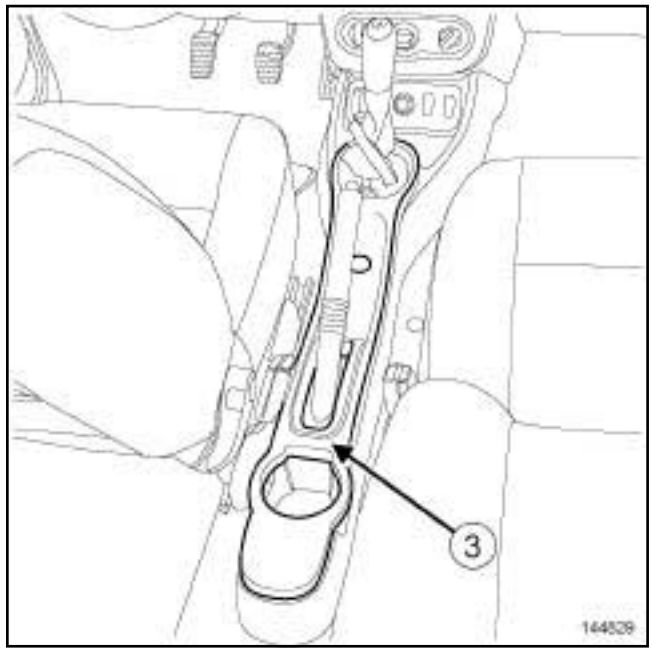



144830

❏ Remove the adjustment control for the door mirrors (**1**) .

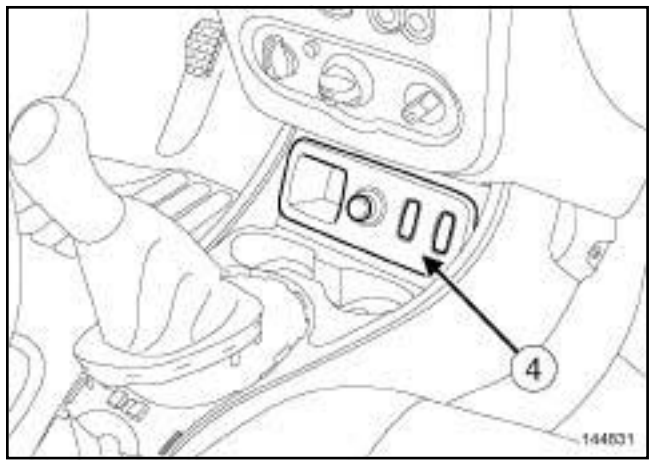
❏ Disconnect the adjustment control connector for the door mirrors.

❏ Unclip the front section of the gear lever gaiter ***(2)*** using the tool **(Car. 1363)**.




144829

❏ Unclip the upper section of the centre console (**3**) .




144831

❏ Unclip the switch mounting front panel (**4**) .

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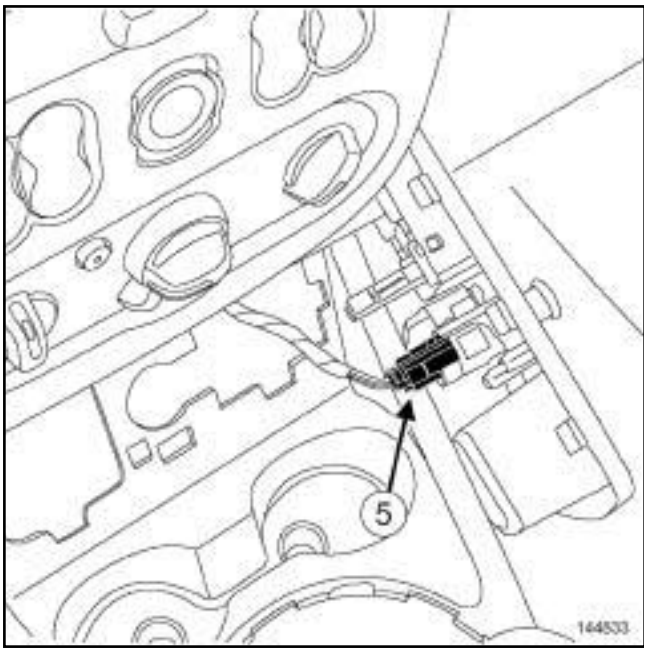
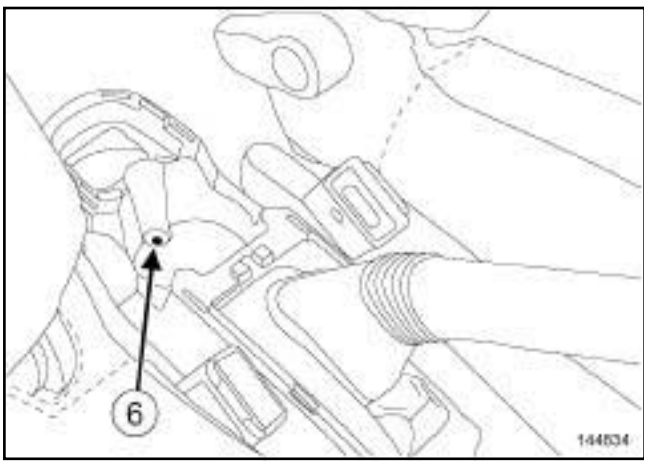
# Centre console: Removal - Refitting

WITH SMOKING ACCESSORIES



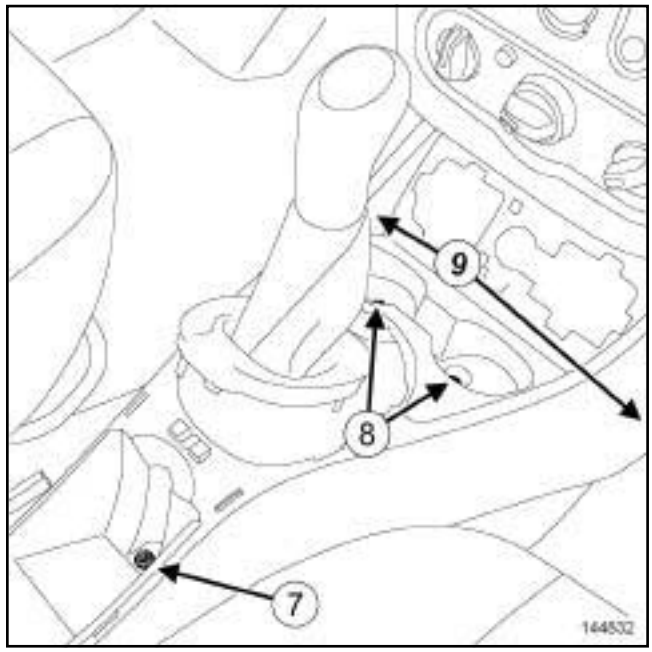

144833

❏ Disconnect the cigarette lighter connector (**5**) .




144834

❏ Remove the rear bolt of the centre console (**6**) .




144832

❏ Remove:

- the centre console nut (**7**) ,
- the central bolts of the centre console (**8**) ,
- the side bolts of the centre console (**9**) ,
- the lower section of the centre console.

## REFITTING

### REFITTING OPERATION

❏ Proceed in the reverse order to removal.

Note:

Before clipping on the gear lever gaiter, position the rear section of the gear lever gaiter on the centre console.

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# Interior rear view mirror: Removal - Refitting

## REMOVAL

### REMOVAL OPERATION

108659

❏ Remove interior rear view mirror (**1**) .

## REFITTING

### REFITTING OPERATION

❏ Proceed in the reverse order to removal.

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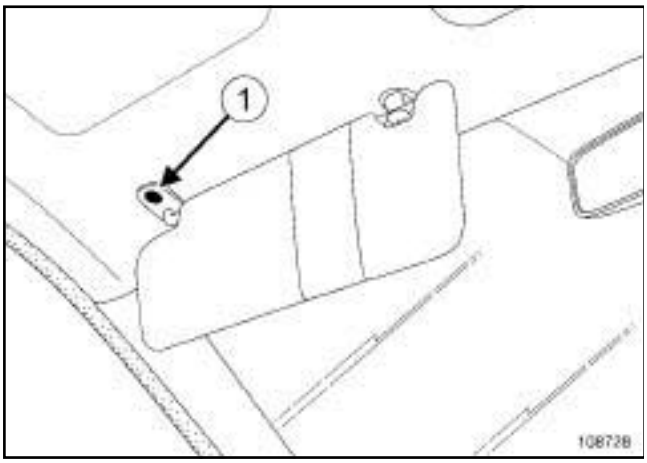
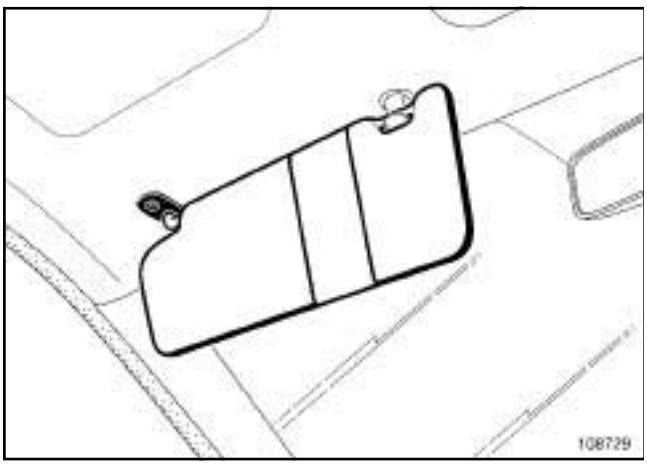
# Sun visor: Removal - Refitting

## REMOVAL



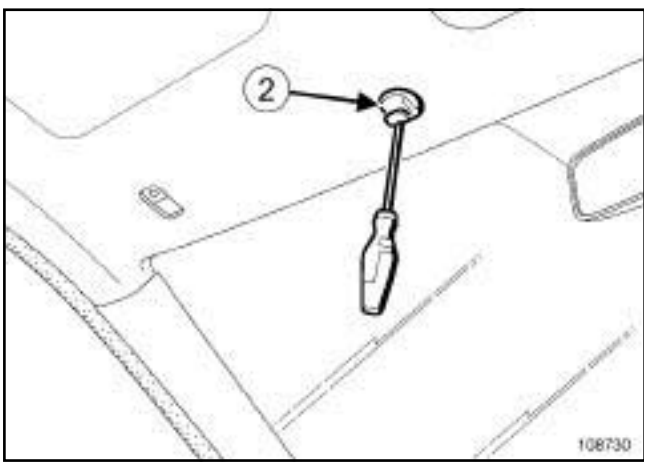
108728

❑ Remove the bolt (**1**) .



108729

❑ Remove the sun visor.



108730

❑ Remove sun visor bracket (**2**) .

## REFITTING

❑ Proceed in the reverse order to removal.

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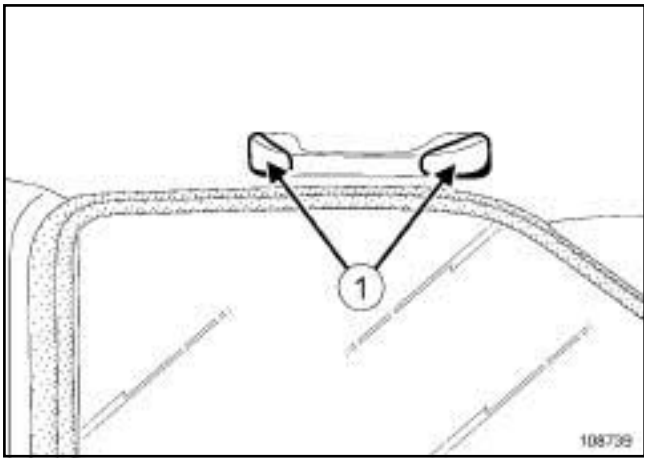
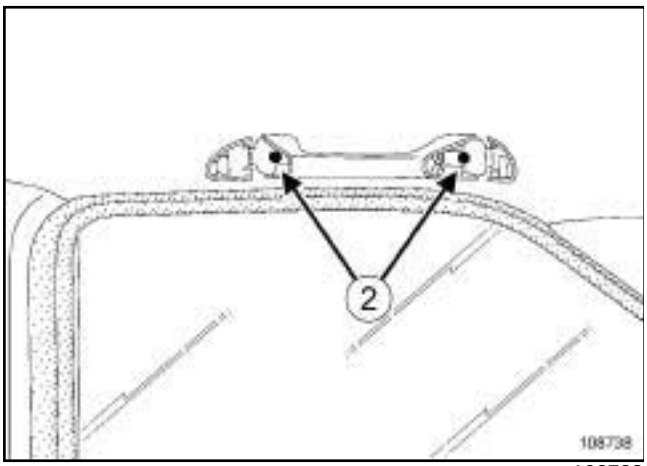
# Grab handle: Removal - Refitting

## REMOVAL



108739

❏ Unclip covers (**1**) .



108738

❏ Remove the bolts (**2**) .

❏ Remove the grab handle.

## REFITTING

❏ Proceed in the reverse order to removal.

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# DUSTER

# 1 Engine and peripherals

## 13B DIESEL INJECTION

**DCM 1.2 injection**
**Program No.: 4C**
**Vdiag No.: 08**


| | |
|---|---|
| Fault finding – Introduction | 13B - 2 |
| Fault finding – Cleanliness guidelines | 13B - 7 |
| Fault finding – System operation | 13B - 10 |
| Fault finding – Replacement of components | 13B - 17 |
| Fault finding – Configurations and programming | 13B - 21 |
| Fault finding – Fault summary table | 13B - 22 |
| Fault finding – Fault Interpretation | 13B - 25 |
| Fault finding – Conformity check | 13B - 118 |
| Fault finding – Status summary table | 13B - 125 |
| Fault finding – Interpretation of statuses | 13B - 126 |
| Fault finding – Parameter summary table | 13B - 130 |
| Fault finding – Interpretation of parameters | 13B - 132 |
| Fault finding – Command summary table | 13B - 134 |
| Fault finding – Customer complaints | 13B - 137 |
| Fault finding – Fault finding chart | 13B - 139 |
| Fault finding – Tests | 13B - 175 |




"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

| | |
|---|---|
| Vehicles: **LOGAN / SANDERO / THALIA 2 / SYMBOL 2**<br>Engines**: K9K 718, 740, 790, 792, 794, 796, 880, 890.**<br>Function concerned: **K9 DELPHI (DCM 1.2) COMMON RAIL Direct diesel injection** | *Name of computer:* **DCM 1.2 injection**<br>*Program No.:* **4C**<br>*Vdiag No.:* **08** |

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type:**

**Fault finding procedure** (this manual):

– Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.

**Wiring Diagrams:**

– Visu-Schéma (CD-ROM).

**Type of diagnostic tools:**

– **CLIP + sensor**

**Special tooling required:**

| Special tooling required | |
|---|---|
| | **Diagnostic tool** |
| | **Multimeter** |
| **Elé. 1590** | 112-track computer bornier |
| **Elé. 1681** | Universal bornier |
| **Mot. 1711** | Injector flow measuring kit |

## 3. REMINDER:

**Procedure**

To run fault finding on the vehicle computers, switch on the ignition.
Depending on the type of vehicle equipment, proceed as follows:

**For vehicles with radio frequency remote control/key,**
switch on the ignition with the key.

To cut off the + after ignition feed, proceed as follows:

**For vehicles with radio frequency remote control/key,**
switch off the ignition with the key.

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**Faults**

Faults are declared as either present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but have not been diagnosed within the current context).

The status of the fault, **present** or **stored**, should be taken into consideration when the **diagnostic tool** is used after the **+ after ignition feed** has been activated (without any of the system components being activated).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the **Notes** section.

If the fault is **confirmed** when the instructions in the Notes section are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:
– the electrical lines which correspond to the fault,
– the connectors on these lines (corrosion, bent pins, etc.),
– the resistance of the faulty component,
– the condition of the wires (melted or cut insulation, wear).

**Conformity check**

The aim of the conformity check is to check data that do not produce a fault display on the **diagnostic tool** when they are inconsistent. Therefore, this phase makes it possible to:
– run fault finding on faults that do not have a fault display, and which may correspond to a customer complaint,
– check that the system is operating correctly and that there is no risk of a fault recurring after repair.

This section gives the fault finding procedures for the statuses and the parameters and the conditions for checking them.

If a status is not behaving normally or a parameter is outside permitted tolerance values, you should consult the corresponding fault finding page.

**Customer complaints - Fault finding chart**

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be dealt with by **customer complaints**.

**A synopsis of the general procedure to follow is provided on the following page in the form of a flow chart.**

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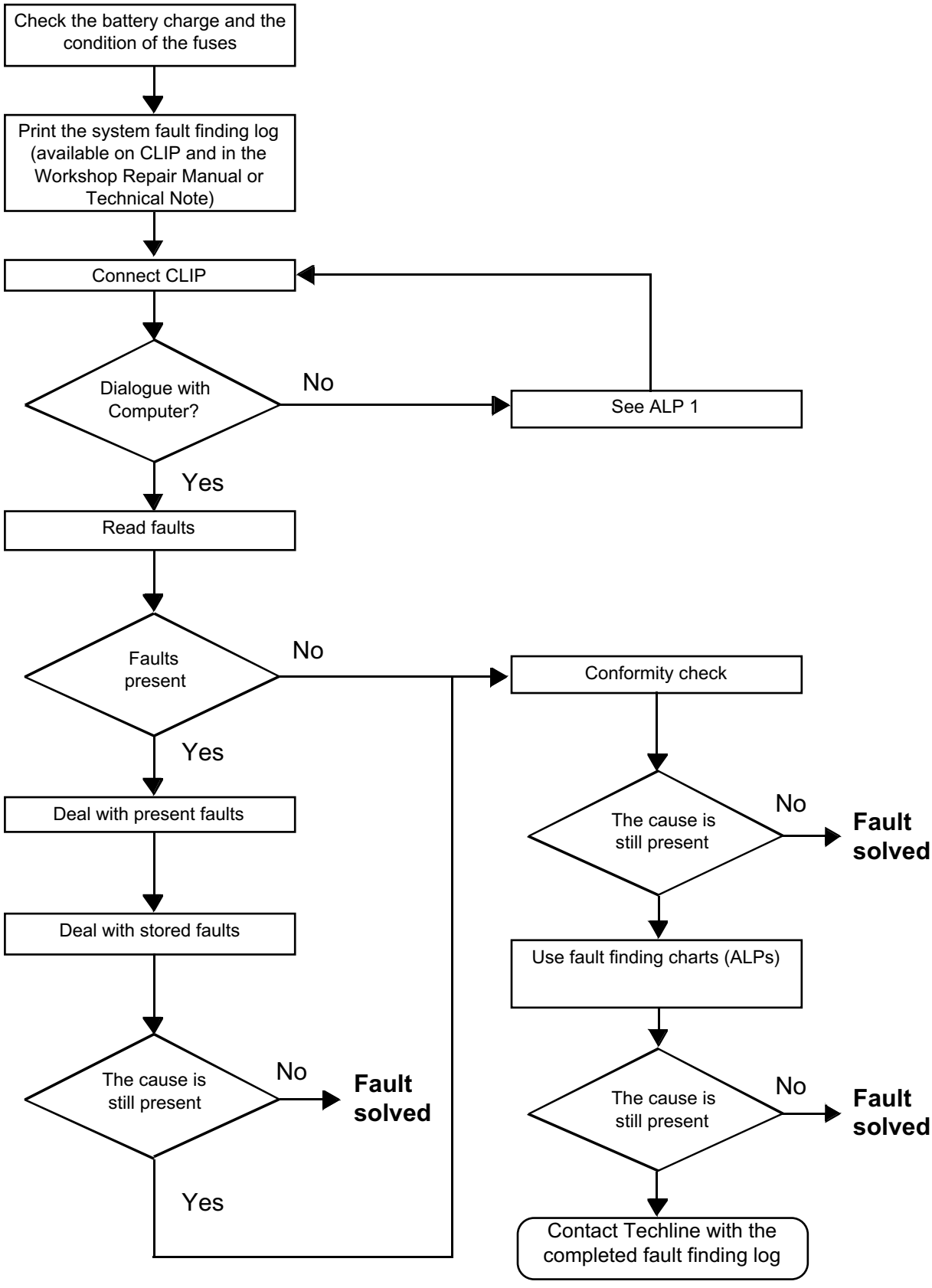
## 4. FAULT FINDING PROCEDURE



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## 4. FAULT FINDING PROCEDURE (continued)

### Wiring check

**Fault finding problems**
Disconnecting the connectors and/or manipulating the wiring may temporarily clear the cause of a fault.
Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

**Visual inspection**
Look for damage under the bonnet and in the passenger compartment.
Carefully check the fuses, insulators and wiring harness routing.
Look for signs of oxidation.

**Tactile inspection**
When handling the wiring, use the **diagnostic tool** to detect any change in fault statuses from "stored" to "present".
Make sure that the connectors are firmly secured.
Apply light pressure to the connectors.
Twist the wiring harness.
If there is a change in status, try to locate the source of the fault.

**Inspection of each component**
Disconnect the connectors and check the appearance of the clips and tabs, as well as the crimping (no crimping on the insulating section).
Make sure that the clips and tabs are properly locked in the sockets.
Check that the clips or tabs have not been bent back during connection.
Check the clip contact pressure using an appropriate model of tab.

**Resistance check**
Check the continuity of the complete lines, then section by section.
Look for a short circuit to earth, to **+ 12 V** or with another wire.

If a fault is detected, repair or replace the wiring harness.

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## 5. FAULT FINDING LOG

**IMPORTANT**

**IMPORTANT**
All faults involving a complex system call for thorough diagnostics with the appropriate tools. The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG EVERY TIME THE TECHLINE OR THE WARRANTY RETURN SERVICE ASKS FOR IT.**

You will always be asked for this log:
– when requesting technical assistance from the Techline,
– when requesting approval before replacing parts for which approval is compulsory,
– to be enclosed when returning monitored parts on request. The log is needed for warranty reimbursement, and enables better analysis of the parts which have been removed.

## 6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:
– make sure that the battery is properly charged to avoid damaging the computers with a low charge,
– use the appropriate tools.

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## I - RISKS ASSOCIATED WITH CONTAMINATION

The high pressure direct injection system is highly sensitive to contamination. The risks caused by the introduction of contamination are:
– damage to or destruction of the high pressure injection system,
– a component seizing up,
– a component losing its sealing.

All After-Sales operations must be performed under very clean conditions. This means that no impurities (particles a few microns in size) should have penetrated the system during dismantling.

The cleanliness guidelines must be applied from the filter through to the injectors.

What are the sources of contamination?
– metal or plastic chips,
– paint,
– fibres:
  – from cardboard,
  – from brushes,
  – from paper,
  – from clothing,
  – from cloths,
– foreign bodies such as hair,
– the ambient atmosphere,
– etc.

**IMPORTANT**
Cleaning the engine using a high pressure washer is prohibited because of the risk of damaging connections. In addition, moisture may collect in the connectors and create faults in the electrical connections.

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## II - INSTRUCTIONS TO BE FOLLOWED BEFORE CARRYING OUT ANY WORK

**IMPORTANT**
Before carrying out any work on the high pressure injection system, protect:
– the accessories belts,
– the electrical accessories, (starter, alternator, electric power-assisted steering pump),
– the flywheel surface, to prevent any diesel from running onto the clutch friction plate.
– timing chain

Ensure that you have plugs for the unions to be opened (set of plugs available from the Parts Department). Plugs are to be used only once. They must be discarded after use (once used they are soiled and cleaning is not sufficient to make them reusable). Unused plugs must be thrown away.

Ensure that you have hermetically resealable plastic bags for storing removed parts. Parts stored in this way will be less susceptible to the risk of contamination. The bags are to be used once only, and discarded after use.

Use lint-free cleaning cloths (cloth part reference **77 11 211 707**). The use of ordinary cloth or paper is not permitted. They are not lint-free and could contaminate the fuel circuit. A lint-free cloth should only be used once.

Use fresh cleaning agent for each operation (used cleaning agent is contaminated). Pour it into a clean receptacle.

For each operation, use a clean brush in good condition (the brush must not shed its bristles).

Use a brush and cleaning agent to clean the unions to be opened.

Blow compressed air over the cleaned parts (tools, workbench, the parts, unions and injection system zones). Check that no bristles are left.

Wash your hands before and during the operation if necessary.

When wearing leather protective gloves cover them with latex gloves to prevent contamination.

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### III - INSTRUCTIONS TO BE FOLLOWED DURING THE OPERATION

As soon as the circuit is open, all openings must be plugged to prevent impurities from entering the system. The plugs to be used are available from the Parts Department. The plugs must not be reused under any circumstances.

Seal the pouch shut, even if it has to be opened shortly afterwards. The ambient atmosphere carries contamination.

All components removed from the injection system must be stored in a hermetically-sealed plastic bag once the plugs have been inserted.

Using a brush, cleaning agent, air gun, brush or normal cloth is strictly prohibited once the circuit has been opened. These items could allow contamination to enter the system.

A new component replacing an old one must not be removed from its packaging until it is to be fitted to the vehicle.

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**System outline**

The **DCM1.2** injection system used on the **K9K** engine is an electronically managed high pressure injection system. The fuel is compressed by a high pressure pump then stored in a rail that feeds the injectors. Injection takes place when a current pulse is applied to the injector holders.

The injection flow is proportional to the rail pressure and to the applied pulse length, and the start of injection is synchronised with the start of the pulse.

The system includes two subsystems, which have different fuel pressure levels:
– the low pressure circuit contains the tank, the diesel fuel filter, the transfer pump and the injector holder return pipes,
– the high pressure circuit contains the high pressure pump, the rail, the injector holders and the high pressure tubes.

The injection system contains a number of control sensors and actuators that enable the entire system to be controlled and monitored.

**Functions provided**

**Function: Fuel supply management (timing, flow and pressure).**

**Quantity of fuel injected and injection timing setting**
The injection checking parameters are the quantities to be injected and their respective timing.
These are calculated by the computer using signals from the following sensors:
– Engine speed (crankshaft + cam lobe for synchronisation).
– Accelerator pedal.
– Turbocharging pressure and air temperature (Turbocharger pressure).
– Coolant temperature.
– Air temperature.
– Air load (Flow and Pressure).
– Rail pressure.

The quantities to be injected and their respective timing are converted into:
– a reference tooth,
– the time between this tooth and the start of activation,
– the time for which the supply to the injector holder is on.

Each injector holder is controlled by an electrical current which is sent according to previously calculated data. The system makes one or two injections (one pilot injection, one main injection).
The general principle is to calculate an overall injected flow, which is then divided into the main injection flow, and a pilot injection flow to promote proper combustion and help reduce pollutant emissions.

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An accelerometer is used to monitor some of the fuel injection deviation. This has several roles:
– Protecting the engine by detecting injection leaks (disabled on the basic version).
– Checking the pilot quantity by measuring deviation and variation.

The quantity of fuel injected and the exact moment the mixture ignites can be readjusted by changing both the injection duration and advance.

**Rail pressure check**
The quality of combustion is influenced by the size of the atomised droplets in the cylinder.

In the combustion chamber, smaller fuel droplets will have time to burn fully, and will not produce smoke or unburned particles. To meet the pollution requirements, the droplet size, and therefore the size of the injection holes must be reduced.

With smaller holes, less fuel will be able to be introduced at a given pressure, which limits the power. To offset this disadvantage, the quantity of fuel injected must be increased, which means increased pressure (and more holes in the injector nozzles).
For the **DCM 1.2** injection system, the pressure reaches **1400 bar - 1600 bar** in the rail and must be constantly regulated. The measuring circuit comprises an active pressure sensor on the rail connected to an analogue port on the computer.

The high pressure pump is supplied at low pressure (**5 bar**) by a built-in transfer pump. It supplies the rail, the pressure of which is controlled by the fuel flow actuator (**IMV**) for filling, and by the injector valves for discharging. This compensates for pressure drops. The fuel flow actuator enables the high pressure pump to only supply the quantity of diesel fuel required to maintain the rail pressure. This mechanism minimises the heat generated and improves engine output.

In order to discharge the rail using the injector valves, the valves are actuated by short electrical pulses which are:
– short enough in amplitude not to open the injector (and pass through the return circuit from the injectors),
– long enough in time to open the valves and discharge the rail.

The fuel surplus is sent back to the fuel filter or the tank, according to its flow. If there is no fuel flow actuator control, the rail pressure is limited by a discharge valve fitted on the pump.

**New pump chamber filling procedure (pump boosting)**
The pump lubrication goes through a booster cycle during which the pump is filled and pressurised before "transferring" the diesel fuel to the rail.

This lubrication goes through programming called **"new pump chamber filling"**, which prohibits starting for approximately **10 seconds**, which is the time required to fill the pump and to start if the key is released before the end of this "first starting" phase. "Power latch" is not necessary before attempting to start the vehicle again.

This procedure runs when a **computer is replaced** if the parameters relating to the rail pressure have not been copied into the new computer, or when an injection computer is reprogrammed.

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**Idling speed regulation**
The computer handles the calculation of idling speed. This has to take account of the instantaneous power level to be supplied, according to the status of the following components:
– engine coolant temperature,
– gear ratio engaged,
– battery charge,
– electrical consumers (Additional heating, Air conditioning, Fan Unit, electric windows, etc.) active or inactive,
– system faults detected.

**Individual injector correction (C2I)**
The **DCM 1.2** system injectors must be calibrated with corrective values to adjust their flow precisely. Each injector is calibrated for different pressures on a test bench, and its specifications are shown on a label attached to the body of the injector holders. These individual correction values are entered in the computer EEPROM, which can then actuate the injectors by taking into account their manufacturing dispersion.

**Measuring the angular position (Cylinder reference sensor)**
The angular position is measured using a magneto-inductive sensor triggered by machined teeth on the crankshaft flywheel. This flywheel has sixty teeth separated by six degrees minus two missing teeth, that form a notch.

A second sensor (Hall effect) triggered by a machined tooth on the high pressure pump drive pulley (synchronised with the camshaft), that rotates at half the engine speed, supplies an injection cycle running signal. When comparing the signals from these two sensors, the APS (Angular Position Subsystem) module of the computer is capable of providing details of the synchronisation components to the system:
– the angular position of the flywheel
– the engine speed, the number of the active injector
– the stage of the injection cycle.
This module also supplies the system with the rotation speed signal.

**Flow capacity function (VLC)**
Because of the combination of several parameters such as the diesel fuel temperature, part wear, clogging of the diesel filter etc., the system limit may be reached during its service life. If this happens, the rail pressure cannot be maintained because the pump lacks the necessary capacity. If the pump lacks the necessary capacity, this programming will therefore reduce the requested flow to a value that will enable the pressure monitoring system to control the pressure again.
The customer may have noticed a loss of vehicle performance when this program is activated (confirmed by the **Flow capacity function** status). **This is part of normal operation.**

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**Function: Air flow management**

**EGR valve control**
The EGR system (Exhaust gas recirculation) comprises a proportional EGR valve, with a built-in valve position feedback potentiometer. The EGR valve position is controlled by the potentiometer in a closed loop and/or by changes in the estimated air flow.

**Calculating the air flow**
The **K9K 790 and 794** engines are not fitted with an air flowmeter. Instead, the amount of fresh inlet air is evaluated based on the values supplied by the surrounding systems.

The (theoretical) air load is calculated using a model with various calculation parameters, which are:
– the inlet air temperature measured by a sensor located after the turbocharger and/or after the exchanger (if fitted),
– the turbocharging pressure,
– the atmospheric pressure (external air),
– the EGR valve position,
– the fuel flow,
– the engine speed.

The atmospheric pressure sensor is optional. If fitted, it sends back a signal relating to the atmospheric pressure to an analogue port on the micro-controller. If not, atmospheric pressure is recovered based on the turbocharger pressure and the engine field.

For **K9K 792 and 796** engines, the flow of fresh air entering the engine is given by a hot wire ratiometric sensor. This flowmeter is used to manage the amount of exhaust gas to be recirculated to ensure optimum recirculation rates. A fresh air temperature sensor is integrated into the flowmeter. Air flow measurement allows closed-loop control via the EGR valve.

**Turbocharger control**

**K9K 796 engine:**
The turbocharging system is made up of a solenoid valve which is used to control the wastegate to adjust the absolute pressure of the inlet circuit.

**K9K 790, 792, and 794 engines:**
The turbocharger system is controlled by the inlet pressure and does not need to be controlled by the computer.

**Pre-postheating control**
Pre/postheating control consists of controlling the heater plugs and preheating warning light on the instrument panel. The heater plugs are activated by a preheating unit (controlled by the injection computer) and power is supplied by the battery. After the ignition is switched on a preheating delay is activated. The warning light comes on for a time dependent on the battery voltage, atmospheric pressure and coolant temperature. If the temperature is below a certain threshold, a postheating function can be used to improve the combustion stability, and consequently engine operation (reducing unburnt particles and pollutant emissions).

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**Functions included**

**Air conditioning management assistance**
For models with air conditioning, the **DCM 1.2** system allows deactivation of the air conditioning under certain operating conditions:
– when requested by the driver,
– when starting the engine,
– if the engine overheats (in order to reduce the power the engine has to supply),
– when the engine speed is kept at a very high level (to protect the compressor),
– during transition phases (e.g. high acceleration demand for overtaking, anti-stalling and moving off). These conditions are only taken into account if they do not occur repeatedly, so as to prevent system instabilities (erratic deactivation),
– when certain faults appear.

**Cold loop air conditioning management**
The air conditioning is the cold loop type and it is managed by the injection computer, which must:
– manage the cooling request according to passenger compartment commands and the refrigerant pressure value,
– calculate the power absorbed by the compressor (from the refrigerant fluid pressure).
– determining the **fan unit** commands according to the vehicle speed and the refrigerant fluid pressure.

The driver requests the air conditioning to be switched on by means of the ventilation selector coupled to a switch. This cooling request is authorised or refused according to the refrigerant pressure measured. If this pressure is outside the operating limits, the cold loop program is not activated.

Note:
**Fan unit** control requests are made from the injection computer.
These requests depend on the air conditioning, but also on the engine coolant temperature and vehicle speed.

**Thermal regulation of the passenger compartment heating circuit**
Engines with direct injection systems are characterised by fuel being injected directly into the combustion chamber. This leads to heat being lost through the upper part of the engine and consequently, the cylinder head cooling circuit is smaller in size.

The effect of this is that the temperature of the coolant which flows through this circuit rises more slowly. This coolant is also used by the passenger compartment heating system. In very cold conditions, it is therefore difficult to achieve a comfortable passenger compartment temperature quickly.

To limit the time taken to warm up the system, air heating resistors, called passenger compartment heating resistors (RCH), are fitted into the passenger compartment heating circuit. The **DCM1.2** injection computer determines the need to control, and physically controls the passenger compartment heating resistors. The injection computer determines the power control limitation of the passenger compartment heating resistors based on the alternator charge on one hand, and the inhibition of passenger compartment heating resistors based on engine speed, load and vehicle speed, on the other.

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**Instrument panel display**
The computer manages the data display on the instrument panel relating to engine operation.
There are six functions concerned:
– the **On board diagnostics MIL** (Malfunction Indicator Lamp),
– pre-postheating,
– coolant temperature,
– **Level 1** (non-critical fault) and **Level 2** (emergency stop) engine faults.
– detection of water in the fuel (depending on instrument panel).
These six functions are represented using four indicator lights.

**Pre-postheating and electronic fault (level 1) indicator light**
This warning light is used as an operation indicator light for the heater plugs and as a system fault warning light.
– Continuously lit during **+ after ignition feed**: indicates preheating of the plugs.
– Flashing after preheating and an automatic **3-second** stop, indicates a **Level 1** fault (indicates a reduced level of operation and a limited safety level. The user must carry out repairs as soon as possible).

**Engine coolant temperature warning light (level 2)**
This indicator light is used both as an in-operation indicator light and as a system fault warning light. It illuminates for **3 seconds** when the power comes on (automatic test procedure).
Continuously lit during **+ after ignition feed**: indicates engine overheating or a **level 2** fault.

**OBD warning light**
This warning light is used to alert the driver of any injection faults causing excessive pollution, or if the **OBD** system is deactivated.
The injection computer requests the illumination of the **OBD** warning light for a present fault only after three successive driving cycles.
The **3 second** visual inspection when the ignition is switched on (automatic test procedure managed by the instrument panel) is carried out by the injection computer.

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**Faults that activate the OBD warning light**

| Tool fault | Diagnostic tool name | Specification |
|---|---|---|
| **DF016** | EGR control circuit | **CO - CO. 0**<br>**CC.1 - 1.DEF** |
| **DF026** | Cylinder 1 injector circuit control | **CO - CC** |
| **DF027** | Cylinder 2 injector circuit control | **CO - CC** |
| **DF028** | Cylinder 3 injector circuit control | **CO - CC** |
| **DF029** | Cylinder 4 injector circuit control | **CO - CC** |
| **DF038** | Computer | **3.DEF** |
| **DF107** | Computer memory | **2.DEF** |
| **DF114** | EGR solenoid valve circuit | **4.DEF** |
| **DF209** | EGR valve position sensor circuit | **CC.1-CO.0** |

**Water present in fuel warning light** (depending on the instrument panel)
This warning light is used to warn the driver about the presence of water in the fuel filter, which leads to engine damage. It illuminates for **3 seconds** when the power comes on (automatic test procedure). When the vehicle is not fitted with this warning light or if it is not configured, this function is provided by the **level 1** warning light.

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## COMPUTER REPLACEMENT, PROGRAMMING AND REPROGRAMMING OPERATIONS

The system can be programmed via the diagnostic socket using the **diagnostic tool** (see **Technical Note 3585A Computer programming and reprogramming procedure** and **Technical Note 9869A Computer programming and reprogramming procedure** and follow the instructions given by the **diagnostic tool**).

**IMPORTANT**
- **Switch on the diagnostic tool (mains or cigarette lighter supply).**
- **Connect a battery charger.**
- **Switch off all electrical consumers (lights, interior lights, air conditioning, radio/CD, etc.).**
- **Wait for the engine to cool (engine coolant temperature below 60˚C and air temperature below 50˚C).**

**IMPORTANT**
It is not possible to try an injection computer coming from the Parts Department because it will no longer be possible to use it on another vehicle.

Before removing a computer in After-Sales, **always save the computer data with the diagnostic tool by running** command SC003 Save computer data. This command saves the following information:
- **C2I parameters (individual injector correction) and engine parameters**,
- **measuring system data**,
- **injection system reset data**.

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**Any time the computer has been programmed:**
– **Switch off the ignition.**
– **Switch on the ignition and use the diagnostic tool to carry out the following steps:**
– Use command **SC001 Write saved data** to restore the **C2I** and the engine adaptive programming.
– Run command **VP010 Write VIN**.
– Run command **AC028 Static test**.
– Run command **AC154 Low speed fan assembly** to test the operation of the 1st speed fan assembly.
– Run command **AC153 High speed fan assembly** to test the operation of the 2nd speed fan assembly.
– Run command **AC250 Heating resistor 1 relay** to test the operation of passenger compartment heating resistor 1.
– Run command **AC251 Heating resistor 2 relay** to test the operation of passenger compartment heating resistor 2.
– Run command **AC100 Stop electrical consumer inhibition**.
– Use command **AC212 New pump chamber filling**.
– Run the starter motor without releasing the key until the engine starts (the reprime time of the pump until the engine starts can be up to **20 seconds**).
– After the engine has started, refer to **ET637 New pump chamber filling** and check that it is **Done**. If not, repeat the starting procedure.
– **Stop the engine, switch off the ignition (to initialise the computer), and wait 30 seconds.**
– After injection system programming, stored faults may appear in other computers.
– If **DF1083 Water in diesel fuel warning light circuit** appears in the injection computer: on a **vehicle fitted with a water in diesel fuel warning light**, perform the fault finding operations described in **DF1083** then run command **AC028 Static test** again; on **other vehicles, do not deal with the fault**.
– Clear the computer memory **RZ001 Fault memory**.

**IMPORTANT**
**AFTER A (RE)PROGRAMMING OPERATION, DO NOT DISCONNECT THE BATTERY FOR AT LEAST 30 MINUTES (to carry out other work on the vehicle).**

Note:
If commands **SC003 Save computer data** and **SC001 Write saved data** do not work or were forgotten: after programming the computer, write the **C2I** for each injector manually by reading the **C2I** on each injector (see **Replacement of injectors**).

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## REPLACING THE INJECTORS

Note:
**C2I (individual injector correction)** is a calibration carried out in the factory on **each injector** to **adjust the flow** of each injector precisely.
The correction values are written on a **label** affixed to each injector, then entered in the injection computer, which can then actuate each injector by taking account of their **manufacturing variation**.

**The system can be set up via the diagnostic socket using the diagnostic tool.**

The **C2I** parameters must be replaced after replacing an injector/injectors.

To do this, reprogram **C2I** into the injection computer using the following commands:
**- VP001 Cylinder 1 injector** for the cylinder 1 injector **(cylinder on the flywheel end)**,
**- VP002 Cylinder 2 injector** for the cylinder 2 injector,
**- VP003 Cylinder 3 injector** for the cylinder 3 injector,
**- VP004 Cylinder 4 injector** for the cylinder 4 injector.

It is also possible to enter the four **C2I** using command **SC002 Enter injector codes**.

**Only** after simultaneously replacing at least three injectors, **reset** the injector programming adaptives, using command **RZ004 Pressure regulation programming adaptives**.

## HIGH PRESSURE PUMP REPLACEMENT

**IMPORTANT**
**When reprogramming the computer, carry out the following procedure only after command AC028 Static test has been run (see Computer reprogramming operation).**

**PROCEDURE**
– Switch on the ignition and use the **diagnostic tool** to re-establish dialogue with the injection computer.
– Use command **AC212 New pump chamber filling**.
– Run the starter (**Important: the repriming time until the engine starts can be up to 20 seconds**).
– After the engine has started, refer to **ET637 Fill new pump chamber** and check that it is **Done**; if not, repeat the starting procedure.

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## REPLACING THE EGR VALVE

If the **EGR valve** is replaced, program the new valve's offset position.
**Switch on the ignition and use the diagnostic tool to perform the following step:**
– run command **RZ002 EGR adaptives** to clear the old offset using the EGR programming clearing procedure.

**IMPORTANT**
**Do not use this command if the valve is not new.**

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**SETTINGS**

**VP001**: Cylinder 1 injector
**VP002**: Cylinder 2 injector
**VP003**: Cylinder 3 injector
**VP004**: Cylinder 4 injector
These commands enable you to manually write the calibration code marked on the injector.
Use these commands after replacing the injector or replacing or (re)programming the computer, when command **SC001 Write saved data** does not work.

**VP010**: Write VIN.
This command enables the vehicle VIN to be entered into the computer.
Use this command each time the computer is replaced or (re)programmed.

**VP013**: Lock injector control.
This command disables electrical actuation of the injectors, for carrying out the compression test.

**SPECIAL COMMANDS**

**SC001**: Write saved data.
Use this command after replacing or (re)programming the computer (if the data were saved using command **SC003 Save computer data**).

**SC002**: Enter injector codes.
This command enables you to manually write the calibration code marked on the injectors.
Use this command after replacing the injectors.

**SC003**: Save computer data.
This command saves the computer operating data, **C2I** (individual injector correction) parameters and engine programming adapters.
Use this command before replacing or (re)programming a computer.

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| Tool fault | Associated DTC | Diagnostic tool name |
|---|---|---|
| **DF001** | **0115** | Coolant temperature sensor circuit |
| **DF002** | **0070** | Air temperature sensor circuit |
| **DF003** | **2226** | Atmospheric pressure sensor circuit |
| **DF005** | **0335** | Engine speed sensor circuit |
| **DF007** | **0190** | Rail pressure sensor circuit |
| **DF008** | **0225** | Pedal potentiometer circuit gang 1 |
| **DF009** | **2120** | Pedal potentiometer circuit gang 2 |
| **DF010** | **0409** | EGR position sensor circuit |
| **DF014** | **0500** | Vehicle speed information circuit |
| **DF015** | **0685** | Main relay control circuit |
| **DF016** | **0403** | EGR control circuit |
| **DF017** | **0382** | Preheating unit control circuit |
| **DF018** | **0480** | Low-speed fan unit control circuit |
| **DF019** | **0481** | High-speed fan unit control circuit |
| **DF021** | **0381** | Preheating warning light circuit |
| **DF022** | **0650** | OBD warning light circuit |
| **DF024** | **0231** | Low pressure actuator control circuit |
| **DF025** | **0380** | Preheater unit diagnostic connection |
| **DF026** | **0201** | Cylinder 1 injector circuit control |
| **DF027** | **0202** | Cylinder 2 injector circuit control |
| **DF028** | **0203** | Cylinder 3 injector circuit control |
| **DF029** | **0204** | Cylinder 4 injector circuit control |
| **DF032** | **1641** | Thermoplunger 1 relay control circuit |
| **DF033** | **1642** | Thermoplunger 2 relay control circuit |
| **DF034** | **1643** | Thermoplunger 3 relay control circuit |
| **DF037** | **0513** | Immobiliser |
| **DF038** | **0606** | Computer |
| **DF039** | **0110** | Inlet air temperature sensor circuit |
| **DF047** | **0560** | Computer feed voltage |
| **DF049** | **0530** | Refrigerant sensor circuit |
| **DF050** | **0571** | Brake switch circuit |

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| Tool fault | Associated DTC | Diagnostic tool name |
|---|---|---|
| **DF052** | **0200** | Injector control circuit |
| **DF053** | **0089** | Rail pressure regulation function |
| **DF056** | **0100** | Air flow sensor circuit |
| **DF057** | **2264** | Water in diesel fuel detector circuit |
| **DF059** | **0263** | Misfiring on cylinder 1 |
| **DF060** | **0266** | Misfiring on cylinder 2 |
| **DF061** | **0269** | Misfiring on cylinder 3 |
| **DF062** | **0272** | Misfiring on cylinder 4 |
| **DF089** | **0235** | Inlet manifold pressure sensor circuit |
| **DF098** | **0180** | Fuel temperature sensor circuit |
| **DF107** | **062F** | Computer memory |
| **DF112** | **0340** | Cylinder reference sensor circuit |
| **DF113** | **0641** | Sensor supply voltage |
| **DF114** | **0400** | EGR solenoid valve circuit |
| **DF121** | **0325** | Accelerometer circuit |
| **DF122** | **0651** | Supply voltage pedal potentiometer gang 2 |
| **DF130** | **0087** | Flow capacity function |
| **DF159** | **0635** | Power steering relay control circuit |
| **DF162** | **0655** | Overheating indicator light |
| **DF195** | **0016** | Camshaft/engine speed sensor consistency |
| **DF209** | **0487** | EGR valve position sensor circuit |
| **DF218** | **0604** | Microcontroller |
| **DF221** | **0830** | Clutch contact signal |
| **DF236** | **106F** | Serious injection fault warning light circuit |

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| Tool fault | Associated DTC | Diagnostic tool name |
|---|---|---|
| **DF242** | **0654** | Engine speed signal output |
| **DF261** | **0045** | Turbocharger actuator circuit |
| **DF427** | **2263** | Turbocharger actuator control |
| **DF433** | **0656** | Fuel consumption signal (ADAC) |
| **DF489** | **0645** | Air conditioning compressor control |
| **DF532** | **2502** | Alternator charge signal |
| **DF631** | **0703** | Brake light switch signal |
| **DF859** | **0170** | Injector programming cycle not done |
| **DF886** | **2269** | Presence of water in the diesel fuel |
| **DF1083** | **3264** | Water in diesel fuel warning light circuit |

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|---|---|
| **DF001 PRESENT OR STORED** | COOLANT TEMPERATURE SENSOR CIRCUIT<br>CO.1: Open circuit or short circuit to +12 V<br>CC.0: Short circuit to earth |

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|---|---|
| ***NOTES*** | **Special notes:**<br>If fault **DF001** is **present**, the preheating time is greater than **10 seconds** and the engine fan switches on at low speed (**Fan assembly 1**). If there is a fault on **Fan assembly 1**, then on vehicles fitted with air conditioning, **Fan assembly 2** switches on. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the coolant temperature sensor connector, component code **244**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s); otherwise, replace the wiring.

Check the **insulation, continuity**, and **absence of interference resistance** of the following connections:
- **3C** between components **244** and **120**,
- **3JK** between components **244** and **120**,
- **M** (or **NH**) of component **244**,
- **42A** between components **244** and **247**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure the **resistance** of the coolant temperature sensor between connections **3JK** and **3C** of component **244**.
**11.5 kΩ < X < 13.5 kΩ** at **-10˚C**,
**2140 Ω < X < 2364 Ω** at **25˚C,**
**773 Ω < X < 851 Ω** at **50˚C,**
**275 Ω < X < 291 Ω** at **80˚C,**
**112 Ω < X < 118 Ω** at **110˚C.**
If the value is not correct, replace the **coolant temperature sensor** (see **MR 388 Mechanical, 19A, Cooling, Coolant temperature sensor: Removal - Refitting**).

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF001

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|---|---|
| **DF002 PRESENT OR STORED** | AIR TEMPERATURE SENSOR CIRCUIT<br>CO.1: Open circuit or short circuit to +12 V<br>CC.0: Short circuit to earth<br>1.DEF: Inconsistency |

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| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF113 Sensor supply voltage.** |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2 or Symbol 2.** |

Check the connection and condition of the air flow sensor connector, component code **799**.
Check the condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s); otherwise, replace the wiring.

Check for **+ 12 V after ignition feed** on connection **3FB** (or **3FBA**) of the air flow sensor connector.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **earth** on connection **NH** of the air flow sensor.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF002 CONTINUED | |
|---|---|

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **3B** between components **120** and **799**,
- **3FB** (or **3FBA**) of component **799**,
- **NH** of component **799**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure the **resistance** of the air flow sensor, which should be between:
**41255 Ω < X < 47492 Ω** at **-40˚C,**
**14260 Ω < X < 16022 Ω** at **-20˚C,**
**5497 Ω < X < 6050 Ω** at **0˚C,**
**2353 Ω < X < 2544 Ω** at **20˚C,**
**1114 Ω < X < 1186 Ω** at **40˚C,**
**569 Ω < X < 597 Ω** at **60˚C,**
**310 Ω < X < 322 Ω** at **80˚C,**
**180 Ω < X < 185 Ω** à **100˚C.**
If the value is not correct, replace the **air flow sensor** (see **MR 388 Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting**).

If the fault is still present, replace the air flowmeter (see **MR 388 Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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|---|---|
| **DF003 PRESENT OR STORED** | ATMOSPHERIC PRESSURE SENSOR CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit on + 12 V |

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| ***NOTES*** | **Special notes:**<br>The atmospheric pressure sensor is incorporated into the injection computer. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| |
|---|
| Look for any damage to the wiring and check the condition and connection of the injection computer connectors, component code **120**.<br>Check the connection and condition of the injection locking relay connector.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Move the wiring between the injection computer and the battery, component code **107**, to see if a change of status occurs (Present → Stored).<br>Look for possible damage to the wiring and check the connection and condition of the battery and its connections.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Measure the battery **voltage** when the ignition is switched on.<br>If the battery voltage is less than **11 V**, recharge the battery (see **Technical Note 6014A (Renault) or Technical Note 9859A (Dacia), Charging circuit check**). |
| Check the connection and condition of the battery terminals. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF003

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| **DF005 PRESENT OR STORED** | ENGINE SPEED SENSOR CIRCUIT<br>1.DEF: Inconsistency<br>2.DEF: Inconsistency<br>3.DEF: Too many additional teeth<br>4.DEF: Teeth missing<br>5.DEF: Additional teeth<br>6.DEF: Too many teeth missing |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>If fault **DF005, 1.DEF, 2.DEF, 3.DEF,** or **6.DEF** is **present**: the engine stops and the **level 2 warning light** illuminates.<br>If fault **DF005, 4.DEF** or **5.DEF** is **present**: the engine performance is reduced to **75%** and no warning lights illuminate.<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |
| | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** when the starter motor is operating or the engine is running at idle speed. |

Check the connection and condition of the engine speed sensor connector, component code **149**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check that the speed sensor is correctly fitted to the engine.

Check the **insulation, continuity**, and **absence of interference resistance** of the following connections:
- **3BL** between components **120** and **149**,
- **3BG** between components **120** and **149**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure **the resistance** of the engine speed sensor between connections **3BG** and **3BL** of component **149**.
If the resistance of the engine speed sensor is not between 510 Ω < X < 850 Ω at 20˚C, replace the sensor (see **MR 388, Mechanical, 13B Diesel injection, Crankshaft position sensor: Removal – Refitting**).

Check that the flywheel ring gear is not defective (missing teeth).

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF005

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|---|---|
| **DF007 PRESENT OR STORED** | RAIL PRESSURE SENSOR CIRCUIT<br>CC.0: Short circuit to earth<br>CO.1: Open circuit or short circuit to +12 V<br>1.DEF: Inconsistency<br>2.DEF: Below minimum threshold<br>3.DEF: Above maximum threshold<br>4.DEF: Value outside permitted tolerance |

| | |
|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF113 Sensor supply voltage.** |
| | **Fault finding procedure application conditions for stored faults:**<br>The fault is declared **present** after the engine starts. |
| | **Special notes:**<br>If fault **DF007** is **present**: the engine stops and cannot be restarted.<br>The **Level 2** warning light illuminates.<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the rail pressure sensor connector, component code **1032**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+5 V** on connection **3LX** of the rail pressure sensor, component code **1032**.
Check for **earth** on connection **3LZ** of the rail pressure sensor, component code **1032**.
If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **3LX** between components **120** and **1032**,
- **3LY** between components **120** and **1032**,
- **3LZ** between components **120** and **1032**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, there is a fault of the rail pressure sensor, replace the rail (see **MR 388 Mechanical, 13B, Diesel injection, Injector rail, Removal - Refitting**).

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF007

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|---|---|
| **DF008 PRESENT OR STORED** | PEDAL POTENTIOMETER GANG 1 CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit on + 12 V<br>1.DEF: Inconsistency between pedal gang 1 and gang 2<br>2.DEF: No signal<br>3.DEF: Jammed component |

| | |
|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF113 Sensor supply voltage.** |
| | **Special notes:**<br>If fault **DF008** is **present**: the engine speed is maintained above **1000 rpm (normal idling speed with brake pedal depressed)** and the **level 1 warning light** illuminates (except for **3.DEF**).<br>If faults **DF008** and **DF009 Pedal potentiometer gang 2 circuit** are **present**: engine speed is fixed at **1300 rpm and the level 1 warning light illuminates**.<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| | | |
|---|---|---|
| **1.DEF**<br>**3.DEF** | ***NOTES*** | None. |

Disconnect the injection computer connector, component code **120**, and the pedal potentiometer connector, component code **921**.
Check the **insulation, continuity** and the **absence of interference resistance** of the following connections:
- **3LS** between components **120** and **921**,
- **3LW** between components **120** and **921**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the **pedal potentiometer** (see **MR 388 Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**).

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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|---|---|
| **DF008 CONTINUED 1** | |

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|---|---|---|
| **CO.0**<br>**CC.1**<br>**2.DEF** | ***NOTES*** | None. |

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|---|
| Check the connection and condition of the pedal potentiometer connector, component number **921**.<br>Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:<br>● **3LR** between components **120** and **921,**<br>● **3LS** between components **120** and **921**,<br>● **3LT** between components **120** and **921**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for **+5 V** on connection **3LR** of the pedal potentiometer, component code **921**.<br>Check for **earth** on connection **3LT** of the pedal potentiometer, component code **921**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Disconnect the injection computer connector and the pedal potentiometer connector.<br>Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:<br>● **3LS** between components **120** and **921**,<br>● **3LW** between components **120** and **921**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF008 CONTINUED 2 | |
|---|---|

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| Measure **the resistance** between connections **3LT** and **3LR** of the pedal potentiometer, component code **921**.<br>If the pedal potentiometer resistance is not between **720 Ω < X < 1680 Ω**, replace the **pedal potentiometer** (see **MR 388 Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**). |
| If the fault is still present, replace the **pedal potentiometer** (see **MR 388 Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

| | |
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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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|---|---|
| **DF009 PRESENT OR STORED** | PEDAL POTENTIOMETER GANG 2 CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit on + 12 V |

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|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF122 Pedal potentiometer supply voltage gang 2.** |
| | **Special notes:**<br>If fault **DF009** is **present**: the engine speed is maintained above **1000 rpm**, **the engine performance is reduced to 75%**, and the **level 1 warning light** illuminates.<br>If faults **DF009** and **DF008 Pedal potentiometer gang 1 circuit** are **present**: the engine speed is fixed at **1300 rpm** and the **level 1 warning light** illuminates.<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| | | |
|---|---|---|
| **CO.0** | ***NOTES*** | None. |

Check the connection and condition of the pedal potentiometer connector, component code **921**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+5 V** on connection **3LU** of the pedal potentiometer, component code **921**.
Check for **earth** on connection **3LV** of the pedal potentiometer, component code **921**.
If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Disconnect the computer connector and the pedal potentiometer connector, component code **921**.
Check the **insulation against earth** of connection **3LW** on the injection computer connector.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF009

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| DF009 CONTINUED 1 | |
|---|---|

Check **the continuity** of the following connection:
- **3LW** between components **120** and **921**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure **the resistance** between connections **3LV** and **3LU** of the pedal potentiometer, component code **921**.
If the resistance is not between **1020 Ω < X < 2380 Ω**, replace the pedal potentiometer (see **MR 388 Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**).

If the fault is still present, contact the Techline.

| CC.1 | *NOTES* | None. |
|---|---|---|

Check the connection and condition of the pedal potentiometer connector, component number **921**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **3LU** between components **120** and **921**,
- **3LV** between components **120** and **921**,
- **3LW** between components **120** and **921**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| DF009 CONTINUED 2 | |
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| Disconnect the computer connector and the pedal potentiometer connector, component code **921**.<br>Check the **insulation** between connections **3LU** and **3LW** of the injection computer connector.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Measure **the resistance** between connections **3LU** and **3LV** of the pedal potentiometer, component code **921**.<br>If the resistance is not between **1020 Ω < X < 2380 Ω,** replace the **pedal potentiometer** (see **MR 388 Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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|---|---|
| **DF010 PRESENT OR STORED** | EGR POSITION SENSOR CIRCUIT<br>1.DEF: At minimum stop<br>2.DEF: At maximum stop |

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| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF113 Sensor supply voltage.** |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| **K9K 718, 740, 792, and 796 ENGINES (Euro 4):** |
|---|
| Check the connection and condition of the **EGR valve** connector, component code **1460**.<br>Check the connection and condition of **connector B** (brown 48-track) of the **computer**, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation and continuity** of the following connections:<br>● **3GC** between components **1460** and **120**,<br>● **3EL** between components **1460** and **120,**<br>● **3JM** between components **1460** and **120**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for **+ 5 V** on connection **3GC** of the EGR valve sensor, component code **1460**.<br>Check for **earth** on connection **3JM** of the EGR valve sensor, component code **1460**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF010

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| DF010 CONTINUED 1 | |
|---|---|

Measure the resistance of the **EGR valve**, component code **1460**:
- with the engine stopped, the EGR valve will be closed (unless there is a fault),
- wait for the ambient temperature around the valve to stabilise (approximately **20˚C**),

measure the resistance between connections **3VP** and **3VQ** of component **1460**. The resistance must be between **0.5 Ω < R < 50 Ω** (while activating command **AC002 EGR solenoid valve**).
If the value is not correct, replace the **EGR valve** (see **MR 388 Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**).
After replacing the EGR valve, use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.

If the fault is still present, contact the Techline.

**K9K 790 and 794 ENGINES (Euro 3):**

Check the connection and condition of the **EGR valve** connector, component code **1460**.
Check the connection and condition of **connector B** (brown 48-track) of the **computer**, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation and continuity** of the following connections:
- **3GC** between components **1460** and **120**,
- **3EL** between components **1460** and **120,**
- **3JM** between components **1460** and **120**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+ 5 V** on connection **3GC** of the EGR valve sensor, component code **1460**.
Check for **earth** on connection **3JM** of the EGR valve sensor, component code **1460**.
If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| DF010 CONTINUED 2 | |
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Check the resistance of the **EGR valve**, component code **1460**:
- with the engine stopped, the EGR valve will be closed (unless there is a fault),
- wait for the ambient temperature around the valve to stabilise (approximately **20˚C**),
- measure the resistance between connections **3FB (or 3FB2)** and **122B.** The resistance must be between **7.54 Ω < R < 8.5 Ω** (at **20˚C**),
- measure the resistance between connections **3GC** and **3JM**. The resistance must be between **2.4 KΩ < R < 5.6 KΩ** (at **20˚C**),
- measure the resistance between connections **3JM** and **3EL**. The resistance must be between **800 Ω < R < 3.6 KΩ** (at **20˚C**),

If the value is not correct, replace the **EGR valve** (see **MR 388 Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**). After replacing the EGR valve, use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| **DF014 PRESENT OR STORED** | VEHICLE SPEED SIGNAL CIRCUIT<br>1.DEF: Inconsistency<br>2.DEF: Signal Absent<br>3.DEF: Below the minimum threshold<br>4.DEF: The CAN test has detected at least one fault<br>5.DEF: Dialogue disrupted |

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| ***NOTES*** | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the speed sensor connector, component code **250**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Connect the bornier in place of the computer and check the **insulation, continuity,** and **absence of interference resistance** on connection **47F** of the injection computer, component code **120**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the speed sensor.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF014

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| **DF015 PRESENT OR STORED** | MAIN RELAY CONTROL CIRCUIT<br>1.DEF: Permanent low signal<br>2.DEF: Permanent high signal |

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| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>Apply the fault finding procedure below if the fault is **present** or **stored**. |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

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| Check the supply fuse **F02** (**30 A**) of the main relay in the engine compartment on the engine fuse and relay box, component code **597** (see **MR 388 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the connection and condition of the connector of the injection computer, component code **120**, and of the computer supply relay, component code **983** on the engine fuse and relay box.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:<br>● **3AA** between components **120** and **983**,<br>● **3FB (**or **3FB2)** between components **120** and **983**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Replace the relay if the fault is still present. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF015

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| **DF016 PRESENT OR STORED** | EGR VALVE CONTROL CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to +12 V<br>CO: Open circuit<br>CO.1: Open circuit or short circuit to +12V<br>CC.0: Short circuit to earth<br>1.DEF: Detection of overheating |

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| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault appears when the engine is running at idle speed. |
| | **Special notes:**<br>If fault **DF016** is **present**, unstable engine speed and even stalling.<br>Starting difficult or even impossible when cold. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| **K9K 718, 740, 792, and 796 ENGINES (Euro 4):** |
|---|
| Check the connection and condition of the **exhaust gas recirculation valve** connector, component code **1460**.<br>Check the connection and condition of the **injection computer**, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation and continuity** of the following connections:<br>● **3VP** between components **1460** and 1**20,**<br>● **3VQ** between components **1460** and **120**.<br>If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for the supply **13 V < X < 14 V (with the engine running)**, **11.5 V < X < 12.5 V (with the ignition on and the engine stopped)** on connection **3VP** of component **1460**.<br>Check for **earth** on connection **3VQ** of component **1460**. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF016

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| DF016 CONTINUED 1 | |
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Measure the resistance of the **EGR valve**, component code **1460**:
- with the engine stopped, the EGR valve will be closed (unless there is a fault),
- wait for the ambient temperature around the valve to stabilise (approximately **20˚C**),

measure the resistance between connections **3VP** and **3VQ** of component **1460**. The resistance must be between **0.5 Ω < R < 50 Ω** (while activating command **AC002 EGR solenoid valve**).
If the value is not correct, replace **the EGR valve** (see **MR 388, Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**).
After replacing the EGR valve, use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.

If the fault is still present, contact the Techline.

**K9K 790 and 794 ENGINES (Euro 3):**

Check the connection and condition of the **exhaust gas recirculation solenoid valve** connector, component code **1460**.
Check the connection and condition of the **injection computer**, component code **1260**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation and continuity** of the following connections:
- **3FB (or 3FB2)** between components **1460** and **120**,
- **122B** between components **1460** and **120.**

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for the supply: **13 V < X < 14 V (with the engine running), 11.5 V < X < 12.5 V (with the ignition on and the engine stopped)** on connection **3FB (or 3FB2)** of component **1460**.
Check for earth on connection **122B** of component **1460**.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| DF016 CONTINUED 2 | |
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Measure the resistance of the **EGR valve**, component code **1460**:
– with the engine stopped, the EGR valve will be closed (unless there is a fault),
– wait for the ambient temperature around the valve to stabilise (approximately **20˚C**),
– measure the resistance between connections **3FB (or 3FB2)** and **122B** of component **1460**. The resistance must be between **7.5 Ω < R < 8.5 Ω** (at **20˚C**),
– measure the resistance between connections **3GC** and **3JM** of component **1460**. The resistance must be between **2.4 KΩ < R < 5.6 KΩ** (at **20˚C**),
– measure the resistance between connections **3JM** and **3EL** of component **1460**. The resistance must be between **800 Ω < R < 3.6 KΩ** (at **20˚C**),
if the value is not correct, replace the **EGR valve** (see **MR 388, Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**).
After replacing the EGR valve, use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| **DF017 PRESENT** | PREHEATING UNIT CONTROL CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Special notes:**<br>If fault **DF017** is **present**: starting is difficult (even impossible when cold).<br>If **CO.0** is present: the heater plugs are permanently switched on, with a risk of engine damage or even failure. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the preheating unit connector, component code **257**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **3FY** between components **120** and **257**,
- **3FF** between components **120** and **257**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF017P

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| **DF018 PRESENT OR STORED** | LOW SPEED FAN ASSEMBLY CONTROL CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** after attempting to start or with the engine running or when command **AC154 Low speed fan unit relay** is running. |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

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|---|---|---|
| **CC.1** | ***NOTES*** | None. |

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| Check the **+ 12 V** after relay supply on the support of the low speed fan assembly - percolation relay, component code **700**, on connection **3FB** (only for **K9K 792, 794, 796** engines) or **3FB2** (only for **K9K 790** engines) or **BP7** (only for **K9K 718, 740** engines).<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the condition of the connections and the correct operation of relay **700**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity** and **the absence of interference resistance** on the following connection:<br>● **3JN** between components **120** and **700**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF018 CONTINUED | |
|---|---|

| CO.0 | *NOTES* | None. |
|---|---|---|

Check the **continuity** and **insulation against earth** of the following connection:
**3FB** (only for **K9K 792, 794, 796** engines) or **3FB2** (only for **K9K 790** engines) or
**BP7** (only for **K9K 718, 740** engines) between components **983** and **700**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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|---|---|
| **DF019 PRESENT OR STORED** | HIGH SPEED FAN ASSEMBLY CONTROL CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** after attempting to start or with the engine running or when command **AC153 High speed fan assembly relay** is running. |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

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|---|---|---|
| **CC.1** | ***NOTES*** | None. |

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| Check the **+ 12 V** after relay supply on the support of the fan assembly relay **336** on connection 3FB (only for **K9K 792, 794, 796** engines) or **3FB2** (only for **K9K 790** engines) or **BP7** (only for **K9K 718, 740** engines).<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the condition of the connections and the correct operation of relay **336**. Replace it if necessary. |
| Check for **continuity and the absence of interference resistance** on the following connection:<br>● **3JP** between components **120** and **336**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF019 CONTINUED | |
|---|---|

| CO.0 | *NOTES* | None. |
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Check **the continuity and insulation from earth** of the following connection:

- **3FB** (only for **K9K 792, 794, 796** engines) or **3FB2** (only for **K9K 790** engines) or **BP7** (only for **K9K 718, 740** engines) between components **983** and **336**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| DF021 PRESENT OR STORED | PREHEATING WARNING LIGHT CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to +12 V |
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| *NOTES* | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2 or Symbol 2.** |
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| Clear the fault and check that the warning light is working properly with command **AC060 Preheating warning light**. |
| Check the **connection** and **condition** of the preheating warning light sensor, component code **247**.<br>Check the **connection** and **condition** of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and there is a repair procedure (see **Technical Note 9804A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check **the insulation** and **continuity** of the following connection:<br>• **3NX** between components **247** and **120**.<br><br>If the connection is faulty and there is a repair procedure (see **Technical Note 9804A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the instrument panel, component code **247** (see **MR 388, (Logan / Sandero) or MR 423 (Thalia 2 / Symbol 2) Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**). |
| If the fault persists, contact your Techline. |

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| **DF022 PRESENT OR STORED** | OBD CIRCUIT WARNING LIGHT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2 or Symbol 2.** |

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| Clear the fault and check that the warning light is working properly with command **AC155 MIL warning light**. |
| Check the **connection** and **condition** of the OBD warning light sensor connector, component code **247**.<br>Check **the connection** and **condition** of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check **the insulation** and **continuity** of the following connection:<br>• **3FH** or **137C** between components **247** and **120**.<br><br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the instrument panel, component code **247** (see **MR 388, (Logan / Sandero) or MR 423 (Thalia 2 / Symbol 2) Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**). |
| If the fault persists, contact your Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF024 PRESENT OR STORED** | LOW-PRESSURE ACTUATOR CONTROL CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Special notes:**<br>If fault **DF024** is **present** with a **CO.0** or a **CC.1**: the fuel flow actuator fully opens, the engine rattles and stops immediately to prevent racing, and the **level 2 warning light** illuminates. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

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| Check the connection and condition of the flow actuator connector, component code **1105**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+12 V after ignition feed** on connection **3FB (**or **3FB2)** on the flow actuator connector, component code **1105**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Measure the **resistance** between the connections **3FB (**or **3FB2)** and **3HI** of the flow actuator, component code **1105**.<br>If the resistance is not between: **4.8 Ω < X < 5.8 Ω** at **20˚ C**, replace the flow actuator (see **MR 388 Mechanical, 13B, Diesel injection, Flow actuator: Removal – Refitting**). |
| Check the **insulation**, **continuity**, and the **absence of interference resistance** on the following connection:<br>● **3HI** between components **120** and **1105**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF024

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| **DF025 PRESENT OR STORED** | PRE-POSTHEATING UNIT DIAGNOSTIC LINE<br>CO: Open circuit |

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| ***NOTES*** | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

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| Check fuse **F1 (70 A)** of the preheating unit power supply, component code **257** in the engine compartment (see **MR 388 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the connection and condition of the heater plug connectors, component codes **680**, **681**, **682**, and **683**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Measure the **resistance** of each heater plug.<br>The resistance must be **less than 2 Ω**.<br>Replace the faulty plug(s) (see **MR 388 Mechanical, 13C, Preheating, Heater plugs, Removal - Refitting**). |
| Check the connection and condition of the preheating unit connector, component code **257**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:<br>● **3FY** between components **120** and **257**,<br>● **3FF** between components **120** and **257**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF026 PRESENT OR STORED** | CYLINDER 1 INJECTOR CIRCUIT CONTROL<br>CO: Open circuit<br>CC: Short circuit<br>1.DEF: At minimum stop<br>2.DEF: At maximum stop |

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| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** with the engine idling. |
| | **Special notes:**<br>When this fault appears, the idling speed is locked at **1000 rpm**, there is engine noise, unsteady engine speed, the engine performance is reduced to **75%**, and the **level 1 warning light** illuminates until the ignition is next switched off. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| | | |
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| **CO**<br>**CC** | ***NOTES*** | None. |

Switch off the ignition and wait **15 seconds**.
Check the connection and condition of the injector 1 connector, component code **193**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s); otherwise, replace the wiring.

Run command **AC005 Cylinder 1 injector**.
If injector 1 cannot be heard operating five times in a cycle, connect the wire of the cylinder 2 injector to the cylinder 1 injector and use command **AC006 Cylinder 2 injector**.
**Does this injector actuation cycle work?**

**Note:**
If the wires cannot be swapped, continue the procedure by replying **YES** to the previous question.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF026 CONTINUED** | |

| | |
|---|---|
| **YES** | Injector 1 is not faulty; fault on injector 1 control circuit. |
| | Check the **continuity, insulation**, and **absence of interference resistance** of the following connections:<br>● **3L** between components **120** and **193**,<br>● **3KW** between components **120** and **193**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | If the fault is still present, contact the Techline. |

| | |
|---|---|
| **NO** | Injector 1 is faulty, replace the cylinder 1 injector (see **MR 388 Mechanical, 13B, Diesel Injection, Diesel injector: Removal – Refitting**). |

| | | |
|---|---|---|
| **1.DEF**<br>**2.DEF** | ***NOTES*** | None. |

| |
|---|
| Check the conformity of the injectors fitted to the vehicle in relation to the engine number and type (low, high or very high pressure injector).<br>Check that the **C2I** is correctly entered on the computer.<br>Check the accelerometer shielding on connection **TB1** of the injection computer connector.<br>Check that the accelerometer is secured on the engine.<br>**After retightening** the accelerometer, **it is essential to clear** the pressure regulation adaptives using command **RZ004 Pressure regulation adaptives**.<br>Disconnect and reconnect the accelerometer sensor to accomplish fast programming |
| If the fault is still present, replace the cylinder 1 injector, component code **193** (see **MR 388 Mechanical, 13B, Diesel injection, Diesel injector: Removal – Refitting**). |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF027 PRESENT OR STORED** | CYLINDER 2 INJECTOR CIRCUIT CONTROL<br>CO: Open circuit<br>CC: Short circuit<br>1.DEF: At minimum stop<br>2.DEF: At maximum stop |

| | |
|---|---|
| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** with the engine idling. |
| | **Special notes:**<br>When this fault appears, the idling speed is locked at **1000 rpm**, there is engine noise, unsteady engine speed, the engine performance is reduced to **75%**, and the **level 1 warning light** illuminates until the ignition is next switched off. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| | | |
|---|---|---|
| **CO**<br>**CC** | ***NOTES*** | None. |

Switch off the ignition and wait **15 seconds**.
Check the connection and condition of the injector 2 connector, component code **194**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s); otherwise, replace the wiring.

Run command **AC006 Cylinder 2 injector**.
If injector 2 cannot be heard operating five times in a cycle, connect the wire of the cylinder 3 injector to the cylinder 2 injector and use command **AC007 Cylinder 3 injector**.
**Does this injector actuation cycle work?**

**Note:**
If the wires cannot be swapped, continue the procedure by replying **YES** to the previous question.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF027

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|---|---|
| **DF027 CONTINUED** | |

| | |
|---|---|
| **YES** | Injector 2 is not faulty. The fault is in the injector 2 control circuit. |
| | Check the **continuity, insulation**, and **absence of interference resistance** of the following connections:<br>● **3LA** between components **120** and **194**,<br>● **3KX** between components **120** and **194**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | If the fault is still present, contact the Techline. |

| | |
|---|---|
| **NO** | Injector 2 is faulty, replace the cylinder 2 injector (see **MR 388 Mechanical, 13B, Diesel injection, Diesel injector: Removal – Refitting**). |

| | | |
|---|---|---|
| **1.DEF**<br>**2.DEF** | ***NOTES*** | None. |

| |
|---|
| Check the conformity of the injectors fitted to the vehicle in relation to the engine number and type (low, high or very high pressure injector).<br>Check that the **C2I** is correctly entered on the computer.<br>Check the accelerometer shielding on connection **TB1** of the injection computer connector.<br>Check that the accelerometer is secured on the engine.<br>**After retightening** the accelerometer, **it is essential to clear** the pressure regulation adaptives using command **RZ004 Pressure regulation adaptives**.<br>Disconnect and reconnect the accelerometer sensor to accomplish fast programming |
| If the fault is still present, replace the cylinder 2 injector, component code **194** (see **MR 388 Mechanical, 13B, Diesel injection, Diesel injector: Removal – Refitting**). |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF028 PRESENT OR STORED** | CYLINDER 3 INJECTOR CIRCUIT CONTROL<br>CO: Open circuit<br>CC: Short circuit<br>1.DEF: At minimum stop<br>2.DEF: At maximum stop |

| | |
|---|---|
| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** with the engine idling. |
| | **Special notes:**<br>When this fault appears, the idling speed is locked at **1000 rpm**, there is engine noise, unsteady engine speed, the engine performance is reduced to **75%**, and the **level 1 warning light** illuminates until the ignition is next switched off. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| | | |
|---|---|---|
| **CO**<br>**CC** | ***NOTES*** | None. |

Switch off the ignition and wait **15 seconds**.
Check the connection and condition of the injector 3 connector, component code **195**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s); otherwise, replace the wiring.

Run command **AC007 Cylinder 3 injector**.
If injector 3 cannot be heard operating five times in a cycle, connect the wire of the cylinder 4 injector to the cylinder 3 injector and use command **AC008 Cylinder 4 injector**.
**Does this injector actuation cycle work?**

**Note:**
If the wires cannot be swapped, continue the procedure by replying **YES** to the previous question.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF028

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|---|---|
| **DF028 CONTINUED** | |

| | |
|---|---|
| **YES** | Injector 3 is not faulty. The fault is in the injector 3 control circuit. |
| | Check the **continuity, insulation**, and **absence of interference resistance** of the following connections:<br>● **3LB** between components **120** and **195**,<br>● **3KY** between components **120** and **195**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | If the fault is still present, contact the Techline. |

| | |
|---|---|
| **NO** | Injector 3 is faulty, replace the cylinder 3 injector (see **MR 388 Mechanical, 13B, Diesel Injection, Diesel injector: Removal – Refitting**). |

| | | |
|---|---|---|
| **1.DEF**<br>**2.DEF** | ***NOTES*** | None. |

| |
|---|
| Check the conformity of the injectors fitted to the vehicle in relation to the vehicle type and engine number (low, high or very high pressure injector).<br>Check that the **C2I** is correctly entered on the computer.<br>Check the accelerometer shielding on connection **TB1** of the injection computer connector, component code **120**.<br>Check that the accelerometer is secured on the engine.<br>**After retightening** the accelerometer, **it is essential to clear** the pressure regulation adaptives using command **RZ004 Pressure regulation adaptives**.<br>Disconnect and reconnect the accelerometer sensor to accomplish fast programming |
| If the fault is still present, replace the cylinder 3 injector, component code **195** (see **MR 388 Mechanical, 13B, Diesel Injection, Diesel injector: Removal – Refitting**). |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF029 PRESENT OR STORED** | CYLINDER 4 INJECTOR CIRCUIT CONTROL<br>CO: Open circuit<br>CC: Short circuit<br>1.DEF: At minimum stop<br>2.DEF: At maximum stop |

| | |
|---|---|
| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** with the engine idling. |
| | **Special notes:**<br>When this fault appears, the idling speed is locked at **1000 rpm**, there is engine noise, unsteady engine speed, the engine performance is reduced to **75%**, and the **level 1 warning light** illuminates until the ignition is next switched off. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| | | |
|---|---|---|
| **CO**<br>**CC** | ***NOTES*** | None. |

Switch off the ignition and wait **15 seconds**.
Check the connection and condition of the injector 4 connector, component code **196**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s); otherwise, replace the wiring.

Run command **AC008 Cylinder 4 injector**.
If injector 4 cannot be heard operating five times in a cycle, connect the wire of the cylinder 3 injector to the cylinder 4 injector and use command **AC007 Cylinder 3 injector**.
**Does this injector actuation cycle work?**

**Note:**
If the wires cannot be swapped, continue the procedure by replying **YES** to the previous question.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF029

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|---|---|
| **DF029 CONTINUED** | |

| | |
|---|---|
| **YES** | Injector 4 is not faulty. The fault is in the injector 4 control circuit. |
| | Check the **continuity, insulation**, and **absence of interference resistance** of the following connections:<br>● **3LC** between components **120** and **196**,<br>● **3KZ** between components **120** and **196**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | If the fault is still present, contact the Techline. |

| | |
|---|---|
| **NO** | Injector 4 is faulty, replace the cylinder 4 injector, component code **196** (see **MR 388 Mechanical, 13B, Diesel Injection, Diesel injector: Removal – Refitting**). |

| | | |
|---|---|---|
| **1.DEF**<br>**2.DEF** | ***NOTES*** | None. |

| |
|---|
| Check the conformity of the injectors fitted to the vehicle in relation to the vehicle type and engine number (low, high or very high pressure injector).<br>Check that the **C2I** is correctly entered on the computer.<br>Check the accelerometer shielding on connection **TB1** of the injection computer connector.<br>Check that the accelerometer is secured on the engine.<br>**After retightening** the accelerometer, **it is essential to clear** the pressure regulation adaptives using command **RZ004 Pressure regulation adaptives**.<br>Disconnect and reconnect the accelerometer sensor to accomplish fast programming |
| If the fault is still present, replace the cylinder 4 injector, component code **196** (see **MR 388 Mechanical, 13B, Diesel Injection, Diesel injector: Removal – Refitting**). |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF032 PRESENT OR STORED** | THERMOPLUNGER 1 RELAY CONTROL CIRCUIT<br>CC.1: Short circuit to +12 V<br>CO.0: Open circuit or short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| |
|---|
| Check the connection and condition of the additional heater 1 relay connector, component code **1067**.<br>Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s); otherwise, replace the wiring. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:<br>● **3JA** between components **120** and **1067**.<br>**With the ignition on**, check for **+12 V** on connection **3FB (**or **3FB2)** of the additional heater 1 relay.<br>If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, check the relay and replace it if necessary. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF032

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| | |
|---|---|
| **DF033 PRESENT OR STORED** | THERMOPLUNGER 2 RELAY CONTROL CIRCUIT<br>CC.1: Short circuit to +12 V<br>CO.0: Open circuit or short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| |
|---|
| Check the connection and condition of the additional heater 2 relay connector, component code **1068**.<br>Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s); otherwise, replace the wiring. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:<br>● **3JAA** between components **120** and **1068.**<br>**With the ignition on**, check for **+12 V** on connection **3FB (**or **3FB2)** of the additional heater 2 relay.<br>If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, check the relay and replace it if necessary. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF033

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| | |
|---|---|
| **DF034 PRESENT OR STORED** | THERMOPLUNGER 3 RELAY CONTROL CIRCUIT<br>CC.1: Short circuit to +12 V<br>CO.0: Open circuit or short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| |
|---|
| Check the connection and condition of the additional heater 3 relay connector.<br>Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s); otherwise, replace the wiring. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:<br>Injection computer, connector **C, track D1 Thermoplunger 3**<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, check the relay and replace it if necessary. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF034

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| | |
|---|---|
| **DF037 PRESENT OR STORED** | ENGINE IMMOBILISER |

| | |
|---|---|
| ***NOTES*** | **Stored fault diagnostic application conditions:**<br>The fault is **present** after the ignition is switched on. |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the injection computer connector, component code **120**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Connect the bornier in place of the computer and check the **insulation** and **continuity** of the following connection:
- **H17** between components **120** and **645**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, run fault finding on the engine immobiliser system (see **82D, Access - Security**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF037

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|---|---|
| **DF038 PRESENT OR STORED** | COMPUTER<br>1.DEF: Analogue - digital converter<br>2.DEF: Enter EEPROM memory<br>3.DEF: Read EEPROM memory<br>4.DEF: Enter injector codes<br>5.DEF: Memory self-test<br>6.DEF: Watchdog activation<br>7.DEF: Interference on the injector control line<br>8.DEF: Watchdog not refreshed |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>When this fault appears, either the engine speed is fixed at **1300 rpm** with the **level 1 warning light** illuminated, or the engine stops with the **level 2 warning light** illuminated. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| | | |
|---|---|---|
| **1.DEF - 2.DEF<br>3.DEF - 5.DEF<br>6.DEF - 8.DEF** | ***NOTES*** | None. |

Contact the Techline.

| | | |
|---|---|---|
| **4.DEF<br>7.DEF** | ***NOTES*** | None. |

| |
|---|
| Check that the individual injector correction **(C2I)** matches the injectors; if not, re-enter the **C2I** (see **Configurations and programming**). |
| Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF038

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| DF038 CONTINUED | |
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Check the **insulation, continuity**, and **absence of interference resistance** of the following connections:
- **3L** between components **120** and **193**,
- **3KW** between components **120** and **193**,
- **3LA** between components **120** and **194**,
- **3KX** between components **120** and **194**,
- **3LB** between components **120** and **195**,
- **3KY** between components **120** and **195**,
- **3LC** between components **120** and **196**,
- **3KZ** between components **120** and **196**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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|---|---|
| **DF039 PRESENT OR STORED** | INLET AIR TEMPERATURE SENSOR CIRCUIT<br>CO.1: Open circuit or short circuit to +12V<br>CC.0: Short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF113 Sensor supply voltage.** |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the air temperature sensor connector, component code **272**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s); otherwise, replace the wiring.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **3KQ** between components **120** and **272**,
- **3SH** between components **120** and **272**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure **the resistance** of the air temperature sensor between connections **3KQ** and **3SH**.
If the resistance of the air temperature sensor is not between:
**8623 Ω < X < 10455 Ω** at **-10° C**,
**1936 Ω < X < 2176 Ω** at **25°C,**
**763 Ω < X < 857 Ω** at **50°C,**
**212 Ω < X < 406 Ω** at **80°C.**
Replace the **air temperature sensor** if the resistance is not correct.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF039

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|---|---|
| **DF047 PRESENT OR STORED** | COMPUTER SUPPLY VOLTAGE<br>1.DEF: Above the maximum threshold<br>2.DEF: Below the minimum threshold |

| | |
|---|---|
| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** with the engine running at over **1000 rpm**. |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Move the wiring between the injection computer, component code **120** and the battery, component code **107** to see if a change of status occurs (Present ↔ Stored).
Look for possible damage to the wiring and check the connection and condition of the battery and its connections.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Measure the **battery voltage** when the ignition is switched on.
If the battery voltage is less than **11 V**, recharge the battery.

Check the connection and condition of the battery terminals.

Check the vehicle's charge circuit (see **Technical Note 6014A (Renault) or Technical Note 9859A (Dacia), Charging circuit check**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF047

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| DF047 CONTINUED | |
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Check the connection and condition of the injection computer, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **AP15** or **AP29** between components **120** and **1016**,
- **N** or **NH** between component **120** and **earth**,
- **3FB** or **3FB2** between components **120** and **983**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| **DF049 PRESENT OR STORED** | REFRIGERANT SENSOR CIRCUIT<br>CO.1: Open circuit or short circuit to +12 V<br>CC.0: Short circuit to earth |

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| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>Apply the fault finding procedure below if the fault is **present** or **stored**. |
| | **Priority when dealing with a number of faults:**<br>**– DF113 Sensor supply voltage.** |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Display **PR037 Refrigerant pressure**, if the value is less than **2 bar**, top up the refrigerant (see **MR 388, Mechanical, 62A, Air conditioning, Refrigerant circuit: Draining - Filling)**.

Move the wiring between the injection computer, component code **120**, and the refrigerant pressure sensor, component code **1202**, to see if a change of status occurs (**present ↔ stored**).
Look for any damage to the wiring and check the condition and connection of the refrigerant pressure sensor and its connections.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the connection and condition of the injection computer connector, component code **120**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF049

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| DF049 CONTINUED | |
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| Check for **+5 V** on connection **38Y** of the refrigerant pressure sensor connector, component code **1202**.<br>Check for **earth** on connection **38U** of the refrigerant pressure sensor connector, component code **1202**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:<br>● **38X** between components **120** and **1202**,<br>● **38Y** between components **120** and **1202**,<br>● **38U** between components **120** and **1202**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **refrigerant pressure sensor**, component code **1202**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF050 PRESENT OR STORED** | BRAKE SWITCH CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>1.DEF: No signal |

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| ***NOTES*** | **Special notes:**<br>The fault is declared **present** when decelerating, when the brake pedal is depressed.<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |
| | **Fault finding procedure application conditions for stored faults:**<br>Apply the fault finding procedure below if the fault is present or stored. |

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| Check the correct operation of the brake switch by displaying **ET039 Brake pedal.** |
| Check the connection and condition of the brake light switch connector, component code **160**.<br>Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+ 12 V** on the brake light switch supply on connections **AP1 or AP10**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **insulation, continuity**, and **absence of interference resistance** of the following connections:<br>● **65A** between components **120** and **160**,<br>● **AP1** or **AP10** between components **160** and **1016**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF052 PRESENT OR STORED** | INJECTORS CONTROL CIRCUIT<br>CC.1: Short circuit to +12 V<br>CC.0: Short circuit to earth |

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| ***NOTES*** | **Priority in the event of a number of faults:**<br>If there is a combination of faults **DF052**,<br>– **DF026 Cylinder 1 injector circuit control,**<br>– **DF027 Cylinder 2 injector circuit control,**<br>– **DF028 Cylinder 3 injector circuit control, and**<br>– **DF029 Cylinder 4 injector circuit control.**<br>The fault finding procedure remains the same, the **DF026 to DF027** serves to identify the faulty injector. |
| | **Special notes:**<br>When the fault occurs, there is engine noise, unstable engine speed, reduced engine performance and the **level 2 warning light** comes on. |
| | **Use the** Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2. |

Switch off the ignition.
Check the condition and connection of the injector connectors, component codes **193, 194, 195, and 196**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Switch off the ignition.
Disconnect the injectors (or the injector identified by the **DF026, DF027, DF028,** and **DF029**) and switch on the ignition again.
Using the **diagnostic tool**, check for changes to **DF052**.
**Is DF052 present or stored?**

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF052 CONTINUED** | |

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| **PRESENT** | The injectors are not defective. |
| | Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:<br>● **3L** between components **120** and **193**,<br>● **3KW** between components **120** and **193**,<br>● **3LA** between components **120** and **194**,<br>● **3KX** between components **120** and **194**,<br>● **3LB** between components **120** and **195**,<br>● **3KY** between components **120** and **195,**<br>● **3LC** between components **120** and **196**,<br>● **3KZ** between components **120** and **196**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | If the fault is still present, contact the Techline. |

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| **STORED** | Injector(s) defective.<br>Replace the injector identified by **DF026, DF027, DF028, DF029 if present** (see **MR 388 Mechanical, 13B, Diesel injection, Diesel injector: Removal – Refitting**).<br>If none of the faults identifying the defective injector circuit are **present**:<br>– Switch off the ignition.<br>– Reconnect one of the four injectors.<br>– Switch on the ignition again.<br>If the fault reappears as **present**, replace the reconnected injector (see **MR 388 Mechanical, 13B, Diesel injection, Diesel injector: Removal – Refitting**).<br>Carry out the same procedure for the remaining injectors. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF053 PRESENT OR STORED** | RAIL PRESSURE REGULATION FUNCTION<br>1.DEF: At minimum stop<br>2.DEF: At maximum stop<br>3.DEF: Below the minimum threshold<br>4.DEF: Above the maximum threshold<br>5.DEF: High flow current < minimum<br>6.DEF: High flow current > maximum<br>7.DEF: Low flow current < minimum<br>8.DEF: Low flow current > maximum |

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| ***NOTES*** | **Special notes:**<br>If fault **DF053** is **present**: the engine may stop with the level 2 warning light illuminated and the message **Injection fault** displayed on the instrument panel. |
| | **Priority in the event of a number of faults:**<br>**– DF098 Fuel temperature sensor circuit**<br>**– DF007 Rail pressure sensor circuit.** |
| | **Use the** Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2. |
| | **Fault finding procedure application conditions for stored faults:**<br>The fault is considered **present** when the engine is running. |

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| **4.DEF**<br>**6.DEF**<br>**8.DEF** | ***NOTES*** | None. |

Check the connection and condition of the flow actuator connector, component code **1105**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF053 CONTINUED 1** | |

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| Check for **+12 V** (after relay) on connection **3FB (**or **3FB2)** of the fuel flow actuator connector, component code **1105**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:<br>● **3HI** between components **120** and **1105**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Measure the **resistance** between connections **3FB (**or **3FB2)** and **3HI** of the flow actuator, component code **1105**.<br>If the resistance of the flow actuator is not between:<br>**4.8 Ω < X < 5.8 Ω** at **20˚ C**, replace the flow actuator. |
| Check the presence and conformity of the fuel in the tank.<br>Run **test 13 Diesel fuel conformity check**.<br>Run **test 1 Low pressure circuit check**. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF053<br>CONTINUED 2 | |
|---|---|

| 1.DEF<br>2.DEF<br>3.DEF<br>5.DEF<br>7.DEF | *NOTES* | None. |
|---|---|---|

Check the presence and conformity of the fuel in the tank.
Run **test 13 Diesel fuel conformity check**.
Run **test 1 Low pressure circuit check**.
Run **test 6 High pressure system check**.
Run **test 8 Injector return flow**

| *AFTER REPAIR* | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| **DF056 PRESENT OR STORED** | AIR FLOW SENSOR CIRCUIT<br>1.DEF: Permanent low level<br>2.DEF: Permanent high level<br>3.DEF: At maximum stop<br>4.DEF: At minimum stop |

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| ***NOTES*** | **Priority in the event of a number of faults:**<br>**– DF089 Inlet manifold pressure sensor circuit.** |
| | **Special notes:**<br>If fault **DF056** is **present**: air flow regulation stops and the EGR valve is closed. |
| | **Use the** Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2. |

Check the condition of the air filter, and replace it if necessary (see **MR 388 Mechanical, 12A, Fuel mixture, Air filter**: **Removal - Refitting**).
Check that the inlet manifold is not obstructed (clogged).
Run **TEST 5 Inlet circuit check**.
Run **TEST 11 Air line at the turbocharger**.

Check the connection and condition of the air flowmeter connector, component code **799**.
Check the condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+ 12 V after ignition feed** on connection **3FB (**or **3FBA)** of the air flowmeter connector, component code **799**.
Check for **+5 V** on connection **3KJ** of the air flowmeter connector, component code **799**.
Check **the earth** on connection **NH** on the air flowmeter connector, component code **799**.
If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF056 CONTINUED | |
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Check the **insulation, continuity**, and **absence of interference resistance** of the following connections:
- **3KJ** between components **120** and **799**,
- **3DV** between components **120** and **799**,
- **3DW** between components **120** and **799**,
- **3FB** between components **799** and **1047** (only for **K9K 718** engines),
- **3FBA** between components **799** and **597** (only for **K9K 792, 796** engines),
- **NH** between component **799** and **earth**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
Also check **the insulation** between these connections.

If the fault is still present, replace the air flowmeter (see **MR 388 Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| **DF057 PRESENT OR STORED** | WATER IN DIESEL FUEL DETECTOR CIRCUIT<br>CO.1: Open circuit or short circuit to +12 V<br>CC.0: Short circuit to earth<br>1.DEF: Above the maximum threshold |

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| ***NOTES*** | **Special note:**<br>If fault **DF057** is **present**, the **level 1 warning light is** illuminated.<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

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| Check for water in the diesel filter. If water is present, bleed the diesel filter.<br>If there is a large quantity of water, run the first part of **Test 13: Diesel fuel conformity check** (Is the fuel cloudy or does it separate into 2 parts?) |
| Check the connection and condition of the water in diesel fuel sensor connector, component code **414**.<br>Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for a voltage between **13 V** and **14 V (with the engine running)** and between **11.5 V** and **12.5 V (with the ignition on and the engine stopped)** on connection **3FB (**or **3FB2)** of the water in diesel fuel sensor connector.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **insulation** and **continuity** of the following connections:<br>● **3WT** between components **120** and **414**,<br>● **M** between components **120** and **414**,<br>● **3FB (**or **3FB2)** between components **414** and **983**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **water in diesel fuel sensor**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF059 PRESENT OR STORED** | COMBUSTION MISFIRES ON CYLINDER 1 |

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| ***NOTES*** | **Special notes:**<br>If fault **DF059** is **present**, the engine speed is maintained at **1000 rpm**, the engine performance is reduced to **75%**, and the **level 2 warning light** illuminates. |
| | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** with the engine idling. |
| | **Priority when dealing with a number of faults:**<br>– **DF026 Cylinder 1 injector circuit control (short circuit or open circuit).**<br>– **DF053 Rail pressure regulation function (1.DEF, 2.DEF, 7.DEF).** |

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| Check the presence and conformity of the fuel. Run **test 13: Diesel fuel conformity check**. |
| Run **test 3 Injector check.** |
| Check the engine compression. |
| Check the valve clearance and adjust it if necessary. |
| Check the inlet manifolds, as well as the EGR valve and clean them if necessary (see **Technical Note 3916A, Cleaning the EGR solenoid valve**). |
| If the fault is still present, replace the injector (see **MR 388, Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF060 PRESENT OR STORED** | MISFIRING ON CYLINDER 2 |

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| ***NOTES*** | **Special notes:**<br>If fault **DF060** is **present**, the engine speed is maintained at **1000 rpm**, the engine performance is reduced to **75%**, and the **level 2 warning light** illuminates. |
| | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** with the engine idling. |
| | **Priority when dealing with a number of faults:**<br>– **DF027 Cylinder 1 injector circuit control (short circuit or open circuit).**<br>– **DF053 Rail pressure regulation function (1.DEF, 2.DEF, 7.DEF).** |

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| Check the presence and conformity of the fuel. Run **test 13: Diesel fuel conformity check**. |
| Run **test 3 Injector check.** |
| Check the engine compression. |
| Check the valve clearance and adjust if necessary. |
| Check the inlet manifolds, as well as the EGR valve and clean them if necessary (see **Technical Note 3916A, Cleaning the EGR solenoid valve**). |
| If the fault is still present, replace the injector (see **MR 388, Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF061 PRESENT OR STORED** | MISFIRING ON CYLINDER 3 |

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| ***NOTES*** | **Special notes:**<br>If fault **DF061** is **present**, the engine speed is maintained at **1000 rpm**, the engine performance is reduced to **75%**, and the **level 2 warning light** illuminates. |
| | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** with the engine idling. |
| | **Priority when dealing with a number of faults:**<br>– **DF028 Cylinder 1 injector circuit control (short circuit or open circuit).**<br>– **DF053 Rail pressure regulation function (1.DEF, 2.DEF, 7.DEF).** |

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| Check the presence and conformity of the fuel. Run **test 13: Diesel fuel conformity check**. |
| Run **test 3 Injector check.** |
| Check the engine compression. |
| Check the valve clearance and adjust if necessary. |
| Check the inlet manifolds, as well as the EGR valve and clean them if necessary (see **Technical Note 3916A, Cleaning the EGR solenoid valve**). |
| If the fault is still present, replace the injector (see **MR 388, Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF062 PRESENT OR STORED** | MISFIRING ON CYLINDER 4 |

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| ***NOTES*** | **Special notes:**<br>If fault **DF062** is **present**, the engine speed is maintained at **1000 rpm**, the engine performance is reduced to **75%**, and the **level 2 warning light** illuminates. |
| | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** with the engine idling. |
| | **Priority when dealing with a number of faults:**<br>– **DF029 Cylinder 1 injector circuit control (short circuit or open circuit).**<br>– **DF053 Rail pressure regulation function (1.DEF, 2.DEF, 7.DEF).** |

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| Check the presence and conformity of the fuel. Run **test 13: Diesel fuel conformity check**. |
| Run **test 3 Injector check.** |
| Check the engine compression. |
| Check the valve clearance and adjust if necessary. |
| Check the inlet manifolds, as well as the EGR valve and clean them if necessary (see **Technical Note 3916A, Cleaning the EGR solenoid valve**). |
| If the fault is still present, replace the injector (see **MR 388, Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF089 PRESENT OR STORED** | INLET MANIFOLD PRESSURE SENSOR CIRCUIT<br>1.DEF: Permanent low level<br>2.DEF: Permanent high level<br>3.DEF: Below the minimum threshold<br>4.DEF: Above the maximum threshold<br>5.DEF: Inconsistency<br>6.DEF: At maximum stop<br>7.DEF: At minimum stop |

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| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF113 Sensor supply voltage.** |
| | **Special notes:**<br>If fault **DF089** is **present**, the engine speed is maintained at **1000 rpm, the engine performance is reduced to 75%**, and the **level 1 warning light** illuminates. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

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|---|---|---|
| **1.DEF**<br>**2.DEF**<br>**3.DEF**<br>**4.DEF** | ***NOTES*** | None. |

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| Check the connection and condition of the turbocharging pressure sensor connector, component code **1071**.<br>Check the condition of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+5 V** on connection **3LQ** of the turbocharging pressure sensor, component code **1071**.<br>Check for **earth** on connection **3LN** of the turbocharging pressure sensor connector, component code **1071**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF089 CONTINUED** | |

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **3LQ** between components **120** and **1071,**
- **3LP** between components **120** and **1071,**
- **3LN** between components **120** and **1071.**

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

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| **5.DEF**<br>**6.DEF**<br>**5.DEF** | ***NOTES*** | None. |

Visually check the **sealing of the exhaust and inlet manifolds**.
Remove the air inlet and **exhaust** ducts.
Check that the ducts are not blocked.
Repair if necessary.

With the engine stopped, check the consistency between the atmospheric pressure and the manifold pressure **(PR035 Atmospheric pressure = PR312 Manifold pressure)**.
With the engine stopped, the pressure should be approximately the same between the two sensors.
Replace the manifold pressure sensor if necessary.

Run **Test 12: Turbocharger**

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF098 PRESENT OR STORED** | FUEL TEMPERATURE SENSOR CIRCUIT<br>CO.1: Open circuit or short circuit to +12 V<br>CC.0: Short circuit to earth |

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| ***NOTES*** | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the fuel temperature sensor connector, component code **1066**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity**, and **absence of interference resistance** of the following connections:
- **3FAB** between components **120** and **1066**,
- **3LD** between components **120** and **1066**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure the **resistance** of the fuel temperature sensor between the following connections:
- **3FAB** between components **120** and **1066**,
- **3LD** between components **120** and **1066**.

If the resistance of the fuel temperature sensor is not approximately **2.2 kΩ** at **25˚C**, replace the sensor (see **MR 388, Mechanical, 13B, Diesel injection, Fuel temperature sensor, Removal - Refitting**).

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF098

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| **DF107 PRESENT OR STORED** | COMPUTER MEMORY<br>1.DEF: Enter EEPROM memory<br>2.DEF: Read EEPROM memory |

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| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is considered **present** when the engine is running. |
| | **Special note:**<br>If fault **DF107** is **present**, the engine stops, restarting is impossible, and the **level 2 warning light** illuminates. |

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| Enter the individual injector corrections **(C2I)** using the **diagnostic tool (command SC002 Enter injector codes)**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF107

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| **DF112 PRESENT OR STORED** | CYLINDER REFERENCE SENSOR CIRCUIT<br>1.DEF: No signal |

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| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is **present** when the **starter motor** is operating or the engine is running at **idle speed**. |
| | **Special note:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the cylinder reference sensor connector, component code **746**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+12 V after ignition feed** on connection **3FB (**or **3FB2)** of the cylinder reference sensor, component code **746**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **3CQ** between components **120** and **746**,
- **3PL** between components **120** and **746**,
- **3FB (**or **3FB2)** between components **746** and **983**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the timing adjustment (see **MR 388: Mechanical systems, 11A, Top and front of engine, Timing belt: Removal - Refitting)**.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF112

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|---|---|
| **DF113 PRESENT OR STORED** | SENSOR SUPPLY VOLTAGE<br>1.DEF: At minimum stop<br>2.DEF: At maximum stop |

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| ***NOTES*** | **Special notes:**<br>If fault **DF113** is **present**: the engine stops immediately and restarting is impossible.<br>The **Level 2** warning light illuminates. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the condition and connection of the connectors on all sensors with a **5 V** supply:
– Refrigerant pressure sensor, component code **1202**.
– Inlet manifold pressure and temperature sensor, component code **147** or temperature sensor only, component code **272** and turbocharger pressure sensor, component code **1071**.
– Rail pressure sensor, component code **1032**.
– Pedal sensor, gangs 1 and 2, component code **921**.
– EGR valve position sensor, component code **1460**.
– Injection air flow sensor, component code **799**.

If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the connection and condition of the injection computer connectors, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

To locate any internal fault in one of the sensors supplied with **+ 5 V** (short circuit), disconnect each of the sensors on the list above in turn, checking after each disconnection whether the fault changes status from **present** to **stored**.
If the defective sensor is located, check its connections and its conformity.
If necessary replace the sensor.

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF113

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| DF113 CONTINUED | |
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Use the bornier to check the **insulation, continuity,** and **absence of interference resistance** on the following connections:

- 3LR between components 120 and 921,
- 3LU between components 120 and 921,
- 3GC between components 120 and 1460,
- 3JM between components 120 and 1460,
- 3LQ between components 120 and 1071,
- 3LX between components 120 and 1032,
- 38Y between components 120 and 1202,
- 3KJ between components 120 and 799,

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, apply the fault finding procedure for each sensor with a **5 V** supply.

| *AFTER REPAIR* | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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|---|---|
| **DF114 PRESENT OR STORED** | EGR SOLENOID VALVE CIRCUIT<br>1.DEF: At minimum stop<br>2.DEF: At maximum stop<br>3.DEF: Inconsistency<br>4.DEF: Valve jammed<br>5.DEF: Valve clogged |

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| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is considered **present** when the engine is running. |
| | **Special notes:**<br>If fault **DF114** is **present**, unstable engine speed and even stalling.<br>Starting difficult or even impossible when cold. Loss of performance and emission of fumes possible.<br>The **level 2 warning light** comes on. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| **K9K 718, 740, 792, and 796 ENGINES (Euro 4):** |
|---|
| Check the connection and condition of the **EGR valve** connector, component code **1460**.<br>Check the connection and condition of **connector B** (brown 48-track) of the injection computer, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation and continuity** of the following connections:<br>● **3VP** between components **1460** and **120,**<br>● **3VQ** between components **1460** and **120**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF114<br>CONTINUED 1 | |
|---|---|

Check for **+5 V** on connection **3GC** of component **1460**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the resistance of the **EGR valve**:
– with the engine stopped, the **EGR valve** will be closed (unless there is a fault),
– wait for the ambient temperature around the valve to stabilise (approximately **20˚C**),
– measure the resistance between connections **3VP** and **3VQ** of component **1460**. The resistance must be between **0.5 Ω < R < 50 Ω** (while running command **AC002 EGR solenoid valve)**.
If the value is not correct, replace the **EGR valve** (see **MR 388 Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**).
After replacing the EGR valve, use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.

Also if a **3.DEF, 4.DEF or 5.DEF** fault is present:
- Remove the EGR valve.
- Check that there are no foreign bodies (scale, etc.) that could jam the valve.
- Remove the foreign matter and clean the EGR valve (see **Technical Note 3916A, Cleaning the EGR solenoid valve**).
- Refit the EGR valve.
- Run command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.
- Clear the faults from the **computer** memory. Carry out a road test followed by another check with the **diagnostic tool**.

If the fault is still present, contact the Techline.

**K9K 790 and 794 ENGINES (Euro 3):**

Check the connection and condition of the **EGR valve** connector, component code **1460**.
Check the connection and condition of **connector B** (brown 48-track) of the injection computer, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation and continuity** of the following connections:
● **3FB** (or **3FB2**) between components **1460** and **120**,
● **122B** between components **1460** and **120.**
If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| DF114 CONTINUED 2 | |
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Check for **+12 V** on connection **3GC** of component **1460**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the resistance of the **EGR valve**, component code **1460**:
- with the engine stopped, the EGR valve will be closed (unless there is a fault),
- wait for the ambient temperature around the valve to stabilise (approximately **20˚C**),
- measure the resistance between connections **3FB** (or **3FB2)** and **122B**. The resistance must be between **7.5 Ω < R < 8.5 Ω** (at **20˚C**),
- measure the resistance between connections **3GC** and **3JM**. The resistance must be between **2.4 kΩ < R < 5.6 kΩ** (at **20˚C**),
- measure the resistance between connections **3JM** and **3EL**. The resistance must be between **800 Ω < R < 3.6 kΩ** (at **20˚C**),

If the value is not correct, replace the **EGR valve**, component code **1460** (see **MR 388 Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve, Removal - Refitting**).
After replacing the EGR valve, use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.

Also if a **3.DEF, 4.DEF**, or **5.DEF** fault is present:
– Remove the EGR valve.
– Check that there are no foreign bodies (scale, etc.) that could jam the valve.
– Remove any foreign bodies and clean the EGR valve (see **Technical Note 3916A, Cleaning the EGR solenoid valve**).
– Refit the EGR valve.
– run command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.
– Clear the faults from the **computer** memory. Carry out a road test followed by another check with the **diagnostic tool**.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| **DF121 PRESENT OR STORED** | ACCELEROMETER CIRCUIT<br>1.DEF: No signal |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>**– DF001 Coolant temperature sensor circuit,**<br>**– DF002 Air temperature sensor circuit,**<br>**– DF003 Atmospheric pressure sensor circuit,**<br>**– DF098 Fuel temperature sensor circuit,**<br>A fault on one of these sensors could lead to incorrect fault finding on the accelerometer. |
| | **Fault finding procedure application conditions for stored faults:**<br>The fault is considered **present** when the engine is running. |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the conformity of the injectors fitted to the vehicle in relation to the type of vehicle and engine number (low-, high- or very high pressure injector).

Check the connection and condition of the accelerometer connector, component code **146**.
Check the connection and condition of the injection computer connector, component code **120** and the sensor shielding on connection **TB1**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **3DQ** between components **120** and **146,**
- **3S** between components **120** and **146**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF121

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| **DF121 CONTINUED** | |

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| Ensure that **C2I** is entered correctly in the injection computer.<br>Check that the accelerometer is secured on the engine.<br>Disconnect and reconnect the accelerometer sensor to accomplish fast programming. |
| Carry out a road test followed by another check with the **diagnostic tool**.<br>If the fault is still present, replace the accelerometer (see **MR 388 Mechanical, 13B, Diesel injection, Accelerometer: Removal - Refitting**). |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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|---|---|
| **DF122 PRESENT OR STORED** | PEDAL POTENTIOMETER GANG 2 SUPPLY VOLTAGE<br>CO.1: Open circuit or short circuit to +12V<br>CC.0: Short circuit to earth |

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| ***NOTES*** | **Special notes:**<br>If fault **DF122** is **present**: the engine stops immediately and restarting is impossible.<br>The **Level 2** warning light illuminates. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the condition and connection of the pedal sensor, component code **921**.
Check the connection and condition of the injection computer connectors, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

To locate any internal fault in one of the sensors with a **5 V** supply (short circuit), disconnect each of the sensors on the list above in turn, checking after each disconnection whether the fault changes status from **present** to **stored**.
If the defective sensor is located, check its connections and its conformity.
If necessary replace the sensor.

Connect the bornier in place of the computer and check the insulation, continuity and the absence of interference resistance on the following connections:
- **3LW** between components **120** and **921**,
- **3LV** between components **120** and **921**,
- **3LU** between components **120** and **921**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, apply the fault finding procedure for each sensor with a **5 V** supply.

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF122

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|---|---|
| **DF130 PRESENT OR STORED** | FLOW CAPACITY FUNCTION<br>1.DEF: High flow capacity < minimum<br>2.DEF: High flow capacity > maximum |

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| ***NOTES*** | **Special notes:**<br>If fault **DF130** is **present**, the engine may stop with the **level 2 warning light** illuminating. |
| | **Fault finding procedure application conditions for stored faults:**<br>The fault is considered **present** when the engine is running. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the flow actuator connector (IMV), component code **1105**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity**, and **absence of interference resistance** on the following connection:
- **3HI** between components **120** and **1105**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure the **resistance** between connections **3HI** and **3FB (**or **3FB2)** of the flow actuator, component code **1105**.
If the resistance of the flow actuator is not between: **4.8** Ω **< X < 5.8** Ω at **20˚C**, replace the flow actuator (see **MR 388 Mechanical, 13B, Diesel injection, Flow actuator: Removal – Refitting**).

Check the presence and conformity of the fuel in the tank.
Run **test 13 Diesel fuel conformity check**.
Run **test 1 Low pressure circuit check**.

If the fault is still present, run **test 6 High pressure system check**.

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF130

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|---|---|
| **DF159 PRESENT OR STORED** | POWER ASSISTED STEERING RELAY CONTROL CIRCUIT<br>CO.0: open circuit or short-circuit to earth<br>CC.1: Short circuit at + 12 V |

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| ***NOTES*** | **Special notes:**<br>This fault is active if the vehicle is fitted with electric power-assisted steering. |

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| Check the connection and condition of the connectors of the **pump assembly relay mounting (power-assisted steering pump assembly)**, component code **409**, and of the **injection computer**, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connection:<br>● **3FK** between components **409** and **120**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring. |
| Check for **+ after ignition feed** between the following connections:<br>**tracks 1** and **3** of the relay.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF159

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| **DF162 PRESENT OR STORED** | OVERHEATING INDICATOR LIGHT<br>CO.0: open circuit or short-circuit to earth<br>CC.1: Short circuit at + 12 V |

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| ***NOTES*** | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2 or Symbol 2.** |

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| Clear the fault and check that the warning light is working properly with command **AC061 Overheating warning light**. |
| Check the **condition** and **connection** of the overheating warning light sensor connector, component code **247**.<br>Check the **connection** and **condition** of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check **the insulation** and **continuity** of the following connection:<br>• **31A** between components **247** and **120**<br><br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the instrument panel, component code **247** (see **MR 388, (Logan / Sandero) or MR 423 (Thalia 2 / Symbol 2) Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**). |
| If the fault persists, contact your Techline. |

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| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF162

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| **DF195 PRESENT OR STORED** | ENGINE SPEED/CAMSHAFT SENSOR CONSISTENCY |

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| ***NOTES*** | **Stored fault diagnostic application conditions:**<br>The fault becomes **present** after clearing the fault from the memory or after an attempt to start the engine or with the engine running. |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connections of the engine speed sensor, component code **149** and the camshaft sensor, component code **746**.
Check the connections of the injection computer, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **3PL** between components **120** and **746**,
- **3CQ** between components **120** and **746**,
- **3BL** between components **120** and **149**,
- **3BG** between components **120** and **149**,
- **3FB (**or **3FB2)** between components **746** and **983**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure **the resistance** of the engine speed sensor, component code **149** between connections **3BL** and **3BG**.
If the resistance of the engine speed sensor is not between **510 Ω < X < 850 Ω** at **20˚C**, replace the sensor (see **MR 388, Mechanical, 13B, Diesel injection, Crankshaft position sensor: Removal - Refitting**).

Measure **the resistance** of the camshaft sensor, component code **746** between connections **3PL** and **3CQ**.
If the resistance of the camshaft sensor is not between **9737.5 Ω < X < 10762.5 Ω**, replace the sensor (see **MR 388 Mechanical, 13B Diesel injection, Camshaft position sensor: Removal - Refitting**).

Check that the engine earthing is in order (oxidation, tightness, etc.).
Check the mounting, the air gap and the condition of the engine speed sensor (heating).

Check the timing adjustment (see **MR 388, Mechanical, 11A, Top and front of engine, Timing belt: Removal - Refitting**).

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF195

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| | |
|---|---|
| **DF209 PRESENT OR STORED** | EGR VALVE POSITION SENSOR CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to +12 V |

| | |
|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF113 Sensor supply voltage, deal first with fault DF113.** |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the EGR valve connector, component code **1460**.
Check the connection and condition of the **injection computer** connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation and continuity** of the following connections:
- **3GC** between components **1460** and **120**,
- **3EL** between components **1460** and **120,**
- **3JM** between components **1460** and **120**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+5 V** on connection **3GC** of component **1460**.
Check for **earth** on connection **3JM** of component **1460**.
If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the EGR valve, component code **1460** (see **MR 388 Mechanical, 14A, Emission control, Exhaust gas recirculation solenoid valve: Removal - Refitting**).
After replacing the EGR valve, use command **RZ002 EGR adaptives** to reinitialise the EGR valve offsets.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF209

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| | |
|---|---|
| **DF218 PRESENT OR STORED** | MICROCONTROLLER<br>1.DEF: RAM memory defect<br>2.DEF: Memory self-test |

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|---|---|
| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is declared present with the **engine running**. |
| | **Special note:**<br>If fault **DF218** is **present**, the engine stops, restarting is impossible, and the **level 2 warning light** illuminates. |

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|---|
| Enter the individual injector corrections **(C2I)** using the **diagnostic tool (command SC002 Enter injector codes)**. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF221 PRESENT OR STORED** | CLUTCH CONTACT SIGNAL<br>1.DEF: Inconsistency |

| | |
|---|---|
| ***NOTES*** | None. |

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|---|
| Check the connection and condition of the clutch pedal switch connector, component code **675**.<br>Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check **the continuity** between connections **86D** and **M** of the clutch pedal switch in the pressed position.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.<br>If not correct, replace the clutch pedal switch (see **MR 388, Mechanical, 37A, Mechanical component controls, Clutch pedal: Removal - Refitting**). |
| Check for **earth** on connection **M** of the clutch pedal switch, component code **675**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the clutch switch (see **MR 388, Mechanical, 37A, Mechanical components controls, Clutch pedal: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF236 PRESENT OR STORED** | SERIOUS INJECTION FAULT WARNING LIGHT CIRCUIT<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to +12 V |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2 or Symbol 2.** |

| |
|---|
| Clear the fault and check that the warning light is working properly with command **AC068 Injection fault warning light**. |
| Check the **connection** and **condition** of the serious injection fault warning light connector, component code **247**.<br>Check the **connection** and **condition** of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation** and **continuity** of the connections between components **247** and **120**.<br><br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the instrument panel, component code **247** (see **MR 388, (Logan / Sandero) or MR 423 (Thalia 2 / Symbol 2) Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**). |
| If the fault persists, contact your Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF242 PRESENT OR STORED** | ENGINE SPEED SIGNAL OUTPUT<br>CC.1: Short circuit to +12 V<br>CO.0: Open circuit or short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF113 Sensor supply voltage, deal first with fault DF113.** |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the connection and condition of the engine speed sensor connector, component code **149**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **3BG** between components **120** and **149**,
- **3BL** between components **120** and **149**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure **the resistance** of the engine speed sensor, component code **149** between connections **3BG** and **3BL**:
**510 Ω < X < 850 Ω** at **20˚C**
If the value is not correct, replace the engine speed sensor (see **MR 388 Mechanical, 13B Diesel injection, Crankshaft position sensor: Removal - Refitting**).

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF261 PRESENT OR STORED** | TURBOCHARGER ACTUATOR CIRCUIT<br>CC.1: Short circuit to +12 V<br>CO.0: Open circuit or short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>If fault **DF261** is **present**: the air flow regulation is switched off, the EGR valve is closed, and the turbocharging regulation is switched off.<br>Injection defective message displayed on the instrument panel and reduced performance. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Run **TEST 11 Air line at the turbocharger**.
Run **TEST 5 Inlet circuit check**.
Run **TEST 10 Turbocharger control solenoid valve check.**
Run **TEST 12 Turbocharger.**
Check the **inlet** pressure signal, check the gear number when changing gear.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF427 PRESENT OR STORED** | TURBO ACTUATOR CONTROL<br>1.DEF: At minimum stop<br>2.DEF: At maximum stop |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>If fault **DF427** is **present**, the air flow regulation is switched off, the EGR valve is closed, the turbocharging regulation is switched off and the performance is reduced. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Run **TEST 11 Air line at the turbocharger**.
Run **TEST 5 Inlet circuit check**.
Run **TEST 10 Turbocharger control solenoid valve check.**
Run **TEST 12 Turbocharger.**
Check the turbocharging pressure signal, check the gear number when changing gear.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF433 PRESENT OR STORED** | FUEL CONSUMPTION SIGNAL (ADAC)<br>CC.1: Short circuit to +12 V<br>CO.0: Open circuit or short circuit to earth |

| | |
|---|---|
| ***NOTES*** | None. |

Check the connection and condition of the instrument panel connector, component code **247**.
Check the connection and condition of the engine management computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** of the following connection:
- **47H** between components **120** and **247**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF489 PRESENT OR STORED** | AIR CONDITIONING COMPRESSOR CONTROL<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to +12 V |

| | |
|---|---|
| ***NOTES*** | **Conditions for applying fault finding procedures to stored faults**<br>The fault is **present** after starting the engine and switching on the air conditioning or running command **AC180 Air conditioning compressor relay control**. |
| | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

| |
|---|
| Check the condition of the clips of the air conditioning - cold loop relay on the engine fuse and relay board (see the relay board wiring diagrams for the vehicle concerned).<br>Replace the clips if necessary. |
| With the ignition on, check for **+ 12 V** on connection **3FB (**or **3FB2)** of the air conditioning - cold loop relay, component code **474**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Connect the bornier in place of the computer and check the **insulation, continuity,** and **absence of interference resistance** on the following connection:<br>● **38K** between components **120** and **474**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **resistance** of the air conditioning - cold loop relay between connections **3FB (**or **3FB2)** and **38K** of the relay.<br>If the resistance is not between **75 Ω < X < 85 Ω** at **25˚C**, replace the relay. |
| If the fault persists, replace the air conditioning - cold loop relay. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF489

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| | |
|---|---|
| **DF532 PRESENT OR STORED** | ALTERNATOR CHARGE SIGNAL<br>1.DEF: Inconsistency<br>2.DEF: No signal |

| | |
|---|---|
| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>If the fault is **present** after the engine is started. |
| | **Special notes:**<br>Use bornier **Elé. 1681** for any operations on the injection computer connectors. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check the condition of the alternator connector, component code **103**.
Check the condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity** and **the absence of interference resistance** on the following connection:
- **2K** between components **120** and **103**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the charging circuit (see **Technical Note 6014A (Renault) or Technical Note 9859A (Dacia), Charging circuit check**).
Carry out the necessary repairs.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF631 PRESENT OR STORED** | BRAKE LIGHT SWITCH SIGNAL<br>1.DEF: No signal<br>2.DEF: Inconsistency |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>The fault is declared **present** when decelerating, when the brake pedal is depressed. |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |
| | **Fault finding procedure application conditions for stored faults:**<br>Apply the fault finding procedure below if the fault is **present** or **stored**. |

Check the connection and condition of the brake light switch connector, component code **160**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+ 12 V** on connection **AP1** or **AP10** of the brake light switch supply, component code **160**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **5A** between components **120** and **160**,
- **65A** between components **120** and **160**,
- **AP1** or **AP10** between components **160** and **1016**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF859 PRESENT OR STORED** | INJECTOR PROGRAMMING CYCLE NOT DONE |

| | |
|---|---|
| ***NOTES*** | **Fault finding procedure application conditions for stored faults:**<br>The fault is declared present with the engine running. |
| | **Priority in the event of a number of faults:**<br>**– Deal with all the other faults before fault DF859** |
| | **Special notes:**<br>This fault is activated when the injectors have not been reset for **1800 miles (3000 km)**. |

| |
|---|
| Leave the vehicle to run at idle speed until the engine is warm. |
| When the engine is warm (**PR064 COOLANT TEMPERATURE above 77˚C**), carry out the following test drive:<br>– Drive at a speed of up to **30 mph (50 km/h)** and change into **5th gear**.<br>– Stay in this gear and perform **8** accelerations from **30 mph (50 Km/h)** to **54 mph (90 Km/h)**. |
| At the end of the test drive, check that the fault is stored and clear the fault. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF886 PRESENT OR STORED** | PRESENCE OF WATER IN THE DIESEL FUEL<br>1.DEF: Open circuit on the line or presence of water in the diesel fuel |

| | |
|---|---|
| ***NOTES*** | **Fault finding procedure application conditions:**<br>The fault is declared **present** after the engine has been started. |
| | **Priority in the event of a number of faults:**<br>**– DF057 Water in diesel fuel detector circuit,** |
| | **Special note:**<br>If the fault is **present**, the **level 1 warning light** illuminates or the **water present in diesel fuel warning light** illuminates (if present on the instrument panel and if configured in injection). |
| | Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |

Check for water in the diesel filter. If water is present, bleed the diesel filter.
If there is a large quantity of water, run the first part of **Test 13: Diesel fuel conformity check** (Is the fuel cloudy or does it separate into 2 parts?)

Check the connection and condition of the water in diesel fuel sensor connector, component code **414**.
Check the connection and condition of the injection computer connector, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for a voltage between **13 V** and **14 V (with the engine running)** and **between 11.5 V** and **12.5 V (with the ignition on and the engine stopped)** on connection **3FB (**or **3FB2)** of the water in diesel fuel sensor connector, component code **414**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_DF886

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| DF886 CONTINUED | |
|---|---|

**A) Make sure the water detection sensor is properly connected.**
– If not, clear the fault,
– Carry out a road test (speed **> 12 mph (20 km/h)** and engine speed **> 1200 rpm**) for more than **30 seconds**.
– If the fault does not recur, end of fault finding procedure.
– If the fault recurs, go to **step B.**

**B) If the sensor is properly connected:**
– Bleed the diesel filter unit (see **MR 388 Mechanical, 13A, Fuel supply, Diesel filter: Removal - Refitting**).
– Clear the fault.
– Carry out a road test (speed **> 12 mph (20 km/h)** and engine speed **> 1200 rpm**) for more than **30 seconds**.
If the fault does not recur, end the fault finding procedure.

**C) If the fault recurs:**
Check the **insulation** and **continuity** of the following connections:
– **3WT** between components **120** and **414**,
– **M** between components **120** and **414**.
If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

**If all these checks reveal no irregularities:**
– Replace the water detection sensor (see **MR 388, Mechanical, 13A, Fuel supply, Diesel filter: Removal - Refitting**).
– Clear the fault.
– Carry out a road test (speed **> 12 mph (20 km/h)** and engine speed **> 1200 rpm**) for more than **30 seconds**, to confirm the repair.
**Note**:
When the water level in the fuel filter unit is below the sensor's electrodes, some driving conditions (turning, inclines) may cause the injection fault warning light to come on erroneously (the sensor's off-centre position in the fuel filter unit, combined with the driving condition, shows water detection, and hence the light comes on).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **DF1083 PRESENT OR STORED** | WATER IN DIESEL FUEL WARNING LIGHT CIRCUIT<br>CC.1: Short circuit to +12 V<br>CO.0: Open circuit or short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2 or Symbol 2.** |

| |
|---|
| Clear the fault and check that the warning light is working properly with command **AC261 Water in fuel warning light**. |
| Check the connection and condition of the water in diesel fuel sensor connector, component code **414**.<br>Check the connection and condition of the injection computer connector, component code **120**.<br>If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:<br>● **3WT** between components **120** and **414**,<br>● **Earth** between components **120** and **414**,<br>If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the instrument panel, component code **247** (see **MR 388, (Logan / Sandero) or MR 423 (Thalia 2 / Symbol 2) Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults declared by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| NOTES | Only perform this conformity check after a **complete check** with the **diagnostic tool**.<br>The values indicated in this conformity check are given as examples.<br>**Application condition: With the engine idling, warm engine, coolant temperature > 80˚C**. |
|---|---|

**STATUS CHECK**

| Function | Parameter or status checked or action | Display and notes | Fault finding |
|---|---|---|---|
| Engine | **ET038:** Engine | **RUNNING** | **NONE** |
| Immobiliser | **ET003:** Immobiliser | **INACTIVE**<br>Indicates the status of the immobiliser system.<br>**INACTIVE:** The injection computer has recognised the immobiliser code transmitted by the UCH.<br>**ACTIVE:** The injection computer does not recognise the immobiliser code transmitted by the UCH. | If **status ET003** is inconsistent, consult the UCH fault finding **(See 82D, Access - Security)**. |
| Air conditioning | **ET164:** Configuration with air conditioning | **YES - NO**<br>States whether the vehicle is fitted with air conditioning or not.<br>**YES:** Air conditioning is detected by the injection computer.<br>**NO:** Air conditioning is not detected by the injection computer. | If not consistent with the vehicle equipment, test the **multiplex network** and follow the relevant procedure. |
| Fast idle speed | **ET023:** Fast idle speed request | **ABSENT**<br>The **UCH** sends a fast idle request to the injection.<br>**ABSENT:** no UCH request.<br>**PRESENT:** UCH request. | If **status ET023** is inconsistent, consult the UCH fault finding **(See 87B, Passenger compartment connection unit)**. |

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| NOTES | Only perform this conformity check after a **complete check** with the **diagnostic tool**. The values indicated in this conformity check are given as examples. **Application condition: With the engine idling, warm engine, coolant temperature > 80°C**. |
|---|---|

**STATUS CHECK (CONTINUED 1)**

| Function | Parameter or status checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Air conditioning | **ET116:** | Air conditioning authorisation | **NO**<br>**YES:** The UCH must send a compressor starting request to the injection. The coolant pressure sensor must not be defective. Satisfactory engine operating conditions (coolant temperature, engine load etc.).<br>**NO:** One of the above conditions has not been met. | **NONE** |
| EGR | **ET008:** | EGR solenoid valve control | **INACTIVE**<br>Indicates the status of the EGR valve control.<br>**INACTIVE:** The valve is not controlled by the computer.<br>**ACTIVE:** The valve is controlled by the computer. | In the event of a fault, apply the interpretation of faults **DF016 EGR control circuit** and **DF114 EGR solenoid valve circuit**. |
| Preheating | **ET007:** | Preheating unit control | **ACTIVE - INACTIVE**<br>Shows the status of the preheating unit control. | In the event of a fault, consult the interpretation of fault **DF017 Preheating unit control circuit**. |

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| NOTES | Only perform this conformity check after a **complete check** with the **diagnostic tool**.<br>The values indicated in this conformity check are given as examples.<br>**Application condition: With the engine idling, warm engine, coolant temperature > 80˚C**. |
|---|---|

**STATUS CHECK (CONTINUED 2)**

| Function | Parameter or status checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Brake contact | **ET122:** | Brake contact signal no. 1 | **INACTIVE**<br>**INACTIVE:** Brake pedal released.<br>**ACTIVE:** Brake pedal depressed. | In the event of a fault, refer to the interpretation of status **ET122**. |
| | **ET123:** | Brake switch no. 2 signal | **INACTIVE**<br>Indicates recognition of brake pedal contacts.<br>**INACTIVE:** Brake pedal released.<br>**ACTIVE:** Brake pedal depressed. | If **ET123** is inconsistent, test the multiplex network using the **diagnostic tool**. |
| Clutch pedal | **ET233:** | Clutch pedal | **RELEASED**<br>Indicates recognition of clutch pedal contacts.<br>**RELEASED:** Pedal released.<br>**DEPRESSED:** Pedal depressed. | In the event of a fault, refer to the interpretation of status **ET233**. |

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| NOTES | Only perform this conformity check after a **complete check** with the **diagnostic tool**.<br>The values indicated in this conformity check are given as examples.<br>**Application condition: With the engine idling, warm engine, coolant temperature > 80˚C**. |
|---|---|

**PARAMETER CHECK**

| Function | Parameter or status checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Idle speed regulation | **PR010:** | Idle speed regulation setpoint | Shows the speed of rotation the engine should reach at idle speed: approximately **825 rpm**. | In the event of a fault, consult the interpretation of faults **DF007 Rail pressure sensor circuit**, **DF024 Low pressure actuator control circuit**, and **DF053 Rail pressure regulation function**. |
| Accelerator pedal | **PR030:** | Accelerator pedal position | **PR030 = 0 %**<br>Gives the accelerator pedal position in **%**. | In the event of a fault, apply the interpretation of faults **DF008 Pedal potentiometer gang 1 circuit, DF009 Pedal potentiometer gang 2 circuit, DF113 Sensor supply voltage**, and **DF122 Pedal potentiometer gang 2 supply voltage**. |
| Coolant temperature | **PR064:** | Coolant temperature | When warm: **90˚C**<br>Indicates the engine coolant temperature in **˚C**.<br>Default value: 80˚C. | In the event of a fault, refer to the interpretation of parameter **PR064**. |
| Vehicle speed | **PR089:** | Vehicle speed | Gives the vehicle speed in **mph (km/h)**. This parameter is sent by the ABS computer or the vehicle speed computer. | Refer to fault finding for the ABS system or the vehicle speed computer. |
| Air temperature | **PR058:** | Air temperature | Gives the inlet air temperature in **˚C**. This information is supplied by the air temperature sensor incorporated in the air flow sensor.<br>**Default value: 20˚C.** | In the event of a fault, consult the interpretation of fault **DF056 Air flow sensor circuit**. |

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| NOTES | Only perform this conformity check after a **complete check** with the **diagnostic tool**. The values indicated in this conformity check are given as examples. **Application condition: With the engine idling, warm engine, coolant temperature > 80˚C**. |
|---|---|

**PARAMETER CHECK (CONTINUED 1)**

| Function | Parameter or status checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Fuel temperature | **PR063:** | Fuel temperature | Cold = **PR064 Coolant temperature**<br>Warm: **50˚C**.<br>Gives the fuel temperature in **˚C**. This value is supplied by the **fuel temperature sensor**.<br>**Default value: 30˚C.** | If there is a fault, use the interpretation of fault **DF098 Fuel temperature sensor circuit**. |
| Atmospheric pressure | **PR035:** | Atmospheric pressure | Indicates the atmospheric pressure in **mbar**. The sensor is built into the computer. | In the event of inconsistency, with the engine stopped and ignition on, check that parameter **PR035 ≈ PR312 ≈ local atmospheric pressure**. |
| Manifold pressure | **PR312:** | Manifold pressure | Gives the pressure in the inlet circuit in **mbar**. | |
| Battery voltage | **PR074:** | Battery voltage | **12 V < PR074 < 14.4 V.** | In the event of a fault, apply the fault finding procedure for the **Charging circuit**. |
| Air flow | **PR018:** | Estimated air flow | Air flow estimated by the injection computer in **mg/st**. | **NONE** |
| Fuel flow | **PR017:** | Fuel flow | Gives the fuel flow at the high pressure pump outlet in **mg/st**. | **NONE** |

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| NOTES | Only perform this conformity check after a **complete check** with the **diagnostic tool**.<br>The values indicated in this conformity check are given as examples.<br>**Application condition: With the engine idling, warm engine, coolant temperature > 80°C**. |
|---|---|

**PARAMETER CHECK (CONTINUED 2)**

| Function | Parameter or status checked or action | Display and notes | Fault finding |
|---|---|---|---|
| Rail pressure | **PR038:** Rail pressure | Indicates the pressure in **bar** of the diesel fuel in the injector rail. This pressure is supplied by the sensor on the rail.<br>**Default value: 2000 bar.** | If there is a fault, use the interpretation of fault **DF007 Rail pressure sensor circuit**. |
| | **PR008:** Rail pressure setpoint | **PR008 = 375 bar** (Engine starting pressure setpoint)<br>Cold: **405 bar**<br>Warm: **230 bar**<br>Gives the theoretical pressure value for optimum engine operation. | **NONE** |
| EGR valve | **PR051:** EGR valve position feedback | **PR051 = 0 %**<br>Indicates the actual value of the EGR valve position.<br>**PR051 = PR005.**<br>**Default value 30%.** | In the event of a fault, apply the interpretation of faults **DF209 EGR valve position sensor circuit, DF016 EGR control circuit** and **DF114 EGR solenoid valve circuit**. |
| | **PR052:** EGR valve opening setpoint | in **%**<br>Gives a theoretical EGR valve opening value for optimum engine operation.<br>**PR005 = PR051.** | |

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| NOTES | Only perform this conformity check after a **complete check** with the **diagnostic tool**. The values indicated in this conformity check are given as examples. **Application condition: With the engine idling, warm engine, coolant temperature > 80°C**. |
|---|---|

**PARAMETER CHECK (CONTINUED 3)**

| Function | Parameter or status checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Pedal load | **PR217:** | Pedal load (gang 1) | Indicates the voltage supply percentage for gangs 1 and 2 of the pedal potentiometer. **10% < PR217 < 20%, 5% < PR218 < 15%.** | In the event of a fault, apply the interpretation of faults **DF008 Pedal potentiometer gang 1 circuit, DF009 Pedal potentiometer gang 2 circuit, DF113 Sensor supply voltage**, and **DF122 Pedal potentiometer gang 2 supply voltage**. |
| | **PR218:** | Pedal load (gang 2) | | |
| Sensor voltage | **PR077:** | EGR valve position sensor voltage | **0.5 V < PR077 < 4.8 V** | In the event of a fault, apply the interpretation of fault **DF209 EGR valve position sensor circuit**. |
| | **PR344:** | Manifold pressure sensor voltage | Shows the voltage in **volts** supplied by the computer to feed the inlet pressure sensor. | In the event of a fault, apply the interpretation of fault **DF089 Inlet manifold pressure sensor circuit**. |
| | **PR080:** | Rail pressure sensor voltage | **0.5 V < PR080 < 4.5 V** Shows the voltage in **volts** supplied by the computer to the rail pressure sensor. **Default value: 4.5 V.** | In the event of a fault, apply the interpretation of **DF007 Rail pressure sensor circuit**. |
| Pressure | **PR037:** | Refrigerant pressure | **2 bar < PR037 < 27 bar** Gives the value in **bar** of the refrigerant pressure in the system. **Default value: 0 bar.** | In the event of a fault, apply the interpretation of **DF049 Refrigerant sensor circuit**. |
| Air flow | **PR019:** | Linearised air flow | Gives the linearised air flow in **g/s**. | In the event of a fault, apply the interpretation of fault **DF056 Air flow sensor circuit**. |

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| Tool Status | Diagnostic tool title |
|---|---|
| **ET003** | Immobiliser |
| **ET007** | Preheating unit control |
| **ET008** | EGR solenoid valve control |
| **ET023** | Fast idle speed request |
| **ET038** | Engine |
| **ET039** | Brake pedal |
| **ET116** | Air conditioning authorisation |
| **ET122** | Brake switch no. 1 signal |
| **ET123** | Brake switch no. 2 signal |
| **ET164** | Configuration with air conditioning |
| **ET200** | Fuel flow controller |
| **ET227** | Key |
| **ET233** | Clutch pedal |
| **ET432** | Wastegate regulation |
| **ET563** | Flow capacity function |
| **ET637** | New pump chamber filling |

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| ET122 | BRAKE CONTACT SIGNAL No. 1 |
|---|---|

| *NOTES* | **Special notes:**<br>Carry out the checks only if the **INACTIVE** and **ACTIVE** statuses are not consistent with the pedal position.<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |
|---|---|

**INACTIVE STATUS Brake pedal depressed.**

**If the brake lights operate:**
– Check the **continuity** of connection **5A** between the brake light switch connector, component code **160** and the computer connector, component code **120**.

**If the brake lights do not operate:**
– Check the condition and fitting of the brake light switch and brake lights fuse.
– Remove and test the operation of the brake light switch:

| Only for **K9K 718, 740 engines** | **Continuity** between connections: | **Insulation** between connections: |
|---|---|---|
| Switch pressed (Brake pedal released) | **5A** and **AP10** | **65A** and **AP10** |
| Switch released (Brake pedal depressed) | **65A** and **AP10** | **5A** and **AP10** |

| Only for the **K9K engines 790, 792, 794, 796** | **Continuity** between connections: | **Insulation** between connections: |
|---|---|---|
| Switch pressed (Brake pedal released) | **5A** and **AP1** | **65A** and **AP1** |
| Switch released (Brake pedal depressed) | **65A** and **AP1** | **5A** and **AP1** |

If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
– If necessary, replace the switch (see **MR 388, Mechanical, 37A, Mechanical component controls, Brake pedal: Removal - Refitting**).
– Check for **+ after ignition feed** on connections **AP1** of the brake light switch connector.

| *AFTER REPAIR* | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ET122

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| ET122 CONTINUED | |
|---|---|

**ACTIVE STATUS Brake pedal released.**

– Check the condition and the mounting of the brake light switch, the brake lights fuse and the conformity of the bulbs.
– Remove and test the operation of the brake light switch:

| Only for **K9K 718, 740 engines** | **Continuity** between connections: | **Insulation** between connections: |
|---|---|---|
| Switch engaged (Brake pedal released) | **5A** and **AP10** | **65A** and **AP10** |
| Switch released (Brake pedal depressed) | **65A** and **AP10** | **5A** and **AP10** |

| Only for the **K9K engines 790, 792, 794, 796** | **Continuity** between connections: | **Insulation** between connections: |
|---|---|---|
| Switch pressed (Brake pedal released) | **5A** and **AP1** | **65A** and **AP1** |
| Switch released (Brake pedal depressed) | **65A** and **AP1** | **5A** and **AP1** |

If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
– If necessary, replace the switch (see **MR 388, Mechanical, 37A, Mechanical component controls, Brake pedal: Removal - Refitting**).
– Check the **insulation** against **+12 V** of connection **5A** between the brake light switch connector and the computer connector.

| ***AFTER REPAIR*** | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

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| ET233 | CLUTCH PEDAL |
|---|---|

| *NOTES* | **Special notes:**<br>Carry out the checks only if the **RELEASED** and **DEPRESSED** statuses are not consistent with the pedal position.<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2.** |
|---|---|

**Only for K9K 718, 740 engines**

**"RELEASED" STATUS and clutch pedal depressed.**

Check the condition and the fitting of the **clutch switch**, component code **675**.
Check and ensure **the continuity** of connection **86D** between the clutch switch connector and the injection computer connector, component code **120**.
Check and ensure the presence of **earth** on connection **M** of component **675**.
If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Remove the clutch switch and check that it is operating correctly:

| | Continuity between tracks | Insulation between tracks |
|---|---|---|
| Switch pressed (Clutch pedal released) | **86D** and **M** | **-** |
| Switch released (Clutch pedal depressed) | **-** | **86D** and **M** |

If necessary, replace the switch (see **MR 388, Mechanical, 37A, Mechanical component controls, Clutch pedal: Removal - Refitting**).

| *AFTER REPAIR* | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ET233

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| ET233 CONTINUED | |
|---|---|

**DEPRESSED STATUS and clutch pedal released.**

Check the condition and fitting of the clutch switch.
Remove the clutch switch and test its operation:

| | Continuity between tracks | Insulation between tracks |
|---|---|---|
| Switch pressed (Clutch pedal released) | **86D** and **M** | **-** |
| Switch released (Clutch pedal depressed) | **-** | **86D** and **M** |

If necessary, replace the switch (see **MR 388, Mechanical, 37A, Mechanical component controls, Clutch pedal: Removal - Refitting**).
Check and ensure **the insulation to earth** of the connection **86D** between components **675** and **120**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

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| Tool parameter | Diagnostic tool title |
|---|---|
| **PR001** | Advance |
| **PR005** | EGR valve opening setpoint |
| **PR008** | Rail pressure setpoint |
| **PR010** | Idle speed regulation setpoint |
| **PR017** | Fuel flow |
| **PR018** | Estimated air flow |
| **PR019** | Linearised air flow |
| **PR021** | EGR request |
| **PR026** | EGR position offset |
| **PR030** | Accelerator pedal position |
| **PR033** | Requested inlet pressure |
| **PR035** | Atmospheric pressure |
| **PR036** | Linearised atmospheric pressure |
| **PR037** | Refrigerant pressure |
| **PR038** | Rail pressure |
| **PR040** | Linearised rail pressure |
| **PR051** | EGR valve position feedback |
| **PR055** | Engine speed |
| **PR057** | Linearised fuel temperature |
| **PR058** | Air temperature |
| **PR063** | Fuel temperature |
| **PR064** | Coolant temperature |
| **PR065** | Linearised coolant temperature |

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| Tool parameter | Diagnostic tool title |
|---|---|
| **PR074** | Battery voltage |
| **PR077** | EGR valve position sensor voltage |
| **PR080** | Rail pressure sensor voltage |
| **PR089** | Vehicle speed |
| **PR125** | Power absorbed by the air conditioning compressor |
| **PR136** | EGR position |
| **PR148** | Pedal potentiometer voltage gang 2 |
| **PR175** | Vehicle speed/engine speed ratio |
| **PR217** | Pedal load (gang 1) |
| **PR218** | Pedal load (gang 2) |
| **PR311** | Manifold air temperature |
| **PR312** | Manifold pressure |
| **PR313** | Linearised manifold pressure |
| **PR315** | Linearised manifold air temperature |
| **PR316** | Linearised sensor supply voltage |
| **PR344** | Manifold pressure sensor voltage |
| **PR400** | New EGR valve offset |
| **PR634** | Air flow request |

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| | |
|---|---|
| **PR058** | AIR TEMPERATURE |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>This circuit is not present on vehicles equipped with **K9K 790 and 794** engines.<br>Only apply the checks if the parameter is inconsistent.<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2**. |

Check the condition of the air flowmeter connections, component code **799**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
If necessary, replace the air temperature - pressure sensor (see **MR 388, Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting**).
Measure the **resistance** between connections **3B** and **3DW** of the air flowmeter.
If the resistance of the air temperature - pressure sensor is not:
(theoretical values)
**41255 Ω < X < 47492 Ω** at **–40˚C,**
**14260 Ω < X < 16022 Ω** at **–20˚C,**
**5497 Ω < X < 6050 Ω** at **0˚C,**
**2353 Ω < X < 2544 Ω** at **20˚C,**
**1114 Ω < X < 1186 Ω** at **40˚C,**
**569 Ω < X < 597 Ω** at **60˚C,**
**310 Ω < X < 322 Ω** at **80˚C,**
**180 Ω < X < 185 Ω** à **100˚C.**
replace the air temperature - pressure sensor (see **MR 388, Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_PR058

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| | |
|---|---|
| **PR064** | COOLANT TEMPERATURE |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>Only apply the checks if the parameter is inconsistent.<br>Use the **Technical Note wiring diagram, Logan, Sandero, Thalia 2, or Symbol 2**. |

Check the condition of the coolant temperature sensor connections, component code **244**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Replace the sensor if necessary.
Measure the **resistance** between connections **3C** and **3JK** of the coolant temperature sensor, component code **244**:
If the resistance of the coolant temperature sensor is not:
(theoretical values)
**11.5 Ω < X < 13.5 Ω** at **–10˚C,**
**2140 Ω < X < 2364 Ω** at **25˚C,**
**773 Ω < X < 851 Ω** at **50˚C,**
**275 Ω < X < 291 Ω** at **80˚C,**
**112 Ω < X < 118 Ω** at **110˚C,**
replace the coolant temperature sensor (see **MR 388, Mechanical, 19A, Cooling, Coolant temperature sensor, Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

DCM1.2_V08_PR064

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| Tool command | Diagnostic tool title | Comments |
|---|---|---|
| **RZ001** | Fault memory | This command is used for clearing the computer's stored faults |
| **RZ002** | EGR programming adaptives | Use this command when replacing the EGR valve |
| **RZ004** | Pressure regulation adaptives | Use this command when simultaneously replacing the four injectors and after replacing/retightening the accelerometer. It enables you to reset the injector programming adaptives |
| **RZ005** | Programming | This command enables you to reinitialise the entire computer configuration. |
| **AC001** | Preheating unit | Activating this actuates the preheating unit to test the heater plug supply. |
| **AC002** | EGR solenoid valve | Activating this lets you listen to the mechanical operation of the EGR valve. |
| **AC004** | Turbocharging solenoid valve | Activating this lets you listen for the turbocharging solenoid valve working |
| **AC005** | Cylinder 1 injector | Activating this lets you listen to the operation of the injector on cylinder 1 |
| **AC006** | Cylinder 2 injector | Activating this lets you listen to the operation of the injector on cylinder 2. |
| **AC007** | Cylinder 3 injector | Activating this lets you listen to the operation of the injector on cylinder 3. |
| **AC008** | Cylinder 4 injector | Activating this lets you listen to the operation of the injector on cylinder 4. |
| **AC010** | High pressure pump | Activating this lets you listen to the operation of the high pressure pump. |
| **AC028** | Static test | Activating this enables fault finding to be run on the EGR, the high pressure pump, and the water in fuel warning light circuits. |

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| Tool command | Diagnostic tool title | Comments |
|---|---|---|
| **AC029** | High pressure circuit sealing test. | Activating this will request the injection system to detect a leak on the high pressure circuit after an operation has been carried out. This is activated with the engine warm and running and consists of unladen acceleration repeated 4 times. |
| **AC056** | Power-assisted steering assembly relay | Activating this actuates the power assisted steering pump. |
| **AC060** | Preheating indicator light | Activating this actuates the preheating warning light on the instrument panel. |
| **AC061** | Overheating warning light. | Activating this actuates the engine overheating warning light on the instrument panel. |
| **AC068** | Injection fault warning light. | Activating this actuates the injection fault warning light on the instrument panel. |
| **AC099** | Deactivation of electrical consumers | This activation only deactivates the preheating function. |
| **AC100** | End deactivation of electrical consumers | Activating this authorises preheating after programming or reprogramming the injection computer (see **Replacement of components**). |
| **AC153** | High-speed fan assembly | Activating this actuates the high speed fan relay to test the supply to the high speed fan. |
| **AC154** | Fan low speed. | Activating this actuates the low speed fan relay to test the supply to the low speed fan. |
| **AC155** | MIL warning light | Activating this actuates the MIL warning light on the instrument panel (EOBD emission control warning light). |
| **AC180** | Air conditioning compressor relay control. | Activating this enables you to listen for the correct operation of the air conditioning compressor. |
| **AC212** | New pump chamber filling | This must only be activated after the high pressure pump has been replaced (see **Replacement of components**). This command enables the pump reprime sequence to be activated. |
| **AC250** | Heating resistor 1 relay. | Activating this actuates the heating resistor no. 1 relay to test the heating resistor supply. |

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| Tool command | Diagnostic tool title | Comments |
|---|---|---|
| **AC251** | Heating resistor 2 relay. | Activating this actuates the heating resistor no. 2 relay to test the heating resistor supply. |
| **AC252** | Heating resistor 3 relay. | Activating this actuates the heating resistor no. 3 relay to test the heating resistor supply. |
| **AC261** | Water in diesel fuel indicator light | Activating this actuates the water present in fuel warning light; this warning light is located on the instrument panel, if fitted to the vehicle. |
| **SC001** | Write saved data | Use this command after replacing or (re)programming the computer (if the data were saved using command **SC003 Save computer data**). |
| **SC002** | Enter injector codes | This command enables you to manually write the calibration code marked on the injectors. Run this command after replacing the injectors. |
| **SC003** | Save computer data | This command saves the computer's operating data, C2I (individual injector correction) parameters and engine programming adaptives. Run this command before replacing or (re)programming the computer. |

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| *NOTES* | **Only consult this customer complaint after a complete check with the diagnostic tool.** |
|---|---|

**No dialogue with the computer** → **ALP1**

**Starting fault:**

- **The engine will not start** → **ALP2**
- **The engine starts with difficulty, or starts then stalls** → **ALP3**
- **Starting difficult with Warm engine** → **ALP4**
- **Rough idling speed (pumping)** → **ALP5**
- **Idling speed too high or too low** → **ALP6**

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**Behaviour while driving:**

- Erratic acceleration/deceleration and engine racing → ALP7
- Acceleration gap → ALP8
- Engine cut-out (stalling) → ALP9
- Engine bucking → ALP10
- Loss of power → ALP11
- Too much power → ALP 12
- Excessive consumption → ALP 13
- Overspeed when releasing accelerator or changing gear → ALP 14
- Engine dies on pulling away → ALP 15

**Noise, odours, or smoke:**

- Engine rattling, noisy engine, turbocharger noise → ALP 16
- Blue, white or black smoke → ALP 17
- Smoke (blue, white or black) on acceleration → ALP 18

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| ALP1 | No dialogue with the computer |
|---|---|

| *NOTES* | **Only consult this customer complaint after a complete check with the diagnostic tool.** |
|---|---|

Try to establish dialogue with a computer on another vehicle to check that **the diagnostic tool** is not faulty. If the tool is not at fault, and dialogue cannot be established with any other computer on the same vehicle, the cause could be a faulty computer interfering on the multiplex network. Check the battery voltage and make the necessary adjustments to obtain a correct voltage (**9.5 V < Battery voltage < 17.5 V**).

↓

Carry out fault finding on the multiplex network using the **diagnostic tool** (see **88B, Multiplexing**).

↓

Check the presence and the condition of the injection fuses in the engine fuse box.
Check the connection of the injection computer connectors, component code **120** and the condition of its connections.
Check the injection computer **earths** (quality, oxidation, earth bolts secure on the battery terminal).
Check that the supply to the computer is correct:
- **NH** or **N** between **earth** and component **120**.
- **AP29** or **AP15** between components **1016** and **120.**

If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

↓

A

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP01

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| ALP1 CONTINUED | |
|---|---|

A

Ensure that the diagnostic socket, component code **225,** has properly power supply:
- **+ Before ignition feed on connection BP56** of component **225.**
- **+ After ignition feed on connection AP10** of component **225.**
- **Earth on connections MAM** and **NC** of component **225.**

If the connection(s) are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If dialogue has still not been established after these various checks, contact the Techline.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP2 | The engine will not start |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that the fuel tank is correctly filled and that the appropriate fuel is used.
Run **test 13 Diesel fuel conformity check**.

↓

Check the levels of engine oil and coolant.

↓

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

Is the catalytic converter clogged or damaged? — YES → Replace the **catalytic converter** (see **MR 388, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO ↓

Check the electric circuit, use **TEST 2 Electrical circuit check**.

↓

Check the electrical conformity of the **heater plugs** (the resistance of the heater plug must be **less than 2 Ω).**

↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP02

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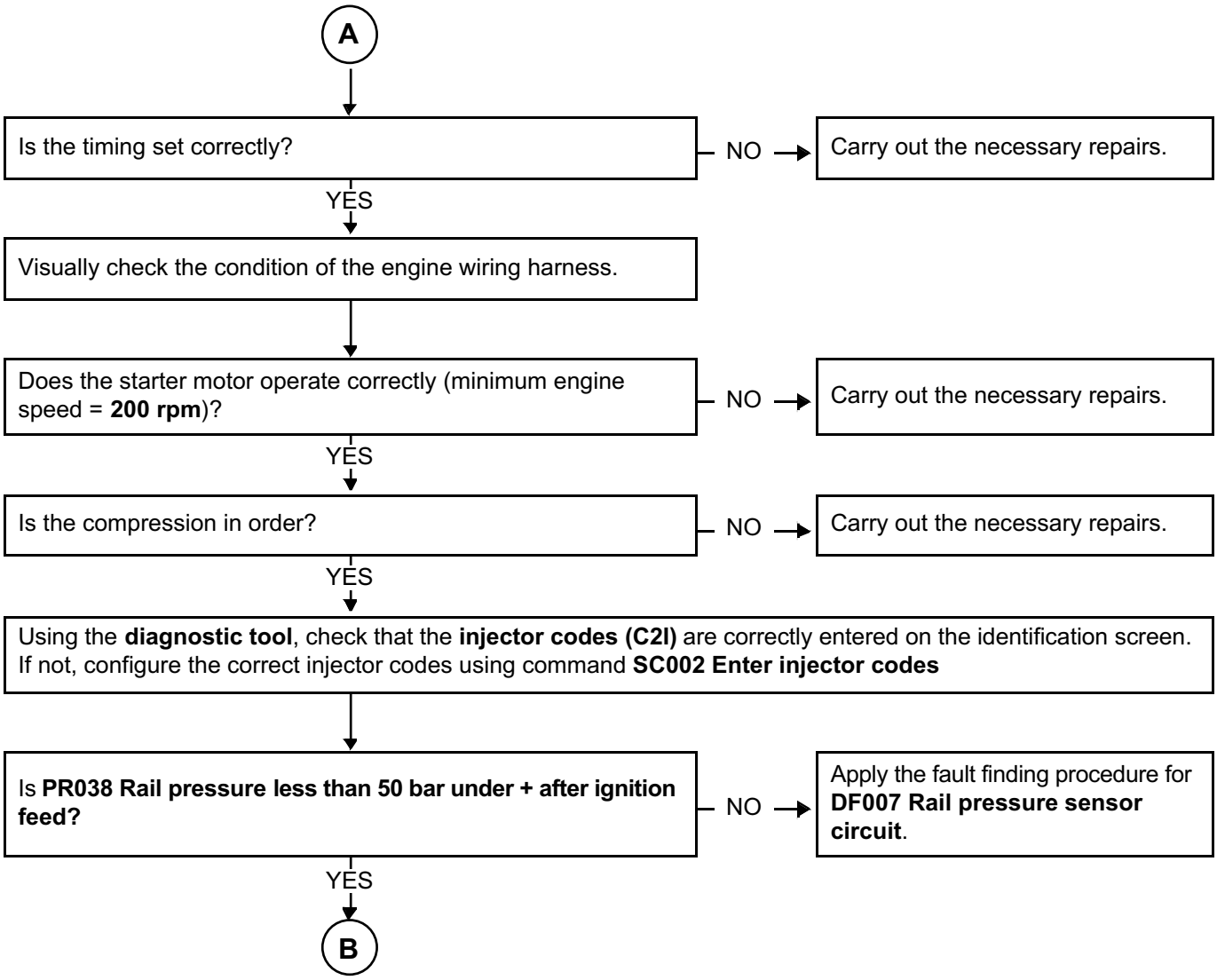
| ALP2 CONTINUED 1 | |
|---|---|




| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP2 CONTINUED 2 | |
|---|---|

B

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

Check the injectors, use **TEST 3 Injector check**.

Visually check that there are no leaks on the high pressure circuit, use **TEST 7 High pressure circuit sealing check**.

Check the high pressure system, use **TEST 6 High pressure system check**.

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP3 | The engine starts with difficulty, or starts then stalls |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that the fuel tank is correctly filled and that the appropriate fuel is used.
Run **test 13 Diesel fuel conformity check**.

↓

Check the levels of engine oil and coolant.

↓

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

Is the catalytic converter clogged or damaged? — YES → Replace the **catalytic converter** (see **MR 388, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO ↓

Check the electrical conformity of the **heater plugs** (the resistance of the heater plug must be **less than 2 Ω**).

↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP03

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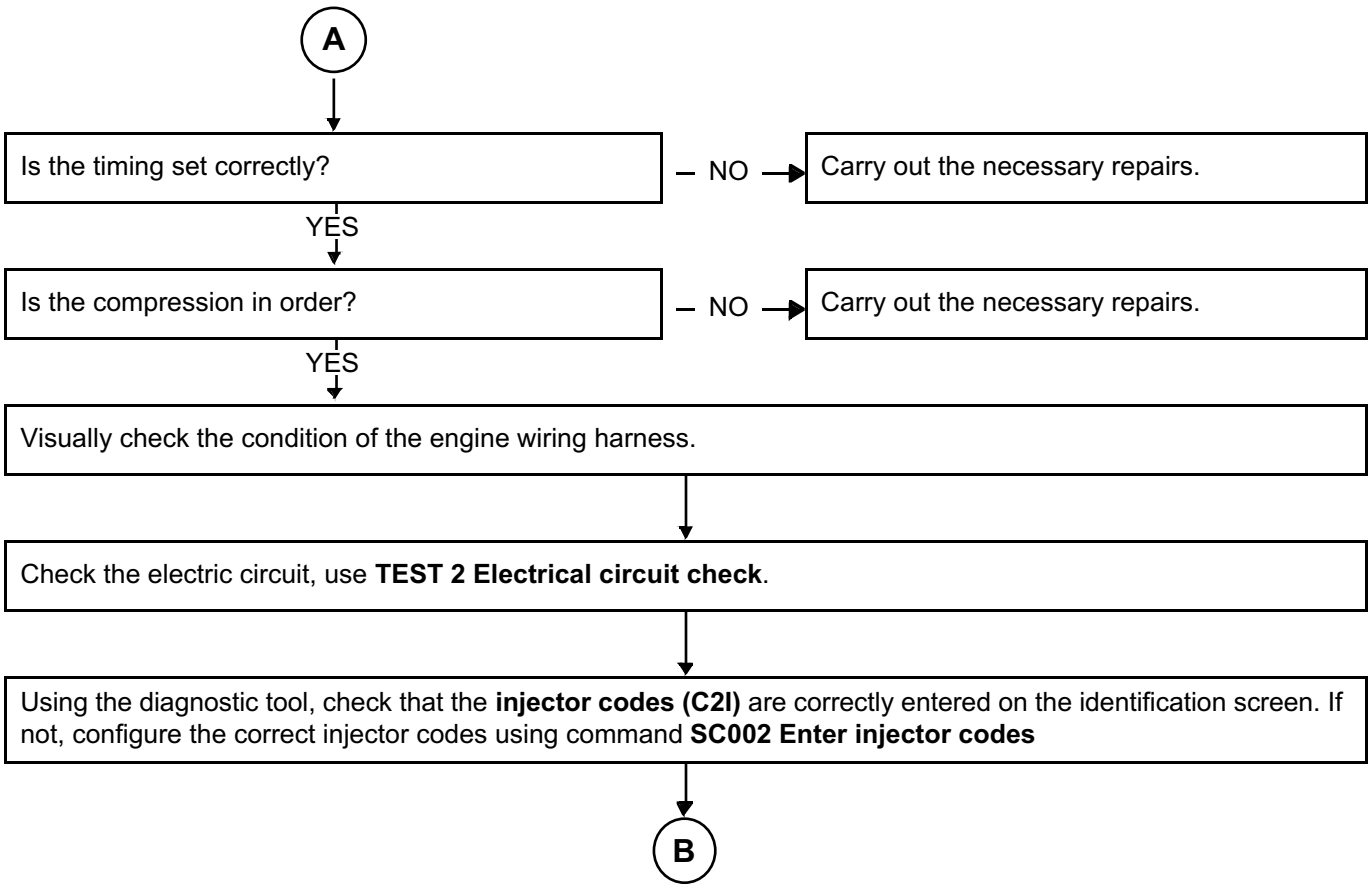
| ALP3 CONTINUED 1 | |
|---|---|




| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP3 CONTINUED 2 | |
|---|---|

B

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

Visually check that there are no leaks on the high pressure circuit, use **TEST 7 High pressure circuit sealing check**.

Check the high pressure system, use **TEST 6 High pressure system check**.

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP4 | Starting difficult with warm engine |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that the tank is filled correctly.

↓

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

Is the compression in order? — NO → Carry out the necessary repairs.

YES ↓

Is the catalytic converter clogged or damaged? — YES → Replace the **catalytic converter** (see **MR 388, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO ↓

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

↓

Visually check the condition of the engine wiring harness.

↓

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP04

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**ALP4 CONTINUED**

A

Control the injectors using commands:
– **AC005: Cylinder 1 injection,**
– **AC006: Cylinder 2 injection,**
– **AC007: Cylinder 3 injection,**
– **AC008: Cylinder 4 injection.**
Can you hear the valve moving 1 metre from the vehicle?

NO → Run **TEST 9 Diesel filter check.**
If the test is correct, replace only the **faulty injector(s)** (see **MR 388, Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting**).

YES

Check the high pressure system, use **TEST 6 High pressure system check**.

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

Contact the Techline if the customer complaint is still present.

| ***AFTER REPAIR*** | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP5 | Rough idling speed (pumping) |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that the tank is correctly filled and that the appropriate fuel is used.
Run **test 13 Diesel fuel conformity check**.

↓

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

↓

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

↓

Visually check the condition of the engine wiring harness.

↓

Visually check that there are no leaks on the high pressure circuit, use **TEST 7 High pressure circuit sealing check**.

↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP05

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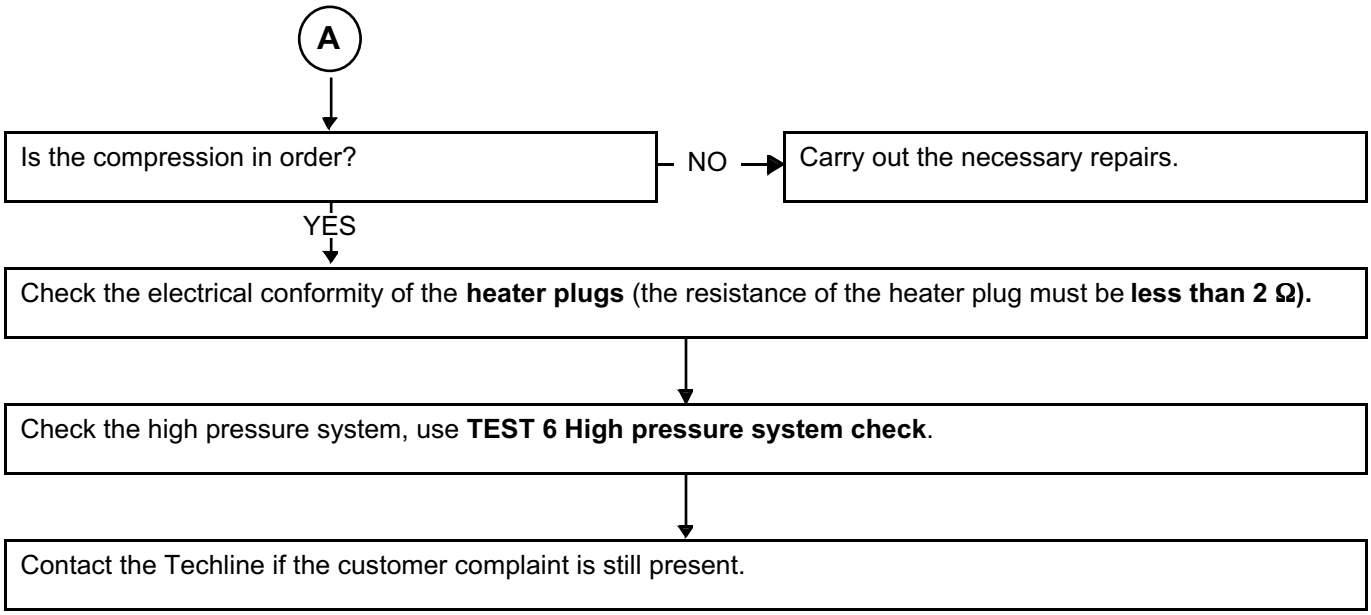
| ALP5 CONTINUED | |
|---|---|




| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP6 | Idling speed too high or too low |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

↓

Check the electric circuit, use **TEST 2 Electrical circuit check**.

↓

Is the clutch clearance set correctly? — NO → Carry out the necessary repairs.

YES ↓

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

↓

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP06

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| ALP7 | Erratic acceleration/deceleration and engine racing |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that the engine has not sucked up its oil (engine racing).

↓

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

↓

Visually check the condition of the engine wiring harness.

↓

Check the injectors, use **TEST 3 Injector check**.

↓

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

↓

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP07

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| ALP8 | Acceleration gap |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

Is the compression in order? — NO → Carry out the necessary repairs.

YES ↓

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

↓

Check that the turbocharger is working correctly.
Run **test 11 Air line at the turbocharger**.
Run **test 10 Turbocharger solenoid valve check**.
Run **test 12 Turbocharger**.
Is the turbocharger in operating correctly? — NO → Carry out the necessary repairs.

YES ↓

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP08

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| ALP8 CONTINUED | |
|---|---|

A

Visually check that there are no leaks on the high pressure circuit, use **TEST 7 High pressure circuit sealing check**.

Check the injectors, use **TEST 3 Injector check**.

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP9 | Engine cut-out (stalling) |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that the fuel tank is correctly filled and that the appropriate fuel is used.
Run **test 13 Diesel fuel conformity check**.

↓

Check the levels of engine oil and coolant.

↓

Check that the engine has not sucked up its oil (engine racing).

↓

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

Is the catalytic converter clogged or damaged? — YES → Replace the **catalytic converter** (see **MR 388, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO ↓

Visually check the condition of the engine wiring harness.

↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP09

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| ALP9 CONTINUED | |
|---|---|

A

Check the electric circuit, use **TEST 2 Electrical circuit check**.

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

Visually check that there are no leaks on the high pressure circuit, use **TEST 7 High pressure circuit sealing check**.

Check the injectors, use **TEST 3 Injector check**.

Check the high pressure system, use **TEST 6 High pressure system check**.

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP10 | Engine bucking |
|---|---|

| *NOTES* | **Special note:**<br>Only consult this customer complaint after a **complete check** using the **diagnostic tool** (see **System operation, Function: Fuel supply management (timing, flow rate, and pressure), flow capacity function (VLC) section**). |
|---|---|

Check that the fuel tank is filled and that the appropriate fuel is used.
Run **TEST 13 Diesel fuel conformity check**.

↓

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

↓

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

↓

Is the engine wiring harness cut or pinched? — YES → Carry out the necessary repairs.

NO ↓

Is the compression in order? — NO → Carry out the necessary repairs.

YES ↓

Is the valve clearance set correctly? — NO → Carry out the necessary repairs.

YES ↓

Check the high pressure pump, use **TEST 6 High pressure system check**.

↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP10

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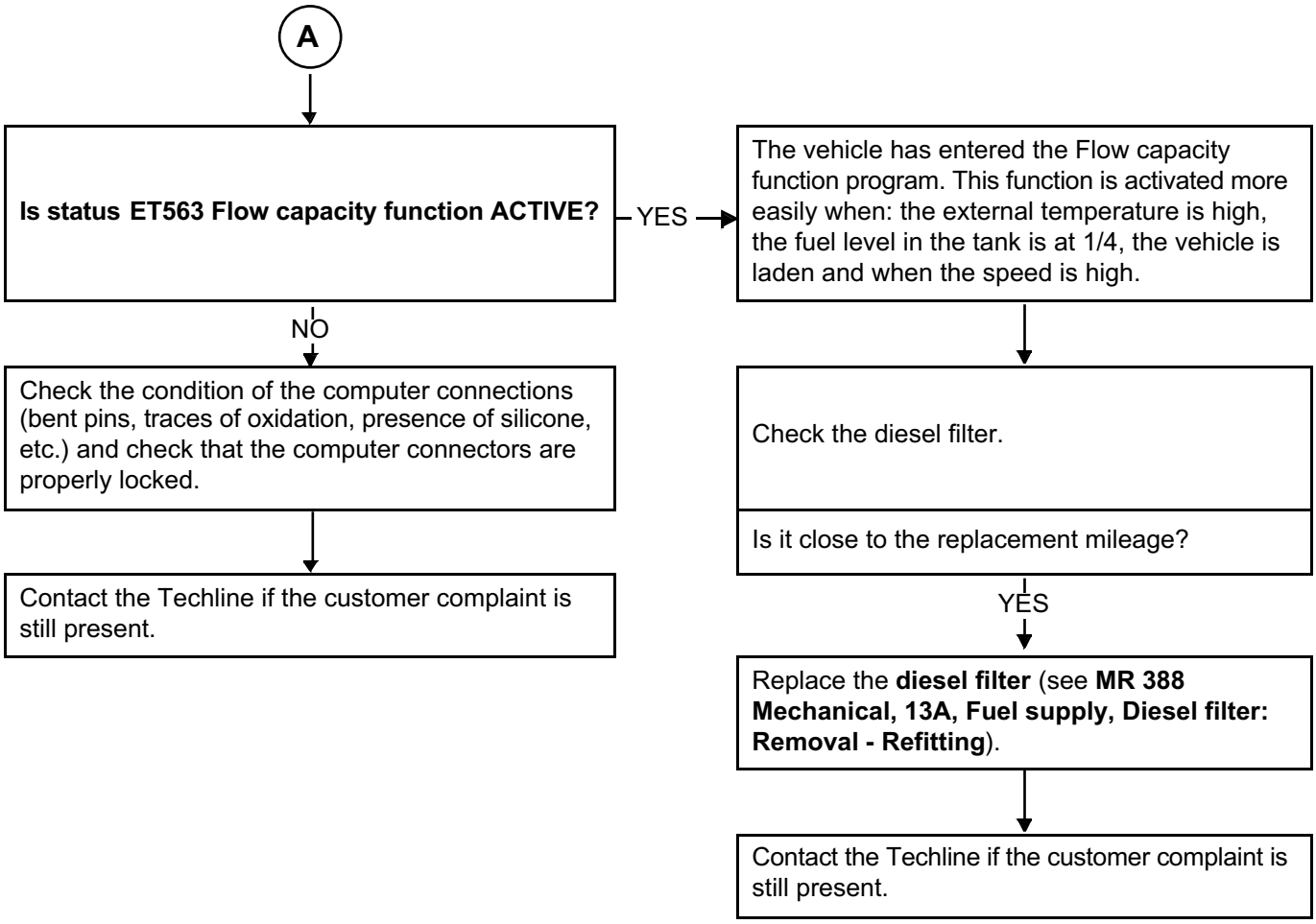
| ALP10 CONTINUED | |
|---|---|




| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP11 | Loss of power |
|---|---|

| *NOTES* | **Special note:**<br>Only address this customer complaint after a **complete check** with **the diagnostic tool**.<br>See explanation for flow capacity function in system operation. |
|---|---|

Is status **ET563 Flow capacity function ACTIVE**?

NO

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

YES

Check the diesel filter.

Is it close to the replacement mileage?

NO

YES

Replace the diesel filter (see **MR 388 Mechanical, 13A, Fuel supply, Diesel filter: Removal - Refitting**).

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

Is the engine oil level correct?

NO

Top up the oil level.

YES

A

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP11

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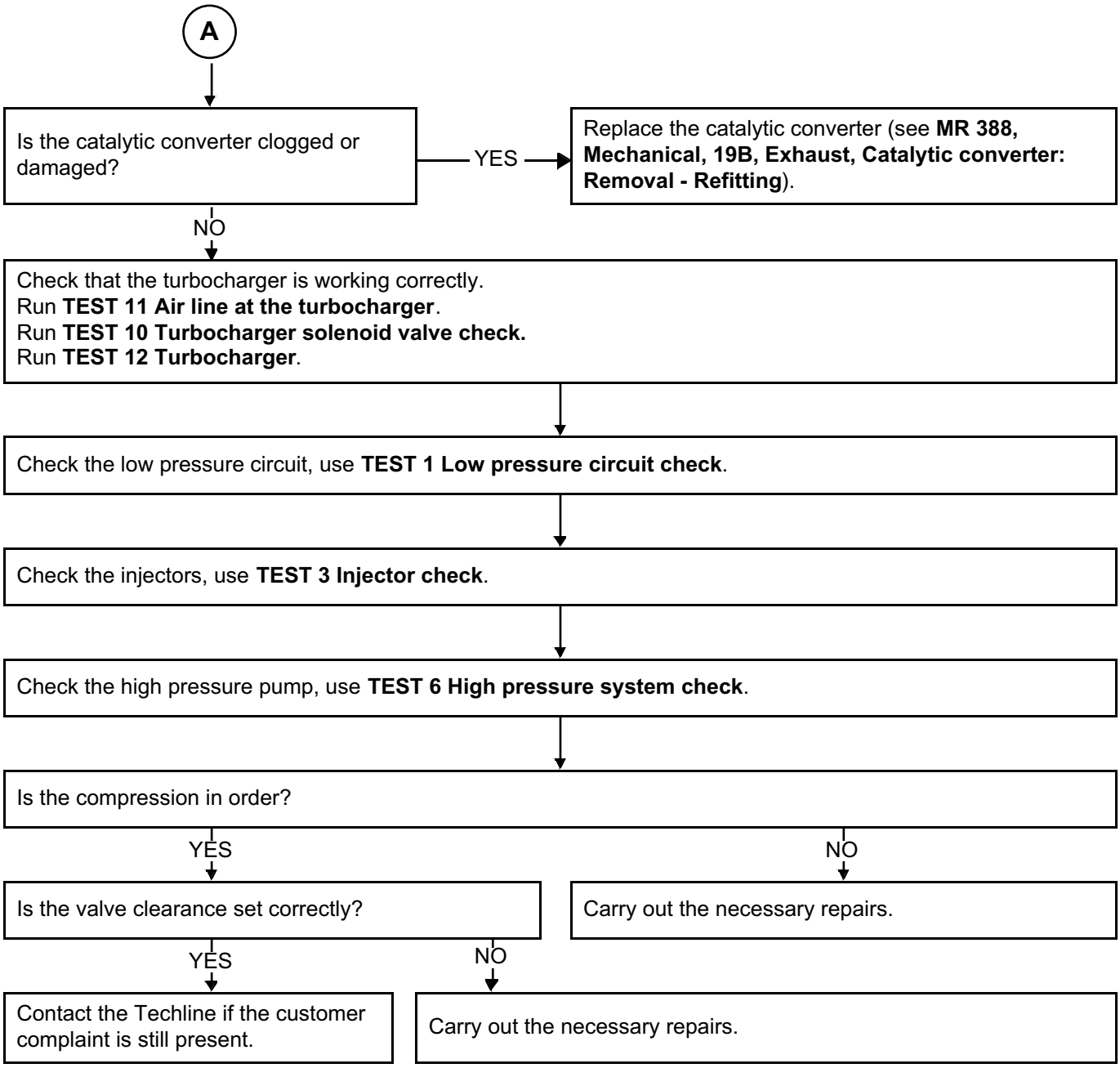
| ALP11 CONTINUED | |
|---|---|




| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP 12 | Too much power |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

**In this case, the control solenoid valve is jammed: it is possible to increase the vacuum but not reduce it afterwards.**

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

↓

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

Check that the engine has not sucked up its oil (engine racing).

↓

Check that the turbocharger is working correctly.
Run **TEST 11 Air line at the turbocharger**.
Run **TEST 10 Turbocharger solenoid valve check**.
Run **TEST 12 Turbocharger**.

↓

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

↓

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP12

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| ALP 12 CONTINUED 1 | |
|---|---|

**In this case, it may be the solenoid valve dynamic specification which is at fault (atmospheric pressure resetting time). Final fault finding is carried out by measuring this specification on a special bench.**

Check that solenoid valve casing does not have any splashes of fluid on it which may impede the breather (water, engine oil, gearbox oil, brake fluid, coolant, mud, dust, or any other substance).
Instructions:
The solenoid valve must be set up **450 mm** above the ground, in an area free from water, mud, or any other fluid.
Cleaning with a high pressure jet is forbidden.

↓

Is there coolant present?

NO ↓

Is the solenoid valve subjected to significant fluctuations or impacts?
Instructions:
The solenoid valve must be correctly secured to its mounting.
Contact with the engine environment is forbidden.

NO ↓

Check the turbocharger regulation control (no partial jamming, etc.).

↓

(A)

YES ↓

Follow the recommendations below.

↓

(A)

YES ↓

Follow the recommendations below.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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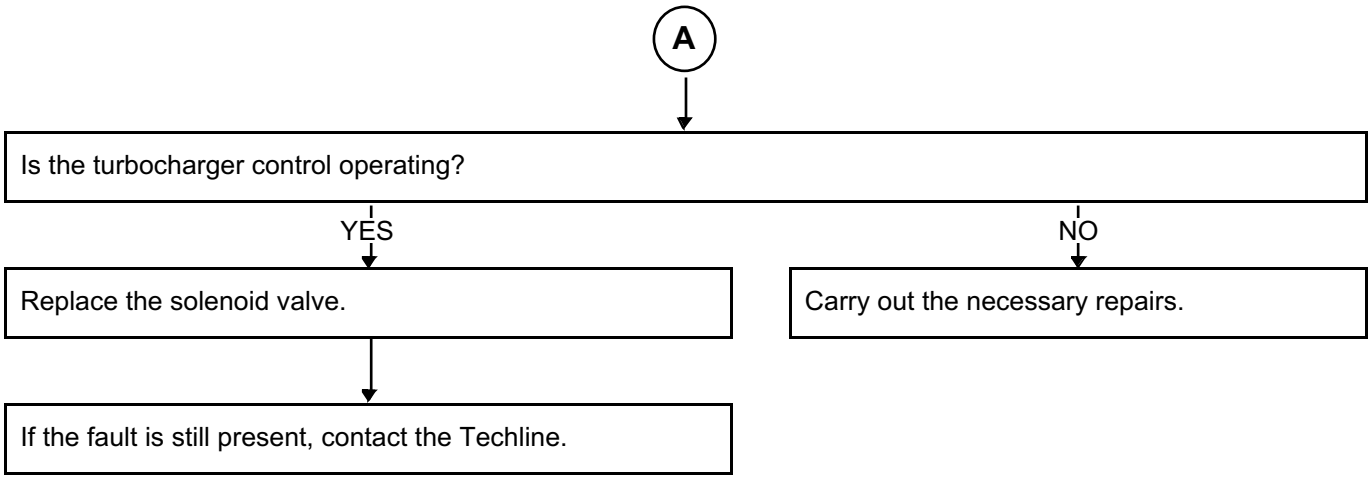
| ALP 12 CONTINUED 2 | |
|---|---|




| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP 13 | Excessive consumption |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that the fuel tank is correctly filled and that the appropriate fuel is used.
Run **TEST 13 Diesel fuel conformity check**.

↓

Check the levels of engine oil and coolant.
Is the fuel temperature sensor leaking?

YES → Replace the **fuel temperature sensor** (see **MR 388, Mechanical, 13B, Diesel injection, Rail pressure sensor: Removal - Refitting**).

NO ↓

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

↓

Visually check that there are no leaks on the high pressure circuit, use **TEST 7 High pressure circuit sealing check**.

↓

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP13

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| ALP 13 CONTINUED | |
|---|---|

(A)

Is the compression in order?

NO → Carry out the necessary repairs.

YES

Is the catalytic converter clogged or damaged?

YES → Replace the catalytic converter (see **MR 388, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO

Check that the turbocharger is working correctly.
Run **TEST 11 Air line at the turbocharger**.
Run **TEST 10 Turbocharger control solenoid valve check**.
Run **TEST 12 Turbocharger**.
Is the turbocharger in operating correctly?

NO → Carry out the necessary repairs.

YES

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP 14 | Overspeed when releasing accelerator or changing gear |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that there are no obstacles that might impede the accelerator pedal travel (carpet, hard point, etc.).

↓

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

↓

Visually check the condition of the engine wiring harness.

↓

Is the clutch clearance set correctly? — NO → Carry out the necessary repairs.

YES ↓

Check that the engine has not sucked up its oil (engine racing).

↓

Check that the turbocharger is working correctly.
**Run TEST 11 Air line at the turbocharger.**
**Run TEST 10 Turbocharger solenoid valve check.**
**Run TEST 12 Turbocharger.**
**Is the turbocharger correct?** — NO → Carry out the necessary repairs.

YES ↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP14

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| ALP 14 CONTINUED | |
|---|---|

A

Check the injectors, use **TEST 3 Injector check**.

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP 15 | Engine dies on pulling away |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Is the clutch clearance set correctly?

NO → Carry out the necessary repairs.

YES ↓

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

↓

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

Is the catalytic converter clogged or damaged?

YES → Replace the **catalytic converter** (see **MR 388, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO ↓

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

↓

Visually check the condition of the engine wiring harness.

↓

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

↓

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP15

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| ALP 16 | Engine rattling, noisy engine, turbocharger noise |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

If the noise arises from the turbocharger, apply **Technical Note 5164A, Noise fault finding.**

**Note:**
Pay close attention to faulty components that might result in unjustified replacement of the turbocharger. For example, whistling does not necessarily indicate damage to the turbocharger (this could be coming from the exhaust, the timing, the gearbox, etc.).

↓

Check that the fuel tank is correctly filled and that the appropriate fuel is used, use **TEST 13 Diesel fuel conformity check**.

↓

Check the levels of engine oil and coolant.

↓

Is the compression in order? — NO → Carry out the necessary repairs.

YES ↓

Check the electrical conformity of the **heater plugs** (the **resistance** of the heater plug must be **less than 2 Ω).**

↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP16

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| ALP 16 CONTINUED | |
|---|---|

A

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

Check the inlet air circuit, use **TEST 5 Inlet circuit check.**

Check the low pressure circuit, use **TEST 1 Low pressure circuit check.**

Check the injectors, use **TEST 3 Injector check.**

Check the high pressure system, use **TEST 6 High pressure system check**.

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP 17 | Blue, white or black smoke |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that the fuel tank is correctly filled and that the appropriate fuel is used.
Run **TEST 13 Diesel fuel conformity check**.

↓

Check the levels of engine oil and coolant.

↓

Is the compression in order? — NO → Carry out the necessary repairs

YES ↓

Check the electrical conformity of the **heater plugs** (the resistance of the heater plug must be **less than 2 Ω).**

↓

Is the catalytic converter clogged or damaged? — YES → Replace the **catalytic converter** (see **MR 388, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO ↓

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

A

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP17

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| ALP 17 CONTINUED | |
|---|---|

A

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

Check the injectors, use **TEST 3 Injector check**.

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| ALP 18 | Smoke (black, white, or blue) when accelerating. |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that the fuel tank is correctly filled and that the appropriate fuel is used.
Run **TEST 13 Diesel fuel conformity check**.

↓

Check the levels of engine oil and coolant.

↓

Check that the engine has not sucked up its oil (engine racing).

↓

Is the compression in order? — NO → Carry out the necessary repairs.

YES ↓

Check the electrical conformity of the **heater plugs** (the resistance of the heater plug must be **less than 2 Ω).**

↓

Is the catalytic converter clogged or damaged? — YES → Replace the **catalytic converter** (see **MR 388, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

NO ↓

Check the inlet air circuit, use **TEST 5 Inlet circuit check**.

↓

(A)

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

DCM1.2_V08_ALP18

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| ALP 18 CONTINUED | |
|---|---|

A

Check that the turbocharger is working correctly.
**Run TEST 11 Air line at the turbocharger.**
**Run TEST 10 Turbocharger solenoid valve check.**
**Run TEST 12 Turbocharger.**
Is the turbocharger correct?

NO → Carry out the necessary repairs.

YES

Visually check the condition of the engine wiring harness.

Using the diagnostic tool, check that the **injector codes (C2I)** are correctly entered on the identification screen. If not, configure the correct injector codes using command **SC002 Enter injector codes**

Check the low pressure circuit, use **TEST 1 Low pressure circuit check**.

Check the injectors, use **TEST 3 Injector check**.

Check the condition of the computer connections (bent pins, traces of oxidation, presence of silicone, etc.) and check that the computer connectors are properly locked.

Contact the Techline if the customer complaint is still present.

| *AFTER REPAIR* | Carry out a road test followed by a check with the **diagnostic tool**. |
|---|---|

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| NOTES | Only consult these tests when applying a fault finding chart (ALP) or Interpretation of faults. |
|---|---|

Some specific checks are grouped together into tests and are performed as required in the various fault finding charts or when interpreting faults.

| | |
|---|---|
| Low pressure circuit check | TEST 1 |
| Electrical circuit check | TEST 2 |
| Injector check | TEST 3 |
| Inlet circuit check | TEST 5 |
| High pressure system check | TEST 6 |
| High pressure circuit sealing check | TEST 7 |
| Injector return flow | TEST 8 |
| Diesel filter check | TEST 9 |
| Turbocharger solenoid valve check | TEST 10 |
| Air line at the turbocharger | TEST 11 |
| Turbocharger | TEST 12 |
| Check the conformity of the diesel fuel | TEST 13 |

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| TEST 1 | Low pressure circuit check |
|---|---|

Check the conformity of the low pressure circuit connections.

Are the low pressure circuit connections in order?

NO → Carry out the necessary repairs.

YES

Check the condition of the priming bulb, and that it is working properly.

Look for leaks on the unions.

Are there leaks on the hoses and unions?

YES → Carry out the necessary repairs.

NO

Check for air bubbles in the diesel fuel.

Check for air bubbles in the low pressure circuit.

YES → Bleed the low pressure circuit.
Place a container under the filter.
- Disconnect the return hose from the filter and plug the filter.
- Pump using the priming bulb until there is no air left.
- Reconnect the return hose immediately.

NO

Low pressure circuit in order.

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| TEST 2 | Electrical circuit check |
|---|---|

Check the battery charge, and that the alternator is working properly (see **Technical Note 6014A (Renault) or Technical Note 9859A (Dacia), Charging circuit check**).

Is the charge circuit in order?

NO → Carry out the necessary repairs

YES ↓

Check the fuses (see **MR 388 Mechanical, 81C, Fuses, Fuses: List and location of components**).

Are the fuses in order?

NO → Carry out the necessary repairs

YES ↓

Check that the injection locking relay is in working order.

Is the injection locking relay working properly?

NO → Carry out the necessary repairs

YES ↓

Check the engine earths (see **Technical Note wiring diagrams for the vehicle**).

Are the engine earths in order?

NO → Carry out the necessary repairs

YES ↓

The electrical circuit is in order.

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| TEST 3 | Injector check |
|---|---|

Visually inspect around the injectors.
Is there diesel fuel around the injectors?

YES → Locate the source of the leak and carry out the necessary repairs.

NO ↓

Control the injectors with commands:
- **AC005: Cylinder 1 injector,**
- **AC006: Cylinder 2 injector,**
- **AC007: Cylinder 3 injector,**
- **AC008: Cylinder 4 injector.**

Can you hear the valve moving 1 metre from the vehicle?

NO → Check the **insulation** and the **continuity** of the electric circuit.
**Run TEST 9 Diesel filter check.**
**If TEST 9 is correct, replace only the faulty injector(s)** (see **MR 388, Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting**).

YES ↓

**End of test 3.**

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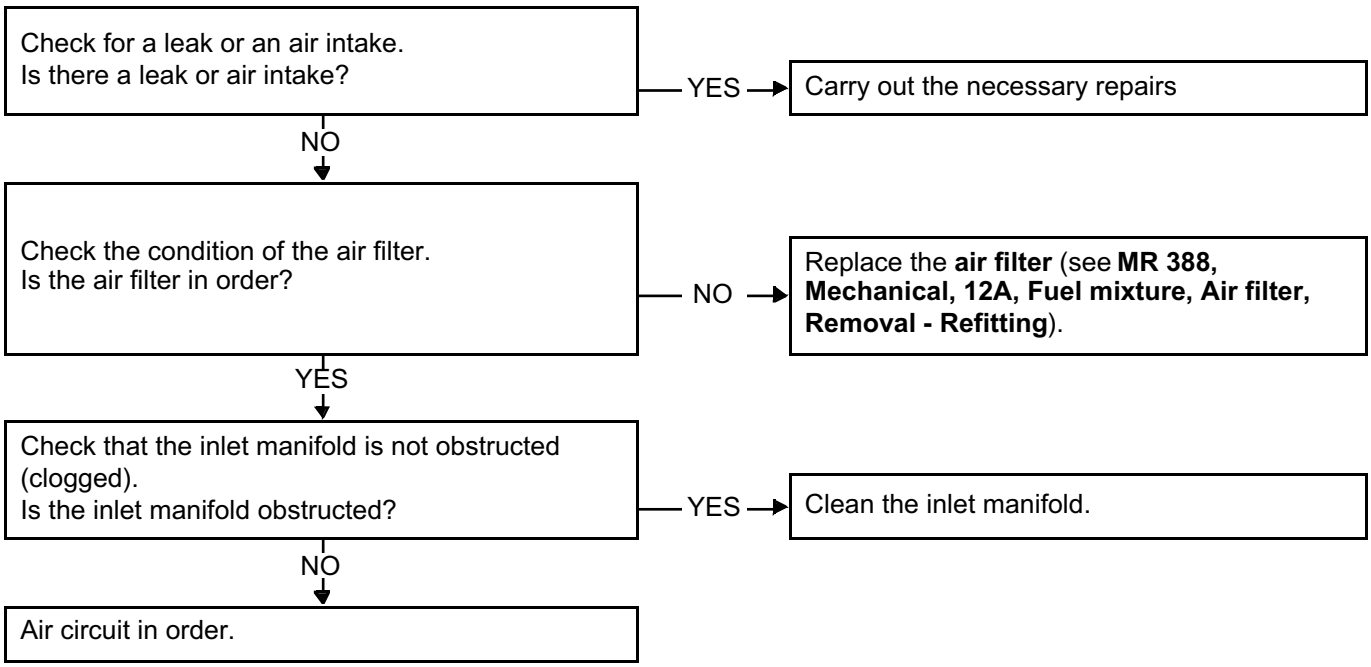
| TEST 5 | Inlet circuit check |
|---|---|



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| TEST 6 | High pressure system check |
|---|---|

| *NOTES* | **Special note:**<br>Certain faults make it impossible to carry out this test - deal with these first.<br>**IMPORTANT**<br>Running the starter motor for more than **5 seconds** does not serve any purpose and can be dangerous. |
|---|---|

**Preliminary checks:**
– Check the presence of fuel.
– Check that there is no air in the low pressure circuit. Run **TEST 1**: **Low pressure circuit check**.
– Ensure that the correct fuel is being used. Run **TEST 13 Diesel fuel conformity check**.

The pump's capacity to produce high pressure can be checked by the following procedure:
– **With the ignition off, disconnect** the low pressure actuator from the pump **(IMV brown connector)** and connect a **test IMV** or the **MOT adapter. 1711**.
– Electrically disconnect the four injectors.
– Switch on the ignition, connect the diagnostic tool and re-establish dialogue with the injection system.
– Go to the **Main computer statuses and parameters** screen.
– Run the test cold, **PR064 Coolant temperature < 30˚C** or equal to the ambient temperature.
– Engage **the starter for 5 seconds**.
– During the test, read the maximum rail pressure value (PR038 Rail pressure) on the **diagnostic tool**.

**PR038 > 1050 bar**?

NO → A

YES → B

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**TEST 6 CONTINUED**

A

- Switch off the ignition, reconnect the electrical connections to the four injectors and the low pressure actuator.
- Switch on the ignition again, and clear the injection faults using the **diagnostic tool**.
- Check for fuel leaks on the high pressure circuit. Run **TEST 7**: **High pressure circuit sealing check**.
- Check the conformity of the diesel filter. Run **TEST 9 Diesel filter check**.
- Carry out fault finding on the injectors by checking the return flow volume of the four injectors, run **TEST 8 Injector return flow**.

Is **TEST 8** correct?

NO

Replace the faulty injector(s) (see **MR 388, Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting**)

B

The pump can supply the operating pressure. Switch off the ignition, reconnect the electrical connections to the four injectors and the low pressure actuator. Switch on the ignition again, and clear the injection faults using the **diagnostic tool**.

- Check for fuel leaks on the high pressure circuit, run **TEST 7 High pressure circuit sealing check**.
- Carry out fault finding on the injectors by checking the return flow volume of the four injectors, run **TEST 8 Injector return flow**.

If the **TEST 8** is correct, the high pressure fuel circuit is correct.

YES

Replace the high pressure pump (see **MR 388, Mechanical, 13B, Diesel injection, High pressure pump: Removal - Refitting**).

**IMV = fuel flow actuator**

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| TEST 7 | High pressure circuit sealing check |
|---|---|

| *NOTES* | **Special note:**<br>Certain faults make it impossible to carry out this test - deal with these first. |
|---|---|

| **The command AC029 High pressure circuit sealing test enables a high pressure circuit sealing test to be carried out when the engine is running.** |
|---|
| This command can locate a leak in the high pressure circuit if a union is incorrectly fitted or screwed on. This test does not identify a minor leak due to a union not being tightened to torque. |
| This command can only be used if the engine temperature is **above 60 ˚C**. |
| **Watch out for any objects (tool or others) on the sides of the engine housing during the 4 accelerations (possible vibrations).** |
| Run command **AC029 High pressure circuit sealing test**, the engine will automatically carry out a cycle of four accelerations to increase the rail pressure and check for leaks in the high pressure circuit. |

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| TEST 8 | Injector return flow |
|---|---|

| *NOTES* | **Special note:**<br>Certain faults make it impossible to carry out this test - deal with these first. |
|---|---|

**Does the engine start?** — NO → A

YES ↓

**Command AC029 High pressure circuit sealing also checks the return volume of each injector** to detect any leaks inside the injectors.

**Watch out for any objects (tool or other) on the engine housing during the four cycles of the operation (possible vibrations).**

**Tooling required**
- **Mot. 1711 Injector flow measuring kit.**
  Or: use four tubes of internal diameter **4 mm**, approximately **50 cm** long, and four graduated measuring cylinders.

**Procedure**
- Ensure that the engine coolant temperature is **above 60˚C**,
- switch off the ignition,
- disconnect the return pipes from the four injectors,
- cap the pump venturi tube to prevent the low pressure circuit from depriming,
- connect the four transparent tubes in place of the return pipes,
- put the other ends of the four pipes into four graduated measuring cylinders.

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| TEST 8<br>CONTINUED 1 | |
|---|---|

When all the preparations are complete, start the engine and leave it running:

| | |
|---|---|
| For **30 seconds** at idle speed | for **euro 4 K9K 718 - 740 - 792 - 796** engines. |

| | |
|---|---|
| For **2 minutes** at idle speed | for **euro 3 K9K 790 - 794** engines. |

**Note:**
**It is essential to comply with these time periods for the correct interpretation of the test results.**

– **Run** command **AC029 High pressure circuit sealing check**.
The engine will carry out automatically a cycle of four accelerations to increase the rail pressure and measure internal injector leaks under these conditions.

– **When the cycle has finished, run command AC029 High pressure circuit sealing test a second time** to obtain the correct return volume reading for each injector.

**Switch off the engine at the end of the cycle.**

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| TEST 8 CONTINUED 2 | |
|---|---|

At the end of the idling phase and the two cycles, the return volume for each injector should be:

| | |
|---|---|
| **45 ml (maximum)** | for **euro 4 K9K 718 - 740 - 792 - 796** engines. |

| | |
|---|---|
| **35 ml (maximum).** | for **euro 3 K9K 790 - 794** engines. |

If the return volume of one of the injectors is greater than the values above, replace only the faulty injector (see **MR 388, Mechanical, 13B, Diesel injection, Diesel injector: Removal – Refitting**).

Disconnect the 4 transparent pipes and reconnect the injector return circuit.

**Carry out the following test to confirm the repair:**
– With the ignition off, disconnect the low pressure actuator from the pump (brown IMV connector) and connect the test adapter **(test IMV, Mot.** 1711),
– electrically disconnect the 4 injectors,
– switch on the ignition, connect the **diagnostic tool** and re-establish dialogue with the injection system,
– go to the **Main computer statuses and parameters** screen,
– engage the starter for **5 seconds**,
– during the test, read the maximum rail pressure value **(PR038 Rail pressure)** on the diagnostic tool.

**If the rail pressure (PR038 Rail pressure) is less than 1050 bar, run test 6 High pressure system check.**

– Switch off the ignition, and reconnect the four injectors electrically,
– disconnect the test filling actuator (test IMV) and reconnect the low-pressure actuator (IMV) connector to the pump,
– switch on the ignition again, and clear the injection faults using the **diagnostic tool**.

**If the rail pressure (PR038) is greater than 1050 bar, the repair is correct.**
End of **TEST 8**.

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| TEST 8<br>CONTINUED 3 | |
|---|---|

A

If the engine does not start, only the static leakage can be measured, i.e. the leakage with the injector closed, not actuated and under high pressure.

Make sure that the ignition circuit is working correctly (minimum engine speed **200 rpm**).

**Tooling required**
– **Mot. 1711 Injector flow measuring kit.**
Or: Use four tubes with internal diameter **4 mm** and approximately **50 cm long and a test adapter (TEST IMV)**.

**Procedure**
– **Switch off the ignition**,
– disconnect the return pipes from the four injectors,
– cap the pump venturi tube to prevent the low pressure circuit from depriming,
– connect the four transparent pipes in place of the return pipes **(Mot. 1711)**,
– disconnect the low pressure actuator from the pump (**brown IMV connector**) and connect a **test IMV** or the **Mot. 1711** adapter,
– **disconnect the four injectors electrically**,
– switch on the ignition and engage **the starter for 5 seconds**,
– measure the amount of diesel fuel in each pipe.

**If the leakage return is greater than 10 cm, replace the injector(s)** (see **MR 388, Mechanical, 13B, Diesel injection, Diesel injector: Removal - Refitting**).

**Switch off the ignition, and reconnect the four injectors electrically.**
Disconnect the test low pressure actuator and reconnect the low pressure actuator connector to the pump. Disconnect the four transparent tubes and reconnect the injectors return circuit. Switch on the ignition again, and clear the injection faults using the diagnostic tool.

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| TEST 8<br>CONTINUED 4 | |
|---|---|

**Carry out the following test to confirm the repair:**
– **With the ignition off, disconnect the** low pressure actuator from the pump **(brown IMV connector)** and connect the test adapter **(test IMV, Mot. 1711)**,
– disconnect the four injectors electrically,
– switch on the ignition, connect the **diagnostic tool** and re-establish dialogue with the injection system,
– go to the **Main computer statuses and parameters screen**,
– run **the starter for 5 seconds**,
– read the maximum rail pressure value **PR038 Rail pressure** during the test on the **diagnostic tool**.

**If the rail pressure (PR038 Rail pressure) is less than 1050 bar, run TEST 6 High pressure system check.**
**– Switch off the ignition, and reconnect the four injectors electrically**,
– disconnect the test IMV and reconnect the low pressure actuator connector to the pump,
– switch on the ignition again, and clear the injection faults using the **diagnostic tool**.

End of **TEST 8**.

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| TEST 9 | Diesel filter check |
|---|---|

**Check the conformity of the diesel filter.**

**Is the diesel filter in order?**

NO → **Replace the filter with an original part** (see **MR 388, Mechanical, 13A, Fuel supply, Fuel filter: Removal - Refitting**).

YES ↓

Switch off the ignition and analyse the diesel fuel in the diesel filter.
- Disconnect the diesel supply and return hoses from the filter.
- Block the filter inlets and outlets straight away with appropriate plugs.
- Remove the filter from its holder and **shake it well**, keeping the plugs in place and empty the contents of the filter into a glass container by lifting up a protective cap and undoing the bleed screw.

**Check to see if there is a deposit of black particles at the bottom of the container.**

NO ↓

Diesel filter in order.

YES ↓

Pass a magnet beneath the container to collect all the metal particles.
Take the magnet away from the container.

Do the particles gathered using the magnet cover a surface area greater than 1 $cm^2$?

NO ↓

Diesel filter in order.

YES ↓

**Replace the entire injection system.**

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| TEST 10 | Turbocharger solenoid valve check |
|---|---|

**Check the vacuum at the pressure regulator inlet**
Run the engine at idle speed.

Check the engine temperature using the CLIP parameter **PR064 Coolant temperature**.
Let the engine warm up until the temperature reaches **80˚C**.

Disconnect the vacuum pipe of the end piece of the pressure regulator.
Connect a vacuum pressure gauge **to the end of the disconnected pipe** and put it in the **vacuum measurement** position.

Perform a quick acceleration by depressing the accelerator pedal completely and then releasing it immediately.
The total duration of pressing and holding in the full load position must not exceed **1 s**.
During this acceleration, the engine speed must reach a value between **3000 and 4000 rpm**.

Repeat the operation 3 times.

Read the maximum vacuum posted by the pressure gauge during the increase and decrease in the speed and after the return to idle speed.

Tolerance intervals for the vacuum are:
**-1 bar** < CORRECT vacuum value < - **0.6 bar**
**-0.6 bar** < INCORRECT vacuum value < **0 bar**

**Is the vacuum at the turbocharging pressure regulator inlet, posted by the pressure gauge within the tolerance interval?**

NO → A

YES → The solenoid valve is in order.

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| TEST 10 CONTINUED 1 | |
|---|---|

A

Reconnect the vacuum pipe on the turbocharging pressure regulator

**Checking the vacuum at the solenoid valve outlet**
Leave the engine running at idle speed.

Disconnect the vacuum pipe from the end piece of the solenoid valve outlet.
This pipe connects the solenoid valve to the turbocharging pressure regulator.

Connect a vacuum pressure gauge **to the solenoid valve outlet** and put it in the **vacuum measurement** position.

Perform a quick acceleration by depressing the accelerator pedal completely and then releasing it immediately.
The total duration of pressing and holding in the full load position must not exceed **1 s**.
During this acceleration, the engine speed must reach a value between **3000 and 4000 rpm**.

Repeat the operation 3 times.

Read the maximum vacuum posted by the pressure gauge during the increase and decrease in the speed and after the return to idle speed.

Tolerance intervals for the vacuum are:
**-1 bar** < CORRECT vacuum value **< - 0.6 bar**
**-0.6 bar** < INCORRECT vacuum value < **0 bar**

Is the vacuum displayed by the pressure gauge at the solenoid valve outlet within the tolerance interval?

NO

Reconnect the vacuum pipe on the turbocharging pressure regulator.

B

YES

Replace the vacuum pipe between the solenoid valve and the turbocharging pressure regulator (see **MR 388**, **12B Turbocharging**).

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| TEST 10 CONTINUED 2 | |
|---|---|

B

**Visual inspection of the electrical connector of the solenoid valve**
Switch off the engine.
Note:
The requested checks are only visual.

1. Check that the connector is correctly connected and locked.
2. Check the absence of damage to the electric wires where they leave the installation.
3. Disconnect the connector to continue the checks.
4. Check the absence of thermal damage to the unit and mechanical damage to the lock.
5. Check the absence of deformations of the contacts (clips and tabs).
6. Check the sealing of the connector.

**Do the visual inspections show any damage?**

NO → C

YES → Refer to **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**. → A

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| TEST 10 CONTINUED 3 | |
|---|---|

C

**Checking the vacuum at the solenoid valve inlet**
Run the engine at idle speed.

Disconnect the vacuum pipe from the end piece of the solenoid valve inlet.
This pipe connects the vacuum pump to the turbocharger solenoid valve.

Connect a vacuum pressure gauge **to the end of the disconnected pipe** and put it in the **vacuum measurement** position.

Read the vacuum posted by the pressure gauge.

Tolerance intervals for the vacuum are:
**-1 bar** < CORRECT vacuum value < **-0.85 bar**
**-0.85 bar** < INCORRECT vacuum value < **0 bar**

**Is the vacuum displayed by the pressure gauge at the solenoid valve inlet within the tolerance interval?**

NO

Carry out the following operations.
– Reconnect the vacuum pipe to the turbocharger solenoid valve.
– Check the conformity of the vacuum pipe connections.
– Visually check the condition of the vacuum pipes leaving the vacuum pump to the different supplied components.
Refer to the repair manual (see **MR 388, 12B Turbocharging**).

YES

Replace the solenoid valve (see **MR 388, 12B turbocharging**).

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| TEST 11 | Air line at the turbocharger |
|---|---|

Check that the air filter is present.
Check the replacement interval of the air filter on the maintenance booklet.
Compare the part nos. of the fitted air filter on the vehicle and of the air filter recommended by the manufacturer.
Check the direction of fitting of the air filter.

**Is the air filter correctly fitted on the vehicle?**

NO → Replace the air filter (see **MR 388, Mechanical, 12A, Fuel mixture**, **Air filter, Removal - Refitting**).

YES ↓

**Check the condition of the air filter**
Visually inspect the condition of the filtering section of the air filter.
**Is the air filter or its seal damaged?**
**Is the air filter fouled (does it contain a lot of impurities)?**

YES → Replace the air filter (see **MR 388, Mechanical, 12A, Fuel mixture**, **Air filter, Removal - Refitting**).

NO ↓

**Low pressure circuit check**
Note:
Depending on the vehicle type, the best visual access will be either from above or from below.

Visually inspect the condition of the following components:
– fresh air inlet scoop on the front panel of the vehicle,
– air inlet pipe to the air filter,
– air pipe of the filter until the compressor inlet,
– mountings of the air flowmeter.

**Is one of these components incorrect (pipes dislodged, torn, bent, pierced or kinked)?**

YES → Replace the defective parts (see **MR 388, Mechanical, 12B, Turbocharging)**.

NO ↓

A

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| TEST 11 CONTINUED | |
|---|---|

A

**High pressure circuit check**
Note:
Depending on the vehicle type, the best visual access will be either from above or from below.
Visually inspect the condition of the following components:
– compressor outlet pipe to the turbocharging air cooler (on some engines, there is no turbocharging air cooler),
– outlet pipe of the turbocharging air cooler to the inlet manifold,
– inlet manifold,
– pressure and temperature sensors.
**Is one of these components incorrect (pipes dislodged, torn, bent, pierced or kinked)?**

YES → Replace the defective parts (see **MR 388, Mechanical, 12B, Turbocharging**).

NO

**Exhaust circuit check**
– Visually inspect the condition of the following engine sections:
– from the exhaust manifold circuit to the turbocharger turbine,
– from the turbine outlet pipe to the end of the exhaust pipe,
– from the inlet manifold to the EGR valve,
– pressure and temperature sensors connected.
**Do certain of these components have blackish or whitish traces?**

YES →

NO

Run **TEST 10: Turbocharger solenoid valve check**.

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| TEST 12 | Turbocharger |
|---|---|

**IMPORTANT**
Perform these checks without removing the turbocharger and with the vehicle ignition switched off.

**Checking the turbocharger shaft**

**IMPORTANT**
Observe the following safety precautions:
– wear high temperature protective gloves when the engine is hot,
– do not wear oversize or baggy clothing or hanging jewellery,
– watch for possible triggering of the motor-driven cooling fan unit and the operation of the accessories belt or belts.

Note:
The turbocharger shaft is the shaft that connects the compressor wheel and the turbine wheel.
Depending on the vehicle type, the best visual access will be either from above or from below.

Disconnect the air pipe located between the turbocharger and the air filter.

Wearing gloves, check the operation of the turbocharger shaft by turning the vanes manually without forcing.

**Does the shaft have a kickdown point in rotation?**

**Does the compressor wheel touch the casing of the turbocharger?**

If for these 2 **questions** the response is **NO**

If **YES** for **one of these 2 questions**

Replace the turbocharger (see **MR 388, Mechanical, 12B, Turbocharging, Turbocharger: Removal - Refitting** and **Technical Note 3938A, Broken turbocharger: replacement instructions**).

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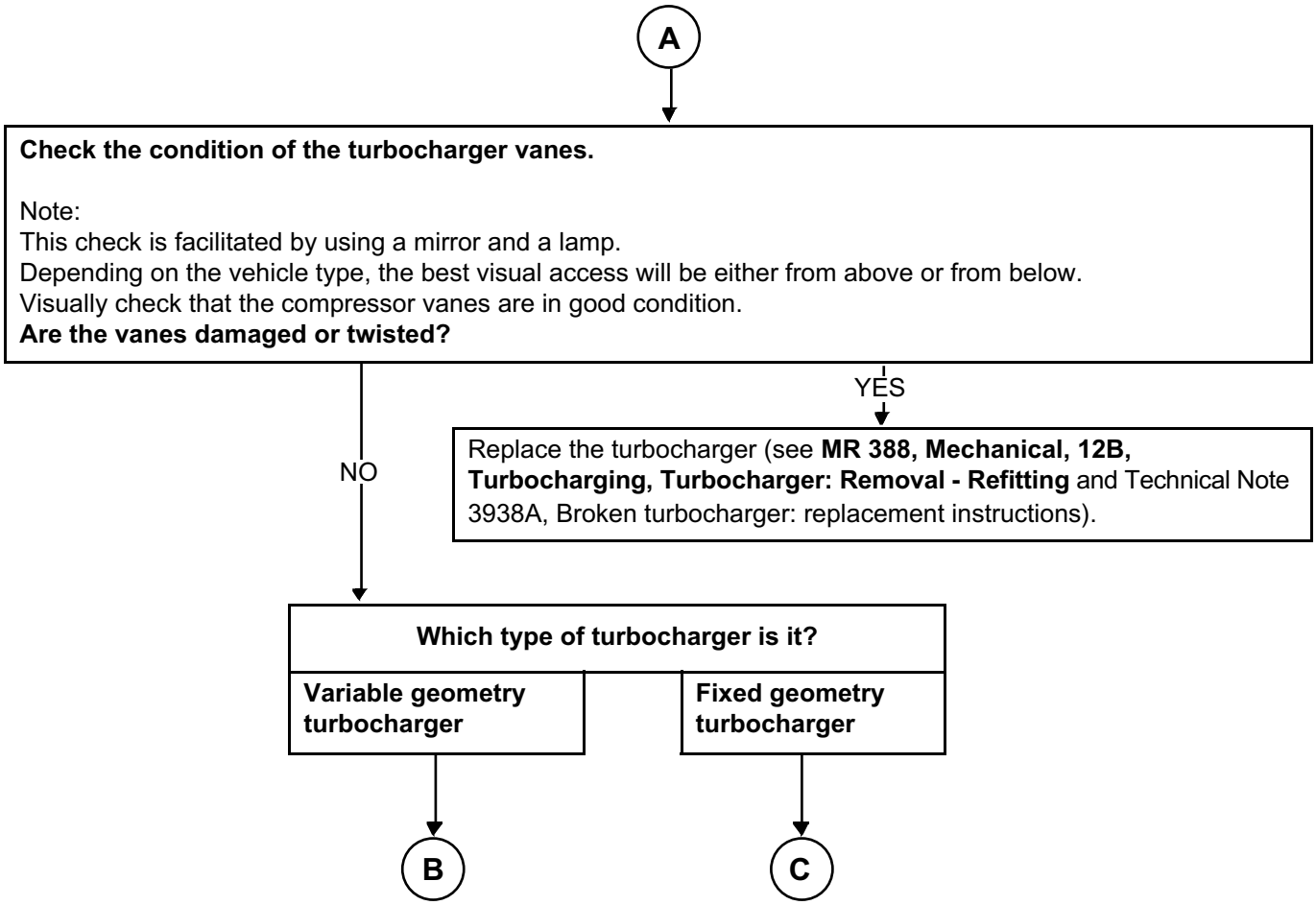
| TEST 12 CONTINUED 1 | |
|---|---|



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| TEST 12 CONTINUED 2 | |
|---|---|

B

**Checking the turbocharging pressure regulator to determine if it is a variable geometry turbocharger**

Note:
The pressure regulator rod of a variable geometry turbocharger is orthogonal to the turbocharger shaft.
Variable geometry turbochargers are controlled by a solenoid valve.
Depending on the vehicle type, the best visual access will be either from above or from below.

Note:
If necessary, according to the vehicle type and the accessibility of the pressure regulator, connect the vacuum pump to the end of the pressure regulator pipe at the solenoid valve outlet.

Using a **manual vacuum pump**, apply a vacuum on the turbocharging pressure regulator of approximately **650 mbar**.

1. Check that the fitting is completely leaktight.
2. Check that the control rod **is resting against its stop**.
3. Lock the **vacuum device** and check that the pressure variation is not greater than **100 mbar in 10 s**.
4. Release the pressure and check that the control rod comes back to its initial position without jerking.

Repeat the complete sequence 3 times.

**Is the pressure regulator leaktight and is the rod movement correct?**

YES

The turbocharger is correct.
**End of procedure.**

NO

Replace the turbocharger (see **MR 388, Mechanical, 12B, Turbocharging, Turbocharger: Removal - Refitting** and Technical Note 3938A, Broken turbocharger: replacement instructions).

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| TEST 12 CONTINUED 3 | |
|---|---|

C

**Checking the turbocharging pressure regulator to determine if it is a fixed geometry turbocharger**

Note:
The pressure regulator rod of a fixed geometry turbocharger is aligned with the turbocharger shaft.
Fixed geometry turbochargers are controlled by a solenoid valve.
Depending on the vehicle type, the best visual access will be either from above or from below.

Note:
If necessary, according to the vehicle type and the accessibility of the pressure regulator, connect the vacuum pump to the end of the pressure regulator pipe at the solenoid valve outlet.

Using a **manual vacuum pump**, apply a vacuum on the turbocharging pressure regulator of approximately **650 mbar**.

1. Check that the fitting is completely leaktight.
2. Check that the control rod **moved several millimetres**.
3. Lock the **vacuum device** and check that the pressure variation is not greater than **100 mbar in 10 s**.
4. Release the pressure and check that the control rod comes back to its initial position without jerking.

Repeat the complete sequence 3 times.

**Is the pressure regulator leaktight and is the rod movement correct?**

YES

The turbocharger is correct.
End of procedure.

NO

Replace the turbocharger (see **MR 388, Mechanical, 12B, Turbocharging, Turbocharger: Removal - Refitting** and Technical Note 3938A, Broken turbocharger: replacement instructions).

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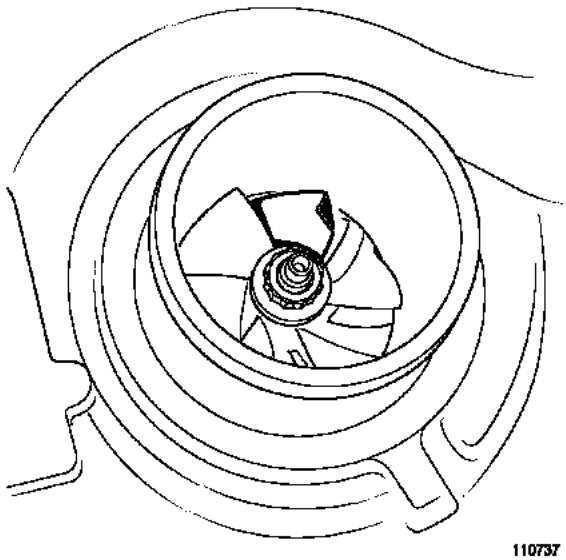
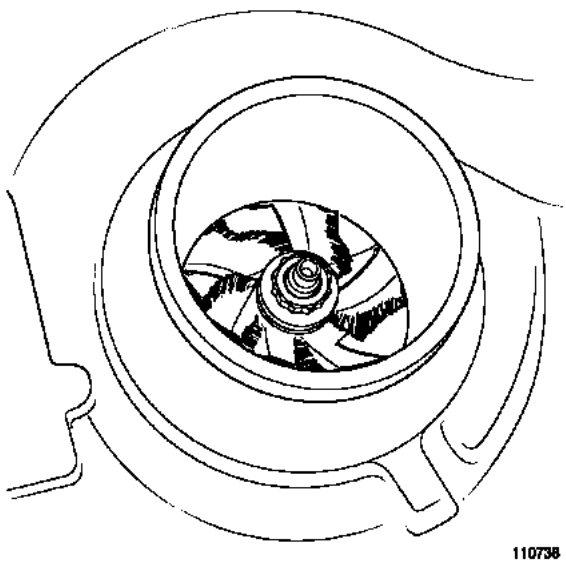
| TEST 12 CONTINUED 4 | |
|---|---|

**Deformed, twisted blade ("soft" foreign body)**




**Broken blades ("hard" foreign body)**




**End of TEST 12**

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| TEST 13 | Check the conformity of the diesel fuel |
|---|---|

**IMPORTANT**
**During this operation, it is essential to:**
**– refrain from smoking or bringing incandescent objects close to the work area,**
**– protect yourself against fuel splashes due to residual pressure in the pipes,**
**– wear glasses with side covers,**
**– wear waterproof gloves (Nitrile type).**

**IMPORTANT**
**– To prevent corrosion and damage, protect any sensitive areas from fuel spills.**
**– To prevent pollution from entering the circuit, place protective plugs on all fuel circuit components that are in contact with the open air.**

**Preparations:**
Weigh a **1300 ml empty plastic pot (part number 77 11 171 413)** with its cover **(part number 77 11 171 416)** using an electronic scale similar to those used in body paint workshops (for example: **PANDA part no. 77 11 224 995**). Make a note of the weight of the empty plastic pot.
The plastic pot is in material used for paintwork preparation.

Take a **1 l** fuel sample from the **diesel fuel filter outlet** (see **MR 388, Mechanical, 19C, Tank, Draining the fuel tank**), using a pneumatic transfer pump (**part no. 634-200**) and place it in the **1300 ml** plastic pot.
Close the plastic pot with its cover and leave the fuel to rest for approx. **2 min**.

**Is the fuel cloudy or does it separate into 2 parts?**

YES → Presence of water in the diesel fuel, the fuel is not in conformity. Drain the fuel circuit, including the tank (see **MR 388, Mechanical, 19C, Tank, Draining the fuel tank**).

NO → A

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| TEST 13 CONTINUED 1 | |
|---|---|

A

Weigh the diesel fuel and note the value while subtracting the empty weight of the plastic pot with its cover.
Is the fuel weight within the min. and max. value of the table below?

| Calculated weight (g.) | | Fuel temperature (˚C) |
|---|---|---|
| Min. weight: | Max. weight: | |
| 821 | 846 | 13 |
| 821 | 846 | 14 |
| 820 | 845 | 15 |
| 819 | 844 | 16 |
| 819 | 844 | 17 |
| 818 | 843 | 18 |
| 817 | 842 | 19 |
| 816 | 841 | 20 |
| 816 | 841 | 21 |
| 815 | 840 | 22 |
| 814 | 839 | 23 |
| 814 | 839 | 24 |
| 813 | 838 | 25 |

Check the fuel temperature by plunging a thermometer in the plastic pot.

YES → B

NO → C

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| TEST 13 CONTINUED 2 | |
|---|---|

B
YES

End of **TEST 13**

C
NO

The fuel is not compliant.
If the fuel weight is less than the min. terminals, it means there is petrol in the diesel fuel.
If the fuel weight is greater than the max terminals, it means there is oil in the diesel fuel.
Drain the fuel circuit, including the tank (see **MR 388, Mechanical, 19C, Tank, Draining the fuel tank**).

Note:
If the measured weight reaches limit values, the measurement may be carried out with a **2230 ml plastic pot (part no. 77 11 171 414)** and its cover **(part no. 77 11 171 417):**
– Carry out a fast driving test so as to mix the fuel and then take a **2l** fuel sample.
– Redo the operations and check the result by multiplying the threshold values by 2.

**If the customer has any doubts or there is any dispute, contact the Techline.**

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# DUSTER

# 1 Engine and peripherals

## 17B PETROL INJECTION

**EMS 3130 injection**
**Program No.: EB**
**Vdiag No.: 04**


| | |
|---|---|
| Fault finding – Introduction | 17B - 2 |
| Fault finding – System operation | 17B - 8 |
| Fault finding – Replacement of components | 17B - 24 |
| Fault finding – Configurations and programming | 17B - 25 |
| Fault finding – Fault summary table | 17B - 29 |
| Fault finding – Interpretation of faults | 17B - 31 |
| Fault finding – Conformity check | 17B - 116 |
| Fault finding – Status summary table | 17B - 117 |
| Fault finding – Interpretation of statuses | 17B - 120 |
| Fault finding – Parameter summary table | 17B - 152 |
| Fault finding – Interpretation of parameters | 17B - 154 |
| Fault finding – Command summary table | 17B - 186 |
| Fault finding – Interpretation of commands | 17B - 188 |
| Fault finding – Customer complaints | 17B - 190 |
| Fault finding – Fault Finding Chart | 17B - 191 |
| Fault finding – Tests | 17B - 200 |
| Fault finding – Help | 17B - 203 |


**V1** **Edition Anglaise**

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

*Vehicle:* **H79**

*Function concerned:* **Petrol injection**

*Engine:* **K4M 690**

*Computer name:* **EMS 3130**

*Program No.:* **EB**

*Vdiag No.:* **04**

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type**

**Fault finding procedures** (this document and the Technical Notes on injection installed in the vehicle):

– Assisted fault finding (integrated into the diagnostic tool), Dialogys.

**Wiring Diagrams:**

– Visu-Schéma (CD-ROM).

**Type of diagnostic tools**

**– CLIP + multiplex line sensor**

**Special tooling required**

| Special tooling required | |
|---|---|
| | Multimeter |
| **Elé. 1497** | Bornier |
| **Elé. 1681** | Universal bornier |

**If the information obtained by the fault-finding tool requires checking electrical continuity, connect bornier Elé. 1497 or universal bornier Elé. 1681.**

**WARNING**
- All tests with bornier **Elé. 1497** or **Elé. 1681** must be conducted with the battery disconnected.
- The bornier is only designed to be used with a multimeter. Never power the test points with **12 V**.

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## 3. REMINDERS

**Procedure**
To run fault finding on the vehicle computers, switch on the ignition. Connect the diagnostic tool and perform the required operations.

**Faults**

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).

The **present** or **stored** status of faults must be considered when the diagnostic tool is used after the + after ignition feed is switched on (without operating the system components).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the **Notes** section.

If the fault is **confirmed** when the instructions in the Notes section are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:

- the electrical lines which correspond to the fault,
- the connectors for these lines (for oxidation, bent pins, etc.),
- the resistance of the faulty component,
- the condition of the wires (melted or split insulation, wear).

**Conformity check**

The aim of the conformity check is to check data that does not produce a fault on the diagnostic tool when the data is inconsistent.

Therefore, this stage is used to:

- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint,
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

**Customer complaints - Fault finding chart**

If the test with the diagnostic tool is OK but the customer complaint is still present, the fault should be processed by **Customer complaints**.

**A synopsis of the general procedure to follow is provided on the following page in the form of a flow chart.**

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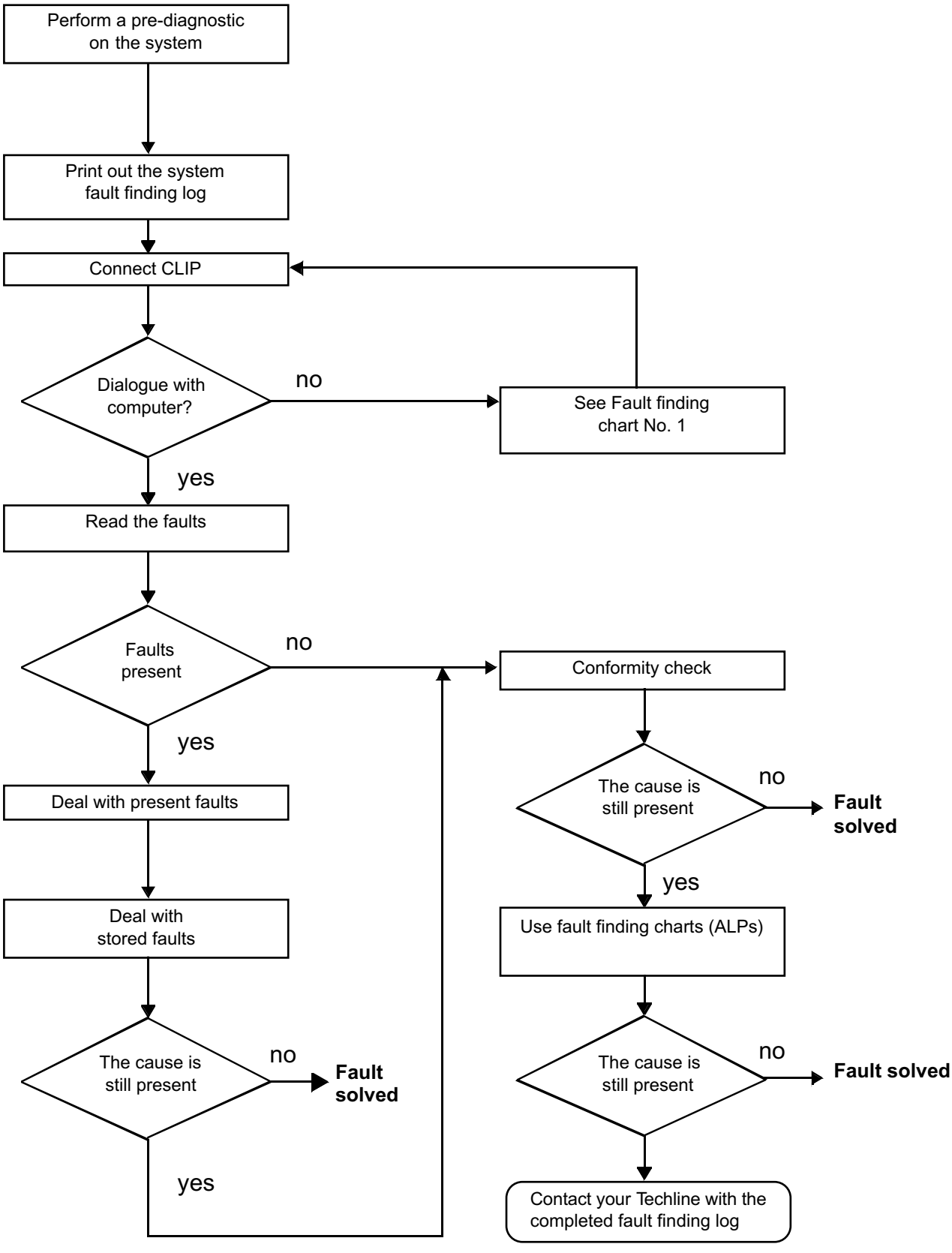
## 4. FAULT FINDING PROCEDURE



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**4. FAULT FINDING PROCEDURE (continued)**

**Wiring check**

**Fault finding problems**
Disconnecting the connectors and/or manipulating the wiring may temporarily remove the cause of a fault.
Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

**Visual inspection**
Look for damage under the bonnet and in the passenger compartment.
Carefully check the fuses, insulators and wiring harness routing.
Look for signs of oxidation.

**Physical inspection**
While manipulating the wiring, use the diagnostic tool to note any change in fault status from stored to present.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Twist the wiring harness.
If there is a change in status, try to locate the source of the fault.

**Inspection of each component**
Disconnect the connectors and check the appearance of the clips and tabs, as well as the crimping (no crimping on the insulating section).
Make sure that the clips and tabs are properly locked in the sockets.
Check that no clips or tabs have been dislodged during connection.
Check the clip contact pressure using an appropriate model of tab.

**Resistance check**
Check the continuity of entire lines, then section by section.
Look for a short circuit to earth, to **+ 12 V** or with another wire.

If a fault is detected, repair or replace the wiring harness.

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## 5. FAULT FINDING LOG

**IMPORTANT!**

**IMPORTANT**
Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG WHENEVER THE TECHLINE OR THE WARRANTY RETURNS DEPARTMENT REQUESTS IT.**

You will always be asked for this log:

- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

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## 6. INSTRUCTIONS TO BE FOLLOWED FOR ANY WORK CARRIED OUT ON THE INJECTION SYSTEM

### Instructions to be followed before opening of the fuel circuit

Use fresh cleaning agent for each operation (used cleaning agent is contaminated). Pour it into an uncontaminated container.
For each operation, use a clean brush in good condition (the brush must not shed its bristles).
Use a brush and cleaning agent to clean the unions to be opened.
Blast compressed air over the cleaned parts (tools, workbench, and the parts, unions and injection system area).
Check that no bristles remain.
Wash your hands before and during the operation if necessary.
When wearing leather protective gloves cover them with latex gloves to prevent contamination.

### Instructions to be followed during the operation

As soon as the circuit is open, all openings must be plugged to prevent impurities from entering the system. The plugs to be used are available from the Parts Department. The plugs must not be reused under any circumstances.
Seal the pouch shut, even if it has to be opened shortly afterwards. Ambient air carries impurities.
All components removed from the injection system must be stored in a hermetically sealed plastic bag once they have been plugged.
The use of a brush, cleaning agent, bellows, sponge or normal cloth is strictly forbidden once the circuit has been opened. These items could allow contamination to enter the system.
A new component replacing an old one must not be removed from its packaging until it is to be fitted to the vehicle.

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**Special notes for multipoint injection**

- **"ESM3130" 96-track** computer controlling the injection and the ignition.
- Multipoint injection operating in sequential mode without a cylinder marking sensor or camshaft position sensor. This means that phasing is carried out by software using the TDC sensor.
- Idling speed corrected according to:
  - air conditioning,
  - electrical consumers in operation.
- Fuel vapour absorber bleed solenoid valve controlled by the **opening cycle ratio** (**OCR**) according to the engine speed and operating conditions.
- Use of two oxygen sensors located upstream and downstream of the catalytic converter.
- Automatic configuration for the operation of the **air conditioning** by exchanging signals between the computers. It is not possible to deconfigure it (even using the diagnostic tool).

**Immobiliser function**

The vehicle is fitted with a **type 2** engine immobiliser system. The injection computer **MUST** have been programmed with the immobiliser code to operate.

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## REPLACING THE INJECTION COMPUTER

The computer is supplied uncoded. When a computer is replaced it must be programmed with the vehicle code, then checked to ensure that the immobiliser function is working properly.

To do this, switch on the ignition for a few seconds and then switch it off.

**IMPORTANT**
– The injection computer retains the immobiliser code for life.
– The system has no security code.
– It is forbidden to perform tests with computers borrowed from the Parts Department or from another vehicle which must then be returned. These computers are hard-coded.

## CHECKING THE STATUS OF THE COMPUTER (code programmed or code not programmed)

Check the injection computer status using the diagnostic tool:

- switch on the ignition,
- Connect the diagnostic tool to the diagnostic socket,
- Select and confirm the vehicle model,
- Select and confirm the Petrol Injection option,
- select and confirm Status.

– if status **ET341: Immobiliser code programmed** is **NO**, the injection computer is not programmed with the code,
– if status **ET003: Immobiliser** is **ACTIVE**, starting will be impossible.

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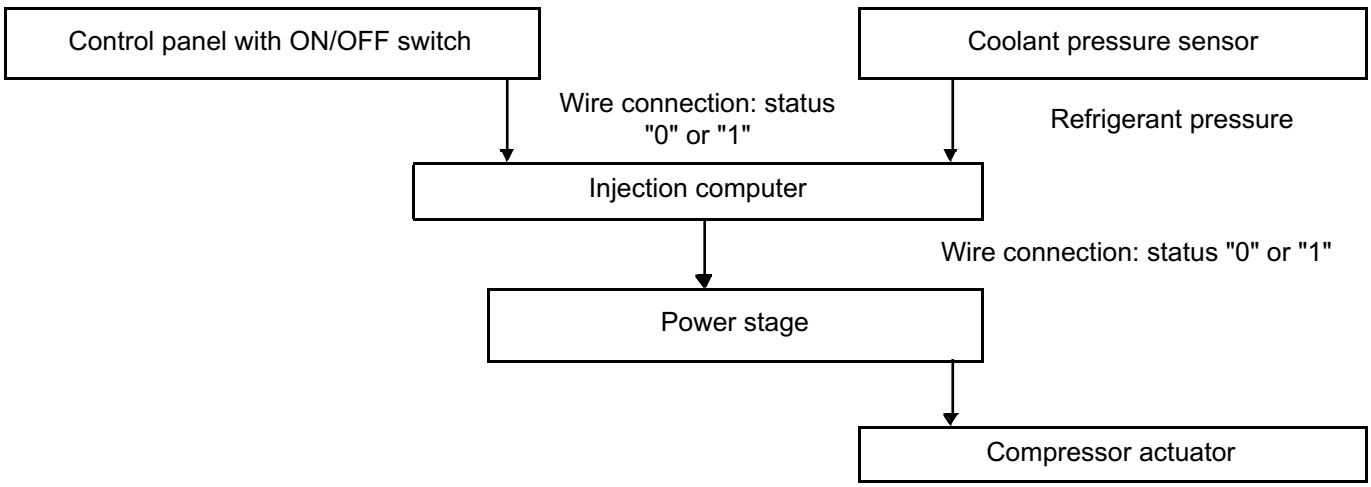
**Cold loop air conditioning management**

The manual air conditioning is a cold loop that consists of the following components:
– a control panel,
– an injection computer,
– a compressor.

It operates unregulated, that is, the amount of cold air is constant as soon as the compressor begins operating.

The operating principle is as follows:
– Pressing the **AC** button on the control panel in the passenger compartment produces a status of "**0**" (equivalent to "OFF" or "stop") (cold air request deactivated) or "**1**" (equivalent to "ON" or "operating") (cold air request activated).
– This status is transmitted by wire connection to the injection computer, which will authorise or not authorise the request for cold air.
– The injection computer activates its authorisation programs:
  – Engine speed: if it is too low, the computer does not authorise the compressor to start.
  – Engine load: if it is too high (such as sudden acceleration, driving up a very steep slope, or heavily loaded vehicle), the computer does not authorise the compressor to start.
  – Refrigerant pressure in the compressor: if there is already refrigerant pressure in the compressor, the computer goes into inhibition safety mode and does not authorise the compressor to start.
– If the injection computer authorises the compressor to start, it transmits a status "**1**" to the power stage that will supply the compressor actuator.



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**Idle speed correction**

**POWER ASSISTED STEERING PRESSURE SWITCH / INJECTION COMPUTER LINK**
(If the vehicle is equipped with power-assisted steering)

The injection computer receives a signal from the power steering pressure switch (which can be displayed on the diagnostic tool). This depends on the pressure in the hydraulic circuit and on the fluidity of the power steering fluid. The higher the pressure, the more energy is absorbed by the power steering pump.

The idling speed can be about **100 rpm** faster on some versions.

**ELECTRICAL CORRECTION ACCORDING TO BATTERY VOLTAGE AND ELECTRIC POWER BALANCE**

The aim of this correction is to compensate for the drop in voltage due to operation of an electrical consumer when the battery charge is low. To achieve this, the idle speed is increased, which increases the speed of rotation of the alternator, and this increases the battery voltage.

The lower the voltage, the more significant the correction. The engine speed correction is variable. It begins when the voltage drops below **12.8 V**. The correction may increase the nominal engine idling speed by a maximum of **150 rpm**.

**Adaptive idle speed correction**

**PRINCIPLE**

Under normal warm engine operating conditions, the value of the idling **Opening Cycle Ratio** signal varies between a high value and a low value, so that the nominal idle speed can be obtained.

Following variations in the operation of the vehicle (running in, engine clogging, etc.), the idling **Opening Cycle Ratio** may be close to the highest or lowest value.

The adaptive correction to the idling **Opening Cycle Ratio** can compensate for slow variations in the engine's air requirement so that the **Opening Cycle Ratio** returns to an average nominal value.

This correction only takes effect if the coolant temperature is greater than **80˚C, 20 seconds** after the engine is started and if the nominal idle speed regulation phase is active.

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## VALUES OF THE IDLING OPENING CYCLIC RATIO AND ITS ADAPTIVE CORRECTION

| Parameter | K4M engine |
|---|---|
| PR145: Engine speed | 752 rpm |
| PR432: Idling OCR signal | 8% < X < 20% |
| PR140: Idling richness adaptive | 64 < X < 192 |

Every time the engine is switched off the computer resets the stepper motor to its lower limit. This resetting function lasts for **8 seconds**.

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**INTERPRETATION OF THESE PARAMETERS**

If there is an excess of air (air intake or throttle stop incorrectly adjusted, etc.), the engine idling speed increases and the value of the idling **Opening Cycle Ratio** signal decreases in order to return to nominal idle speed; the adaptive adjustment value of the idling **Opening Cycle Ratio** decreases in order to reset the idle speed regulation.

In the case of insufficient air (clogging, etc.), the process is inverted, the idling **Opening Cycle Ratio** increases and the adaptive correction likewise increases, to realign the idle speed operation to an average nominal value.

**WARNING**
After the computer memory has been cleared, the engine must be started and then switched off to allow the stepper motor to be readjusted. Start the engine again and leave it running at idle speed until it reaches nominal idle speed, so that the adaptive correction can reset.

**Richness regulation**

**K4M690** engines operating with the **EMS 3130** computer are equipped with two oxygen sensors - an upstream sensor and a downstream sensor.

**SENSOR HEATING**

The sensor heating system is controlled by the computer:
- when the engine is started for the upstream sensor,
- after the engine has been running for a certain length of time, mapped according to the top dead centre and the coolant temperature in the absence of no load conditions for the downstream sensor.

The oxygen sensors are heated constantly until the engine is switched off.

**UPSTREAM SENSOR VOLTAGE**

The reading on the diagnostic tool: parameter **PR098 Upstream oxygen sensor voltage** indicates the computer reading of the voltage across the terminals of the oxygen sensor upstream of the catalytic converter. It is expressed in millivolts.
When the injection system is operating in a closed loop, the voltage should vary quickly between two values:
- **-30 mV < X < 70 mV** for a lean mixture,
- **770 mV < X < 910 mV** for a rich mixture.

The smaller the gap between the upper and lower values, the poorer the signal from the sensor (the gap is usually at least **500 mV**).

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**DOWNSTREAM SENSOR VOLTAGE**

The reading on the diagnostic tool: parameter **PR099 Downstream oxygen sensor voltage** indicates the computer reading of the voltage across the terminals of the oxygen sensor downstream of the catalytic converter.
It is expressed in millivolts.

The function of this sensor is to locate faults on the catalytic converter and to perform a second more precise check on the richness (slow regulation loop). This function only starts operating after the engine has been running at normal operating temperature for a while and is not operating at idle speed.

When the engine is operating in a closed loop and at stabilised speed, the voltage should vary within the range **500 mV < X < 700 mV**.

When the engine is decelerating, the voltage should be less than **200 mV**.

Do not use the voltage reading on the diagnostic tool when the engine is idling.

**MIXTURE CORRECTION**

The value displayed on the diagnostic tool for parameter **PR438: Richness correction** represents the average value of richness corrections made by the computer according to the richness of the burnt mixture as detected by the oxygen sensor upstream of the catalytic converter (the oxygen sensor analyses the oxygen content of the exhaust gases).

The correction value has a nominal value of **128** and limits of **0** and **255**:
- value less than **128**: request for leaner mixture,
- value greater than **128**: request for richer mixture.

**ENTRY INTO RICHNESS REGULATION MODE**

The richness regulation mode begins following a starting delay if the coolant temperature is greater than **22˚C** and following a delay of **28 seconds** after the engine was started.

If richness regulation has not started, the reading value is **128**.

**Unlooping phase**

When richness regulation is on, the operating phases during which the computer ignores the voltage signal from the sensor are:
- at full load: variable and greater than **128**,
- during sharp acceleration: variable and greater than **128**,
- when decelerating with no-load signal (injection cut off): **128**,
- in the event of an oxygen sensor fault: **128**.

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**DEFECT MODE WHEN THE OXYGEN SENSOR IS FAULTY**

If the voltage sent by the oxygen sensor is incorrect (varying very slightly or not at all) during richness regulation, the computer will only enter defect mode (value = **128**) if the fault has been detected for **10 seconds**. Only in that case will the fault be memorised.

If an oxygen sensor fault is present and recognised and if the fault has already been stored, the system enters open loop mode directly. In this case, parameter **PR438 Richness correction value** takes the value **128**.

**Adaptive richness adjustment**

**PRINCIPLE**

In the loop mode (see **Richness regulation**), richness regulation corrects the injection timing to give fuel metering which is as close as possible to richness **1**. The correction value is close to **128**, with limits of **0** and **255**.

Variations can affect the components of the injection system, and cause the correction to reset to **0** or **255**, to obtain richness **1**.

Adaptive correction allows the injection mapping to be adjusted to recentre the richness regulation to **128** and to ensure a constant authority of correction to make the mixture richer or leaner.

Adaptive correction of richness regulation can be broken down into two parts:
- adaptive correction preponderant on average and heavy engine loads, **operation richness adaptive,**
- adaptive correction preponderant on idle speed and low engine loads, **idle speed richness adaptive**.

Adaptive corrections take **128** as the average value after initialisation (erasing the memory) and have the following threshold values:

| Parameter | K4M engine |
|---|---|
| **PR139: Operating richness adaptive** | **64 < X < 192** |
| **PR140: Idling richness adaptive** | **64 < X < 192** |

Adaptive correction only takes place when the engine is warm in closed loop mode and in a given manifold pressure range.

The engine must have operated in loop mode and in a given manifold pressure range.

The engine must have operated in the loop mode over several pressure ranges for adaptive correction to begin to change to compensate for the variations in engine operating richness.
A specific road test must therefore be carried out after the computer has been reinitialised (adaptives return to **128**).

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**ROAD TEST**

Conditions:
- engine warm (coolant temperature **> 80˚C**),
- do not exceed an engine speed of **4000 rpm**.

For this test, start from a fairly low engine speed, in 3rd or 4th gear and accelerate gradually **to stabilise the desired pressure for 10 seconds in each range** (see table below).

Pressure zones which must be passed through during the test.
Using the diagnostic tool, read the values of parameter PR421 Manifold pressure.

| Range no. 1 (mbar) | Range no. 2 (mbar) | Range no. 3 (mbar) | Range no. 4 (mbar) | Range no. 5 (mbar) |
|---|---|---|---|---|
| 258 - - - - - - - - - 410 | - - - - - - - - - 528 | - - - - - - - - - 646 | - - - - - - - - - 764 | - - - - - - - - 873 |
| Average 334 | Average 469 | Average 587 | Average 705 | Average 818 |

Following this test the adjustments will be operational.
The idle speed richness adaptive varies more noticeably on the idle speed and low loads, and the operating richness adaptive on the average and high loads, but both across all the manifold pressure ranges.
The test should be carried out during normal, smooth and varied driving over **3 to 6 miles** (**5 to 10 kilometres**).

After the test, read the operation adaptive values. Initially **128**, they may have changed. If not, repeat the test ensuring that the test conditions are observed.

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**Special features of the OBD system**

This vehicle is fitted with an OBD (On-Board Diagnostic) fault finding system characterised by a warning light on the instrument panel (OBD warning light) which illuminates when a fault causing excessive pollution is detected.
This warning light indicates to the driver that the vehicle must be repaired.

The fault finding strategies dealt with by the On Board Diagnostic system are:

- electrical fault finding,
- misfire fault finding,
- upstream oxygen sensor operational fault finding,
- catalytic converter fault finding.

Electrical fault finding and misfire fault finding are carried out continuously.

Upstream oxygen sensor operational fault finding and catalytic converter fault finding are carried out only once while the vehicle is being driven, provided that the necessary fault finding conditions are met:

– air and water temperature conditions,
– speed condition (range of values),
– engine conditions (manifold pressure, speed, range of values and stability),
– delay since start.

The OBD management program supplements the management of conventional electrical failures. To meet this standard the requirements are:

– the OBD light coming on (or flashing for some faults),
– storing OBD faults.

**CONSEQUENCES FOR FAULT FINDING AND REPAIRS**

Special care is required when working on the car to prevent the OBD warning light from illuminating after the vehicle has been returned to the customer.

Some faults only appear when the car is being driven, when the adaptives are programmed: **it is essential to validate the repair**.

**IMPORTANT**
At the end of each test, do not switch off the ignition before reading the result on the diagnostic tool. Switching off the ignition will lead to the results being misinterpreted.

Note:
All electrical faults which result in exceeding the pollution limit cause the OBD warning light to come on.

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**CONDITIONS FOR THE OBD WARNING LIGHT TO ILLUMINATE**
Under particular driving conditions (for example, in a traffic jam), fault finding cannot be performed on certain functions.

**OBD warning light illuminated:** If the same OBD fault is detected during three consecutive driving periods or there is an electrical fault.

**OBD warning light flashing**: If misfires that could damage the catalytic converter are detected.

**OBD warning light goes out:** If the OBD fault does not reappear during three consecutive driving periods, the warning light goes out (but the fault is still stored in the injection computer).

The fault must not be detected by the computer during 40 consecutive tests for it to be cleared from the computer memory (or the fault may be cleared with the diagnostic tool).

**OBD fault finding conditions**

**DIAGNOSTIC CONDITIONS**
With the ignition switched on and the engine stopped, if the air temperature measured by the temperature sensor is not between **-6ºC < X < 119ºC** or if the coolant temperature measured by the sensor is not between **-6ºC < X < 119ºC** or if the atmospheric pressure is less than **775 mbar** (altitude of approximately **2500 m**), then the OBD fault finding procedures are not authorised until the next time the ignition is switched on.

In order for the OBD system to function correctly, there must be no electrical faults in the injection system, even if the OBD warning light is not illuminated.

Catalytic converter and oxygen sensor fault finding can only be carried out consecutively.

When the catalytic converter or oxygen sensor fault finding procedures are in progress, the fuel vapour absorber bleed is closed and the richness adaptives are locked at their last value.

**TEST PROCEDURE**
- Rectify the electrical faults.
- Erase all faults.
- Carry out all injection programming (if necessary).

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**COMPLETE INITIALISATION OF THE OBD USING COMMAND MODES**

- Clear the stored faults.
- Erase the programming (in the event that work on a component may have altered the programming: idle speed regulation valve, flywheel target or sensor, etc.).

**PROGRAMMING REQUIRED FOR OBD FAULT FINDING**

**Torque - gas programming (Status: ET061 Cylinder 1 recognition = PERFORMED, engine running)**

Carry out this programming by:

- decelerating a first time with injection cut-off in 2nd, 3rd, 4th, or 5th gear between **3500** and **3000 rpm** for at least **2 seconds**,
- decelerating a second time with injection cut-off in 2nd, 3rd, 4th, or 5th gear between **2400** and **2000 rpm** for at least **3 seconds**.

**Richness adjustment programming**

To carry out this programming, drive the vehicle while complying with the requested pressure ranges (see, **Adaptive richness adjustment**).

**Status ET422 Combustion misfire fault finding included, must be YES.**

*Diag: fault finding

**Combustion misfire fault finding**

The diagnostic can detect, for example:

- clogging or flooding of a spark plug,
- clogging of the injectors or an injector flow fault,
- a fault in the supply system (pressure regulator, fuel pump, etc),
- a bad connection in the petrol or injection circuits (coil secondary, etc.).

Fault finding is performed by measuring the instantaneous variations in engine rotation speed. Observation of a drop in torque detects combustion misfires.

This fault finding is performed practically continuously while the car is being driven. If it is not carried out, or if a fault is detected, all other OBD fault finding will be inhibited.

This diagnostic strategy makes it possible to diagnose two types of fault:

- destructive misfires that damage the catalytic converter, and cause the OBD warning light to begin flashing immediately,
- polluting misfires that result in the OBD pollution limit being exceeded, and cause the OBD warning light to illuminate if they are detected during three consecutive journeys.

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**DETECTION CONDITIONS**
Check that programming has been correctly carried out. The conditions prior to switching on the ignition and the current conditions must also be satisfied.

Make sure statuses:
– **ET061 Cylinder 1 recognition is PERFORMED and**
– **ET422 Combustion misfire diag* included, is YES**.

Detection is carried out as soon as the coolant temperature is above **75˚C**, and over three different engine working speeds between **idle speed** and **4500 rpm**.

The test can also be performed by keeping the engine at idle speed **for 11 minutes**.

**IMPORTANT**
**Do not switch off the ignition before the result is read on the diagnostic tool at the end of each test. Switching off the ignition will lead to the results being misinterpreted.**

**If after the test, the diagnostic tool has recorded misfires, see the procedures for dealing with faults DF123 Polluting misfire and DF124 Destructive misfire.**

**CONFIRMATION OF THE REPAIR**
– **ET061 Cylinder 1 recognition** is **PERFORMED**
– **ET422 Combustion misfire diag* included** is **YES**.
– No fault detected and **OBD warning light off**.

*Diag: fault finding

**Catalytic converter fault finding**
The aim of catalytic converter fault finding is to detect a malfunction that causes hydrocarbon pollutant emissions to exceed the OBD limit.
The ability of the catalytic converter to store oxygen indicates its condition. As the catalytic converter ages, its ability to store oxygen reduces along with its ability to treat pollutant gases.

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**CONDITIONS FOR STARTING FAULT FINDING**

Fault finding of the catalytic converter can only take place after the engine has been running for the time detailed in the following table, if all the conditions prior to switching on the ignition are satisfied and maintained:

- no electrical faults,
- cylinder 1 position recognition performed,
- no combustion misfires detected,
- no catalytic converter fault finding performed since the ignition was switched on,
- programming done,
- main loop and double loop active,
- coolant temperature greater than **75ºC**.

| Engine | Speed, mph (kph) | Engine speed (rpm) | Manifold pressure (mbar) | Stabilisation time (s) | Time before enabling (min) |
|---|---|---|---|---|---|
| K4M | 63/130 | 1856/3808 | 400/750 | 11 | 17 |

**FAULT DETECTION**

Fault finding is performed over a stabilised range in **5th gear** at **43 mph** (**70 km/h**). When the conditions for starting fault finding are satisfied, richness excitation peaks are applied, having the effect of sending bursts of oxygen into the catalytic converter. If the catalytic converter is in good condition it absorbs the oxygen and the downstream oxygen sensor value will remain at its average value. If it is worn, it rejects the oxygen and the oxygen sensor will start to vibrate. The voltage of the oxygen sensor fluctuates. If the fault is confirmed three consecutive times, the OBD warning light illuminates.

The test cannot last longer than **52 seconds**.

**IMPORTANT**
**Do not switch off the ignition before the result is read on the diagnostic tool at the end of each test. Switching off the ignition will lead to the results being misinterpreted.**

If after the test, the diagnostic tool recorded an operating fault of the catalytic converter, see the procedure for dealing with fault DF394 Catalytic converter operating fault.

**CONFIRMATION OF THE REPAIR**

- **ET345 Catalytic converter fault finding included** is **ACTIVE**
- **ET349 Catalytic converter fault finding performed** is **YES**
- No catalytic converter operating fault detected.

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**Oxygen sensor fault finding**
The purpose of oxygen sensor fault finding is to detect a fault which causes the hydrocarbon pollutant emissions to exceed the OBD limit. It is performed by measuring and comparing oxygen sensor vibration periods.

There are two types of possible faults on the oxygen sensors:
- mechanical damage to an electrical component (breakage, cut in wire) which leads to an electrical fault,
- chemical damage to the component which causes the response time of the sensor to slow down, thus increasing its switching period.

When the required test conditions are met, the average of the sensor periods read is taken, subtracting the effects of interference, then compared with an average period of the OBD limit.

**TEST CONDITIONS**
Fault finding of the oxygen sensor can only take place after the engine has been running for a while and under specific operating conditions, detailed in the table below, and if all the conditions prior to the ignition being switched on are met and maintained:
- no electrical faults detected,
- programming and cylinder recognition done,
- no oxygen sensor fault finding performed since the ignition was switched on,
- no combustion misfires detected,
- coolant temperature greater than **75ºC**.

| Engine | Speed, mph (kph) | Engine speed (rpm) | Manifold pressure (mbar) | Stabilisation time (s) | Time before enabling (min) |
|---|---|---|---|---|---|
| K4M | 63/130 | 1856/3808 | 380/850 | 8 | 14 |

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**FAULT DETECTION**

Fault finding is performed while the vehicle is being driven in one gear, travelling at a steady speed and for the minimum period of time specified in the following table:

| Engine | Gear | Speed, mph (kph) | Maximum period (s) |
|---|---|---|---|
| K4M | 5 | 70 | 40 |

For this test, the computer inhibits fuel vapour absorber bleeding. The computer displays sensor fault finding included.

**IMPORTANT**
**Do not switch off the ignition before the result is read on the diagnostic tool at the end of each test. Switching off the ignition will lead to the results being misinterpreted.**

**If, after the test, the diagnostic tool has found an oxygen sensor fault, see the procedure for dealing with fault DF390 Oxygen sensor operating fault.**

**CONFIRMATION OF THE REPAIR**

- **ET344 Sensor fault finding included** **ACTIVE**
- **ET348 Sensor fault finding performed** **YES**
- No fault detected and the **OBD warning light is off**

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## 1. REPLACING, PROGRAMMING OR REPROGRAMMING THE COMPUTER

The system can be programmed or reprogrammed via the diagnostic socket using the diagnostic tool (**Follow the instructions provided by the diagnostic tool**).

**IMPORTANT**
- **Switch on the diagnostic tool (mains supply or cigarette lighter).**
- **Connect a battery charger (throughout the computer (re)programming procedure, the engine cooling fan assemblies are triggered automatically).**
- **Before any (re)programming, observe the engine temperature setpoints given by the diagnostic tool.**

**After programming, reprogramming or replacing the computer:**

- **Switch off the ignition**.
- **Start and then stop the engine (to initialise the computer) and wait 30 seconds**.
- **Switch the ignition back on and use the diagnostic tool to carry out the following steps**:
- Use command **VP020 Write VIN**.
- After injection system (re)programming, stored faults may appear in other computers.
- Clear the memory of these computers.
- Run command **RZ019 Programming reinitialisation**.
- Carry out a road test followed by another check with the diagnostic tool.

## 2. REPLACING OR REMOVING THE TDC SENSOR

When replacing or removing the TDC sensor, program the engine flywheel target (see **Configurations and programming**).

**IMPORTANT**
- The injection computer retains the immobiliser code for life,
- the system has no security code,
- carrying out tests with computers borrowed from the Parts Department or from another vehicle, which later need to be returned, is prohibited. These computers are hard-coded.

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## 1. CONFIGURATION

**Computer configuration by automatic detection**
The computer configures itself automatically according to the sensors and/or options present on the vehicle.

| | | |
|---|---|---|
| **LC001** | Vehicle speed connection type | |
| | → | Multiplex |
| | → | Wire |
| **LC007** | Cylinder 1 detection | |
| | → | WITH |
| | → | WITHOUT |
| **LC021** | Catalytic converter fault finding OBD sequencer | |
| | → | WITH |
| | → | WITHOUT |
| **LC022** | Combustion misfire fault finding OBD sequencer | |
| | → | WITH |
| | → | WITHOUT |
| **LC023** | Sensor fault finding OBD sequencer | |
| | → | WITH |
| | → | WITHOUT |
| **LC032** | Configuration reading: air conditioning | |
| | → | WITH |
| | → | WITHOUT |
| **LC075** | ABS → injection connection | |
| | → | WITH |
| | → | WITHOUT |
| **LC078** | Control of fan assemblies with engine running | |
| | → | WITH |
| | → | WITHOUT |

*diag: fault finding

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| | | |
|---|---|---|
| **LC079** | OBD warning light | |
| | → | WITH |
| | → | WITHOUT |
| **LC090** | Reduced flow petrol pump | |
| | → | WITH |
| | → | WITHOUT |
| **LC095** | CA** cold loop in injection | |
| | → | WITH |
| | → | WITHOUT |
| **LC111** | Control of air conditioning compressor and fan assembly | |
| | → | WITH |
| | → | WITHOUT |
| **LC118** | Combustion misfire OBD warning light command | |
| | → | WITH |
| | → | WITHOUT |
| **LC135** | TYPE A air temperature sensor | |
| | → | WITH (TYPE A air temperature sensor) |
| | → | WITHOUT (TYPE D air temperature sensor) |
| **LC140** | Pencil type ignition coil | |
| | → | WITH |
| | → | WITHOUT |

*diag.: fault finding
**CA: conditioned air
***AC: air conditioning

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| | | |
|---|---|---|
| **LC 149** | AC*** programming for small engine | |
| | → | VARIABLE CYL. |
| | → | WITHOUT |
| **LC152** | Brake switch opening | |
| | → | WITH |
| | → | WITHOUT |
| **LC175** | Level 2 warning light | |
| | → | WITH |
| | → | WITHOUT |
| **LC177** | Level 1 warning light | |
| | → | WITH |
| | → | WITHOUT |

*diag.: fault finding
**CA: conditioned air
***AC: air conditioning

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## 2. PROGRAMMING THE ENGINE FLYWHEEL TARGET

Program the engine flywheel target after replacing the engine speed and position sensor or the engine flywheel:

- Decelerate a first time with injection cut-off (feet off the brake, accelerator and clutch pedals) in second, third, fourth or fifth gear, between **3500** and **3000 rpm**, for at least **2 seconds**.
- Decelerate a second time with injection cut-off (feet off the brake, accelerator and clutch pedals) in second, third, fourth or fifth gear, between **2400** and **2000 rpm**, for at least **3 seconds**.

Use the diagnostic tool to check that this programming has been carried out correctly: status **ET314 Flywheel signal with engine running** should be **ACTIVE**.

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| Tool fault | Diagnostic tool title |
|---|---|
| **DF001** | Coolant temperature sensor circuit |
| **DF002** | Air temperature sensor circuit |
| **DF011** | Sensor supply voltage no. 1 |
| **DF012** | Sensor supply voltage no. 2 |
| **DF018** | Low-speed fan unit control circuit |
| **DF019** | High-speed fan unit control circuit |
| **DF022** | OBD warning light circuit |
| **DF023** | Coolant overheating warning light circuit |
| **DF038** | Computer |
| **DF040** | Cylinder 1 injector circuit |
| **DF041** | Cylinder 2 injector circuit |
| **DF042** | Cylinder 3 injector circuit |
| **DF043** | Cylinder 4 injector circuit |
| **DF081** | Canister bleed solenoid valve circuit |
| **DF082** | Upstream oxygen sensor heating circuit |
| **DF083** | Downstream oxygen sensor heating circuit |
| **DF085** | Fuel pump relay control circuit. |
| **DF091** | Vehicle speed signal |
| **DF092** | Upstream oxygen sensor circuit |
| **DF093** | Downstream oxygen sensor circuit |
| **DF123** | Pollutant combustion misfires |
| **DF124** | Destructive combustion misfires |

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| Tool fault | Diagnostic tool title |
|---|---|
| **DF232** | Refrigerant pressure sensor circuit |
| **DF235** | Injection fault warning light circuit |
| **DF236** | Serious injection fault warning light circuit |
| **DF328** | Throttle potentiometer circuit |
| **DF330** | Pinking sensor circuit |
| **DF336** | Flywheel signal information |
| **DF352** | Immobiliser circuit |
| **DF353** | Manifold pressure sensor circuit |
| **DF360** | Idle speed regulation circuit |
| **DF361** | Ignition coil circuit 1-4 |
| **DF362** | Ignition coil 2-3 circuit |
| **DF390** | Oxygen sensor operating fault |
| **DF394** | Catalytic converter operating fault |
| **DF489** | Air conditioning compressor control |
| **DF524** | Actuator relay output voltage |
| **DF587** | +5 volts supply to potentiometers and sensors |

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| | |
|---|---|
| **DF001 PRESENT OR STORED** | COOLANT TEMPERATURE SENSOR CIRCUIT<br>1.DEF: Open circuit or short circuit |

| | |
|---|---|
| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF587 +5 volts supply to potentiometers and sensors** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after:<br>Increase in engine temperature to obtain a temperature variation (triggering of the fan assembly).<br>(The fault should appear present, but may be stored again once the instruction has been followed). |
| | **Special notes:**<br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET496 OBD coolant temperature sensor circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the coolant temperature sensor circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF001 CONTINUED | |
|---|---|

Check the condition and connection of the **connector of the coolant temperature sensor**, component code **244** and the **injection computer**, component code **120**.
If the connectors are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **3JK** between components **244** and **120**,
- **3C** between components **244** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure the **resistance of the coolant temperature sensor**. **Check that it is not zero or infinity** (definite sensor fault).
Replace the coolant temperature sensor, component code **244** (see **MR 451, Mechanical, 19A, Cooling, Coolant temperature sensor: Removal - Refitting**) if the **resistance** is not between **2140 Ω < X < 2370 Ω** at **25ºC**.

Check that **the sensor resistance changes according to the temperature**.
If there is a fault, replace the sensor, component code **244** (see **MR 451 Mechanical, 19A, Cooling, Coolant temperature sensor: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
|---|---|

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| | |
|---|---|
| **DF002 PRESENT OR STORED** | AIR TEMPERATURE SENSOR CIRCUIT<br>1.DEF: Open circuit or short circuit |

| | |
|---|---|
| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF587 +5 volts supply to potentiometers and sensors** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after:<br>Increase in engine temperature to obtain a temperature variation (triggering of the fan assembly).<br>(The fault should appear present, but may be stored again once the instruction has been followed). |
| | **Special notes:**<br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET497 OBD air temperature sensor circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the air temperature sensor circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF002 CONTINUED | |
|---|---|

| |
|---|
| Check the **condition** and **connection** of the **connector of the air temperature sensor**, component code **272** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connections:<br>• **3B** between components **272** and **120**,<br>• **3JQ** between components **272** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Measure the **resistance of the air temperature sensor**, component code **272**. The measured value should not be zero or infinity (definite sensor fault).<br>Replace the sensor, component code **272** (see **MR 451, Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting**) if the **resistance** is not between **1920 Ω < X < 2180 Ω** at **25ºC**. |
| Check that **the sensor resistance changes according to the temperature.**<br>If there is a fault, replace the sensor, component code **272** (see **MR 451 Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting**). |
| If the fault is still present, contact the Techline |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| | |
|---|---|
| **DF011 PRESENT OR STORED** | SENSOR FEED VOLTAGE NO. 1<br>1. DEF: Voltage outside permitted range of values |

| | |
|---|---|
| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF524 Actuator relay output voltage** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present when the **ignition is switched on**. |
| | **Special notes:**<br>The injection causes a speed restriction of 54 mph (90 km/h), a loss of power during acceleration (impression of **having a spongy accelerator pedal**), and a loss of inter-systems. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| DF011 CONTINUED | |
|---|---|

Check the **condition** and **connections** of the **connector of the manifold pressure sensor**, component code **147**, the **connector of the refrigerant pressure sensor**, component code **1202** and the **injection computer**, component code **120**
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check the **continuity, insulation, and absence of interference resistance** on the following connections:
- **3AJP** between components **147** and **120**,
- **38Y** between components **1202** and **120**,

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+5 V** on the **manifold pressure sensor**, component code **147**, and on the refrigerant pressure sensor, component code **1202** on the following connections:
- **3AJP** of component **147**,
- **38Y** of component **1202**.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |
|---|---|

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| | |
|---|---|
| **DF012 PRESENT OR STORED** | SENSOR SUPPLY VOLTAGE NO. 2<br>1.DEF: Voltage outside permitted range of values |

| | |
|---|---|
| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present when the **ignition is switched on**. |
| | **Special notes:**<br>– The injection causes a **limitation** of **vehicle speed and engine speed**.<br>– The **OBD** warning light is illuminated. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| DF012 CONTINUED | |
|---|---|

Check the **condition** and **connection** of the **connector of the throttle potentiometer sensor**, component code **222** and the **injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+5 V after ignition feed** on connection **3GR** of the **connector of the throttle potentiometer sensor**, component code **222**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Disconnect the **injection computer connector**, component code **120** and the **throttle potentiometer connector**, component code **222**.
Check the **insulation on the injection computer connector**, component code **120** between connections **3GR** and **3AJ**.
If any of the connections are faulty and there is a repair procedure (see **Technical Note 6015A**, **Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Check the **continuity**, **insulation** and the **absence of interference resistance** on the following connections:
- **3GR** between components **222** and **120**,
- **3JL** between components **222** and **120**.

If any of the connections are faulty and there is a repair procedure (see **Technical Note 6015A**, **Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |
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| **DF018 PRESENT OR STORED** | LOW SPEED FAN ASSEMBLY CONTROL CIRCUIT<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>1.DEF: Open circuit or short circuit |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF524 Actuator relay output voltage** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present when **the ignition is on** or on command **AC038 Low speed fan assembly relay**. |
| | **Special notes:**<br>– **CO/CC.1**: No activation of the **low speed fan assembly**.<br>– **CC.0**: **Low speed fan assembly** permanently activated.<br>– **1.DEF**: for all stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| DF018 CONTINUED | |
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| Check the **connection** and **condition** of the **connector of the low speed fan assembly relay**, component code **784 (700)** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation**, **continuity** and the **absence of interference resistance** on the following connection:<br>• **3JN** between components **120** and **784 (700)**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for **+ after ignition feed** on connection **BP7** of the **connector of the low speed fan assembly relay**, component code **784 (700)**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **low speed fan assembly relay**, component code **784(700)**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| **DF019 PRESENT OR STORED** | HIGH SPEED FAN ASSEMBLY CONTROL CIRCUIT<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>1.DEF: Open circuit or short circuit |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF524 Actuator relay output voltage** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present when the ignition is on or on command **AC039 High speed fan assembly relay**. |
| | **Special notes:**<br>– **CO/CC.1**: No activation of **high speed fan assembly**: engine liable to overheat.<br>– **CC.0**: **High speed fan assembly** permanently activated.<br>– **1.DEF**: for all stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| DF019 CONTINUED | |
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| Check the **connection** and **condition** of the **connector of the high speed fan assembly relay**, component code **336** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation**, **continuity** and the **absence of interference resistance** on the following connection:<br>• **3JP** between components **120** and **336**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for **+ after ignition feed** on connection **BP7** of the **connector of the high speed fan assembly relay**, component code **336**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **high speed fan assembly relay**, component code **336**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| **DF022 PRESENT OR STORED** | OBD WARNING LIGHT CIRCUIT<br>1.DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after running command **AC047 OBD warning light**. |
| | **Special notes:**<br>– **CO/CC.1**: The warning light is constantly off.<br>– **CC.0**: The warning light is constantly illuminated.<br>– **1.DEF**: for all stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| DF022 CONTINUED | |
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| Check the correct operation of the warning light using command **AC047**. |
| Check the **connection** and **condition** of the **injection computer connector**, component code **120** and the **instrument panel connector**, component code **247**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **presence** and **condition of the supply fuses for the instrument panel**, component code **1016**: **F02 (5 A)** on component **1016**,<br>Replace the fuses if the checks are not correct. |
| Check for **+12 V** on the **instrument panel**, component code **247** on the following connection:<br>• **AP29** of component **247**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connection:<br>• **137C** between components **120** and **247**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, carry out fault finding on the Instrument panel system (see **83A, Instrument panel**). |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| **DF023 PRESENT OR STORED** | COOLANT OVERHEATING WARNING LIGHT CIRCUIT<br>1.DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after running command **AC116 Coolant temperature warning light**. |
| | **Special notes:**<br>– **CO/CC.1**: The warning light is constantly off.<br>– **CC.0**: The warning light is constantly illuminated.<br>– **1. DEF**: for all stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF023 CONTINUED | |
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| Check the **connection** and **condition** of the **connector of the injection computer**, component code **120** and the **instrument panel**, component code **247**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **presence** and **condition of the supply fuses for the instrument panel**, component code **1016**:<br>– **F02 (5 A)** on component **1016**.<br>Replace the fuses if the checks are not correct. |
| Check for **+12 V** on the **instrument panel**, component code **247** on the following connection:<br>• **AP29** of component **247**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connection:<br>• **31A** between components **120** and **247**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, carry out fault finding on the Instrument panel system (see **83A, Instrument panel**). |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF038 PRESENT OR STORED | COMPUTER |
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| *NOTES* | **Special notes:**<br>When this fault occurs: The vehicle stalls and cannot be restarted. |
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Computer defective or not to specification:
Check that **the computer is correct according to the vehicle's technical specification** (see **17B, Petrol injection, Introduction**).

Check the **condition** and **connection** of the **injection computer connectors**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

**Do not change the computer immediately**.
Carry out the following procedure:
– Use command **RZ007- FAULT MEMORY** to clear the computer memory.
– Switch the ignition off and wait for loss of dialogue with the computer.
– Switch the ignition on and establish dialogue with the computer.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| **DF040 PRESENT OR STORED** | CYLINDER 1 INJECTOR CIRCUIT<br>1. DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF524 Actuator relay output voltage** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the engine starts.<br>(Run the engine and make sure to stop it **when the fault appears**, to avoid damaging the catalytic converter). |
| | **Special notes:**<br>– **CO/CC.1:** No **injection** on **cylinder 1**. Greatly reduced performance. OBD warning light comes on.<br>– **CC.0**: The **injector** is still **open**: there is a risk of the **engine stalling** or **being damaged when starting**. Greatly reduced performance. **Level 2 (serious injection fault) warning light** and **OBD warning light illuminated**.<br>– **1. DEF**: for all stored faults.<br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET499 OBD cylinder 1 injector circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the **cylinder 1 injector circuit**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF040 CONTINUED | |
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| Check the **condition** and **connection of the connector of injector 1**, component code **193** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity**, **insulation**, and the **absence of interference resistance** on the following connection:<br>• **3CR** between components **193** and **120**,<br>• **3FB** between components **193** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Measure the **resistance** of **injector 1**. The measured resistance should not be zero or infinity.<br>Replace **injector 1**, component code **193** (see **MR 451, Mechanical, 13B, Fuel mixture, Injector rail: Removal - Refitting**) if the **resistance** is not between **13 Ω < X < 15 Ω at 20ºC**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF041 PRESENT OR STORED** | CYLINDER 2 INJECTOR CIRCUIT<br>1.DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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|---|---|
| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF524 Actuator relay output voltage** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the engine starts.<br>(Run the engine and **make sure to stop it when the fault appears**, to avoid damaging the catalytic converter). |
| | **Special notes:**<br>– **CO/CC.1:** No **injection** on **cylinder 2**. Greatly reduced performance. OBD warning light comes on.<br>– **CC.0**: The **injector** is still **open**: **there is a risk of the engine stalling or being damaged when starting**. Greatly reduced performance. **Level 2 (serious injection fault) warning light** and **OBD warning light illuminated**.<br>– **1. DEF**: for all stored faults.<br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET500 OBD cylinder 2 injector circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the **cylinder 2 injector circuit**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF041 CONTINUED | |
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| Check the **condition** and **connection of the connector of injector 2**, component code **194** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity, insulation**, and the **absence of interference resistance** on the following connection:<br>• **3CS** between components **194** and **120**,<br>• **3FB** between components **194** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Measure the **resistance of injector 2**. The measured resistance should not be zero or infinity.<br>Replace **injector 2**, component code **194** (see **MR 451, Mechanical, 13B, Fuel mixture, Injector rail: Removal - Refitting**) if the **resistance** is not between **13 Ω < X < 15 Ω at 20ºC**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF042 PRESENT OR STORED** | CYLINDER 3 INJECTOR CIRCUIT<br>1. DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF524 Actuator relay output voltage** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the engine starts.<br>(Run the engine and **make sure to stop it when the fault appears**, to avoid damaging the catalytic converter). |
| | **Special notes:**<br>– **CO/CC.1:** No **injection** on **cylinder 3**. Greatly reduced performance. OBD warning light comes on**.**<br>– **CC.0**: The **injector** is still **open**: **there is a risk of the engine stalling or being damaged when starting**. Greatly reduced performance. **Level 2 (serious injection fault) warning light** and **OBD warning light illuminated**.<br>– **1. DEF**: for all stored faults.<br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET501 OBD cylinder 3 injector circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the **cylinder 3 injector circuit**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF042 CONTINUED | |
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Check the **condition** and **connection of the connector of injector 3**, component code **195** and the **injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity, insulation**, and the **absence of interference resistance** on the following connection:
- **3CT** between components **195** and **120**,
- **3FB** between components **195** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure the **resistance of injector 3**. The measured resistance should not be zero or infinity.
Replace **injector 3**, component code **195** (see **MR 451, Mechanical, 13B, Fuel mixture, Injector rail: Removal - Refitting**) if the **resistance** is not between **13 Ω < X < 15 Ω at 20ºC**.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| **DF043 PRESENT OR STORED** | CYLINDER 4 INJECTOR CIRCUIT<br>1. DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF524 Actuator relay output voltage** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the engine starts.<br>(Run the engine and **make sure to stop it when the fault appears**, to avoid damaging the catalytic converter). |
| | **Special notes:**<br>– **CO/CC.1**: No **injection** on **cylinder 4**. Greatly reduced performance. OBD warning light comes on**.**<br>– **CC.0**: The **injector** is still **open**: **there is a risk of the engine stalling or being damaged when starting**. Greatly reduced performance. **Level 2 (serious injection fault) warning light** and **OBD warning light illuminated**.<br>– **1. DEF**: for all stored faults.<br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET502 OBD cylinder 4 injector circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the **cylinder 4 injector circuit**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF043 CONTINUED | |
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| Check the **condition** and **connection of the connector of injector 4**, component code **196** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity, insulation**, and the **absence of interference resistance** on the following connection:<br>• **3CU** between components **196** and **120**,<br>• **3FB** between components **196** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Measure the **resistance of injector 4**. The measured resistance should not be zero or infinity.<br>Replace **injector 4**, component code **196** (see **MR 451, Mechanical, 13B, Fuel mixture, Injector rail: Removal - Refitting**) if the **resistance** is not between **13 Ω < X < 15 Ω at 20ºC**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF081 PRESENT OR STORED** | CANISTER BLEED SOLENOID VALVE CIRCUIT<br>1.DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF524 Actuator relay output voltage** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after running command **AC017 Canister bleed solenoid valve**. |
| | **Special notes:**<br>– **CO/CC.1:** The valve remains locked closed: there is a smell of petrol. The OBD warning light is lit.<br>– **CC.0: The valve remains stuck open: hesitation when driving, risk of engine stalling and difficult to restart the engine.**<br>– **1. DEF**: for all stored faults.<br>If the fault is stored with the **OBD warning light illuminated**, check in the context section if status **ET515 OBD canister bleed control circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check **the circuit of the fuel vapour absorber bleed solenoid valve sensor**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF081 CONTINUED | |
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| Check the **condition** and **connection** of the connectors of the **canister bleed solenoid valve**, component code **371** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Measure the **resistance of the canister bleed solenoid valve**.<br>Replace the canister bleed solenoid valve, component code **371** (see **MR 451, Mechanical, 14A, Emission control, Fuel vapour absorber: Removal - Refitting**) if the **resistance** is not between **22 Ω < X < 30 Ω** at **23ºC**. |
| Check for **+12 V** on the **canister bleed solenoid valve**, component code **371** on the following connection:<br>• **3FB** of component **371**. |
| Check the **continuity, insulation**, and the **absence of interference resistance** on the following connection:<br>• **3BB** between components **120** and **371**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the canister bleed solenoid valve, component code **371** (see **MR 451, Mechanical, 14A, Emission control, Fuel vapour absorber: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF082 PRESENT OR STORED** | UPSTREAM OXYGEN SENSOR HEATING CIRCUIT<br>1.DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF524 Actuator relay output voltage** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present with the engine running or when using command **AC018 Upstream $O_2$ sensor heating**. |
| | **Special notes:**<br>– **CO/CC.1**: No **upstream sensor** heating: the vehicle is polluting and the OBD warning light is illuminated.<br>– **CC.0**: **Upstream sensor heating on continuously from switching on the ignition: risk of sensor being irreparably damaged**.<br>– **1.DEF**: for all stored faults.<br>If the fault is stored with the **OBD warning light** illuminated, check in the context section if status **ET507 OBD upstream oxygen sensor heating circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the **upstream oxygen sensor heating circuit**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF082 CONTINUED | |
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| Check the **condition** and **connection** of the **connectors of the upstream oxygen sensor**, component code **887** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+12 V** on the **upstream oxygen sensor**, component code **887** on the following connection:<br>• **3FB** of component **887**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **continuity, insulation**, and the **absence of interference resistance** on the following connection:<br>• **3GF** between components **120** and **887**.<br>• **3FB** between components **887** and **238**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check that the sensor is disconnected and cold in order to measure **the resistance of the upstream oxygen sensor**.<br>Replace **the upstream oxygen sensor**, component code **887** (see **MR 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**) if the **resistance** is not between **2 Ω < X < 5 Ω** at **23ºC**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF083 PRESENT OR STORED** | DOWNSTREAM OXYGEN SENSOR HEATING CIRCUIT<br>1.DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF524 Actuator relay output voltage** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present with the engine running or when using command **AC019 Downstream $O_2$ sensor heating**. |
| | **Special notes:**<br>– **CO/CC.1**: No **downstream oxygen sensor** heating: the vehicle is polluting and the OBD warning light is illuminated.<br>– **CC.0**: **Downstream sensor heating on continuously from switching on the ignition: risk of downstream oxygen sensor being irreparably damaged**.<br>– **1.DEF**: for all stored faults.<br>If the fault is stored with the **OBD warning light** illuminated, check in the context section if status **ET509 OBD downstream oxygen sensor heating circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the **downstream oxygen sensor heating circuit**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF083 CONTINUED | |
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Check the **condition** and **connection** of the **connectors of the downstream oxygen sensor**, component code **242** and the **injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+12 V** on the **downstream oxygen sensor**, component code **242** on the following connection:
- **3FB** of component **242**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **continuity, insulation**, and the **absence of interference resistance** on the following connection:
- **3GG** between components **120** and **242**,
- **3FB** between components **242** and **238**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure the **resistance of the downstream oxygen sensor**.
Replace the downstream oxygen sensor, component code **242** (see **MR 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**) if the **resistance** is not between **2 Ω < X < 5 Ω at 23ºC**.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| **DF085 PRESENT OR STORED** | FUEL PUMP RELAY CONTROL CIRCUIT<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V<br>1.DEF: Fault on + after relay feed<br>2.DEF: Open circuit or short circuit |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF587 +5 volts supply to potentiometers and sensors** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after running command **AC015 Fuel pump relay**.<br>Note:<br>This fault is a priority. Deal with it first. |
| | **Special notes:**<br>– **CO/CC.0/CC.1: Level 2 (serious injection fault) warning light and OBD warning light illuminated. CO or CC.1: No activation of fuel pump. The vehicle stalls and cannot be restarted.**<br>– **CC.0: Fuel pump still supplied.**<br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET513 OBD fuel pump control circuit**, corresponding to the request to illuminate the **OBD warning light**, is **YES**. In this case, apply the method below to check the **fuel pump relay circuit**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF085 CONTINUED 1 | |
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| 1.DEF | *NOTES* | **There is a fault on the fuel pump relay power circuit.** |
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| Check that the **inertia switch** is not engaged. Repair if necessary. |
| Check the **condition and connection** of the connectors of the **fuel pump relay**, component code **236** and of the connector of the **engine fuse and relay box**, component code **594**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+12 V** on the **fuel pump relay**, component code **236** on the following connection:<br>• **BP17** of component **236**.<br><br>Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:<br>• **BP17** between components **236** and **597**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| DF085 CONTINUED 2 | |
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With the ignition on and while running command **AC015 Fuel pump relay**, **check for +12 V** on the **fuel pump relay**, component code **236** on the following connection:
- **3NA** of component **236**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **3NA** between components **236** and **833**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **3NA** between components **236** and **1077**,
- **3NA** between components **236** and **1078**,
- **3NA** between components **236** and **833**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| **DF085 CONTINUED 3** | |

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| **2.DEF** | ***NOTES*** | **There is a fault on the fuel pump relay control circuit.** |

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| Check the **condition and connection** of the connectors of the **fuel pump relay**, component code **236** and connector of the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:<br>• **3AC** between components **236** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for **+12 V** on the **fuel pump relay**, component code **236** on the following connection:<br>• **AP29** of component **236**.<br><br>Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:<br>• **AP29** between components **236** and **1016**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check **the petrol pump relay coil**.<br>Replace the fuel pump relay if necessary. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF091 PRESENT OR STORED** | VEHICLE SPEED SIGNAL |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after a road test.<br>Continue the road test on a hill at a constant speed.<br>Continue the road test on a hill in the no load position. |
| | **Special notes:**<br>**The vehicle speed signal can be supplied by:**<br>**– the vehicle speed sensor (for a 4x2 vehicle without ABS, without ESP),**<br>**– the ETC torque distributor (for a 4x4 vehicle without ABS, without ESP),**<br>**– the ABS computer (for a vehicle with ABS),**<br>**– the ESP computer (for a vehicle with ESP).**<br><br>If the fault is stored with the **OBD warning light illuminated**, check in the context section if status **ET516 OBD speed sensor circuit**, corresponding to the request to illuminate the **OBD warning light**, is **YES**. In this case, apply the method below to check the vehicle speed signal circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

Check the **condition** and **connection** of the **injection computer** connectors, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF091<br>CONTINUED 1 | |
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**For a vehicle without ABS and without ESP:**
**The vehicle speed signal is given by the vehicle speed sensor**, component code **250**

Check the **condition** and **connection** of the **vehicle speed sensor** connectors, component code **250**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

If the fault is still present, disconnect the connector of the vehicle speed sensor, component code **250**.
Check for **+12 V** on the **vehicle speed sensor**, component code **250** on the following connection:
- **3FB** of component **250**.

Check the continuity, **insulation, and the absence of interference resistance** on the following connection:
- **3FB** between components **1047** and **250**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
Check that the **injection relay**, component code **1047** is operating correctly. Replace it if necessary.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| DF091 CONTINUED 2 | |
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Check for **earth** on the **vehicle speed sensor**, component code **250** between the following connection:
- **NH** of component **250**.

Check the **continuity, insulation and the absence of interference resistance** on the following connection:
- **NH** between component **250** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **continuity, insulation and the absence of interference resistance** on the following connection:
- **47F** between components **250** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault persists, replace the vehicle speed sensor.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| DF091 CONTINUED 3 | |
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**For a vehicle with ABS:**
The vehicle speed signal is given by the **ABS computer**, component code **118**.

Check the **condition** and **connection** of the **ABS computer** connectors, component code **118**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

If the fault is still present, use the diagnostic tool to check that the **ABS** is correctly receiving the vehicle speed signal during a road test.

Check the **continuity, insulation and the absence of interference resistance** on the following connection:
- **47F** between components **118** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Replace the **ABS computer** if necessary (see **MR 451**, **Mechanical**, **38C**, **Anti-lock braking system**, **Hydraulic brake unit: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| DF091 CONTINUED 4 | |
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**For a vehicle with ESP:**
The vehicle speed signal is given by the **ESP computer**, component code **1094**.

Check the **condition** and **connection** of the **ESP computer** connectors, component code **1094**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

If the fault is still present, use the diagnostic tool to check that the ESP is correctly receiving the vehicle speed signal during a road test.

Check the **continuity, insulation and the absence of interference resistance** on the following connection:
- **47F** between components **1094** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Replace the **ESP computer** if necessary (see **MR 451**, **Mechanical**, **38C**, **Anti-lock braking system**, **Hydraulic brake unit: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| DF091 CONTINUED 5 | |
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**For a vehicle without ESP:**
The vehicle speed signal is given by the **ETC torque distributor**, component code **2017**.

Check the **condition** and **connection** of the **ETC torque distributor** connectors, component code **2017**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

If the fault is still present, use the diagnostic tool to check that the **ETC torque distributor** is correctly receiving the vehicle speed signal during a road test.

Check the **continuity, insulation and the absence of interference resistance** on the following connection:
- **47F** between components **2017** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Replace the **ETC torque distributor** if necessary.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| **DF092 PRESENT OR STORED** | UPSTREAM OXYGEN SENSOR CIRCUIT<br>1.DEF: Open circuit or short circuit |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF587 +5 volts supply to potentiometers and sensors** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the engine has been started.<br>With the engine idling, check that status **ET052 Upstream $O_2$ sensor heating** is **ACTIVE** and wait until status **ET300 Richness regulation** is ACTIVE, then wait for **5 minutes**. |
| | **Special notes:**<br>If the fault is stored with the **OBD warning light illuminated**, check in the context section if status **ET506 OBD upstream oxygen sensor circuit**, corresponding to the request to illuminate the **OBD warning light**, is **YES**. In this case, apply the method below to check the **upstream oxygen sensor circuit**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF092 CONTINUED | |
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| Check that there is no **air leak between the exhaust manifold and the catalytic converter.** |
| If the vehicle is driven frequently in town, **decoke the engine.** |
| Check the **condition** and **connection** of the **connectors** of **the upstream oxygen sensor**, component code **887** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br>Check that there is no **water present in the connector (probable cause of an engine flat spot)**. |
| Check the **continuity, insulation, and absence of interference resistance** on the following connections:<br>• **3GH** between components **120** and **887**,<br>• **3GK** between components **120** and **887**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **oxygen sensor**, component code **887** (see **MR 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF093 PRESENT OR STORED** | DOWNSTREAM OXYGEN SENSOR CIRCUIT<br>1.DEF: Open circuit or short circuit |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF587 +5 volts supply to potentiometers and sensors** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after:<br>– a road test whilst driving steadily, after operation of the fan assembly and if status **ET056: Double richness loop** is **ACTIVE**.<br>– a road test whilst driving steadily, after operation of the fan, followed immediately by a deceleration phase (on a hill, for example), if status **ET278: Throttle position: no load** is **ACTIVE**, with gear and clutch engaged. |
| | **Special notes:**<br>If the fault is stored with the **OBD warning light illuminated**, check in the context section if status **ET508 OBD upstream oxygen sensor circuit**, corresponding to the request to illuminate the **OBD warning light**, is **YES**. In this case, apply the method below to check the downstream oxygen sensor circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF093 CONTINUED | |
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| Check that there are no **air leaks between the two oxygen sensors**. |
| If the vehicle is driven frequently in town, **decoke the engine.** |
| Check the **condition** and **connection** of the **connectors** of **the upstream oxygen sensor**, component code **242** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity, insulation, and absence of interference resistance** on the following connections:<br>• **3GJ** between components **120** and **242**,<br>• **3GL** between components **120** and **242**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **oxygen sensor**, component code **242** (see **MR 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF123 PRESENT OR STORED** | POLLUTANT MISFIRES |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal first with:<br>– ignition faults,<br>**DF361 Ignition coil circuit 1-4,**<br>**DF362 Ignition coil circuit 2-3,**<br><br>– fuel supply circuit faults<br>**DF040 Cylinder 1 injector circuit,**<br>**DF041 Cylinder 2 injector circuit,**<br>**DF042 Cylinder 3 injector circuit,**<br>**DF043 Cylinder 4 injector circuit,**<br>**DF085 Fuel pump relay control circuit,**<br><br>– flywheel signal faults<br>**DF336 Flywheel signal information.** |
| | **Conditions for applying the fault finding procedure to stored and present faults:**<br>The fault is declared present under the following conditions: with the engine idling. |

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| ***AFTER REPAIR*** | Check that all faults have been dealt with. Clear the stored faults.<br>Do not clear the programming.<br>To check that the system has been properly repaired:<br>– There must be no remaining electrical faults.<br>– programming should have been carried out.<br>– The engine should be warm (minimum **75˚C**).<br>– Run the engine at idle speed with all electrical consumers drawing power for **20 minutes**. |

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| **DF123 CONTINUED 1** | |

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| ***NOTES*** | **Special notes:**<br>The **OBD warning light** remains **continuously illuminated**.<br>The fault is declared present when the **misfiring rate** is **greater than 4%** for at least **15 minutes**.<br><br>Status **ET061: Cylinder no. 1 recognition** must be **PERFORMED**, to differentiate each cylinder.<br><br>These **statuses** give information on the nature and location of the fault:<br>**ET057 Misfire on cylinder 1,**<br>**ET058 Misfire on cylinder 2,**<br>**ET059 Misfire on cylinder 3,**<br>**ET060 Misfire on cylinder 4.** |

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| ***AFTER REPAIR*** | Check that all faults have been dealt with. Clear the stored faults.<br>Do not clear the programming.<br>To check that the system has been properly repaired:<br>– There must be no remaining electrical faults.<br>– programming should have been carried out.<br>– The engine should be warm (minimum **75˚C**).<br>– Run the engine at idle speed with all electrical consumers drawing power for **20 minutes**. |

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| DF123<br>CONTINUED 2 | |
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| Only one cylinder is declared faulty:<br>– **ET057 (cylinder 1)**, or<br>– **ET058 (cylinder 2)**, or<br>– **ET059 (cylinder 3)**, or<br>– **ET060 (cylinder 4)**. | The fault is probably due to a component that can only affect one cylinder:<br>**– Problem on the injector.**<br>**– Fault with the spark plug.**<br>**– Fault with the high voltage wire or the pencil coil (if fitted).**<br>Before making a replacement, try the component with another cylinder. |

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| Cylinders 1 and 4 or cylinders 2 and 3 are declared faulty:<br>**– ET057 (cylinder 1) and ET060 (cylinder 4)**<br>or<br>**– ET058 (cylinder 2) and ET059 (cylinder 3).** | The problem is probably due to a factor that can only affect this pair of cylinders:<br>**– fault on the control side of the coil.** |

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| All four cylinders are declared faulty:<br>– **ET057 (cylinder 1)** and<br>– **ET058 (cylinder 2)** and<br>– **ET059 (cylinder 3)** and<br>– **ET060 (cylinder 4)**. | The fault is probably due to a component affecting all the cylinders:<br>**– Fuel filter fault,**<br>**– Fuel pump fault,**<br>**– Fault with petrol type,**<br>**– Fault with spark plug type.** |

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| ***AFTER REPAIR*** | Check that all faults have been dealt with. Clear the stored faults.<br>Do not clear the programming.<br>To check that the system has been properly repaired:<br>– There must be no remaining electrical faults.<br>– programming should have been carried out.<br>– The engine should be warm (minimum **75˚C**).<br>– Run the engine at idle speed with all electrical consumers drawing power for **20 minutes**. |

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| DF123<br>CONTINUED 3 | |
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**If the fault is still present, check:**
- the flywheel sensor,
- the condition and cleanliness of the flywheel,
- the flywheel sensor mounting,
- the flywheel - sensor air gap,
- the cylinder compressions,
- the complete fuel supply circuit (see **MR 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
- the complete ignition system (see **MR 451, Mechanical, 17A, Ignition, Coil: Removal - Refitting**),
- the hydraulic tappets (if fitted to the vehicle) in case of camshaft noise (see **MR 451, Mechanical, 11A, Top and front of engine, Cylinder head: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check that all faults have been dealt with. Clear the stored faults.<br>Do not clear the programming.<br>To check that the system has been properly repaired:<br>– There must be no remaining electrical faults.<br>– programming should have been carried out.<br>– The engine should be warm (minimum **75˚C**).<br>– Run the engine at idle speed with all electrical consumers drawing power for **20 minutes**. |
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| **DF124 PRESENT OR STORED** | DESTRUCTIVE MISFIRE |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal first with:<br>– ignition faults,<br>**DF361 Ignition coil circuit 1-4,**<br>**DF362 Ignition coil circuit 2-3,**<br><br>– fuel supply circuit faults<br>**DF040 Cylinder 1 injector circuit,**<br>**DF041 Cylinder 2 injector circuit,**<br>**DF042 Cylinder 3 injector circuit,**<br>**DF043 Cylinder 4 injector circuit,**<br>**DF085 Fuel pump relay control circuit,**<br><br>– flywheel signal faults<br>**DF336 Flywheel signal information.** |
| | **Conditions for applying the fault finding procedure to stored and present faults:**<br>The fault is declared present under the following conditions: with the engine idling. |

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| ***AFTER REPAIR*** | Check that all faults have been dealt with. Clear the stored faults.<br>Do not clear the programming.<br>To check that the system has been properly repaired:<br>– There must be no remaining electrical faults.<br>– programming should have been carried out.<br>– The engine should be warm (minimum **75˚C**).<br>– Run the engine at idle speed with all electrical consumers drawing power for **20 minutes**. |

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| DF124 CONTINUED 1 | |
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| ***NOTES*** | **Special notes:**<br>When the fault is detected, **the injection to the faulty cylinder(s) is cut off** to prevent the temperature in the catalytic converter from rising. The **OBD warning light** flashes for as long as the fault is present.<br>The fault is declared present when the misfiring rate is **greater than 15%** for at least **1 minute 30 seconds**.<br><br>Status **ET061: Cylinder no. 1 recognition** must be **PERFORMED**, to differentiate each cylinder.<br><br>These **statuses** give information on the nature and location of the fault:<br>**ET057 Misfire on cylinder 1,**<br>**ET058 Misfire on cylinder 2,**<br>**ET059 Misfire on cylinder 3,**<br>**ET060 Misfire on cylinder 4.** |

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| ***AFTER REPAIR*** | Check that all faults have been dealt with. Clear the stored faults.<br>Do not clear the programming.<br>To check that the system has been properly repaired:<br>– There must be no remaining electrical faults.<br>– programming should have been carried out.<br>– The engine should be warm (minimum **75˚C**).<br>– Run the engine at idle speed with all electrical consumers drawing power for **20 minutes**. |

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| DF124 CONTINUED 2 | |
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| Only one cylinder is declared faulty:<br>– **ET057 (cylinder 1)**, or<br>– **ET058 (cylinder 2)**, or<br>– **ET059 (cylinder 3)**, or<br>– **ET060 (cylinder 4)**. | The fault is probably due to a component that can only affect one cylinder:<br>**– Problem on the injector.**<br>**– Fault with the spark plug.**<br>**– Fault with the high voltage wire or the pencil coil (if fitted).**<br>Before making a replacement, try the component with another cylinder. |

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| Cylinders 1 and 4 or cylinders 2 and 3 are declared faulty:<br>– **ET057 (cylinder 1)** and **ET060 (cylinder 4)** or<br>– **ET058 (cylinder 2)** and **ET059 (cylinder 3)**. | The problem is probably due to a factor that can only affect this pair of cylinders:<br>**– fault on the control side of the coil.** |

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| All four cylinders are declared faulty:<br>– **ET057 (cylinder 1)** and<br>– **ET058 (cylinder 2)** and<br>– **ET059 (cylinder 3)** and<br>– **ET060 (cylinder 4)**. | The fault is probably due to a component affecting all the cylinders:<br>**– Fuel filter fault,**<br>**– Fuel pump fault,**<br>**– Fault with petrol type,**<br>**– Fault with spark plug type.** |

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| ***AFTER REPAIR*** | Check that all faults have been dealt with. Clear the stored faults.<br>Do not clear the programming.<br>To check that the system has been properly repaired:<br>– There must be no remaining electrical faults.<br>– programming should have been carried out.<br>– The engine should be warm (minimum **75˚C**).<br>– Run the engine at idle speed with all electrical consumers drawing power for **20 minutes**. |

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| DF124 CONTINUED 3 | |
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If the fault is still present, check:
– the flywheel sensor,
– the condition and cleanliness of the flywheel,
– the flywheel sensor mounting,
– the flywheel - sensor air gap,
– the cylinder compressions,
– the complete fuel supply circuit (see **MR 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
– the complete ignition system (see **MR 451, Mechanical, 17A, Ignition, Coil: Removal - Refitting**),
– the hydraulic tappets (if fitted to the vehicle) in case of camshaft noise (see **MR 451, Mechanical, 11A, Top and front of engine, Cylinder head: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check that all faults have been dealt with. Clear the stored faults.<br>Do not clear the programming.<br>To check that the system has been properly repaired:<br>– There must be no remaining electrical faults.<br>– programming should have been carried out.<br>– The engine should be warm (minimum **75˚C**).<br>– Run the engine at idle speed with all electrical consumers drawing power for **20 minutes**. |
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| **DF232 PRESENT OR STORED** | REFRIGERANT PRESSURE SENSOR CIRCUIT |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF011 Sensor supply voltage no. 1** first if it is present or stored. |
| | **Special notes:**<br>The fault is declared present when the **ignition is switched on**.<br>When the fault is present and stored, parameter **PR037 Refrigerant pressure**, displays a default value: **0 bar**, and the air conditioning does not operate.<br>On **vehicles fitted with a refrigerant fluid pressure sensor** (cold loop mode in injection), the computer recalculates parameter **PR125 Power absorbed by the AC* compressor** from the refrigerant fluid pressure values.<br>If there is any drift on parameter **PR037,** the value of parameter **PR125** could be incorrect. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF232 CONTINUED | |
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| Check the **condition and connection** of the connectors of the **refrigerant pressure sensor**, component code **1202** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check **the connection and condition** of the refrigerant pressure sensor connector.<br>Repair if necessary.<br>Check the continuity, insulation, and absence of interference resistance on the following connections:<br>• **38Y** between components **1202** and **120**,<br>• **38X** between components **1202** and **120**,<br>• **38U** between components **1202** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

*AC: Air conditioning

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF235 PRESENT OR STORED** | INJECTION FAULT WARNING LIGHT CIRCUIT<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>1.DEF: Open circuit or short circuit |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present when the ignition is on or on command **AC068 Injection fault warning light**. |
| | **Special notes:**<br>**CO/CC.1**: Level 1 warning light not illuminated.<br>**CC.0**: Level 1 warning light constantly illuminated.<br>**1.DEF**: for all stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| DF235 CONTINUED | |
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| Clear the fault and check the correct operation of the warning light with command **AC068**. |
| Check the **condition** and **connection** of the **connector of the instrument panel**, component code **247** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity, insulation and the absence of interference resistance** on the following connection:<br>• **3NX** between components **247** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the instrument panel, component code **247** (see **MR 451, Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| **DF236 PRESENT OR STORED** | SERIOUS INJECTION FAULT WARNING LIGHT CIRCUIT<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>1.DEF: Open circuit or short circuit |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present when the ignition is on or on command **AC069 Serious injection fault warning light**. |
| | **Special notes:**<br>– **CO/CC.1**: Level 2 warning light not illuminated.<br>– **CC.0**: Level 2 warning light constantly illuminated.<br>– Level 1 warning light illuminated if the level 2 warning light is defective.<br>– **1.DEF**: for all stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| DF236 CONTINUED | |
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| Clear the fault and check the correct operation of the warning light with command **AC069**. |
| Check the **connection** and **condition** of the **injection computer connector**, component code **120** and the **instrument panel connector**, component code **247**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connection:<br>• **3NY** between components **120** and **247**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **instrument panel**, component code **247** (see **MR 451, Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| **DF328 PRESENT OR STORED** | THROTTLE POTENTIOMETER CIRCUIT<br>1. DEF: Open circuit or short circuit |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF012 Sensor supply voltage no. 2** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after:<br>– Leave the vehicle with the ignition on for **10 seconds** in no load position.<br>– Vary the pedal potentiometer gently from no load to full load.<br>– Keep at full load position for **10 seconds**.<br>(The fault should appear present, but may be stored again once the instruction has been followed). |
| | **Special notes:**<br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET505 OBD throttle potentiometer circuit**, corresponding to the **request to illuminate the OBD warning light**, is **YES**. In this case, use the method below to check the throttle potentiometer circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF328 CONTINUED | |
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Check the **connection** and **condition** of the **connector of the injection computer,** component code **120** and the **throttle potentiometer**, component code **222**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity**, **insulation** and the **absence of interference resistance** on the following connections:
- **3GR** between components **222** and **120**,
- **3AJ** between components **222** and **120**,
- **3JL** between components **222** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the throttle potentiometer resistance** (the resistance is zero or infinity in the event of a permanent fault).
Check that the **resistance change of the throttle potentiometer is progressive by pressing the throttle** from no load to full load.
Replace the throttle potentiometer, component code **222** (see **MR 451, Mechanical, 17B, Petrol injection, Throttle valve potentiometer: Removal - Refitting**) if the **resistance between connections 3JL and 3GR** is not between **960 Ω < X < 1440 Ω** or the **resistance between connections 3AJ and 3JL** is not **less than 1050** Ω.
Check that the throttle is driving the potentiometer.

If the fault is still present, apply the interpretation of fault **DF587 +5 volts supply to potentiometers and sensors**.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| **DF330 PRESENT OR STORED** | PINKING SENSOR CIRCUIT<br>1. DEF: Open circuit or short circuit |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present following a road test with the engine warm and under load. |
| | **Special notes:**<br>If the fault is stored with the **OBD warning light illuminated**, check in the context section if status **ET510 OBD pinking sensor circuit**, corresponding to the request to **illuminate the OBD warning light**, is **YES**. In this case, apply the method below to check the pinking sensor circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF330 CONTINUED | |
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Check the **connection** and **condition** of the **connector of the injection computer**, component code **120** and the **pinking sensor**, component code **146**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **clamping of the pinking sensor** on the engine block.
Repair if necessary.

Check the **continuity**, **insulation** and the **absence of interference resistance** on the following connections:
- **3DQ** between components **146** and **120**,
- **3S** between components **146** and **120**.

Check the **condition** of shielding **TB1** of connections **3S** and **3DQ** on component **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| **DF336 PRESENT OR STORED** | FLYWHEEL SIGNAL INFORMATION<br>1. DEF: Flywheel target fault<br>2. DEF: No tooth signal |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF353 Manifold pressure sensor circuit** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after starter operation for **10 seconds** or engine start. |
| | **Special notes:**<br>In the event of a tooth signal loss, **the OBD and level 2 warning lights are illuminated**, the **injection** and the **ignition** are **cut off**: the engine stalls and cannot be restarted.<br>If the fault is stored with the **OBD warning light illuminated**, check in the context section if status **ET495 OBD flywheel target fault**, corresponding to the request to **illuminate the OBD warning light**, is **YES**. In this case, apply the method below to check the flywheel sensor circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Check that status **ET422 Combustion misfire fault finding included** is **YES**.<br>If not, reinitialise the programming.<br>Deal with any other faults displayed by the diagnostic tool.<br>Then perform a conformity check. |

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| DF336 CONTINUED | |
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Check that there is **no play** between **the bearing face of the sensor target**, component code **149** and **the engine** (sensor is correctly recessed and correctly attached).

Check the **condition** and **connection of the connectors of the sensor target**, component code **149 and the injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity**, **insulation** and the **absence of interference resistance** on the following connections:
- **3BL** between components **149** and **120**,
- **3BG** between components **149** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure **the target sensor resistance** (the resistance is zero or infinity in the event of a permanent fault).
Replace the **target sensor**, component code **149** (see **MR 451, Mechanical, 17B, Petrol Injection, Crankshaft position sensor: Removal - Refitting**) if the resistance between connections **3BG** and **3BL** is not between **175 Ω < X < 295 Ω**.

Notes:
– These checks do not detect all the possible faults of the sensor.
– Whenever replacing sensors, if the connector is round and black, always replace the wiring (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check that status **ET422 Combustion misfire fault finding included** is **YES**.<br>If not, reinitialise the programming.<br>Deal with any other faults displayed by the diagnostic tool.<br>Then perform a conformity check. |
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| **DF352 PRESENT OR STORED** | IMMOBILISER CIRCUIT<br>1. DEF: Immobiliser line fault |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the ignition has been switched on. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

Check the **connection** and **condition** of the **injection computer connector**, component code **120** and the **UCH connector**, component code **645**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **H17** between components **645** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, carry out fault finding on the immobiliser (see **82A, Immobiliser, Fault summary table**).

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF353 PRESENT OR STORED** | MANIFOLD PRESSURE SENSOR CIRCUIT<br>1. DEF: Open circuit or short circuit<br>2. DEF: Change of manifold pressure |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with fault **DF587 +5 volts supply to potentiometers and sensors** first if it is present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the engine is started and the engine speed is increased above **608 rpm** for at least **10 seconds**. |
| | **Special notes:**<br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET498 OBD manifold pressure sensor circuit**, corresponding to the request to illuminate the **OBD warning light**, is **YES**. In this case, apply the method below to check the manifold pressure sensor circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF353 CONTINUED | |
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If the fault is only present when the engine is running, **switch the ignition on and check the consistency of parameter PR424 No load position programming value**.
Lightly depress the accelerator pedal (from no load to full throttle) and **check that the throttle position increases regularly**.
If this is not the case, the signal is incorrect. Apply the interpretation of **PR424**.

Check the **connection** and **condition** of the **connectors of the manifold pressure sensor**, component code **147** and the **injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check that the pressure sensor is **correctly attached on the inlet manifold**.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **3AJP** between components **147** and **120**,
- **3AJQ** between components **147** and **120**,
- **3AJR** between components **147** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault persists, apply the fault finding procedure for fault **DF587**.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| **DF360 PRESENT OR STORED** | IDLE SPEED REGULATION CIRCUIT<br>1. DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the engine is started. |
| | **Special notes:**<br>– **CO/CC.0/CC.1** on present faults.<br>– **1. DEF** for all stored faults.<br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET514 OBD idle speed regulation circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the idle speed regulation circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF360 CONTINUED | |
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Check the **connection** and **condition** of the **connectors of the idle speed regulation stepper motor**, component code **649** and the **injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **3BW** between components **649** and **120**,
- **3BU** between components **649** and **120**,
- **3BV** between components **649** and **120**,
- **3BX** between components **649** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Measure **the resistance of the idle speed regulation stepper motor** (the resistance is zero or infinity in case of a permanent fault).
Replace the **idle speed regulation stepper motor**, component code **649** (see **MR 451, Mechanical, 17B, Petrol injection, Petrol injection: List and location of components**) if the **resistance between connections 3BU and 3BV or between 3BW and 3BX** is not between **48 Ω < X < 58 Ω at 25ºC**.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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|---|---|
| **DF361 PRESENT OR STORED** | IGNITION COIL 1 - 4 CIRCUIT<br>1. DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal first with faults **DF587 +5 volts supply to potentiometers and sensors** and **DF085 Fuel pump relay circuit** if they are present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the engine starts. |
| | **Special notes:**<br>**The OBD warning light might be illuminated, idling is unstable**, there is a **loss of power, engine stalls and does not restart**.<br><br>**– CC.0 and CO: the level 2 (serious injection fault) warning light is illuminated.**<br>**– CO/CC.0/CC.1: on present faults.**<br>**– 1. DEF: for all stored faults.**<br><br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET503 OBD ignition coil 1 - 4 circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the ignition coil 1 - 4 circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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|---|---|
| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF361<br>CONTINUED 1 | |
|---|---|

Check the **connection** and **condition** of the **connectors of the pencil coil 1 circuit**, component code **1077**, the **pencil coil 4 circuit**, component code **1080** and the **injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Measure **the secondary resistance of pencil coils 1 and 4**.
Replace the **pencil coils**, component code **1077** and component code **1080** (see **MR 451, Mechanical, 17A, Ignition, Coils: Removal - Refitting**) if the **secondary resistance** is not between:
**9100 Ω < X < 12300 Ω**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **3CV** between components **1077** and **120**,
- **3CZ** between components **1077** and **1080**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| DF361 CONTINUED 2 | |
|---|---|

With the ignition on, check for **+12 V** on the **fuel pump relay**, component code **1047** on the following connection:
- **3NA** of component **1047**.

If there is no **+ 12V**:
– disconnect the battery,
In the **engine compartment connection unit**, disconnect the fuel pump relay.

Check the **connection** and **condition** of the **fuel pump relay connectors**, component code **1047**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **3NA** between components **1047** and **1077**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Reconnect the connector of the fuel pump relay, component code **1047**, and reconnect the battery.
If, with the ignition on, there is still no **+12 V** on the connector of the **cylinder 1 coil**, component code **1077**, replace the **relay**, component code **1047**.

Check the glow of the electric arc of the coils using the **Elé. 1808** and the method described in the associated Technical Note (see **Technical Note 6505A, Fault finding – Ignition coils on K4 and F4 engines**).
Replace the faulty coil if necessary.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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|---|---|
| **DF362 PRESENT OR STORED** | IGNITION COIL 2-3 CIRCUIT<br>1. DEF: Open circuit or short circuit<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal first with faults **DF587 +5 volts supply to potentiometers and sensors** and **DF085 Fuel pump relay circuit** if they are present or stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the engine starts. |
| | **Special notes:**<br>The **OBD warning light** might be **illuminated**, **idling** is **unstable**, there is a loss of **power, engine stalls and does not restart**.<br><br>**– CC.0 and CO: the level 2 (serious injection fault) warning light is illuminated.**<br>**– CO/CC.0/CC.1: on present faults.**<br>**– 1. DEF: for all stored faults.**<br><br>If the fault is stored with the OBD warning light illuminated, check in the context section if status **ET504 OBD ignition coil 2 - 3 circuit**, corresponding to the request to illuminate the OBD warning light, is **YES**. In this case, apply the method below to check the ignition coil 2 - 3 circuit. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF362<br>CONTINUED 1 | |
|---|---|

Check the **connection** and **condition** of the **connectors of the pencil coil 2 circuit**, component code **1078**, the **pencil coil 3 circuit**, component code **1079** and the **injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Measure the **secondary resistance of pencil coils 2** and **3**.
Replace the **pencil coils**, component code **1078** and component code **1079** (see **MR 451, Mechanical, 17A, Ignition, Coils: Removal - Refitting**) if the **secondary resistance** is not between: **9100 Ω < X < 12300 Ω**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **3CW** between components **1079** and **120**,
- **3CP** between components **1078** and **1079**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| DF362 CONTINUED 2 | |
|---|---|

With the ignition on, check for **+12 V** on the **fuel pump relay**, component code **1047** on the following connection:
- **3NA** of component **1047**.

If there is no **+ 12V**:
– disconnect the battery,
In the **engine compartment connection unit**, disconnect the fuel pump relay.

Check the **connection** and **condition** of the **fuel pump relay connectors**, component code **1047**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **3NA** between components **1047** and **1078**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Reconnect the connector of the fuel pump relay, component code **1047**, and reconnect the battery.
If, with the ignition on, there is still no **+12 V** on the connector of the **cylinder 2 coil**, component code **1078**, replace the **relay**, component code **1047**.

Check the glow of the electric arc of the coils using the **Elé. 1808** and the method described in the associated Technical Note (see **Technical Note 6505A, Fault finding – Ignition coils on K4 and F4 engines**).
Replace the faulty coil if necessary.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| **DF390 PRESENT OR STORED** | OXYGEN SENSOR OPERATING FAULT |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored and present faults:**<br>The fault is declared present after the engine has been started. |
| | **Special notes:**<br>This fault indicates that the signal received by the upstream oxygen sensor is inconsistent. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| Check that there are no **air leaks on the exhaust system**. |
| If the vehicle is driven frequently in town, **decoke the engine**. |
| Check the **connection** and **condition of the connector for the upstream oxygen sensor**, component code **887** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |

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| ***AFTER REPAIR*** | Make a note of any other operating faults.<br>Deal with any other faults displayed by the diagnostic tool. |

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| DF390 CONTINUED | |
|---|---|

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **3GK** between components **887** and **120**,
- **3GH** between components **887** and **120**,
- **3GF** between components **887** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the **upstream oxygen sensor**, component code **887** (see **MR 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Make a note of any other operating faults.<br>Deal with any other faults displayed by the diagnostic tool. |
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| **DF394 PRESENT OR STORED** | CATALYTIC CONVERTER OPERATING FAULT |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present after the engine has been started. |
| | **Special notes:**<br>This fault indicates an inconsistency of the signals received by the two oxygen sensors, upstream and downstream of the catalytic converter. |

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| Check that there are no **air leaks on the exhaust system**.<br>Repair if necessary. |
| **Visually check the condition of the catalytic converter**. A deformity may be causing it to malfunction.<br>Check for visual signs of thermal shock.<br>(Cold water splashing onto the hot catalytic converter may damage it). |
| Check that there has not been any **excessive consumption of oil** or **coolant**. Ask the customer if he has used an additive or other products of this kind. Such products can block the catalytic converter, and damage its short or long term performance. |
| Check if the engine has been **misfiring**. This could damage the catalytic converter. |
| If the cause of the damage was found, the catalytic converter can be replaced (see **MR 451, Mechanical, 19B, Exhaust, Catalytic converter: Removal – Refitting**).<br><br>**If the catalytic converter is replaced without having found the cause of its destruction, the new catalytic converter is likely to be destroyed very rapidly.** |

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| ***AFTER REPAIR*** | Make a note of any other operating faults.<br>Deal with any other faults displayed by the diagnostic tool. |

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|---|---|
| **DF489 PRESENT OR STORED** | AIR CONDITIONING COMPRESSOR CONTROL<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>1. DEF: Open circuit or short circuit |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present with the engine running and whilst pressing the air conditioning command button. |
| | **Special notes:**<br>**CO/CC.1**: It is no longer possible to request the air conditioning.<br>**CC.0**: The compressor is still active, risk of irreversible damage to the compressor (loss of capacity). The customer is complaining that the air conditioning is operating continuously.<br>**1. DEF**: for all stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |

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| DF489 CONTINUED | |
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| Check the **condition** and **connection** of the connectors of the **air conditioning compressor control relay**, component code **474** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity, insulation and the absence of interference resistance** on the following connection:<br>• **38K** between components **120** and **474**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **air conditioning compressor control relay**, component code **474** (see **MR 451**, **Mechanical**, **62A, Air conditioning**, **Compressor: Removal – Refitting**). |
| If the fault is still present, contact the Techline. |

| ***AFTER REPAIR*** | Deal with any faults displayed by the diagnostic tool.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the diagnostic tool. |
|---|---|

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| **DF524 PRESENT OR STORED** | ACTUATOR RELAY OUTPUT VOLTAGE<br>1.DEF: Open circuit or short circuit |

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| ***NOTES*** | **Special notes:**<br>This relay supplies the following actuators: the injectors, the oxygen sensor heaters, the fuel vapour absorber bleed solenoid valve, and connection **3FB** of the injection computer.<br><br>**CO/CC.1:** No actuator supply: same effect as running out of fuel. The vehicle stalls and will not start again.<br>**CC.0:** The actuators are supplied constantly: high electrical consumption when stationary.<br>**Intermittent CO:** Intermittent relay cut-off: hesitation when driving |
| | Use the **Technical Note Wiring Diagrams for H79**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| **DF524 CONTINUED** | |

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| Check the **condition of the battery and the vehicle earths**.<br>Repair if necessary. |
| Check the **condition** and **connection** of the connectors of the **actuator relay**, component code **1047, the injection computer**, component code **120** and the **engine fuse and relay box**, component code **597**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the presence and condition of the supply fuse of the **actuator relay**, component code **1047**:<br>• **F02 (25 A)** on component **597**,<br>Replace the fuses if the checks are not correct.<br><br>Check for **+12 V** on the **actuator relay**, component code **1047** on the following connection:<br>• **BP17** of component **1047**.<br>• **3FB** of component **1047**.<br><br>Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:<br>• **BP17** between components **1047** and **597**.<br>• **3FB** between components **1047** and **120**.<br><br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Replace the **actuator relay**, component code **1047** if necessary. |
| Disconnect the components one by one (injectors, fuel vapour absorber bleed solenoid valve, etc.).<br>Switch on the ignition to identify the defective component.<br>Replace the faulty component. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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|---|---|
| **DF587 PRESENT** | +5 VOLTS SUPPLY TO POTENTIOMETERS AND SENSORS<br>1.DEF: Open circuit or short circuit |

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| ***NOTES*** | Check parameter **PR071 Computer power supply voltage** (battery voltage measured approximately **12 V**):<br>– if it is at the limit value of approximately **16 V**, there is a short circuit to earth,<br>– if it is at the limit value of approximately **10.7 V**, there is a short circuit to the **+12 V supply of one of the 5 V supply tracks**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |

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| DF587 CONTINUED | |
|---|---|

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120**, the **throttle potentiometer**, component code **222**, the **manifold pressure sensor**, component code **147** and the **refrigerant pressure sensor**, component code **1202**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Disconnect the sensors **one by one**, to check whether the fault changes from **PRESENT** to **STORED**: throttle potentiometer, manifold pressure sensor, and refrigerant pressure sensor (if fitted to the vehicle).
If necessary, deal with the fault that applies to the sensor.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **3GR** between components **120** and **222**,
- **3AJP** between components **120** and **147**
- **38Y** between components **120** and **1202**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults displayed by the diagnostic tool.<br>Clear the computer memory.<br>Perform the conformity check. |
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| The global **conformity check** for the sub-functions of this system is no longer interpreted in the conformity check section. Instead, all information available in the sub-functions can be found in the following sections: |
| For the **STATUSES**, consult **INTERPRETATION OF STATUSES**. |
| For the **PARAMETERS**, consult **INTERPRETATION OF PARAMETERS**. |
| For the **COMMANDS**, consult **INTERPRETATION OF COMMANDS**. |

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| Status index | Diagnostic tool title |
|---|---|
| **ET001** | + After ignition computer feed |
| **ET003** | Engine immobiliser |
| **ET018** | Air conditioning request |
| **ET052** | Upstream $O_2$ sensor heating |
| **ET053** | Downstream $O_2$ sensor heating |
| **ET054** | Idle speed regulation |
| **ET056** | Richness double loop |
| **ET057** | Misfiring on cylinder 1 |
| **ET058** | Misfiring on cylinder 2 |
| **ET059** | Misfiring on cylinder 3 |
| **ET060** | Misfiring on cylinder 4 |
| **ET061** | Cylinder 1 detection |
| **ET117** | Overheating indicator light |
| **ET118** | OBD warning light |
| **ET219** | Fast idle speed |
| **ET222** | Injection fault warning light control |
| **ET223** | Serious injection fault warning light control. |
| **ET278** | Throttle position: no load |
| **ET279** | Throttle position: full load |
| **ET290** | Petrol pump relay control |
| **ET295** | Canister bleed |
| **ET297** | Power-assisted steering pressure switch |
| **ET298** | Low-speed fan assembly |
| **ET299** | High-speed fan assembly |

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| Status index | Diagnostic tool title |
|---|---|
| **ET300** | Richness regulation |
| **ET314** | Flywheel signal with engine running |
| **ET318** | Power-assisted steering pressure switch connection |
| **ET321** | Air conditioning compressor |
| **ET341** | Immobiliser code programmed |
| **ET344** | Sensor fault finding included |
| **ET345** | Catalytic converter fault finding in progress |
| **ET348** | Sensor fault finding complete |
| **ET349** | Catalytic converter fault finding complete |
| **ET422** | Combustion misfire fault finding in progress |
| **ET495** | OBD flywheel target fault |
| **ET496** | OBD coolant temperature sensor circuit |
| **ET497** | OBD air temperature sensor circuit |
| **ET498** | OBD manifold pressure sensor circuit |
| **ET499** | OBD cylinder 1 injector circuit |
| **ET500** | OBD cylinder 2 injector circuit |
| **ET501** | OBD cylinder 3 injector circuit |
| **ET502** | OBD cylinder 4 injector circuit |
| **ET503** | OBD ignition coil 1-4 circuit |
| **ET504** | OBD ignition coil 2-3 circuit |
| **ET505** | OBD throttle potentiometer circuit |

*Diag: fault finding
*RCH: passenger compartment heating resistor

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| Status index | Diagnostic tool title |
|---|---|
| **ET506** | OBD upstream oxygen sensor circuit |
| **ET507** | Upstream OBD upstream oxygen sensor heating |
| **ET508** | OBD downstream oxygen sensor circuit |
| **ET509** | Upstream OBD downstream oxygen sensor heating |
| **ET510** | Upstream OBD pinking sensor |
| **ET513** | OBD fuel pump control circuit |
| **ET514** | OBD idle speed regulation circuit |
| **ET515** | OBD canister bleed control circuit |
| **ET516** | OBD vehicle speed sensor circuit |

*Circ.: Circuit

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| ET001 | COMPUTER + AFTER IGNITION FEED |
|---|---|

| *STATUS DEFINITION* | **INACTIVE**: This status indicates the absence of the + after ignition feed.<br>**ACTIVE**: This status indicates the presence of the + after ignition feed. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

Status **ET001** must be **ACTIVE**.

In the event of a fault, apply **ALP1 No dialogue with the computer**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET003 | ENGINE IMMOBILISER |
|---|---|

| *STATUS DEFINITION* | **INACTIVE**: This status indicates that the immobiliser is inactive.<br>**ACTIVE**: This status indicates that the immobiliser is active. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

If the status is not **Inactive**, consult the interpretation of fault **DF352 Immobiliser circuit**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET018 | AIR CONDITIONING REQUEST |
|---|---|

| *STATUS DEFINITION* | **INACTIVE**: This status indicates that the air conditioning is not requested.<br>**ACTIVE**: This status indicates that the air conditioning is requested. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|
| | Use the **Technical Note Wiring Diagrams for H79**. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **air conditioning compressor control relay**, component code **474**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **38K** between components **474** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, check the air conditioning (**see MR 451, Mechanical, 62A, Air conditioning, Refrigerant circuit: Check**).

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET052 | UPSTREAM O2 SENSOR HEATING |
|---|---|

| *STATUS DEFINITION* | **INACTIVE**: This status indicates that the upstream $O_2$ sensor heating is inactive.<br>**ACTIVE**: This status indicates that the upstream $O_2$ sensor heating is active. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: engine stopped and ignition on.**

If the status is not **Inactive**, consult the interpretation of faults **DF082 Upstream oxygen sensor heating circuit** and **DF092 Upstream oxygen sensor circuit**.

**Conformity check: Engine warm and idling.**

If the status is inconsistent, consult the interpretation of faults **DF082** and **DF092**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET053 | DOWNSTREAM O2 SENSOR HEATING |
|---|---|

| *STATUS DEFINITION* | **INACTIVE**: This status indicates that the downstream O2 sensor heating is inactive.<br>**ACTIVE**: This status indicates that the downstream O2 sensor heating is active. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

Conformity check: engine stopped and ignition on.

The status is inactive when the engine is off.
In the event of a fault, apply the interpretation of faults **DF083 Downstream oxygen sensor heating circuit** and **DF093 Downstream oxygen sensor circuit**.

**Conformity check: Engine running at idle speed and engine coolant temperature > 80ºC.**

The status becomes **ACTIVE** when the engine is started and its operation increases according to the heating temperature. In the event of a fault, apply the interpretation of **DF083 and DF093**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| | |
|---|---|
| **ET054** | IDLING SPEED REGULATION |

| | |
|---|---|
| ***STATUS DEFINITION*** | **INACTIVE**: This status indicates that idle speed regulation is inactive.<br>**ACTIVE**: This status indicates that idle speed regulation is active. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults.<br>Pay attention to the consistency of parameters **PR145 Engine speed** and **PR190 Idle speed setpoint**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

**Conformity check: engine stopped and ignition on.**

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| ET054<br>CONTINUED 1 | |
|---|---|

| |
|---|
| The status must be **Inactive**, if this is not the case, apply the procedure below. |
| Check the **condition** and **connection** of the connectors of the **idle speed regulation stepper motor**, component code **649** and the **injection computer**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **resistance of the idle speed regulation stepper motor**.<br>If the resistance is not between **47 Ω < X < 58 Ω** at **25 °C**, replace the idle speed regulation valve, component code **649** (see **MR 451, Mechanical, 17B, Petrol injection, Petrol injection: List and location of components**). |
| Check the **continuity, insulation** and **absence of interference resistance** on the following connections:<br>• **3BW** between components **649** and **120**,<br>• **3BU** between components **649** and **120**,<br>• **3BV** between components **649** and **120**,<br>• **3BX** between components **649** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| ET054 CONTINUED 2 | |
|---|---|

**Conformity check: Engine warm and idling.**

The status must be **Active**, if this is not the case, apply the procedure below.

Check the **condition** and **connection** of the connectors of the **idle speed regulation stepper motor**, component code **649** and the **injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **resistance of the idle speed regulation stepper motor.**
If the resistance is not between **47 Ω < X < 58 Ω**, replace the idle speed regulation valve, component code **649** (see **MR 451, Mechanical, 17B, Petrol injection, Petrol injection: List and location of components**).

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **3BW** between components **649** and **120**,
- **3BU** between components **649** and **120**,
- **3BV** between components **649** and **120**,
- **3BX** between components **649** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| | |
|---|---|
| **ET054 CONTINUED 3** | |
| **IDLING SPEED TOO LOW** | – Check the operation of the richness regulation.<br>– Clean the air supply circuit (throttle valve, etc.) as it is probably clogged.<br>– Check the engine oil level.<br>– Check the valve clearances and timing.<br>– Check ignition.<br>– Check the injectors.<br>If all these points are correct, replace the idle speed regulation motor. |
| **IDLING SPEED TOO HIGH** | – Check the oil level.<br>– Check that the pressure sensor is operating correctly.<br>– Check the cleanliness of the pipes on the manifold.<br>– Check the pneumatically controlled solenoid valves.<br>– Check the manifold gaskets.<br>– Check the throttle valve seals.<br>– Check the sealing of the brake servo.<br>– Check for the fittings in the oil vapour rebreathing system.<br>– Check the valve clearances and timing.<br>If all these points are correct, replace the idle speed regulation motor. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| ET056 | DOUBLE RICHNESS LOOP |
|---|---|

| *STATUS DEFINITION* | **INACTIVE**: This status indicates that the double richness loop is inactive.<br>**ACTIVE**: The status indicates that the double richness loop is active. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|
| | To change status **ET056** to **ACTIVE** run the engine for approximately **1 minute 30 seconds**. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

In the event of a fault, apply the interpretation of **DF092 Upstream oxygen sensor circuit** and **DF093 Downstream oxygen sensor circuit**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET057 | COMBUSTION MISFIRES ON CYLINDER 1 |
|---|---|

| *STATUS DEFINITION* | **NO**: Indicates the absence of misfiring on cylinder 1.<br>**YES**: Indicates the presence of misfiring on cylinder 1. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

If **ET057** is **YES**, apply the interpretation of faults **DF123 Pollutant combustion misfires** and **DF124 Destructive combustion misfires**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET058 | MISFIRING ON CYLINDER 2 |
|---|---|

| *STATUS DEFINITION* | **NO**: Indicates the absence of misfiring on cylinder 2.<br>**YES**: Indicates the presence of misfiring on cylinder 2. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

If **ET058** is **YES**, apply the interpretation of faults **DF123 Pollutant combustion misfires** and **DF124 Destructive combustion misfires**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET059 | MISFIRING ON CYLINDER 3 |
|---|---|

| *STATUS DEFINITION* | **NO**: Indicates the absence of misfiring on cylinder 3.<br>**YES**: Indicates the presence of misfiring on cylinder 3. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

If **ET059** is **YES**, apply the interpretation of faults **DF123 Pollutant combustion misfires** and **DF124 Destructive combustion misfires**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET060 | MISFIRING ON CYLINDER 4 |
|---|---|

| *STATUS DEFINITION* | **NO**: Indicates the absence of misfiring on cylinder 4.<br>**YES**: Indicates the presence of misfiring on cylinder 4. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

If **ET060** is **YES**, apply the interpretation of faults **DF123 Pollutant combustion misfires** and **DF124 Destructive combustion misfires**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET061 | CYLINDER 1 RECOGNITION |
|---|---|

| *STATUS DEFINITION* | **PERFORMED**: This status indicates that the cylinder 1 injector command recognition is active.<br>**NOT PERFORMED**: This status indicates that the cylinder 1 injector command recognition is inactive. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

Run command **RZ019 Reinitialise programming** and program the engine flywheel target (**see Configurations and Programming - 2. Flywheel target programming**).
If the programming is done, status **ET061** must be **performed**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET117 | OVERHEATING WARNING LIGHT |
|---|---|

| *STATUS DEFINITION* | **OFF**: The **overheating warning light** must be **off**.<br>**ILLUMINATED**: The **overheating warning light** must be **illuminated**. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

The **overheating warning light** also is used as a warning light for system operation. It illuminates for **3 seconds** when the **power comes on** (automatic test procedure).

**Permanently on**: indicates engine **overheating**.
In the event of **overheating**, it is up to the driver whether to stop the vehicle or continue driving.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET118 | OBD WARNING LIGHT |
|---|---|

| *STATUS DEFINITION* | **OFF**: Indicates that the OBD warning light is off.<br>**ILLUMINATED**: Indicates that the OBD warning light is illuminated. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine warm and idling.**

If **ET118** is **ILLUMINATED**, consult the interpretation of **DF022 OBD warning light circuit**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| | |
|---|---|
| **ET222** | INJECTION FAULT WARNING LIGHT CONTROL. |

| | |
|---|---|
| ***STATUS DEFINITION*** | **ACTIVE**: Indicates that the **Level 1 injection fault** warning light is illuminated.<br>**INACTIVE**: Indicates that the **Level 1 injection fault** warning light is off. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

**ACTIVE:** The **injection computer** recorded one or more faults, with status **open circuit or short circuit** to **+12 V**.
Level 1 warning light illuminated if the level 2 warning light is defective.
Deal with these faults (see **Interpretation of faults**).

**INACTIVE:** The status is **INACTIVE** when the **injection computer** did not record any present fault that could illuminate the **level 1 warning light** (**Injection fault warning light**).

If the status is inconsistent, consult the interpretation of fault **DF235 Injection fault warning light circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the diagnostic tool. |

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| ET223 | SERIOUS INJECTION FAULT WARNING LIGHT CONTROL |
|---|---|

| *STATUS DEFINITION* | **ACTIVE**: Indicates that the Level 2 injection fault warning light is illuminated.<br>**INACTIVE**: Indicates that the Level 2 injection fault warning light is off. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

| |
|---|
| **ACTIVE:** The **injection computer** recorded one or more faults, with status **short circuit to earth**.<br>Deal with these faults (see **Interpretation of faults**). |
| **INACTIVE:** The status is **INACTIVE** when the **injection computer** did not record any present fault that could illuminate the **level 2 warning light** (**Serious injection fault warning light**). |
| If the status is inconsistent, consult the interpretation of fault **DF236 Serious injection fault warning light circuit**. |

| *AFTER REPAIR* | Carry out a road test, followed by a check with the diagnostic tool. |
|---|---|

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| | |
|---|---|
| **ET278** | THROTTLE POSITION: NO LOAD |

| | |
|---|---|
| ***STATUS DEFINITION*** | **YES**: If the accelerator pedal is not depressed.<br>**NO**: If the accelerator pedal is lightly depressed or depressed. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: engine stopped and ignition on.**

| |
|---|
| Accelerator pedal released:<br>Check that the value of **PR429 Measured throttle position** is between **0˚C < X < 47˚C**.<br>If **ET278** is **NO**, apply the interpretation of **PR429**. |
| Accelerator pedal lightly depressed:<br>If **ET278** is **YES**, apply the interpretation of **PR429**. |
| Accelerator pedal fully depressed:<br>Check that the value of **PR429** is between **70˚C < X < 100˚C**.<br>If **ET278** is **YES**, apply the interpretation of **PR429**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| ET278 CONTINUED | |
|---|---|

**Conformity check: Engine warm and idling.**

| |
|---|
| Accelerator pedal not depressed:<br>Check that the value of **PR429** is between **0˚C < X < 47˚C**.<br>If **ET278** is **NO**, apply the interpretation of **PR429**. |
| Accelerator pedal lightly depressed:<br>If **ET278** is **YES**, apply the interpretation of **PR429**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| ET290 | FUEL PUMP RELAY CONTROL |
|---|---|

| *STATUS DEFINITION* | **ACTIVE**: This status indicates that the fuel pump relay control is active.<br>**INACTIVE**: This status indicates that the fuel pump relay control is deactivated. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

| This status becomes **ACTIVE** when the engine is started. |
|---|
| In the event of a fault apply the interpretation for **DF085, Fuel pump relay control circuit**. |

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| | |
|---|---|
| **ET295** | CANISTER BLEED |

| | |
|---|---|
| ***STATUS DEFINITION*** | **ACTIVE**: The status indicates that the canister bleed control is active.<br>**INACTIVE**: The status indicates that the canister bleed control is inactive. |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>The petrol vapour rebreather bleed does not operate at idle speed |
| | There must be no present or stored faults. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

| |
|---|
| In the event of a fault, use command **AC017 Canister bleed solenoid valve** to check its operation. |
| If the fault is still present, see the interpretation of fault **DF081 Canister bleed solenoid valve circuit**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| ET297 | POWER ASSISTED STEERING PRESSOSTAT |
|---|---|

| *STATUS DEFINITION* | **ACTIVE**: This status indicates that the steering pressostat is active.<br>**INACTIVE**: This status indicates that the steering pressostat is inactive. |
|---|---|

| *NOTES* | There must be no present or stored faults.<br>Take this interpretation into account only if there is a conformity check inconsistency. |
|---|---|
| | Use the **Technical Note Wiring Diagrams for H79**. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **steering pressostat**, component code **224**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **3AW** between components **120** and **224**,
- **3BA** between components **120** and **224**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET298 | LOW-SPEED FAN ASSEMBLY |
|---|---|

| *STATUS DEFINITION* | **ACTIVE**: This status indicates that the low speed **fan assembly** is active.<br>**INACTIVE**: This status indicates that the low speed **fan assembly** is inactive. |
|---|---|

| *NOTES* | There should be no fault detected on the coolant temperature sensor circuit when this fault finding procedure is being carried out. |
|---|---|

**Conformity check: Engine warm and idling.**

Deal with **DF001 Coolant temperature sensor circuit** first.
Check the consistency of **PR064 Coolant temperature**.
**ACTIVE**: The injection computer requests the **activation** of the **low speed fan assembly** when:
- the engine coolant temperature is above **99˚C**,
- the injection computer has system faults that could lead to the engine overheating,
- the air conditioning is switched on by the driver.

When the high speed fan is supplied:
status **ET298** becomes **ACTIVE**.

**INACTIVE**: The high speed fan assembly stops when:
- the engine coolant temperature is below **96˚C**,
- no fault which could cause engine overheating is present in the injection system.
- the air conditioning is switched on by the driver.

| *AFTER REPAIR* | Carry out a road test, followed by a check with the diagnostic tool.<br>Repeat the conformity check from the start. |
|---|---|

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| ET299 | HIGH SPEED FAN ASSEMBLY |
|---|---|

| *STATUS DEFINITION* | **ACTIVE**: This status indicates that the high speed **fan assembly** is active.<br>**INACTIVE**: This status indicates that the high speed **fan assembly** is inactive. |
|---|---|

**Conformity check: Engine warm and idling.**

Deal with **DF001 Coolant temperature sensor circuit** first.
Check the consistency of **PR064 Coolant temperature**.
**ACTIVE**: The injection computer requests the activation of the high speed fan assembly when:
– the engine coolant temperature is above **102˚C**,
– the injection computer has system faults that could lead to the engine overheating.
When the high speed fan is supplied:
status **ET299** becomes **ACTIVE**.

**INACTIVE**: The high speed fan assembly stops when:
– the engine coolant temperature is below **99˚C**,
– no fault which could cause engine overheating is present in the injection system.

| *AFTER REPAIR* | Carry out a road test, followed by a check with the diagnostic tool. |
|---|---|

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| | |
|---|---|
| **ET300** | RICHNESS REGULATION |

| | |
|---|---|
| ***STATUS DEFINITION*** | **ACTIVE**: This status indicates that richness regulation is active.<br>**INACTIVE**: This status indicates that richness regulation is inactive. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

| |
|---|
| The status must be **ACTIVE**. In the event of a fault, consult the procedure below. |
| Check the **condition** and **connection** of the **connectors of the upstream oxygen sensor**, component code **887**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **condition** and **connection** of the **injection computer connectors**, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| ET300 CONTINUED | |
|---|---|

Check ignition.
Check the canister bleed tightness (a leak greatly disturbs the richness).
Check the exhaust system tightness.
Check the tightness of the inlet manifold.
If the vehicle has only been driven in town, the sensor will be dirty (try driving under load).
Check fuel pressure.
If idling is unstable, check the valve clearances and timing.
If necessary, replace the **oxygen sensor**, component code **887** (see **MR 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**).

Check for **+12 V** on the **upstream oxygen sensor**, component code **887** on the following connection:
- **3FB** of component **887**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
Check the **insulation, continuity and the absence of interference resistance** on the following connections:
- **3GH** between components **120** and **887**.
- **3GK** between components **120** and **887**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET314 | FLYWHEEL SIGNAL WITH ENGINE RUNNING |
|---|---|

| *STATUS DEFINITION* | **INACTIVE**: This status indicates that the flywheel signal with engine running is inactive.<br>**ACTIVE**: This status indicates that the flywheel signal with engine running is active. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: engine stopped and ignition on.**

The status must be **INACTIVE**.

**Conformity check: Engine warm and idling.**

The status must be **ACTIVE**.

In the event of a fault, consult the interpretation of fault **DF336 Flywheel signal information**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET318 | POWER ASSISTED STEERING PRESSURE SWITCH CONNECTION |
|---|---|

| *STATUS DEFINITION* | **YES**: This status indicates that the power-assisted steering pressure switch connection is made.<br>**NO**: This status indicates that the power-assisted steering pressure switch connection is not made. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: engine stopped and ignition on.**

| The status must be **NO**. |
|---|
| In the event of a fault, see the interpretation of **ET297 Power-assisted steering pressure switch**. |

**Conformity check: Engine warm and idling.**

| The status should be **YES**. |
|---|
| In the event of a fault, see the interpretation of **ET297**. |

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET321 | AIR CONDITIONING COMPRESSOR |
|---|---|

| *STATUS DEFINITION* | **ACTIVE**: This status indicates that the air conditioning compressor is active.<br>**INACTIVE**: This status indicates that the air conditioning compressor is inactive. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|
| | Use the **Technical Note Wiring Diagrams for H79**. |

**Conformity check: Engine warm and idling.**

Check the **condition** and **connection** of the **connectors of the air conditioning compressor control relay**, component code **474** and the **connectors of the injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **38K** between the components **120** and **474**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, check the air conditioning (see **MR 451, Mechanical, 62A, Air conditioning, Air conditioning: Check**).

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| ET341 | IMMOBILISER CODE PROGRAMMED |
|---|---|

| *STATUS DEFINITION* | **YES**: This status indicates that the immobiliser code has been programmed by the injection computer.<br>**NO**: This status indicates that the immobiliser code has not been programmed by the injection computer. |
|---|---|

| *NOTES* | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

If the status is **NO**, consult the interpretation of fault **DF352 Immobiliser circuit**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| Tool Parameter | Diagnostic tool title |
|---|---|
| **PR014** | Idling speed correction |
| **PR035** | Atmospheric pressure |
| **PR037** | Refrigerant pressure |
| **PR058** | Air temperature |
| **PR064** | Coolant temperature |
| **PR071** | Computer feed voltage |
| **PR095** | Anti-pinking correction |
| **PR098** | Upstream oxygen sensor voltage |
| **PR099** | Downstream oxygen sensor voltage |
| **PR101** | Duration of injection |
| **PR102** | Canister bleed solenoid valve OCR* |
| **PR103** | Instantaneous fuel consumption |
| **PR105** | OBD fault warning light lit mileage counter |
| **PR125** | Power used by the AC compressor |
| **PR139** | Operating adaptive richness |
| **PR140** | Idle adaptive richness |
| **PR145** | Engine speed |
| **PR155** | Vehicle speed |
| **PR190** | Engine idle speed setpoint. |
| **PR192** | Engine torque map |

*ocr = opening cyclic ratio

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| Tool Parameter | Diagnostic tool title |
|---|---|
| **PR421** | Inlet manifold vacuum |
| **PR424** | Programming the no-load position value |
| **PR427** | Average pinking signal |
| **PR429** | Measured throttle position |
| **PR431** | Idle speed OCR* adaptive |
| **PR432** | Idle speed OCR* |
| **PR438** | Richness correction value |
| **PR444** | Integral idling speed regulation correction |
| **PR448** | Ignition advance |
| **PR459** | Combustion misfiring rate |

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| | |
|---|---|
| **PR014** | IDLE SPEED CORRECTION |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the value of the idle speed correction.<br>This parameter changes according to the variations and ageing of the engine. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine stopped and ignition on or engine warm and idling.**

The parameter value is **PR014** = **0 rpm**.
If the reading is inconsistent, apply the interpretation of **DF336 Flywheel signal information**.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR035** | ATMOSPHERIC PRESSURE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the atmospheric pressure value in **mbar**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check with engine stopped and ignition on.**

In case of inconsistency, check that **PR421 Manifold pressure = PR035 Local atmospheric pressure**.

**Conformity check: Engine warm and idling.**

The parameter value must be between **700 mbar** < **PR035** < **1047 mbar**.
In case of inconsistency, check that **PR421 = PR035 = Local atmospheric pressure** with the **engine stopped and the ignition on**.
In the event of a fault, consult the interpretation of **PR421**.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR037** | REFRIGERANT PRESSURE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the refrigerant pressure value in **bar**. |

**Conformity check: Engine stopped and ignition on or engine warm and idling.**

The value must be between **1 bar < PR037 < 33 bar**.
In the event of a fault, see the interpretation of fault **DF232 Refrigerant pressure sensor circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR058** | AIR TEMPERATURE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the air temperature value in **ºC**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

**Conformity check: Engine stopped and ignition on or engine warm and idling.**

The value indicated by the air temperature sensor must be equal to the **temperature under the bonnet to within 5ºC**.
If the reading is inconsistent, check that the sensor is obeying the **"resistance versus temperature" calibration curve (see Fault finding – Help section at the end of the document)**.
Replace the sensor, **component code 272** (see **MR 451, Mechanical, 12A, Fuel mixture, Air flowmeter: Removal - Refitting**) if the values are incorrect (if a sensor is incorrect, this is often due to an electric shock).

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| PR058 CONTINUED | |
|---|---|

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **air temperature sensor**, component code **272**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **3B** between components **120** and **272**,
- **3JQ** between components **120** and **272**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| | |
|---|---|
| **PR064** | COOLANT TEMPERATURE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the coolant temperature value in **ºC**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

**Conformity check: Engine stopped and ignition on or engine warm and idling.**

The indicated value must be equal to the **engine temperature to within 5ºC**.
If the reading is inconsistent, check that the sensor is obeying the **"resistance versus temperature" calibration curve (see Fault finding – Help section at the end of the document)**.
Replace the **coolant temperature sensor**, component code **244** (see **MR 451, Mechanical, 19A, Cooling, Coolant temperature sensor: Removal - Refitting**) if the values are incorrect (if a sensor is incorrect, this is often due to an electric shock).

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **3JK** between components **120** and **244**,
- **3C** between components **120** and **244**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| PR071 | COMPUTER SUPPLY VOLTAGE |
|---|---|

| *PARAMETER DEFINITION* | This parameter indicates the value of the computer power supply voltage in **V**. |
|---|---|

| *NOTES* | There must be no present or stored faults.<br>There must be no electrical consumer activated. |
|---|---|

**Conformity check: Engine stopped and ignition on or engine warm and idling.**

**If the voltage is at minimum:**
Check the battery (see **Technical Note 3682A, Battery, 80A, Battery - Check**) and the charging circuit (see **Technical Note 3455A, Checking the charging circuit, 16A, Starting - Charging**).

**If the voltage is at maximum:**
Check that the charging voltage is correct with and without electrical consumers (see **Technical Note 3455A, Checking the charging circuit, 16A, Starting - Charging**).

**If the battery and the charging circuit are correct:**
Deal with the fault by applying the procedure for fault **DF587 +5 volts supply to potentiometers and sensors**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| | |
|---|---|
| **PR095** | ANTI-PINKING CORRECTION |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the anti-pinking correction in **˚V**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine warm and idling.**

The pinking sensor must not supply a zero signal, proving that it is recording the mechanical vibrations of the engine.
The value should be between **0 ˚V < PR095 < 8 ˚V**.
If the reading is inconsistent, see the interpretation of fault **DF330 Pinking sensor circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| PR098 | UPSTREAM OXYGEN SENSOR VOLTAGE |
|---|---|

| ***PARAMETER DEFINITION*** | This parameter indicates the upstream oxygen sensor voltage in **mV**. |
|---|---|

| ***NOTES*** | There must be no present or stored faults. |
|---|---|

**Conformity check: engine stopped and ignition on.**

The voltage value must be between **400 mV < PR098 < 450 mV** and must vary by at least **+/- 50 mV**.

**Conformity check: Engine warm and idling.**

The voltage value must be between **20 mV < PR098 < 840 mV**.

| | |
|---|---|
| **Upstream oxygen sensor** sub-function | In the event of a fault, apply interpretation of **DF092 Upstream oxygen sensor circuit**. |
| **Richness regulation** sub-function | In the event of a fault, consult the interpretation of status **ET300 Richness regulation**. |

| ***AFTER REPAIR*** | Repeat the conformity check from the start. |
|---|---|

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| | |
|---|---|
| **PR099** | DOWNSTREAM OXYGEN SENSOR VOLTAGE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the downstream oxygen sensor voltage in **mV**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: engine stopped and ignition on.**

The voltage value must be between **400 mV** < **PR098** < **450 mV**.
In the event of a fault, apply interpretation of **DF093 Downstream oxygen sensor circuit**.

**Conformity check: Engine warm and idling.**

The voltage value must be between **20 mV** < **PR098** < **840 mV**.
In the event of a fault, apply interpretation of **DF093 Downstream oxygen sensor circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR102** | CANISTER BLEED SOLENOID VALVE OCR |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the canister bleed solenoid valve opening cyclic ratio in %. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine stopped and ignition on or engine warm and idling.**

The parameter value must be **PR102 ≈ 0%**.
In the event of a fault, use command **AC017 Canister bleed solenoid valve** to check its operation. With the solenoid valve disconnected and the engine idling, use a finger to check that there is no intake of vapours.

If the fault is still present, see the interpretation of fault **DF081 Canister bleed solenoid valve circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR105** | MILEAGE COUNTER OBD FAULT WARNING LIGHT LIT |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the mileage travelled with the OBD warning light illuminated. This counter can be reset to 0 with the fault clearing command **RZ007 Fault memory**. The mileage varies according to the time the On Board Diagnostics warning light has been lit. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine stopped and ignition on or engine warm and idling.**

If there are no OBD faults on the vehicle, the value of **PR105** is **0**.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR125** | POWER ABSORBED BY THE AC* COMPRESSOR |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the power consumed by the air conditioning compressor in **W**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check with engine stopped and ignition on.**

The value should be: **PR125 = 300 W**

**Conformity check: Engine warm and idling and air conditioning activated.**

The parameter value must be **0 W** < **PR125** > **300 W**.

*AC: Air conditioning

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR139**<br>**PR140** | RICHNESS ADAPTIVE OPERATION<br>IDLE SPEED RICHNESS ADAPTIVE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | These parameters indicate the richness regulation.<br>The richness correction values are applied in order to have a richness of around **1**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults.<br>Carry out the programming operations. |

**Conformity check: Engine stopped and ignition on or engine warm and idling.**

The value of the operating richness adaptive parameter must be between **100** < **PR139** < **255**.
The value of the idle richness adaptive parameter must be between **0** < **PR140** < **208**.
If the readings are inconsistent, apply the fault finding procedure below.

Check the sealing of the canister bleed.
Repair if necessary.

Clear the injection computer memory.
When the engine is warm and during idle speed regulation, look at parameters **PR139** and **PR140**.
- **If one of these parameters goes to maximum stop, there is not enough petrol or too much air in the mixture.**
- **If one of these parameters goes to minimum stop, there is too much petrol or not enough air in the mixture.**

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| PR139<br>PR140<br>CONTINUED | |
|---|---|

| |
|---|
| Ensure the correctness, cleanness and proper operation of:<br>– petrol filter,<br>– petrol pump,<br>– fuel circuit,<br>– tank,<br>– air supply pipe,<br>– air filter,<br>– plugs.<br>Repair if necessary. |
| Check:<br>– the compressions,<br>– the valve clearance,<br>– the ignition.<br>Repair if necessary. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR145** | ENGINE SPEED |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the engine's rotational speed in **rpm**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: engine stopped and ignition on.**

The parameter value must be **PR145** = **0 rpm**.
In the event of a fault, consult the interpretation of status **ET054 Idle speed regulation**.

**Conformity check: Engine warm and idling.**

When accelerating or driving, the parameter value must be between **700 < PR145 < 6500 rpm**.
In the event of a fault, consult the interpretation of fault **DF336 Flywheel signal information**.

When idling, the parameter value must be between **750 < PR145 < 910 rpm**.
In the event of a fault, consult the interpretation of status **ET054**.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR155** | VEHICLE SPEED |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the vehicle speed in **mph** (**km/h**). |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

This parameter is transmitted by the **ABS** computer.
This signal is transmitted to the injection by:
– the **vehicle speed sensor** (for a 4x2 vehicle without ABS, without ESP)
– the **ABS computer** (for a vehicle with ABS)
– the **ESP computer** (for a vehicle with ESP)
– the **ETC torque distributor** (for a 4x4 vehicle without ABS, without ESP).

In the event of a fault, see the interpretation of fault **DF091 Vehicle speed signal**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the diagnostic tool. |

EMS3130_V04_PR155

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| | |
|---|---|
| **PR190** | IDLE SPEED SETPOINT |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the idle speed setpoint in **rpm**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

| |
|---|
| Its value must be equal to the value of **PR145** to within **25 rpm**. |
| In the event of a fault, consult the interpretation of status **ET054 Idle speed regulation**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR192** | ENGINE TORQUE MAP |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the engine torque in **Nm**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine warm and idling.**

This value must be between **20 N.m < X < 40 N.m**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the diagnostic tool. |

EMS3130_V04_PR192

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| | |
|---|---|
| **PR421** | MANIFOLD PRESSURE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the pressure in the inlet circuit in **mbar**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

**Conformity check: engine stopped and ignition on.**

| |
|---|
| The value of **PR421** must be between **250 mbar < X < 500 mbar**. |
| If there is inconsistency, check that **PR421 = PR035 Atmospheric pressure = Local atmospheric pressure**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| PR421 CONTINUED 1 | |
|---|---|

**Conformity check: Engine warm and idling.**

The value of **PR421** must be between **114 mbar < X < 1048 mbar**.

If there is inconsistency, consult the procedure below.

| | |
|---|---|
| Manifold pressure not correct when ignition is on.<br>or<br>Manifold pressure < minimum at idle speed<br>or<br>Atmospheric pressure not correct (**PR035**) | Check the **condition** and **connection** of the **connectors of the manifold pressure sensor**, component code **147** and the **injection computer**, component code **120**. If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| | Check the **continuity**, **insulation** and the **absence of interference resistance** on the following connections:<br>• **3AJR** between components **147** and **120**,<br>• **3AJQ** between components **147** and **120**,<br>• **3AJP** between components **147** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | If the fault is still present, replace the manifold pressure sensor (see **MR 451, Mechanical, 17B, Petrol injection, Petrol injection: List and location of components**). |

| ***AFTER REPAIR*** | Repeat the conformity check from the start. |
|---|---|

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| PR421 CONTINUED 2 | |
|---|---|

| | |
|---|---|
| Manifold pressure > maximum pressure at idle speed. | Check:<br>– the seal between the manifold and the sensor,<br>– the valve clearance,<br>– the fuel vapour absorber bleed,<br>– the cylinder compressions,<br>– that there are no air leaks,<br>– that the exhaust is not blocked. |
| | If the fault is still present, replace the manifold pressure sensor (see **MR 451, Mechanical, 17B, Petrol injection, Petrol injection: List and location of components**). |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| PR427 | AVERAGE PINKING SIGNAL |
|---|---|

| ***PARAMETER DEFINITION*** | This parameter indicates the average pinking signal. |
|---|---|

| ***NOTES*** | There must be no present or stored faults. |
|---|---|

**Conformity check: Engine warm and idling.**

This parameter varies according to the pinking status in the combustion chamber.
After the first cylinder was recognised for the first time, without pinking, the average pinking signal must be approximately **50**.
In the event of a fault, apply interpretation of **DF330 Pinking sensor circuit**.

| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the diagnostic tool. |
|---|---|

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| | |
|---|---|
| **PR429** | MEASURED THROTTLE POSITION |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the throttle position. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

For **engine stopped and ignition on**, **PR429** must be between **70˚C < X < 100˚C**.
For **engine warm and idling**, **PR429** must be between **0˚C < X < 47˚C**.

In the event of a fault, consult the interpretation below.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| PR429 CONTINUED 1 | |
|---|---|

| | |
|---|---|
| Programming at end point **PR424** or non-detection of No Load **ET278** or non-detection of Full Load **ET279** | Check that the **potentiometer mechanical stop has not been altered**.<br>Check the accelerator control (friction, blockage, etc.). |
| | Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the throttle potentiometer, component code **222**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| | Check the **continuity**, **insulation** and the **absence of interference resistance** on the following connections:<br>• **3GR** between components **222** and **120**,<br>• **3JL** between components **222** and **120**,<br>• **3AJ** between components **222** and **120**.<br><br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | Measure the resistance of the throttle potentiometer.<br>if the resistance between connections **3GR** and **3JL** is not between **960 Ω < X < 1440 Ω** and the **resistance between connections 3AJ and 3JL** is not **X ≤ 1050 Ω**: replace the throttle potentiometer (see **MR 451, Mechanical, 17B, Petrol injection, Throttle valve potentiometer: Removal - Refitting**). |
| | Repair if necessary. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| PR429 CONTINUED 2 | |
|---|---|
| The throttle position is fixed (**PR429**). | Check that the sensor is mechanically linked to the throttle.<br>Replace the throttle potentiometer if necessary (see **MR 451, Mechanical, 17B, Petrol injection, Throttle valve potentiometer: Removal - Refitting**). |

| ***AFTER REPAIR*** | Repeat the conformity check from the start. |
|---|---|

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| | |
|---|---|
| **PR431** | IDLE SPEED OCR* ADAPTIVE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the idle speed regulation programming value as a %. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine warm and idling.**

**PR431** is a stored parameter designed to "program" engine variation and ageing for the idle speed regulator. The programming is carried out only when the engine is idle and warm, and no electrical consumer (air conditioning, fan assembly, power assisted steering) is operating. Therefore it adjusts slowly.

***ocr = opening cyclic ratio**

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR432** | IDLE SPEED OCR* |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the value of the richness correction. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

| |
|---|
| For the values, see **System operation, Adaptive idle speed correction**. |
| In the event of a fault, consult the interpretation of status **ET054 Idle speed regulation**. |

***ocr = opening cyclic ratio**

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR438** | RICHNESS CORRECTION VALUE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the value of the richness correction. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

| |
|---|
| The value must be between **0 < X < 255**.<br>Average value **128**. |
| In the event of a fault, consult the interpretation of status **ET300 Richness regulation**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| | |
|---|---|
| **PR444** | BUILT-IN CORRECTION FOR IDLE SPEED REGULATION |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the integral term of the theoretical OCR* of regulation valve control in % and is calculated depending on the air requirements of the consumers. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

In the event of a fault, consult the interpretation of fault **DF360 Idle speed regulation circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the diagnostic tool. |

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| | |
|---|---|
| **PR448** | IGNITION ADVANCE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the ignition advance in degrees of crankshaft rotation ˚**V**. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults.<br>There must be no electrical consumer activated. |

**Conformity check: engine stopped and ignition on.**

The value should be:
– **PR448 ≈ 0 ºV**.
In the event of a fault, consult the interpretation of fault **DF336 Flywheel signal information**.

**Conformity check: Engine warm and idling.**

The value should be:
– **PR448 ≈ 4 ºV**.
In the event of a fault, apply the interpretation of **DF336**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the diagnostic tool. |

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| | |
|---|---|
| **PR459** | COMBUSTION MISFIRING RATE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the percentage of combustion misfiring. |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults.<br>There must be no electrical consumer activated. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

The value ≈ **20% indicates** that no major misfiring was detected based on an analysis of an adequate sample.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the diagnostic tool. |

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| NOTES | The commands are carried out to confirm that certain components are working properly. |
|---|---|

| Tool command | Diagnostic tool title<br>Specification |
|---|---|
| AC015 | Fuel pump relay |
| | This command controls the activation of the fuel pump.<br>In the event of a fault, see **Interpretation of commands**. |
| AC017 | Canister bleed solenoid valve |
| | This command controls the canister bleed solenoid valve.<br>In the event of a fault, consult the interpretation of **DF081 Canister bleed solenoid valve circuit**. |
| AC018 | Upstream O2 sensor heating |
| | This command controls the heating of the upstream oxygen sensor.<br>In the event of a fault, apply the interpretation of **DF082 Upstream oxygen sensor heating circuit**. |
| AC019 | Downstream O2 sensor heating |
| | This command controls the heating of the downstream oxygen sensor.<br>In the event of a fault, consult the interpretation of **DF083 Downstream oxygen sensor heating circuit**. |
| AC038 | Low speed fan assembly relay |
| | This command controls the low speed fan assembly.<br>In the event of a fault, apply the interpretation of status **ET298 Low speed fan assembly**. |
| AC039 | High speed fan assembly relay |
| | This command controls the high speed fan assembly.<br>In the event of a fault, apply the interpretation of status **ET299 High speed fan assembly**. |
| AC047 | OBD warning light |
| | This command controls the **OBD** warning light on the instrument panel.<br>– With the engine stopped and the ignition on, the **OBD** warning light should **illuminate**.<br>– With the engine warm and idling, the **OBD** warning light should remain **off**.<br>In the event of a fault, consult the interpretation of **DF022 OBD warning light circuit**. |

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| Tool command | Diagnostic tool title |
|---|---|
| | **Specification** |
| **AC068** | Injection fault warning light |
| | This command actuates the **level 1** warning light on the instrument panel.<br>In the event of a fault, consult the interpretation of **DF235 Injection fault warning light circuit**. |
| **AC069** | Severe injection fault warning light |
| | This command actuates the **level 2** warning light on the instrument panel.<br>In the event of a fault, consult the interpretation of **DF236 Serious injection fault warning light circuit**. |
| **AC070** | Air conditioning compressor |
| | This command is used to activate the air conditioning compressor.<br>In the event of a fault, refer to the interpretation of status **ET321 Air conditioning compressor**. |
| **AC109** | Idle regulation valve |
| | This command is used to activate the idle regulation valve.<br>In the event of a fault, consult the interpretation of fault **DF360 Idle speed regulation circuit**. |
| **AC116** | Coolant temperature warning light |
| | This command is used to illuminate the coolant temperature warning light.<br>In the event of a fault, consult the interpretation of fault **DF001 Coolant temperature sensor circuit.** |

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| | |
|---|---|
| **AC015** | FUEL PUMP RELAY |

| | |
|---|---|
| ***COMMAND DEFINITION*** | This command controls the activation of the fuel pump, when the ignition is on. |

| | |
|---|---|
| ***NOTES*** | Use the **Technical Note Wiring Diagrams for H79**. |

**Conformity check: Engine stopped and ignition on or Engine warm and idling.**

Check the **condition and connection** of the connectors of the **fuel pump relay**, component code **236** and the connector of the **fuel sender**, component code **833**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

With the ignition off, check for **+12 V** on the **fuel pump relay**, component code **236** on the following connection:
- **BP17** of component **236**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **BP17** between components **236** and **597**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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| AC015 CONTINUED | |
|---|---|

With the starter activated, check for **+12 V** on the **fuel pump relay**, component code **236** on the following connection:
- **3NA** of component **236**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **3NA** between components **236** and **833**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **earth** on the **fuel pump relay**, component code **833** between the following connection:
- **MG** of component **833**.

Check the **continuity, insulation and the absence of interference resistance** on the following connection:
**MG** between component **833** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the **fuel pump relay**, component code **236**.

If the fault is still present, replace the **fuel pump**, component code **833** (see **MR 451**, **Mechanical**, **19C**, **Fuel tank**, **Fuel level sensor module: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| *NOTES* | Only refer to the customer complaints after performing a complete check using the diagnostic tool. |
|---|---|

| | |
|---|---|
| **NO DIALOGUE WITH THE COMPUTER** | **ALP1** |
| **STARTING FAULTS** | **ALP2** |
| **IDLING SPEED FAULTS** | **ALP3** |
| **FAULTS WHEN DRIVING (ACCELERATION FLAT SPOTS, HESITATION ETC.)** | **ALP4** |

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| ALP1 | No dialogue with the computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagram for H79**. |
|---|---|

Check the condition of the battery.
**Ensure that the diagnostic tool is not the cause of the fault** by using it to establish dialogue with a computer on another vehicle.
Check the connection between the diagnostic tool and the diagnostic socket (condition of the cable).
Repair if necessary.

Check the presence and condition of the supply fuses of the **injection computer**, component code **120**:
- **F02 (5 A)** on component **1016**.

Replace the fuses if the checks are not correct.

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **passenger compartment fuse box**, component code **1016**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+12 V** on the **injection computer**, component code **120** on the following connection:
- **AP29** of component **120**.

| *AFTER REPAIR* | Carry out a check using the diagnostic tool. |
|---|---|

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| ALP1 CONTINUED 1 | |
|---|---|

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **AP29** between components **120** and **1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **for earth** on the **injection computer**, component code **120** between the following connections:
- **NH** of component **120**.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **NH** between component **120** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **condition** and **connection** of the **diagnostic socket**, component code **225**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity, insulation**, and the **absence of interference resistance** on the following connection:
- **HK** between components **120** and **225**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Carry out a check using the diagnostic tool. |
|---|---|

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| ALP1 CONTINUED 2 | |
|---|---|

Check the presence and condition of the supply fuses of the **diagnostic socket**, component code **225**:
- **F04 (10 A)** and **F29 (15 A)** on component **1016**,

Replace the fuses if the checks are not correct.

Check the **condition** and **connection** of the **passenger compartment fuse box** connectors, component code **1016**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+12 V** on the **diagnostic socket**, component code **225** on the following connections:
- **BP56** of component **225**,
- **AP10** of component **225**.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **BP56** between components **225** and **1016**,
- **AP10** between components **225** and **1016**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **for earth** on the **diagnostic socket**, component code **225** between the following connections:
- **MAN** of component **225**,
- **NC** of component **225**.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **MAN** between component **225** and **earth**,
- **NC** between component **225** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a check using the diagnostic tool. |
|---|---|

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| ALP2 | Starting faults |
|---|---|

| *NOTES* | Only address this customer complaint after a complete check with the diagnostic tool. |
|---|---|

| |
|---|
| Check that the starter motor operates properly. |
| Check that there is fuel in the tank (fuel sender fault).<br>Check the conformity of the fuel, run **TEST 1 Petrol conformity check**. |
| Check that no hoses are pinched (especially after a removal operation).<br>Check the condition of the fuel filter.<br>Check the condition of the tank.<br>Check that the tank vent is not blocked. |
| Check the petrol pump electrical supply. |
| Check the idle speed regulation valve.<br>Tap gently to release the valve. |
| Disconnect the pipe connecting the fuel vapour absorber bleed solenoid valve to the inlet manifold.<br>Plug the pipe to prevent an air leak.<br>If there is no longer any disturbance, the fuel vapour absorber bleed is at fault. |

| *AFTER REPAIR* | Carry out a check using the diagnostic tool. |
|---|---|

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| | |
|---|---|
| **ALP2 CONTINUED** | |

| |
|---|
| Check the condition of the spark plugs and ignition coils.<br>Check that these components are correct for the vehicle. |
| Check the engine compression. |
| Check the condition of the flywheel. |
| Check the timing adjustment. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a check using the diagnostic tool. |

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| ALP3 | Idle speed faults |
|---|---|

| *NOTES* | Only address this customer complaint after a complete check with the diagnostic tool. |
|---|---|

| |
|---|
| Check that there is fuel in the tank (fuel sender fault).<br>Check the conformity of the fuel, run **TEST 1 Petrol conformity check**. |
| Check that no hoses are pinched (especially after a removal operation).<br>Check the condition of the fuel filter.<br>Check the condition of the tank.<br>Check that the tank vent is not blocked. |
| Check the connection and condition of the connector of the idle speed regulation stepper motor.<br>Replace the connector if necessary. |
| Check the idle speed regulation valve.<br>Tap gently to release the valve. |
| Check that the camshaft dephaser solenoid valve is not locked in the open position (if fitted on the vehicle). |
| Disconnect the pipe connecting the fuel vapour absorber bleed solenoid valve to the inlet manifold.<br>Plug the pipe to prevent an air leak.<br>If there is no longer any disturbance, the fuel vapour absorber bleed is at fault. |

| *AFTER REPAIR* | Carry out a check using the diagnostic tool. |
|---|---|

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| ALP3 CONTINUED | |
|---|---|

| |
|---|
| Check the condition of the spark plugs and ignition coils.<br>Check that these components are correct for the vehicle. |
| Check that the exhaust system is not blocked and the catalytic converter is not clogged. |
| Using the dipstick, check that the oil level is not too high. |
| Check that the brake servo does not leak (noise). |
| Check the condition of the inlet manifold. |
| Check that the throttle valve is not clogged. |
| Check the engine compression. |
| Check the condition of the flywheel. |
| Check the timing adjustment. |

| *AFTER REPAIR* | Carry out a check using the diagnostic tool. |
|---|---|

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| | |
|---|---|
| **ALP4** | **Faults when driving (acceleration flat spots, jerking, etc.)** |

| | |
|---|---|
| ***NOTES*** | Only address this customer complaint after a complete check with the diagnostic tool. |

| |
|---|
| Check that the air filter is not deformed. |
| Check that there is fuel in the tank (fuel sender fault).<br>Check the conformity of the fuel, run **TEST 1 Petrol conformity check**. |
| Check that no hoses are pinched (especially after a removal operation).<br>Check the condition of the fuel filter.<br>Check the condition of the tank.<br>Check that the tank vent is not blocked. |
| Disconnect the pipe connecting the fuel vapour absorber bleed solenoid valve to the inlet manifold.<br>Plug the pipe to prevent an air leak.<br>If there is no longer any disturbance, the fuel vapour absorber bleed is at fault. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a check using the diagnostic tool. |

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| ALP4 CONTINUED | |
|---|---|

| |
|---|
| Check the condition of the spark plugs and ignition coils.<br>Check that these components are correct for the vehicle. |
| Check that the exhaust system is not blocked and the catalytic converter is not clogged. |
| Check that the exhaust manifold is not leaking. |
| Using the dipstick, check that the oil level is not too high. |
| Check that the brake servo does not leak (noise). |
| Check the condition of the inlet manifold. |
| Check that the throttle valve is not clogged. |
| Check the engine compression. |
| Check the condition of the flywheel. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a check using the diagnostic tool. |

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| Petrol conformity check | → | TEST 1 |
|---|---|---|

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| TEST 1 | Petrol conformity check |
|---|---|

**WARNING**
**During this operation, it is essential to:**
- **refrain from smoking or bringing incandescent objects close to the work area,**
- **protect yourself against fuel splashes due to residual pressure in the pipes,**
- **wear safety goggles with side guards,**
- **wear leaktight gloves (Nitrile type).**

**IMPORTANT**
- **To avoid any corrosion or damage, protect the areas on which fuel is likely to run.**
- **To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.**

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| TEST 1 CONTINUED | |
|---|---|

Remove **1 l** of fuel **at the fuel filter outlet, in the engine compartment** (see **MR 451, Mechanical, 19C, Tank, Fuel tank: Draining**), using a pneumatic transfer pump (**part no. 634-200**) and place it in a **1300 ml** plastic cup (**part no. 77 11 171 413**).
Close the plastic cup with its cover (**part no. 77 11 171 416**) and let the fuel rest for approximately **2 minutes**.
This type of plastic cup is used to prepare paint.

**Is the fuel cloudy or does it separate into two parts?**

YES → Water is present in the petrol; the fuel is not correct.
Drain the fuel circuit, including the tank (see **MR 451, Mechanical, 19C, Tank, Fuel tank: Draining**).

NO

Visually compare the fuel removed with the correct petrol.
**Are the samples identical?**

YES

The fuel is correct.
End of test.

NO

Fuel incorrect.
Drain the fuel circuit, including the tank (see **MR 451, Mechanical, 19C, Tank, Fuel tank: Draining**).

Note:
**Contact the Techline if you have doubts or problems with the customer.**

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| | | |
|---|---|---|
| Throttle potentiometer resistance | Track<br>Cursor | **960 Ω < X < 1440 Ω**<br>**X ≤ 1050 Ω** |
| Idle regulation stepper motor resistance | at **25ºC** | **47 Ω < X < 58 Ω** |
| BERU pencil ignition coil resistance | Secondary | **9100 Ω < X < 12300 Ω** |
| Injector resistance | at **20ºC** | **13 Ω < X < 15 Ω** |
| Upstream oxygen sensor heating resistance | at **23ºC** | **2 Ω < X < 5 Ω** |
| Downstream oxygen sensor heating resistance | at **23ºC** | **5 Ω < X < 7 Ω** |
| Top Dead Centre magnetic sensor resistance | at **23ºC** | **175 Ω < X < 295 Ω** |
| Fuel vapour absorber solenoid valve resistance | at **23ºC** | **22 Ω < X < 30 Ω** |

| Temperature | Air temperature sensor resistance | Coolant temperature sensor resistance |
|---|---|---|
| in **ºC** | in Ω | in Ω |
| **-10** | **10500 < X < 9000** | **11330 < X < 13600** |
| **25** | **1920 < X < 2180** | **2140 < X < 2370** |
| **50** | **763 < X < 857** | **770 < X < 850** |
| **80** | **292 < X < 326** | **275 < X < 290** |
| **110** | **126 < X < 143** | **112 < X < 117** |

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**Checking the ignition system:**

– Check the condition and correct tightness of the spark plugs, and that the codes or part numbers correspond to the engine. Replace them, if necessary.

– Check the condition of the ignition coil connectors. Replace them, if necessary.

– Check the condition and the resistance values of the ignition coils. Replace them, if necessary.

– Check the supplies to the coils. Presence of **+12 V** (ignition on).

– Check the line between the coils and the actuator relay. Repair if necessary.

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DUSTER

# 1 Engine and peripherals

## 17B PETROL INJECTION

**V42 Injection**
**Program No.: 2A**
**Vdiag No.: 04, 06**


| | |
|---|---|
| Fault finding – Introduction | 17B - 2 |
| Fault finding – List and location of components | 17B - 3 |
| Fault finding – Role of components | 17B - 4 |
| Fault finding – Operating diagram | 17B - 5 |
| Fault finding – Features | 17B - 9 |
| Fault finding – Replacement of components | 17B - 12 |
| Fault finding – Fault summary table | 17B - 15 |
| Fault finding – Interpretation of faults | 17B - 17 |
| Fault finding – Conformity check | 17B - 90 |
| Fault finding – Status summary table | 17B - 91 |
| Fault finding – Interpretation of statuses | 17B - 92 |
| Fault finding – Parameter summary table | 17B - 109 |
| Fault finding – Interpretation of parameters | 17B - 111 |
| Fault finding – Command summary table | 17B - 141 |
| Fault finding – Customer complaints | 17B - 143 |
| Fault finding – Fault Finding Chart | 17B - 145 |
| Fault finding – Test summary table | 17B - 173 |
| Fault finding – Tests | 17B - 174 |




"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

| | |
|---|---|
| **Vehicle(s): LOGAN, SANDERO, DUSTER**<br>**Engine: K7M714, K4M694, D4D760, K4M606**<br>**Function(s) concerned:**<br>**Petrol injection,**<br>**Flex Fuel Injection** | **Name of computer: V42**<br>**Program No.: 2A**<br>**Vdiag No.: 04, 06** |

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type**
**Fault finding procedures** (this manual):
– Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.
**Wiring Diagrams:**
– Visu - Schéma.

**Type of diagnostic tools**

**– CLIP**

**Special tooling required**

| **Special tooling required** | |
|---|---|
| **Diagnostic tool** | |
| **Elé 1590** | 128-track computer bornier |
| **Ele. 1681** | universal bornier |
| **Mot 1711** | Injector flow measuring kit |
| Multimeter. | |

## 3. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:
– Make sure the battery is properly charged to avoid damaging the computers if there is a low charge.
– Use the appropriate tools.

## 4. REMINDER

To run diagnostics on the vehicle computers, switch on the ignition using the key

To switch off the + after ignition feed, switch off the ignition using the key.

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**Injection computer:**
The injection computer is located in the engine compartment, behind the battery.

**TDC sensor:**
This sensor is located on the gearbox casing, behind the engine.

**Pinking sensor:**
This sensor is located between the four injectors.

**Refrigerant pressure sensor:**
This sensor is located on the air conditioning circuit.

**Injection coolant temperature sensor:**
This sensor is located on the engine water chamber.

**Injection air temperature sensor:**
The air temperature sensor is located at the air circuit inlet.

**Downstream oxygen sensor:**
The downstream oxygen sensor is located on the exhaust pipe downstream of the catalytic converter.

**Upstream oxygen sensor:**
The upstream oxygen sensor is located on the exhaust pipe after the manifold.

**Accelerator potentiometer:**
The potentiometer is located on the accelerator pedal.

**Brake light switch:**
The switch is located on the brake pedal.

**Injectors 1, 2, 3, 4:**
The injectors are mounted on the engine.

**Motorised throttle valve:**
The damper valve is located in front of the inlet manifold.

**Quadruple ignition coil module** (**D4D** and **K7M** engines):
The coil module is located in the engine compartment.

**Cylinder 1, 2, 3, 4 pencil coils** (**K4M** engine):
They are located on the cylinder head.

**Catalytic converter:**
The catalytic converter is located on the exhaust pipe downstream of the catalytic pre-converter.

**Fan unit relay:**
The relay is located on the cooling radiator.

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**Injection computer:**
The injection computer receives information from various sensors and sends control signals to various actuators according to mappings that it has stored in the memory.

**TDC sensor:**
This sensor allows the computer to provide synchronisation as well as to know the position Top Dead Centre for injection phasing.

**Pinking sensor:**
This sensor allows the computer to correct the ignition advance under high engine load to avoid damaging the engine.

**Refrigerant pressure sensor:**
The role of the sensor is to measure the refrigerant fluid pressure in the air conditioning circuit.

**Injection coolant temperature sensor:**
The engine coolant temperature sensor informs the computer about the engine coolant temperature.

**Injection air temperature sensor:**
The air temperature sensor provides the computer with the temperature of air taken in by the engine.

**Oxygen sensors:**
The oxygen sensors allow the catalytic converter to correctly perform engine emission control tasks.

**Accelerator potentiometer:**
The potentiometer allows the computer to take into account driver requests expressed using the accelerator pedal.

**Clutch pedal switch:**
This switch allows the computer to convert to anti-jerking mode when the clutch pedal is depressed.

**Brake light switch:**
The brake light switch informs the computer of the brake pedal status.
Two gangs are used if the cruise control function exists.

**Injectors:**
These injectors enable rapid, precise metering of the quantity of fuel injected, with excellent injection process repetitiveness.

**Motorised throttle valve:**
The throttle valve allows engine air flow to be managed according to driver requests.

**Quadruple ignition coil module** (**D4D** and **K7M** engines):
The ignition unit enables ignition (explosion timing control).

**Cylinder 1, 2, 3, 4 pencil coils** (**K4M** engine):
The pencil coils enable ignition (explosion timing control).

**Fan unit relay:**
The engine cooling fan unit relay supplies power to the engine cooling fan.

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**D4D760**

1. Air filter
2. Motorised throttle valve
3. Injection air temperature sensor
4. Manifold pressure
5. Injectors
6. Ignition coils
7. Injection coolant temperature sensor
8. Pinking sensor
9. TDC sensor
10. Upstream oxygen sensors
11. Downstream oxygen sensors
12. Injection computer
13. Auxiliary cold starting system
14. Auxiliary fuel tank
15. Auxiliary fuel
16. Petrol/alcohol tank
17. Petrol pump
18. Bleed valve

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**K4M694**

1. Air filter
2. Motorised throttle valve
3. Injection air temperature sensor
4. Manifold pressure
5. Injectors
6. Ignition coils
7. Injection coolant temperature sensor
8. Pinking sensor
9. TDC sensor
10. Upstream oxygen sensors
11. Downstream oxygen sensors
12. Injection computer
13. Auxiliary cold starting system
14. Auxiliary fuel tank
15. Auxiliary fuel
16. Petrol/alcohol tank
17. Petrol pump
18. Bleed valve

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**K7M714**

1. Air filter
2. Motorised throttle valve
3. Injection air temperature sensor
4. Manifold pressure
5. Injectors
6. Ignition coils
7. Injection coolant temperature sensor
8. Pinking sensor
9. TDC sensor
10. Upstream oxygen sensors
11. Downstream oxygen sensors
12. Injection computer
13. Auxiliary cold starting system
14. Auxiliary fuel tank
15. Auxiliary fuel
16. Petrol/alcohol tank
17. Petrol pump
18. Bleed valve

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**K4M606**

1. Air filter
2. Motorised throttle valve
3. Injection air temperature sensor
4. Manifold pressure
5. Injectors
6. Ignition coils
7. Injection coolant temperature sensor
8. Pinking sensor
9. TDC sensor
10. Upstream oxygen sensors
11. Downstream oxygen sensors
12. Injection computer

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**Engine immobiliser**

This Verlog 2 type immobiliser function is managed by the UCH computer and the injection computer.
Before any starting request, the injection computer is protected.
When a starting request is made, the injection computer and the Passenger Compartment Control Unit (UCH) exchange authentication data via the multiplex network. This determines whether the engine start is authorised or denied.

After more than five consecutive failed authentication attempts, the injection computer goes into protection (anti-scanning) mode and no longer tries to authenticate the UCH computer. It only leaves this mode when the following sequence of operations is carried out:
– the ignition is left on for at least **20 seconds**,
– the message is switched off,
– the end of the injection computer self-feed is adhered to (the length of time varies depending on engine temperature).

After this, one and only one authentication attempt is allowed. If this fails again, repeat the sequence of operations described above.
If the injection computer still fails to unlock, contact the Techline.

**Impact detected**
If an impact has been **stored** by the injection computer, turn off the ignition for **10 seconds**, then switch it back on to start the engine. Clear the faults using the control **RZ001 Fault memory**.

**WARNING**
Disconnect the injection system computer when carrying out any welding work on the vehicle.

**ENGINE SPEED MANAGEMENT**

Engine speed management is based on the following programs:

– Engine speed management when starting
– Engine speed management according to engine vibrations
– Idle speed management
– Engine speed restriction
– Engine speed management according to its status

**Engine speed management when starting**

This programming is used:
– To set the injection timing when starting, using the TDC (Top Dead Centre) sensor
– To calculate the amount of fuel to be injected into the cylinders to avoid flooding the engine.

**Preventive correction of engine speed linked to vibrations**

Programming that enables user comfort to be optimised during acceleration or deceleration which causes a harsh change in engine torque and therefore vibration in the driveshaft. Torque management is important during these situations.

**Curative correction of engine speed linked to vibrations**

This programming is used to absorb the oscillations in engine speed caused by vibration in the driveshaft.

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**Idle speed management**

This programming is used to calculate the adapted idle speed according to the conditions of use (cold engine, air conditioning requests, electrical consumer use etc.).

**Air supply**

This is managed by a motorised throttle valve which is controlled by the injection computer.
The injection computer also performs the following tasks using the motorised throttle:
– management of valve oscillations which can produce undesirable torque,
– management of valve movement subject to mechanical faults when the valve reaches its mechanical boundaries,
– management of acoustic faults by limiting throttle opening at a certain engine speed and when stopping the engine.

**Torque management**

The torque structure is the system for managing engine torque. It is necessary for some functions such as the electronic stability program (ESP), automatic transmission (BVA) or sequential gearbox (BVR).

Each computer (ESP, sequential gearbox, automatic transmission) sends a request for torque via the multiplex network to the injection computer. This arbitrates between the various torque requests and the driver's request (made via the accelerator pedal or the cruise control/speed limiter).

The result of this arbitration gives the torque setpoint. The computer then calculates the throttle position setpoint, the ignition advance *and the wastegate setpoint* (if a turbocharged engine) in order to provide the necessary torque.

**Ignition management**

Management of ignition advance enables the combustion quality to be managed and therefore engine operation to be optimised. For a positive advance, the ignition point will be before TDC*, however the advance can have a negative value.
TDC*: Top Dead Centre.

**Fuel supply management**

The fuel pump ensures the supply of fuel. It is activated for one second each time the + after ignition feed is switched on. It ensures the correct level of pressure in the circuit and thereby achieves correct engine starting, particularly if the vehicle has not been used for a long time. When the engine is running, the pump relay is controlled and therefore the pump is always active.
The petrol vapour absorber enables petrol vapour to be collected in order to limit its release into the atmosphere.

**Richness adjustment**

Richness is managed using the upstream and downstream oxygen sensors located on the exhaust. For the sensors to be operational quickly, they need to be heated by the exhaust gas and by a resistor internal to the sensor. These sensors reflect the efficiency of combustion and, using information sent to the computer, they enable the quantity of fuel injected to be managed in order to meet the emission control standards and to ensure optimum engine operation.

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**Engine temperature management**

The engine is cooled by a 2-speed fan assembly.
To cool the engine, the first speed of the GMV* is activated if the coolant temperature exceeds **99˚C**, then the second speed is activated if the temperature exceeds **102˚C**. A "very high temperature" warning light illuminates on the instrument panel if the temperature exceeds **108˚C**.
GMV*: Fan assembly

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## OPERATIONS FOR REPLACING OR REPROGRAMMING THE COMPUTER

### Procedure to be applied before replacement

This procedure must be applied before replacing or reprogramming the injection computer
(see **MR 388 or 451, Mechanical, 17B, Petrol injection, Petrol injection computer: Removal - Refitting**).

**IMPORTANT:**
– The computer permanently stores the immobilisation function code. It is forbidden to perform tests with computers borrowed from the Parts Department or from another vehicle.
– Connect a battery charger and switch on the vehicle + after ignition feed.
– Switch off all the electrical consumers (lights, interior lighting, air conditioning, radio, etc.).

– Connect the diagnostic tool (mains or cigarette lighter supply).

– Save the data by running command: **SC003 Save computer data**. In the event of a fault, contact the Techline.

– In the event of a **replacement**, note the vehicle **VIN code** using command **ID008 VIN code**.

– Switch on vehicle + after ignition feed and wait until **the coolant temperature** is less than **70˚C** and **the air temperature** is less than **50˚C**. Consult parameter **PR064 Coolant temperature** and **PR059 Air temperature**.

**IMPORTANT:**
It is necessary to respect these temperature values in order to carry out the computer programming or reprogramming operations.

– Apply the programming or reprogramming operations described in **Technical Note 3585A Computer (re)programming procedure**.

**IMPORTANT:**
After (re)programming the computer, switch off the + after ignition feed and wait for the loss of communication message to appear on the diagnostic tool, if the message does not appear, wait for **9 minutes**.
Failure to follow this procedure may cause the computer data to be corrupted.

### Procedure to be applied after repair:

This procedure must be applied after replacing or reprogramming the computer.

**Entering the saved data**
– enter the saved data by running command **SC001 Write saved data**.

**Programming the VIN code**

– Display the identifier **ID008 VIN code**
If the **VIN** is not entered, enter the **VIN** using command **VP010 Enter VIN**.

**Injection computer initialisation**

Start and stop the engine to initialise the computer and wait for the loss of communication message to appear on the diagnostic tool, if the message does not appear, wait for **9 minutes**.
The computer is automatically configured according to the sensors and options present on the vehicle.

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If the data were not saved before the operation, carry out the following operations:

**– Programming the VIN code**
– Enter the **V.I.N.** using command **VP010 Enter VIN**.

**– Injector programming**
Program the injectors by accessing the sub-section entitled **Injector replacement operations.**

**– Programming the TDC sensor**
Program the TDC sensor by accessing the sub-section entitled **TDC (Top Dead Centre) sensor replacement operations**.

**– Programming the motorised throttle**
Program the motorised throttle by accessing the sub-section entitled **Throttle valve replacement operations**.

**– Injection computer initialisation**
Start and stop the engine to initialise the computer and wait for the loss of communication message to appear on the diagnostic tool, if the message does not appear, wait for **9 minutes**.
The computer is automatically configured according to the sensors and options present on the vehicle.

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## THROTTLE VALVE REPLACEMENT OPERATIONS

– When replacing the inlet throttle valve, switch on the vehicle + after ignition feed, after replacing the part.
– Carry out resetting using command **RZ031 Throttle stop programming**.
– Switch off the ignition. The inlet valve will run a new programming procedure whilst maintaining the supply (power latch) due to the reinitialisation phase.
– Check that the programming is correct using status **ET051 Throttle stop programming**, it must be at **1**.
If programming was not performed correctly, repeat the operation from the start.
– If the fault is still present, contact the Techline.

## OPERATIONS FOR REPLACING THE BRAKE PEDAL SWITCH

– When replacing the brake pedal switch, switch on the vehicle + after ignition feed, after replacing the part.

– Check that the switch statuses change as follows, when the brake pedal is activated:

– **ET039** Brake pedal = 1 and **ET799** Brake Wire Contact = 1 when the brake pedal is **released**
– **ET039** Brake pedal = 2 and **ET799** Brake Wire Contact = 2 when the brake pedal is **depressed**

## OPERATIONS FOR REPLACING THE TDC (TOP DEAD CENTRE) SENSOR

– Switch on the vehicle + after ignition feed,
– Carry out resetting using command **RZ037 Flywheel target programming**.

Operation for Programming

– Decelerate a first time with injection cut-off (feet off the brake, accelerator and clutch pedals) between **3500** and **3000 rpm**, in a gear above 3rd for at least 3 seconds for manual gearboxes.
– Decelerate a second time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **2400** and **2000 rpm**, in 3rd gear for a manual gearbox for at least 14 seconds.
BVM*: Manual gearbox

Programming was performed successfully when status **ET089 Flywheel target programming** is at value **1**.

## OPERATIONS FOR REPLACING THE INJECTORS

– Switch on the vehicle + after ignition feed after replacing the part.
Carry out resetting using command **RZ033 Richness regulation programming**.
– Switch off the ignition.
A power latch is necessary to save the reset data.

– Switch on the vehicle + after ignition feed and check the values of the following parameters:
**PR624 Richness regulation programming offset**
**PR625 Richness regulation programming gain**

– Test the injectors using the following commands:
**AC005 Cylinder 1 injector**
**AC006 Cylinder 2 injector**
**AC007 Cylinder 3 injector**
**AC008 Cylinder 4 injector**.

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| Tool fault | DTC code | Diagnostic tool title |
|---|---|---|
| **DF001** | 0115 | Coolant temperature sensor circuit |
| **DF002** | 0095 | Air temperature sensor circuit |
| **DF011** | 0641 | Sensor supply voltage no. 1 |
| **DF012** | 0651 | Sensor supply voltage no. 2 |
| **DF015** | 0657 | Main relay control circuit |
| **DF018** | 0480 | Low-speed fan unit control circuit |
| **DF026** | 0201 | Cylinder 1 injector control circuit |
| **DF027** | 0202 | Cylinder 2 injector control circuit |
| **DF028** | 0203 | Cylinder 3 injector control circuit |
| **DF029** | 0204 | Cylinder 4 injector control circuit |
| **DF038** | 0606 | Computer |
| **DF047** | 0560 | Computer feed voltage |
| **DF050** | 0571 | Brake switch circuit |
| **DF059** | 0301 | Misfiring on cylinder 1 |
| **DF060** | 0302 | Misfiring on cylinder 2 |
| **DF061** | 0303 | Misfiring on cylinder 3 |
| **DF062** | 0304 | Misfiring on cylinder 4 |
| **DF065** | 0300 | Combustion misfire |
| **DF078** | 2100 | Motorised throttle control circuit |
| **DF079** | 2119 | Motorised throttle valve automatic control |
| **DF081** | 0443 | Canister bleed solenoid valve circuit |
| **DF082** | 0135 | Upstream oxygen sensor heating circuit |
| **DF083** | 0141 | Downstream oxygen sensor heating circuit |
| **DF085** | 0627 | Fuel pump relay control circuit |
| **DF088** | 0325 | Pinking sensor circuit |
| **DF091** | 0500 | Vehicle speed signal |
| **DF092** | 0130 | Upstream oxygen sensor circuit |
| **DF093** | 0136 | Downstream oxygen sensor circuit |
| **DF095** | 0120 | Throttle potentiometer circuit gang1 |
| **DF096** | 0220 | Throttle potentiometer circuit gang 2 |
| **DF101** | C121 | ESP multiplex connection |

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| Tool fault | DTC code | Diagnostic tool title |
|---|---|---|
| **DF102** | 2503 | Alternator power signal available |
| **DF109** | 0313 | Low fuel level misfire |
| **DF120** | 0335 | Engine speed sensor signal |
| **DF361** | 1351 | Ignition coil circuit 1-4 |
| **DF362** | 1352 | Ignition coil 2-3 circuit |
| **DF394** | 0420 | Catalytic converter operating fault |
| **DF398** | 0170 | Fuel circuit operating fault |
| **DF409** | 0461 | Fuel level sensor circuit |
| **DF457** | 0315 | Flywheel target |
| **DF532** | 2502 | Alternator charge signal |
| **DF556** | 2135 | Pedal/throttle position consistency |
| **DF631** | 0703 | Brake light switch signal |
| **DF648** | 060B | Computer |
| **DF721** | 0217 | Engine overheating |
| **DF884** | 2632 | Additional fuel circuit pump relay |
| **DF887** | 0226 | Brake - accelerator pedal position |
| **DF894** | 1633 | Additional fuel circuit solenoid valve |
| **DF974** | 0225 | Pedal potentiometer circuit gang 1 |
| **DF975** | 2120 | Pedal potentiometer circuit gang 2 |
| **DF992** | 1644 | Additional heater 1 relay circuit |
| **DF993** | 1645 | Additional heater 2 relay circuit |
| **DF994** | 1646 | Additional heater 3 relay circuit |
| **DF1015** | 0504 | Brake switch signal consistency |
| **DF1017** | 061A | Computer |
| **DF1058** | 0106 | Inlet pressure consistency |
| **DF1063** | C415 | ESP multiplex connection |
| **DF1068** | 0530 | Refriger* pressure sensor voltage |
| **DF1072** | 0645 | Air conditioning compressor relay control |
| **DF1074** | 0638 | Motorised throttle position inconsistent |
| **DF1355** | 1656 | Multiplexed torque regulator connection |

*Refriger: refrigerant

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| | |
|---|---|
| **DF001 PRESENT OR STORED** | COOLANT TEMPERATURE SENSOR CIRCUIT<br>4.DEF: Voltage too low<br>5.DEF: Voltage too high<br>6.DEF: Micro-cut |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>**– The OBD and Level 1 warning lights illuminate.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the connection and condition of the connector **of the coolant temperature sensor**, component code **244** and of the connections of the **injection computer**, component code **120**.
If the connector(s) are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Disconnect the **injection computer** connector, component code **120** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Petrol injection computer: Removal - Refitting**).
Measure the **resistance** of component **244** by connections **3JK** and **3C** of the **injection computer** connector, component code **120**.

If the **resistance** of the **coolant temperature sensor**, component code **244** is not between **100** $\Omega \leq$ **X** $\leq$ **10 k**$\Omega$ at ambient temperature: replace the **coolant temperature sensor**, component code **244** (see **MR 388 or 451, Mechanical, 19A, Cooling, Coolant temperature sensor: Removal - Refitting**).

Check the **insulation, continuity and absence of interference resistance** on the following connections:
– **3JK** between components **120** and **244**.
– **3C** between components **120** and **244**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF001 / V42_V06_DF001

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| | |
|---|---|
| **DF002 PRESENT OR STORED** | AIR TEMPERATURE SENSOR CIRCUIT<br>2.DEF: Signal outside lower limit.<br>3.DEF: Signal outside upper limit. |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>**– The OBD and Level 1 warning lights illuminate.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the connection and condition of the connector of the air temperature sensor, component code **272** and of the connections of the **injection computer**, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Measure the **resistance** of the **air temperature sensor**, component code **272** between connections **3B** and **3JQ**.
If the **resistance** measured is not between **300** Ω ≤ **X** ≤ **6 k**Ω: replace the **air temperature sensor**, component code **272**.

Check the **insulation, continuity and absence of interference resistance** on the following connections:
– **3B** between components **799** and **120**.
– **3JQ** between components **799** and **120**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF002 / V42_V06_DF002

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|---|---|
| **DF011 PRESENT OR STORED** | SENSOR FEED VOLTAGE NO. 1<br>1.DEF: Above maximum threshold.<br>2.DEF: Below minimum threshold. |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>**– The OBD and Level 2 warning lights illuminate.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Disconnect the **accelerator pedal sensor gang 1**, component code **921** then switch on the ignition. Wait several seconds so that the computer can update the fault status.
If the fault changes from **present** to **stored**: Replace the **accelerator pedal sensor gang 1**, component code **921** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal – Refitting**).

Disconnect the **motorised throttle valve**, component code **1076** then switch on the ignition (see **MR 388 or 451, Mechanical, 12A, Fuel mixture, Throttle valve: Removal - Refitting**).
Wait several seconds so that the computer can update the fault status.

If the fault changes from **present** to **stored**: Replace the **damper valve position sensor**, component code **1076** (see **MR 388 or 451, Mechanical, 12A, Fuel mixture, Throttle valve: Removal - Refitting**) referring to the **Replacement of components** section.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3LR** between components **921** and **120**,
– **3LT** between components **921** and **120**,
– **3MN** between components **1076** and **120**,
– **3MO** between components **1076** and **120**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF011 / V42_V06_DF011

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| | |
|---|---|
| **DF012 PRESENT OR STORED** | SENSOR SUPPLY VOLTAGE NO. 2<br>1.DEF: Above maximum threshold.<br>2.DEF: Below minimum threshold. |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>**– The OBD and Level 2 warning lights illuminate.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Disconnect the **accelerator pedal sensor gang 2**, component code **921** then switch on the ignition (see **MR 388 or 451, Mechanical, 37A, Mechanical component control, Accelerator pedal: Removal – Refitting**).
Wait several seconds so that the computer can update the fault status.
If the fault changes from **present** to **stored**: Replace the **accelerator pedal sensor gang 2**, component code **921** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal – Refitting**).

Disconnect the **manifold pressure sensor**, component code **147**, then switch on the ignition.
Wait several seconds so that the computer can update the fault status.
If the fault changes from **present** to **stored:** Replace the **inlet pressure sensor**, component code **147**.

Disconnect the **freon pressure sensor**, component code **1202**, then switch on the ignition (see **MR 388 or 451, Mechanical, 62A, Air conditioning, Pressure sensor: Removal - Refitting**).
Wait several seconds so that the computer can update the fault status.

If the fault changes from **present** to **stored:** Replace the **freon pressure sensor**, component code **1202** (see **MR 388 or 451, Mechanical, 62A, Air conditioning, Pressure sensor: Removal - Refitting**).

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3LU** between components **921** and **120**,
– **3LV** between components **921** and **120**,
– **3AJP** between components **147** and **120**,
– **3AJR** between components **147** and **120**,
– **38Y** between components **1202** and **120**,
– **38U** between components **1202** and **120**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF012 / V42_V06_DF012

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|---|---|
| **DF015 PRESENT OR STORED** | MAIN RELAY CONTROL CIRCUIT<br>CC.0: Short circuit to earth. |

| | |
|---|---|
| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is declared **present**:<br>– switch on the powerlatch phase - **switch off + after ignition feed and switch on the + after ignition feed again**). |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the connection and condition of the connectors of the **passenger compartment fuse box**, component code **1016**, of the **engine fuse box**, component code **597**, of the **injection computer**, component code **120** and of the **injection relay,** component code **1047** (see **MR 388 or 451, Mechanical, 87G, Engine compartment connection unit, Engine compartment connection unit: List and location of components**).
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the condition and operation of the **injection relay**, component code **1047**.
If the injection relay is faulty, replace the injection relay, component code **1047** (see **MR 388 or 451, Mechanical, 87G, Engine compartment connection unit, Engine compartment connection unit: List and location of components**).

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3AA** between components **1047** and **120**,
– **3AC** between components **1047** and **120**,
– **AP29** between components **1016** and **120**,
– **BP37** between components **597** and **1047**,
– **BP17** between components **1047** and **597**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF015 / V42_V06_DF015

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| | |
|---|---|
| **DF018 PRESENT OR STORED** | LOW SPEED FAN ASSEMBLY CONTROL CIRCUIT<br>CC.0: Short circuit to earth.<br>CC.1: Short circuit to +12 volts. |

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|---|---|
| ***NOTES*** | **Conditions for application to a stored fault:**<br>The fault is declared present after the ignition has been switched on or after running command **AC038 Low speed fan assembly relay** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

| |
|---|
| Run command **AC038 Low speed fan assembly relay** and check the supply of the low speed fan assembly relay control circuit using a test light on connection **3JN** of component **120**. |
| Check the connection and condition of the connector of the **injection computer**, component code **120** and of the **low speed fan assembly relay**, component code **784**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity and check for absence of interference resistanc**e on the following connection:<br>– **3JN** between components **784** and **120**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Run command **AC038 Low speed fan assembly relay** and check the supply of the low speed fan assembly relay power circuit using a test light on connection **49C** of component **784**.<br>If the check is not correct, replace the **fan assembly control relay**, component code **784**. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF018 / V42_V06_DF018

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| | |
|---|---|
| **DF026 PRESENT OR STORED** | CYLINDER 1 INJECTOR CONTROL CIRCUIT<br>CO: Open circuit.<br>CC.1: Short-circuit on +12 volts.<br>CC.0: Short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **The fault changes from stored to present when the engine is running at idle speed.** |
| | **Special notes:**<br>For **CC.1 and CO, the OBD and Level 1 warning lights illuminate**.<br>For **CC.0, the Level 2 warning light illuminates**. |
| | **Measure the resistance of the injector between 0˚C and 40˚C.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the connection and condition of the connector of the **injection computer**, component code **120** and of the **cylinder 1 injector**, component code **193**.
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Measure the **resistance** of the **cylinder 1 injector**, component code **193** between connections **3FB** and **3CR**.
If the **resistance** measured is not between **11** Ω ≤ **X** ≤ **20** Ω (**K4M** and **D4D** engine) or **9.2** Ω ≤ **X** ≤ **17** Ω (**K7M** engine): replace the **cylinder 1 injector**, component code **193** (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**).

Run command **AC005 Cylinder 1 injector** and check the operation of the injector with a listening test.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3CR** between components **193** and **120**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

With the ignition on, check for **+ 12 V** on connection **3FB** of component **193**.
If there is no **+ 12 V,** check the **continuity** of the following connection:
– **3FB** between components **597** and **193**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

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|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF026 / V42_V06_DF026

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|---|---|
| **DF027 PRESENT OR STORED** | INJECTOR CYLINDER 2 CONTROL CIRCUIT<br>CO: Open circuit.<br>CC.1: Short-circuit on +12 volts.<br>CC.0: Short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **The fault changes from stored to present when the engine is running at idle speed.** |
| | **Special notes:**<br>For **CC.1** and **CO, the OBD and Level 1 warning lights illuminate.**<br>**For CC.0**, the Level 2 warning light illuminates**.** |
| | **Measure the resistance of the injector between 0˚C and 40˚C.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the connection and condition of the connector of the **injection computer**, component code **120** and of the **cylinder 2 injector,** component code **194**.
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Measure the **resistance** of the **cylinder 2 injector**, component code **194** between connections **3FB** and **3CS**.
If the **resistance** measured is not between **11** Ω ≤ **X** ≤ **20** Ω (**K4M** and **D4D** engine) or
**9.2** Ω ≤ **X** ≤ **17** Ω (**K7M** engine): replace the **cylinder 2 injector**, component code **194** (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**).

Run command **AC006 Cylinder 2 injector** and check the operation of the injector with a listening test.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3CS** between components **194** and **120**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

With the ignition on, check for **+ 12 V** on connection **3FB** of component **194**.
If there is no **+ 12 V,** check the **continuity** of the following connection:
– **3FB** between components **1047** and **194**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF027 / V42_V06_DF027

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| | |
|---|---|
| **DF028 PRESENT OR STORED** | CYLINDER 3 INJECTOR CONTROL CIRCUIT<br>CO: Open circuit.<br>CC.1: Short-circuit on +12 volts.<br>CC.0: Short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **The fault changes from stored to present when the engine is running at idle speed.** |
| | **Special notes:**<br>For **CC.1** and **CO, the OBD and Level 1 warning lights illuminate.**<br>**For** CC.0, the Level 2 warning light illuminates. |
| | **Measure the resistance of the injector between 0˚C and 40˚C.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the connection and condition of the connector of the **injection computer**, component code **120** and of the **cylinder 3 injector,** component code **195**.
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Measure the **resistance** of the **cylinder 3 injector**, component code **195** between connections **3FB** and **3CT**.
If the **resistance** measured is not between **11** Ω ≤ **X** ≤ **20** Ω (**K4M** and **D4D** engine) or
**9.2** Ω ≤ **X** ≤ **17** Ω (**K7M** engine): replace the **cylinder 3 injector**, component code **195** (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**).

Run command **AC007 Cylinder 3 injector** and check the operation of the injector with a listening test.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3CT** between components **195** and **120**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

With the ignition on, check for **+ 12 V** on connection **3FB** of component **195**.
If there is no **+ 12 V,** check the **continuity** of the following connection:
– **3FB** between components **1047** and **195**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF028 / V42_V06_DF028

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| | |
|---|---|
| **DF029 PRESENT OR STORED** | CYLINDER 4 INJECTOR CONTROL CIRCUIT<br>CO: Open circuit.<br>CC.1: Short-circuit on +12 volts.<br>CC.0: Short circuit to earth |

| | |
|---|---|
| ***NOTES*** | **The fault changes from stored to present when the engine is running at idle speed.** |
| | **Special notes:**<br>For **CC.1** and **CO, the OBD and Level 1 warning lights illuminate.**<br>**For** CC.0, the Level 2 warning light illuminates**.** |
| | **Measure the resistance of the injector between 0˚C and 40˚C.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

| |
|---|
| Check the connection and condition of the connector of the **injection computer**, component code **120** and of the **cylinder 4 injector,** component code **196**.<br>If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Measure the **resistance** of the **cylinder 4 injector**, component code **196** between connections **3FB** and **3CU**.<br>If the **resistance** measured is not between **11** Ω ≤ **X** ≤ **20** Ω (**K4M** and **D4D** engine) or<br>**9.2** Ω ≤ **X** ≤ **17** Ω (**K7M** engine): replace the **cylinder 4 injector**, component code **196** (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**). |
| Run command **AC008 Cylinder 4 injector** and check the operation of the injector with a listening test. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connections:<br>– **3CU** between components **196** and **120**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| With the ignition on, check for **+ 12 V** on connection **3FB** of component **196**.<br>If there is no **+ 12 V,** check the **continuity** of the following connection:<br>– **3FB** between components **1047** and **196**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF029 / V42_V06_DF029

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|---|---|
| **DF038 PRESENT OR STORED** | COMPUTER<br>1.DEF: Internal electronic fault. |

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|---|---|
| ***NOTES*** | **Special notes:**<br>**The OBD and Level 2 warning lights illuminate.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF038 / V42_V06_DF038

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| | |
|---|---|
| **DF047 PRESENT OR STORED** | COMPUTER SUPPLY VOLTAGE<br>1.DEF: Permanent high signal.<br>2.DEF: Permanent low level. |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>**The OBD and Level 1 warning lights illuminate.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Move the wiring harness between the **injection computer**, component code **120** and the **battery**, component code **107** to see if the status changes (**Present ←→ Stored**).
Look for any damage to the wiring harness and check the connection and condition of the **battery**, component code **107** and its connections.
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Start the engine and check the battery voltage using **PR071 Computer supply voltage** is **X ≥ 9V**.

Stop the engine and check the vehicle **charging circuit** (see **MR 388 Mechanical, 16A, Starting – Charging, Charging circuit: Check**).

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF047 / V42_V06_DF047

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|---|---|
| **DF050 PRESENT OR STORED** | BRAKE SWITCH CIRCUIT<br>1.DEF: Inconsistent signal. |

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|---|---|
| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is **present** after the ignition has been switched on and the brake pedal has been depressed.<br>The fault appears after a fault on one of the two brake switch contacts. |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

| |
|---|
| With the brake pedal **released**, check **ET039 Brake pedal** and **ET799 Brake wire contact**.<br>**ET039** must be **Released** and **ET799 Inactive**. |
| Check the fitting and mechanical operation of the brake pedal (the pedal returns properly).<br>If the check is incorrect, check the braking system. |
| Remove the **brake pedal switch**, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**) and, without action on the pedal, press sufficiently on the brake pedal switch to seat it completely in its position.<br>Lock it by turning it an eighth of a turn. |
| With the brake pedal **depressed**, measure the **resistance** of the **brake pedal switch**, component code **160** between connections **AP1** and **65A**, the value must be **X > 1000 kΩ**.<br>If the **resistance** is not correct, replace the **brake pedal switch**, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**).<br>With the brake pedal **released**, measure the **resistance** of the **brake pedal switch**, component code **160** between connections **AP1** and **5A**, the value must be between **0 Ω < X ≤ 1 Ω**.<br>If the **resistance** is not correct, replace the **brake pedal switch**, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**). |
| Check the **brake pedal switch** connector, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**).<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring |
| Check fuse **F03** (**10 A**) and replace it if necessary. |
| **Checking the brake pedal switch**:<br>After the repair, perform these two checks.<br>With the brake pedal **released**, check **ET039** and **ET799**.<br>**ET039** must be **Released** and **ET799** must be **Inactive**.<br>While depressing the brake pedal, check **ET039** and **ET799**.<br>**ET039** must be **depressed** and **ET799** must be **active**.<br>The two checks must be correct. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF050 / V42_V06_DF050

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|---|---|
| **DF059 PRESENT OR STORED** | COMBUSTION MISFIRES ON CYLINDER 1<br>1.DEF: Polluting misfiring<br>2.DEF: Destructive misfiring |

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|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF109 Low fuel level misfire,**<br>Check whether there are other cylinders with a **combustion misfire** fault reported **by the diagnostic tool** before starting the fault finding procedure below. |
| | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is considered **present** under the following conditions:<br>– engine running at idling speed. |
| | **Special note:**<br>**Level 1 fault warning light illuminated.** |

| | | |
|---|---|---|
| **1.DEF** | ***NOTES*** | None. |

Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit,
Check the condition of the cylinder 1 injector (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the compression of cylinder 1.

After repair, check that the catalytic converter is not damaged by the misfire.
To do this, switch on the ignition, run the catalytic converter test **SC006 Run OBD test: Catalytic converter** and start the engine (only depress the brake pedal to authorise the starting of the engine, do not touch the accelerator pedal or clutch pedal).
At the end, check the test results:
**STATUS1**: Fault finding was not performed/impossible to obtain the necessary conditions
**STATUS2**: The component is in an average condition - sensor OK
**STATUS3**: The component is in a good condition - sensor OK
**STATUS4**: The component is in a poor condition - replace the catalytic converter (see **MR 388 or 451, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF059 / V42_V06_DF059

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| DF059 CONTINUED | |
|---|---|

| 2.DEF | *NOTES* | None. |
|---|---|---|

Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit
Check the condition of the cylinder 1 injector (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the compression of cylinder 1.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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|---|---|
| **DF060 PRESENT OR STORED** | MISFIRING ON CYLINDER 2<br>1.DEF: Polluting misfiring<br>2.DEF: Destructive misfiring |

| | |
|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF109 Low fuel level misfire**,<br>Check whether there are other cylinders with a **combustion misfire** fault reported **by the diagnostic tool** before starting the fault finding procedure below. |
| | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is considered **present** under the following conditions:<br>– engine running at idling speed. |
| | **Special note:**<br>**Level 1 fault warning light illuminated.** |

| | | |
|---|---|---|
| **1.DEF** | ***NOTES*** | None. |

Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the condition of the cylinder 2 injector (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the compression of cylinder 2.

After repair, check that the catalytic converter is not damaged by the misfire.
To do this, switch on the ignition, run the catalytic converter test **SC006 Run OBD test: Catalytic converter** and start the engine (only depress the brake pedal to authorise the starting of the engine,
do not touch the accelerator pedal or clutch pedal).
At the end, check the test results:
**STATUS1**: Fault finding was not performed/impossible to obtain the necessary conditions
**STATUS2**: The component is in an average condition - sensor OK
**STATUS3**: The component is in a good condition - sensor OK
**STATUS4**: The component is in a poor condition - replace the catalytic converter (see **MR 388 or 451, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF060 / V42_V06_DF060

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| DF060 CONTINUED | |
|---|---|

| 2.DEF | *NOTES* | None. |
|---|---|---|

Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the condition of the cylinder 2 injector (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the compression of cylinder 2.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **DF061 PRESENT OR STORED** | MISFIRING ON CYLINDER 3<br>1.DEF: Polluting misfiring<br>2.DEF: Destructive misfiring |

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|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF109 Low fuel level misfire,**<br>Check whether there are other cylinders with a **combustion misfire** fault reported **by the diagnostic tool** before starting the fault finding procedure below. |
| | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is considered **present** under the following conditions:<br>– engine running at idling speed. |
| | **Special note:**<br>**Level 1 fault warning light illuminated.** |

| | | |
|---|---|---|
| **1.DEF** | ***NOTES*** | None. |

Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit (see **MR 388, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the condition of the cylinder 3 injector (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the compression of cylinder 3.

After repair, check that the catalytic converter is not damaged by the misfire.
To do this, switch on the ignition, run the catalytic converter test **SC006 Run OBD test: Catalytic converter** and start the engine (only depress the brake pedal to authorise the starting of the engine, do not touch the accelerator pedal or clutch pedal).
At the end, check the test results:
**STATUS1**: Fault finding was not performed/impossible to obtain the necessary conditions
**STATUS2**: The component is in an average condition - sensor OK
**STATUS3**: The component is in a good condition - sensor OK
**STATUS4**: The component is in a poor condition - replace the catalytic converter (see **MR 388 or 451, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF061 / V42_V06_DF061

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| DF061 CONTINUED | |
|---|---|

| 2.DEF | *NOTES* | None. |
|---|---|---|

Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the condition of the cylinder 3 injector (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the compression of cylinder 3.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **DF062 PRESENT OR STORED** | MISFIRING ON CYLINDER 4<br>1.DEF: Polluting misfiring<br>2.DEF: Destructive misfiring |

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|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF109 Low fuel level misfire**,<br>Check whether there are other cylinders with a **combustion misfire** fault reported **by the diagnostic tool** before starting the fault finding procedure below. |
| | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is considered **present** under the following conditions:<br>– engine running at idling speed. |
| | **Special note:**<br>**Level 1 fault warning light illuminated.** |

| | | |
|---|---|---|
| **1.DEF** | ***NOTES*** | None. |

Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the condition of the cylinder 4 injector (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the compression of cylinder 4.

After repair, check that the catalytic converter is not damaged by the misfire.
To do this, switch on the ignition, run the catalytic converter test **SC006 Run OBD test: Catalytic converter** and start the engine (only depress the brake pedal to authorise the starting of the engine, do not touch the accelerator pedal or clutch pedal).
At the end, check the test results:
**STATUS1**: Fault finding was not performed/impossible to obtain the necessary conditions
**STATUS2**: The component is in an average condition - sensor OK
**STATUS3**: The component is in a good condition - sensor OK
**STATUS4**: The component is in a poor condition - replace the catalytic converter (see **MR 388 or 451, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF062 / V42_V06_DF062

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| DF062 CONTINUED | |
|---|---|

| 2.DEF | *NOTES* | None. |
|---|---|---|

Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the condition of the cylinder 4 injector (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the compression of cylinder 4.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **DF065 PRESENT OR STORED** | COMBUSTION MISFIRES<br>1.DEF: Polluting misfiring<br>2.DEF: Destructive misfiring |

| | |
|---|---|
| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**– DF109 Low fuel level misfire,**<br>**– DF059 Combustion misfire on cylinder 1,**<br>**– DF060 Combustion misfire on cylinder 2,**<br>**– DF061 Combustion misfire on cylinder 3,**<br>**– DF062 Combustion misfire on cylinder 4.** |
| | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is considered **present** under the following conditions:<br>– engine running at idling speed. |
| | **Special note:**<br>**Level 1 fault warning light illuminated.** |

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| **1.DEF** | ***NOTES*** | None. |

Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the condition of the cylinder injector (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the compression of the cylinder.

After repair, check that the catalytic converter is not damaged by the misfire.
To do this, switch on the ignition, run the catalytic converter test **SC006 Run OBD test: Catalytic converter** and start the engine (only depress the brake pedal to authorise the starting of the engine, do not touch the accelerator pedal or clutch pedal).
At the end, check the test results:
**STATUS1**: Fault finding was not performed/impossible to obtain the necessary conditions
**STATUS2**: The component is in an average condition - sensor OK
**STATUS3**: The component is in a good condition - sensor OK
**STATUS4**: The component is in a poor condition - replace the catalytic converter (see **MR 388 or 451, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF065 / V42_V06_DF065

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| DF065 CONTINUED | |
|---|---|

| 2.DEF | *NOTES* | None. |
|---|---|---|

Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the condition of the cylinder injector (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the compression of the cylinder.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| **DF078 PRESENT OR STORED** | MOTORISED THROTTLE CONTROL CIRCUIT<br>1.DEF: Motorised throttle general control fault |

**WARNING:**
Never drive the vehicle without having confirmed that no faults involving the throttle valve are present.

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| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is considered **present** if:<br>– the engine speed varies,<br>– the AC027 Motorised throttle command is activated. |
| | **Special notes:**<br>**OBD warning light and level 1 fault warning light illuminated.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the **cleanliness and condition** of the injection computer connector, component code **120** and of the throttle valve connector, component code **1076**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3AJB** between components **120** and **1076**,
– **3AJC** between components **120** and **1076**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF078 / V42_V06_DF078

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| **DF079 PRESENT OR STORED** | MOTORISED THROTTLE VALVE SERVO<br>1.DEF: Motorised throttle rest position programming error<br>2.DEF: Values outside permitted tolerance<br>3.DEF: Incorrect position of throttle valve in safe mode |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is declared **present**:<br>– switch on the powerlatch phase - **switch off + after ignition feed and switch on the + after ignition feed again** |
| | **Special notes:**<br>**OBD warning light and level 1 fault warning light illuminated.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the **cleanliness and condition** of the injection computer connector, component code **120** and of the throttle valve connector, component code **1076**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

If the fault is still present, manually check that the throttle valve **rotates correctly**.
Repair if necessary (see **MR 388 or 451, Mechanical, 12A, Fuel mixture, Throttle valve: Cleaning**).

Accelerate a couple of times and check that the values of **PR538 Measured voltage gang 2** and **PR539 Measured voltage gang 1** vary according to acceleration.

If the fault is still present, disconnect the battery and the injection computer.
Check the **insulation, continuity and absence of interference resistance** of the following connections:
– **3AJB** between components **120** and **1076**,
– **3AJC** between components **120** and **1076**,
– **3MO** between components **120** and **1076**,
– **3MP** between components **120** and **1076**,
– **3MN** between components **120** and **1076**,
– **3MQ**between components **120** and **1076**.
If the connection or connections are faulty and if there is a repair method (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the throttle valve has been replaced, reinitialise the programming by running command **RZ031 Throttle stop programming**.

If the fault is still present, **contact Techline**.

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF079 / V42_V06_DF079

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| **DF081 PRESENT OR STORED** | CANISTER BLEED SOLENOID VALVE CIRCUIT<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V |

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| ***NOTES*** | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |
| | **Special notes:**<br>**For CO and CC.1, the OBD warning light and level 1 fault warning light illuminate.** |

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| Check the **cleanliness and condition of** the connector of the injection computer, component code **120** and of the connector of the fuel vapour absorber bleed solenoid valve, component code **371**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connections:<br>– **3FB** between components **371** and **1047**,<br>– **3BB** between components **371** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| With the ignition on, check for **+ 12 V** on connection **3FB** of component **371**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the operation of the canister bleed solenoid valve using command **AC017 Canister bleed solenoid valve**. |
| Check the **resistance of the fuel vapour absorber bleed solenoid valve**.<br>If the resistance of the fuel vapour absorber bleed solenoid valve is not between: **24 Ω < X < 30 Ω** between **0˚C** and **40˚C**, replace the fuel vapour absorber bleed solenoid valve (see **MR 388 or 451, Mechanical, 14A, Emission control, Fuel vapour absorber: Removal - Refitting**). |
| If the fault is still present, **contact Techline**. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF081 / V42_V06_DF081

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| **DF082 PRESENT OR STORED** | UPSTREAM OXYGEN SENSOR HEATING CIRCUIT<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V |

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| ***NOTES*** | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |
| | **Special notes:**<br>**For CO and CC.1, the OBD warning light and level 1 fault warning light illuminate.** |

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| Check the **condition of the fuse** of the supply circuit for the upstream oxygen sensor, component code **887**.<br>If the fuse is faulty, replace the fuse (see **MR 388 or 451, Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the **cleanliness** and **condition** of the injection computer connector, component code **120** and of the upstream oxygen sensor connector, component code **887**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| With the ignition on, check for **+ 12 V** on connection **3FB** of component **887**.<br>Check the **insulation, continuity and the absence of interference resistance** of the following connection:<br>– **3FB** between components **1047** and **887**,<br>– **3GF** between components **120** and **887**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring. Otherwise replace the wiring. |
| If all the checks are correct, replace the upstream oxygen sensor, component code **887** (see **MR 388 or 452, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting)**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF082 / V42_V06_DF082

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| **DF083 PRESENT OR STORED** | DOWNSTREAM OXYGEN SENSOR HEATING CIRCUIT<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V |

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| ***NOTES*** | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |
| | **Special notes:**<br>**For CO and CC.1, the OBD warning light and level 1 fault warning light illuminate.** |

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| Check the **condition of the fuse** of the supply circuit for the downstream oxygen sensor, component code **242**.<br>If the fuse is faulty, replace the fuse (see **MR 388 or 451, Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the **cleanliness** and **condition** of the injection computer connector, component code **120** and of the connector of the downstream oxygen sensor, component code **242**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| With the ignition on, check for **+ 12 V** on connection **3FB** of component **242**.<br>Check the **insulation, continuity and the absence of interference resistance** of the following connection:<br>– **3FB** between components **1047** and **242**,<br>– **3GG** between components **120** and **242**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring. Otherwise replace the wiring. |
| If all the checks are correct, replace the downstream oxygen sensor, component code **242** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF083 / V42_V06_DF083

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| **DF085 PRESENT OR STORED** | FUEL PUMP RELAY CONTROL CIRCUIT<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is declared **present** after the ignition is switched on or when running command **AC015 Petrol pump relay**. |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

| | | |
|---|---|---|
| **CO**<br>**CC.1** | ***NOTES*** | **Special notes:**<br>**OBD warning light and level 2 fault warning light illuminated.** |
| **CC.0** | ***NOTES*** | None. |

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| Check the supply of the fuel supply pump relay control circuit with a test light by running command **AC015 Fuel pump relay**. |
| Check the **cleanliness** and **condition** of the connector of the petrol pump relay, component code **236 (1047)** and of the injection computer connector, component code **120**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **insulation, continuity and absence of interference resistance** on the following connection:<br>– **3AC** between components **236 (1047)** and **120**,<br>– **3NA** between components **236 (1047)** and **833**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the supply of the power circuit at the fuel supply pump relay output with a test light by running command **AC015 Fuel pump relay**. If the supply at the relay output is not correct, replace the petrol pump relay, component code **1047** (see **MR 388 or 451, Mechanical, 87G, Engine compartment connection unit, Engine compartment connection unit: List and location of components**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF085 / V42_V06_DF085

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| **DF088 PRESENT OR STORED** | PINKING SENSOR CIRCUIT |

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| ***NOTES*** | **Conditions for application to a stored fault:**<br>The fault is declared **present** during a warm engine road test at an engine speed of more than **3500 rpm**. |
| | **Special notes:**<br>– **The Level 1 warning light is illuminated.**<br>– The wiring harness connecting the injection computer to the pinking sensor is shielded, therefore a short circuit at **+ 12V** is unlikely. |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check **the cleanliness and condition** of the pinking sensor, component code **146** and its connector.
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check the **tightness** of the pinking sensor (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Petrol injection: List and location of components**).

Check the **cleanliness and condition** of the injection computer connections, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector(s), otherwise, replace the wiring.

Check the internal resistance of the pinking sensor, component code **146**. The resistance value of the sensor must be: **X > 10M** Ω. If the value is not correct, replace the pinking sensor, component code **146** (see **MR 388, Mechanical, 17B, Petrol injection, Petrol injection: List and location of components** or **MR 451, Mechanical, 17B, Petrol injection, Pinking sensor: Removal - Refitting**).

Check the **continuity and insulation** of the following connections:
– **3S** between components **120** and **146**,
– **3DQ** between components **120** and **146**,
– **TB1** of component **120**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, **contact Techline**.

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF088 / V42_V06_DF088

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| **DF091 PRESENT OR STORED** | VEHICLE SPEED SIGNAL<br>1.DEF: Signal outside upper limit<br>2.DEF: Signal outside lower limit |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is considered **present** when the engine is running. |
| | **2.DEF**<br>Impossible to change the fault to **present** status; deal with the **stored** fault. |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the **cleanliness** and **condition** of the connector of the vehicle speed sensor, component code **250** and of the injection computer connector, component code **120**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check for **+ after ignition feed** using a multimeter on connection **3FB** of the vehicle speed sensor, component code **250**.

Check the **continuity and insulation** of the following connections:
– **3FB** between components **250** and **1047**,
– **47F** between components **120** and **250**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the correct operation of the injection relay, component code **1047** (see **MR 388 or 451, Mechanical, 87G, Engine compartment connection unit, Engine compartment connection unit: List and location of components**).
If the checks are correct and the fault is still present, replace the vehicle speed sensor, component code **250**.

If the fault is still present, **contact Techline**.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF091 / V42_V06_DF091

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| **DF092 PRESENT OR STORED** | UPSTREAM OXYGEN SENSOR CIRCUIT<br>CC.1: Short circuit to + 12 V<br>CO: Open circuit<br>CC.0: Short circuit to earth<br>(---) |

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| ***NOTES*** | **Deal with the following faults first**:<br>Only for **CC.1 - DF082 Upstream oxygen sensor heating circuit**. |
| | **Conditions for applying the fault finding procedure to a stored fault**:<br>The fault is declared present:<br>– **CC.0** - engine idling<br>– **CC.1** - engine idling for **> 180 seconds**<br>– **CO** - engine idling<br>– in the fourth case (---), it is impossible to change the fault to present status, deal with the stored fault |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

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| **CO**<br>**CC.1**<br>**CC.0** | ***NOTES*** | **Special notes:**<br>**level 1 fault warning light illuminated.** |

Check the **cleanliness** and **condition** of the connector of the upstream oxygen sensor, component code **887** and of the injection computer connector, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation**, **continuity and the absence of interference resistance** on the following connections:
– **3GH** between components **120** and **887**,
– **3GK** between components **120** and **887**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF092 / V42_V06_DF092

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| DF092 CONTINUED | |
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| (---) | *NOTES* | **Special notes:**<br>**Level 1 fault warning light illuminated.**<br>**Deal with the stored fault** |
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| Check the resistance of the upstream oxygen sensor. The value must be between **7 Ω < X < 10 Ω** and the sensor temperature must be **X < 40˚C**. If the value is not correct, replace the upstream oxygen sensor (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal – Refitting**). |
| Check that the programming of the TDC* sensor is correct. (see **Replacement of components** section). |
| Run test **SC007 Run OBD test: O2 sensor** and start the engine (Only depress the brake pedal to authorise the starting of the engine).<br>At the end, check the test results:<br>**STATUS1**: Run the test again with the engine coolant temperature **X > 90˚C**.<br>**STATUS2** or **STATUS3**: Sensor OK.<br>**STATUS4**: Replace the upstream oxygen sensor (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal – Refitting**). |
| If the fault is still present, contact the Techline. |

*TDC: Top Dead Centre

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |
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| **DF093 PRESENT OR STORED** | DOWNSTREAM OXYGEN SENSOR CIRCUIT<br>CC.1: Short circuit to + 12 V<br>CO: Open circuit<br>CC.0: Short circuit to earth |

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| ***NOTES*** | **Deal with the following faults first**:<br>Only for **CC.1** and **CO** - **DF083 Downstream oxygen sensor heating circuit**. |
| | **Conditions for applying the fault finding procedure to a stored fault**:<br>The fault is declared **present**:<br>– with the engine idling for **> 300 seconds** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

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| **CC.1**<br>**CC.0** | ***NOTES*** | **Special notes:**<br>**Level 1 fault warning light illuminated.** |

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| Check the **condition of the fuse** of the supply circuit for the downstream oxygen sensor, component code **242**.<br>If the fuse is faulty, check all the following steps and replace the fuse (see **MR 388 or 451, Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the **cleanliness** and **condition** of the injection computer connector, component code **120** and of the connector of the downstream oxygen sensor, component code **242**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **insulation**, **continuity and the absence of interference resistance** on the following connections:<br>– **3GJ** between components **120** and **242**,<br>– **3GL** between components **120** and **242**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the downstream oxygen sensor, component code **242** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal – Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF093 / V42_V06_DF093

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| **DF093 CONTINUED** | |

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| **CO** | ***NOTES*** | **None.** |

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| Check the **condition of the fuse** of the supply circuit for the downstream oxygen sensor, component code **242**.<br>If the fuse is faulty, check all the following steps and replace the fuse (see **MR 388 or 451, Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Read the stored speed within the context of the fault using **PR089 Vehicle speed**.<br>If the value is **0**, drive the vehicle to reach a speed of **6 mph (10 km/h)** and check **PR089** again.<br>If the value of this parameter is **0** whilst driving, apply the fault finding procedure for **DF091 Vehicle speed signal**, abandoning the steps described below. If **PR089** operates normally, follow the fault finding procedure for this fault. |
| Check the **cleanliness** and **condition** of the injection computer connector, component code **120** and of the connector of the downstream oxygen sensor, component code **242**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **insulation**, **continuity and the absence of interference resistance** on the following connections:<br>– **3GJ** between components **120** and **242**,<br>– **3GL** between components **120** and **242**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring. Otherwise replace the wiring. |
| If the fault is still present, replace the downstream oxygen sensor, component code **242** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal – Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| **DF095 PRESENT OR STORED** | THROTTLE POTENTIOMETER CIRCUIT GANG 1<br>1.DEF: Signal incoherent |

**WARNING**
Never drive the vehicle without having confirmed that no faults involving the throttle valve are present.

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| ***NOTES*** | **Special notes:**<br>**OBD warning light and level 1 fault warning light illuminate,**<br>The throttle no longer operates. |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the **cleanliness** of the throttle valve, component code **1076** and that the throttle **rotates properly** (no resistance point)
Check the **cleanliness** and **condition** of the throttle valve connector.
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **cleanliness and condition** of the injection computer connector, component code **120**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check the **insulation**, **continuity and the absence of interference resistance** on the following connections:
– **3MO** between components **120** and **1076**,
– **3MP** between components **120** and **1076**,
– **3MN** between components **120** and **1076**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the throttle valve has been replaced, reinitialise the programming by running command **RZ031 Throttle stop programming**.

If the fault is still present, **contact Techline**.

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF095 / V42_V06_DF095

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| **DF096 PRESENT OR STORED** | THROTTLE POSITION POTENTIOMETER CIRCUIT GANG 2<br>1.DEF: Signal incoherent |

**WARNING**
Never drive the vehicle without having confirmed that no faults involving the throttle valve are present.

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| ***NOTES*** | **Deal with the following faults first:**<br>**DF011 Sensor supply voltage no. 1.** |
| | **Special notes:**<br>**OBD warning light and level 1 fault warning light illuminate,**<br>The throttle no longer operates |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the **cleanliness** of the throttle valve, component code **1076** and that the throttle **rotates properly** (no resistance point).

Check the **cleanliness** and **condition** of the injection computer connector, component code **120** and of the throttle valve connector, component code **1076**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3MQ** between components **120** and **1076**,
– **3MN** between components **120** and **1076**,
– **3MO** between components **120** and **1076**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the throttle valve has been replaced, reinitialise the programming by running command **RZ031 Throttle stop programming**.

If the fault is still present, **contact Techline**.

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF096 / V42_V06_DF096

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| **DF101 PRESENT OR STORED** | MULTIPLEX ELECTRONIC STABILITY PROGRAM LINK<br>1.DEF: Invalid multiplex signals generated by computer |

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| ***NOTES*** | None |

Test the ABS computer (see **38C, Anti-lock braking system**).

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF101 / V42_V06_DF101

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| **DF102 PRESENT OR STORED** | ALTERNATOR POWER SIGNAL AVAILABLE<br>1.DEF: Below minimum threshold. |

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| ***NOTES*** | **Special notes:**<br>**OBD warning light illuminated.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |

Check the **cleanliness** and **condition** of the alternator connector, component code **103** and of the injection computer connector, component code **120**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connection.
– **2K** between components **103** and **120**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF102 / V42_V06_DF102

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| **DF109 PRESENT OR STORED** | LOW FUEL LEVEL MISFIRING<br>1.DEF: Polluting misfiring<br>2.DEF: Destructive misfiring |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is **present** after starting the engine and under the following conditions:<br>– engine running at idling speed |
| | **Special note:**<br>**Level 1 fault warning light illuminated.** |

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| **1.DEF** | ***NOTES*** | None. |

Check the presence and conformity of the fuel in the tank (see **Test 19 Checking the conformity of the fuel**).
Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the condition of the injectors (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting or MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the cylinder compressions.

After repair, check that the catalytic converter is not damaged by the misfire.
To do this, switch on the ignition, run the catalytic converter test **SC006 Run OBD test: Catalytic converter** and start the engine (only depress the brake pedal to authorise the starting of the engine, do not touch the accelerator pedal or clutch pedal).
At the end, check the test results:
**STATUS1**: Fault finding was not performed/impossible to obtain the necessary conditions
**STATUS2**: The component is in an average condition - sensor OK
**STATUS3**: The component is in a good condition - sensor OK
**STATUS4**: The component is in a poor condition - replace the catalytic converter (see **MR 388 or 451, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**).

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| ***AFTER REPAIR*** | Check that all faults have been dealt with.<br>Do not clear the programming.<br>To check that the system has been repaired correctly:<br>– there must be no further electrical faults,<br>– programming has been carried out,<br>– warm engine (minimum **75˚C**),<br>– running at idle speed with all electrical consumers drawing power for 15 minutes.<br>If the fault reappears, continue the fault finding procedure. |

V42_V04_DF109 / V42_V06_DF109

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| DF109 CONTINUED | |
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| 2.DEF | *NOTES* | None. |
|---|---|---|

Check the presence and conformity of the fuel in the tank (see **Test 19 Checking the conformity of the fuel**).
Check the ignition coil circuit (see **MR 388, Mechanical, 17A, Ignition, Ignition: Specifications**),
Check the fuel supply circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the fuel supply pump circuit (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel circuit: Operating diagram**),
Check the condition of the injectors (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting or MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
Check the cylinder compressions.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| **DF120 PRESENT OR STORED** | ENGINE SPEED SENSOR SIGNAL<br>1.DEF: Inconsistent signal.<br>3.DEF: Interference.<br>4.DEF: Incorrect number of teeth. |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is **present** after starting the engine and under the following conditions:<br>– engine running at idling speed |
| | **Special note:**<br>**OBD warning light and level 1 fault warning light illuminated.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

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| Check the connection and condition of the connector of the **crankshaft position sensor**, component code **149** and of the **injection computer** connector, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |
| Measure the **resistance** of the **crankshaft position sensor** component code **149** between connections **3BL** and **3BG** on the **injection computer** connector, component code **120**.<br>If the **resistance** of the **crankshaft position sensor** is not between **175** Ω ≤ **X** ≤ **295** Ω (**between 0˚C** and **40˚C**), replace the **crankshaft position sensor** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Crankshaft position sensor: Removal - Refitting**). |
| Check the **insulation** and **continuity** of the following connections:<br>– **3BG** between components **149** and **120**,<br>– **3BL** between components **149** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check that the **58** teeth of the **flywheel** target are not damaged or broken. |
| Check that the target is securely mounted on the **flywheel** (see **MR 388 or 451, Mechanical, 10A, Engine and cylinder block assembly, Flywheel: Removal - Refitting**): check the tightening torque and that there is no angular play or movement in relation to the target shaft |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF120 / V42_V06_DF120

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| **DF342 PRESENT OR STORED** | MALFUNCTION INDICATOR LIGHT CIRCUIT<br>1.DEF: Voltage too low.<br>2.DEF: Voltage too high. |

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| ***NOTES*** | Deal with the other faults **first**. |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |

Test the **OBD warning light** using a test warning light when switching on the ignition.
If the test warning light illuminates for a few seconds, replace the faulty warning light (see **MR 388 or 451, Mechanical, 83A, Instrument panel, Instrument panel, Removal - Refitting**).

Check the continuity, insulation, and the absence of interference resistance on the following connection:
– **137C** between components **120** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF342 / V42_V06_DF342

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| **DF361 PRESENT OR STORED** | IGNITION COIL 1 - 4 CIRCUIT<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>CO: Open circuit |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is **present** after starting the engine and under the following conditions:<br>– engine running at idling speed |
| | **Special note:**<br>**For CC.1 and CO, the OBD warning light and level 1 fault warning light illuminate,**<br>**For CC.0, the OBD warning light and level 2 fault warning light illuminate.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |
| | **The D4D and K7M engines are equipped with a quadruple ignition coil module.**<br>The **K4M** engine is equipped with 4 "pencil" type coils. |

**D4D and K7M engines**

Check the cleanliness and condition of the injection computer connector, component code **120** and of the coil connector, component code **778**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3CV** between components **120** and **778**,
– **3CW** between components **120** and **778**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

With the ignition on, check the supply of the ignition coil, component code **778** using a test light on connection **3NA**.

Check the **insulation, continuity and the absence of interference resistance** on the following connection:
– **3NA** between components **1047** and **778**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

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|---|---|
| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF361 / V42_V06_DF361

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| DF361 CONTINUED | |
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**K4M engine**

Check the cleanliness and condition of the pencil coil no.1 connector, component code **1077**, of the pencil coil no.4 connector, component code **1080** and of the injection computer connector, component code **120**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3CZ** between components **120** and **1077**,
– **3CV** between components **1077** and **1080**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring. Otherwise replace the wiring.

With the ignition on, check the supply of the pencil ignition coils, component code **1077** and **1080** using a test light on connection **3NA** of the injection relay, component code **1047**.

Check the **insulation, continuity and the absence of interference resistance** on the following connection:
– **3NA** between components **1080** and **1047**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |
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| **DF362 PRESENT OR STORED** | IGNITION COIL 2-3 CIRCUIT<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>CO: Open circuit |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is **present** after starting the engine and under the following conditions:<br>– engine running at idling speed |
| | **Special note:**<br>For **CC.1** and **CO**, the **OBD warning light and level 1 fault warning light illuminate**.<br>For **CC.0, the OBD warning light and level 2 fault warning light illuminate**. |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
| | The **D4D** and **K7M** engines are equipped with a quadruple ignition coil module.<br>The **K4M** engine is equipped with 4 "pencil" type coils. |

**D4D and K7M engines**

Check the cleanliness and condition of the injection computer connector, component code **120** and of the coil connector, component code **778**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3CV** between components **120** and **778**,
– **3CW** between components **120** and **778**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

With the ignition on, check the supply of the ignition coil, component code **778** using a test light on connection **3NA**.

Check the **insulation, continuity and the absence of interference resistance** on the following connection:
– **3NA** between components **1047** and **778**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF362 / V42_V06_DF362

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| DF362 CONTINUED | |
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**K4M engine**

Check the cleanliness and condition of the injection computer connector, component code **120**, of the pencil coil no.2 connector, component code **1078** and of the pencil coil no.3 connector, component code **1079.**
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3CP** between components **120** and **1078**,
– **3CW** between components **1078** and **1079**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring. Otherwise replace the wiring.

With the ignition on, check the supply of the ignition coils, component code **1078** and **1079** using a test light on connection **3NA** of the injection relay, component code **1047**.

Check the **insulation, continuity and the absence of interference resistance** on the following connection:
– **3NA** between components **1079** and **1047**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |
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| **DF394 PRESENT OR STORED** | CATALYTIC CONVERTER OPERATING FAULT<br>1.DEF: Component in bad condition |

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| ***NOTES*** | **Priority when dealing with a number of faults:**<br>Deal with the other faults first.<br>There must be no other injection system faults, either **present or stored**.<br>– **DF081 - Canister bleed solenoid valve circuit**<br>– **DF120 - Engine speed sensor signal**<br>– **DF361 - Ignition coil 1-4 circuit**<br>– **DF362 - Ignition coil 2-3 circuit**<br>– **DF026 - Cylinder 1 injector control circuit**<br>– **DF027 - Cylinder 2 injector control circuit**<br>– **DF028 - Cylinder 3 injector control circuit**<br>– **DF029 - Cylinder 4 injector control circuit**<br>– **DF092 - Upstream oxygen sensor circuit**<br>– **DF082 - Upstream oxygen sensor heating circuit**<br>– **DF093 - Downstream oxygen sensor circuit**<br>– **DF002 - Air temperature sensor circuit**<br>– **DF001 - Coolant temperature sensor circuit** |
| | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is not declared **present**, deal with the **stored** fault. |
| | **Special note:**<br>**Level 1 fault warning light illuminated.** |

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| Check the **downstream oxygen sensor** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**).<br>Check the programming of the **TDC* sensor** (see Section: **Replacement of components**) |
| Run the catalytic converter test **SC006 Run OBD test: Catalytic converter** and start the engine (only depress the brake pedal to authorise the starting of the engine,<br>do not touch the accelerator pedal or clutch pedal).<br>At the end, check the test results:<br>**STATUS1**: Fault finding was not performed/impossible to obtain the necessary conditions<br>**STATUS2**: The component is in an average condition - sensor OK<br>**STATUS3**: The component is in a good condition - sensor OK<br>**STATUS4**: The component is in a poor condition - replace the catalytic converter (see **MR 388 or 451, Mechanical, 19B, Exhaust, Catalytic converter: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

*TDC: Top Dead Centre

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF394 / V42_V06_DF394

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| **DF398 PRESENT OR STORED** | FUEL CIRCUIT OPERATING FAULT<br>1.DEF: Component in poor condition. |

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| ***NOTES*** | **Priority when dealing with a number of faults:**<br>Deal with the other faults first.<br>**– DF085 - Fuel pump relay control circuit** |
| | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is declared **present** with the engine running at an engine speed of **2500 rpm** for **10 seconds**. |
| | **Special note:**<br>**OBD warning light illuminated.** |

Check the value of parameter **PR139 Operating richness adaptive**.

If the value of **PR139 < 1** then:
Check the sealing of the fuel supply system from the fuel pump to the injector rail:
– The fuel tank (see **MR 388 or 451, Mechanical, 19C, Tank, Fuel tank: Removal - Refitting**),
– The connection between the fuel pump and the fuel filter (see **MR 388 Mechanical, 19C, Tank, Fuel supply pipe: Removal – Refitting** or **MR 451 Mechanical, 19C, Tank, Fuel tank: Removal - Refitting**),
– The connection between the fuel filter and the regulator (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel filter: Removal - Refitting**),
– The pressure regulator ducts (see **MR 388 Mechanical, 19C, Tank, Fuel supply pipe: Removal – Refitting** or **MR 451 Mechanical, 19C, Tank, Fuel tank: Removal - Refitting**),
– The connection between the regulator and the injector rail (see **MR 388 Mechanical, 19C, Tank, Fuel supply pipe: Removal - Refitting or MR 451 Mechanical, 19C, Tank, Fuel tank: Removal - Refitting**),
– The fuel ducts between the injector rail and the injectors (see **MR 388 Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal - Refitting** or **MR 451 Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal - Refitting**),
– Check the fuel filter (to detect possible clogging) (see **MR 388 or 451, Mechanical, 13A, Fuel supply, Fuel filter: Removal - Refitting**),
– Check the pressure regulator,
– Check the fuel pump flow (see **MR 388 Mechanical, 13A, Fuel supply, Fuel flow: Removal – Refitting** or **MR 451 Mechanical, 13A, Fuel supply, Fuel flow: Check**),
– Check the injector flow (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**).

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF398 / V42_V06_DF398

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| DF398 CONTINUED | |
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If the value of **PR139 > 1** then:
- Check the pressure regulator,
- Check the connections on the inlet manifold (see **MR 388 or 451, Mechanical, 12A, Fuel mixture, Air inlet: Description**),
- Check for possible petrol leaks (see **ALP4 Fuel leak**),
- Check for possible air leaks,
- Check the injector sealing (see **MR 388, Mechanical, 13A, Fuel supply, Injector rail - Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**),
- Check the seal between the inlet manifold and the solenoid valve unit.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |
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| **DF409 PRESENT OR STORED** | FUEL LEVEL SENSOR CIRCUIT<br>1.DEF: Voltage too low<br>2.DEF: Voltage too high |

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| ***NOTES*** | **Special notes:**<br>**OBD warning light illuminated.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |

Check the cleanliness and condition of the injection computer connector, component code **120** and of the instrument panel connector, component code **247**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **47H** between components **120** and **247**,
– **3NX** between components **120** and **247**,
– **137C** between components **120** and **247**,
– **31A** between components **120** and **247**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF409 / V42_V06_DF409

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| **DF457 PRESENT OR STORED** | FLYWHEEL TARGET<br>1.DEF: Component in bad condition |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is declared **present** with the engine running, **engine speed > 3500 rpm**. |
| | **Special notes:**<br>**OBD warning light illuminated.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |

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| Check the cleanliness and condition of the injection computer connector, component code **120** and of the TDC* sensor connector, component code **149**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Measure the **resistance** of the **TDC* sensor** component code **149** between connections **3BL** and **3BG** on the **injection computer** connector, component code **120**.<br>If the **resistance** of the **crankshaft position sensor** is not between **175** Ω ≤ **X** ≤ **295** Ω (**between 0˚C** and **40˚C**), replace the **crankshaft position sensor** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Crankshaft position sensor: Removal - Refitting**). |
| Check the **insulation, continuity and the absence of interference resistance** on the following connections:<br>– **3BG** between components **120** and **149**,<br>– **3BL** between components **120** and **149**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **cleanliness** and **condition** of the flywheel (see **MR 388 or 451, Mechanical, 10A, Engine and cylinder block assembly, Flywheel: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

*TDC: Top Dead Centre

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| ***AFTER REPAIR*** | Follow the instructions to confirm repair.<br>Deal with any other faults.<br>Clear the **stored** faults. |

V42_V04_DF457 / V42_V06_DF457

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|---|---|
| **DF532 PRESENT OR STORED** | ALTERNATOR CHARGE SIGNAL<br>1.DEF: Voltage too low<br>2.DEF: Voltage too high |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>**The fault is** present with the **engine idling**. |
| | **Special notes:**<br>**The OBD warning light is lit.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |

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| Check the **cleanliness** and **condition** of the alternator connector, component code **103** and of the injection computer connector, component code **120**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connection.<br>– **2K** between components **103** and **120**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the connection is correct, replace the alternator, component code **103** (see **MR 388 or 451, Mechanical, 16A, Starting - Charging, Alternator: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF532 / V42_V06_DF532

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|---|---|
| **DF556 PRESENT OR STORED** | PEDAL/THROTTLE POSITION CONSISTENCY<br>1.DEF: Signal incoherent<br>2.DEF: Micro-break detected |

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| ***NOTES*** | The inlet throttle valve no longer operates. |
| | **Special notes:**<br>**For 1.DEF, the OBD and level 1 fault warning lights are illuminated.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |

Check the **cleanliness** and **condition** of the injection computer connector, component code **120** and of the damper valve connector, component code **1076** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Petrol injection computer: Removal - Refitting**).
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3AJB** between components **1076** and **120**,
– **3AJC** between components **1076** and **120**.
If the connection or connections are faulty and if there is a repair procedure (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF556 / V42_V06_DF556

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| DF631 PRESENT OR STORED | BRAKE LIGHT SWITCH SIGNAL<br>1.DEF: Inconsistent signal. |
|---|---|

| *NOTES* | **Conditions for application to a stored fault:**<br>The fault is declared **present** when the engine is **idling**.<br>The fault is declared **present**:<br>– After depressing the pedal at least **10 times**. |
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| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

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| With the brake pedal released, check **ET039 Brake pedal** and **ET799 Brake wire contact**.<br>Check that **ET039** is **Released** and **ET799** is **Inactive**. |
| Check the fitting and mechanical operation of the brake pedal (the pedal returns properly).<br>If the check is incorrect, check the braking system. |
| Remove the **brake pedal switch**, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**) and, without action on the pedal, press sufficiently on the **brake pedal switch** to seat it completely in its position.<br>Lock it by turning it a quarter of a turn anti-clockwise.<br>The fault should change from **present** to **stored**. |
| While depressing the brake pedal to the end of travel, check **ET039** and **ET799**.<br>**ET039** must be **depressed** and **ET799** must be **active**.<br>If the statuses are correct, contact the Techline. |
| With the brake pedal **depressed**, measure the **resistance** of the **brake pedal switch**, component code **160** between connections **AP1** and **65A**, the value must be **X > 10 MΩ**.<br>If the **resistance** is not correct, replace the **brake pedal switch**, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**).<br>- With the brake pedal **released**, measure the **resistance** of the **brake pedal switch**, component code **160** between connections **AP1** and **5A**, the value must be between **0 Ω < X ≤ 1 Ω**.<br>If the **resistance** is not correct, replace the **brake pedal switch**, component code **160** (see **MR 388, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**). |
| Check the **brake pedal switch** connector, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**).<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring |
| Check fuse **F03** (**10 A**) and replace it if necessary. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connections:<br>– **AP1** between components **160** and **1016**,<br>– **5A** between components **160** and **120**,<br>– **65A** between components **160** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

V42_V04_DF631 / V42_V06_DF631

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| **DF648 PRESENT OR STORED** | COMPUTER |

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| ***NOTES*** | **Special notes:**<br>**The OBD and Level 2 fault warning lights are illuminated.** |

Contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF648 / V42_V06_DF648

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| **DF721 PRESENT OR STORED** | ENGINE OVERHEATING<br>1.DEF: Operating temperature too high. |

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| ***NOTES*** | **Deal with the stored fault.** |
| | **Special notes:**<br>After this fault appears:<br>**The level 1 warning light is illuminated.**<br>**The overheating warning light is illuminated.** |

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| Check the **engine cooling system** (see **MR 388 or 451, Mechanical, 19A, Cooling, Engine cooling system: Check**). |
| Check the coolant temperature sensor by applying **TEST 15 Checking the coolant temperature sensor**. |
| Check the correct operation of the engine cooling fans (see **Test 16 Checking the fan relay**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF721 / V42_V06_DF721

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|---|---|
| **DF884 PRESENT OR STORED** | ADDITIONAL FUEL CIRCUIT PUMP RELAY<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>CO: Open circuit |

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| ***NOTES*** | **Conditions for application to a stored fault:**<br>The fault is declared **present** after running command **AC224 Additional fuel circuit pump relay.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero**. |

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| Check the supply of the control circuit of the additional fuel supply pump relay with a test light by running command **AC224 Additional petrol circuit pump relay**. |
| Check the **cleanliness** and **condition** of the connector of the additional petrol pump relay, component code **1639** and of the injection computer connector, component code **120**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **insulation, continuity and absence of interference resistance** on the following connection:<br>– **3ACK** between components **1639** and **120**,<br>– **3FB** between components **1639** and **1047**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring. Otherwise replace the wiring. |
| Check the supply of the power circuit of the additional fuel supply pump relay with a test light by running command **AC224 Additional petrol circuit pump relay**. If the check is correct, replace the pump, component code **1639** (see **MR 388, Mechanical, 19C, Tank, Additional fuel system petrol pump: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF884 / V42_V06_DF884

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|---|---|
| **DF887 PRESENT OR STORED** | BRAKE - ACCELERATOR PEDAL POSITION<br>1.DEF: Jammed accelerator pedal detected.<br>2.DEF: Jammed accelerator pedal detected.<br>3.DEF: Inconsistency between pedal gang 1 and gang 2.<br>4. DEF: Fault on pedal potentiometer gangs 1 and 2. |

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| ***NOTES*** | **Conditions for application to a stored fault:**<br>The fault is declared **present** after the ignition is switched on or with the engine running.<br>Deal with the stored faults (**1.DEF, 2.DEF** only). |
| | **Special notes:**<br>After this fault appears:<br>**For 3.DEF, the OBD and level 1 warning lights are illuminated.**<br>**For 2.DEF, the OBD and level 2 warning lights are illuminated.** |

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|---|---|---|
| **1.DEF**<br>**2.DEF** | ***NOTES*** | **None.** |

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| Check that the accelerator pedal is not jammed and that there is nothing impeding its operation (floor carpet, etc.). |
| Run **TEST 9 Brake pedal switch check**. |
| Run **TEST 8 Accelerator pedal potentiometer check.** |
| If the fault is still present, contact the Techline. |

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| **3.DEF** | ***NOTES*** | **None.** |

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| If fault **3.DEF: Inconsistency between pedal gang 1 and gang 2** is the only fault and is **present**, replace the **accelerator pedal** (see **MR 388 or 451, Mechanical, 37A, Mechanical component control, Accelerator pedal: Removal – Refitting**). |
| If the fault is still present, contact the Techline. |

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|---|---|---|
| **4.DEF** | ***NOTES*** | **None.** |

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| Run **TEST 8 Accelerator pedal potentiometer check.** |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF887 / V42_V06_DF887

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|---|---|
| **DF894 PRESENT OR STORED** | ADDITIONAL FUEL CIRCUIT SOLENOID VALVE<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>CO: Open circuit |

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| ***NOTES*** | See the **Wiring Diagrams Technical Note for Logan, Sandero**. |

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|---|
| Check the connection and condition of the connector of the additional fuel circuit solenoid valve, component code **1640** and the **injection computer** connector, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity, insulation, and absence of interference resistance** on the following connections:<br>– **3ACM** between components **1640** and **120**,<br>– **3FB** between components **1640** and **1047**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring. Otherwise replace the wiring. |
| Check the supply of the solenoid valve using a test light, by running command **AC217 Additional fuel circuit solenoid valve**. |
| Check the internal resistance of the solenoid valve, component code **1640** on the computer connector, its value must be between: **24Ω < X ≤ 30Ω**. If the resistance is incorrect, replace the solenoid valve. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF894/ V42_V06_DF894

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|---|---|
| **DF974 PRESENT OR STORED** | PEDAL POTENTIOMETER CIRCUIT GANG 1<br>1.DEF: Battery voltage too high.<br>2.DEF: Battery voltage too low. |

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| ***NOTES*** | **Fault priorities:**<br>Deal with the following fault as a priority:<br>**DF011 Sensor voltage supply no. 1** |
| | **Special notes:**<br>After this fault appears:<br>**The OBD and level 1 warning lights are illuminated.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |

Check the connection and condition of the connector of the **accelerator pedal sensor, gang 1**, component code **921** and of the **injection computer** connector, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Run **TEST 8 Accelerator pedal potentiometer check.**

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF974 / V42_V06_DF974

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|---|---|
| **DF975 PRESENT OR STORED** | PEDAL POTENTIOMETER CIRCUIT GANG 2<br>1.DEF: Battery voltage too high.<br>2.DEF: Battery voltage too low. |

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|---|---|
| ***NOTES*** | **Special notes:**<br>After this fault appears:<br>**The OBD and level 1 warning lights are illuminated.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the connection and condition of the connector of the **accelerator pedal sensor, gang 2**, component code **921** and of the **injection computer** connector, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Run **TEST 8 Accelerator pedal potentiometer check.**

If the fault is still present, contact the Techline.

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|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF975 / V42_V06_DF975

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|---|---|
| **DF992 PRESENT OR STORED** | ADDITIONAL HEATER 1 RELAY CIRCUIT<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>CO: Open circuit |

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|---|---|
| ***NOTES*** | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the **cleanliness and condition** of the additional heater 1 relay, component code **1067** and the connections of the injection computer, component code **120**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check the **insulation, continuity and absence of interference resistance** on the following connection:
– **38JU** between components **1067** and **120**,
– **3FB** between components **1067** and **1047**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that the additional heater relay operates correctly by running command **AC250 Heating resistor 1 relay** and check that there are no more faults on the relay. If the check is not correct, replace the additional heater relay, component code **1067** (see **MR 388 or 451, Mechanical, 61A, Heating system, Heating resistor relay: Removal - Refitting**).

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF992 / V42_V06_DF992

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|---|---|
| **DF993 PRESENT OR STORED** | ADDITIONAL HEATER 2 RELAY CIRCUIT<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>CO: Open circuit |

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|---|---|
| ***NOTES*** | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the **cleanliness and condition** of the additional heater 2 relay, component code **1068** and the connections of the injection computer, component code **120**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check the **insulation, continuity and absence of interference resistance** on the following connection:
– **38JV** between components **1068** and **120**,
– **3FB** between components **1068** and **1047**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that the additional heater relay operates correctly by running command **AC251 Heating resistor 2 relay** and check that there are no more faults on the relay. If the check is not correct, replace the additional heater relay, component code **1068** (see **MR 388 or 451, Mechanical, 61A, Heating system, Heating resistor relay: Removal - Refitting**).

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF993 / V42_V06_DF993

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|---|---|
| **DF994 PRESENT OR STORED** | ADDITIONAL HEATER 3 RELAY CIRCUIT<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>CO: Open circuit |

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|---|---|
| ***NOTES*** | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the **cleanliness and condition** of the additional heater 3 relay, component code **1069** and the connections of the injection computer, component code **120**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check the **insulation, continuity and absence of interference resistance** on the following connection:
– **38JW** between components **1069** and **120**,
– **3FB** between components **1069** and **1047**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that the additional heater relay operates correctly by running command **AC252 Heating resistor 3 relay** and check that there are no more faults on the relay. If the check is not correct, replace the additional heater relay, component code **1069** (see **MR 388 or 451, Mechanical, 61A, Heating system, Heating resistor relay: Removal - Refitting**).

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF994 / V42_V06_DF994

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| **DF1015 PRESENT OR STORED** | BRAKE SWITCH SIGNAL CONSISTENCY<br>1.DEF: Value outside permitted tolerance values<br>2.DEF: Inconsistent signal. |

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| ***NOTES*** | **Fault priorities**<br>Deal with the following faults first:<br>**DF050 Brake switch circuit**<br>**DF631 Brake light switch signal** |
| | **Conditions for application to a stored fault:**<br>The fault is declared **present**:<br>– For **1.DEF engine at idle speed**.<br>– For **2.DEF**, impossible to see the **present** fault, deal with it as a **stored** fault. |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

With the brake pedal **released**, check **ET039 Brake pedal** and **ET799 Brake wire contact**.
If **ET039** is **Released** and **ET799** is **Inactive**.

Check the fitting and mechanical operation of the brake pedal (the pedal returns properly).
If the check is incorrect, check the braking system.

Remove the **brake pedal switch**, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**) and, without action on the pedal, press sufficiently on the brake pedal switch to seat it completely in its position.
Lock it by turning it an eighth of a turn.
The fault should change from **present** to **stored**.

– With the brake pedal **depressed**, measure the **resistance** of the **brake pedal switch**, component code **160** between connections **AP1** and **65A**, the value must be **X > 10 MΩ**.

If the **resistance** is not correct, replace the **brake pedal switch**, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**).

– With the brake pedal **released**, measure the **resistance** of the **brake pedal switch**, component code **160** between connections **AP1** and **5A**, the value must be between **0 Ω < X ≤ 1 Ω**.

If the **resistance** is not correct, replace the **brake pedal switch**, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**).

Check the **brake pedal switch** connector, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check fuse **F03** (**10 A**) and replace it if necessary.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF1015 / V42_V06_DF1015

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| **DF1017 PRESENT OR STORED** | COMPUTER<br>1.DEF: Internal electronic fault.<br>2.DEF: Internal electronic fault. |

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| ***NOTES*** | **Conditions for application to a stored fault:**<br>The fault is declared **present**:<br>– For an engine speed **> 1500 rpm** and coolant temperature **> 70˚C** |

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| **1.DEF** | ***NOTES*** | None. |

Do not replace the injection computer if the fault is **stored**.
In the event of a customer complaint relating to engine jolts, contact Techline.

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|---|---|---|
| **2.DEF** | ***NOTES*** | None. |

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF1017 / V42_V06_DF1017

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| **DF1058 PRESENT OR STORED** | INLET PRESSURE CONSISTENCY<br>1.DEF: Abnormal voltage<br>2.DEF: Abnormal pressure |

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| ***NOTES*** | **Priority when dealing with a number of faults:**<br>**DF079 Motorised throttle valve servo** |
| | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is considered **present** under the following conditions:<br>– For **2.DEF** engine running at idle speed. |
| | **Special note:**<br>**For 2.DEF, the OBD warning light and level 1 fault warning light illuminate,**<br>**For 1.DEF, the OBD warning light illuminates.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |

Check the fitting and sealing of the inlet air pressure sensor, component code **147** (condition of the seals) and look for possible leaks on the inlet air pipe.

Check the connector of the inlet air pressure sensor, component code **147**.
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the supply voltage of the sensor on connections **3AJR** and **3AJP**.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3AJP** between components **120** and **147**,
– **3AJR** between components **120** and **147**,
– **3AJQ** between components **120** and **147**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Replace the inlet air pressure sensor, component code **147** and check that the fault is no longer **present** (see **MR 388 or 451, Mechanical, 12A, Fuel mixture, Air inlet: Description**).

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF1058 / V42_V06_DF1058

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| | |
|---|---|
| **DF1063 PRESENT OR STORED** | MULTIPLEX ELECTRONIC STABILITY PROGRAM LINK<br>1.DEF: Invalid multiplex signals generated by computer |

| | |
|---|---|
| ***NOTES*** | None. |

Test the ABS computer (see **38C, Anti-lock braking system**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF1068 PRESENT OR STORED** | REFRIGER.* PRESSURE SENSOR VOLTAGE<br>1.DEF: Voltage too low.<br>2.DEF: Voltage too high. |

| | |
|---|---|
| ***NOTES*** | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

| |
|---|
| Check the connection and condition of the **refrigerant pressure sensor** connector, component code **1202** and of the **injection computer** connector, component code **120**.<br>If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| With the ignition on, check for the presence of **+ 5 V** on connection **38Y** and an **earth** on connection **38U** of the **refrigerant fluid pressure sensor**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connections:<br>– **38Y** between components **1202** and **120**,<br>– **38X** between components **1202** and **120**,<br>– **38U** between components **1202** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **refrigerant pressure sensor**, component code **1202** (see **MR 388 or 451, Mechanical, 62A, Air conditioning, Pressure sensor: Removal – Refitting**, **MR 388 or 451, Mechanical, 62A, Air conditioning: Precautions for repair**, **MR 388 or 451, Mechanical, 62A, Air conditioning: Parts and consumables for the repair**). |
| If the fault is still present, contact the Techline. |

REFRIGER.*: REFRIGERANT.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF1068 / V42_V06_DF1068

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| | |
|---|---|
| **DF1072 PRESENT OR STORED** | AIR CONDITIONING COMPRESSOR RELAY CONTROL<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V<br>CO: Open circuit |

| | |
|---|---|
| ***NOTES*** | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

Check the connection and condition of the **air conditioning compressor control relay** connector, component code **474** and the **injection computer** connector, component code 120.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **38K** between components **474** and **120**,
– **3FB** between components **1047** and **474**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Run command **AC180 Air conditioning compressor relay control** in order to check that the relay operates correctly.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF1072 / V42_V06_DF1072

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| | |
|---|---|
| **DF1074 PRESENT OR STORED** | MOTORISED THROTTLE POSITION INCONSISTENT<br>1.DEF: Inconsistency between throttle valve position and control.<br>2.DEF: Inconsistent signal. |

| | |
|---|---|
| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is considered **present** under the following conditions:<br>– For **1.DEF** engine running at idle speed. |
| | **Special note:**<br>**For 1.DEF, the OBD warning light illuminates,**<br>**For 2.DEF, the OBD warning light and level 2 fault warning light illuminate.** |
| | **See the Wiring Diagrams Technical Note for Logan, Sandero, Duster.** |

Check the connection and condition of the **motorised throttle valve** connector, component code **1076** and the **injection computer** connector, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3AJB** between components **1076** and **120**,
– **3AJC** between components **1076** and **120**,
– **3MP** between components **1076** and **120**,
– **3MQ** between components **1076** and **120**,
– **3MO** between components **1076** and **120**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF1074 / V42_V06_DF1074

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| | |
|---|---|
| **DF1355 PRESENT OR STORED** | MULTIPLEX TORQUE REGULATOR CONNECTION<br>1.DEF: Inconsistent signal.<br>2.DEF: Invalid multiplex signals generated by computer. |

| | |
|---|---|
| ***NOTES*** | None. |

Perform fault finding on the electromagnetic torque management computer.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_DF1355 / V42_V06_DF1355

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| |
|---|
| The global **conformity check** for the functions and sub-functions of this system is no longer interpreted in the conformity check. Instead, all information available in the functions and sub-functions can be found in the following chapters: |
| For **STATUSES**, refer to **INTERPRETATION OF STATUSES**. |
| For **PARAMETERS**, refer to **INTERPRETATION OF PARAMETERS**. |
| For **COMMANDS**, refer to **INTERPRETATION OF COMMANDS**. |

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| Tool status | Diagnostic tool title |
|---|---|
| **ET001** | Computer + After ignition |
| **ET038** | Engine |
| **ET039** | Brake pedal |
| **ET041** | Gearbox ratio |
| **ET047** | Fuel pump control circuit |
| **ET051** | Throttle stop programming |
| **ET089** | Flywheel target programming |
| **ET148** | OBD warning light activation request |
| **ET321** | Air conditioning compressor |
| **ET405** | Clutch pedal switch |
| **ET434** | Low fuel level |
| **ET673** | Jammed accelerator pedal detected |
| **ET717** | Target gearbox ratio |
| **ET734** | Heating resistor 1 relay control |
| **ET735** | Heating resistor 2 relay control |
| **ET736** | Heating resistor 3 relay control |
| **ET759** | Braking multiplex signal detected |
| **ET760** | First starting |
| **ET775** | Camshaft TDC* synchronisation |
| **ET798** | Clutch wire contact connection |
| **ET799** | Brake wire contact |
| **ET813** | Low speed fan assembly request by injection |
| **ET814** | High speed fan assembly request by injection |
| **ET819** | Low speed fan assembly final request |
| **ET820** | High speed fan assembly final request |
| **ET836** | TDC sensor signal |
| **ET837** | Crankshaft synchronisation |
| **ET831** | Injection protection |

TDC*: Top Dead Centre
GMV**: Fan assembly

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| | |
|---|---|
| **ET001** | COMPUTER + AFTER IGNITION FEED |

| | |
|---|---|
| ***STATUS DEFINITION*** | **PRESENT:** This status indicates that the + after ignition feed is active.<br>**ABSENT:** This status indicates that the + after ignition is not active. |

| | | |
|---|---|---|
| **"PRESENT"** | ***NOTES*** | None. |

With the ignition on and engine running warm at idle speed, + after ignition feed is activated.
In the event of a fault, apply the interpretation of **DF047 Computer supply voltage**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer fault memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

V42_V04_ET001 / V42_V06_ET001

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| | |
|---|---|
| **ET038** | ENGINE |

| | |
|---|---|
| ***STATUS DEFINITION*** | **STOPPED:** This status indicates that the engine ignition is on without the starter engaged.<br>**STALLED:** This status indicates that the engine has stalled.<br>**RUNNING:** This status indicates that the engine has started.<br>**STARTING:** This status indicates that the engine is in starting phase. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |

V42_V04_ET038 / V42_V06_ET038

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| | |
|---|---|
| **ET041** | GEAR |

| | |
|---|---|
| ***STATUS DEFINITION*** | **REVERSE:** This status indicates the gear engaged.<br>**DECLUTCHED:** This status indicates the gear engaged.<br>**1:** This status indicates the gear engaged.<br>**2:** This status indicates the gear engaged.<br>**3:** This status indicates the gear engaged.<br>**4:** This status indicates the gear engaged<br>**5:** This status indicates the gear engaged. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |

V42_V04_ET041 / V42_V06_ET041

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| | |
|---|---|
| **ET047** | FUEL PUMP CONTROL CIRCUIT |

| | |
|---|---|
| ***STATUS DEFINITION*** | **ACTIVE:** This status indicates that the fuel pump is active.<br><br>**INACTIVE:** This status indicates that the fuel pump is inactive. |

**Conformity check: Engine stopped, ignition on or engine running.**

| | |
|---|---|
| **ACTIVE** | Status **ET047** is **ACTIVE** when starting the engine. In the event of a fault apply the interpretation of **DF085 Fuel pump relay circuit**. |
| **INACTIVE** | Status **ET047** is **INACTIVE** when the engine is stopped and the ignition off. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |

V42_V04_ET047 / V42_V06_ET047

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| ET051 | THROTTLE STOP PROGRAMMING |
|---|---|

| *STATUS DEFINITION* | **COMPLETED:** This status indicates that the throttle stops have been programmed<br>**NOT COMPLETED:** This status indicates that the throttle stops have not been programmed. |
|---|---|

**Conformity check: Engine stopped, ignition on or engine running.**

| | |
|---|---|
| **COMPLETED** | This means that the throttle stops have been programmed.<br><br>Even though this programming is automatic, take particular care when performing the first motorised throttle stop programming operation.<br>This can be carried out on several occasions:<br>– when a computer is switched on for the first time,<br>– at the end of computer programming (see **Replacement of components**)<br>The air temperature must be above **0˚C** during programming, then, at the end of programming, switch off the ignition and wait **30 seconds** for the end of Power Latch so that the computer can store the programmed stops. |
| **NOT COMPLETED** | This means that the throttle stops have not been programmed. |

| *AFTER REPAIR* | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

V42_V04_ET051 / V42_V06_ET051

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| ET089 | PROGRAMMING THE ENGINE FLYWHEEL TARGET |
|---|---|

| *STATUS DEFINITION* | **COMPLETED:** This status indicates that the throttle stops have been programmed<br>**NOT COMPLETED:** This status indicates that the throttle stops have not been programmed. |
|---|---|

**Conformity check: Engine stopped, ignition on or engine running.**

| | |
|---|---|
| **COMPLETED** | This means that the engine flywheel target programming has been completed.<br><br>In the event of a fault, program the engine flywheel target (see **Replacement of components**).<br>In the event of a fault, apply the interpretation of **DF457 Flywheel target**. |
| **NOT COMPLETED** | This means that the engine flywheel target programming has not been completed. |

| *AFTER REPAIR* | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

V42_V04_ET089 / V42_V06_ET089

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| | |
|---|---|
| **ET148** | OBD WARNING LIGHT ACTIVATION REQUEST |

| | |
|---|---|
| ***STATUS DEFINITION*** | **YES:** This status indicates that the warning light is lit continuously.<br>**NO:** This status indicates that the warning light is off.<br>**FLASHING:** This status indicates that the warning light flashes.<br>**SELF TEST:** This status indicates that the warning light is performing a self test. |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>In the event of normal operation, this warning light must remain off (**NO**). |

**Conformity check: Engine stopped, ignition on or engine running.**

| | |
|---|---|
| **"YES"** | If the status is inconsistent, consult the interpretation of fault **DF342 Malfunction indicator light circuit**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |

V42_V04_ET148 / V42_V06_ET148

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| | |
|---|---|
| **ET321** | AIR CONDITIONING COMPRESSOR |

| | |
|---|---|
| ***STATUS DEFINITION*** | **ACTIVE**: This status indicates that the air conditioning compressor is active.<br><br>**INACTIVE:** This status indicates that the air conditioning compressor is inactive |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>Only perform these tests if the status does not correspond with the system programming functions. |

**Conformity check: Engine stopped, ignition on or engine running.**

| | |
|---|---|
| **ACTIVE** | To check the operation of the air conditioning, run command **AC180 Air conditioning compressor relay control**. In the event of a fault, apply the interpretation of **DF1072 Air conditioning compressor control**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |

V42_V04_ET321 / V42_V06_ET321

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| ET405 | CLUTCH PEDAL SWITCH |
|---|---|

| *STATUS DEFINITION* | **ACTIVE**: This status indicates that the clutch pedal is depressed.<br><br>**INACTIVE**: This status indicates that the clutch pedal is released. |
|---|---|

| *NOTES* | **Special notes:**<br>Apply the checks only if statuses **ACTIVE** and **INACTIVE** are inconsistent with the pedal position. |
|---|---|
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

**Conformity check: Engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C.**

| **INACTIVE** | Check the condition and fitting of the **clutch pedal position sensor**, component code **675** (see **MR 388, Mechanical, 37A, Mechanical component controls, Clutch pedal position sensor: Removal – Refitting or MR 451, Mechanical, 37A, Mechanical component controls, Clutch pedal: Removal - Refitting**).<br>Remove the **clutch pedal position sensor**, component code **675** (see **MR 388, Mechanical, 37A, Mechanical component controls, Clutch pedal position sensor: Removal – Refitting or MR 451, Mechanical, 37A, Mechanical component controls, Clutch pedal: Removal - Refitting)**.<br>Check the **insulation** between connections **MAM** and **86D** of component **675** with the switch in the rest position.<br>– Repeat this operation with the switch pressed, and check **the continuity and the absence of interference resistance** between the two connections.<br>If these 2 checks are not correct, replace the **clutch pedal position sensor**, component code **675** (see **MR 388, Mechanical, 37A, Mechanical component controls, Clutch pedal position sensor: Removal – Refitting or MR 451, Mechanical, 37A, Mechanical component controls, Clutch pedal: Removal - Refitting**).<br>Then check the **continuity** and **absence of interference resistance** of the following connection:<br>– **86D** between components **120** and **675**.<br>Check that the **earth** is in order on connection **MAM** of component **675**.<br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), **repair the wiring, otherwise replace it**. |
|---|---|

| *AFTER REPAIR* | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

V42_V04_ET405 / V42_V06_ET405

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| | |
|---|---|
| **ET405 CONTINUED** | |
| **ACTIVE** | Check the condition and fitting of the clutch pedal position sensor.<br>Remove the **clutch pedal position sensor**, component code **675** (see **MR 388, Mechanical, 37A, Mechanical component controls, Clutch pedal position sensor: Removal – Refitting or MR 451, Mechanical, 37A, Mechanical component controls, Clutch pedal: Removal - Refitting), check the insulation between connections MAM and 86D of component 675, with the switch in the rest position**.<br>– Repeat this operation with the switch pressed, and check **the continuity and the absence of interference resistance** between the two connections.<br>If these 2 checks are not correct, replace the **clutch pedal position sensor,** component code **675** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Clutch pedal position sensor: Removal – Refitting or MR 451, Mechanical, 37A, Mechanical component controls, Clutch pedal: Removal - Refitting).** |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |

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| ET673 | JAMMED ACCELERATOR PEDAL |
|---|---|

| *STATUS DEFINITION* | **YES:** This status indicates that the accelerator pedal is jammed.<br>**NO:** This status indicates that the accelerator pedal is not jammed. |
|---|---|

| *NOTES* | To reinitialise this status, clear the fault memory by running command **RZ001 Fault memory**. |
|---|---|

**Conformity check: Engine stopped, ignition on or engine running.**

| YES | Check that the accelerator pedal is not jammed or that there is nothing impeding its operation (floor carpet, etc.).<br>Check the brake switch (see the interpretation of fault **DF050 Brake switch circuit**. |
|---|---|

| *AFTER REPAIR* | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

V42_V04_ET673 / V42_V06_ET673

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| | |
|---|---|
| **ET717** | TARGET GEARBOX RATIO |

| | |
|---|---|
| ***STATUS DEFINITION*** | **REVERSE:** This status indicates the gear engaged.<br>**DECLUTCHED:** This status indicates the gear engaged.<br>**1:** This status indicates the gear engaged.<br>**2:** This status indicates the gear engaged.<br>**3:** This status indicates the gear engaged.<br>**4:** This status indicates the gear engaged<br>**5:** This status indicates the gear engaged. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |

V42_V04_ET717 / V42_V06_ET717

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| | |
|---|---|
| **ET734**<br>**ET735**<br>**ET736** | HEATING RESISTOR NO.1 RELAY CONTROL<br>HEATING RESISTOR NO.2 RELAY CONTROL<br>HEATING RESISTOR NO.3 RELAY CONTROL |

| | |
|---|---|
| ***STATUS DEFINITION*** | **ACTIVE**: This status indicates that the relay is supplied.<br>**INACTIVE**: This status indicates that the relay is not supplied. |

**Conformity check: Engine stopped, ignition on or engine running.**

| | |
|---|---|
| **INACTIVE** | Statuses **ET734, ET735** and **ET736** are **INACTIVE** with the ignition on and the engine stopped, or when the engine is warm. |
| **ACTIVE** | Statuses **ET734**, **ET735** and **ET736** are **ACTIVE** when the engine is started, the engine coolant temperature is low (**< 15°C**) and the air temperature is low (**< 5**°).<br>This program allows the engine coolant to be heated to enable the passenger compartment to be heated.<br>To control the operation of the relays, run the following commands:<br>**AC250 Heating resistor no.1 relay.**<br>**AC251 Heating resistor no.2 relay.**<br>**AC252 Heating resistor no.3 relay.**<br><br>In the event of a fault, refer to the interpretation of faults:<br>**DF992 Additional heater relay 1 circuit.**<br>**DF993 Additional heater relay 2 circuit.**<br>**DF994 Additional heater relay 3 circuit.** |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |

V42_V04_ET734 / V42_V06_ET734 / V42_V04_ET735 / V42_V06_ET735 / V42_V04_ET736 / V42_V06_ET736

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| ET759 | BRAKING MULTIPLEX SIGNAL DETECTED |
|---|---|

| *STATUS DEFINITION* | **ABSENT:** This status indicates that the braking multiplex signal detected is **absent**.<br>**PRESENT:** This status indicates that the braking multiplex signal detected is **present**.<br>**INTERMEDIATE:** This status indicates that the braking multiplex signal detected is intermediate. |
|---|---|

**Conformity check: Engine stopped, ignition on or engine running.**

**Vehicle under + after ignition feed.**
**– Parking brake released,**
**– Gear lever in 1st.**
**Neither the brake pedal nor the clutch pedal depressed.**

Check status **ET759.**

| **PRESENT - INTERMEDIATE** | Check the correct position and the conformity of the brake pedal sensor.<br>Run fault finding on the UCH domain (see **87B, UCH**). |
|---|---|

| **"ABSENT"** | The brake pedal sensor is correct. |
|---|---|

| *AFTER REPAIR* | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

V42_V04_ET759 / V42_V06_ET759

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| ET836 | TDC SENSOR SIGNAL |
|---|---|

| *STATUS DEFINITION* | **DETECTED:** This status indicates that the TDC sensor signal is detected.<br>**NOT DETECTED:** This status indicates that the TDC sensor signal is not detected. |
|---|---|

**Conformity check: Engine stopped, ignition on or engine running.**

| NOT DETECTED | In the event of a fault, refer to the interpretation of fault **DF120 Engine speed sensor signal**. |
|---|---|

| *AFTER REPAIR* | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

V42_V04_ET836 / V42_V06_ET836

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| | |
|---|---|
| **ET846** | INJECTION PROTECTION |

| | |
|---|---|
| ***STATUS DEFINITION*** | **NOT PROTECTED**<br>**BLANK:** No signal<br>**PROTECTED STATUS 1: Fault on coded line circuit**<br>**PROTECTED STATUS 2: Fault on immobiliser memory area**<br>**PROTECTED STATUS 3: Injection computer self-protection** |

**BLANK:**
– The injection computer does not receive a signal from the UCH computer.
– Run fault finding on the multiplex network.

**PROTECTED STATUS 1**:
The UCH computer does not respond to the authentication requests from the injection computer.
Several possibilities:
– either the UCH computer was not programmed with the vehicle's card/key,
– or the vehicle's card/key is not recognised by the UCH computer.
– Run fault finding on the UCH computer.

**PROTECTED STATUS 2**:
Several possibilities:
– either the injection computer is blank and was not programmed with the immobiliser code, and the UCH computer is not authorised to send the immobiliser code,
– Connect a diagnostic tool to the UCH computer to authorise it to send the immobiliser code.
– or the UCH computer has detected a fault,
– Run fault finding on the UCH computer.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |

V42_V04_ET846 / V42_V06_ET846

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| ET846 CONTINUED | |
|---|---|

**PROTECTED STATUS 3**:
There are several possible causes, in the following order:
– check that the UCH computer has not detected a fault,
– Run fault finding on the UCH computer.
– check that the injection computer has not already been programmed with the immobiliser code for another vehicle using the status.
– Check that the injection computer corresponds correctly to the vehicle on which fault finding is being run.

– if none of the 2 previous points is the cause, check that the injection computer is not in anti-scanning mode after undergoing several failed authentication attempts,
– It only leaves this mode when the following sequence of operations is carried out:
1- switch off the ignition,
2- switch on the ignition again and wait for at least **20 seconds** under + after ignition feed,
3- switch off the ignition and ensure that the end of the self-feed phase of the injection computer is observed (the length of time varies depending on the engine coolant temperature and can be **10 minutes** maximum),
4- switch on the ignition again and start the vehicle,
5- if the vehicle does not start, repeat this procedure **3 times**,
6- if the vehicle still does not start, contact the Techline.

| *AFTER REPAIR* | Deal with any faults. Clear the faults from the computer memory.<br>Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**. |
|---|---|

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| Tool Parameter | Diagnostic tool title |
|---|---|
| **PR002** | Alternator charge |
| **PR015** | Engine torque |
| **PR030** | Accelerator pedal position |
| **PR037** | Refrigerant pressure |
| **PR041** | Turbocharging pressure |
| **PR055** | Engine speed |
| **PR059** | Inlet air temperature |
| **PR064** | Coolant temperature |
| **PR071** | Computer feed voltage |
| **PR084** | Coolant temperature sensor voltage |
| **PR089** | Vehicle speed |
| **PR097** | Motorised throttle lower stop programmed value |
| **PR098** | Upstream oxygen sensor voltage |
| **PR099** | Downstream oxygen sensor voltage |
| **PR102** | Canister bleed solenoid valve OCR* |
| **PR118** | Measured throttle position gang 1 |
| **PR119** | Measured throttle position gang 2 |
| **PR138** | Richness correction |
| **PR139** | Operating adaptive richness |
| **PR147** | Pedal potentiometer voltage gang 1 |
| **PR148** | Pedal potentiometer voltage gang 2 |
| **PR215** | Sensor supply voltage no. 1 |
| **PR216** | Sensor supply voltage no. 2 |
| **PR312** | Inlet manifold vacuum |
| **PR313** | Linearised manifold pressure |
| **PR344** | Pressure sensor voltage |
| **PR427** | Average pinking signal |
| **PR429** | Measured throttle position |
| **PR444** | Integral idling speed regulation correction |

OCR*: Opening cyclic ratio

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| Tool Parameter | Diagnostic tool title |
|---|---|
| **PR446** | Upstream O2 sensor heating resistance |
| **PR447** | Downstream O2 sensor heating resistor |
| **PR448** | Ignition advance |
| **PR469** | Cylinder 1 pinking value |
| **PR471** | Cylinder 2 pinking value |
| **PR473** | Cylinder 3 pinking value |
| **PR475** | Cylinder 4 pinking value |
| **PR492** | Motorised throttle position setpoint |
| **PR538** | Measured throttle voltage, gang 2 |
| **PR539** | Measured throttle voltage gang 1 |
| **PR606** | Adaptive idling speed correction |
| **PR624** | Richness regulation programming offset |
| **PR625** | Richness regulation programming gain |
| **PR770** | Camshaft offset |
| **PR814** | Number of active heating resistors |
| **PR831** | Combustion misfiring counter |
| **PR832** | Combustion misfiring counter |
| **PR833** | Combustion misfiring counter |
| **PR834** | Combustion misfiring counter |
| **PR847** | Inlet air temperature sensor voltage |
| **PR872** | Refriger.* pressure sensor voltage |
| **PR877** | Estimated engine oil temperature |
| **PR887** | Motorised throttle safe mode programmed value |
| **PR931** | Raw turbocharging pressure |
| **PR1026** | Crankshaft synchro.* loss counter |
| **PR1029** | Alternator power |
| **PR1129** | Brake contact no.1 duration |
| **PR1153** | Brake contact no.2 duration |

Refriger.*: refrigerant
Synchro*: Synchronisation

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| | |
|---|---|
| **PR015** | ENGINE TORQUE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the engine torque in **N.m.** |

**Conformity check with the engine running and engine coolant temperature > 80˚C**

The value must be between **20 Nm < PR015 < 40 Nm**
This parameter is only valid when the engine is running.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR015 / V42_V06_PR015

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| PR030 | ACCELERATOR PEDAL POSITION |
|---|---|

| *PARAMETER DEFINITION* | This parameter indicates the accelerator pedal position as a **%**. |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

**Conformity check: Engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C.**

No load ≤ **16%**
Full load ≥ **85%**
Check that the pedal mechanism has not seized.
Check the **cleanliness** and **condition** of the pedal potentiometer connections, component code **921** and the injection computer connections, component code **120**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Disconnect the battery and the injection computer.
Use the "Universal bornier" to check the **insulation** and **continuity** of the following connections:
– **3LT** between components **120** and **921**,
– **3LR** between components **120** and **921**,
– **3LS** between components **120** and **921**,
– **3LV** between components **120** and **921**,
– **3LU** between components **120** and **921**,
– **3LW** between components **120** and **921**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

In the event of a fault, apply the interpretation of **DF974 Pedal potentiometer circuit gang 1** and **DF975 Pedal potentiometer circuit gang 2**.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_PR030 / V42_V06_PR030

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| | |
|---|---|
| **PR037** | REFRIGERANT PRESSURE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the refrigerant pressure in **bar**. |

| | |
|---|---|
| ***NOTES*** | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

**Conformity check: Engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C.**

The refrigerant pressure must be between **2 bar < PR037 < 27 bar**.

Check the **cleanliness** and **condition** of the refrigerant pressure sensor and its connections, component code **1202** and the injection computer connections, component code **120**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Disconnect the battery and the injection computer.
Using the universal bornier in place of the computer, check for **insulation** and **continuity** on the following connections:

– **38Y** between components **120** and **1202**,
– **38X** between components **120** and **1202**,
– **38U** between components **120** and **1202**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, replace the refrigerant pressure sensor. (see **MR 388 or 451, Mechanical, 62A, Air conditioning, Pressure sensor: Removal - Refitting**).
(see **MR 388 or 451, Mechanical, 62A, Air conditioning: Precautions for repair**) and (see **MR 388 or 451, Mechanical, Air conditioning: Parts and consumables for the repair**).
If the fault is **present**, check the air conditioning circuit (see **MR 388 or 451, Mechanical, 62A, Air conditioning: Check**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR037 / V42_V06_PR037

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| | |
|---|---|
| **PR055** | ENGINE SPEED |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the engine's rotational speed in **rpm**. |

Conformity check with engine stopped and ignition on.

With the ignition on the value must be **0 rpm**.
In the event of a fault, apply interpretation of **DF120 Engine speed sensor signal**.

Conformity check with the engine running and engine coolant temperature > 80˚C

With the engine running at idle speed, the value must be ≈ **750 rpm**.
In the event of a fault, apply the interpretation of **DF120**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR059** | INLET AIR TEMPERATURE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the air temperature in ˚**C**. |

Conformity check with engine stopped and ignition on.

With the ignition on the inlet air temperature varies according to the exterior temperature.
In the event of a fault, consult the interpretation of fault **DF002 Air temperature sensor circuit**.
Parameter **PR059** ≈ **PR064 Coolant temperature** engine cold.

Conformity check with the engine running and engine coolant temperature > 80˚C

With the engine running at idle speed the inlet air temperature varies according to the engine coolant temperature.
In the event of a fault, refer to the interpretation of fault **DF002**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR064** | COOLANT TEMPERATURE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the engine coolant temperature in ˚**C**. |

| | |
|---|---|
| ***NOTES*** | **There must be no present or stored faults.**<br>Perform this fault finding procedure:<br>– after finding an inconsistency in the parameter,<br>– after a customer complaint (e.g. lack of power). |

Conformity check with engine stopped and ignition on.

With the ignition on the coolant temperature varies according to the exterior temperature.
In the event of a fault, consult the interpretation of fault **DF001 Coolant temperature sensor circuit**.

Conformity check with the engine running and engine coolant temperature > 80˚C

With the engine running at idle speed the coolant temperature varies according to the engine temperature.
If there is a fault, refer to the interpretation of fault **DF001**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR071** | COMPUTER SUPPLY VOLTAGE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the computer supply voltage in **volts**. |

Conformity check: Engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C.

The voltage should be between:
**9 V < PR071 < 16 V**
In the event of a fault, run fault finding on the charging circuit (see **16A, Checking the charging circuit**) and refer to the interpretation of **DF047 Computer supply voltage.**

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

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| PR089 | VEHICLE SPEED |
|---|---|

| *PARAMETER DEFINITION* | Gives the vehicle speed in **km/h**. |
|---|---|

Conformity check: Engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C.

Carry out a road test, observing the vehicle speed on the instrument panel and the information given by the diagnostic tool.
If there is an inconsistency between the two values, run complete fault finding on the ABS computer (see **38C, ABS**).

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **PR097** | MOTORISED THROTTLE VALVE LOWER STOP PROGRAMMED VALUE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the programmed throttle valve upper stop value as a **%**. |

Conformity check with engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C

The value must be ≈ **9%**.
In the event of a fault, apply the interpretation of **ET051 Throttle stop programming**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR097 / V42_V06_PR097

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| | |
|---|---|
| **PR098** | UPSTREAM OXYGEN SENSOR VOLTAGE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the upstream oxygen sensor voltage in **millivolts**. |

Conformity check with the engine running and engine coolant temperature > 80˚C

The upstream oxygen sensor voltage must be between:
**20 mV < PR098 < 1395 mV.**
In the event of a fault, apply interpretation of **DF092 Upstream oxygen sensor circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR099** | DOWNSTREAM OXYGEN SENSOR VOLTAGE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the downstream oxygen sensor voltage in **millivolts** |

Conformity check with the engine running and engine coolant temperature > 80˚C

The downstream oxygen sensor voltage must be between:
**0 mV < PR099 < 1000 mV.**
In the event of a fault, apply interpretation of **DF093 Downstream oxygen sensor circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR102** | CANISTER BLEED SOLENOID VALVE OCR* |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the canister bleed solenoid valve opening cyclic ratio in **%**. |

Conformity check with engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C

The value must be **between 0% and 100%**.

* ocr = opening cyclic ratio

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR102 / V42_V06_PR102

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| | |
|---|---|
| **PR118** | MEASURED THROTTLE POSITION GANG 1 |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the motorised throttle valve 1 position setpoint as a **%**. |

Conformity check with the engine running and engine coolant temperature > 80˚C

With the engine idling, the value must be ≈ **13%**.
If there is a fault, use the interpretation of **DF095 Throttle potentiometer circuit gang 1**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR119** | MEASURED THROTTLE POSITION GANG 2 |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the motorised throttle valve 2 position setpoint as a **%**. |

Conformity check with the engine running and engine coolant temperature > 80˚C

With the engine idling, the value must be ≈ **13%**.
If there is a fault, use the interpretation of **DF096 Throttle potentiometer circuit gang 2**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR138** | RICHNESS CORRECTION |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the richness correction as a **%**. |

Conformity check with the engine running and engine coolant temperature > 80˚C

This value changes according to the richness signals from the computer.
The richness correction value must be ≈ **50%**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR139** | RICHNESS ADAPTIVE OPERATION |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | There must be no faults present. |

Conformity check with the engine running and engine coolant temperature > 80˚C

Check the sealing of the fuel vapour absorber bleed.
Repair if necessary.
With the engine warm in the idle speed regulation phase, look at parameter **PR139**.
– If the parameter goes to **MAXIMUM stop**, there is not enough fuel or too much air in the mixture.
– If the parameter goes to **MINIMUM stop**, there is too much fuel or not enough air in the mixture.
Check the cleanliness and correct operation of:
– petrol filter,
– petrol pump,
– fuel circuit,
– tank,
– air supply pipe,
– air filter,
– plugs.
Repair if necessary.
Check:
– the compressions,
– the valve clearance,
– the ignition.
Repair if necessary.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| PR147 | PEDAL POTENTIOMETER GANG 1 VOLTAGE |
|---|---|

| *PARAMETER DEFINITION* | This parameter indicates the pedal potentiometer gang 1 voltage in **volts**. |
|---|---|

Conformity check: Engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C.

The value must be ≈ **0.72 V** and varies according to the status of the pedal.
In the event of a fault, apply the interpretation of fault **DF974 Pedal potentiometer circuit gang 1**.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

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| PR148 | PEDAL POTENTIOMETER GANG 2 VOLTAGE |
|---|---|

| *PARAMETER DEFINITION* | This parameter indicates the pedal potentiometer gang 2 voltage in **volts**. |
|---|---|

Conformity check: Engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C.

The value must be ≈ **0.52 V** and varies according to the status of the pedal.
In the event of a fault, apply the interpretation of fault **DF975 Pedal potentiometer circuit gang 2**.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_PR148 / V42_V06_PR148

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| | |
|---|---|
| **PR215** | SENSOR SUPPLY VOLTAGE NO. 1 |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the supply voltage no. 1 of the sensors in **Volts**. |

Conformity check: Engine stopped and the ignition on, or the engine running and the engine coolant temperature > 80˚C without electrical consumers.

The voltage of **PR215** is approximately **5000 mV**.

In the event of a fault, run fault finding on the charging circuit and consult the interpretation of **DF011 Sensor supply voltage no. 1**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR216** | SENSOR SUPPLY VOLTAGE NO. 2 |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the supply voltage no. 2 of the sensors in **Volts**. |

Conformity check: Engine stopped and the ignition on, or the engine running and the engine coolant temperature > 80˚C without electrical consumers.

The voltage of **PR216** is approximately **5000 mV**.

In the event of a fault, run fault finding on the charging circuit and consult the interpretation of **DF012 Sensor supply voltage no. 2**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR312** | MANIFOLD PRESSURE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the manifold pressure in **mbar**. |

Conformity check with the engine running and engine coolant temperature > 80˚C

**With the engine idling**, the value must be ≈ **500 mbar**.
**With the engine running and throttle open**, the value must be ≈ **1000 mbar**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR312 / V42_V06_PR312

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| | |
|---|---|
| **PR427** | AVERAGE PINKING SIGNAL |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the average pinking signal. |

Conformity check with the engine running and engine coolant temperature > 80˚C

This parameter varies according to the pinking status in the combustion chamber.
In the event of a fault, apply the interpretation of fault **DF088 Pinking sensor circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR427 / V42_V06_PR427

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| | |
|---|---|
| **PR429** | MEASURED THROTTLE POSITION |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the throttle valve position measured as a **%**. |

Conformity check with engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C

Without action on the accelerator pedal, the value must be ≈ **10%**.
When the accelerator pedal is fully depressed, the value must be ≈ **85%**.
In the event of a fault, apply the interpretation of faults **DF095 Throttle potentiometer circuit gang 1** and **DF096 Throttle potentiometer circuit gang 2**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR444** | BUILT-IN CORRECTION FOR IDLE SPEED REGULATION |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the built-in correction for idle speed regulation in N.m. |

Conformity check with engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C

The built-in idle speed regulation correction is continuously calculated to take into account consumer air demand.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| | |
|---|---|
| **PR446** | UPSTREAM O2 SENSOR HEATING RESISTOR |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the heating resistance of the downstream oxygen sensor in **Ohms**. |

Conformity check with engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C

The value must be ≈ **9 Ω at 20˚C.**

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR446 / V42_V06_PR446

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| | |
|---|---|
| **PR447** | DOWNSTREAM O2 SENSOR HEATING RESISTOR |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the heating resistance of the downstream oxygen sensor in **Ohms**. |

Conformity check with engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C

The value must be ≈ **9** Ω **at 20˚C**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR447 / V42_V06_PR447

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| | |
|---|---|
| **PR448** | IGNITION ADVANCE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the ignition advance in **volts.** |

Conformity check with engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C

The value must be ≈ **0˚ V** with the ignition on and **4 V** at idle speed.
In the event of a fault, apply the interpretation of fault **DF120 Engine speed sensor signal**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR448 / V42_V06_PR448

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| | |
|---|---|
| **PR538** | MEASURED THROTTLE VOLTAGE, GANG 2 |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the throttle valve gang 2 voltage measured in **volts**. |

**Conformity check with engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C**

The value must be ≈ **0.60 V**.
In the event of a fault, apply the interpretation of fault **DF096 Throttle potentiometer circuit gang 2**.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR538 / V42_V06_PR538

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| | |
|---|---|
| **PR539** | THROTTLE VALVE GANG 1 MEASURE VOLTAGE |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the throttle valve voltage, gang 1 measured in **volts**. |

Conformity check with engine stopped and ignition on, or engine running, and engine coolant temperature > 80˚C

The value must be ≈ **0.35 V**.
In the event of a fault, apply the interpretation of fault **DF095 Throttle potentiometer circuit gang 1**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR539 / V42_V06_PR539

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| | |
|---|---|
| **PR814** | NUMBER OF ACTIVE HEATING RESISTORS |

| | |
|---|---|
| ***PARAMETER DEFINITION*** | This parameter indicates the number of active heating resistors and can be between **0** to **5** depending on the relays activated.<br>**0** if no relay is active<br>**1** if relay 1 is active<br>**2** if relay 2 is active<br>**3** if relays 1 and 2 are active<br>**4** if relays 2 and 3 are active<br>**5** if all of the relays are active |

Conformity check: Engine stopped and ignition on, or engine running, and engine coolant temperature < 80°C

In the event of a fault, consult the interpretation of faults:
**DF992 Additional heater relay 1 circuit,**
**DF993 Additional heater relay 2 circuit,**
**DF994 Additional heater relay 3 circuit.**

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_PR814 / V42_V06_PR814

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| Tool command | Diagnostic tool title | Comments |
|---|---|---|
| **RZ001** | **Fault memory** | This command is used to clear the faults stored in the computer. |
| **RZ003** | **Engine adaptives** | This command enables a long engine start time. |
| **RZ031** | **Throttle stop programming** | This command is used to reset the necessary system adaptives if replacing the throttle valve. |
| **RZ033** | **Richness regulation programming** | This command is used to reset the necessary system adaptives if replacing the injectors. |
| **RZ037** | **Flywheel target programming** | This command is used to reset the necessary system adaptives if replacing the TDC* sensor. |
| | | |
| **AC005** | **Cylinder 1 injector** | This command is used to perform an audible check on injector 1. |
| **AC006** | **Cylinder 2 injector** | This command is used to perform an audible check on injector 2. |
| **AC007** | **Cylinder 3 injector** | This command is used to perform an audible check on injector 3. |
| **AC008** | **Cylinder 4 injector** | This command is used to perform an audible check on injector 4. |
| **AC015** | **Fuel pump relay** | This command is used to check the fuel pump. |
| **AC017** | **Canister bleed solenoid valve** | This command is used to check the canister bleed solenoid valve. |
| **AC027** | **Motorised throttle** | This command is used to check the motorised throttle. |
| **AC038** | **Low speed GMV** relay** | This command is used to check the low speed GMV** relay. |
| **AC039** | **High speed GMV** relay** | This command is used to check the high speed GMV** relay. |
| **AC180** | **Air conditioning compressor relay control** | This command is used to check the air conditioning compressor relay. |
| **AC217** | **Additional fuel circuit solenoid valve** | This command is used to check the additional fuel circuit solenoid valve. Only on Flexfuel injection |
| **AC224** | **Additional fuel circuit pump relay** | This command is used to check the additional fuel circuit pump relay. Only on Flexfuel injection |

TDC*: Top Dead Centre
GMV**: Fan assembly

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| | | |
|---|---|---|
| **AC250** | **Heating resistor 1 relay** | This command is used to activate the heating resistor no.1 relay. |
| **AC251** | **Heating resistor 2 relay** | This command is used to activate the heating resistor no.2 relay. |
| **AC252** | **Heating resistor 3 relay** | This command is used to activate the heating resistor no.3 relay. |
| **SC001** | **Write saved data** | Use this command after replacing or (re)programming the computer (if the data has been saved using command **SC003**). |
| **SC003** | **Save computer data** | This command enables the computer operating data, the engine adaptives, to be recorded. |
| **SC006** | **Start OBD test: Catalytic converter** | This command is used to test the catalytic converter. |
| **SC007** | **Start OBD test: O2 sensor** | This command is used to test the O2 sensors. |
| | | |
| **VP010** | **Enter VIN.** | This command is used to enter the **VIN**. |
| **VP036** | **Fuel supply inhibited** | This command is used to inhibit fuel supply to the engine. |
| **VP037** | **Lift fuel supply inhibition** | This command is used to stop command **VP036**. |

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| *NOTES* | **Special note:**<br>Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

| | |
|---|---|
| **NO COMMUNICATION WITH THE COMPUTER** | **ALP 1** |
| **GENERAL APPEARANCE OF ENGINE COMPARTMENT** | **ALP 2** |
| **APPEARANCE AND MOUNTING OF THE EXHAUST** | **ALP 3** |
| **LEAK FROM THE ENGINE** | |
| **FUEL LEAK** | **ALP 4** |
| **ENGINE OIL LEAK** | **ALP 5** |
| **COOLANT LEAK** | **ALP 6** |
| **ODOURS UNDER BONNET** | |
| **UNUSUAL ODOUR** | **ALP 7** |
| **FUEL ODOUR** | **ALP 8** |
| **SMOKE UNDER BONNET** | |
| **ABNORMAL SMOKE IN THE ENGINE COMPARTMENT** | **ALP 9** |
| **EXHAUST SMOKE** | |
| **WHITE SMOKE FROM THE EXHAUST** | **ALP 10** |
| **BLACK SMOKE FROM THE EXHAUST** | **ALP 11** |
| **BLUE SMOKE FROM THE EXHAUST** | **ALP 12** |

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| | |
|---|---|
| **EXCESSIVE CONSUMPTION** | |
| EXCESSIVE FUEL CONSUMPTION | ALP 13 |
| EXCESSIVE COOLANT CONSUMPTION | ALP 14 |
| EXCESSIVE OIL CONSUMPTION | ALP 15 |
| **ENGINE STARTING** | |
| IMPOSSIBLE TO START THE ENGINE | ALP 16 |
| ENGINE STALLS WHEN COLD | ALP 17 |
| THE ENGINE STARTS WITH DIFFICULTY | ALP 18 |
| **PERFORMANCE** | |
| LACK OF POWER OR TORQUE | ALP 19 |
| ACCELERATION GAP | ALP 20 |
| **DRIVING PLEASURE** | |
| ROUGH IDLE | ALP 21 |
| IDLE SPEED TOO HIGH OR TOO LOW | ALP 22 |
| JERKING OR HESITATION | ALP 23 |
| ENGINE STALLS | ALP 24 |
| ERRATIC ACCELERATION | ALP 25 |
| ERRATIC DECELERATION | ALP 26 |
| ENGINE RACING (WITHOUT ACTION ON THE PEDAL) | ALP 27 |

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| ALP 1 | No dialogue with the computer |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

Try to establish dialogue with a computer on another vehicle to make sure that the **diagnostic tool** is not faulty. If the tool is not the cause and communication cannot be established with any other computer on the same vehicle, it is possible that another computer is disrupting the multiplex network.

Check the voltage of the battery.
If the battery voltage is between **9.5 V** and **17.5 V**, run fault finding on the charging circuit.

– Check the presence and condition of the injection fuses on the UPC and in the engine fuse box.
– Check the connection of the computer connectors, component code **120**.
– Check the **injection computer** earths (quality, oxidation, tightness of the earth bolts on the battery terminal).
– Check that the supply to the computer is correct:
– **Earth** on connection **NH** of component **120**,
– **+ 12V** on connection **3FB** of component **120**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that the **diagnostic socket**, component code **225** is correctly supplied:
– **+ Before ignition feed** on connection **BP56** of component **225**,
– **+ After ignition feed** on connection **AP10** of component **225**,
– **Earth** on connections **MAM** and **NC** of component **225**.

If the connection(s) are faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If dialogue has still not been established after these checks, contact the techline.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_ALP1 / V42_V06_ALP1

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| ALP 2 | General appearance of engine compartment |
|---|---|

| |
|---|
| Check the fan assembly |
| Check the air filter unit. |
| Check the inlet manifold air pressure sensor by running **TEST 7 Air inlet pressure sensor check**. |
| Check the air pipes. |
| Check the coolant temperature sensor by running **TEST 15 Coolant temperature sensor check**. |
| Check the injector rail. |
| Check the inlet manifold. |
| Check the oil filter. |
| Check the catalytic converter. |
| Check the exhaust manifold. |
| Check the accessories belt. |
| Check the dipstick. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 3 | Appearance and mounting of the exhaust |
|---|---|

| |
|---|
| Check the catalytic converter. |
| Check the exhaust manifold. |
| Check the cylinder head. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_ALP3 / V42_V06_ALP3

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| ALP 4 | Fuel leak |
|---|---|

| |
|---|
| Check the fuel pump relay by running **TEST 1 Fuel supply pump relay check**. |
| Check the air pipes. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the spark plugs. |
| Check the injector rail. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 5 | Engine oil leak |
|---|---|

| |
|---|
| Check the air filter unit. |
| Check the oil filler cap. |
| Check the air pipes. |
| Check the inlet manifold. |
| Check the oil filter. |
| Check the oil circuit. |
| Check the oil pump. |
| Check the cylinder head. |
| Check the camshaft. |
| Check the rotating parts. |
| Check the dipstick. |
| If the fault is still present, contact the Techline. |

| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_ALP5 / V42_V06_ALP5

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| ALP 6 | Coolant leak |
|---|---|

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|---|
| Check the coolant pump. |
| Check the cylinder head. |
| Check the cooling system. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 7 | Unusual odour |
|---|---|

| |
|---|
| Check the air pipes. |
| Check the catalytic converter. |
| Check the coolant pump. |
| Check the exhaust manifold. |
| Check the cylinder head. |
| Check the timing. |
| Check the cooling system. |
| If the fault is still present, contact the Techline. |

| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_ALP7 / V42_V06_ALP7

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| ALP 8 | Fuel odours |
|---|---|

| |
|---|
| Check the air pipes. |
| Check the injector rail. |
| Check the inlet manifold. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 9 | Abnormal smoke in the engine compartment |
|---|---|

| |
|---|
| Check the air pipes. |
| Check the injector rail. |
| Check the inlet manifold. |
| Check the oil circuit. |
| Check the catalytic converter. |
| Check the coolant pump. |
| Check the exhaust manifold. |
| Check the cylinder head. |
| Check the timing. |
| Check the cooling system. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 10 | White smoke from the exhaust |
|---|---|

| |
|---|
| Check the air filter unit. |
| Check the air pipes. |
| Check the inlet manifold. |
| Check the exhaust manifold. |
| If the fault is still present, contact the Techline. |

| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

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| ALP 11 | Black smoke from the exhaust |
|---|---|

| |
|---|
| Check the air filter unit. |
| Check the air pipes. |
| Check the air inlet temperature sensor by running **TEST 6 Checking the air temperature sensor**. |
| Check the coolant temperature sensor by running **TEST 15 Coolant temperature sensor check**. |
| Check the injector rail. |
| Check the injectors by running **TEST 13 Checking the injectors**. |
| Check the upstream oxygen sensor by running **TEST 17 Checking the upstream O2 sensor**. |
| Check the downstream oxygen sensor by running **TEST 18 Checking the downstream O2 sensor**. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 12 | Blue smoke from the exhaust |
|---|---|

| |
|---|
| Check the oil. |
| Check the coolant temperature sensor by running **TEST 15 Coolant temperature sensor check**. |
| Check the spark plugs. |
| Check the ignition coil by running **TEST 14 Checking the ignition coil**. |
| Check the injectors by running **TEST 13 Checking the injectors**. |
| Check the oil filter. |
| Check the oil circuit. |
| Check the exhaust manifold. |
| Check the oil pump. |
| Check the pistons and piston rings. |
| Check the cylinder head. |
| Check the inlet and exhaust valves. |
| Check the rotating parts. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 13 | Excessive fuel consumption |
|---|---|

| |
|---|
| Check the air filter unit. |
| Check the air pipes. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the injector rail. |
| Check the injectors by running **TEST 13 Checking the injectors**. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| Check the pinking sensor by running **TEST 11 Pinking sensor check**. |
| Check the upstream oxygen sensor by running **TEST 17 Checking the upstream O2 sensor**. |
| Check the downstream oxygen sensor by running **TEST 18 Checking the downstream O2 sensor**. |
| Check the catalytic converter. |
| Check the camshaft. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 14 | Excessive coolant consumption |
|---|---|

| |
|---|
| Check the engine cooling fan assembly. |
| Check the coolant pump. |
| Check the cylinder head. |
| Check the cooling system. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_ALP14 / V42_V06_ALP14

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| ALP 15 | Excessive oil consumption |
|---|---|

| |
|---|
| Check the engine cooling fan assembly. |
| Check the oil circuit. |
| Check the oil filter. |
| Check the pistons and piston rings. |
| Check the cylinder head. |
| Check the valves. |
| Check the rotating parts. |
| Check the dipstick. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_ALP15 / V42_V06_ALP15

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| ALP 16 | Impossible to start the engine |
|---|---|

| |
|---|
| Check the fuel pump relay by running **TEST 1 Petrol supply pump relay check**. |
| Check the air filter unit. |
| Check the oil. |
| Check the air pipes. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the spark plugs. |
| Check the injector rail. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| Check the TDC sensor by running **TEST 10 TDC sensor check**. |
| Check the coolant pump. |
| Check the cylinder head. |
| Check the camshaft. |
| Check the valves. |
| Check the timing. |
| Check the rotating parts. |
| Check the accessories belt. |
| Check the supply relay and the injection computer. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 17 | Engine stalls when cold |
|---|---|

| |
|---|
| Check the air filter unit. |
| Check the oil. |
| Check the inlet manifold air pressure sensor by running **TEST 7 Air inlet pressure sensor check**. |
| Check the air pipes. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the coolant temperature sensor by running **TEST 15 Coolant temperature sensor check**. |
| Check the injector rail. |
| Check the injectors by running **TEST 13 Injector check**. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| Check the TDC sensor by running **TEST 10 TDC sensor check**. |
| Check the upstream oxygen sensor by running **TEST 17 Checking the upstream O2 sensor**. |
| Check the camshaft. |
| Check the valves. |
| Check the timing. |
| Check the injection computer. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 18 | The engine starts with difficulty. |
|---|---|

| |
|---|
| Check the air filter unit. |
| Check the oil. |
| Check the inlet manifold air pressure sensor by running **TEST 7 Air inlet pressure sensor check**. |
| Check the air pipes. |
| Check the throttle valve by running **TEST 3 Throttle valve check**. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the coolant temperature sensor by running **TEST 15 Coolant temperature sensor check**. |
| Check the spark plugs. |
| Check the injector rail. |
| Check the ignition coil by running **TEST 14 Checking the ignition coil**. |
| Check the injectors by running **TEST 13 Checking the injectors**. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| Check the TDC sensor by running **TEST 10 TDC sensor check**. |
| Check the coolant pump. |
| Check the oil pump. |
| Check the cylinder head. |
| Check the camshaft. |
| Check the valves. |
| Check the timing. |
| Check the cooling system. |
| Check the rotating parts. |
| Check the accessories belt. |
| Check the supply relay and the injection computer. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_ALP18 / V42_V06_ALP18

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| ALP 19 | Lack of power or torque |
|---|---|

| |
|---|
| Check the air filter unit. |
| Check that the floor carpet is correctly positioned. |
| Check the engine cooling fan assembly. |
| Check the accelerator pedal potentiometer by running **TEST 8 Accelerator pedal potentiometer check**. |
| Check the air filter unit. |
| Check the inlet manifold air pressure sensor by running **TEST 7 Air inlet pressure sensor check**. |
| Check the air pipes. |
| Check the air inlet temperature sensor by running **TEST 6 Checking the air temperature sensor**. |
| Check the throttle valve by running **TEST 3 Throttle valve check**. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the spark plugs. |
| Check the injector rail. |
| Check the inlet manifold. |
| Check the ignition coil by running **TEST 14 Checking the ignition coil**. |
| Check the injectors by running **TEST 13 Checking the injectors**. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| Check the TDC sensor by running **TEST 10 TDC sensor check**. |
| Check the pinking sensor by running **TEST 11 Pinking sensor check**. |
| Check the oil circuit. |
| Check the oil filter. |
| Check the upstream oxygen sensor by running **TEST 17 Checking the upstream O2 sensor**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 19 CONTINUED | |
|---|---|

| |
|---|
| Check the downstream oxygen sensor by running **TEST 18 Checking the downstream O2 sensor**. |
| Check the catalytic converter. |
| Check the exhaust manifold. |
| Check the pistons and piston rings. |
| Check the cylinder head. |
| Check the camshaft. |
| Check the valves. |
| Check the timing. |
| Check the rotating parts. |
| Check the injection computer. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 20 | Flat spots when accelerating |
|---|---|

| |
|---|
| Check the accelerator pedal potentiometer by running **TEST 8 Accelerator pedal potentiometer check**. |
| Check the brake pedal switch by running **TEST 9 Brake pedal switch** check. |
| Check the air filter unit. |
| Check the inlet manifold air pressure sensor by running **TEST 7 Air inlet pressure sensor check**. |
| Check the air pipes. |
| Check the air inlet temperature sensor by running **TEST 6 Checking the air temperature sensor**. |
| Check the throttle valve by running **TEST 3 Throttle valve check**. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the spark plugs. |
| Check the injector rail. |
| Check the inlet manifold. |
| Check the ignition coil by running **TEST 14 Checking the ignition coil**. |
| Check the injectors by running **TEST 13 Checking the injectors**. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| Check the TDC sensor by running **TEST 10 TDC sensor check**. |
| Check the pinking sensor by running **TEST 11 Pinking sensor check**. |
| Check the upstream oxygen sensor by running **TEST 17 Checking the upstream O2 sensor**. |
| Check the downstream oxygen sensor by running **TEST 18 Checking the downstream O2 sensor**. |
| Check the catalytic converter. |
| Check the camshaft. |
| Check the valves. |
| Check the timing. |
| Check the injection computer. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 21 | Rough idle |
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| Check the alternator charge signal module by running **TEST 2 Alternator signal module check**. |
| Check the accelerator pedal potentiometer by running **TEST 8 Accelerator pedal potentiometer check**. |
| Check the air filter unit. |
| Check the inlet manifold air pressure sensor by running **TEST 7 Air inlet pressure sensor check**. |
| Check the throttle valve by running **TEST 3 Throttle valve check**. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the spark plugs. |
| Check the injector rail. |
| Check the inlet manifold. |
| Check the ignition coil by running **TEST 14 Checking the ignition coil**. |
| Check the injectors by running **TEST 13 Checking the injectors**. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| Check the upstream oxygen sensor by running **TEST 17 Checking the upstream O2 sensor**. |
| Check the downstream oxygen sensor by running **TEST 18 Checking the downstream O2 sensor**. |
| Check the cylinder head. |
| Check the camshaft. |
| Check the valves. |
| Check the timing. |
| Check the rotating parts. |
| Check the injection computer. |
| Check the injection pump. |
| If the fault is still present, contact the Techline. |

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|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

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| ALP 22 | Idling speed too high or too low |
|---|---|

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| Check the alternator charge signal module by running **TEST 2 Alternator signal module check**. |
| Check the accelerator pedal potentiometer by running **TEST 8 Accelerator pedal potentiometer check**. |
| Check the air filter unit. |
| Check the air inlet temperature sensor by running **TEST 6 Checking the air temperature sensor**. |
| Check the throttle valve by running **TEST 3 Throttle valve check**. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the coolant temperature sensor by running **TEST 15 Coolant temperature sensor check**. |
| Check the spark plugs. |
| Check the injector rail. |
| Check the inlet manifold. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| Check the upstream oxygen sensor by running **TEST 17 Checking the upstream O2 sensor**. |
| Check the downstream oxygen sensor by running **TEST 18 Checking the downstream O2 sensor**. |
| Check the cylinder head. |
| Check the camshaft. |
| Check the valves. |
| Check the timing. |
| Check the injection computer. |
| If the fault is still present, contact the Techline. |

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|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_ALP22 / V42_V06_ALP22

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| ALP 23 | Jerking or hesitation |
|---|---|

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| Check the alternator charge signal module by running **TEST 2 Alternator signal module check**. |
| Check the fuel pump relay by running **TEST 1 Petrol supply pump relay check**. |
| Check the accelerator pedal potentiometer by running **TEST 8 Accelerator pedal potentiometer check**. |
| Check the brake pedal switch by running **TEST 9 Brake pedal switch check**. |
| Check the air filter unit. |
| Check the inlet manifold air pressure sensor by running **TEST 7 Air inlet pressure sensor check**. |
| Check the air pipes. |
| Check the air inlet temperature sensor by running **TEST 6 Checking the air temperature sensor**. |
| Check the throttle valve by running **TEST 3 Throttle valve check**. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the spark plugs. |
| Check the injector rail. |
| Check the inlet manifold. |
| Check the ignition coil by running **TEST 14 Checking the ignition coil**. |
| Check the injectors by running **TEST 13 Checking the injectors**. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| Check the TDC sensor by running **TEST 10 TDC sensor check**. |
| Check the upstream oxygen sensor by running **TEST 17 Checking the upstream O2 sensor**. |
| Check the downstream oxygen sensor by running **TEST 18 Checking the downstream O2 sensor**. |
| Check the camshaft. |
| Check the valves. |
| Check the timing. |
| Check the supply relay and the injection computer. |
| If the fault is still present, contact the Techline. |

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|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_ALP23 / V42_V06_ALP23

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| ALP 24 | Engine stalls |
|---|---|

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| Check the fuel pump relay by running **TEST 1 Petrol supply pump relay check**. |
| Check the air filter unit. |
| Check the inlet manifold air pressure sensor by running **TEST 7 Air inlet pressure sensor check**. |
| Check the air pipes. |
| Check the additional fuel circuit solenoid valve by running **TEST 5 Checking the additional fuel tank**. |
| Check the injector rail. |
| Check the injectors by running **TEST 13 Checking the injectors**. |
| Check the additional petrol circuit pump by running **TEST 12 Additional fuel tank pump check**. |
| Check the TDC sensor by running **TEST 10 TDC sensor check**. |
| Check the upstream oxygen sensor by running **TEST 17 Checking the upstream O2 sensor**. |
| Check the downstream oxygen sensor by running **TEST 18 Checking the downstream O2 sensor**. |
| Check the camshaft. |
| Check the valves. |
| Check the timing. |
| Check the injection computer. |
| Check the injection computer supply relay. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_ALP24 / V42_V06_ALP24

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| ALP 25 | Erratic acceleration |
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| Check that the floor carpet is correctly positioned. |
| Check the accelerator pedal potentiometer by running **TEST 8 Accelerator pedal potentiometer check**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_ALP25 / V42_V06_ALP25

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| ALP 26 | Erratic deceleration |
|---|---|

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| Check the inlet manifold air pressure sensor by running **TEST 7 Air inlet pressure sensor check**. |
| Check the throttle valve by running **TEST 3 Throttle valve check**. |
| If the fault is still present, contact the Techline. |

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|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_ALP26 / V42_V06_ALP26

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| ALP 27 | Engine racing (without action on the accelerator pedal) |
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| Check the accelerator pedal potentiometer by running **TEST 8 Accelerator pedal potentiometer check**. |
| Check the throttle valve by running **TEST 3 Throttle valve check**. |
| Check the injection computer. |
| If the fault is still present, contact the Techline. |

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|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_ALP27 / V42_V06_ALP27

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| | |
|---|---|
| Fuel supply pump relay check | TEST 1 |
| Alternator signal module check | TEST 2 |
| Throttle valve check | TEST 3 |
| Fuel vapour absorber solenoid valve check | TEST 4 |
| Additional fuel tank check | TEST 5 |
| Air temperature sensor check | TEST 6 |
| Air inlet pressure sensor check | TEST 7 |
| Accelerator pedal potentiometer check | TEST 8 |
| Brake pedal switch check | TEST 9 |
| TDC sensor check | TEST 10 |
| Pinking sensor check | TEST 11 |
| Additional fuel tank pump check | TEST 12 |
| Injector check | TEST 13 |
| Ignition coil check | TEST 14 |
| Coolant temperature sensor check | TEST 15 |
| Fan relay check | TEST 16 |
| Upstream O2 sensor check | TEST 17 |
| Downstream O2 sensor check | TEST 18 |
| Fuel conformity check | TEST 19 |

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| TEST 1 | Fuel supply pump relay check |
|---|---|

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| Listen to the operation of the fuel supply pump, as well as the fuel pump relay by running command **AC015 Fuel pump relay**. |
| Check the fuel pump supply on connection **3NA** by running command **AC015 Fuel pump relay**. |
| Check the **continuity, insulation, and absence of interference resistance** on the following connections:<br>– **3NA** between components **1047** and **833**,<br>– **MG** between component **833** and **the earth**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring. Otherwise replace the wiring. |
| If the fault is still present, contact the Techline. |

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|---|---|
| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_TEST1 / V42_V06_TEST1

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| TEST 2 | Alternator signal module check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

With the engine running, check the alternator charge without any electrical consumers switched on using **PR002 Alternator charge**, then switch on the consumers and check the increase in **PR002**.

Check the **cleanliness** and **condition** of the alternator connector, component code **103** and of the injection computer connector, component code **120**.
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Check the **insulation, continuity and the absence of interference resistance** on the following connection:
– **2K** between components **103** and **120**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.
If the check is correct, replace the alternator signal module, component code **103** (see **MR 388 or 451, Mechanical, 16A, Starting - Charging, Alternator: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST2 / V42_V06_TEST2

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| TEST 3 | Throttle valve check |
|---|---|

Check that parameter **PR444 Idling speed regulation integral correction** is between:
**5 N.m < PR444 < 10 N.m**.
The attempt is made with the engine idling and warm **(75˚C),** without any electrical consumers switched on.
The value of **PR444** must be read at least **20 minutes** after the engine coolant temperature has reached **75˚C**.

If the value of **PR444** is greater than **10 N.m**, program the throttle again using command **RZ031 Throttle stop programming**.

If the value of **PR444** is less than **-5N.m**, check the fitting of the throttle and check for possible air leaks (see **MR 388 or MR451, Mechanical, 12A, Fuel mixture, Throttle valve: Removal – Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST3 / V42_V06_TEST3

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| TEST 4 | Fuel vapour absorber solenoid valve check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

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| Check the cleanliness, mounting, possible leaks and the hoses of the fuel vapour absorber solenoid valve, component code **371** (see **MR 388, Mechanical, 14A, Emission control, Fuel vapour recirculation circuit: Check** or **MR 451, Mechanical, 14A, Emission control, Fuel vapour absorber: Removal - Refitting**). |
| Listen to the operation of the solenoid valve by running command **AC017 Canister bleed solenoid valve**. |
| With the engine idling, disconnect the pipe at the solenoid valve inlet and check that there is no suction on your finger. (These steps allow the sealing of the solenoid valve to be checked for air tightness.) |
| Check the **cleanliness** and **condition** of the canister bleed solenoid valve connector, component code **371** and of the injection computer connector, component code **120**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connections:<br>– **3FB** between components **371** and **1047**,<br>– **3BB** between components **371** and **120**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| With the ignition on, check for **+ 12 V** on connection **3FB** of component **371**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **resistance of the fuel vapour absorber bleed solenoid valve**.<br>If the resistance of the fuel vapour absorber bleed solenoid valve is not between: **24 Ω < X < 30 Ω** between **0˚C** and **40˚C**, replace the fuel vapour absorber bleed solenoid valve (see **MR 388 or 451, Mechanical, 14A, Emission control, Fuel vapour absorber: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST4 / V42_V06_TEST4

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| TEST 5 | Additional fuel tank check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero.** |
|---|---|

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| Check the cleanliness, mounting, possible leaks and the solenoid valve hoses (see **MR 388 Mechanical, 19C, Tank, Additional fuel system petrol pump: Removal – Refitting**). |
| Listen to the operation of the solenoid valve by running command **AC217 Additional petrol circuit solenoid valve**. |
| Check the **cleanliness** and **condition** of the connector of the additional petrol circuit solenoid valve, component code **1640** and of the injection computer connector, component code **120**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **continuity, insulation, and absence of interference resistance** on the following connections:<br>– **3ACM** between components **1640** and **120**,<br>– **3FB** between components **1640** and **1047**.<br><br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the supply of the solenoid valve using a test light, by running command **AC224 Additional petrol circuit pump relay**. |
| Check the internal resistance of the solenoid valve, component code **1640** on the computer connector, component code **120**, its value must be between: **24** Ω **< X** ≤ **30** Ω. If the resistance is not correct, replace the solenoid valve (see **MR 388 Mechanical, 19C, Tank, Additional fuel system petrol pump: Removal – Refitting**). |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST5 / V42_V06_TEST5

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| TEST 6 | Air temperature sensor check |
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| Perform a visual inspection and look for possible sealing faults in the system.<br>Ensure the conformity of the system (see **MR 388 or 451, Mechanical, 12A, Fuel mixture, Air inlet: Description**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_TEST6 / V42_V06_TEST6

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| TEST 7 | Air inlet pressure sensor check |
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| Check the fitting and sealing of the inlet air pressure sensor, component code **147** (condition of the seals) and look for possible leaks on the inlet air pipe. Ensure the conformity of the system (see **MR 388 or 451, Mechanical, 12A, Fuel mixture, Air inlet: Description**). |
| With the ignition on, compare the value of **PR312 Manifold pressure** for the vehicle concerned with that given by another vehicle (**absolute difference < 130 mbars)**. |
| Check the **connection** and **condition** of the connector of the inlet air pressure sensor, component code **147** and of the injection computer connector, component code **120**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the supply voltage of the sensor on connections **3AJR** and **3AJP**. |
| Check the **insulation, continuity and the absence of interference resistance** on the following connections:<br>– **3AJP** between components **120** and **147**,<br>– **3AJR** between components **120** and **147**,<br>– **3AJQ** between components **120** and **147**.<br><br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| With the ignition on, use a vacuum pump in order to create a variation in negative pressure. Then use the diagnostic tool to check that **PR312 Manifold pressure ≤ 500 mbar**. |
| Replace the inlet air pressure sensor, component code **147** (see **MR 388 or 451, Mechanical, 12A, Fuel mixture, Air inlet: Description**) and repeat the vacuum test. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |

V42_V04_TEST7 / V42_V06_TEST7

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| TEST 8 | Accelerator pedal potentiometer check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

Check the variation in **PR055 Engine speed** when depressing the accelerator pedal (with the engine running).

Stop the engine and switch on the ignition. Without action on the pedal, check that the voltage correction of circuit 1:
– **PR147 Pedal potentiometer voltage gang 1** is less than **817 mV** and
– **PR148 Pedal potentiometer voltage gang 2** is less than **440 mV**.
Then, in the "full load" position, check the voltage of circuit 1: **PR147** must be greater than **4185 mV** and **PR148** must be greater than **2013 mV**.

Also check the pedal position in the following cases:
– "position zero" (**PR030 Accelerator pedal position = 0**)
– "Full load" (**PR030 = 1**).

Stop the engine and then switch on the ignition.
With the vehicle under **+ after ignition feed**, measure the voltage between the following connections:
– **3LR** and **3LT** of component **921**,
– **3LU** and **3LV** of component **921**.

If the value is not between **4.75 V ≤ X ≤ 5.25 V**, check **the insulation, the continuity and the absence of interference resistance** of the following connections:
– **3LR** between components **120** and **921**,
– **3LT** between components **120** and **921**,
– **3LU** between components **120** and **921**,
– **3LV** between components **120** and **921**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **3LS** between components **120** and **921**,
– **3LW** between components **120** and **921**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST8 / V42_V06_TEST8

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| TEST 8 CONTINUED | |
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Remove the **accelerator pedal**, component code **921** (see **MR 388, Mechanical, 17B, Petrol injection, Accelerator pedal potentiometer: Removal – Refitting or 451, Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal – Refitting**).
**Without action on the accelerator pedal**, check the **resistance** between the following connections:

Gang 1:
– **3LT** and **3LS** of component **921**, the **resistance** must be between **718** Ω ≤ **X** ≤ **5263** Ω,
– **3LT** and **3LR** of component **921**, the **resistance** must be between **838** Ω ≤ **X** ≤ **1742** Ω,
– **3LR** and **3LS** of component **921**, the **resistance** must be between **1312** Ω ≤ **X 6495** Ω.

Gang 2:
– **3LV** and **3LW** of component **921**, the **resistance** must be between **701** Ω ≤ **X** ≤ **5242** Ω,
– **3LV** and **3LU** of component **921**, the **resistance** must be between **1495** Ω ≤ **X** ≤ **3105** Ω,
– **3LU** and **3LW** of component **921**, the **resistance** must be between **1978** Ω ≤ **X** ≤ **7894** Ω.

If these checks are incorrect, replace the **accelerator pedal sensor**, component code **921** (see **MR 388, Mechanical, 17B, Petrol injection, Accelerator pedal potentiometer: Removal – Refitting** or **MR 451, Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal – Refitting**).

If the fault is still present, contact the Techline.

**With the accelerator pedal depressed to the end of travel**, check the **resistance** between the following connections:

Gang 1:
– **3LT** and **3LS** of component **921**, the **resistance** must be between **1361** Ω ≤ **X** ≤ **6600** Ω,
– **3LT** and **3LR** of component **921**, the **resistance** must be between **838** Ω ≤ **X** ≤ **1742** Ω,
– **3LR** and **3LS** of component **921**, the **resistance** must be between **668** Ω ≤ **X** ≤ **5160** Ω.

Gang 2:
– **3LV** and **3LW** of component **921**, the **resistance** must be between **1276** Ω ≤ **X** ≤ **6436** Ω,
– **3LV** and **3LU** of component **921**, the **resistance** must be between **1495** Ω ≤ **X** ≤ **3105** Ω,
– **3LU** and **3LW** of component **921**, the **resistance** must be between **1403** Ω ≤ **X** ≤ **6700** Ω.

If these checks are incorrect, replace the **accelerator pedal sensor**, component code **921** (see **MR 388, Mechanical, 17B, Petrol injection, Accelerator pedal potentiometer: Removal – Refitting** or **MR 451, Mechanical, 37A, Mechanical component controls, Accelerator pedal: Removal – Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

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| TEST 9 | Brake pedal switch check |
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| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

With the brake pedal **released**, check **ET039 Brake pedal** and **ET799 Brake wire contact**.
**ET039** must be **01** and **ET799** must be **01**.
While depressing the brake pedal, check **ET039** and **ET799**.
**ET039** must be **02** and **ET799** must be **02**.
If these two checks are correct, the switch is not faulty.

Check the fitting and mechanical operation of the brake pedal (the pedal returns properly).
If the check is incorrect, check the braking system.

With the brake pedal **depressed**, measure the **resistance** of the **brake pedal switch**, component code **160** between connections **AP1** and **65A**, the value must be **X > 10 MΩ**.
If the **resistance** is not correct, replace the **brake pedal switch**, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**).

With the brake pedal **released**, measure the **resistance** of the **brake pedal switch**, component code **160** between connections **AP1** and **5A**, the value must be between **0 Ω < X < 1 Ω**.
If the **resistance** is not correct, replace the **brake pedal switch**, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**) and move on to the **part: Checking the brake pedal switch**.

Check the condition of the **brake pedal switch** connector, component code **160** (see **MR 388 or 451, Mechanical, 37A, Mechanical component controls, Brake pedal switch: Removal - Refitting**).
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the presence and condition of the brake pedal fuse **F03** (**10 A**).

Check the **insulation, continuity and the absence of interference resistance** on the following connections:
– **AP1** between components **160** and **1016**,
– **5A** between components **160** and **120**,
– **65A** between components **160** and**120**,
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST9 / V42_V06_TEST9

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| TEST 10 | TDC sensor check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

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| Check the fitting of the sensor (connectors, mountings, etc.) (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Crankshaft position sensor: Removal - Refitting**). |
| Switch on the ignition, check the change of the engine rotation speed using parameter **PR055 Engine speed**.<br>The value must be between **0 rpm** and more than **120 rpm** when the starter is operating. |
| With the engine running, accelerate to obtain different engine rotation speeds and check that the engine speed correctly changes in relation to the accelerations.<br>If **PR055** varies, the sensor is sound. |
| Check the **cleanliness** and **condition** of the **TDC sensor**, component code **149** and of the injection computer connector, component code **120**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **resistance** of the **TDC sensor** between connections **3BL** and **3BG** on the **injection computer** connector side, component code **120** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Petrol injection computer: Removal - Refitting**).<br><br>The **resistance** must be between **175** Ω ≤ **X** ≤ **295** Ω. If the value is not correct, replace the sensor (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Crankshaft position sensor: Removal - Refitting**). |
| Check the **insulation, continuity and the absence of interference resistance** on the following connections:<br>– **3BL** between components **120** and **149**,<br>– **3BG** between components **120** and **149**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST10 / V42_V06_TEST10

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| TEST 11 | Pinking sensor check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

| |
|---|
| Start the engine and let it idle. Then, check that **PR427 Average pinking signal** is **0**. |
| With the engine idling, check that parameters **PR469 Cylinder 1 pinking value, PR471 Cylinder 2 pinking value, PR473 Cylinder 3 pinking value**, **PR475 Cylinder 4 pinking value** are all 0. |
| Check the **cleanliness** and **condition** of the **pinking sensor** connector, component code **146** and of the injection computer connector, component code **120**.<br>If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring. |
| Check the **resistance** of the **pinking sensor** between connections **3DQ** and **3S** on the **injection computer** connector side, component code **120** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Petrol injection computer: Removal - Refitting**).<br><br>The **resistance** must be: **X > 10 MΩ**.<br>If the resistance value is not correct, replace the pinking sensor (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Petrol injection: List and location of components**). |
| Check the **insulation, continuity and the absence of interference resistance** on the following connections:<br><br>– **3DQ** between components **120** and **146**,<br>– **3S** between components **120** and **146**.<br><br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST11 / V42_V06_TEST11

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| TEST 12 | Additional fuel tank pump check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero.** |
|---|---|

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| Listen to the operation of the additional fuel pump and of the petrol pump relay of the additional circuit by running command **AC224 Additional petrol circuit pump relay**. |
| Check the supply of the solenoid valve using a test light, by running command **AC224**.<br>If the supply is correct, replace the additional fuel pump (see **MR 388 Mechanical, 19C, Tank, Additional fuel circuit tank: Removal – Refitting**). |
| Check the **continuity, insulation, and absence of interference resistance** on the following connections:<br><br>– **3ACL** between components **1639** and **283**,<br>– **NH** between **earth** and **283**.<br><br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the checks are correct, run fault finding on the Protection and Switching Unit. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST12 / V42_V06_TEST12

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| TEST 13 | Injector check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

Perform a visual inspection of the condition and possible leaks in the system.
Repair if necessary (see **MR 388 Mechanical, 13A, Fuel supply, Injector rail – Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**).

Listen to the operation of the injectors by running the commands:
– **AC005 Cylinder 1 injector**,
– **AC006 Cylinder 2 injector**,
– **AC007 Cylinder 3 injector**,
– **AC008 Cylinder 4 injector**.
Replace the injectors if necessary (see **MR 388 Mechanical, 13A, Fuel supply, Injector rail – Injectors: Removal – Refitting** or **MR 451, Mechanical, 17B, Petrol injection, Injector rail - Injectors: Removal – Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST13 / V42_V06_TEST13

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| TEST 14 | Ignition coil check |
|---|---|

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|---|---|
| ***NOTES*** | **Special note:**<br>**To apply this procedure, use special tool Elé. 1808: Ignition coil tester, available in the Parts Department catalogue.**<br>**part number: 77 11 381 808.** |
| | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |

**K4M engine**

Perform a visual inspection of the condition of the connectors for the following: pencil ignition coil no.1, component code **1077**, pencil ignition coil no.2, component code **1078**, pencil ignition coil no.3, component code **1079**, pencil ignition coil no.4, component code **1080** (see **MR 388 or 451, Mechanical, 17A, Ignition, Coils: Removal – Refitting**).
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Insert tool **Elé. 1808** (**1**) into the coil.
Place the tool/coil assembly in the spark plug well.
Start the engine and let it idle.
Apply light pressure to the assembly to hold the coil in contact with the tool.
Observe the glow from the electric arc on the spark plug well wall.
If the electric arc is not produced, replace the coil concerned (see **MR 388 or 451, Mechanical, 17A, Ignition, Coils: Removal – Refitting**).

If the fault is still present, contact the Techline.

| ***AFTER REPAIR*** | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

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| TEST 14 CONTINUED | Ignition coil check |
|---|---|

**K7M engine**

Perform a visual inspection of the condition of the ignition coil connectors, component code **778** (see **MR 388 Mechanical, 17A, Ignition, Coils: Removal – Refitting**).
If the connector or connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector(s), otherwise replace the wiring.

Insert tool **Elé.1808** (**1**) in the cap of the wire of the plugs concerned.
Fit the assembly in the plug well.
Start the engine and let it idle.
Apply light pressure to the assembly to hold the coil in contact with the tool.
Observe the glow from the electric arc on the spark plug well wall.
If the electric arc is not produced, replace the ignition coil (see **MR 388 Mechanical, 17A, Ignition, Coils: Removal – Refitting**).

If the fault is still present, contact the Techline.

**D4D engine**

– Switch on the vehicle **+ after ignition feed**.
– Run command **VP036 FUEL SUPPLY INHIBITION**.
Put the vehicle under starting conditions:
– position of gear lever in neutral for a manual gearbox* or position "P" (Parking) for an automatic gearbox*.
– brake pedal depressed.
– Run command **RZ003 ENGINE ADAPTIVES**.
Remove the plugs from each cylinder and check, one after another, that sparks are present by bringing the plug close to a chassis earth, with the starter engaged. If no spark is produced, replace the ignition coil, component code **778** (see **MR 388 Mechanical, 17A, Ignition, Coils: Removal – Refitting**).

If the fault is still present, contact the Techline.

BVM*: Manual gearbox.
BVA*: Automatic gearbox.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

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| TEST 15 | Coolant temperature sensor check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

If the fault is still present, contact the Techline.

With the engine idling: visually check that there are no leaks where the **coolant temperature sensor** is fitted, component code **244** (see **MR 388 or 451, Mechanical, 19A, Cooling, Coolant temperature sensor: Removal - Refitting**).
Switch off the engine. Wait for **15 minutes**, restart the engine and, for **10 minutes**, check that the temperature value given by the sensor increases, using parameter **PR064 Coolant temperature**.
If the value increases, the sensor is sound.

Check the condition of the **coolant temperature sensor** connector, component code **244** and of the **injection computer** connector, component code **120**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the supply between connections **3JK** and **3C** of component **244**.
Check the **insulation, continuity and absence of interference resistance** on the following connections:
– **3JK** between components **244** and **120**,
– **3C** between components **244** and **120**.
If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

If the fault is still present, replace the **coolant temperature sensor**, component code **244** (see **MR 388 or 451, Mechanical, 19A, Cooling, Coolant temperature sensor: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST15 / V42_V06_TEST15

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| TEST 16 | Fan relay check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

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| Check the operation of the low speed fan assembly by running command **AC038 Low speed fan assembly relay**.<br>Check the operation of the high speed fan assembly by running command **AC039 High speed fan assembly relay**.<br>If these two checks are correct, the fan assembly relay is not faulty |
| Run command **AC038** and use the test light to check for the control signal of component **120** on connection **3JN** of component **700**. |
| Check the connection and condition of the **fan assembly** connector, component code **188** and of the **injection computer** connector, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check **the insulation, continuity and absence of interference resistance** on the following connections:<br>– **3JN** between components **700** and **120**,<br>– **49C** between components **321** and **700**,<br>– **49B** between components **188** and **321**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Run command **AC038** and use the test light to check for the presence of supply at the relay output.<br>If the supply is absent, replace the **low speed fan assembly relay**, component code **700**. |
| Run command **AC039** and use the test light to check for the control signal of component **120** on connection **3JP** of component **336**. |
| Check the **insulation, continuity and absence of interference resistance** on the following connection:<br>– **49B** between components **336** and **188**,<br>– **3JP** between components **336** and **120**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Run command **AC039** and use the test light to check for the presence of supply at the relay output.<br>If the supply is absent, replace the **high speed fan assembly relay**, component code **336**. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

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| TEST 17 | Upstream O2 sensor check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

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| Visually check the position and mounting of the upstream oxygen sensor (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**). |
| With the engine warm, **PR064 Coolant temperature > 70˚C**, depress the accelerator pedal and check that **PR098 Upstream oxygen sensor voltage** varies correctly between: **20 mV < PR098 < 1395 mV**. The variation must be greater than **50 mV**. |
| Check the connection and condition of the upstream oxygen sensor connector, component code **887** and of the **injection computer** connector, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity and absence of interference resistance** on the following connection:<br>– **3GH** between components **887** and **120**,<br>– **3GK** between components **887** and **120**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the resistance value of the upstream oxygen sensor, component code **887** on the computer connector side, component code **120**. With the engine stopped for **10 minutes**, the resistance value should be between **7 Ω and infinity**.<br>If the resistance is not correct, replace the upstream oxygen sensor, component code **887** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**). |
| Check that the TDC* sensor programming is correct (see the section on **Replacement of components**). |
| Run test **SC007 Run OBD test: O2 sensor** and start the engine (Only depress the brake pedal to authorise the starting of the engine).<br>At the end, check the test results:<br>**STATUS1**: Run the test again with the engine coolant temperature **X > 90˚C**.<br>**STATUS2** or **STATUS3**: Sensor OK.<br>**STATUS4**: Replace the upstream oxygen sensor (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal – Refitting**). |
| If the fault is still present, contact the Techline. |

TDC*: TOP DEAD CENTRE

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST17 / V42_V06_TEST17

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| TEST 18 | Downstream O2 sensor check |
|---|---|

| *NOTES* | See the **Wiring Diagrams Technical Note for Logan, Sandero, Duster**. |
|---|---|

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| Visually check the position and mounting of the downstream oxygen sensor, component code **242** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**). |
| With the engine warm, **PR064 Coolant temperature > 70˚C**, depress the accelerator pedal for **3 minutes**, perform several accelerations and check that **PR099 Downstream oxygen sensor voltage** varies correctly between: **0 mV < PR099 < 1000 mV**. |
| Check the connection and condition of the downstream oxygen sensor connector, component code **242** and of the **injection computer** connector, component code **120**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity and absence of interference resistance** on the following connection:<br>– **3GL** between components **242** and **120**,<br>– **3GJ** between components **242** and **120**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the resistance value of the downstream oxygen sensor, component code **242** on the computer connector side, component code **120**. With the engine stopped for **10 minutes**, the resistance value should be between **7 Ω and infinity**.<br>If the resistance value is not correct, replace the downstream oxygen sensor, component code **242** (see **MR 388 or 451, Mechanical, 17B, Petrol injection, Oxygen sensors: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST18 / V42_V06_TEST18

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| TEST 19 | Fuel conformity check |
|---|---|

**WARNING:**
**During this operation, it is essential to:**
**refrain from smoking or bringing incandescent objects close to the work area,**
**protect yourself against fuel splashes due to residual pressure in the pipes, wear safety goggles with side guards and waterproof gloves (Nitrile type).**

**IMPORTANT:**
**To avoid any corrosion or damage, protect the areas on which fuel is likely to run.**
**To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.**

Remove **1 L** of fuel **at the fuel filter outlet** (see **MR 388 or 451, Mechanical, 19C, Tank, Fuel tank: Draining**), using a pneumatic transfer pump (**part no. 634-200**) and place it in the 1300 ml plastic cup.
Cover the plastic cup with its cover and allow it to settle for approximately **2 minutes**.

**Check if the fuel is cloudy or if it separates into two parts.**
If the fuel is cloudy or if it separates into two parts, there is water in the fuel, the fuel is not correct.
Drain the fuel circuit, including the tank (see **MR 388 or 451, Mechanical, 19C, Tank, Fuel tank: Draining**).

Visually compare the fuel removed with the correct petrol.
**Are the samples identical?**
If the samples are identical, this means that the fuel is correct.
Otherwise, drain the fuel circuit, including the tank (see **MR 388 or 451, Mechanical, 19C, Tank, Fuel tank: Draining**).

Note:
**Contact the Techline if you have doubts or problems with the customer.**

| *AFTER REPAIR* | Carry out a road test, then check with the **diagnostic tool**. |
|---|---|

V42_V04_TEST19 / V42_V06_TEST19

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# 3 Chassis

## 36B POWER-ASSISTED STEERING PUMP ASSEMBLY

**GEPDA**
**Vdiag No.: 04**


| | |
|---|---|
| Fault finding – Introduction | 36B - 2 |
| Fault finding – List and location of components | 36B - 9 |
| Fault finding – Function | 36B - 10 |
| Fault finding – Configuration | 36B - 13 |
| Fault finding – Programming | 36B - 14 |
| Fault finding – Replacement of components | 36B - 15 |
| Fault finding – Fault summary table | 36B - 17 |
| Fault finding – Interpretation of faults | 36B - 18 |
| Fault finding – Conformity check | 36B - 34 |
| Fault finding – Status summary table | 36B - 40 |
| Fault finding – Parameter summary table | 36B - 41 |
| Fault finding – Interpretation of parameters | 36B - 42 |
| Fault finding – Command summary table | 36B - 47 |
| Fault finding – Customer complaints | 36B - 48 |
| Fault finding – Fault Finding Chart | 36B - 49 |




"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

| | |
|---|---|
| *Vehicle:* **DUSTER**<br>*Function concerned:* **Power-assisted steering pump assembly** | *Computer name:* **GEPDA**<br>*Vdiag No.:* **04** |

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type:**

**Fault finding procedure** (this manual):
- Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.

**Wiring Diagrams:**
- Visu - Schéma

**Type of diagnostic tools:**
- **CLIP**

**Special tooling required:**

| Special tooling required | |
|---|---|
| **Diagnostic tool** | |
| | Multimeter |
| **Elé. 1681** | Universal bornier |

## 3. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:
- check the battery voltage to avoid incorrect operation of computer functions,
- use the proper tools.

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**Faults**

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).

Consider the fault status, **present** or **stored** when the **diagnostic tool** is used after the + after ignition feed (without operating the system components).

For a **present fault**, apply the procedure described in the Interpretation of faults section.
For a **stored fault**, note the faults displayed and apply the Notes section.

If the fault is **confirmed** when the instructions are applied, the fault is present. Deal with the fault.
If the fault is **not confirmed**, check:
– the electrical connections that correspond to the fault,
– the connectors for this connection,
– the resistance of the faulty component,
– the condition of the wires.
**Refer to paragraphs 4.1 Checking wiring and 4.2 Checking connectors**

**Conformity check**

The aim of the conformity check is to check data that does not produce a fault on the **diagnostic tool** when the data is inconsistent. Therefore, this stage is used to:
– carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint,
– check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

**Customer complaints - Fault finding chart**

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **customer complaints**.

**A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.**

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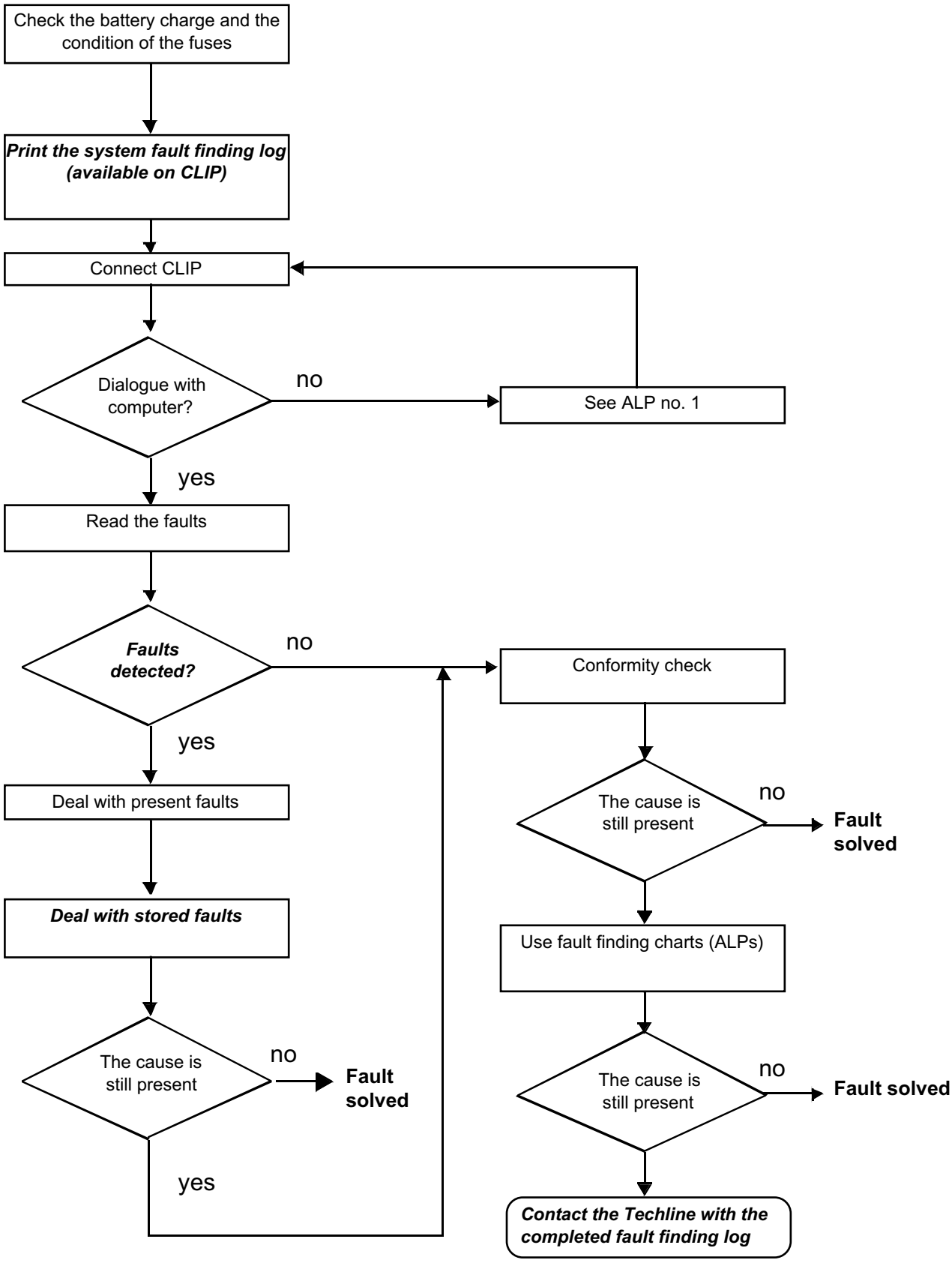
## 4. FAULT FINDING PROCEDURE



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## 4. FAULT FINDING PROCEDURE (CONTINUED)

### 4.1 Wiring check

**Fault finding problems**
Disconnecting the connectors and/or manipulating the wiring may temporarily remove the cause of a fault.

**Visual inspection**
Look for damage under the bonnet and in the passenger compartment.
Carefully check the protectors, insulation, and routing of the wiring, as well as the mountings.

**Physical inspection**
While manipulating the wiring, use either the **diagnostic tool** to detect a change in status from “stored” to “present”, or use the multimeter to view the status changes.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Twist the wiring harness.

**Checking earth insulation**
This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the **12 V** or **5 V**. The correct measured value is **0 V.**

**Checking insulation against + 12 V or + 5 V**
This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the earth. In the first instance, the earth may be taken on the chassis. The correct measured value should be **0 V**

**Continuity check**
A continuity check is carried out by measuring the resistance (multimeter in ohmmeter mode), with the connectors disconnected at both ends. The expected result is **1 Ω ± 1 Ω** for every connection. The line must be fully checked, and the intermediate connections are only included in the method if this saves time during the fault finding procedure. The continuity check on the multiplex lines must be carried out on both wires. The measured value should be **1** Ω **± 1** Ω.

**Checking the supply**
This check may be carried out using a test light (**21 W** or **5 W** depending on the maximum authorised load).

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### 4.2 Checking the connectors

Note:
Carry out each requested check visually.
Do not remove a connector if it is not required.

Note:
Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:
The check is carried out on the 2 parts of the connection. There may be two types of connection:
– Connector/Connector.
– Connector/Device.

**Visual inspection of the connection:**

– Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

**Visual inspection of the area around the connection:**

– Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
– Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
– Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

**Visual inspection of the plastic casing:**

– Check that there is no mechanical damage (casing crushed, split, broken, etc.), in particular to the fragile components (lever, lock, sockets, etc.).
– Check that there is no heat damage (casing melted, darker, deformed, etc.).
– Check that there are no stains (grease, mud, liquid, etc.).

**Visual inspection of the metal contacts:**

*(The female contact is called CLIP. The male contact is called TAB).*

– Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The contact comes out of the connector when the wire is pulled gently.
– Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
– Check that there is no oxidation on the metal contacts.

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**Visual inspection of the sealing:**
(Only for watertight connectors)
Check for the seal on the connection (between the 2 parts of the connection).
– Check the seal at the back of the connectors:
  – For *unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
  – For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
  – For gel seals, check for gel in all of the sockets without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
  – For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and the electrical wires, and that the hardened glue comes out of the side of the wire.
– Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, consult **Technical Note 6015A, Repairing electrical wiring.**

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## 5. FAULT FINDING LOG

**IMPORTANT!**

**IMPORTANT**
Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE ESSENTIAL THAT THE FAULT FINDING LOG IS FILLED OUT EVERY TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS DEPARTMENT.**

You will always be asked for this log:
– when requesting technical assistance from Techline,
– for approval requests when replacing parts for which approval is mandatory,
– to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

## 6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the proper tools.

**It is forbidden to carry out a road test with the diagnostic tool in dialogue with the ECU because the ABS and Electronic Brake Distribution functions are deactivated. Braking pressure is identical on both vehicle axles (risk of a spin under heavy braking).**

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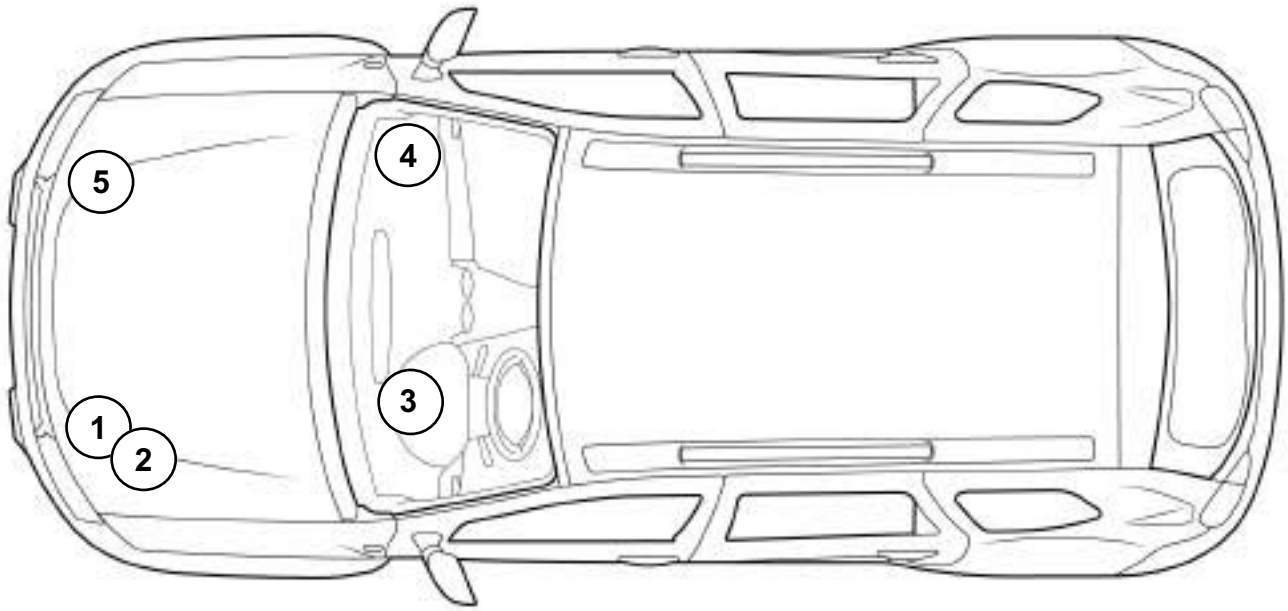
## Location of components

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| | | | |
|---|---|---|---|
| 1 | Power-assisted steering pump assembly | 4 | Diagnostic socket |
| 2 | Engine interconnection unit | 5 | Alternator |
| 3 | Passenger compartment fuse box | | |

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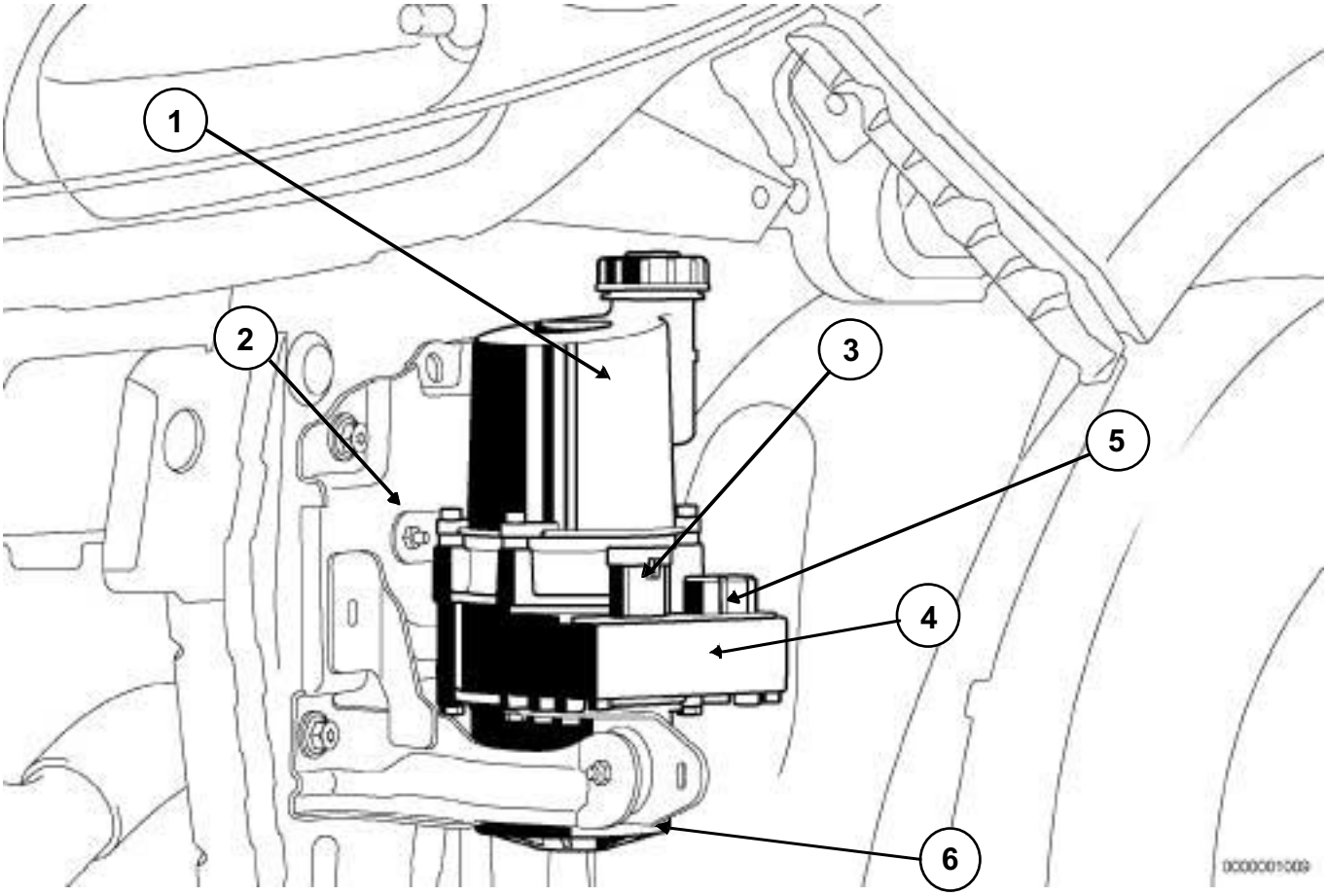
**Power-assisted steering pump assembly**

**System outline**




| | | | |
|---|---|---|---|
| 1 | Oil reservoir | 4 | Computer |
| 2 | Hydraulic pump (in tank) | 5 | Signal connector |
| 3 | Power connector | 6 | Electric motor |

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**Functions provided**

- **Main function**

**Power-assisted steering:**
The power-assisted steering system uses a pump assembly which generates the hydraulic pressure assistance in the steering circuit.

Operation of the power-assisted steering is managed by a computer integrated into the pump assembly of the power-assisted steering.
Correct system operation is checked using sensors integrated into the pump assembly of the power-assisted steering.

The power-assisted steering is only available when the **+ after ignition feed** is on (computer activation) and the vehicle's engine is running (the presence of the alternator signal is interpreted by the computer as "engine running"). The power-assisted steering is only switched off if the after ignition feed and alternator signal disappear and the speed is less than **2 mph (3 km/h)**.

The level of assistance calculated is based on parameters defined by Renault (tuning or assistance strategy) and stored in the computer memory. This assistance strategy should be entered after replacing the **pump assembly* of DUSTER**.

**Specific case:**

- When the vehicle speed is absent, or received but invalid, then the level of assistance provided corresponds to the level of assistance for **60 mph (100km/h)**. In this case, power-assisted steering is available but is not optimal. Heavy steering is easily perceived when stationary.

**The higher the vehicle speed, the more limited the power-assisted steering assistance.** The **DUSTER GEP*** is a variable power-assisted steering system, which varies according to the vehicle speed.

- The assistance is available more or less immediately when the vehicle is started. Two cases can be identified:
  - The ignition is on but the engine is not started immediately. This allows time for the GEP* to perform its initialisation sequence (**500 ms** approximately). As soon as the engine is **running**, the GEP* supplies assistance with a gradient of **100%/s**.
  - The ignition is on and the engine is started immediately. The GEP* starts the initialisation phase immediately followed by a gradient of **100%/s**.

The power-assisted steering can be maintained in degraded mode then reduced gradually for the following **5 minutes** until assistance stops completely. This particular mode is active when the signal connector is disconnected.

Fault finding only operates when the **GEP** supply voltage is between 9**V** and 18**V**. Abnormal levels of voltage, which are out of range, may generate noticeable variations in assistance.

*GEP: Pump assembly

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- **Temperature Protection Function**

The temperature of the pump assembly is monitored by two sensors, one for the oil temperature, the other for the temperature of the internal electronics.

There are two possible cases:

- When at least one of the two temperatures (**PR008 COMPUTER TEMPERATURE and PR016 OIL TEMPERATURE**) exceeds the threshold of **107˚C**, the rotation speed of the electric motor decreases **until the temperature drops below this threshold.**
- When at least one of the two temperatures (**PR008 COMPUTER TEMPERATURE** and **PR016 OIL TEMPERATURE**) exceeds the threshold of **125˚C**, the electric pump switches off and no assistance is provided for as long as it takes for the temperature to return below this threshold.

- **Fault finding function**

The pump assembly computer includes a self-test procedure function. The required information can be accessed using the **diagnostic tool**, by the **HK** line.

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| Equipment required: |
| --- |
| CLIP diagnostic tool |

**Configurations of the power-assisted steering function**

Configuration readings available using the **diagnostic tool**:

| Configuration reading | Name of configuration | Option | Configuration |
| --- | --- | --- | --- |
| LC005 | Computer calibration | K9K | VP006 |

- Check the configurations in the **Read configurations** menu

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## SETTINGS

**VP001: Write VIN.**

This command permits manual entry of the vehicle's VIN into the computer.
Use this command each time the pump assembly of the power-assisted steering is replaced.

Check that the configuration is correct by reading the identification **ID010 V.I.N. code**.

**VP005: Enter After-Sales operation date.**

This command allows is used to manual enter the date of the last After-Sales operation on the pump assembly system of the power-assisted steering.
Use this command after every operation, whether mechanical or electric/electronic, on the pump assembly of the power-assisted steering.

Consecutively enter the six figures of the date: two for the year, two for the month and two for the day. E.g. 000706 (06 July 2000).

Check that the configuration is correct by reading the identification **ID018 Read last After-Sales operation date**.

**VP006: Computer calibration.**

This command enables the rotation speed of the electric pump motor to be calibrated in the computer.

Use this command after each replacement of the power-assisted steering pump assembly when this is not already configured.

Check by reading **LC005 Computer calibration** that the configuration has been registered correctly.

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**Precautions for use**

- The power-assisted steering pump assembly (the computer, the electric motor, the hydraulic pump, the oil reservoir) cannot be separated.

## OPERATIONS FOR REPLACING THE PUMP ASSEMBLY

Before replacing the power-assisted steering pump assembly, perform fault finding on the system and apply the appropriate fault finding procedure.
The power-assisted steering pump assembly may only be replaced after approval from Techline.
After replacing the pump assembly, calibrate the computer using the **diagnostic tool.**

**WARNING:**
To prevent any accidents, it is essential to disconnect the battery when performing operations on the front axle, regardless of the operation, to remove the risk of trapping someone between a wheel and the body if the power-assisted steering is accidentally triggered due to a fault in the pump assembly system.

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When replacing the power-assisted steering pump assembly, perform the following operations:

- disconnect the vehicle battery,
- replace the power-assisted steering pump assembly (see **MR 451 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Removal - Refitting**),
- reconnect the vehicle battery,
- connect **the diagnostic tool**, switch on the ignition and establish dialogue with the computer of the power-assisted steering pump assembly,
- configure the computer by running command **VP006 Computer calibration** (see **Programming**),
- Enter the vehicle VIN using command **VP001 Enter VIN** (see **Programming**),
- write the date of the last After-Sales operation using command **VP005 Enter After-Sales operation date** (see **Programming**),
- switch off the ignition for at least **15 seconds** for the configurations to register, without disconnecting the battery,
- switch on the ignition and establish dialogue with the computer of the power-assisted steering pump assembly,
- use configuration reading **LC005 Computer calibration** to check that the calibration corresponds correctly to the vehicle
- check that there are no faults and that the parameters are correct,
- start the vehicle engine and check that the power-assisted steering pump assembly is operating correctly (power-assisted steering available with the engine running),
- check that there are no faults and that the parameters are correct.

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| Tool fault | Associated DTC | Diagnostic tool title |
|---|---|---|
| **DF002** | 5608 | Computer |
| **DF017** | 5606 | Motor circuit |
| **DF023** | 5613 | +After ignition supply |
| **DF037** | 5601 | Battery voltage |
| **DF043** | 5616 | Vehicle speed |
| **DF053** | 5602 | Computer configuration |
| **DF055** | 5607 | Computer memory |
| **DF075** | 5617 | Alternator fault |

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| | |
|---|---|
| **DF002 PRESENT OR STORED** | COMPUTER<br>1.DEF: Supplier No. 1 signal<br>2.DEF: Supplier No. 2 signal<br>3.DEF: Supplier No. 3 signal<br>4.DEF: Supplier No. 4 signal<br>5.DEF: Supplier No. 5 signal |

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|---|---|
| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared **present** after starting or moving the steering wheel movement from full lock to full lock. |

Replace the **GEPDA** computer (see **MR 451 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Removal - Refitting**)

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

GEPDA_V04_DF002

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|---|---|
| **DF017 PRESENT OR STORED** | MOTOR CIRCUIT<br>1.DEF: Supplier No. 1 signal<br>2.DEF: Control overcurrent<br>3.DEF: Inverter<br>4.DEF: No signal |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared **present** after starting or moving the steering wheel movement from full lock to full lock. |

Replace the **GEPDA** computer (see **MR 451 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Removal - Refitting**).

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|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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|---|---|
| **DF023 PRESENT OR STORED** | + AFTER IGNITION FEED<br>DEF: No signal |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared **present** after starting or moving the steering wheel movement from full lock to full lock. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

– Check the condition and conformity of the supply fuses for the computer of the power-assisted steering pump assembly, component code **186** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components):**
– power fuse **F02** in the **engine compartment connection unit**, component code **597**, **+ after ignition feed** fuse **F24** in the **passenger compartment fuse box**, component code **1016**.

Disconnect the two connectors from the **computer on the power-assisted steering pump assembly**.
Check the condition and conformity of the connectors on the power-assisted steering pump assembly and their clips.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF023 CONTINUED | |
|---|---|

Check for:
- a **+ 12 V before ignition supply** on connection **BP36** of component **186**,
- an **earth** on connection **MS** of component **186**,
- a **+ 12 V after ignition supply** on connection **AP23** of component **186**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the battery voltage and check the charging circuit (see **Technical Note 6014A (Renault) or Technical Note 9859A (Dacia), Checking the charging circuit**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| **DF037 PRESENT OR STORED** | BATTERY VOLTAGE<br>DEF: Under voltage |

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| ***NOTES*** | **Special note:**<br>This fault is raised in the event of an on-board network fault, if the voltage drops below **10V**.<br>Assistance maintained when driving as long as the voltage level is **> 8 V**.<br>Degraded assistance between **8** and **10V**.<br>Loss of assistance below **8V**.<br>Impossible to enter fault finding with the **GEP*** if the voltage is less than **8V** at the computer terminals. |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the following components: on-board network/alternator, wiring harness and wiring, battery, computer.
Check the tightness of the alternator terminal and the voltage level of the battery.
Check the tightness and the condition of the battery terminals (see **MR 451, Mechanical, 80A, Battery, Battery: Removal - Refitting**).
Check the charge circuit.
Check the condition and position of fuse **F01** and **F02** in the **engine fuse and relay box**.
Check the condition and position of fuse **F24** in the **passenger compartment fuse box** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of the components**).

**With the ignition on** and the **engine stopped**, check for a voltage equal to the battery voltage on connections **BP36** and **AP23** in relation to the **earth MS**.

*GEP: Pump assembly

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| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF037 CONTINUED | |
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| Disconnect the two connectors from the **computer on the power-assisted steering pump assembly**, component code **186**.<br>Check the condition and conformity of the connectors on the power-assisted steering pump assembly and their clips.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| With the connectors of the **engine fuse and relay box**, component code **597** and of the **passenger compartment fuse box**, component code **1016,** disconnected:<br>Check the continuity and insulation of connection **BP36** between components **186** and **597**.<br>Check the continuity and insulation of connection **AP23** between components **186** and **1016**.<br>Check the continuity and insulation of connection **MS** of component **186**. |
| If the checks reveal no faults, check the conformity of components **597** and **1016**. |
| If the fault is still present, contact the Techline. |

| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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|---|---|
| **DF043 PRESENT OR STORED** | VEHICLE SPEED<br>CO: Open circuit<br>CC.0: Short circuit to earth |

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| ***NOTES*** | **Special note:**<br>**The vehicle speed signal comes from the ABS, ESP, speed sensor or from the ETC. This fault indicates the disappearance or abnormal behaviour of the vehicle speed wire signal, such as, for example, a significant variation in speed.** |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check whether the **instrument panel**, component code **247**, receives the vehicle speed signal on:
the ETC torque distribution computer, for a **4x4** vehicle **without ABS, without ESP**,
the vehicle speed sensor for a **4x2 vehicle without ABS, without ESP**;
The ABS computer for a vehicle **with ABS** (see **38C, Anti-lock braking system**);
The ESP computer for a vehicle **with ESP** (see **38C, Anti-lock braking system**).

Carry out a road test.
Check the consistency of the speed signal on the **instrument panel**, component code **247**.
If necessary, run fault finding on the **UCH** system (see **87B, Passenger compartment connection unit**).
Then use the diagnostic tool to check that **PR003 Vehicle speed** is not zero.

Outside **+ after ignition**, check the **connection** and **condition** of the **connector** of the **power-assisted steering pump assembly**, component code **186** and of these clips.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF043 CONTINUED 1 | |
|---|---|

**If the vehicle speed signal is supplied by the vehicle speed sensor (for a 4x2 vehicle without ABS, without ETC, without ESP):**

Check the **condition** and **connection** of the connectors of the **vehicle speed sensor**, component code **250** and of the **power-assisted steering pump assembly**, component code **186**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **47F** between components **250** and **186**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| DF043 CONTINUED 2 | |
|---|---|

If the fault is still present, disconnect the **connector** of the speed sensor, component code **250**.
Check for + 12 V on the following connection:
- **3FB** (for petrol) between components **1047** or **120** and **250**,
- **3FBA** (for diesel) between components **597** and **250**.

If there is no **+ 12 V**:
Check the condition of the vehicle speed sensor protection fuse.
Check that the **injection relay**, component code **1047** (for petrol) and **983** (for diesel) operates correctly.
Replace it if necessary.

If the fault is not resolved, use the "universal bornier" to check the **insulation**, **continuity** and **absence of interference resistance** on the following connection:
- **3FB** (for petrol) between components **1047** or **120** and **250**,
- **3FBA** (for diesel) between components **597** and **250**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If **earth** is absent:
Use the "universal bornier" to check the insulation, continuity and the absence of interference resistance on the following connection:
- **NH** between the **earth** and the **vehicle speed sensor**, component code **250**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, use the "universal bornier" to check the **insulation**, **continuity** and the **absence of interference resistance** on the following connection:
- **47F** between components **186** and **250**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault persists, replace the vehicle speed sensor.

If the fault is still present, contact your Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| DF043 CONTINUED 3 | |
|---|---|

**If the vehicle speed signal is supplied by the ABS computer (for a 4x2 or 4x4 vehicle with ABS):**

Check the **condition** and **connection** of the **ABS computer** connectors, component code **118**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Replace it if necessary (see **MR 451, Mechanical, 38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**).

If the fault is still present, use the diagnostic tool to check that the ABS is correctly receiving the vehicle speed signal during a road test.

If the fault is not resolved, use the "universal bornier" to check the **insulation**, **continuity** and **the absence of interference resistance** of the following connection:
- **47F** between components **186** and **118**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact your Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| DF043 CONTINUED 4 | |
|---|---|

**If the vehicle speed signal is supplied by the ESP computer (for a 4x2 or 4x4 vehicle with ESP):**

Check the **condition** and **connection** of the **ESP computer** connectors, component code **1094**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Replace it if necessary (see **MR 451, Mechanical, 38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**).

If the fault is still present, use the diagnostic tool to check that the ESP correctly receives the vehicle speed signal during a road test.

If the fault is not resolved, use the "universal bornier" to check the **insulation**, **continuity** and **absence of interference resistance** of the following connection:
- **47F** between components **186** and **1094**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact your Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| DF043 CONTINUED 5 | |
|---|---|

**If the vehicle speed signal is supplied by the ETC torque distributor computer (for a 4x4 vehicle without ABS, without ESP).**

Check the **condition** and **connection** of the **ETC torque distributor computer** connectors, component code **2017**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Replace it if necessary (see **MR 451 Mechanical, 26A, Rear final drive, Rear final drive coupler computer: Removal - Refitting**).

If the fault is still present, use the diagnostic tool to check that the ETC torque distributor is correctly receiving the vehicle speed signal during a road test.

If the fault is not resolved, use the "universal bornier" to check the **insulation**, **continuity** and **absence of interference resistance** of the following connection:
- **47F** between components **186** and **2017**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact your Techline.

| *AFTER REPAIR* | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **DF053 STORED** | COMPUTER CONFIGURATION<br>DEF: Computer calibration not carried out |

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|---|---|
| ***NOTES*** | **Fault finding application conditions for stored faults:**<br>This fault is declared **present** after the engine is started. |

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| Configure the **computer** of the **power-assisted steering pump assembly** using command **VP006 Computer calibration** respecting the vehicle equipment (see **Programming**). |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF055 PRESENT OR STORED** | COMPUTER MEMORY<br>1.DEF: Supplier No. 6 signal<br>2.DEF: Supplier No. 7 signal<br>3.DEF: Supplier No. 1 signal |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>The fault is declared **present** after the battery is disconnected. |

Replace the **GEPDA** computer (see **MR 451 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF075 PRESENT OR STORED** | ALTERNATOR FAULT<br>DEF: No signal |

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|---|---|
| ***NOTES*** | **Special notes:**<br>This fault indicates that the alternator signal has disappeared.<br>Assistance maintained.<br>No immediate effect but no assistance when the ignition is next switched on. |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the connection and condition of the **connector** of the **power-assisted steering pump assembly computer**, component code **186**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.
Check the connection and condition of the **alternator connector**, component code **103** and the **instrument panel connector**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.
Check the insulation, continuity and the absence of interference resistance on the following connections:

- **2K** between components **103** and **120**,
- **2A** between components **247**, **186** and **103**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
Repair the **alternator** (see **MR 451, Mechanical, 16A, Starting – charging, Alternator: Repair**) and carry out the **conformity check**.
If the fault is still present, replace the alternator (see **MR 451, Mechanical, 16A, Starting – charging, Alternator: Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF075 CONTINUED** | |

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any faults displayed by the **diagnostic tool**.<br>Clear the computer memory.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| NOTES | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **With the engine stopped, ignition on and vehicle speed zero**. |
|---|---|

**Main screen**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Computer supply | **PR108:** | Computer feed voltage | **10 V < PR108 < 16 V.** | **In the event of a fault**, apply the interpretation of parameter **PR108** |
| Engine status | **ET006:** | Engine status | **NOT RUNNING** | **In the event of a fault**, consult the interpretation of fault **DF075 Alternator fault**. |

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| NOTES | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **With the engine stopped, ignition on and vehicle speed zero**. |
|---|---|

**Main screen (continued 1)**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Vehicle speed | **PR003** | Vehicle speed | **0 mph (km/h)** | **In the event of a fault**, consult the interpretation of fault **DF043 Vehicle speed**. |
| Oil temperature | **PR016:** | Oil temperature | **Indicates the oil temperature in ˚C. The sensor is integrated into the pump assembly.** | Without any action on the steering wheel. |
| Computer temperature | **PR008:** | Computer temperature | **Indicates the temperature of the electronics in ˚C. The sensor is integrated into the computer of the pump assembly.** | Without any action on the steering wheel. |

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| NOTES | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **With the engine stopped, ignition on and vehicle speed zero**. |
|---|---|

**Main screen (continued 2)**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Electric motor | **PR012:** | Current absorbed by the motor | **0 A < PR012 < 1 A.** | **In the event of a fault**, apply the interpretation of parameter **PR012** |
| Electric motor speed | **PR024:** | Pump assembly motor speed | **0 rpm.** | **In the event of a fault**, apply the interpretation of parameter **PR024**. |
| Electric motor speed | **PR025:** | GEP* motor speed setpoint | **0 rpm.** | **In the event of a fault**, apply the interpretation of parameter **PR025**. |

*GEP: Pump assembly

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| NOTES | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Application conditions: **Engine idling and vehicle speed zero**. |
|---|---|

**Main screen**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Computer supply | **PR108:** | Computer feed voltage | **10 V < PR108 < 16 V.** | **In the event of a fault**, apply the interpretation of parameter **PR108.** |
| Engine status | **ET006:** | Engine status | **Running.** | **In the event of a fault**, consult the interpretation of fault **DF075 Alternator fault**. |

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| NOTES | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Application conditions: **Engine idling and vehicle speed zero**. |
|---|---|

**Main screen (continued 1)**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Vehicle speed | **PR003** | Vehicle speed | **0 mph (km/h)** | **In the event of a fault**, refer to the interpretation for parameter **PR003**. |
| Oil temperature | **PR016:** | Oil temperature | **PR016 < 110˚C.** | **In the event of a fault**, consult the interpretation of parameter **PR016**. |
| Computer temperature | **PR008:** | Computer temperature | **PR008 < 110˚C.** | Exceptionally, the parameter value may reach **75˚C** when the engine is put under great strain and in a hot ambient environment. |

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| NOTES | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Application conditions: **Engine idling and vehicle speed zero**. |
|---|---|

**Main screen (continued 2)**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Electric motor | **PR012:** | Current absorbed by the motor | **0 A < PR012 < 80 A.** | **In the event of a fault**, apply the interpretation of parameter **PR012**. |
| Electric motor speed | **PR024:** | Pump assembly motor speed | **800 rpm < PR024 < 3200 rpm.** | **In the event of a fault**, apply the interpretation of parameter **PR024**. |
| Electric motor speed | **PR025:** | GEP* motor speed setpoint | **800 rpm < PR025 < 3200 rpm.** | **In the event of a fault**, apply the interpretation of parameter **PR025**. |

*GEP: Pump assembly

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## Fault finding - Status summary table

| Tool status | Diagnostic tool title |
|---|---|
| ET006 | Engine status |

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| Tool Parameter | Diagnostic tool title |
|---|---|
| **PR003** | Vehicle speed |
| **PR008** | Computer temperature |
| **PR012** | Current absorbed by the motor |
| **PR016** | Oil temperature |
| **PR024** | Pump assembly motor speed |
| **PR025** | GEP* motor speed setpoint |
| **PR108** | Computer feed voltage |

*GEP: Pump assembly

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| | |
|---|---|
| **PR003** | VEHICLE SPEED |

| | |
|---|---|
| ***NOTES*** | None. |

| |
|---|
| This value should vary gradually (and not suddenly) according to the way the vehicle is being driven. |
| If the parameter is not correct, consult the interpretation of fault **DF043 Vehicle speed**. |

*GEP: Pump assembly

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a check using the **diagnostic tool**. |

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| | |
|---|---|
| **PR012** | CURRENT ABSORBED BY THE MOTOR |

| | |
|---|---|
| ***NOTES*** | None. |

Parameter **PR012** indicates the current actually consumed by the electric motor of the power-assisted steering pump assembly. The power varies when moving the steering wheel and it decreases when the steering wheel is held at full lock (thermal protection).

If the parameter does not comply with the values indicated in the **Conformity check**, refer to the interpretation of fault **DF017 Motor circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a check using the **diagnostic tool**. |

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| | |
|---|---|
| **PR024** | PUMP ASSEMBLY MOTOR SPEED |

| | |
|---|---|
| ***NOTES*** | None. |

Parameter **PR024** indicates the actual speed of the electric motor of the power-assisted steering pump assembly.

The value of parameter **PR024** should be roughly equal to the value of parameter **PR025 GEP* motor speed setpoint**.
If the parameter differs from **PR025**, carry out a visual inspection of the condition of the hydraulic circuit (leaks etc.) and top up the electric pump assembly oil (see **MR 479 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Bleed**).

*GEP: Pump assembly

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a check using the **diagnostic tool**. |

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| | |
|---|---|
| **PR025** | GEP* MOTOR SPEED SETPOINT |

| | |
|---|---|
| ***NOTES*** | None. |

Parameter **PR025** indicates the setpoint value for the speed of the electric motor of the power-assisted steering pump assembly.

The value of parameter **PR025** should be roughly equal to the value of parameter **PR024 Pump assembly motor speed**.
If the parameter differs from **PR025**, carry out a visual inspection of the condition of the hydraulic circuit (leaks, etc.) and top up the electric pump assembly oil (see **MR 479 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Bleed**).

*GEP: Pump assembly

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a check using the **diagnostic tool**. |

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| | |
|---|---|
| **PR108** | COMPUTER SUPPLY VOLTAGE |

| | |
|---|---|
| ***NOTES*** | There must be no **present** or **stored** faults.<br>No electrical consumers. |

Parameter **PR108** indicates the supply voltage read by the **GEPDA** computer.
If it does not correspond to the on-board voltage, consult the interpretation of fault **DF037 Battery voltage.**

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a check using the **diagnostic tool**. |

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**CLEARING**

| | |
|---|---|
| **RZ001:** | Fault memory.<br>This command is used for clearing the **stored** faults from the computer. |

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| NOTES | Only address this customer complaint after a complete check with the diagnostic tool. |
|---|---|

| | |
|---|---|
| NO DIALOGUE WITH THE COMPUTER → | ALP1 |
| CUSTOMER COMPLAINTS CONCERNING ASSISTANCE → | ALP2 |
| TOO LITTLE ASSISTANCE → | ALP3 |
| ASSISTANCE AVAILABLE WITHOUT STARTING VEHICLE ENGINE → | ALP4 |

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| | |
|---|---|
| **ALP1** | **No dialogue with the computer** |

| | |
|---|---|
| ***NOTES*** | Only consult this customer complaint after a full check with the **diagnostic tool**. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the battery voltage of the vehicle (**10 V < Battery voltage < 16 V**). |
| To check that the **diagnostic tool** is not causing the fault, try to establish dialogue with a computer on another vehicle.<br>If the tool is not at fault and dialogue cannot be established with any other computer on the same vehicle, it may be that a faulty computer is disrupting communication. |
| Check the supply fuses on the power-assisted steering pump assembly, component code **186** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**):<br>• power fuse **F02** in the engine compartment connection unit, component code **597**,<br>• **+ after ignition** supply fuse **F24** in the passenger compartment fuse box, component code **1016**. |
| Check the **condition** and **conformity** of the **connector** on the **diagnostic socket**, component code **225**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br>Check for:<br>• a **+ 12 V battery** supply on connection **BP56** of component **225**,<br>• a **+ 12 V after ignition supply** on connection **AP10** of component **225**,<br>• an **earth** on connections **MAM** and **NC** of component **225**.<br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the **fault finding tool**. |

GEPDA_V04_ALP1

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| ALP1 CONTINUED | |
|---|---|

Disconnect the two connectors from the computer on the power-assisted steering pump assembly.
Check the condition and conformity of the connectors on the power-assisted steering pump assembly and their clips.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check the conformity of the electrical **supplies** (they must be equal to the battery voltage) on the following connections:

- **BP36** on component **186**,
- **MS** of component **186**,
- **AP23** on component **186**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the insulation, continuity** and **absence of interference resistance** of the wiring harness between the diagnostic socket and the connector on the computer of the power-assisted steering pump assembly on the following connection:
**HK** between components **225** and **186**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a road test, followed by a check with the **fault finding tool**. |
|---|---|

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| | |
|---|---|
| **ALP2** | **Poor vehicle handling** |

| | |
|---|---|
| ***NOTES*** | Only consult this customer complaint after a full check with the **diagnostic tool**. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the pressure and condition of the tyres, the condition of the joints and the front axle geometry.<br>Check the battery voltage of the vehicle and the condition of the battery terminals, component code **107.** |
| Check the **condition** and **presence** of power **fuse F02** on the power-assisted steering pump assembly, component code **186** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the condition and presence of **+ after ignition** fuse **F24** on the power-assisted steering pump assembly, component code **186** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the **fault finding tool**. |

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| | |
|---|---|
| **ALP2 CONTINUED** | |

Check the **insulation, continuity** and **absence of interference resistance** on the following connection:
**BP36** between components **186** and **597**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Make sure the configuration reading **LC005 Computer calibration** matches the vehicle equipment.
If necessary, use the **diagnostic tool** to configure the power-assisted steering pump assembly computer correctly (see **Configuration and programming**).

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the **fault finding tool**. |

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| | |
|---|---|
| **ALP3** | **Too little assistance** |

| | |
|---|---|
| ***NOTES*** | Only consult this customer complaint after a full check with the **diagnostic tool**. |

| |
|---|
| Check the **pressure** and **condition** of the **tyres**, the **condition** of the **joints** and the **front axle geometry**. |
| Check the vehicle battery voltage.<br>Check the charging circuit if necessary (see **Technical Note 6014A (Renault) or Technical Note 9859A (Dacia), Checking the charging circuit**). |
| Do not operate the power-assisted steering pump assembly for at least **1 hour**.<br>Check the conformity of parameters **PR008 Computer temperature** and **PR016 Oil temperature**.<br>Check that no component placed in the area around the power-assisted steering pump assembly causes an abnormal rise in the temperature of the pump assembly. |
| Carry out a visual inspection of the general condition of the hydraulic circuit (leak, pipe crushed, etc.)<br>Top up the hydraulic circuit (see **MR 451 Mechanical, 36B, Power-assisted steering, Power-assisted steering pump assembly: Bleed**). |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the **fault finding tool**. |

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| | |
|---|---|
| **ALP4** | **Assistance available without starting vehicle engine** |

| | |
|---|---|
| ***NOTES*** | Only consult this customer complaint after a full check with the **diagnostic tool**. |
| | **Special note:**<br>Use the Wiring Diagrams Technical Note for DUSTER. |

Check the **condition** of the **connection** of the **alternator signal connector**, on the **vehicle alternator**, component code **103**.
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check the charging circuit if necessary (see **Technical Note 6014A (Renault) or Technical Note 9859A (Dacia), Checking the charging circuit**).

Check that the battery charge warning light illuminates on the instrument panel during **+ after ignition** with the vehicle engine stopped.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the **fault finding tool**. |

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| | |
|---|---|
| **ALP4 CONTINUED** | |

Check the **insulation, continuity** and **absence of interference resistance** on the following connection:
- **2A** between components **186** and **103**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the **fault finding tool**. |

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# 3 Chassis

## 38C ANTI-LOCK BRAKING SYSTEM

**ABS BOSCH 8.1**
**Vdiag No.: 04**


| | |
|---|---|
| Fault finding – Introduction | 38C - 2 |
| Fault finding – List and location of components | 38C - 9 |
| Fault finding – Role of components | 38C - 10 |
| Fault finding – Operating diagram | 38C - 11 |
| Fault finding – System operation | 38C - 15 |
| Fault finding – Programming | 38C - 16 |
| Fault finding – Replacement of components | 38C - 18 |
| Fault finding – Fault summary table | 38C - 19 |
| Fault finding – Interpretation of faults | 38C - 22 |
| Fault finding – Conformity check | 38C - 60 |
| Fault finding – Status summary table | 38C - 65 |
| Fault finding – Interpretation of statuses | 38C - 66 |
| Fault finding – Parameter summary table | 38C - 69 |
| Fault finding – Command summary table | 38C - 70 |
| Fault finding – Interpretation of commands | 38C - 72 |
| Fault finding – Customer complaints | 38C - 77 |
| Fault finding – Fault finding chart | 38C - 79 |




"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## Fault finding – Introduction

### 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

| | |
|---|---|
| *Vehicle(s):* **DUSTER**<br><br>*Function concerned:* **ABS** | *Computer name*: **ABS BOSCH 8.1**<br><br>*Vdiag No.*: **04** |

### 2. PREREQUISITES FOR FAULT FINDING

**Documentation type**

**Fault finding procedures** (this document):
- Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.

**Wiring Diagrams:**
- Visu-Schéma.

**Type of diagnostic tools**

- **CLIP**

**Special tooling required**

| **Special tooling required:** |
|---|
| **Diagnostic tool** |
| Multimeter |

### 3. REMINDERS

**Procedure**

To run fault finding on the vehicle computers, switch on the ignition. Proceed as follows:
- turn the ignition key to APC,
- connect the diagnostic tool and perform the required operations.

To **cut off the + after ignition feed**, proceed as follows:
- disconnect the diagnostic tool,
- turn the ignition key to OFF,
- verify that the forced + after ignition feed has been switched off by checking that the computer warning lights on the control panel have gone out.

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## Fault finding – Introduction

### Faults

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).

Consider the fault status, **present** or **stored** when the **diagnostic tool** is used after the + after ignition feed (without operating the system components).

For a **present fault**, apply the procedure described in the Interpretation of faults section.
For a **stored fault**, note the faults displayed and apply the Notes section.

If the fault is **confirmed** when the instructions are applied, the fault is present. Deal with the fault.
If the fault is **not confirmed**, check:
– the electrical connections that correspond to the fault,
– the connectors for this connection,
– the resistance of the faulty component,
– the condition of the wires.
**Refer to paragraphs 4.1 Checking wiring and 4.2 Checking connectors**

### Conformity check

The aim of the conformity check is to check data that does not produce a fault on the **diagnostic tool** when the data is inconsistent. Therefore, this stage is used to:
– carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint,
– check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

### Customer complaints - Fault finding chart

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **customer complaints**.

**A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.**

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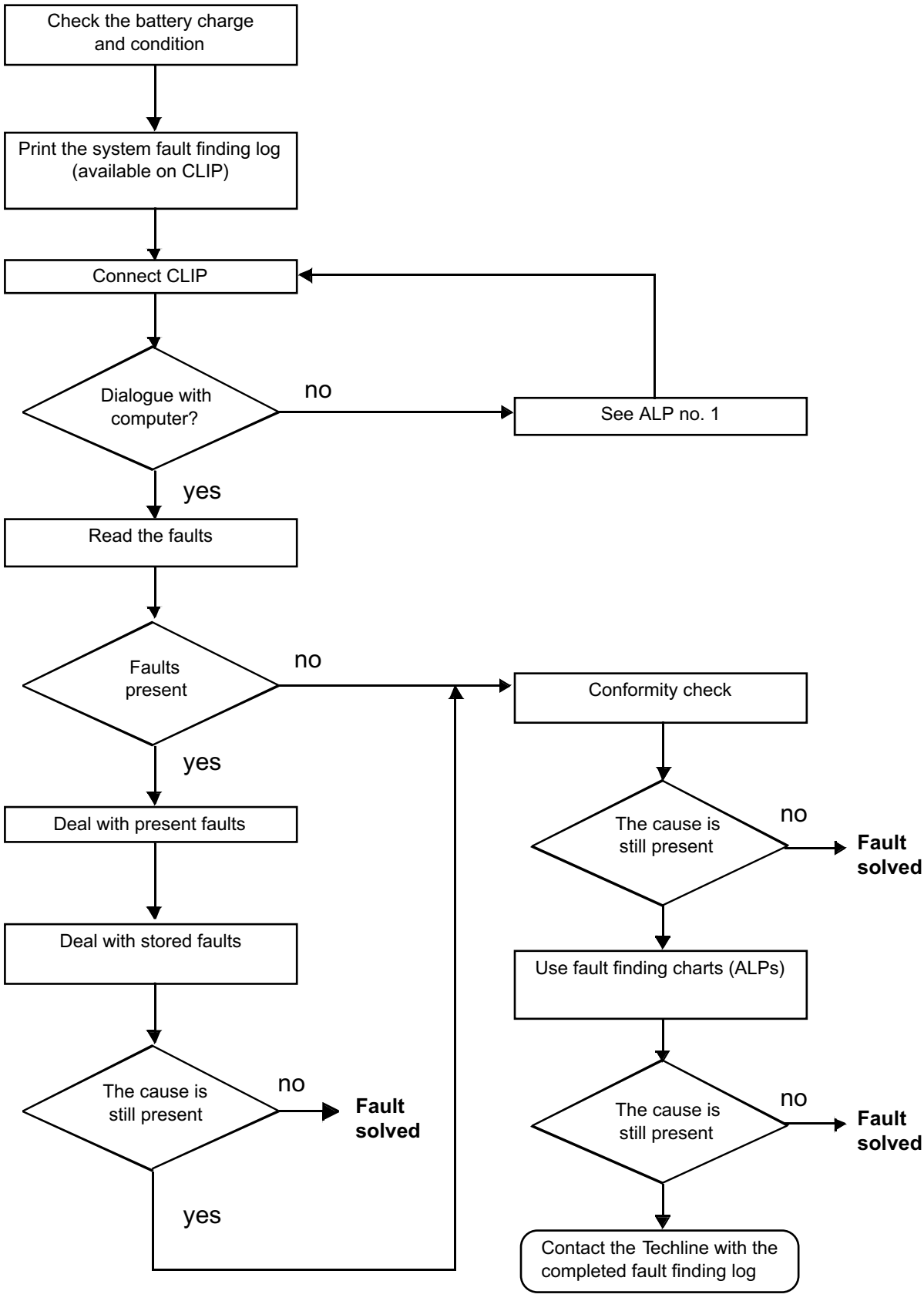
## 4. FAULT FINDING PROCEDURE



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## 4. FAULT FINDING PROCEDURE (CONTINUED)

### 4.1 Wiring check

Fault finding problems
Disconnecting the connectors and/or manipulating the wiring may temporarily remove the cause of a fault.

**Visual inspection**
Look for damage under the bonnet and in the passenger compartment.
Carefully check the protectors, insulation, and routing of the wiring, as well as the mountings.

**Physical inspection**
While manipulating the wiring, use either the **diagnostic tool** to detect a change in status from "stored" to "present", or use the multimeter to view the status changes.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Twist the wiring harness.

**Checking earth insulation**
This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the **12 V** or **5 V**. The correct measured value is **0 V**.

**Checking insulation against + 12 V or + 5 V**
This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the earth. In the first instance, the earth may be taken on the chassis. The correct measured value should be **0 V**

**Continuity check**
A continuity check is carried out by measuring the resistance (multimeter in ohmmeter mode), with the connectors disconnected at both ends. The expected result is **1 Ω ± 1 Ω** for every connection. The line must be fully checked, and the intermediate connections are only included in the method if this saves time during the fault finding procedure. The continuity check on the multiplex lines must be carried out on both wires. The measured value should be **1 Ω ± 1 Ω**.

**Checking the supply**
This check may be carried out using a test light (**21 W** or **5 W** depending on the maximum authorised load).

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### 4.2 Checking the connectors

**Note:**
Carry out each requested check visually.
Do not remove a connector if it is not required.

**Note:**
Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

**Note:**
The check is carried out on the 2 parts of the connection. There may be two types of connection:
- Connector/Connector.
- Connector/Device.

**Visual inspection of the connection:**
- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

**Visual inspection of the area around the connection:**
- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

**Visual inspection of the plastic casing:**
- Check that there is no mechanical damage (casing crushed, split, broken, etc.), in particular to the fragile components (lever, lock, sockets, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

**Visual inspection of the metal contacts:**
*(The female contact is called CLIP. The male contact is called TAB).*
- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The contact comes out of the connector when the wire is pulled gently.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

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**Visual inspection of the sealing:**
*(Only for watertight connectors)*
Check for the seal on the connection (between the 2 parts of the connection).
– Check the seal at the back of the connectors:
  – For *unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
  – For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
  – For gel seals, check for gel in all of the sockets without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
  – For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and the electrical wires, and that the hardened glue comes out of the side of the wire.
– Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, consult **Technical Note 6015A, Repairing electrical wiring**.

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## 5. FAULT FINDING LOG

**IMPORTANT!**

**IMPORTANT**
Any fault on a complex system requires thorough fault finding with the appropriate tools.
The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE ESSENTIAL THAT THE FAULT FINDING LOG IS FILLED OUT EVERY TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS DEPARTMENT.**

You will always be asked for this log:
– when requesting technical assistance from Techline,
– for approval requests when replacing parts for which approval is mandatory,
– to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

## 6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the proper tools.

**It is forbidden to carry out a road test with the diagnostic tool in dialogue with the ECU because the ABS and Electronic Brake Distribution functions are deactivated. Braking pressure is identical on both vehicle axles (risk of a spin under heavy braking).**

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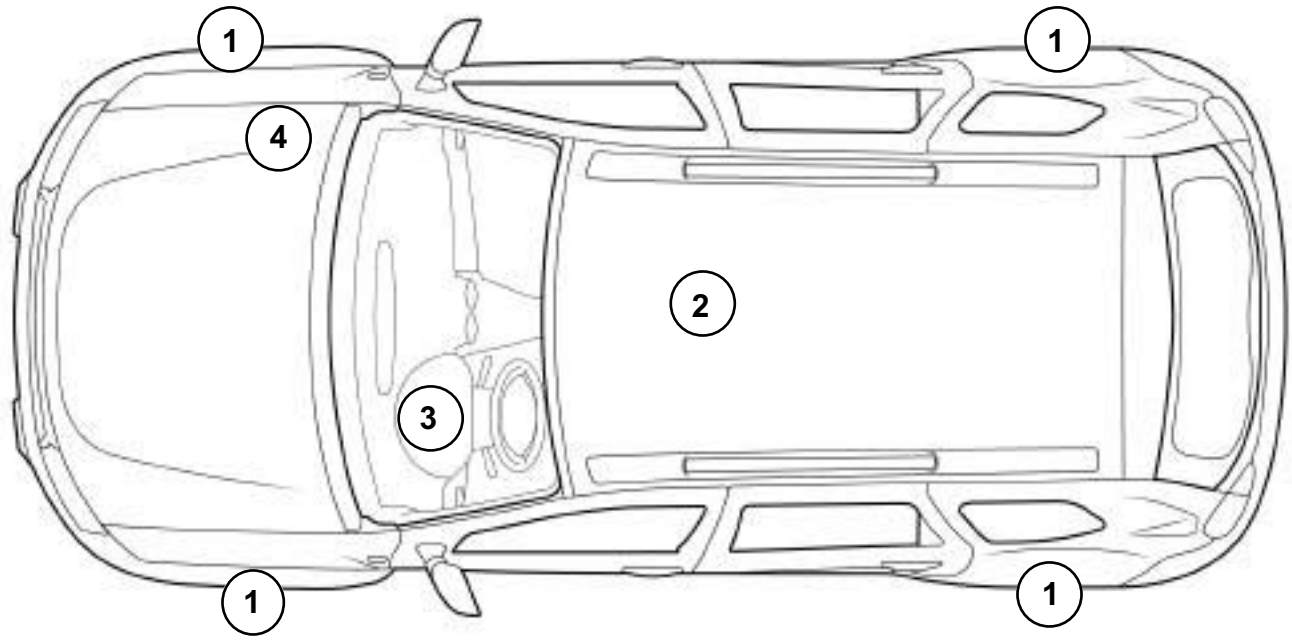


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The anti-lock braking system consists of:
– four wheel speed sensors (1),
– a longitudinal acceleration sensor (ABS 4X4) (2),
– a brake pedal sensor (3),
– a pump assembly (4) consisting of:
    • a hydraulic pump,
    • a pressure modulation unit (eight solenoid valves),
    • a computer,
    • a pressure sensor.

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**Wheel speed sensor:**

Gives the speed of each of the vehicle's wheels.
Analysis of the speeds of the right-hand and left-hand wheel allows the turning direction of the vehicle to be deduced.

**Brake lights switch:**

Visual indication of the brake pedal position.
It indicates whether the driver is depressing the brake pedal.

**Wire connection (vehicle speed):**

The **ABS** computer supplies the vehicle speed to the other computers.

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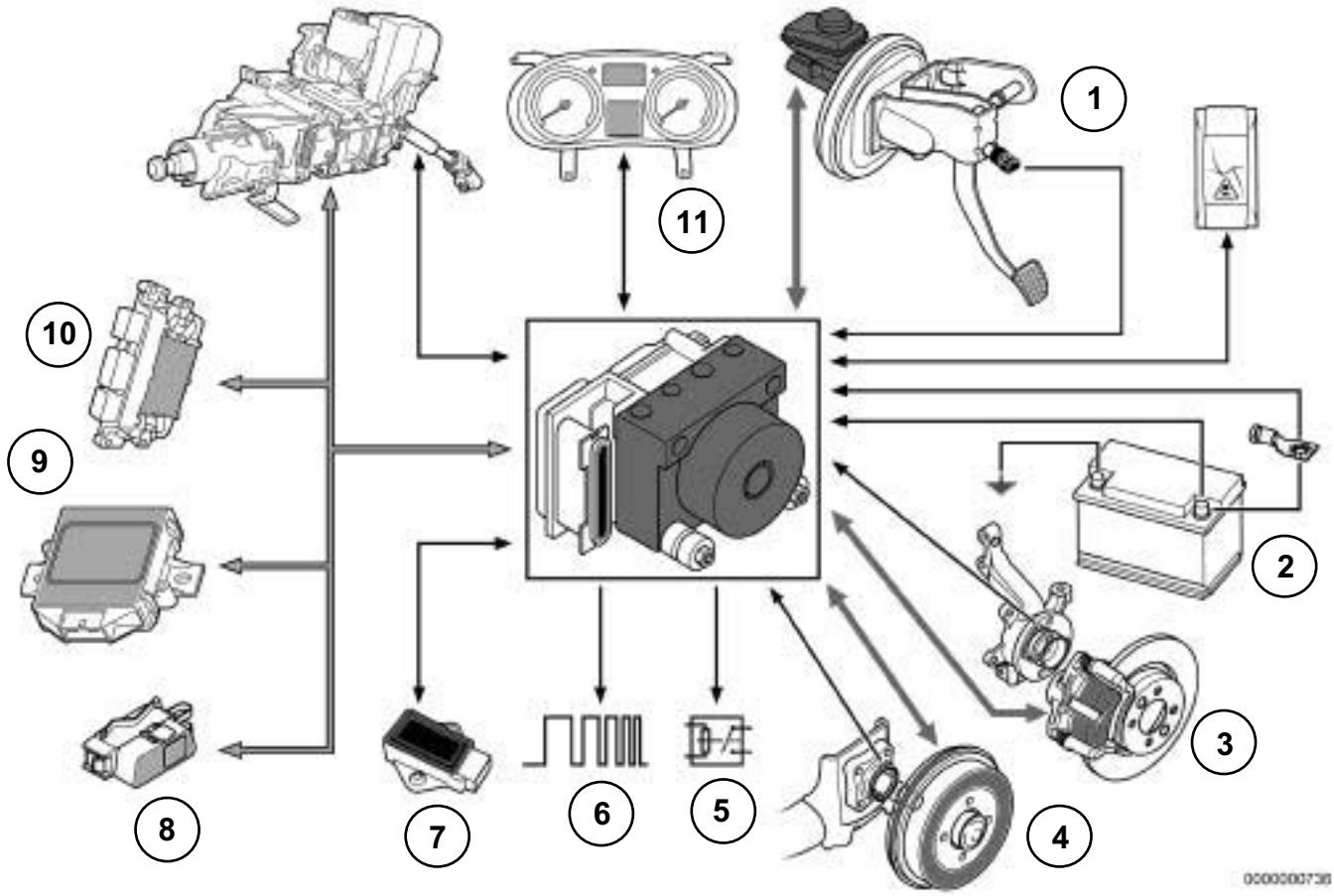
**ABS EA111 (4X4) functional flowchart**



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| | |
|---|---|
| 1 | Brake lights switch |
| 2 | Battery |
| 3 | Front wheel |
| 4 | Rear wheel |
| 5 | Engine fuse and relay box |
| 6 | Vehicle speed output |
| 7 | Wheel speed sensor |
| 8 | Diagnostic socket |
| 9 | Injection computer |
| 10 | ETC computer |
| 11 | Instrument panel |
|  | Electric circuit |
| | CAN network |
| | Hydraulic circuit |

The ABS 4X4 system consists of:

– An integrated unit containing a hydraulic unit and a **Bosch 8.1 EA111** integrated computer.
– Four active wheel speed sensors (Hall effect). At the front, the targets are magnetic with **48** pole pairs. At the rear, the targets are mechanical with **48** pole pairs.
– A longitudinal acceleration sensor.

Other external components are necessary to perform all the system functions:

– ETC torque distributor computer.
– Brake light switch: from the pedals system.
– The multiplex network, which allows communication with the injection computer and the ETC torque distributor computer.
– The instrument panel: to illuminate the warning lights and provide the vehicle speed signal.

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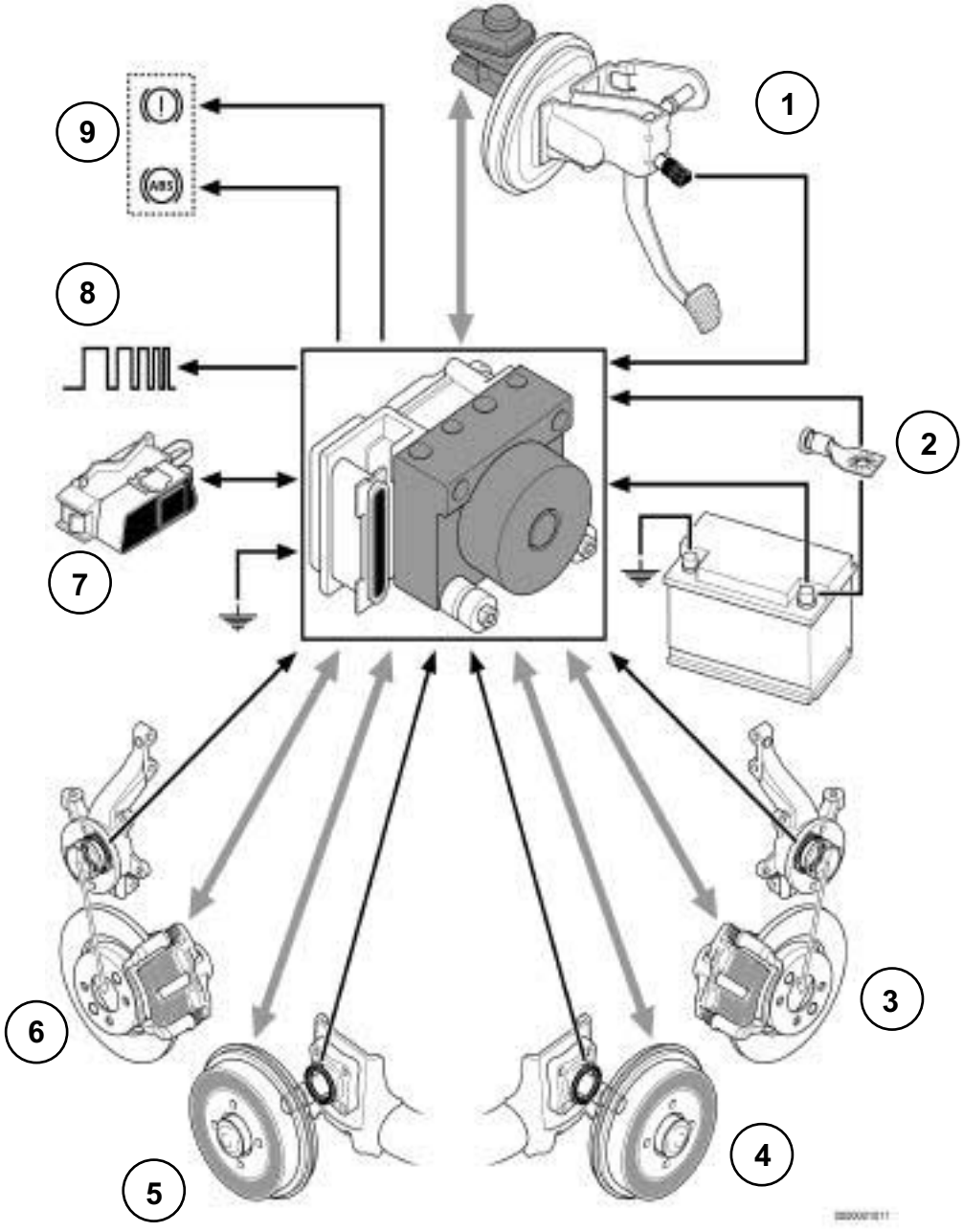
**ABS EA106 (4X2) functional flowchart**



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| | |
|---|---|
| 1 | Brake lights switch |
| 2 | Battery |
| 3 | Front right-hand wheel |
| 4 | Rear right-hand wheel |
| 5 | Rear left-hand wheel |
| 6 | Front left-hand wheel |
| 7 | Diagnostic socket |
| 8 | Vehicle speed output |
| 9 | Instrument panel warning light (ABS and EBD) |
|  | Electric circuit |
| | Hydraulic circuit |

The ABS 4X2 system consists of:

– An integrated unit containing a hydraulic unit and a **Bosch 8.1 EA106** integrated computer.
– Four active wheel speed sensors (Hall effect). At the front, the targets are magnetic with **48** pole pairs. At the rear, the targets are mechanical with **48** pole pairs.

Other external components are necessary to perform all the system functions:

– Brake light switch: from the pedals system.
– The instrument panel: to illuminate the warning lights and provide the vehicle speed signal.

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On this vehicle, the main functions of the ABS are as follows:
- electronic distribution of braking between front and rear by controlling skidding of the rear wheels,
- keeping the wheels from locking by controlling skidding of the four wheels.
- The ABS 4X4 also has the **MSR** function:
  When the driver abruptly releases the accelerator pedal or the clutch pedal after changing down a gear, the engine braking tends to brake the drive wheels. In case of poor traction, the wheels can tend to slow down and slip, resulting in a loss of vehicle stability.
  The **MSR** requests the engine to increase its torque to prevent the drive wheels from locking.

The **ABS** prevents the wheels from locking when braking. This function allows the vehicle to be steered under braking and ensures vehicle stability under braking.

**EBD (electronic braking distribution):**

The electronic braking distribution unit optimises the brakeforce distribution between the front and rear axles. This function ensures vehicle stability under braking.

**Fault finding warning lights programming**

| Instrument panel warning light | | Meaning |
|---|---|---|
| - | ABS | ABS function inoperative. |
| Brake faults | ABS and STOP | Electronic braking regulation and ABS function not working |
| Brake faults flashing at **2 Hz** | ABS flashing at **2 Hz** | ABS computer is in fault finding mode. |
| - | ABS flashing at **8 Hz** | Tachometer index or vehicle configuration not programmed. |

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**SETTINGS**

**VP001: Enter VIN**.

This command permits manual entry of the vehicle's VIN into the computer.
Use this command each time the computer is replaced.
The VIN number (VF...) can be found on the manufacturer's plate on the door pillar and on the body panel under the bonnet.

**Programming procedure:**

– connect the **diagnostic tool**,
– refer to the **BOSCH 8.1 ABS** fault finding,
– select parameter **VP001**,
– enter the VIN,
– clear the computer memory using command **RZ001 Fault memory**,
– exit fault finding mode,
– switch off the ignition,
– wait for the end of powerlatch,
– on the identification screen, using **ID010 V.I.N. code**, check that the code entered has been correctly recognised.

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**VP004: Vehicle parameters.**

This command is used to configure the vehicle version (4x4, 4x2).

Using **PR063 Vehicle parameters**, check that the parameters have been correctly recognised.

**VP006: Enter last APV* operation date.**

Whenever the ABS system is worked on in the shop, the date must be entered.
Select command VP006 on the diagnostic tool.
Enter the service date using the **diagnostic tool** keypad.
Using **ID020 Read last After-Sales operation date**, check that the date has been entered correctly.

**VP007: Tachometric index.**

This command is used to program the computer memory with the index required to calculate vehicle speed from the speed at which the tyres fitted on the vehicle turn.

**Command VP007 is only used to stop the ABS warning light flashing after the computer has been replaced.**

Using **PR030 Tachometric index**, check that the index has been entered correctly.

**IMPORTANT:**
The vehicle speed information is not delivered to the other computers by the ABS computer.
The vehicle speed signal is delivered by a speed sensor located on the gearbox.

APV*: After-Sales

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**Replacing the computer**

When replacing the computer, apply the following procedure:
– Switch off the ignition,
– Disconnect the battery,
– Replace the computer,
– Reconnect the battery,
– Count the number of teeth on the ABS target using command **SC001 Check target teeth**.
– Configure the vehicle parameters using command **VP004 Vehicle parameters:**

– Use **PR063 Vehicle parameters** to check that the ABS version has been stored correctly,
– Enter the VIN number using command **VP001 Write VIN**,
– Configure the tachometric index using command **VP007 Tachometric index**,
– Perform a road test followed by a fault reading to confirm that the system is operating correctly.

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## Fault finding – Fault summary table

| Tool fault | Associated DTC | Diagnostic tool title |
|---|---|---|
| **DF001** | 50CC | Computer supply |
| **DF006** | 501F | Front left-hand wheel speed sensor circuit |
| **DF007** | 503F | Rear left-hand wheel speed sensor circuit |
| **DF008** | 501F | Front left-hand wheel speed sensor signal |
| **DF009** | 503F | Rear left-hand wheel speed sensor signal |
| **DF011** | 50 CB | Solenoid valve supply |
| **DF017** | 5050 | Computer |
| **DF020** | 5154 | Tachometric index programming |
| **DF026** | 500F | Front right-hand wheel speed sensor circuit |

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| Tool fault | Associated DTC | Diagnostic tool title |
|---|---|---|
| **DF027** | 502F | Rear right-hand wheel speed sensor circuit |
| **DF028** | 500F | Front right-hand wheel speed sensor signal |
| **DF029** | 502F | Rear right-hand wheel speed sensor signal |
| **DF055** | 5151 | Vehicle parameter programming |
| **DF063** | 5046 | Wheel speed inconsistency |
| **DF066** | 5076 | No injection multiplex signal |
| **DF090** | 5041 | Front right-hand wheel target |
| **DF091** | 5042 | Front left-hand wheel target |
| **DF092** | 5043 | Rear right-hand wheel target |
| **DF093** | 5044 | Rear left-hand wheel target |
| **DF120** | 5078 | Injection multiplex signal consistency |
| **DF152** | 5080 | Multiplex network |
| **DF219** | 5074 | ABS multiplex signal consistency |

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## Fault finding – Fault summary table

| Tool fault | Associated DTC | Diagnostic tool title |
|---|---|---|
| **DF250** | 5072 | Engine speed multiplex signal |
| **DF251** | 5071 | Effective average torque multiplex signals |
| **DF252** | 5070 | Signal: request multiplex feedback signal |
| **DF253** | 5077 | Calculated torque multiplex signal |
| **DF254** | 5073 | Resisting torque multiplex signal |
| **DF263** | 5161 | Longitudinal acceleration sensor signal |
| **DF282** | 5161 | Longitudinal acceleration sensor |
| **DF300** | 50CA | Pump motor control circuit |
| **DF331** | 5084 | No piloted axle multiplex signal |
| **DF332** | 5085 | Invalid piloted axle multiplex signals |
| **DF333** | 5075 | Signal: accelerator pedal position multiplex |

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| | |
|---|---|
| **DF001 PRESENT OR STORED** | COMPUTER SUPPLY VOLTAGE<br>1.DEF: Below minimum threshold<br>2.DEF: Above maximum threshold<br>3.DEF: Abnormal voltage |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>This fault is recorded if the vehicle speed is greater than **3.6 mph (6 km/h)**.<br>1.DEF: The supply voltage is less than the minimum operating voltage (**9.3 V < X < 9.9 V**). |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>Apply the fault finding procedure if the fault is **present** or **stored**. |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

| | | |
|---|---|---|
| **1.DEF**<br>**3.DEF** | ***NOTES*** | None. |

Check the tightness and the condition of the battery terminals.
Check the battery voltage and carry out the operations necessary to obtain a correct voltage (**10 V < battery voltage < 17 V**).
Check the charge circuit.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF001 CONTINUED 1 | |
|---|---|

Check the tightening and condition of the ABS **earth** terminal. carry out repairs.

Check the **condition** and **connection** of the connectors of the ABS computer, component code **118**, of the engine fuse and relay box, component code **597**, and of the passenger compartment fuse box, component code **1016**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the condition of the ABS fuses, **F01 (50 A)**, **F02 (25 A)**, and **F15 (10 A)** as well as the quality of their electrical contacts. Replace the faulty components (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**).

Check for **earth** on the ABS computer, component code **118** between the following connections:
- **MAH** of component **118**.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **MAH** between component **118** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+12 V** on the ABS computer, component code **118** on the following connections:
- **BP88** of component **118**,
- **BP14** of component **118**,
- **AP5** of component **118**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **BP88** between components **597** and **118**,
- **BP14** between components **597** and **118**,
- **AP5** between components **1016** and **118**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **DF001 CONTINUED 2** | |

| | | |
|---|---|---|
| **2.DEF** | ***NOTES*** | None. |

| |
|---|
| Using the diagnostic tool, read the voltage seen by the computer for verification. |
| Check the battery charging circuit. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF006 PRESENT OR STORED** | FRONT LEFT-HAND WHEEL SPEED SENSOR CIRCUIT |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>The fault is declared **present** during a road test at a vehicle speed **> 6 mph (10 km/h)**.<br>Command **AC013 Wheel speed sensor supply test**, must be used only once. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>Apply the fault finding procedure if the fault is **present** or **stored**. |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the connection and condition of the connections of the front left-hand wheel speed sensor, component code **153**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Disconnect the sensor, use command **AC013** and check that voltage pulses of approximately **12 V** are detected by a multimeter at the terminals of the sensor connector on the computer side.
**Are the pulses present?**

| | |
|---|---|
| ***AFTER REPAIR*** | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |

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| DF006 CONTINUED 1 | |
|---|---|

| YES | Swap the 2 sensors on the same axle and check if the fault follows the sensor.<br>If it follows the sensor, replace the sensor (see **MR 451, Mechanical, 38C, Anti-lock braking systems, Front wheel speed sensor: Removal - Refitting**).<br>If it does not follow the sensor:<br>Check the connection and condition of the connections of the ABS computer, component code **118**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. Check the **continuity** and **insulation**, and the **absence of interference resistance** on the following connections:<br>– **4E** between components **153** and **118**,<br>– **4C** between components **153** and **118**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.<br>If the fault is still present, contact the Techline. |
|---|---|

| *AFTER REPAIR* | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |
|---|---|

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| | |
|---|---|
| **DF006 CONTINUED 2** | |

| | |
|---|---|
| **NO** | Check the connection and condition of the connections of the ABS computer, component code **118**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br>Check the **continuity** and **insulation**, and the **absence of interference resistance** on the following connections:<br>– **4E** between components **153** and **118**,<br>– **4C** between components **153** and **118**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.<br>If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |

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| | |
|---|---|
| **DF007 PRESENT OR STORED** | REAR LEFT-HAND WHEEL SPEED SENSOR CIRCUIT |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>The fault is declared **present** during a road test at a vehicle speed **> 6 mph (10 km/h)**.<br>Command **AC013 Wheel speed sensor supply test**, must be used only once. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>Apply the fault finding procedure if the fault is **present** or **stored**. |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the connection and condition of the connections of the rear left-hand wheel speed sensor, component code **151**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Disconnect the sensor, use command **AC013** and check that voltage pulses of approximately **12 V** are detected by a multimeter at the terminals of the sensor connector on the computer side.
**Are the pulses present?**

| | |
|---|---|
| ***AFTER REPAIR*** | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |

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| DF007 CONTINUED 1 | |
|---|---|

| YES | Swap the 2 sensors on the same axle and check if the fault follows the sensor.<br>If it follows the sensor, replace the sensor (see **MR 451, Mechanical, 38C, Anti-lock braking systems, Rear wheel speed sensor: Removal - Refitting**).<br>If it does not follow the sensor:<br>Check the connection and condition of the connections of the ABS computer, component code **118**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br><br>Check the **continuity** and **insulation**, and the **absence of interference resistance** on the following connections:<br>– **4G** between components **151** and **118**,<br>– **4H** between components **151** and **118**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.<br>If the fault is still present, contact the Techline. |
|---|---|

| *AFTER REPAIR* | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |
|---|---|

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| | |
|---|---|
| **DF007 CONTINUED 2** | |

| | |
|---|---|
| **NO** | Check the connection and condition of the connections of the ABS computer, component code **118**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br><br>Check the **continuity** and **insulation**, and the **absence of interference resistance** on the following connections:<br>– **4G** between components **151** and **118**,<br>– **4H** between components **151** and **118**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.<br>If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |

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| DF008 PRESENT OR STORED | FRONT LEFT-HAND WHEEL SPEED SENSOR SIGNAL |
|---|---|

| *NOTES* | None. |
|---|---|

| |
|---|
| Run a conformity check of the magnetic target. If the target is not correct, ensure the conformity of it. |
| Check that the **4** tyres conform to the type defined for this vehicle.<br>Ensure the conformity of the incorrect tyres, then check the value of **PR030 Tachometric index**. |
| Check the sensor mounting. If it is not correct, ensure the conformity of it. |
| Visually inspect the condition of the connections and cable of the sensor (signs of oxidation, cable damage, etc.).<br>If there is corrosion, replace the sensor and the wiring. |
| Swap the 2 sensors on the same axle. Perform a road test of more than **30 seconds** above **12 mph (20 km/h)**.<br>Check if the fault follows the sensor. If the fault follows the sensor, replace the sensor (see **MR 451, Mechanical, 38C, Anti-lock braking system, Front wheel speed sensor: Removal - Refitting**). |
| Visually inspect the condition of the computer connections (particularly the pins for the sensor) and the computer wiring (signs of oxidation, damage, etc.).<br>Replace the faulty components. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |
|---|---|

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| DF009 PRESENT OR STORED | REAR LEFT-HAND WHEEL SPEED SENSOR SIGNAL |
|---|---|

| *NOTES* | None. |
|---|---|

| |
|---|
| Run a conformity check of the magnetic target. If the target is not correct, ensure the conformity of it. |
| Check that the 4 tyres conform to the type defined for this vehicle.<br>Ensure the conformity of the incorrect tyres, then check the value of **PR030 Tachometric index**. |
| Check the sensor mounting. If it is not correct, ensure the conformity of it. |
| Visually inspect the condition of the connections and cable of the sensor (signs of oxidation, cable damage, etc.).<br>If there is corrosion, replace the sensor and the wiring. |
| Swap the 2 sensors on the same axle. Perform a road test for more than **30 seconds** above **12 mph (20 km/h)**.<br>Check if the fault follows the sensor. If the fault follows the sensor, replace the sensor (see **MR 451, Mechanical, 38C, Anti-lock braking system, Rear wheel speed sensor: Removal - Refitting**). |
| Visually inspect the condition of the computer connections (particularly the pins for the sensor) and the computer wiring (signs of oxidation, damage, etc.).<br>Replace the faulty components. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |
|---|---|

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| | |
|---|---|
| **DF011 PRESENT OR STORED** | SOLENOID VALVE SUPPLY<br>DEF: Abnormal voltage |

| | |
|---|---|
| ***NOTES*** | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the tightness and the condition of the battery terminals.

Check the **condition** and **connection** of the connectors of the ABS computer, component code **118** and of the engine fuse and relay box, component code **597**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check the presence and condition of the supply fuses of the ABS computer, component code **118**:

- **F02 (25 A)** on component **597**.

Replace the fuses if the checks are not correct.

Check for **+12 V** on the ABS computer, component code **118** on the following connection:
- **BP14** of component **118**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
**BP14** between components **118** and **597**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF011 CONTINUED | |
|---|---|

Check the quality of the system earth (tightening, oxidation, etc.).

Check for **earth** on the ABS computer, component code **118** between the following connections:
- **MAH** of component **118**.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **MAH** between component **118** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Control the solenoid valves from the diagnostic tool using the following commands: **AC003 Front left-hand wheel solenoid valves**, **AC004 Front right-hand wheel solenoid valves**, **AC005 Rear right-hand wheel solenoid valves**, **AC006 Rear left-hand wheel solenoid valves** (verification of hydraulic track assignments). If the test fails and/or if the computer exits fault finding mode, the solenoid valves are faulty or jammed, or the computer is faulty. Replace the computer (see **MR 451, Mechanical, 38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**).

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| **DF017 PRESENT OR STORED** | COMPUTER<br>DEF: Supply fault or internal electronic fault |

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| ***NOTES*** | **Special notes:**<br>The fault is **present** when the ignition is switched on. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>Apply the fault finding procedure if the fault is **present** or **stored**. |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the condition and position of ABS power fuses **F01 (50 A)** and **F02 (25 A)** in the engine compartment connection unit, component code **597** (see **MR 451, Mechanical, 81C, Fuses, Fuses: List and location of components**).
Check **the continuity** between fuses **F01** and **F02** and connections **BP14** and **BP88** of the computer connector, component code **118** (presence of **+ before ignition feed** on the connections).
Check that the battery terminals are in good condition and properly tightened, component code **107**.
Check the connections on the connector of the ABS computer, component code **118**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check **the earths** on connections **MAH** of component **118**.
If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF017 CONTINUED** | |

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| Clear the computer memory using command **RZ001 Fault memory**, exit fault finding and switch off the ignition. Carry out a new check using the **diagnostic tool**. |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF020 PRESENT** | TACHOMETRIC INDEX PROGRAMMING |

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| ***NOTES*** | None. |

The **ABS BOSCH 8.1** computer with "tachometric function" must have an index value in order to calculate the vehicle speed from the speed at which the tyres turn.
Use command **VP007 Tachometric index** and check that it has been taken into account using parameter **PR030 Tachometric index**.
**IMPORTANT:**
The vehicle speed information is not delivered to the other computers by the ABS computer.
**The vehicle speed signal is delivered by a speed sensor located on the gearbox, which informs the computers (instrument panel, engine management, etc.)**.

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF026 PRESENT OR STORED | FRONT RIGHT-HAND WHEEL SPEED SENSOR CIRCUIT |
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| *NOTES* | |
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| | **Special notes:**<br>The fault is declared **present** during a road test at a vehicle speed **> 6 mph (10 km/h)**.<br>Command **AC013 Wheel speed sensor supply test**, must be used only once. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>Apply the fault finding procedure if the fault is **present** or **stored**. |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the connection and the condition of the connections of the front right-hand wheel speed sensor, component code **152**. If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Disconnect the sensor, use command **AC013** and check that voltage pulses of approximately **12 V** are detected by a multimeter at the terminals of the sensor connector on the computer side.
Are the pulses present?

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| DF026 CONTINUED 1 | |
|---|---|

| YES | Swap the 2 sensors on the same axle and check if the fault follows the sensor.<br>If it follows the sensor, replace the sensor (see **MR 451, Mechanical, 38C, Anti-lock braking systems, Front wheel speed sensor: Removal - Refitting**).<br>If it does not follow the sensor:<br>Check the connection and condition of the connections of the computer, component code **118**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br><br>Check the **continuity** and **insulation**, and the **absence of interference resistance** on the following connections:<br>– **4M** between components **152** and **118**,<br>– **4N** between components **152** et **118**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.<br>If the fault is still present, contact the Techline. |
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| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| **DF026 CONTINUED 2** | |

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| **NO** | Check the connection and condition of the connections of the computer, component code **118**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br><br>Check the continuity and insulation, and the absence of interference resistance on the following connections:<br>– **4M** between components **152** and **118**,<br>– **4N** between components **152** et **118**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.<br>If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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|---|---|
| **DF027 PRESENT OR STORED** | REAR RIGHT-HAND WHEEL SPEED SENSOR CIRCUIT |

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| ***NOTES*** | **Special notes:**<br>The fault is declared **present** during a road test at a vehicle speed **> 6 mph (10 km/h)**.<br>Command **AC013 Wheel speed sensor supply test**, must be used only once. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>Apply the fault finding procedure if the fault is **present** or **stored**. |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the connection and the condition of the connections of the rear right-hand wheel speed sensor, component code **150**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Disconnect the sensor, use command **AC013** and check that voltage pulses of approximately **12 V** are detected by a multimeter at the terminals of the sensor connector on the computer side.
Are the pulses present?

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| ***AFTER REPAIR*** | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |

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| **DF027 CONTINUED 1** | |

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| **YES** | Swap the 2 sensors on the same axle and check if the fault follows the sensor.<br>If it follows the sensor, replace the sensor (see **MR 451, Mechanical, 38C, Anti-lock braking systems, Rear wheel speed sensor: Removal - Refitting**).<br>If it does not follow the sensor:<br>Check the connection and condition of the connections of the computer, component code **118**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br><br>Check the **continuity** and **insulation**, and the **absence of interference resistance** on the following connections:<br>– **4S** between components **150** and **118**,<br>– **4T** between components **150** and **118**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.<br>If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |

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| **DF027 CONTINUED 2** | |

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|---|---|
| **NO** | Check the connection and condition of the connections of the computer, component code **118**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br><br>Check the **continuity** and **insulation**, and the **absence of interference resistance** on the following connections:<br>– **4S** between components **150** and **118**,<br>– **4T** between components **150** and **118**.<br>If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |

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| DF028 PRESENT OR STORED | FRONT RIGHT-HAND WHEEL SPEED SENSOR SIGNAL |
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| *NOTES* | None. |
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| Run a conformity check of the magnetic target. If the target is not correct, ensure the conformity of it. |
| Check that the 4 tyres conform to the type defined for this vehicle.<br>Ensure the conformity of the incorrect tyres, then check the value of **PR030 Tachometric index**. |
| Check the sensor mounting. If it is not correct, ensure the conformity of it. |
| Visually inspect the condition of the connections and cable of the sensor (signs of oxidation, cable damage, etc.).<br>If there is corrosion, replace the sensor and the wiring. |
| Swap the 2 sensors on the same axle. Perform a road test for more than **30 seconds** above **12 mph (20 km/h)**.<br>Check if the fault follows the sensor. If the fault follows the sensor, replace the sensor (see **MR 451, Mechanical, 38C, Anti-lock braking system, Front wheel speed sensor: Removal - Refitting**). |
| Visually inspect the condition of the computer connections (particularly the pins for the sensor) and the computer wiring (signs of oxidation, damage, etc.).<br>Replace the faulty components. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |
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| DF029 PRESENT OR STORED | REAR RIGHT-HAND WHEEL SPEED SENSOR SIGNAL |
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| *NOTES* | None. |
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| Run a conformity check of the magnetic target. If the target is not correct, ensure the conformity of it. |
| Check that the 4 tyres conform to the type defined for this vehicle.<br>Ensure the conformity of the incorrect tyres, then check the value of **PR030 Tachometric index**. |
| Check the sensor mounting. If it is not correct, ensure the conformity of it. |
| Visually inspect the condition of the connections and cable of the sensor (signs of oxidation, cable damage, etc.).<br>If there is corrosion, replace the sensor and the wiring. |
| Swap the 2 sensors on the same axle. Perform a road test for more than **30 seconds** above **12 mph (20 km/h)**.<br>Check if the fault follows the sensor. If the fault follows the sensor, replace the sensor (see **MR 451, Mechanical, 38C, Anti-lock braking system, Rear wheel speed sensor: Removal - Refitting**). |
| Visually inspect the condition of the computer connections (particularly the pins for the sensor) and the computer wiring (signs of oxidation, damage, etc.).<br>Replace the faulty components. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Once the repair is finished, carry out a conformity check of the target to verify that all is correct. |
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| **DF055 PRESENT OR STORED** | VEHICLE PARAMETER PROGRAMMING<br>DEF: Configuration absent or incorrect |

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| ***NOTES*** | None. |

Program the correct vehicle version with the diagnostic tool using command **VP004 Vehicle parameters**.
Exit fault finding mode, switch the ignition off and on.
Check that the programming is correctly entered in the computer using **PR063 Vehicle parameters**.
If the fault is still present, replace the hydraulic unit (see **MR 451 Mechanical, 38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**).

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF063 PRESENT OR STORED** | WHEEL SPEED CONSISTENCY<br>DEF: Inconsistency |

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| ***NOTES*** | **Priorities when dealing with a number of faults:**<br>Deal with faults **DF006 Front left-hand wheel speed sensor circuit**, **DF007 Rear left-hand wheel speed sensor circuit**, **DF026 Front right-hand wheel speed sensor circuit** and **DF027 Rear right-hand wheel speed sensor circuit** first even if they are stored. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared **present** during a road test. |

Check the condition of the braking system (condition of linings, sealing, grating, bleed, etc.).
Check the condition of the axles and the conformity and good condition of the tyre mountings.
Check how well the wheel speed sensors are fitted (correct clipping).
Repair if necessary.

Check the target conformity (condition, number of teeth = **48**) for every wheel.
If the counts are not correct, apply the target fault finding procedure for the wheel(s) concerned (**DF090 Front right-hand wheel target**, **DF091 Front left-hand wheel target**, **DF092 Rear right-hand wheel target, DF093 Rear left-hand wheel target**).

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF066 PRESENT OR STORED** | INJECTION MULTIPLEX SIGNAL ABSENT |

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| ***NOTES*** | **Special notes:**<br>The injection computer does not always store these transient failures as quickly as the ABS computer.<br>If no fault is stored in the injection computer, start the engine; if there is no fault present, contact the Techline. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared **present** when the engine is started. |
| | **Priorities when dealing with a number of faults:**<br>First deal with fault **DF152 Multiplex network**. |

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| Use fault finding to control the engine torque in order to check that the exchanges between injection and ABS are correct. |
| Run a multiplex network test (see **88B, Multiplex**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF090**<br>**DF091**<br>**DF092**<br>**DF093**<br>**PRESENT**<br>**OR**<br>**STORED** | FRONT RIGHT-HAND WHEEL TARGET<br>FRONT LEFT-HAND WHEEL TARGET<br>REAR RIGHT-HAND WHEEL TARGET<br>REAR LEFT-HAND WHEEL TARGET. |

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| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared **present** during a road test. |
| | **Priorities when dealing with a number of faults:**<br>Deal with faults **DF006 Front left-hand wheel speed sensor circuit, DF007 Rear left-hand wheel speed sensor circuit, DF026 Front right-hand wheel speed sensor circuit**, and **DF027 Rear right-hand wheel speed sensor circuit first**. |

Run a conformity check of the magnetic target. Clean the target. Ensure the conformity if necessary.

Check the wheel speed sensor mounting. Ensure the conformity of the mounting.
Check the condition of the magnetic target. Carry out repairs.

Run a conformity check of the magnetic target. If the target is not correct:
– Swap the wheels (only if the fault is on the rear axle).
– Check the target conformity on the **2** wheels.
– If the check is not correct on the wheel receiving the suspect target, replace the defective wheel mounting.
– In the other cases, contact the Techline

If the fault is still present, contact the Techline.

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF120 PRESENT OR STORED** | INJECTION MULTIPLEX SIGNALS CONSISTENCY. |

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| ***NOTES*** | **Special notes:**<br>The injection computer emitted too short a signal. |

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| Use fault finding to control the engine torque in order to check that the exchanges between injection and ABS are correct. |
| Run a multiplex network test (see **88B, Multiplex**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF152 PRESENT OR STORED** | MULTIPLEX NETWORK<br>DEF: Carry out the multiplex network fault finding procedure. |

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| ***NOTES*** | **Special notes:**<br>There is a fault on the multiplex network. |

Run a multiplex network test (see **88B, Multiplex**).

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF219**<br>**DF250**<br>**DF251**<br>**DF252**<br>**DF253**<br>**DF254**<br>**PRESENT**<br>**OR**<br>**STORED** | ABS MULTIPLEX SIGNAL CONSISTENCY<br>ENGINE SPEED MULTIPLEX SIGNAL<br>EFFECTIVE AVERAGE TORQUE MULTIPLEX SIGNALS<br>TORQUE REQUEST MULTIPLEX FEEDBACK SIGNAL<br>CALCULATED TORQUE MULTIPLEX SIGNAL<br>RESISTING TORQUE MULTIPLEX SIGNAL |

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| ***NOTES*** | **Special notes:**<br>Although it is stored in the computer, the ABS system is not faulty. The ABS is deactivated due to unusable information from the injection system. Perform fault finding on the injection system using the diagnostic tool. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present when the engine is started. |
| | **Priorities when dealing with a number of faults:**<br>First deal with fault **DF152 Multiplex network**. |

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| Use fault finding to control the engine torque in order to check that the exchanges between injection and ABS are correct. |
| Run a multiplex network test (see **88B, Multiplex**). |
| If the fault is still present, contact the Techline. |

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF263 PRESENT OR STORED** | LONGITUDINAL ACCELERATION SENSOR SIGNAL<br>1.DEF: Inconsistency |

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| ***NOTES*** | **Special notes:**<br>The longitudinal acceleration signal remains constant, which is not consistent with the longitudinal acceleration recalculated from the wheel speeds. |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the position and mounting of the longitudinal accelerometer, component code **1380**.

Check the **condition** and **connection** of the connectors of the longitudinal accelerometer, component code **1380** and of the ABS computer, component code **118**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check for **+12 V** on the longitudinal accelerometer, component code **1380** on the following connection:
- **44AD** of component **1380**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **44AD** between components **1380** and **118**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF263 CONTINUED | |
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Check for **earth** on the longitudinal accelerometer, component code **1380** between the following connection:
- **44AE** of component **1380**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **44AE** between component **1380** and **118**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **44AF** between components **1380** and **118**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
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| **DF282 PRESENT OR STORED** | LONGITUDINAL ACCELERATION SENSOR<br>1.DEF: Supply fault or internal electrical fault |

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| ***NOTES*** | None |

If the fault is stored, clear the fault. If it reappears, replace the sensor.
If the fault is still present, replace the sensor.

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| **DF300 PRESENT OR STORED** | PUMP MOTOR CONTROL CIRCUIT<br>DEF: Abnormal voltage |

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| ***NOTES*** | Use the **Wiring Diagrams Technical Note for DUSTER**. |

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| Check the tightness and the condition of the battery terminals. |
| Check the presence and condition of the supply fuses of the ABS computer, component code **118**:<br><br>• **F01 (50 A)** on component **597**.<br>Replace the fuses if the checks are not correct. |
| Check the **condition** and **connection** of the connectors of the ABS computer, component code **118** and of the engine fuse and relay box, component code **597**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |

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| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| DF300 CONTINUED | |
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Check for **+12 V** on the ABS computer, component code **118** on the following connection:
- **BP88** of component **118**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
**BP88** between components **118** and **597**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the quality of the system earth (tightening, oxidation, etc.).

Check for **earth** on the ABS computer, component code **118** between the following connections:
- **MAH** of component **118**.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **MAH** between component **118** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Control the solenoid valves from the diagnostic tool using the following commands: **AC003 Front left-hand wheel solenoid valves**, **AC004 Front right-hand wheel solenoid valves**, **AC005 Rear right-hand wheel solenoid valves**, **AC006 Rear left-hand wheel solenoid valves** (verification of hydraulic track assignments). If the test fails and/or if the computer exits fault finding mode, the solenoid valves are faulty or jammed, or the computer is faulty. Replace the computer (see **MR 451, Mechanical, 38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**).

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **DF331<br>DF332<br>PRESENT<br>OR<br>STORED** | NO PILOTED AXLE MULTIPLEX SIGNAL<br>INVALID PILOTED AXLE MULTIPLEX SIGNALS |

| | |
|---|---|
| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present when the engine is started. |
| | **Priorities when dealing with a number of faults:**<br>First deal with fault **DF152 Multiplex network**. |

| |
|---|
| Use fault finding to control the engine torque in order to check that the exchanges between injection and ABS are correct. |
| Run a multiplex network test (see **88B, Multiplex**). |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **DF333 PRESENT OR STORED** | ACCELERATOR PEDAL POSITION MULTIPLEX SIGNAL |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>Although it is stored in the computer, the ABS system is not faulty.<br>The ABS is deactivated due to unusable information from the injection system.<br>Perform fault finding on the injection system using the diagnostic tool. |
| | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present when the engine is started. |
| | **Priorities when dealing with a number of faults:**<br>First deal with fault **DF152 Multiplex network**. |

| |
|---|
| Use fault finding to control the engine torque in order to check that the exchanges between injection and ABS are correct. |
| Run a multiplex network test (see **88B, Multiplex**). |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| *NOTES* | Only carry out a conformity check after a **complete check** with the **diagnostic tool**. |
|---|---|

**SUB-FUNCTION: MAIN SCREEN**

| Function | Parameter or Status Check or Action | Display and notes | Fault finding |
|---|---|---|---|
| Vehicle speed | **PR038:** Vehicle speed | Ensure that the vehicle speed is consistent | **In the event of a fault**, apply the interpretation of fault **DF063 Wheel speed consistency** |
| Brake pedal not depressed detection | **ET017:** Brake pedal | **Released** status, brake pedal not depressed **Depressed** status, brake pedal depressed | **If the event of a fault**, apply the interpretation of status **ET017** |
| Wheel speed | **PR002:** Front left-hand wheel speed | Ensure that the wheel speed is consistent | **In the event of a fault**, refer to the interpretation of fault **DF006 Front left-hand wheel speed sensor circuit** |
| | **PR001:** Front right-hand wheel speed | Ensure that the wheel speed is consistent | **In the event of a fault**, refer to the interpretation of fault **DF026 Front right-hand wheel speed sensor circuit** |
| | **PR004:** Rear left-hand wheel speed | Ensure that the wheel speed is consistent | **In the event of a fault**, refer to the interpretation of fault **DF007 Rear left-hand wheel speed sensor circuit** |
| | **PR003:** Rear right-hand wheel speed | Ensure that the wheel speed is consistent | **In the event of a fault**, refer to the interpretation of fault **DF027 Rear right-hand wheel speed sensor circuit** |

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| NOTES | Only carry out a conformity check after a **complete check** with the **diagnostic tool**. |
|---|---|

**SUB-FUNCTION: MAIN SCREEN (CONTINUED)**

| Function | Parameter or Status Check or Action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Computer supply | **PR005:** | Computer feed voltage | Ensure that the battery voltage is correct (check the charge circuit if necessary) | **In the event of a fault**, apply the interpretation of fault **DF001 Computer supply.** |
| Tachometric index | **PR030:** | Tachometric index | Make sure that the tachometric index matches the tyres fitted to the vehicle. | **In the event of a fault**, apply the interpretation of command **VP007 Tachometric index.** |
| Vehicle parameters | **PR063:** | Vehicle parameters | Check that the parameters are consistent with the vehicle on which fault finding is being run. | **In the event of a fault**, apply the interpretation of command **VP004 Vehicle parameters.** |

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| NOTES | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **Engine stopped, ignition on**. |
|---|---|

**SUB-FUNCTION: BRAKE REGULATION**

| Function | Parameter or Status Check or Action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Brake pedal not depressed detection | **ET017:** | Brake pedal | **Released** status confirmed, brake pedal not depressed<br>**Depressed** status, brake pedal depressed | **If the event of a fault**, apply the interpretation of status **ET017**. |
| Wheel speed | **PR001:** | Front right-hand wheel speed | Ensure that the wheel speed is consistent | **In the event of a fault**, refer to the interpretation of fault **DF026 Front right-hand wheel speed sensor circuit**. |
| | **PR002:** | Front left-hand wheel speed | Ensure that the wheel speed is consistent | **In the event of a fault**, refer to the interpretation of fault **DF006 Front left-hand wheel speed sensor circuit**. |
| | **PR003:** | Rear right-hand wheel speed | Ensure that the wheel speed is consistent | **In the event of a fault**, refer to the interpretation of fault **DF027 Rear right-hand wheel speed sensor circuit**. |
| | **PR004:** | Rear left-hand wheel speed | Ensure that the wheel speed is consistent | **In the event of a fault**, refer to the interpretation of fault **DF007 Rear left-hand wheel speed sensor circuit**. |

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| NOTES | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **Engine stopped, ignition on**. |
|---|---|

**SUB-FUNCTION: BRAKE REGULATION (CONTINUED 1)**

| Function | Parameter or Status Check or Action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Computer supply | **PR005:** | Computer feed voltage | Ensure that the battery voltage is correct (check the charge circuit if necessary) | **In the event of a fault**, apply the interpretation of fault **DF001 Computer supply**. |
| Vehicle speed | **PR038:** | Vehicle speed | Ensure that the vehicle speed is consistent | **In the event of a fault**, apply the interpretation of fault **DF063 Wheel speed consistency**. |
| Wheel solenoid valves | **AC003:** | Front left-hand wheel solenoid valves | This command is used to test the front left-hand wheel solenoid valve | **In the event of a fault**, apply the interpretation of command **AC003**. |
| | **AC004:** | Front right-hand wheel solenoid valves | This command is used to test the front right-hand wheel solenoid valve | **In the event of a fault**, apply the interpretation of command **AC004**. |
| | **AC005:** | Rear left-hand wheel solenoid valves | This command is used to test the rear left-hand wheel solenoid valve | **In the event of a fault**, apply the interpretation of command **AC005**. |
| | **AC006:** | Rear right-hand wheel solenoid valves | This command is used to test the rear right-hand wheel solenoid valve | **In the event of a fault**, apply the interpretation of command **AC006**. |

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **Engine stopped, ignition on**. |

**SUB-FUNCTION: BRAKE REGULATION (CONTINUED 2)**

| Function | Parameter or Status Check or Action | | Display and notes | Fault finding |
|---|---|---|---|---|
| Speed sensor supply | **AC013:** | Wheel speed sensor supply test | This command is used to check that voltage pulses of approximately **12 V** are detected on the faulty sensor | **In the event of a fault**, apply the interpretation of command **AC013**. |
| Acceleration | **PR007:** | Longitudinal acceleration | Check that the longitudinal acceleration is consistent. | **In the event of a fault**, apply the interpretation of **DF282 Longitudinal acceleration sensor**. |

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## Fault finding – Status summary table

| Tool status | Diagnostic tool title |
|---|---|
| **ET017** | Brake pedal |

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| | |
|---|---|
| **ET017** | BRAKE PEDAL |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>Carry out the checks only if the **depressed** and **released** statuses are not consistent with the pedal position. |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

**Released STATUS Brake pedal depressed.**

**If the brake lights are working:**

– Check the **condition** and **connection** of the connectors of the brake light switch, component code **160** and of the ABS computer, component code **118**.

If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

– Check and ensure **the continuity** of connection **65A** between the connector of the brake light switch, component code **160** and the connector of the ABS computer, component code **118**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

**If the brake lights are not working:**

– Check the condition and fitting of the brake light switch and fuse **F3 (10A)** of the brake lights.

– Remove and test the operation of the brake light switch:

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| ET017 CONTINUED 1 | |
|---|---|

| | **Continuity** between the following connections: | **Insulation** between the following connections: |
|---|---|---|
| Switch depressed (Brake pedal released) | **5A** and **AP1** | **65A** and **AP1** |
| Switch released (Brake pedal depressed) | **65A** and **AP1** | **5A** and **AP1** |

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

– Replace the switch if necessary.
– Check and ensure the presence of **+ after ignition feed** on connection **AP1** on the brake light switch connector, component code **160**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| ET017 CONTINUED 2 | |
|---|---|

**Depressed STATUS: Brake pedal released.**

Check the **condition** and **connection** of the connectors of the brake light switch, component code **160** and of the ABS computer, component code **118**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

– Check the condition and fitting of the brake light switch and fuse **F3 (10A)** of the brake lights.

– Remove and test the operation of the brake light switch:

| | Continuity **between the following connections:** | **Insulation** between the following connections: |
|---|---|---|
| Switch depressed (Brake pedal released) | **5A** and **AP1** | **65A** and **AP1** |
| Switch released (Brake pedal depressed) | **65A** and **AP1** | **5A** and **AP1** |

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check and ensure **the insulation to +12 V** of connection **65A** between the connector of the brake light switch, component code **160** and the connector of the ABS computer, component code **118**.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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## Fault finding – Parameter summary table

| Tool Parameter | Diagnostic tool title | Comments |
|---|---|---|
| **PR001** | Front right-hand wheel speed | These parameters indicate the speed in **mph (km/h)** of each wheel on the vehicle. |
| **PR002** | Front left-hand wheel speed | |
| **PR003** | Rear right-hand wheel speed | |
| **PR004** | Rear left-hand wheel speed | |
| **PR005** | Computer feed voltage | This parameter indicates the computer supply voltage in **volts**. |
| **PR030** | Tachometric index | This parameter specifies the tachometric index entered in the computer for the tyres fitted to the vehicle. |
| **PR038** | Vehicle speed | This parameter indicates the vehicle speed in **mph (km/h)**. |
| **PR063** | Vehicle parameters | This parameter shows whether the configuration (**VP004 Vehicle parameters**) matches the vehicle undergoing fault finding |
| **PR007** | Longitudinal acceleration | This parameter indicates the vehicle's longitudinal acceleration. It should be **0** when the vehicle is stationary. |

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| Tool command | Diagnostic tool title | Comments |
|---|---|---|
| **RZ001** | Fault memory | This command is used to clear the faults **stored** in the computer. |
| **AC003** | Front left-hand wheel solenoid valves | See interpretation of command **AC003**. |
| **AC004** | Front right-hand wheel solenoid valves | See interpretation of command **AC004**. |
| **AC005** | Rear left-hand wheel solenoid valves | See interpretation of command **AC005**. |
| **AC006** | Rear right-hand wheel solenoid valves | See interpretation of command **AC006**. |
| **AC013** | Wheel speed sensor supply test | See interpretation of command **AC013**. |
| **AC016** | Pump motor test | See interpretation of command **AC016**. |

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| Tool command | Diagnostic tool title | Comments |
|---|---|---|
| **SC001** | Check target teeth | This command tests the condition of the teeth on each wheel.<br>Select the command **SC001** and follow the instructions.<br>The test result must equal **48**. |
| **SC006** | Bleed the hydraulic unit and brake circuits. | This command must be used only in the event of abnormal lengthening of brake pedal travel during a road test with ABS regulation (the vehicle must have already been bled using the conventional procedure).<br>Select command **SC006** and follow the instructions given by **the diagnostic tool**. |

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| | |
|---|---|
| **AC003**<br>**AC004**<br>**AC005**<br>**AC006** | FRONT LEFT-HAND WHEEL SOLENOID VALVES<br>FRONT RIGHT-HAND WHEEL SOLENOID VALVES<br>REAR LEFT-HAND WHEEL SOLENOID VALVES<br>REAR RIGHT-HAND WHEEL SOLENOID VALVES |

| | |
|---|---|
| ***NOTES*** | **Conditions of use of the command:**<br>Ignition on, engine stopped and vehicle speed zero. |
| | Before using the commands, check that the battery is fully charged. |

These commands test the solenoid valves on each wheel.
**Controlling the wheel solenoid valves to check the hydraulic system.**
Lift the vehicle in order to be able to check that the wheels turn freely. Keep the brake pedal depressed to prevent the wheel being tested from being turned by hand (do not brake so firmly that full braking power is reached).
Select and confirm the command of the wheel being examined (e.g. Front left-hand wheel solenoid valves, etc.).
Turn the wheel concerned by hand; you should see it go through the locking/unlocking cycles.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **AC013** | WHEEL SPEED SENSOR SUPPLY TEST |

| | |
|---|---|
| ***NOTES*** | **Conditions of use of the command:**<br>Ignition on, engine stopped and vehicle speed zero. |
| | Before using the command, check that the battery is fully charged.<br>You must use command **AC013** once only. |

This command is used to check that voltage pulses of approximately **12 V** are detected on the faulty sensor by a **multimeter** on the connector terminals on the computer side, component codes **150**, **151**, **152**, and **153**.
Select command **AC013**.

Note:
To restart an **AC013 command**, restart then stop the vehicle engine and ensure that the battery is properly charged.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **AC016** | PUMP MOTOR TEST |

| | |
|---|---|
| ***NOTES*** | **Conditions of use of the command:**<br>Ignition on, engine stopped and vehicle speed zero. |
| | Before using the command, check that the battery is fully charged. |

This command is used to test the pump motor control circuit.
Select the command **AC016**.
The motor must run for **5 seconds**.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **SC001** | CHECK THE TARGET TEETH |

| | |
|---|---|
| ***NOTES*** | **Conditions of use of the command:**<br>Ignition on, engine stopped and vehicle speed zero. |
| | Before using the command, check that the battery is fully charged. |

This command is used to test the pump motor control circuit.
Select the command **SC001**.
The test result must equal **48**.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **SC006** | BLEEDING THE HYDRAULIC UNIT AND BRAKE CIRCUITS |

| | |
|---|---|
| ***NOTES*** | **Conditions of use of the command:**<br>Ignition on, engine stopped and vehicle speed zero. |
| | Before using the command, check that the battery is fully charged. |

This command must be used only in the event of abnormal lengthening of brake pedal travel during a road test with ABS regulation (the vehicle must have already been bled using the conventional procedure).
Select command **SC006** and follow the instructions given by **the diagnostic tool**.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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## Fault finding – Customer complaints

| *NOTES* | Only consult these customer complaints after a **complete check** with **the diagnostic tool**. |
|---|---|

| FAULTS DETECTED WHEN BRAKING WITH ABS CONTROL | |
|---|---|
| **Locking of one or more wheels** | **ALP 2** |
| **Pull** | **ALP 3** |
| **Drift** | **ALP 4** |
| **Unexpected ABS operation at low speed and with slight pedal pressure** | **ALP 5** |
| **Unexpected ABS system intervention on a poor road surface** | **ALP 6** |
| **Unexpected ABS operation when using special equipment (car phone, CB, etc.)** | **ALP 7** |
| **Extension of brake pedal travel following a regulation phase (with an irregular pedal when entering regulation).** | **ALP 8** |
| **Spongy pedal** | **ALP 9** |
| **Brake pedal vibration** | **ALP 10** |
| **Noise from the pump, pipes or hydraulic unit** | **ALP 11** |

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## Fault finding – Customer complaints

| OTHER CASES | |
|---|---|
| No dialogue with the ABS computer | ALP 1 |
| Intermittent illumination of brake, ABS, SERVICE and STOP warning lights and a message on the instrument panel with no fault codes in the computer | ALP 12 |

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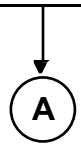
| ALP 1 | No dialogue with the ABS computer |
|---|---|

| *NOTES* | Use the **Wiring Diagrams Technical Note for DUSTER**. |
|---|---|

Try to establish dialogue with a computer on another vehicle to check that **the diagnostic tool** is not faulty. If the tool is not causing the fault and dialogue cannot be established with any other computer on the same vehicle, it may be that a faulty computer is disrupting diagnostic line **K**.
Use a process of successive disconnections to locate this computer.
Check the battery voltage and perform the operations necessary to obtain the correct voltage (**9.8 V < battery voltage < 16.7 V**).




| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **ALP 1 CONTINUED 1** | |

A

Check the presence and condition of the ABS fuses on the passenger compartment fuse box, component code **1016, F15 (10 A)** and in the engine fuse box, component code **597**, **F01 (50 A)** and **F02 (25 A)**, (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**).
Check the connection of the ABS computer connector, component code **118** and the condition of its connections.
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check **the earths** on connections **MAH** of component **118** (good condition, not corroded, tightness of the earth screw on top of the ABS assembly).
Check that the supply to the computer is correct:
– **Earth** on connections **MAH** of component **118**,
– **+ before ignition feed** on connections **BP14** and **BP88** of component **118**,
– **+ after ignition feed** on connection **AP5** of component **118**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
Check the connection of the diagnostic socket connector, component code **225** and the condition of its connections.
Check the continuity of connection HK between the computer and the diagnostic socket.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

B

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| | |
|---|---|
| **ALP 1 CONTINUED 2** | |

B

Check that the diagnostic socket, component code **225** is correctly supplied:
– **+ before ignition feed** on connection **BP56** of component **225**.
– **+ after ignition feed** on connection **AP10** of component **225**.
– **Earth** on connections **MAM** and **NC** of component **225**.

If the connection(s) are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If dialogue has still not been established after these checks, contact the techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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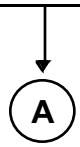
| ALP 2 | Locking of one or more wheels |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

**Reminder:**
Locking of the wheels on a vehicle fitted with ABS or squealing of tyres, interpreted by the customer as locking, could be related to a normal reaction of the system and should not automatically be assumed to be a fault (braking with ABS regulation on a very bad road causes considerable squealing).




| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **ALP 2 CONTINUED** | |

A

However, if the wheel(s) is/are actually locking, lift the vehicle so that you can turn the wheels and check for:
– Possible inversion when connecting the speed sensors.
Use parameters **PR001 Front right-hand wheel speed, PR002 Front left-hand wheel speed, PR003 Rear right-hand wheel speed** and **PR004 Rear left-hand wheel speed** by turning the relevant wheels and checking the consistency of the results obtained.
If the value measured is zero, rotate the other wheels to confirm an electrical inversion of the sensors and repair the wiring harness.
– Possible inversion of pipes on the hydraulic unit.
Use commands **AC003 Front left-hand wheel solenoid valves, AC004 Front right-hand wheel solenoid valves, AC005 Rear left-hand wheel solenoid valves** and **AC006 Rear right-hand wheel solenoid valves** while depressing the brake pedal and check for the occurrence of locking/unlocking cycles on the wheel concerned (see **Command summary table**). If the cycles do not occur on the wheel tested (wheel remains locked), check whether they occur on another wheel to confirm reversed pipes.
If the cycles do not occur on one wheel and the pipes have not been inverted, contact the Techline.

Check that the wheel speed sensor mounting is in good condition (clipping).
Visually inspect the condition of the target (clogging, metallic contamination, etc.) and clean with compressed air if necessary.
Check the condition of the braking system (condition of linings, sealing, grating, bleed, etc.).
Check the condition of the axles and the conformity and good condition of the tyre mountings.
If the fault is still present after these checks, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |

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| ALP 3 | Pull |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Disconnect one wheel speed sensor.
Start the engine and ensure that only the ABS fault warning light comes on. Do not drive the vehicle if the brake fault warning light is also illuminated because the "braking compensator" function is no longer guaranteed.
Carry out a road test with the ABS thus out of order.
**Is the fault still present under these conditions?**

NO

Raise the vehicle so that you can rotate the wheels and check:
– whether the speed sensors have been incorrectly connected,
– whether the pipes on the hydraulic unit have been inverted.
For these two tests, consult and apply the procedures defined in **ALP2 Locking of one or several wheels**.
Check the condition and conformity of the ABS targets.
If the fault is still present, contact the Techline.

YES

If the brake pedal travel is relatively long, bleed the brake circuit.
If the travel is normal, check the tyre pressures, the front axle, or for any leaks in the circuit.

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| ALP 4 | Drift |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Disconnect one wheel speed sensor.
Start the engine and ensure that only the ABS fault warning light comes on. Do not drive the vehicle if the brake fault warning light is also illuminated because the "braking compensator" function is no longer guaranteed.
Carry out a road test with the ABS thus out of order.
**Is the fault still present under these conditions?**

NO

Normal behaviour linked to the system operation during the regulation phase, mainly on surfaces with uneven grip or which are poorly laid.

YES

Road holding fault not related to the ABS.
Check the condition of the brake linings and that they are to specification and check the tyre pressures, the front axle, etc.

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| ALP 5 | Unexpected ABS operation at low speed and with slight pedal pressure |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. Warning: **ABS** control is sensitive to poor traction (icy roads, wet cobblestones, etc.). |
|---|---|

It is possible to feel brake pedal vibrations which are associated with the reaction of the system in particular circumstances, such as:
– crossing rumble strips,
– tight cornering with lifting of the inside rear wheel.
These vibrations may be linked to simple brake limiter activation, when the pressure on the rear axle is limited.
If the fault is different, check the speed sensor connectors (micro-breaks).

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| ALP 6 | Unexpected ABS system intervention on a poor road surface |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

On poor road surfaces it is normal to feel bucking and vibration of the pedal as well as more significant tyre squealing than on good surfaces.
This gives the impression of a variation in efficiency, but this should be considered normal.

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| ALP 7 | **Unexpected ABS operation when using special equipment (car phone, CB, etc.)** |
|---|---|

| ***NOTES*** | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Check that the equipment which is causing the fault is approved.
Check that this equipment has been correctly installed without modification to the original wiring, particularly that of the ABS (unauthorised earth and **+ after ignition feed** connections on the ABS).

| ***AFTER REPAIR*** | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| ALP 8 | **Extension of brake pedal travel following a regulation phase (with an irregular pedal when entering regulation).** |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Air transit from the hydraulic unit regulation channels to the brake circuits.
Bleed the circuits following the recommended procedure in **MR451, Mechanical, 30A, General information, Braking circuit: Bleeding (use of diagnostic tool command modes)**.
After the operation, carry out a road test with ABS regulation.

If the fault persists, carry out the above operation again once or twice.
If the customer complaint is particularly pronounced, and the bleeds have not rectified it, contact the Techline.

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| ALP 9 | Spongy pedal |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Air in the brake circuits.
Bleed the circuits in the conventional way starting with the rear right-hand brake, followed by rear left-hand, front left-hand, and finally the front right-hand. Repeat the operation if necessary.
Check the play of the front and rear bearings.

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| ALP 10 | Brake pedal vibration |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

Normal reaction of the brake pedal during an ABS regulation phase or pressure limitation on the rear axle (brake limiter function).

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| ALP 11 | Noise from the pump, pipes or hydraulic unit |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**. |
|---|---|

– Vibration of the unit: check the presence and the condition of the unit support insulating rubber mountings.
– Vibration of pipes: check that all the pipes are securely clipped in their retaining clips and that there is no contact between pipes or between pipes and bodywork.

To identify the origin of the noise, use the solenoid valve control commands **AC003 Front left-hand wheel solenoid valves**, **AC004 Front right-hand wheel solenoid valves**, **AC005 Rear left-hand wheel solenoid valves** and **AC006 Rear right-hand wheel solenoid valves** while depressing the brake pedal.

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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| ALP 12 | **Intermittent illumination of brake, ABS, Service and Stop warning lights and a message on the instrument panel with no fault codes in the computer** |
|---|---|

| *NOTES* | **Special notes:**<br>Only address this customer complaint after a **complete check** with **the diagnostic tool**.<br>Problem with external supply to the computer:<br>The computer is intermittently without supply because of bad contacts in the electrical supply circuit. |
|---|---|

| Refer to the interpretation of fault **DF001 Computer supply**. |
|---|
| If the fault is still present, contact Techline. |

| *AFTER REPAIR* | Clear the computer memory using command **RZ001 Fault memory**.<br>Carry out a road test followed by another check with the **diagnostic tool**. |
|---|---|

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# 6 Air conditioning

## 61A HEATING


| | |
|---|---|
| Fault finding – Introduction | 61A - 2 |
| Fault finding – List and location of components | 61A - 6 |
| Fault finding – Role of components | 61A - 7 |
| Fault finding – Function | 61A - 9 |
| Fault finding – Conformity check | 61A - 13 |
| Fault finding – Customer complaints | 61A - 18 |
| Fault finding – Fault finding charts | 61A - 19 |


V1 Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to the heating function with the following specifications:

| |
|---|
| Vehicle(s): **DUSTER** |
| Function concerned: **Heating** |

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type**

**Fault finding procedures** (this document):
– Assisted fault finding (integrated into the CLIP diagnostic tool),

**Wiring Diagrams:**
– Visu-Schéma (CD-ROM), paper.

**Special tooling required**

| Special tooling required |
|---|
| Multimeter and current clamp |

## 3. REMINDERS

This heating system does not have a computer and therefore fault finding cannot be carried out on the system using the **diagnostic tool**.

In this section, the fault finding procedure is dealt with by **Customer complaints - Fault finding charts**.

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## 4. FAULT FINDING PROCEDURE

### Wiring check

Note:
Carry out each requested check visually. Do not remove a connector if it is not required.

Note:
Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:
The check is carried out on the 2 parts of the connection. There may be two types of connection:
- Connector / Connector
- Connector / Device

**Fault finding problems**
Disconnecting the connectors and/or manipulating the wiring may temporarily clear the cause of a fault.
Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

**Visual inspection of the connection:**
- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

**Visual inspection of the area around the connection:**
- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

**Visual inspection of the plastic casing:**
- Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

**Visual inspection of the metal contacts:**
(The female contact is called CLIP. The male contact is called TAB).
- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The spring contact of the connector when the wire is gently pulled.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

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**Visual inspection of the sealing:**
*(Only for watertight connectors)*
- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
  - *For unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
  - For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
  - For *gel* seals, check for gel in all of the openings without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
  - For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, repair or replace the wiring (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**)

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## 5. FAULT FINDING LOG

**IMPORTANT!**

**IMPORTANT**
All faults involving a complex system call for thorough diagnostics with the appropriate tools. The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE ESSENTIAL THAT THE FAULT FINDING LOG IS FILLED OUT EVERY TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS DEPARTMENT**

You will always be asked for this log:
- when requesting technical assistance from the Techline,
- when requesting approval before replacing parts for which approval is compulsory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

## 6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:
- check the battery voltage to avoid incorrect operation of computer functions,
- do not smoke,
- use the proper tools.

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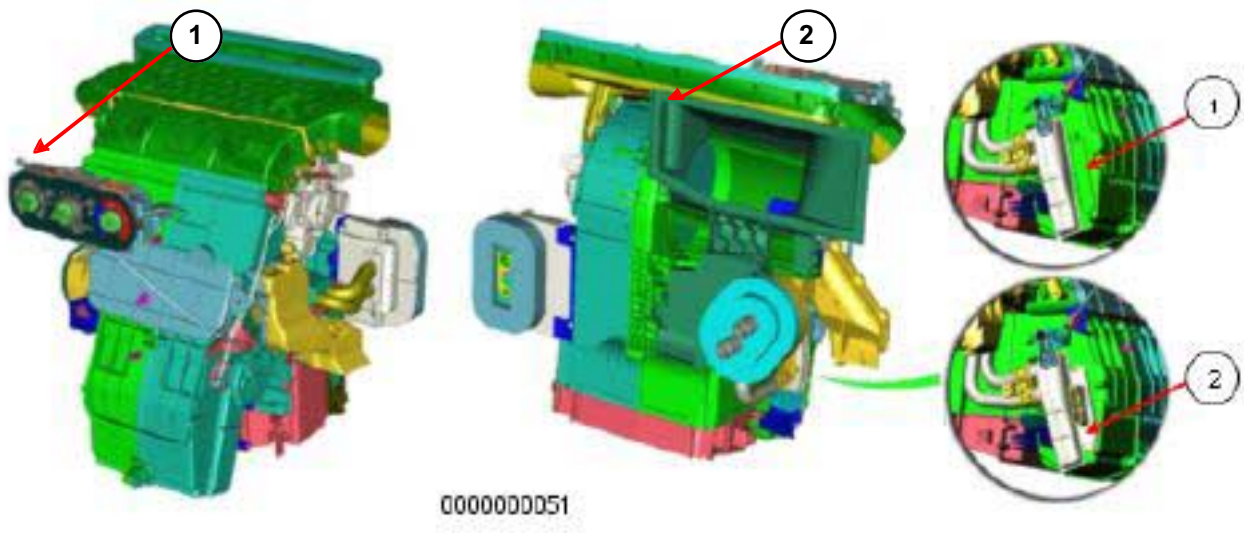


1. **Without Passenger Compartment Heating Resistors**
2. **With Passenger Compartment Heating Resistors**

**Passenger compartment fan unit**

- **HEATING COMPONENTS**
  - **Heater matrix:** This is located at the bottom of the heating and air conditioning unit.
  - **Passenger compartment heating resistors:** These are located at the bottom of the heater matrix on the driver's side (depending on the equipment).
- **ACTUATORS:**
  - **Air distribution flap:** This is located in the heating and air conditioning unit.
  - **Mixing flap:** This is located in the heating and air conditioning unit.
  - **Recirculation flap:** This is located behind the dashboard.
- **OTHERS**
  - **Passenger compartment fan assembly:** This is located in the heating and air conditioning unit.
  - **Air pipes:** These are located underneath the dashboard.

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- **HEATING COMPONENTS**

  – **Heater matrix:**
  The external air entering the heating and air conditioning device (**HVAC**) is heated by the **heater matrix**.
  – Passenger Compartment Heating Resistors (**depending on version**):
  The passenger compartment heating resistors are an electric heating system located in the passenger compartment ventilation heating unit. This system acts as an additional heater which operates when the engine is cold (when starting).

**Passenger Compartment Heating Resistors (RCH)**

- **ACTUATORS**

  **– Air distribution flap:**
This flap enables the air flowing into the passenger compartment to be directed.

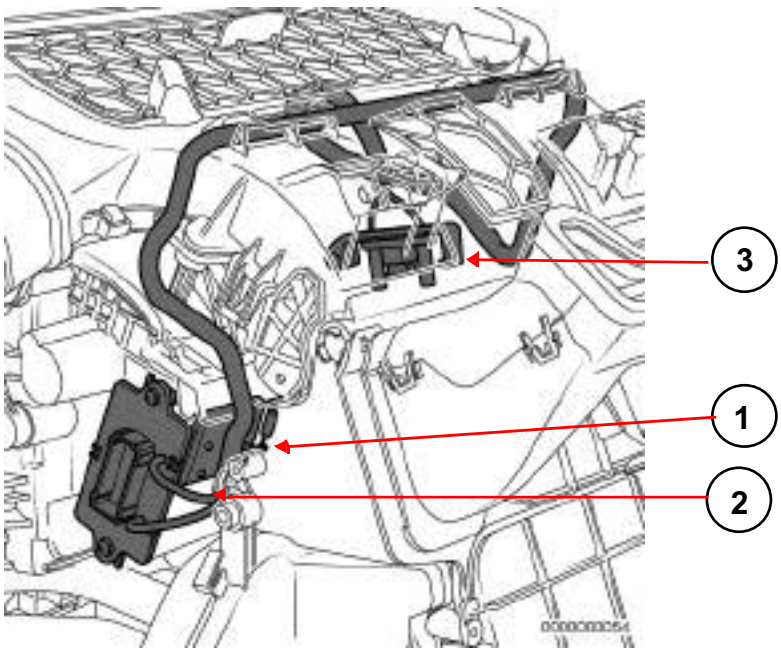
  **– Air mixing flap:**
This flap enables the temperature requirements of the occupants to be met.

  **– Recirculation flap:**
This flap prevents the entry of exterior air. In this case, the passenger compartment is isolated from the exterior and air is blown in the passenger compartment in a closed circuit.

- **OTHERS**

  **– Passenger compartment blower unit:**

The passenger compartment blower unit is controlled by the MVPR (Resistive Blower Dimmer Module).



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**Resistive Blower Dimmer Module (MVPR)**

1) **Thermal fuse**
2) **Fan assembly connector**
3) **Connector to Control panel**

**– Air pipes:**

The air flows into an open air inlet scoop towards the exterior. There must be enough air flow for it to be channelled into the passenger compartment. This flow can be created by the vehicle speed (in non-recirculation mode) or by activating the blower. The air flowing into the passenger compartment is protected by a grille and a rain shield in order to prevent foreign bodies and water from entering. The air is then distributed inside the passenger compartment.

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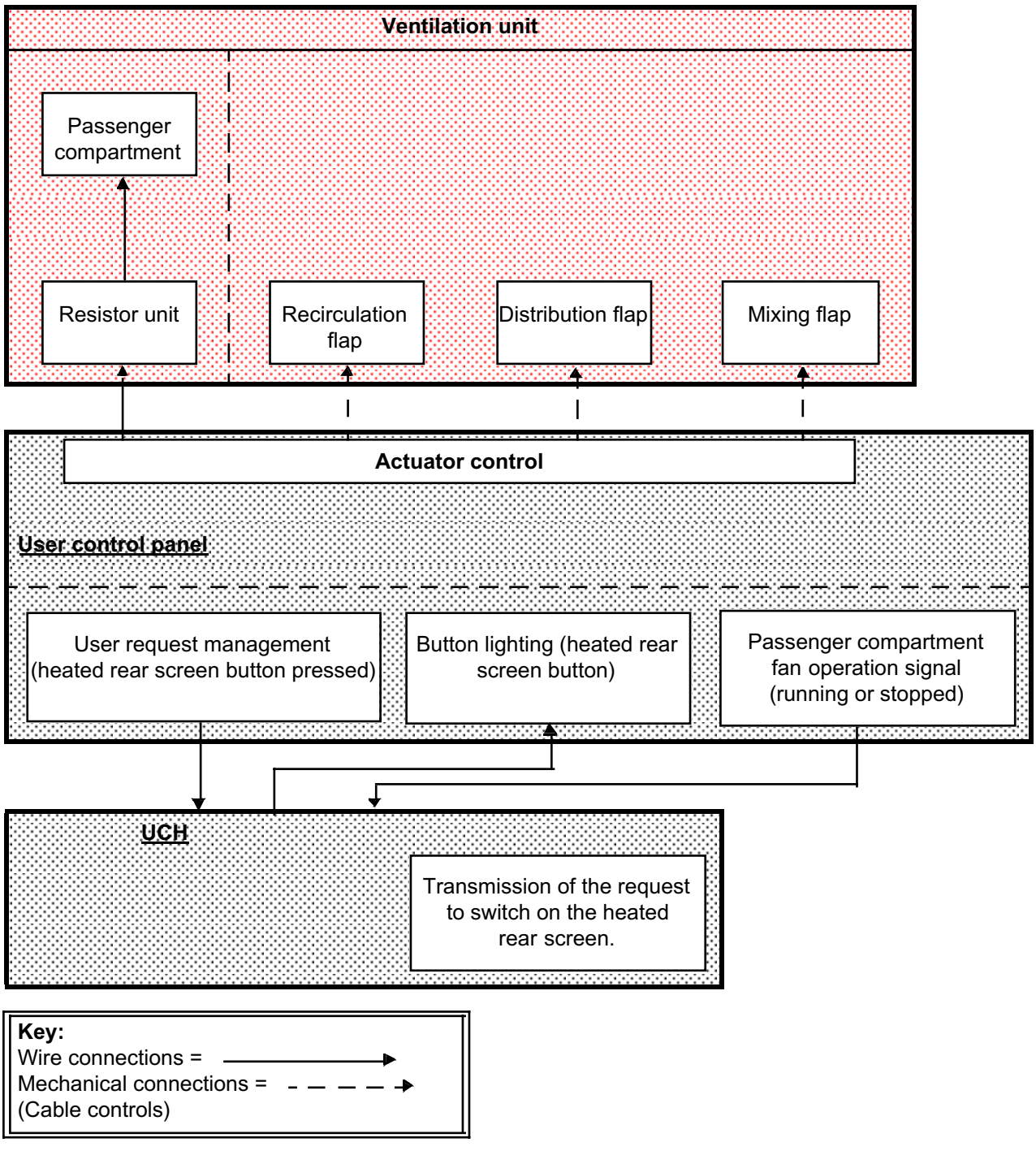
**Summary of components controlled by the passenger compartment ventilation and heating control panel:**




**Key:**
Wire connections = ——————→
Mechanical connections = - — — — →
(Cable controls)

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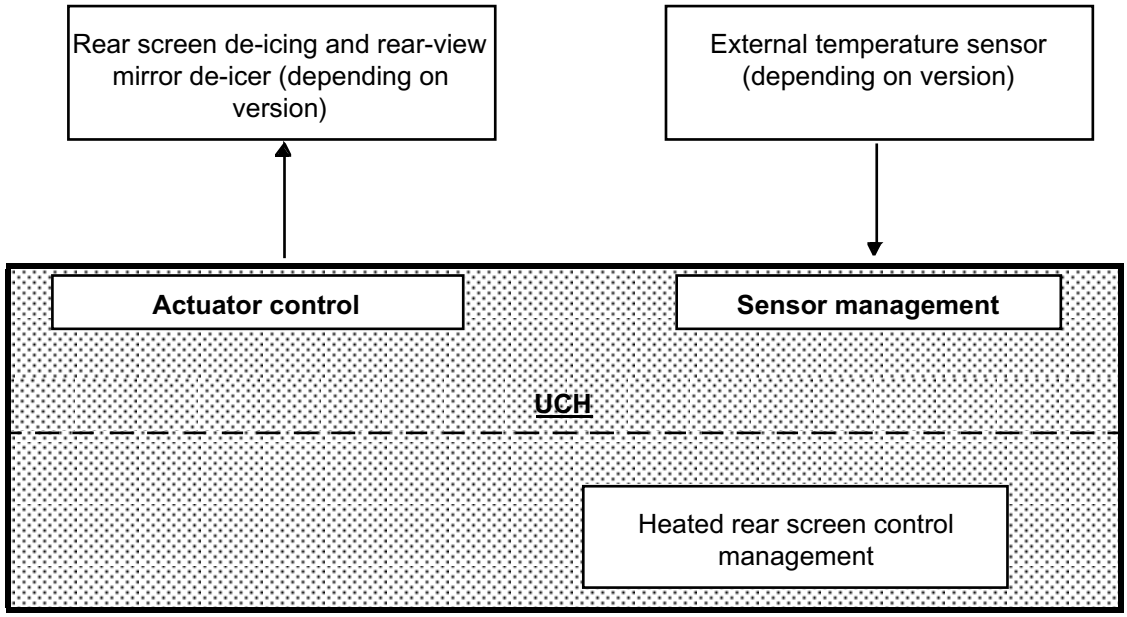
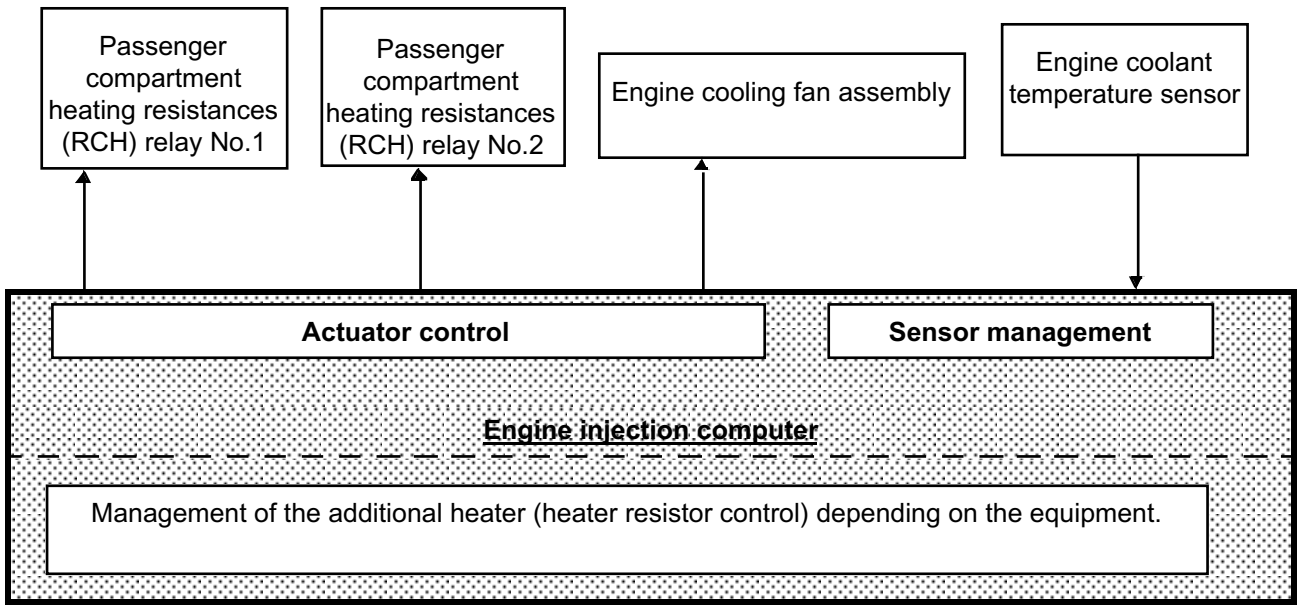
**Summary of components controlled or managed by the UCH:**




**Summary diagram of components controlled or managed by the injection computer:**




**Key:**
Wire connections = ——→

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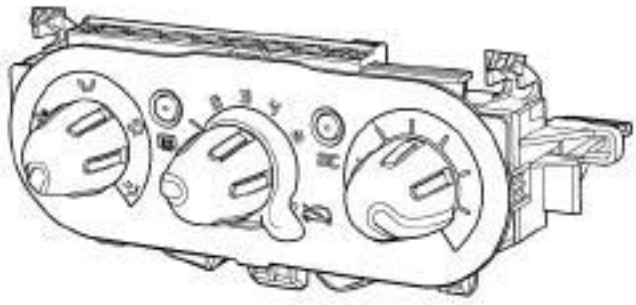
**Layout of the heating function:**

The passenger compartment ventilation heating panel enables:

– the passenger compartment blower unit to be activated,
– the rear de-icing to be activated by the UCH.

The passenger compartment ventilation heating panel controls the air distribution, mixing and recirculation flaps by cables. It controls the blower unit speed via a wire connection and a resistor unit (MVPR).

The injection computer controls the passenger compartment heating resistors (depending on the equipment). The injection computer authorises or denies compressor activation depending on the vehicle operation and refrigerant pressure.



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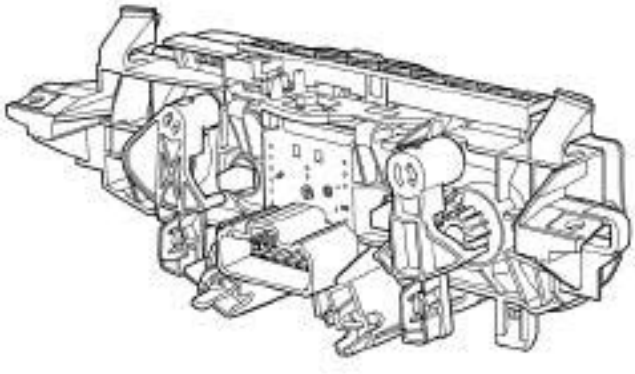
**Passenger compartment ventilation and heating control front panel**



**Passenger compartment ventilation and heating control rear panel**

Buttons with operation indicator lamps:
– Air conditioning button.

Manual controls:
– Mixing: rotary control on the right-hand side, with cable connection to the flap.
– Distribution: rotary control on the left-hand side, with cable connection to the flap.
– Recirculation: rotary lever in the centre, with cable connection to the flap.
– Air flow V0, V1 to V4 by rotary control in the centre.

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions:** engine stopped, ignition on. |

**SUB-FUNCTION: USER SELECTION**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| UCH (see **87B, Passenger compartment connection unit**) | **ET004: + 12 V** after ignition | **+ after ignition feed.** | In the event of a fault, refer to **the interpretation of this status**. |
| | **ET547:** Rear de-icing button | **DEPRESSED**<br>**RELEASED** | In the event of a fault, refer to **the interpretation of this status**. |

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| *NOTES* | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions:** engine stopped, ignition on. |
|---|---|

**SUB-FUNCTION: HEATING**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| Injection (see **13B, Diesel injection or 17B, Petrol injection**) | **PR064:** Coolant temperature | **X = engine coolant temperature** | If there is a fault, refer to the **interpretation of this parameter** |
| | **ET111:** RCH number set (depending on equipment) | **NO**<br>**Note:** Depending on the requirements of the injection system (power requirement, torque reduction, etc.), the injection computer sets the controlled passenger compartment heating resistor stage number (no more, no less) | In the event of a fault, refer to **the interpretation of this status**. |
| | **ET112:** Passenger compartment heating resistors cut-off (depending on equipment) | **YES** | In the event of a fault, refer to **the interpretation of this status**. |

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions:** engine at idle speed, vehicle speed zero. |

**SUB-FUNCTION: USER SELECTION**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| UCH (**see 87B, Passenger compartment connection unit**) | **PR001:** Battery voltage | **10.5 V < X < 14.4 V** | If there is a fault, refer to the **interpretation of this parameter** If the fault is still present, carry out fault finding on the charging circuit (**see MR 451 Mechanical, 16A, Starting - Charging circuit**). |
| | **ET004: + 12 V** after ignition | **+ after ignition feed.** | In the event of a fault, **refer to the interpretation of this status.** |
| | **ET547:** Engine coolant temperature | **PRESSED** if the instrument panel warning light is lit.<br>**RELEASED** otherwise. | In the event of a fault, **refer to the interpretation of this status.**<br>Note: This status only operates for manual air conditioning and heating versions. |
| UCH (**see 87B, Connection unit**) | **ET004: + 12 V** after ignition | **+ after ignition feed.** | In the event of a fault, **refer to the interpretation of this status.** |
| | **ET547:** Rear de-icing button | **DEPRESSED**<br>**RELEASED** | In the event of a fault, **refer to the interpretation of this status.** |

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions:** engine at idle speed, vehicle speed zero. |

**HEATING SUB-FUNCTION**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| Injection (see **13B, Diesel injection or 17B, Petrol injection**) | **PR064:** Coolant temperature | **X = engine coolant temperature** | If there is a fault, refer to the **interpretation of this parameter** |
| | **ET111:** RCH number set (depending on equipment) | **NO**<br>**Note:** Depending on the requirements of the injection system (power requirement, torque reduction, etc.), the injection computer sets the controlled passenger compartment heating resistor stage number (no more, no less) | In the event of a fault, refer to **the interpretation of this status**. |
| | **ET112:** Passenger compartment heating resistors cut-off (depending on equipment) | **YES** | In the event of a fault, refer to **the interpretation of this status**. |

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## SUMMARY TABLE OF THE VARIOUS AIR CONDITIONING COMPUTER COMMANDS

| NAME OF SUB-FUNCTION | COMPUTER NAME | TITLE OF COMMAND | FAULT FINDING |
|---|---|---|---|
| **HEATING** | Injection (see **13B, Diesel injection or 17B, Petrol injection**) | **AC250 Heating resistor relay 1 (depending on version)** | In the event of a fault, consult **the interpretation of this command**. |
| | | **AC251 Heating resistor relay 2 (depending on version)** | In the event of a fault, consult **the interpretation of this command**. |

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| NOTES | **Special notes:**<br>This section gives the list of possible customer complaints (Fault finding charts can be found in sections **61A** and **62C**: see below). |
|---|---|

**AIR DISTRIBUTION FAULT** (Section **62C**)

| | |
|---|---|
| **AIR DISTRIBUTION PROBLEM** | **ALP 2** |
| **AIR FLOW FAULT** | **ALP 3** |
| **INEFFICIENT WINDSCREEN DEMISTING** | **ALP 4** |
| **NO PASSENGER COMPARTMENT VENTILATION** | **ALP 5** |

**HEATING FAULT**

| | |
|---|---|
| **NO HEATING OR INADEQUATE HEATING** | **ALP 6** |
| **EXCESSIVE HEATING** | **ALP 7** |
| **INEFFICIENT REAR SCREEN DE-ICING/DEMISTING** (Section **62C**) | **ALP 10** |
| **WATER PRESENT IN THE PASSENGER COMPARTMENT** (Section **62C**) | **ALP 12** |

**CONTROL PANEL FAULT** (Section **62C**)

| | |
|---|---|
| **NO CONTROL PANEL LIGHTING** | **ALP 13** |

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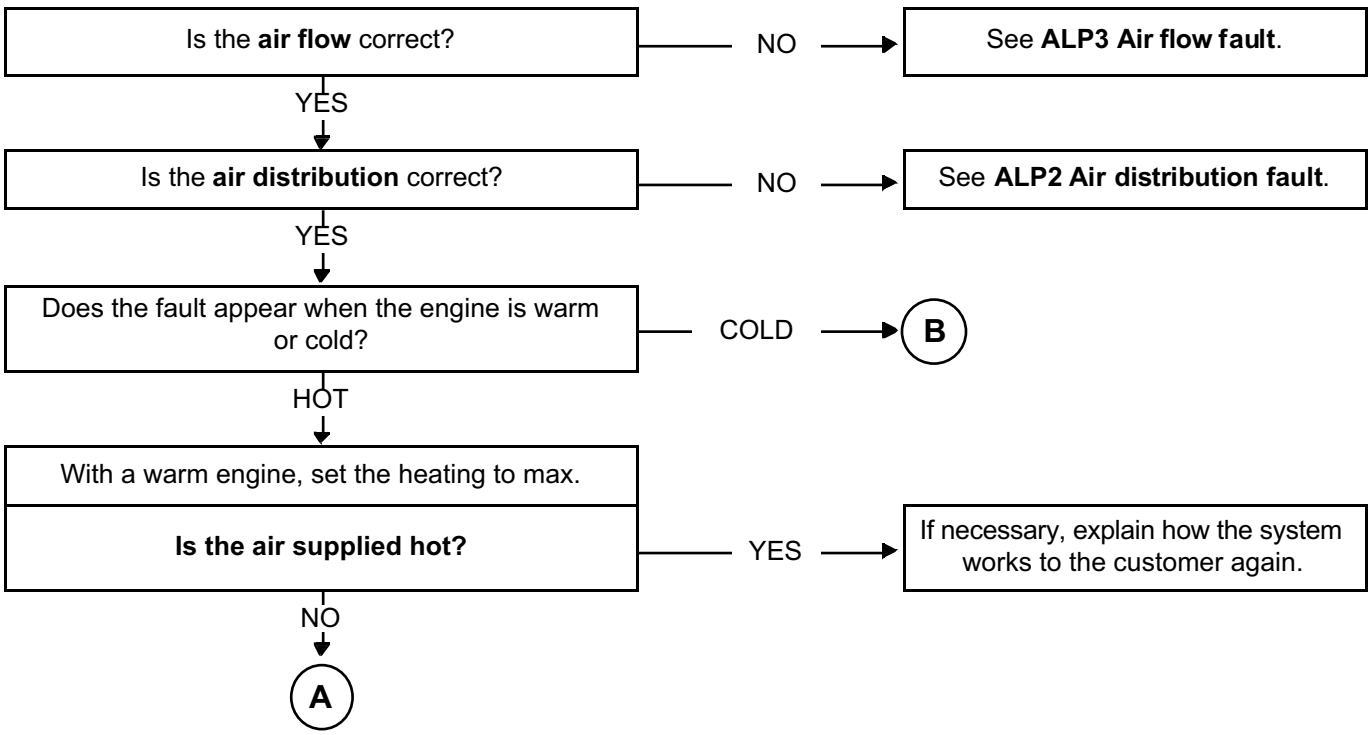
| ALP 6 | No heating or inadequate heating |
|---|---|

| *NOTES* | Carry out these checks after a **full check** using the **diagnostic tool** (fault reading and configuration checks).<br>Check that the fuses are in good condition.<br>Use a multimeter, current clamp and **21 W** test light.<br>Use the **Technical Note Wiring Diagram for DUSTER**. |
|---|---|



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**ALP 6 CONTINUED 1**

A

Vary the position of the **mixing flap** from the "maximum cold" position to the "maximum hot" position and check subjectively that there is a difference in temperature.

**Is a difference in temperature noted?**

NO

**For manual air conditioning and heater versions:**
Check the condition and routing of the mixing flap control cable.
Eliminate any constraints on it: kinks, cable restricted by plastic clips, etc.
Replace the lead if necessary. Unclip the cable from the side of the heating/air conditioning unit and check the stiffness of movement of each component: control button and flap control on the air distribution unit. Check that there is no mechanical fault with the mixing flap (flap jammed inside the unit, etc.).
Carry out any necessary repairs.

Is the fault still present?

YES

NO

**End of fault finding.**

YES

Is the **lower** heater matrix pipe (coolant inlet) **hot**?
**Note:** Pipe located on the left-hand side of the heating and air conditioning unit, near the engine bulkhead.

YES

NO

C

C

D

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| ALP 6<br>CONTINUED 2 | |
|---|---|

C
YES

Check that the heater matrix is not **blocked**: the **top** heater matrix outlet pipe should be hot.
Clean the heater matrix or replace it if necessary (see **MR 451, Mechanical, 61A, Heating, Heater matrix: Removal - Refitting**).

D
NO

Check the coolant circuit:
Check the **level** of the coolant circuit (too low a level may unprime the circuit when driving at low loads and when idling).
Check that the **thermostatic valve** opens at the correct temperature, and replace the valve if necessary (see **MR 451, Mechanical, 19A, Cooling, Thermostat: Removal - Refitting**).

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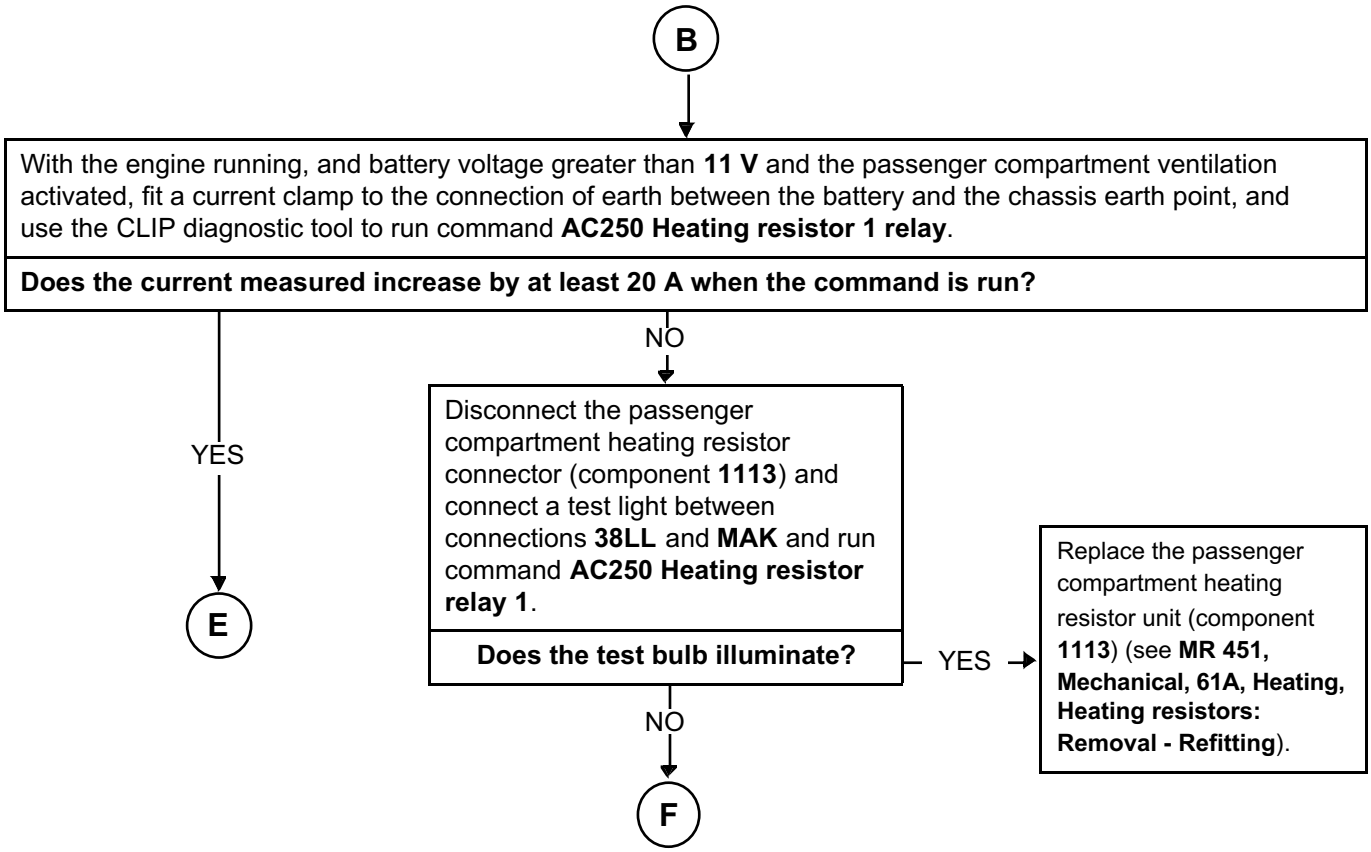
| ALP 6 CONTINUED 3 | |
|---|---|

| *NOTE* | **Fault finding procedure performed using a current clamp.** |
|---|---|



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**ALP 6 CONTINUED 4**

F

Connect a test light between connection **38LL** of component **1113** and the chassis **earth** and run command **AC250 Heating resistor relay 1**.

**Does the test bulb illuminate?**

YES → **Earth** fault on component **1113**. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

NO

Check the continuity on connection **38LL** between components **1113** and **1067**.

**Is the continuity correct?**

NO → Continuity fault on connection **38LL**. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES

Re-run command **AC250 Heating resistor 1 relay**. Check for **+ 12 V** between the **chassis earth** and connections **3FB2** and **BP9** of component **1067**.

**Is there +12 V?**

YES

Run fault finding on the injection computer for the heating resistor 1 relay control (see **13B, Diesel injection, Conformity check**).

NO

Check the engine fuse and relay box.

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| ALP 6<br>CONTINUED 5 | |
|---|---|

| *NOTE* | **Fault finding procedure performed using a current clamp.** |
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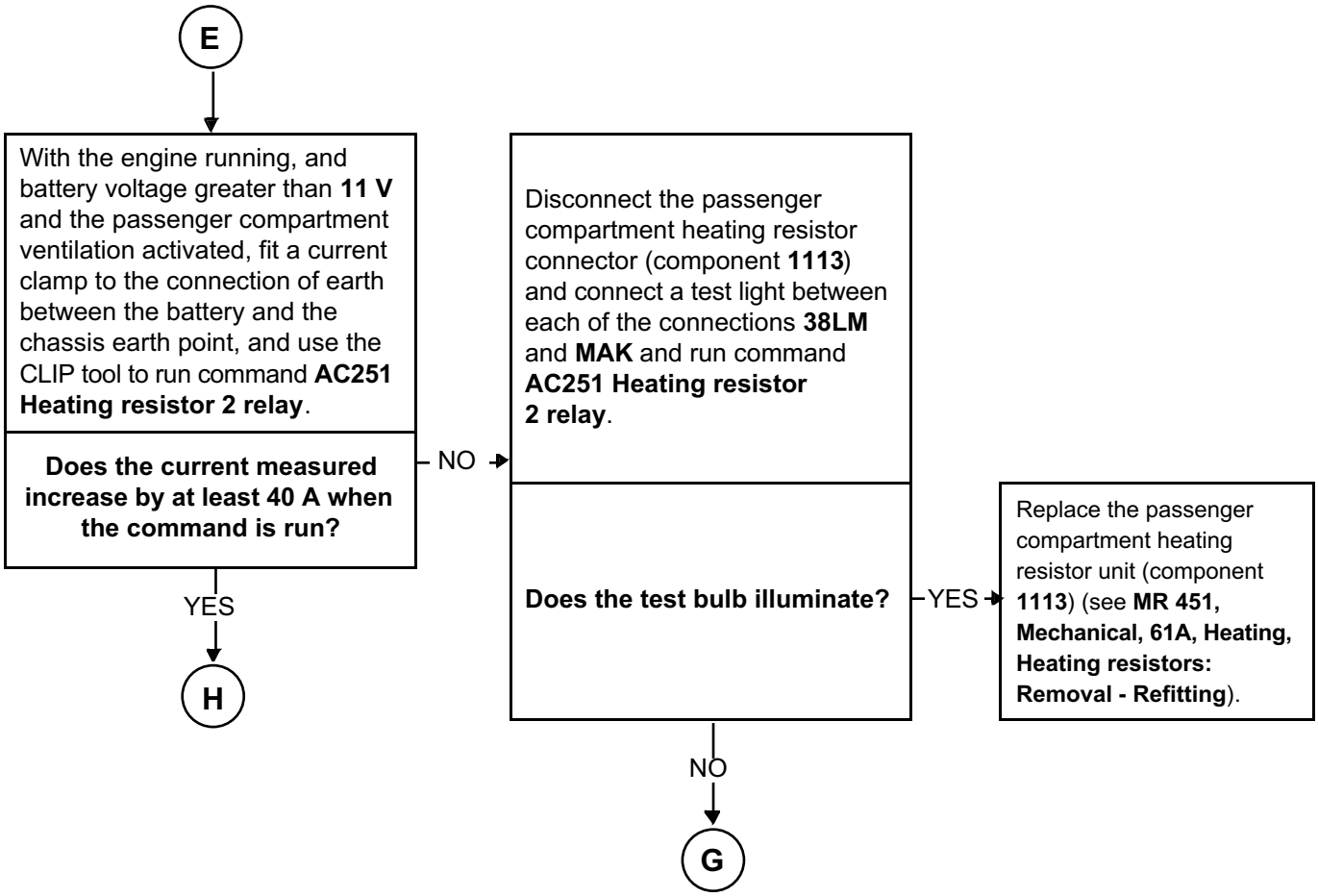

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| ALP 6<br>CONTINUED 6 | |
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| *NOTE* | **Fault finding procedure performed using a current clamp.** |
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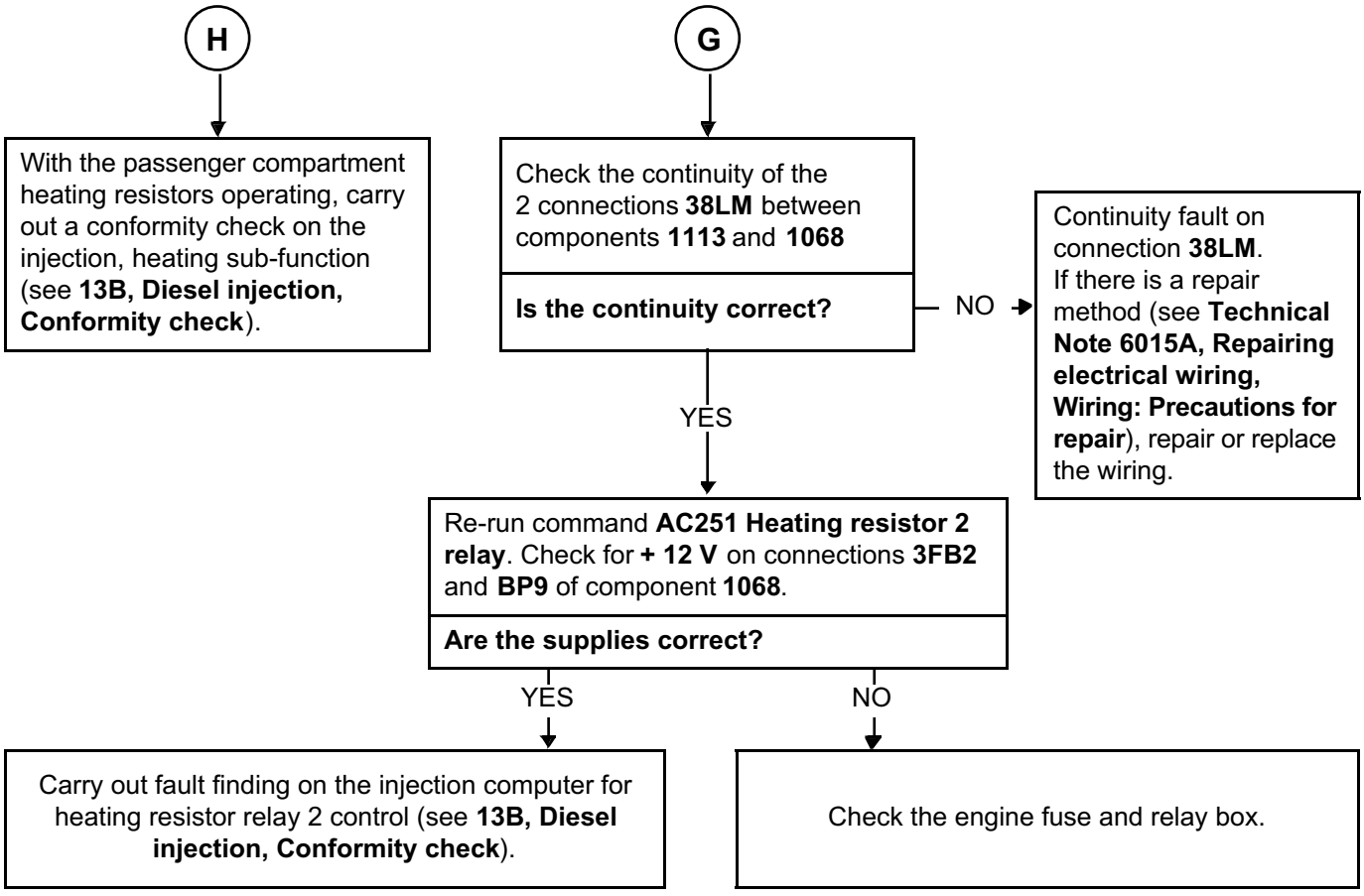

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| ALP 6<br>CONTINUED 6 | |
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| *NOTE* | **Fault finding procedure without using a current clamp.** |
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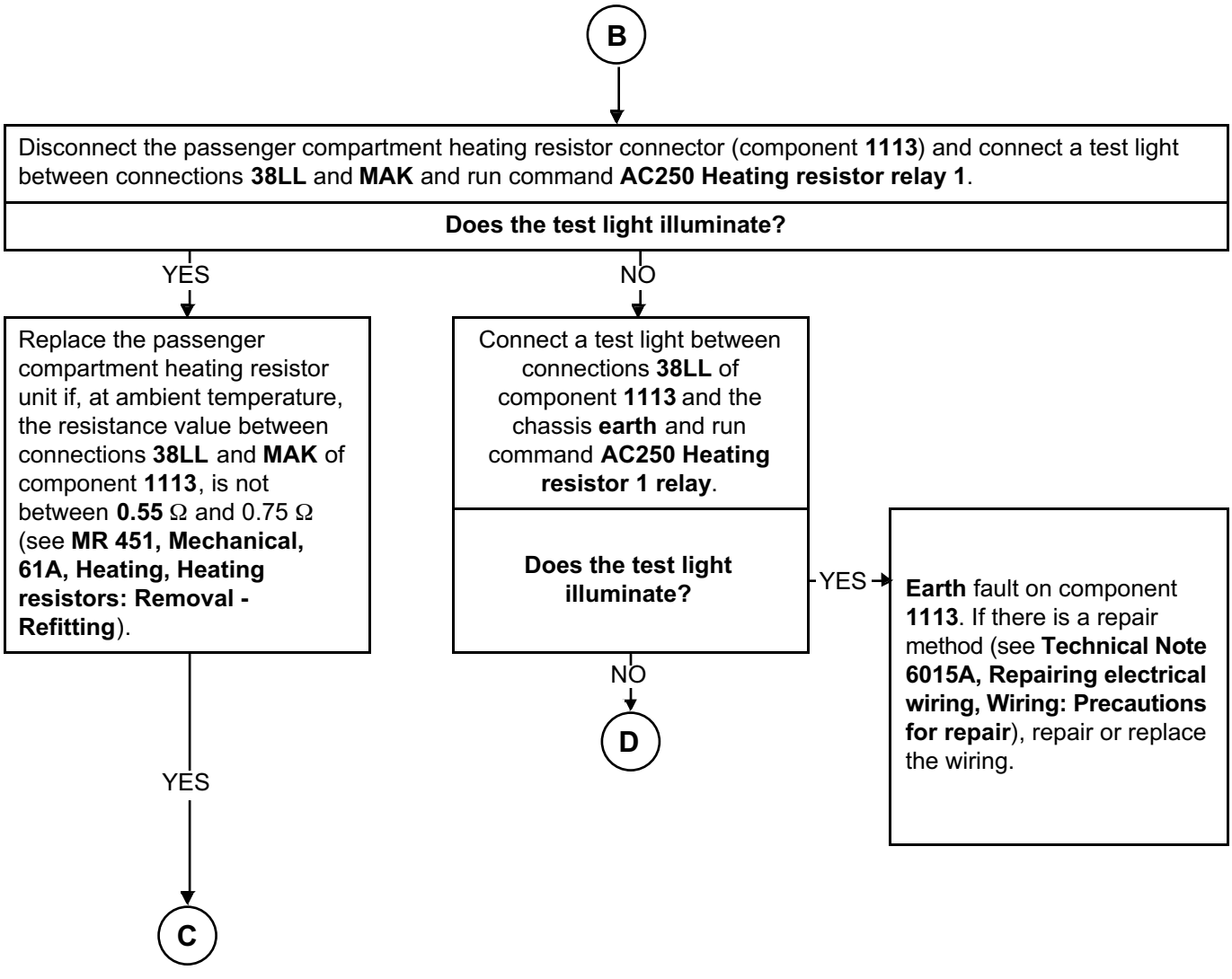

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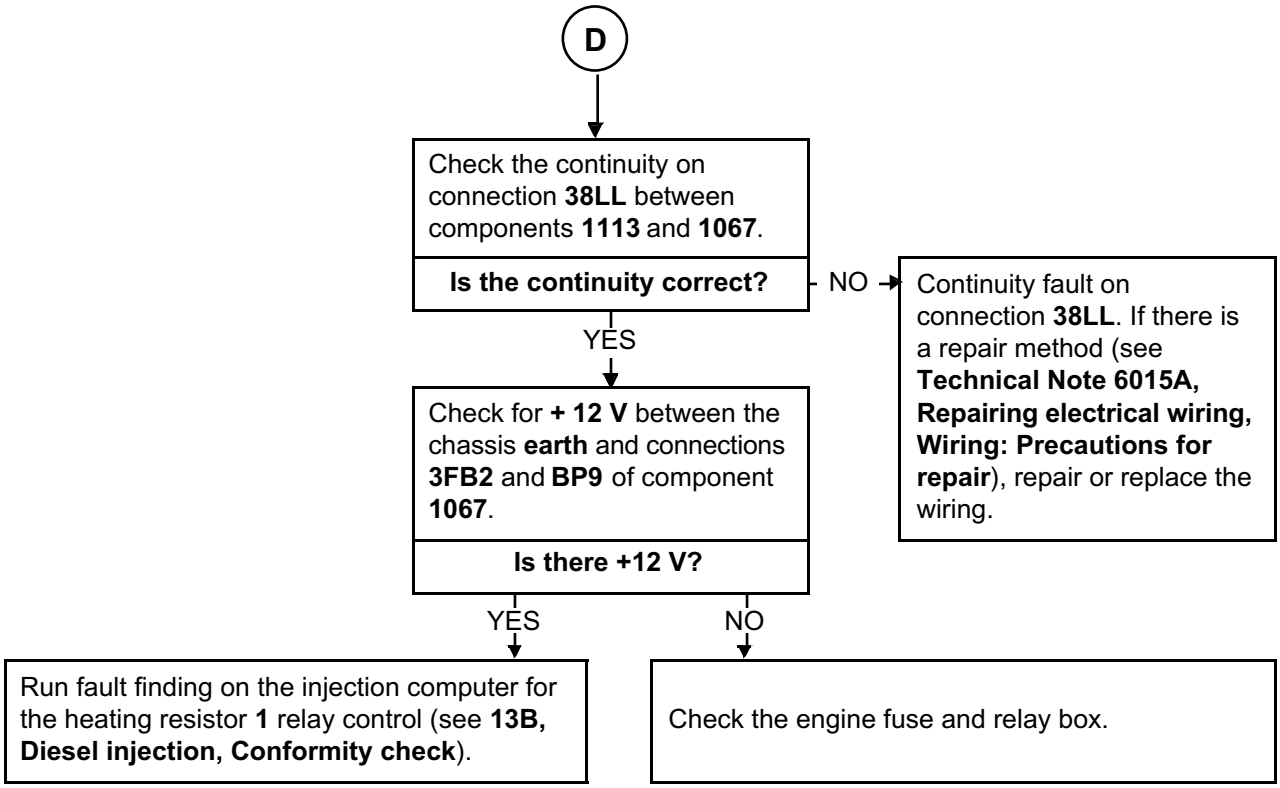
| | |
|---|---|
| **ALP 6 CONTINUED 7** | |

| | |
|---|---|
| ***NOTE*** | **Fault finding procedure without using a current clamp.** |



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| ALP 6<br>CONTINUED 8 | |
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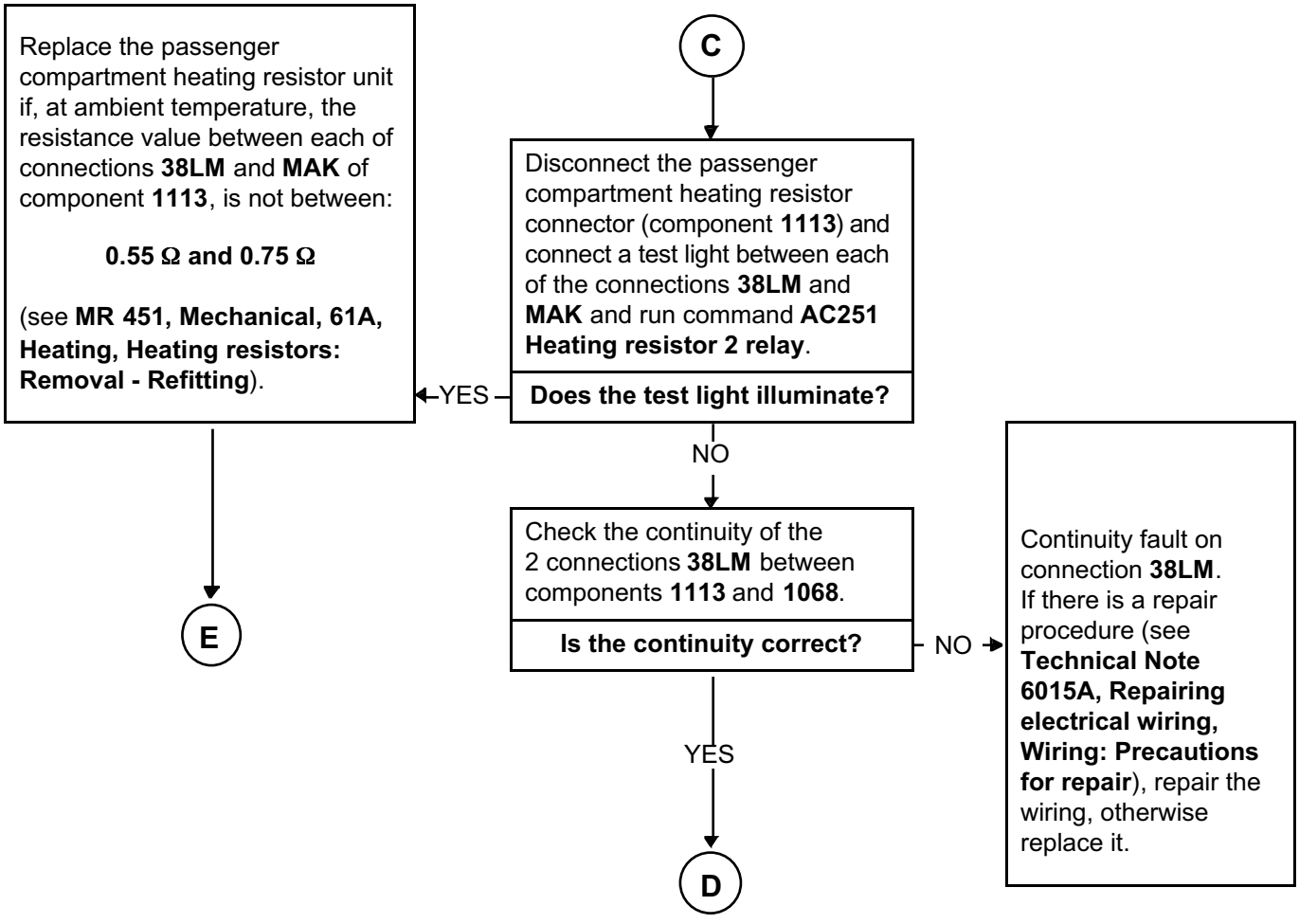
| *NOTE* | **Fault finding procedure without using a current clamp.** |
|---|---|



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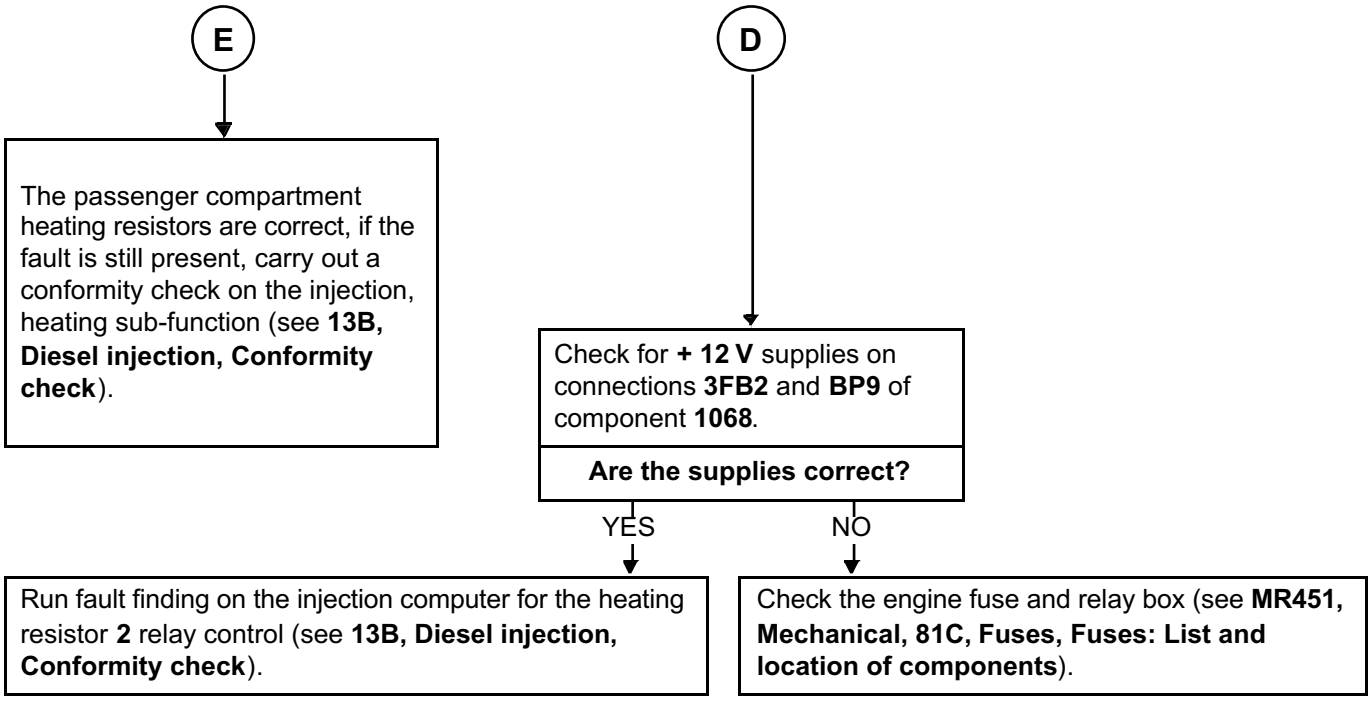
| ALP 6<br>CONTINUED 9 | |
|---|---|

| *NOTE* | **Fault finding procedure without using a current clamp.** |
|---|---|



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| ALP 7 | Too much hot air |
|---|---|

| *NOTES* | Carry out these checks after a **full check** using the **diagnostic tool** (fault reading and configuration checks).<br>Check that the fuses are in good condition.<br>Use a multimeter and a **21 W** test light.<br>Use the **Technical Note Wiring Diagram for DUSTER**. |
|---|---|

With the engine warm and passenger compartment ventilation operating, vary the position of the **mixing flap** from the maximum cold position to the maximum hot position and check subjectively that there is a difference in temperature.

**Is a difference in temperature noted?**

NO →

**For manual air conditioning and heater versions:**
Check the condition and routing of the mixing flap control cable. Eliminate any constraints on it: kinks, cable restricted by plastic clips, etc.
Replace the lead if necessary. Unclip the cable from the side of the heating/air conditioning unit and check the stiffness of movement of each component: control button and flap control on the air distribution unit. Check that there is no mechanical fault with the mixing flap (flap jammed inside the unit, etc.).
Carry out any necessary repairs.

B

YES

B

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| ALP 7<br>CONTINUED 2 | |
|---|---|

B

**For manual air conditioning systems:**
Check that the recirculation flap is in the **exterior air** position. If this is not operating correctly (impossible to change the flap to the exterior air position), check the condition and routing of the recirculation flap control cable. Eliminate any constraints it may have such as kinks, restriction by plastic clips, etc. Replace it if necessary.
Check that there is no mechanical fault on the recirculation flap (flap jammed). Carry out any necessary repairs.

**Is the fault still present?**

YES → C

NO → **End of fault finding procedure.**

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**ALP 7 CONTINUED 3**

C

For diesel vehicles equipped with **passenger compartment heating resistors**, ensure that they are not in operation when the engine is hot (temperature **> 50˚C**) and the exterior air temperature is greater than **10˚C**.

Disconnect the **Passenger compartment heating resistors** connector (component **1113**) and connect a test light between connections **38LL** and **MAK**.

**Does the test light illuminate?**

YES → Check the **continuity** and **insulation** to **+ 12 V** of connection **38LL** between components **1113** and **1067**.

**Is the connection OK?**

NO → Fault on connection **38LL**, if there is a repair procedure, repair the wiring (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), otherwise replace the wiring

YES → Run fault finding on the injection computer for the heating resistor 1 relay control (see**13B, Diesel injection, Conformity check, Heating sub-function**).
If the control is correct, replace the relay (component **1067**).

NO → D

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**ALP 7 CONTINUED 4**

D

Disconnect the **Passenger compartment heating resistors** connector (component **1113**) and connect a test light between each of the connections **38LM** and **MAK**.

**Does the test bulb illuminate?**

YES

Check the **continuity** and **insulation** to **+ 12 V** of the 2 connections **38LM** between components **1113** and **1067**.

**Is the connection OK?**

NO

Fault on connection **38LM**, if there is a repair procedure, repair the wiring (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), otherwise replace the wiring.

YES

Run fault finding on the injection computer for the heating resistor 2 relay control (see **13B, Diesel injection, Conformity check, Heating sub-function**).
If the control is correct, replace the relay (component **1068**).

NO

**End of fault finding.**

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# 6 Air conditioning

## 62C CLIMATE CONTROL


| | |
|---|---|
| Fault finding – Introduction | 62C - 2 |
| Fault finding – List and location of components | 62C - 9 |
| Fault finding – Role of components | 62C - 11 |
| Fault finding – Operating diagram | 62C - 17 |
| Fault finding – Function | 62C - 18 |
| Fault finding – Conformity check | 62C - 24 |
| Fault finding – Customer complaints | 62C - 34 |
| Fault finding – Fault finding chart | 62C - 36 |




"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle(s): **DUSTER**

Function concerned: **Climate Control**

## 2. PREREQUISITES FOR FAULT FINDING

### Documentation type

**Fault finding procedures** (this document and the Technical Notes concerning the injection system fitted to the vehicle, and the UCH):
– Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.
**Wiring Diagrams:**
– Visu-Schéma (CD-ROM), paper.

### Type of diagnostic tools

**– CLIP + CAN sensor**

### Special tooling required

| | Special tooling required |
|---|---|
| | Multimeter |
| **Elé. 1681** | Universal bornier |

## 3. REMINDERS

### Procedure

To run fault finding on the vehicle computers, proceed as follows:
– turn the ignition key to APC,
– connect the **diagnostic tool** and perform the required operations,

To cut off the + after ignition feed, proceed as follows:
– disconnect the **diagnostic tool**,
– turn the ignition key to OFF,
– switch off the ignition.

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**Faults**

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).
The **present** or **stored** status of the fault should be considered when the diagnostic tool is switched on after the + after ignition feed is switched on (without any action on the system components).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.
For a **stored fault**, note the faults displayed and apply the **Notes** section.
If the fault is **confirmed** when the instructions are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:
- the electrical lines which correspond to the fault,
- the connectors on these lines (corrosion, bent pins, etc.),
- the resistance of the faulty component,
- the condition of the wires (melted or split insulation, wear).

**Conformity check**

The aim of the conformity check is to check data that does not produce a fault on the **diagnostic tool** when the data is inconsistent. Therefore, this stage is used to:

- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint,
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

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**Special notes on the conformity check for the air conditioning function:**

The **air conditioning system** conformity check is divided into four parts. The parts relate to the four sub-functions of the air conditioning system: heating, cold loop, user selection and passenger compartment ventilation. The statuses and parameters related to these sub-functions are listed with their respective computers.

**Special notes:** The air conditioning control panel does not control electrical components (other than the passenger compartment fan assembly) and it cannot support fault finding.

**Note:**
The interpretation of statuses, parameters and commands is also split into several sections. Everything controlled by the air conditioning control panel is explained in the two **Air conditioning** sections (**62B and 62C**). On the other hand, signals from other computers are explained in the fault finding sections for these computers (see **conformity check**).

**Customer complaints - Fault finding chart**

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **customer complaints**.

**A synopsis of the general procedure to follow is provided on the following page in the form of a flow chart.**

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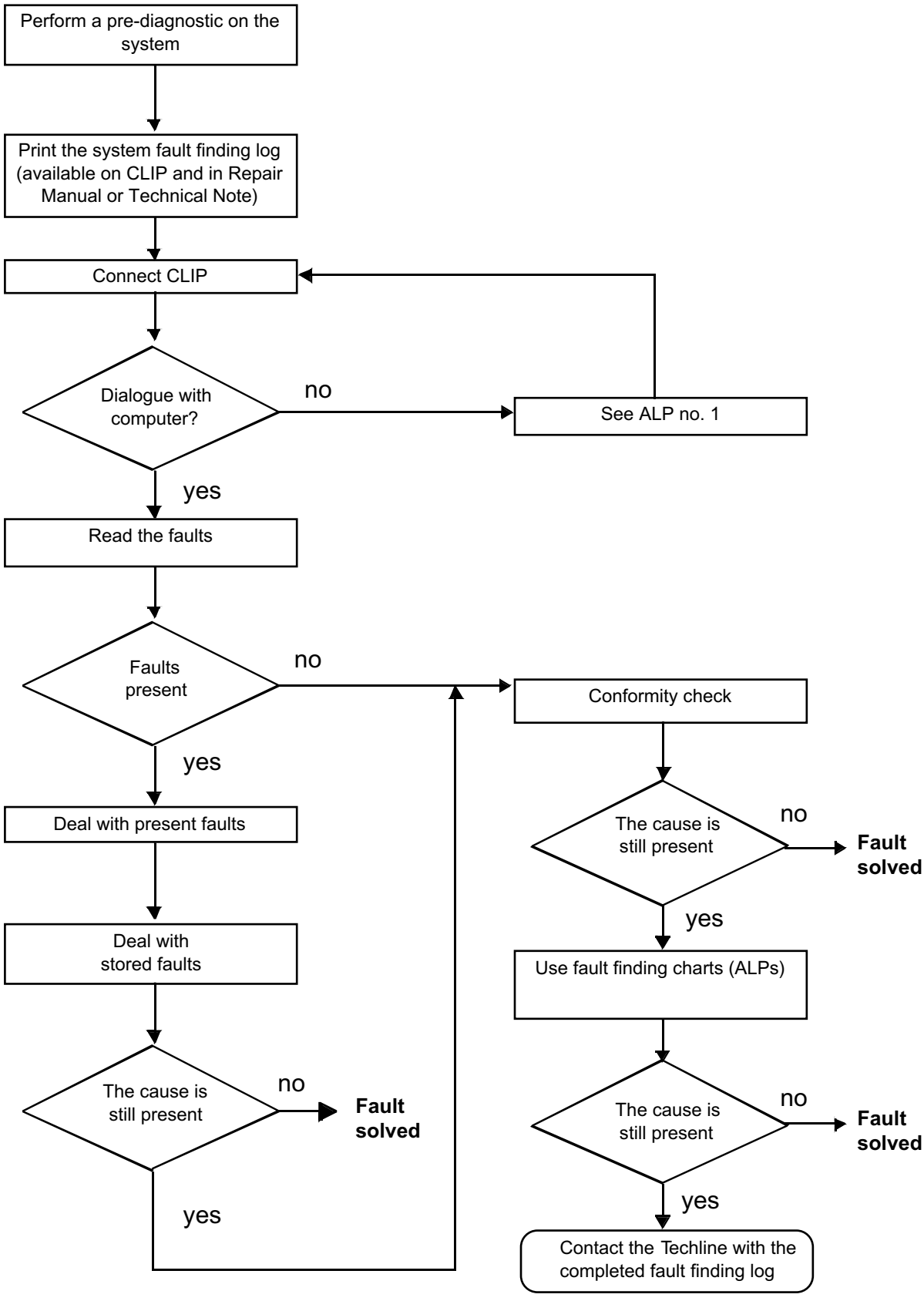
## 4. FAULT FINDING PROCEDURE



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**4. FAULT FINDING PROCEDURE (continued)**

**Wiring check**

Note:
Carry out each requested check visually. Do not remove a connector if it is not required.

Note:
Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:
The check is carried out on the 2 parts of the connection. There may be two types of connection:
- Connector / Connector
- Connector / Device

**Fault finding problems**
Disconnecting the connectors and/or manipulating the wiring may temporarily remove the cause of a fault. Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

**Visual inspection of the connection:**
- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

**Visual inspection of the area around the connection:**
- Check the condition of the mounting (pin, strap, adhesive tape, etc.), that the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

**Visual inspection of the plastic casings:**
- Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

**Visual inspection of the metal contacts:**
(The female contact is called CLIP. The male contact is called TAB).
- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The spring contact of the connector when pulling the wire slightly.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

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**Visual inspection of the sealing:**
*(Only for watertight connectors)*

- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
  - For *unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
  - For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
  - For *gel* seals, check for gel in all of the sockets without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
  - For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, repair or replace the wiring (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**)

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## 5. FAULT FINDING LOG

**IMPORTANT!**

**IMPORTANT**
Any fault on a complex system requires thorough fault finding with the appropriate tools.
The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE ESSENTIAL THAT THE FAULT FINDING LOG IS FILLED OUT EVERY TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS DEPARTMENT.**

You will always be asked for this log:

- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

## 6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:

– check the battery voltage to avoid incorrect operation of computer functions,
– do not smoke,
– use the proper tools.

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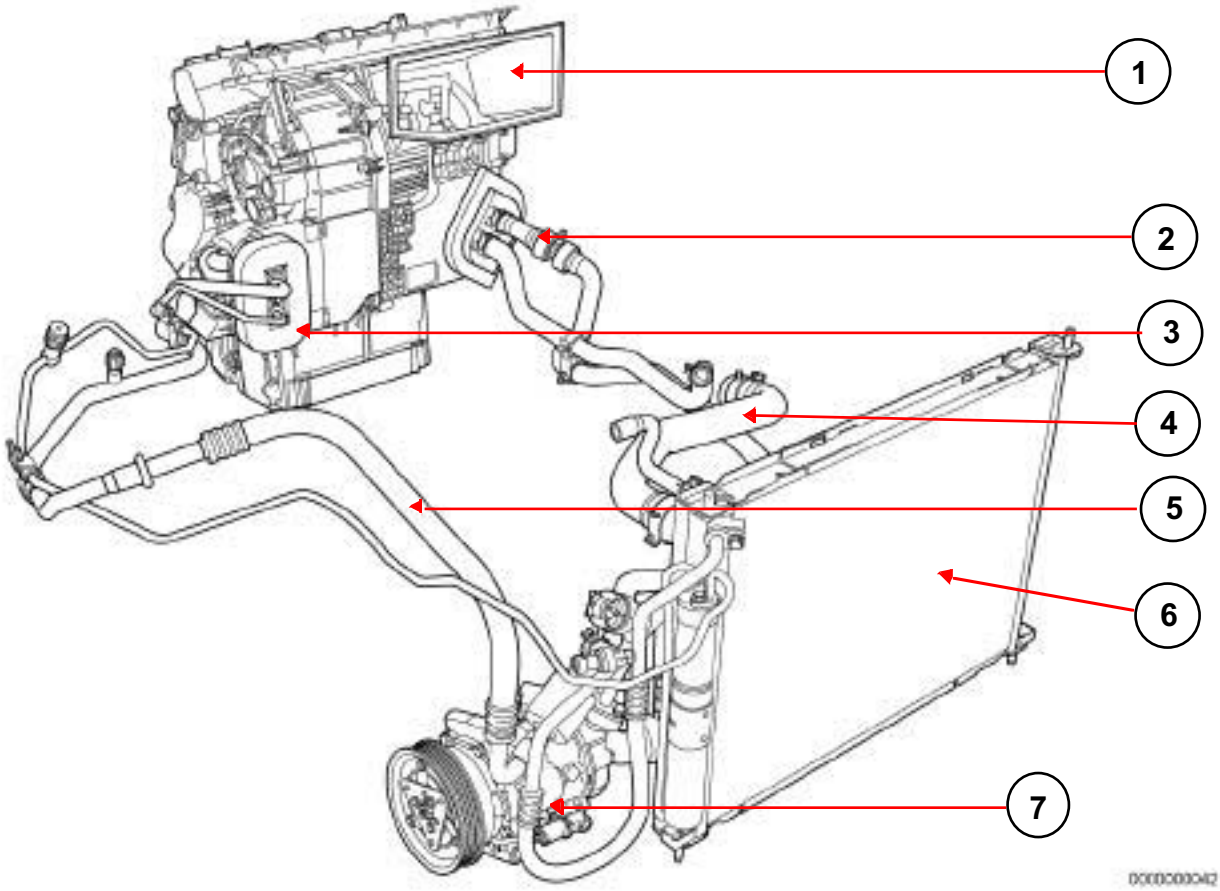
**System (cold loop, hot loop and components)**




1) **Air conditioning unit**
2) **Heater matrix**
3) **Expansion valve and evaporator**
4) **Coolant circuit**
5) **Cold loop**
6) **Condenser and radiator**
7) **Compressor**

- **COLD LOOP COMPONENTS:**

– **Compressor**: This is located at the bottom on the left-hand side, next to the radiator in the engine compartment.

– **Condenser:** This is located between the radiator and the cooling fan assembly.

– **Dehydrator reservoir**: This is located on the left-hand side of the condenser outlet.

– **Heating and air conditioning assembly**: This is located underneath the dashboard.

– **Thermostatic expansion valve**: This is located to the left of the heating and air conditioning assembly on the bulkhead.

– **Evaporator**: This is located to the right of the **thermostatic expansion valve** in the heating and air conditioning assembly.

– **High pressure pipe**: This pipe connects the compressor, condenser, dehydrator reservoir and expansion valve inlet in series (it is located in the engine compartment on the left-hand side).

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– **Low pressure pipe**: This pipe connects the expansion valve, buffering capacity, evaporator and compressor inlet in series (it is located in the engine compartment on the left-hand side).

- **HEATING COMPONENTS**

– **Heater matrix:** This is located at the bottom of the heating and air conditioning assembly.

– **Heating resistors**: These are located at the bottom of the heater matrix on the driver's side (depending on the equipment).

- **ACTUATORS:**

– **Air distribution flap:** This is located in the heating and air conditioning assembly.

– **Mixing flap:** This is located in the heating and air conditioning assembly.

– **Recirculation flap**: This is located behind the dashboard.

- **OTHERS**

– **Passenger compartment fan assembly:** This is located in the heating and air conditioning assembly.

– **Cooling fan assembly:** This is located in the front panel of the vehicle, in front of the condenser.

– **Air pipes**: These are located underneath the dashboard.

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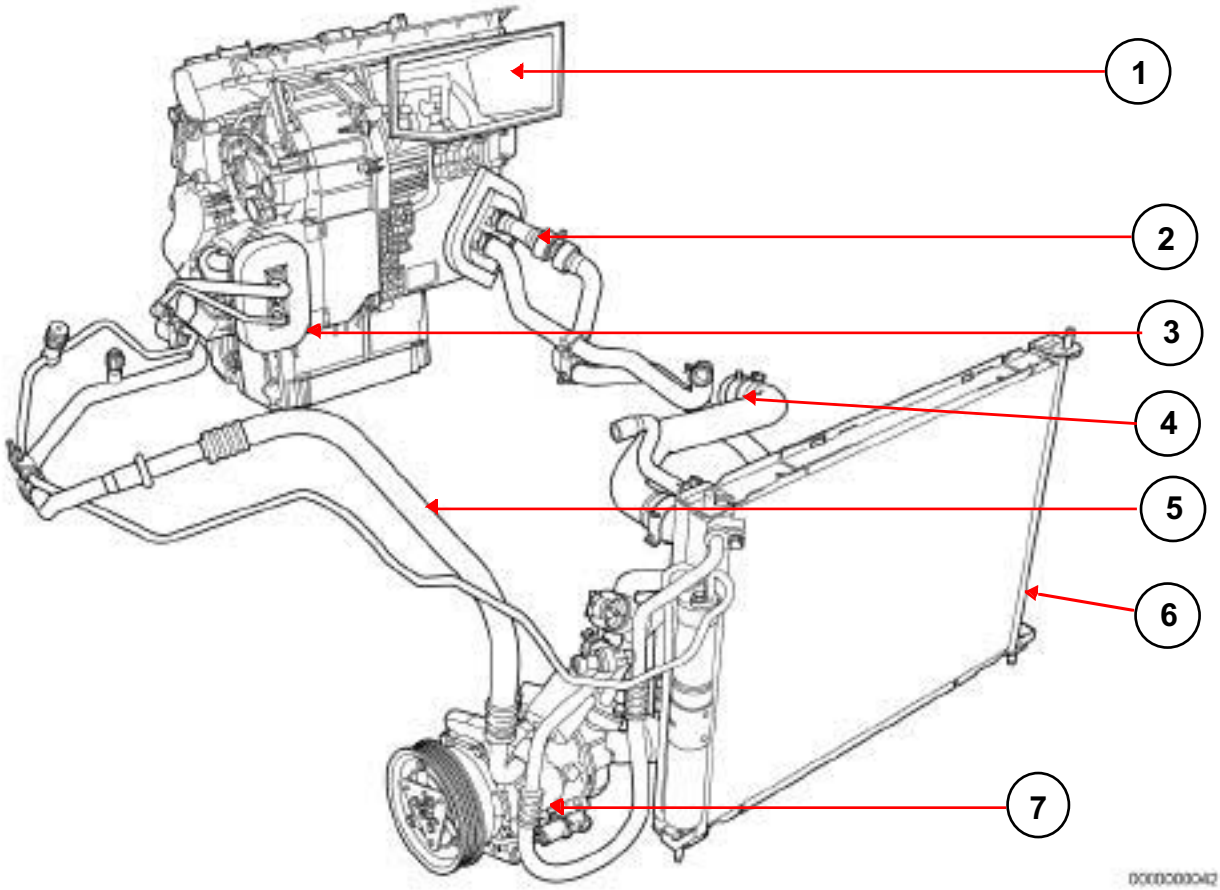
- **COLD LOOP COMPONENTS**




**System assembly**

1) **Air conditioning unit**
2) **Heater matrix**
3) **Expansion valve and evaporator**
4) **Coolant circuit**
5) **Cold loop**
6) **Condenser and radiator**
7) **Compressor**

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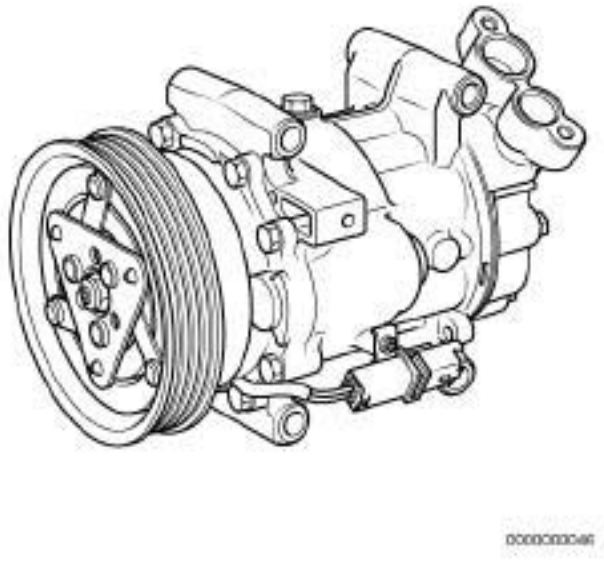
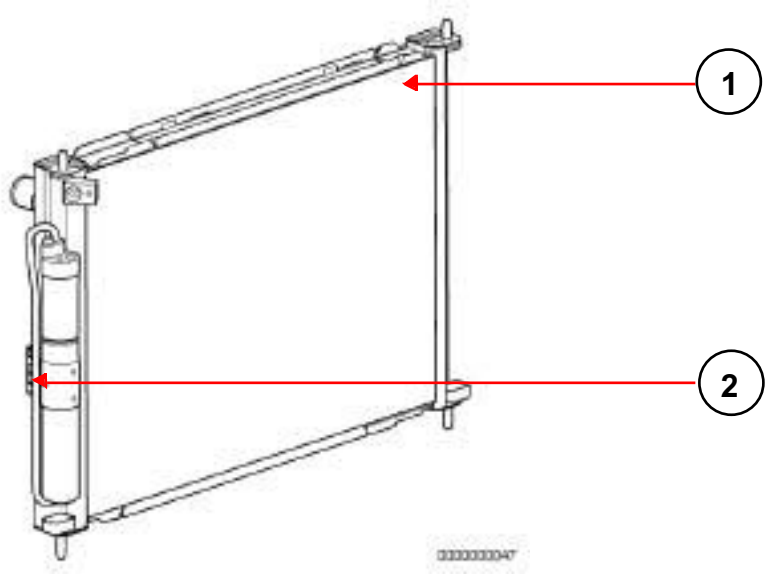
**Figure 1: System assembly**

**– Compressor:**

The compressor is not activated when the exterior temperature is less than **3˚C**, it is used to compress the refrigerant into gas. The pressure can reach up to **28 bar**.



**– Condenser:**
The condenser is composed of flat horizontal aluminium tubes. The pipes are divided by the vanes in order to increase the air heat exchange and therefore cool the refrigerant fluid to produce condensation.




1) **Condenser**
2) **Dehydrator reservoir**

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**– Dehydrator reservoir: (see figure above)**

The dehydrator reservoir is used to:
- Check the condition of the refrigerant.
- Absorb the variations in volume (expansion bottle principle).
- Filter impurities.
- Absorb moisture (water in the circuit).

**– Heating and air conditioning assembly: (see figure above)**

This unit acts as an air mixing box. It is equipped with a system of flaps which allow the air to be directed in accordance with the requirements of the occupants whilst simultaneously allowing the temperature of the air entering the passenger compartment to be modified by mixing hot and cold air.

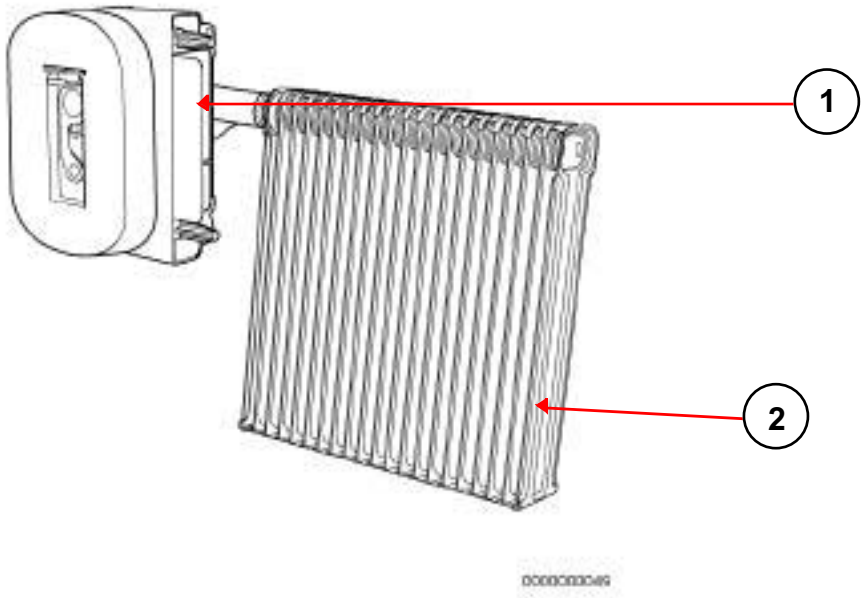
**– Thermostatic expansion valve: (see figure below)**

This thermostatic-type expansion valve is used to check refrigerant expansion. It is located at the evaporator inlet.

**– Evaporator: (see figure below)**

- The evaporator is a heat exchanger which enables the air entering the passenger compartment to be cooled.

Note: Condensation of the air may occur thereby causing normal drops of water to form underneath the vehicle body.




**1) Expansion valve**
**2) Evaporator**

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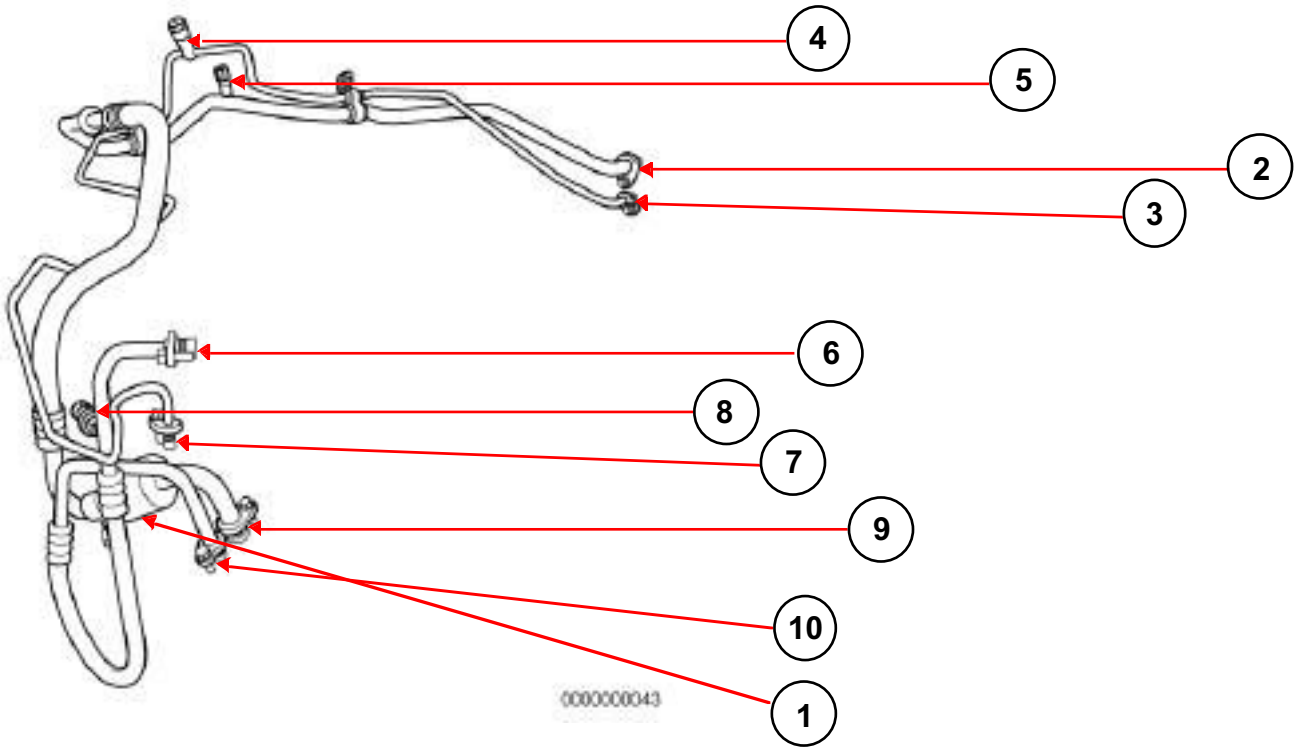
**– High and low pressure pipes:**

- The **High Pressure** and **Low Pressure** pipes are composed of rigid aluminium pipes and flexible pipes which enable engine-related movements to be absorbed.
- Two filler valves (on the **High Pressure** pipe and on the **Low Pressure** pipe) can be accessed in order to fill (or drain) the refrigerant loop.
- The connections must be checked in the event of a refrigerant fluid leak.




1) **Buffering capacity**
2) **Expansion valve outlet**
3) **Expansion valve inlet**
4) **High pressure filler valve**
5) **Low pressure filler valve**
6) **Condenser inlet**
7) **Condenser outlet**
8) **Pressure sensor**
9) **Compressor inlet**
10) **Compressor outlet**

**Figure 6: Cold loop pipes**

- **HEATING COMPONENTS**

**– Heater matrix:**

The external air entering the heating and air conditioning system (**HVAC**) is heated by the **heater matrix**.

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**– Passenger compartment heating resistors (depending on the equipment level):**
The passenger compartment heating resistors (RCH) are electrical heating devices in the air conditioning unit. This system is an additional heating system which operates when the engine is cold (when starting).

- **ACTUATORS**

**– Air distribution flap:**

This flap enables the air flowing into the passenger compartment to be directed.

**– Air mixing flap:**

This flap mixes the air in order to meet the temperature requirements of the occupants.

**– Recirculation flap:**

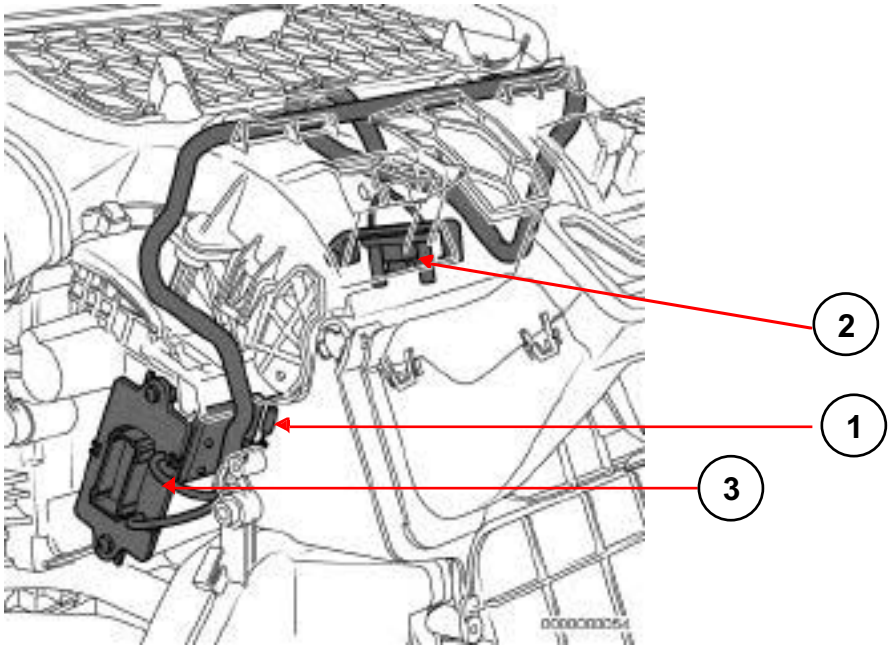
This flap prevents the entry of exterior air. In this case, the passenger compartment is isolated from the exterior and air is blown in the passenger compartment in a closed circuit.

These three flaps are **controlled by a cable**.

- **OTHERS**

**– Passenger compartment blower unit:**

The passenger compartment fan assembly is controlled by the Resistive Blower Dimmer Module (**MVPR**).



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**Resistive Blower Dimmer Module (MVPR)**

1) **Thermal fuse**
2) **Fan assembly connector**
3) **Connector to Control panel**

The passenger compartment fan assembly is used to vary the rate at which air is blown into the passenger compartment, depending on the requirements of the customer.

**– Cooling fan assembly:**

The cooling fan assembly motor is normally used in order to promote heat exchange in the condenser and therefore improve the performance of the air conditioning system. Activation of the air conditioning fan unit depends, among other things, on the vehicle speed and high pressure in the loop.

**– Air pipes:**

The air flows into an open air inlet scoop towards the exterior. Therefore there must be enough air flow for it to be channelled into the passenger compartment. This flow can be created by the vehicle speed (in non-recirculation mode) or by activating the blower. The air flowing into the passenger compartment is protected by a grille and a rain shield in order to prevent foreign bodies and water from entering. The air is then distributed inside the passenger compartment.

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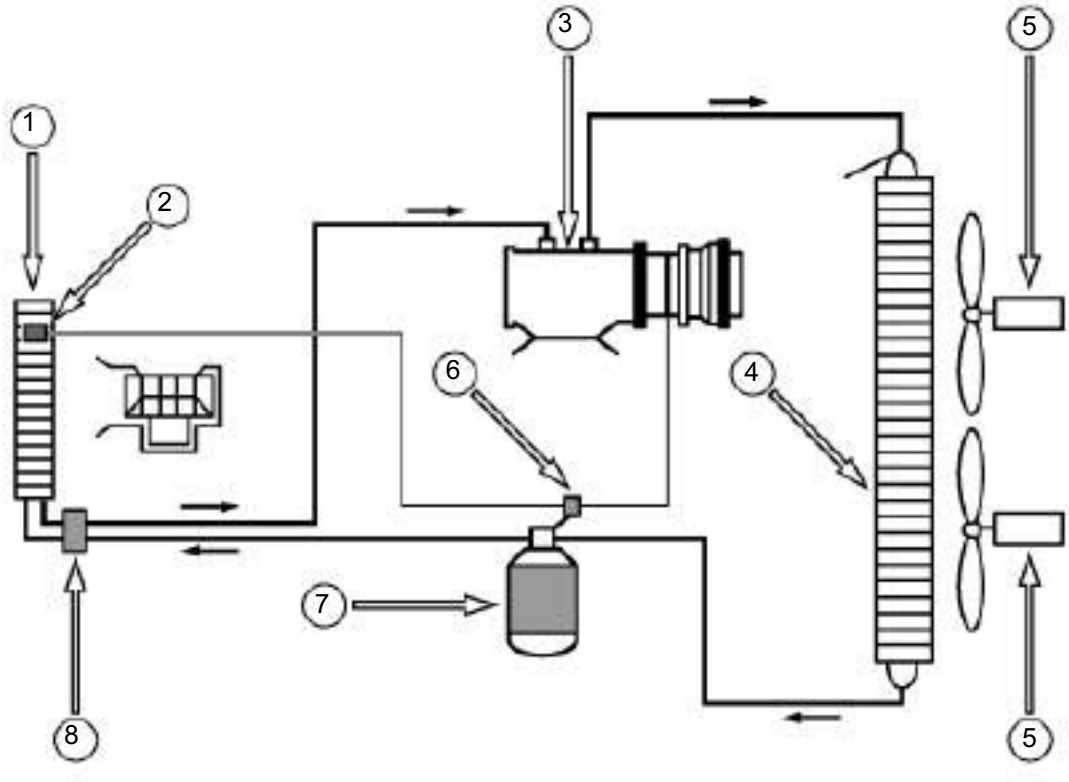
## Fault finding – Operating diagram

**Summary diagram of all the components of the air conditioning system**




1) **Evaporator**
2) **Temperature sensor**
3) **Compressor**
4) **Condenser**
5) **Fan assembly**
6) **Pressure switch**
7) **Dehydrator reservoir**
8) **Expansion valve**

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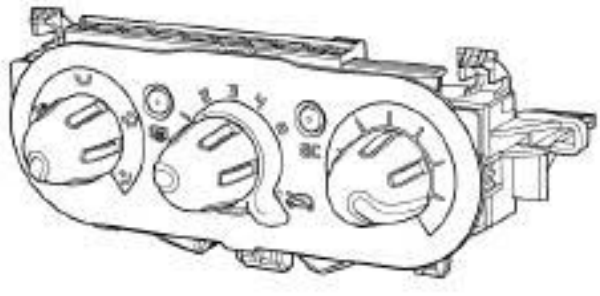
**Layout of the air conditioning function:**

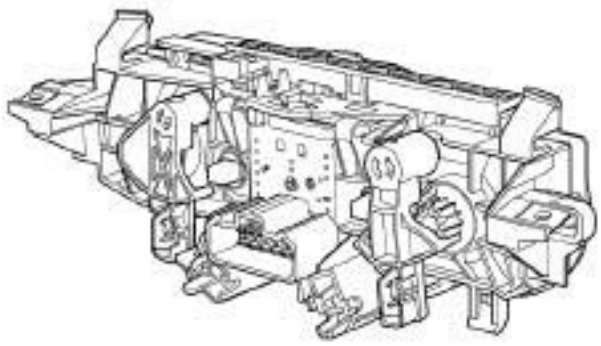
The functions provided by the system are the thermal comfort of the occupants (warming and cooling), visibility through the windscreen, as well as the isolation of the passenger compartment in case of exterior air pollution. The heating and air conditioning system dries and purifies the air in the passenger compartment. Only manual heating and air conditioning is available for **DUSTER**.

The injection computer controls the passenger compartment heating resistors (depending on the equipment). It authorises or denies compressor activation depending on the vehicle operation and refrigerant pressure.



9000000052

**Manual air conditioning system control panel: front panel**



9000000053

**Manual air conditioning system control panel: rear panel**

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Buttons with operation indicator lamps:
- Air conditioning button.

Manual controls:
- Mixing: rotary control on the right-hand side, with cable connection to the flap.
- Distribution: rotary control on the left-hand side, with cable connection to the flap.
- Recirculation: rotary lever in the centre, with cable connection to the flap.
- Air flow V0, V1 to V4 by rotary control in the centre.

**Description of the sub-functions:**

**Heating sub-function**: this sub-function includes everything relating to the **production of warm air** in the vehicle and management of the heated rear screen.

The UCH computer controls the rear screen de-icing.
The injection computer manages the actuation of the passenger compartment heating resistors

**Cold loop sub-function**: this sub-function includes everything involved in the vehicle's **production of cold air**.

The computers concerned include:
The injection computer, which authorises compressor activation and controls the compressor and motor-driven fan assemblies.

The UCH, which authorises or denies the request for compressor activation from the air conditioning control panel to the injection computer in accordance with the condition of the passenger compartment blower and the exterior temperature (depending on the equipment).

**User selection sub-function:** This sub-function includes everything used to transmit the user's requests (pressing buttons). The computer involved is the UCH computer.

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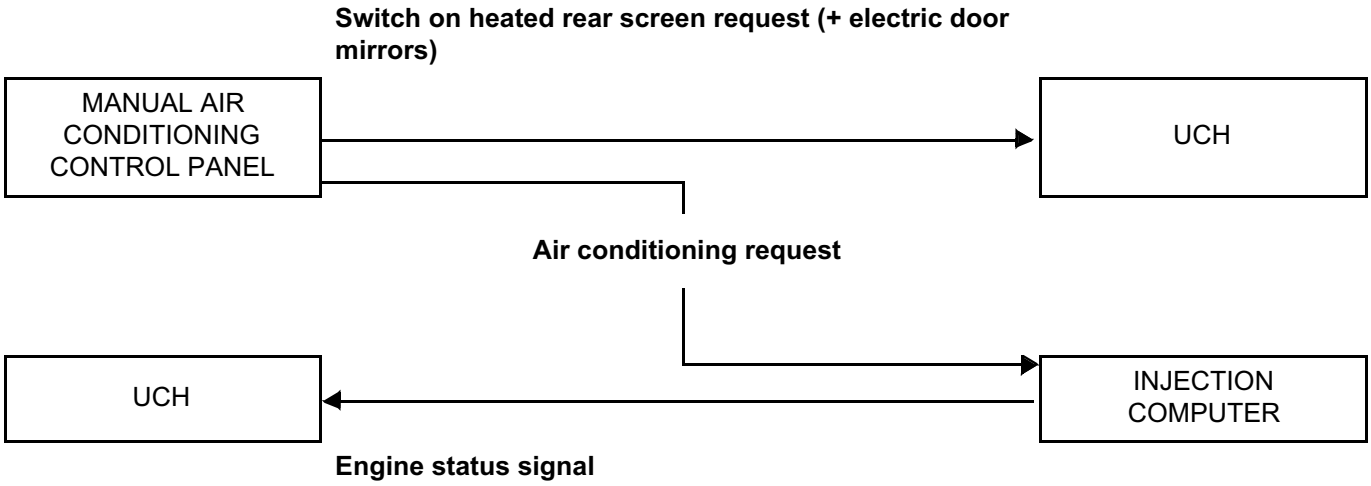
**Exchanges between the two air conditioning computers (manual air conditioning)**



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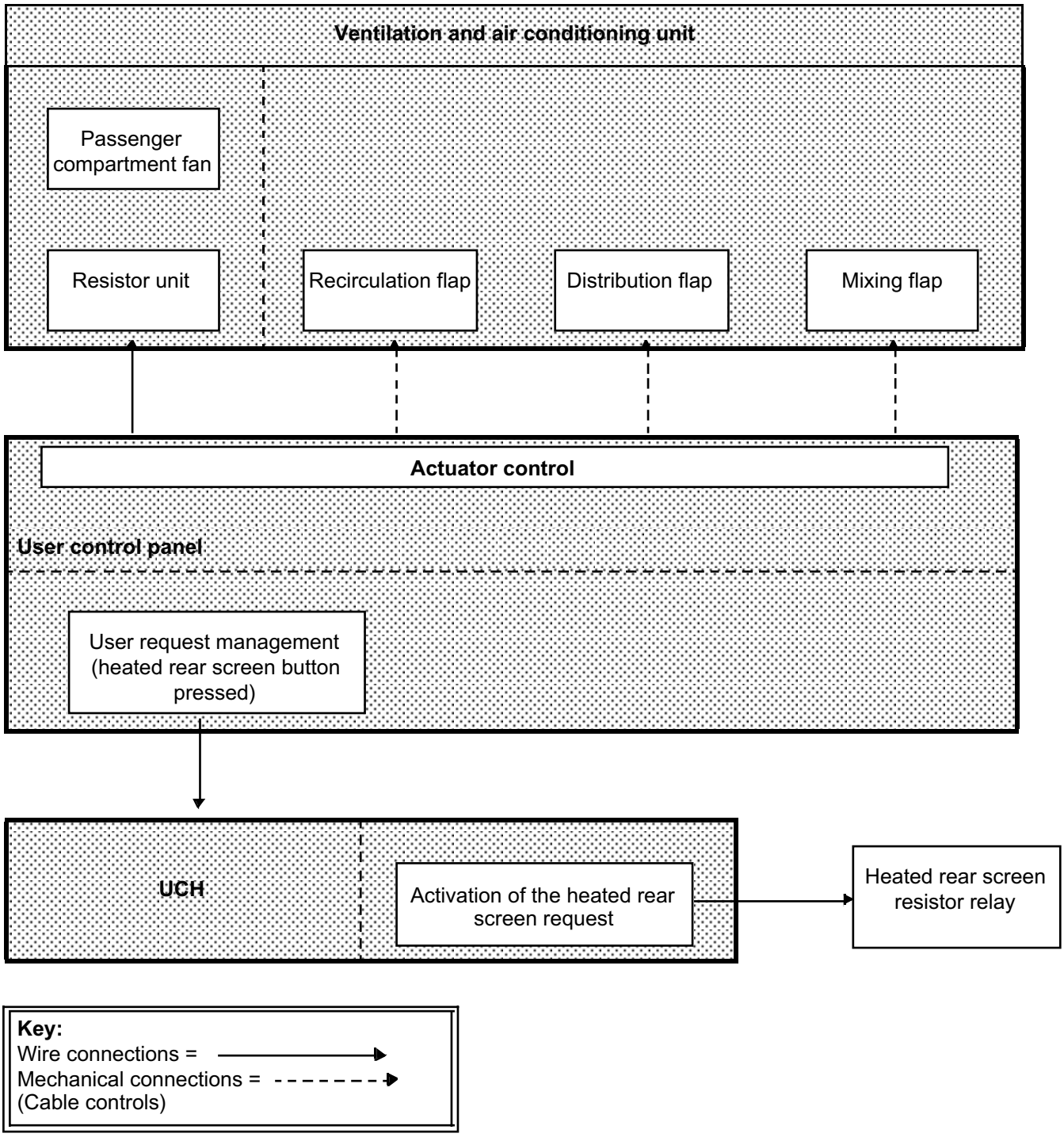
**Summary of components controlled or managed by the MANUAL AIR CONDITIONING control panel:**




**Key:**
Wire connections = ——→
Mechanical connections = - - - - - - - →
(Cable controls)

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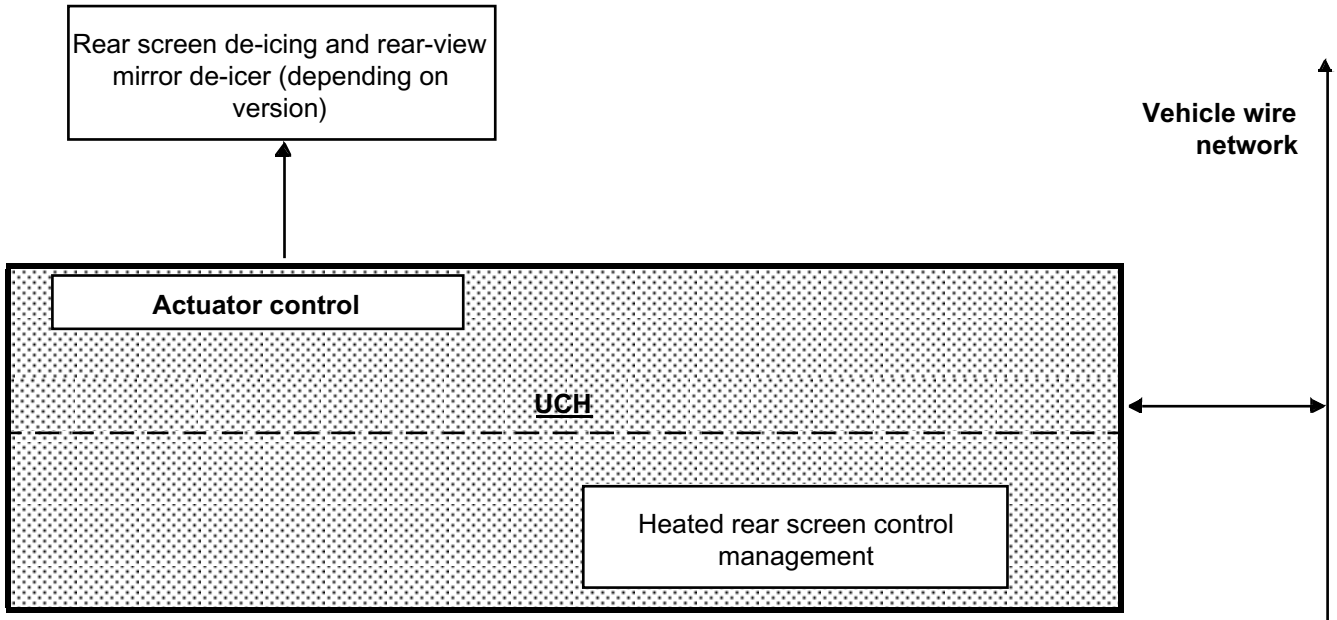
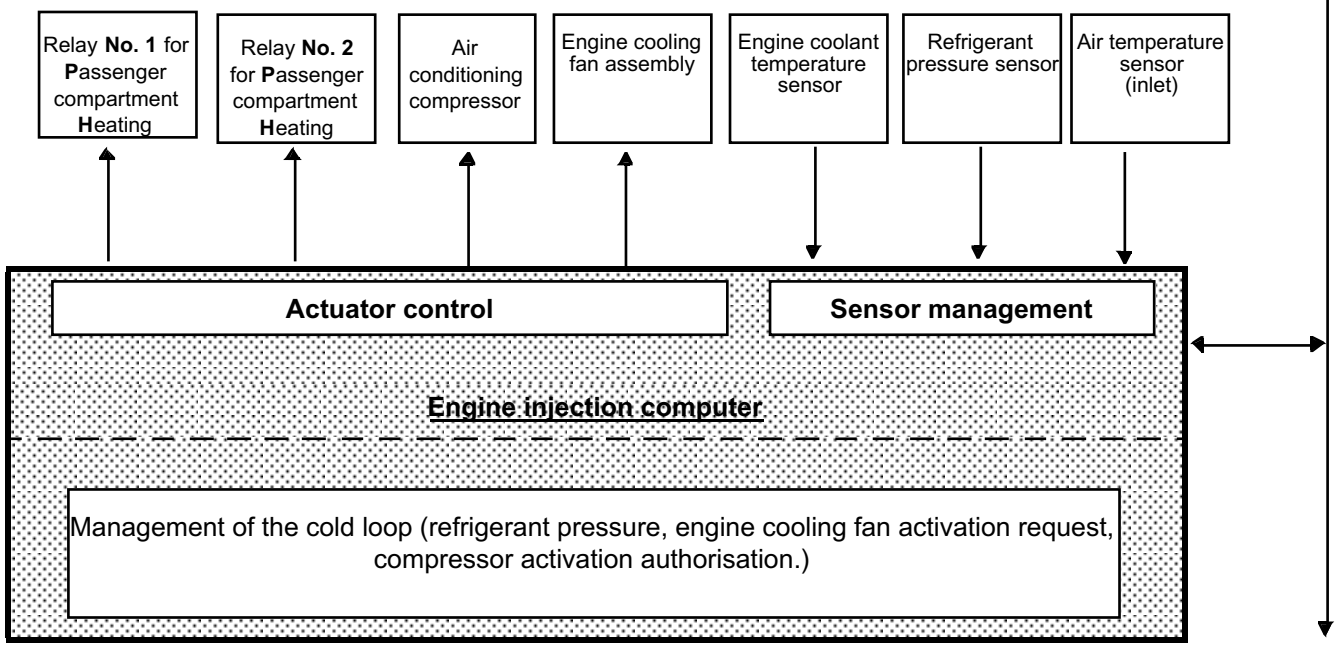
**Summary diagram of components controlled or managed by the UCH:**




**Summary diagram of components controlled or managed by the injection computer:**




**Key:**
Wire connections = ——→

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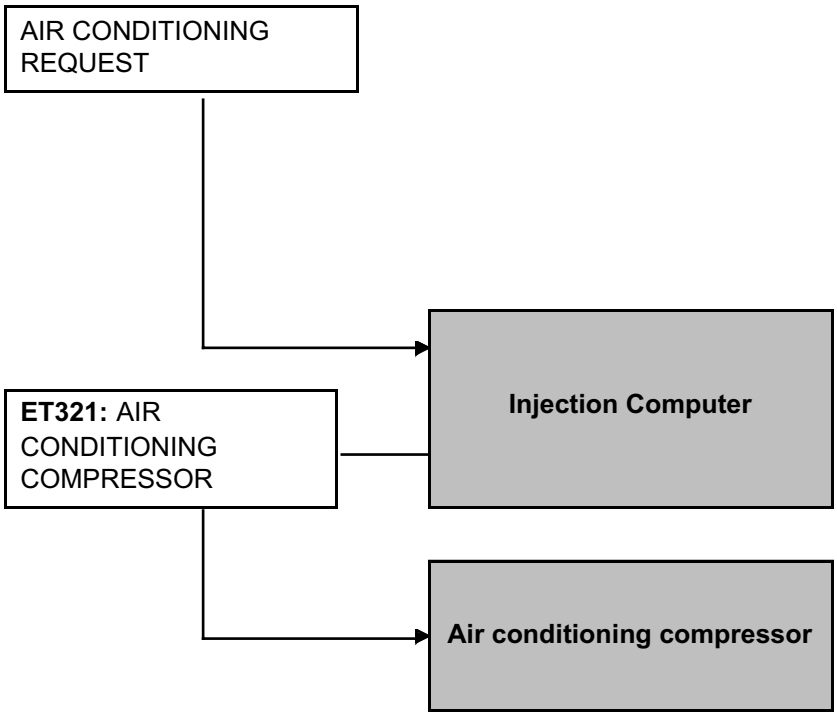
**Compressor control flowchart:**




**Key:**

**: Wire connections**

**Special notes:**
This flowchart shows the tracks of the compressor engagement request.

If the compressor does not engage (one of the requests is not transmitted): carry out a conformity check.

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions:** Engine stopped, ignition on, **AIR CONDITIONING SWITCHED OFF** (Passenger compartment blower unit switched off and air conditioning compressor not activated).<br>**Note:**<br>Read the parameters when the vehicle is cold (in the morning) to check the conformity of the temperature parameters (without thermometer). The two temperatures should be approximately equal (interior, exterior and engine coolant). |

**SUB-FUNCTION: COLD LOOP**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| **UCH** | **ET091:** Engine running | **NO** | In the event of a fault, refer to the **interpretation of this status**. |
| **Injection** | **ET321:** Air conditioning compressor | **INACTIVE** | If the status displays **ACTIVE**, refer to the **interpretation of this status**. |
| | **PR037:** Refrigerant pressure | **1 bar < X < 15 bar** | If there is a fault, refer to the **interpretation of this parameter.** |
| | **PR055** or **PR145:** Engine speed (depending on version) | **0 rpm** | If there is a fault, refer to the **interpretation of this parameter.** |
| | **PR064:** Coolant temperature | **X = coolant temperature of the engine** | If there is a fault, refer to the **interpretation of this parameter.** |
| | **PR089** or **PT155:** Vehicle speed (depending on version) | **0 mph** | If there is a fault, refer to the **interpretation of this parameter.** |

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions:** Engine stopped, ignition on, **AIR CONDITIONING SWITCHED OFF** (Passenger compartment blower unit switched off and air conditioning compressor not activated).<br>**Note:**<br>Read the parameters when the vehicle is cold (in the morning) to check the conformity of the temperature parameters (without thermometer). The two temperatures should be approximately equal (interior, exterior and engine coolant). |

**SUB-FUNCTION: COLD LOOP (CONTINUED)**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| **Injection** | **PR125:** Power absorbed by the AC* compressor | **0 W (ambient tº = 23ºC)** | If there is a fault, refer to the **interpretation of this parameter.** |
| | **ET298:** Low-speed fan assembly | **INACTIVE** | In the event of a fault, refer to **the interpretation of this status**. |
| | **ET299:** High-speed fan assembly | **INACTIVE** | In the event of a fault, refer to **the interpretation of this status**. |
| | **ET018:** Air conditioning request | **INACTIVE / NO** | In the event of a fault, refer to **the interpretation of this status**. |

*AC: Air conditioning

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions:** Engine stopped, ignition on, **AIR CONDITIONING SWITCHED OFF** (Passenger compartment blower unit switched off and air conditioning compressor not activated). |

**SUB-FUNCTION: HEATING**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| **UCH** | **PR001:** Battery voltage | **10.5 V < X < 14.4 V** | If there is a fault, refer to the **interpretation of this parameter** If the fault is still present, carry out a check of the charging circuit. |
| | **ET004:** +12 V after ignition | **PRESENT** | If there is a fault, see **the interpretation of this parameter** |
| **Injection** | **PR064:** Coolant temperature | **X = engine coolant temperature** | If there is a fault, see **the interpretation of this parameter** |
| | **ET111:** RCH number set | **NO**<br>**Note: Depending on the requirements of the injection system (power requirement, torque reduction, etc.), the injection computer sets the controlled passenger compartment heating resistor stage number (no more, no less)** | In the event of a fault, refer to **the interpretation of this status**. |
| | **ET112:** Passenger compartment heating resistor cut-off | **YES** | In the event of a fault, refer to **the interpretation of this status**. |

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions:** Engine stopped, ignition on, **AIR CONDITIONING SWITCHED OFF** (Passenger compartment blower unit switched off and air conditioning compressor not activated). |

**SUB-FUNCTION: USER SELECTION**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| **UCH** | **ET547:** Rear de-icing button | **PRESSED / RELEASED** | In the event of a fault, refer to **the interpretation of this status**. |

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| NOTES | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions: Engine at idle speed, AIR CONDITIONING OPERATING** (air conditioning compressor engaged). |
|---|---|

**SUB-FUNCTION: COLD LOOP**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| **UCH** | **ET091: Engine running** | **YES** | In the event of a fault, refer to **the interpretation of this status**. |
| **Injection** | **ET321: Air conditioning compressor** | **ACTIVE** | If the status displays **INACTIVE**, refer to the **interpretation of this status**. |
| | **PR037: Refrigerant pressure** | **1 bar < X < 27 bar** | If there is a fault, see **the interpretation of this parameter** |
| | **PR055 or PR145: Engine speed (depending on version)** | **750 rpm < X < 850 rpm** | If there is a fault, see **the interpretation of this parameter** |
| | **PR064: Coolant temperature** | **X = engine coolant temperature** | If there is a fault, see **the interpretation of this parameter** |
| | **PR089 or PR155: Vehicle speed (depending on version)** | **0 mph** | If there is a fault, see **the interpretation of this parameter** |
| | **PR125: Power absorbed by the AC* compressor** | **300 W < X < 5000 W (ambient temperature 23 ºC)** | If there is a fault, see **the interpretation of this parameter** |

*AC: Air conditioning

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions: Engine at idle speed, AIR CONDITIONING OPERATING** (air conditioning compressor engaged). |

**SUB-FUNCTION: COLD LOOP (CONTINUED)**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| Injection | **ET298: Low-speed fan assembly** | **ACTIVE if the refrigerant pressure is less than 19 bar, INACTIVE otherwise.** | In the event of a fault, refer to **the interpretation of this status**. |
| | **ET299: High-speed fan assembly** | **ACTIVE if the refrigerant pressure is more than 19 bar, INACTIVE otherwise.** | In the event of a fault, refer to **the interpretation of this status**. |
| | **ET018: Air conditioning request** | **ACTIVE / YES** | In the event of a fault, refer to **the interpretation of this status**. |

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions: Engine at idle speed, AIR CONDITIONING OPERATING** (air conditioning compressor engaged). |

**SUB-FUNCTION: HEATING**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| **UCH** | **PR001:** Battery voltage | **12.5 V < X < 14.4 V** | If there is a fault, refer to the **interpretation of this parameter** If the fault is still present, carry out a check of the charging circuit. |
| | **ET004**: +12 V after ignition | **PRESENT** | In the event of a fault, refer to **the interpretation of this status**. |
| **Injection** | **PR064:** Coolant temperature | **X = engine coolant temperature** | If there is a fault, see **the interpretation of this parameter** |
| | **ET111:** RCH number set | **YES or NO**<br>**Note: Depending on the requirements of the injection system (power requirement, torque reduction, etc.), the injection computer sets the controlled passenger compartment heating resistor stage number (no more, no less)** | In the event of a fault, refer to **the interpretation of this status**. |

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions: Engine at idle speed, AIR CONDITIONING OPERATING** (air conditioning compressor engaged). |

**SUB-FUNCTION: HEATING (CONTINUED)**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| **Injection** | **ET112:** Passenger compartment heating resistor cut-off | **YES or NO**<br>**Note: Depending on the requirements of the injection system (power requirement, torque reduction, etc.), the injection computer sets the controlled passenger compartment heating resistor stage number (no more, no less)** | In the event of a fault, refer to **the interpretation of this status**. |

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>**Application conditions: Engine at idle speed, AIR CONDITIONING OPERATING** (air conditioning compressor engaged). |

**SUB-FUNCTION: USER SELECTION**

| Computer | Parameter or Status Checked or Action | Display and notes | Fault finding |
|---|---|---|---|
| **UCH** | **ET547:** Rear de-icing button | **PRESSED / RELEASED** | In the event of a fault, refer to the **interpretation of this status**. |

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**SUMMARY TABLE OF THE VARIOUS AIR CONDITIONING COMPUTER COMMANDS**

| NAME OF SUB-FUNCTION | COMPUTER NAME | TITLE OF COMMAND | FAULT FINDING |
|---|---|---|---|
| COLD LOOP | Injection | **AC180: Air conditioning compressor relay control or AC070 Air conditioning compressor or AC003 Air conditioning compressor (depending on version)** | In the event of a fault, consult **the interpretation of this command**. |
| | | **AC039 High speed fan assembly relay or AC625 High speed fan assembly (depending on version)** | In the event of a fault, consult **the interpretation of this command**. |
| | | **AC038 Low speed fan assembly relay or AC626 Low speed fan assembly (depending on version)** | In the event of a fault, consult **the interpretation of this command**. |
| HEATING | Injection | **AC250 Heating resistor relay 1** | In the event of a fault, consult **the interpretation of this command**. |
| | | **AC251 Heating resistor relay 2** | In the event of a fault, consult **the interpretation of this command**. |

Fault finding procedures for the commands listed in this summary are explained in the Workshop Repair Manuals relating to the computer which generates the signal (see **Introduction**).

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## Fault finding – Customer complaints

| *NOTES* | **Special notes:**<br>This section corresponds to the list of possible customer complaints. |
|---|---|

**AIR DISTRIBUTION PROBLEM**

| | |
|---|---|
| AIR DISTRIBUTION PROBLEM | ALP 2 |
| AIR FLOW FAULT | ALP 3 |
| INEFFICIENT WINDSCREEN DEMISTING | ALP 4 |
| NO PASSENGER COMPARTMENT VENTILATION | ALP 5 |

**HEATING FAULT**

| | |
|---|---|
| NO HEATING OR LOSS OF HEATING (section 61A) | ALP 6 |
| TOO MUCH HEATING (section 61A) | ALP 7 |

**AIR CONDITIONING FAULT**

| | |
|---|---|
| NO COLD AIR | ALP 8 |
| TOO MUCH COLD AIR | ALP 9 |
| INEFFICIENT REAR SCREEN DE-ICING/DEMISTING | ALP 10 |

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**PASSENGER COMPARTMENT ODOURS**

- UNPLEASANT ODOURS IN PASSENGER COMPARTMENT → ALP 11

**WATER IN PASSENGER COMPARTMENT**

- WATER IS PRESENT IN PASSENGER COMPARTMENT → ALP 12

**CONTROL PANEL FAULT**

- NO CONTROL PANEL LIGHTING → ALP 13

**COMPRESSOR NOISES**

- COMPRESSOR NOISES → ALP 14

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| ALP 2 | Air distribution fault |
|---|---|

| *NOTES* | Make sure that **the air circuit** (**cabin filter**, scuttle panel grille, air ducts etc.) is not blocked. |
|---|---|

Check that **the air circuit** (**cabin filter**, scuttle panel grille, air vents and extractors etc.) is not blocked.
Ensure that the passenger compartment fan blades are in good condition.
Repair, clean or change the cabin filter if necessary.

Ensure that the blower unit is properly **sealed**.
Repair if necessary.

↓

Set the passenger compartment blower to maximum speed with maximum hot or maximum cold and move the air distribution control.
Check that the air outlet is the one selected.

**Is the air distribution correct?**

YES → The air distribution is operating correctly.
Explain to the customer how the system operates.

NO ↓

(A)

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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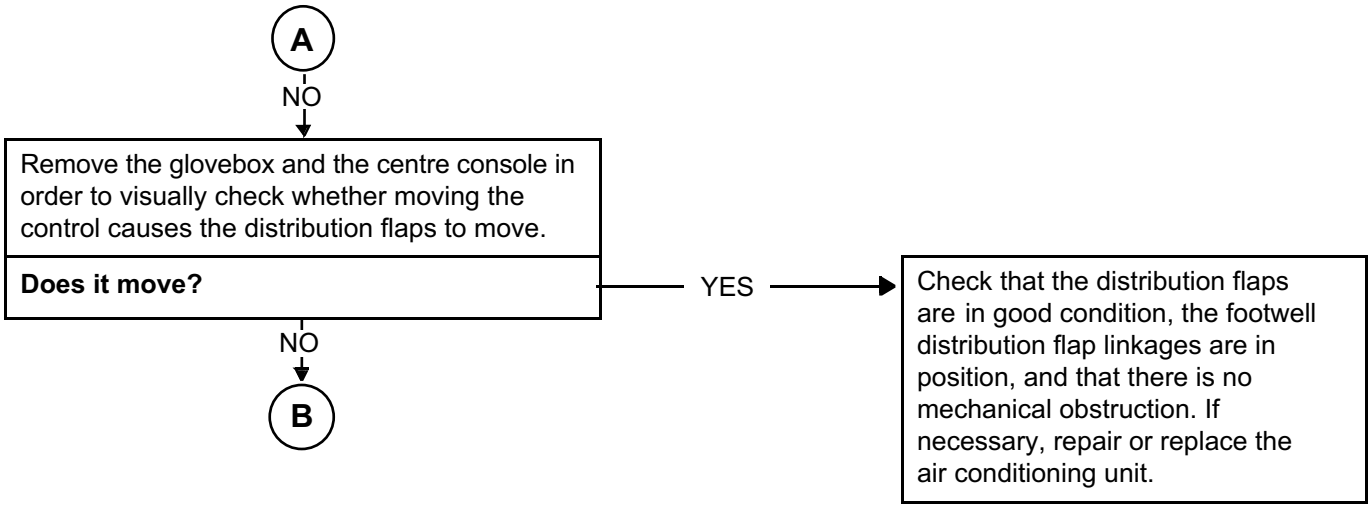
| ALP 2<br>CONTINUED 1 | |
|---|---|




| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **ALP 2 CONTINUED 2** | |

B

Check that the cable routing is clean and that the cables are in good condition.
Repair if necessary.

Make sure that the controls are in good condition and that they move the cables correctly.
Repair if necessary.

**End of fault finding.**

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |

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| ALP 3 | Air flow fault |
|---|---|

| *NOTES* | Only refer to this customer complaint after a **complete check using the diagnostic tool**<br>Check that the customer knows how to work the air conditioning system properly. |
|---|---|

Does the passenger compartment fan **operate**? Check all of the speeds: Does the flow vary in accordance with the position of the speed switch?

NO → Repair, see **ALP 5**.

YES ↓

Make sure that **the air circuit** (**cabin filter**, scuttle panel grille, air ducts etc.) is not blocked.
Ensure that the passenger compartment fan blades are in good condition.
Clean or replace the cabin filter.

↓

With the cabim filter removed, put your hand into the housing to ensure that the evaporator is not obstructed and that there is no ice.

**Is the evaporator obstructed?**

YES → Remove the evaporator and clean if it is blocked. If there is ice on the evaporator, carry out a **conformity check** on the temperature sensors (exterior and coolant). Replace any faulty components.

NO ↓

(A)

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 3 CONTINUED | |
|---|---|

A

NO

Ensure that the blower unit is properly **sealed**. Also check that the air distribution ducts (right-hand and left-hand, upper and lower) are correctly connected to the housing as well as the refrigeration pipe in the glove box (if the customer complains about a feeling of cold air on the passenger's side).
Repair if necessary.

Check that the air recirculation flap does not remain closed when in the recirculation position.
Repair if necessary.

Does the fault disappear when the **air distribution** is changed?

YES → Ensure that all the air vents are open.
If the fault persists, refer to **ALP 2**.

NO

See **ALP 5**.

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 4 | Inefficient windscreen demisting |
|---|---|

| *NOTES* | **Special notes:**<br>Check that the inside of the windows are not greasy, as this reduces the demisting efficiency. |
|---|---|

Is the passenger compartment fan **working**?

NO → Repair, see **ALP 5**.

YES ↓

Check that the air extraction vents are not blocked.
Repair if necessary.

Is the fault still present?

NO → **End of fault finding procedure.**

YES ↓

Ensure that there are no **water leaks** into the passenger compartment, which would significantly increase the humidity and reduce the effectiveness of the demisting.
Repair if necessary (see **ALP 12**).

Is the fault still present?

NO → **End of fault finding procedure.**

YES ↓

Make sure that the compressor is working correctly by switching on the air conditioning.

Does the compressor work?

NO → See **ALP 8 No cold air**.

YES ↓

(A)

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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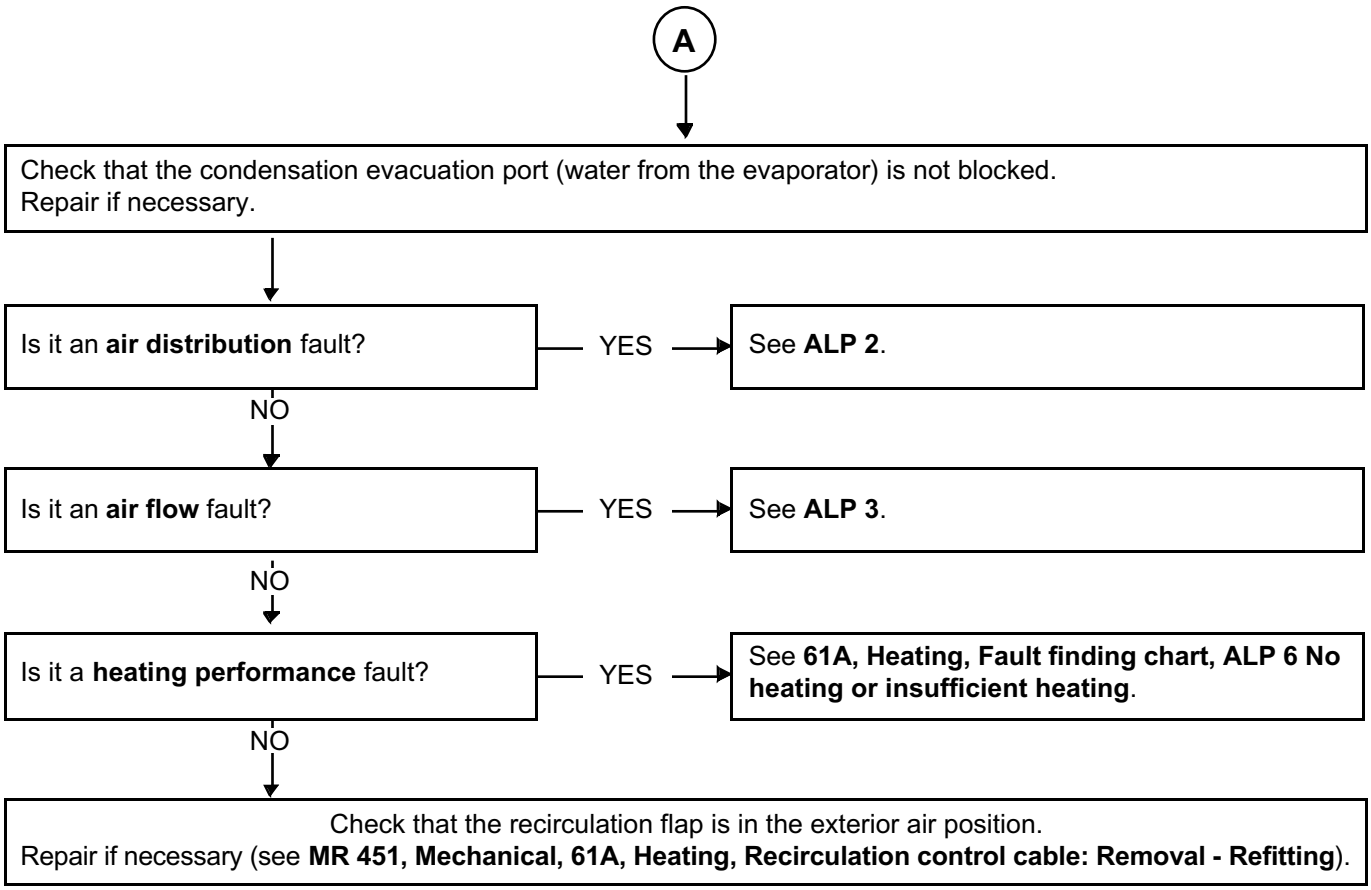
| ALP 4 CONTINUED | |
|---|---|




| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 5 | No passenger compartment ventilation |
|---|---|

| *NOTES* | Check that fuses **F39** and **F36** are in good condition. |
|---|---|

Check that the **air circuit (cabin filter, scuttle panel grille, air ducts, etc.)** is not blocked.

Is the air circuit in good condition?

NO

If necessary, repair, clean or replace the cabin filter (see **MR 451 Mechanical, 61A, Heating, Cabin filter: Removal - Refitting**).

YES

Check the condition of the passenger compartment blower blades

Are the passenger compartment blower blades in good condition?

YES

Check that the air recirculation flap does not remain closed when in the recirculation position. Repair if necessary.

Ensure that all the air vents are open. Repair if necessary.

A

NO

If necessary, repair, clean or replace the passenger compartment blower blades (see **MR 451 Mechanical, 61A, Heating, Fan assembly: Removal - Refitting**).

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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**ALP 5 CONTINUED 1**

(A)

Is the fault still present? — NO → **END OF FAULT FINDING**

YES

Check fuses **F36** and **F39** of component **1016**. Are the checks correct? — NO → Replace the faulty fuse.

YES

Using a multimeter in the voltmeter position, check for **+12 V** on connection **SP3** and **BP1** of component **233** and earth **MAM** of component **233**.

Are the checks correct?

YES → (B)

NO

Check for earth on connection **MAM** of component **233**.

Is the result of the check correct? — NO → Repair the wiring. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES → (H)

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |

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**ALP 5 CONTINUED 2**

B

Check for **+12 V** on connection **S1** of component **319**. Is the result of the check correct?

NO → Carry out a continuity test on connection **S1** between components **233** and **319**. Is the result of the check correct?

NO → Repair the wiring. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES → Replace the cold air blowing device relay (component code **233**).

YES

Make sure that the control panel speed selection button works properly.
Position the speed selection button on speed 1 and carry out a continuity test between connection **S1** and connection **38AH** of component **319**.
Position the speed selection button on speed 2 and carry out a continuity test between connection **S1** and connection **38AJ** of component **319**.
Position the speed selection button on speed 3 and carry out a continuity test between connection **S1** and connection **38AK** of component **319**.
Position the speed selection button on speed 4 and carry out a continuity test between connection **S1** and connection **38AL** of component **319**.
Position the speed selection button on speed 4 and carry out a continuity test between connection **S1** and connection **38DB** of component **319**.

Are the checks correct?

YES → C

NO → Replace the air conditioning control panel.

| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 5 CONTINUED 3 | |
|---|---|

C

Carry out a continuity test on connection **38AH** between components **319** and **164**.

Is the continuity correct?

YES

Carry out a continuity test on connection **38AJ** between components **319** and **164**.

Is the continuity correct?

YES

Carry out a continuity test on connection **38AK** between components **319** and **164**.

Is the continuity correct?

YES

D

NO

Fault on connection **38AH** between components **319** and **164**. Repair the wiring.
If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

NO

Fault on connection **38AJ** between components **319** and **164.** Repair the wiring. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

NO

E

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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**ALP 5 CONTINUED 4**

D

Carry out a continuity test on connection **38AK** between components **319** and **164**.

Is the continuity correct?

YES

Carry out a continuity test on connection **38DB** between components **319** and **164.**

Is the continuity correct?

YES

F

E

Fault on connection **38AK** between components **319** and **164**. Repair the wiring. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

NO

Fault on connection **38AL** between components **319** and **164**. Repair the wiring. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

NO

G

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |

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| ALP 5<br>CONTINUED 5 | |
|---|---|

(F)

YES

Check for earth on connection **MAN** of component **164** (fan assembly).
Is the result of the check correct?

NO ▸ Repair the wiring. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

Replace fan assembly 1 (see **MR 451 Mechanical, 61A, Heating, Passenger compartment fan assembly control unit: Removal - Refitting**).

(G)

NO

Fault on connection **38DB** between components **319** and **164**. Repair the wiring. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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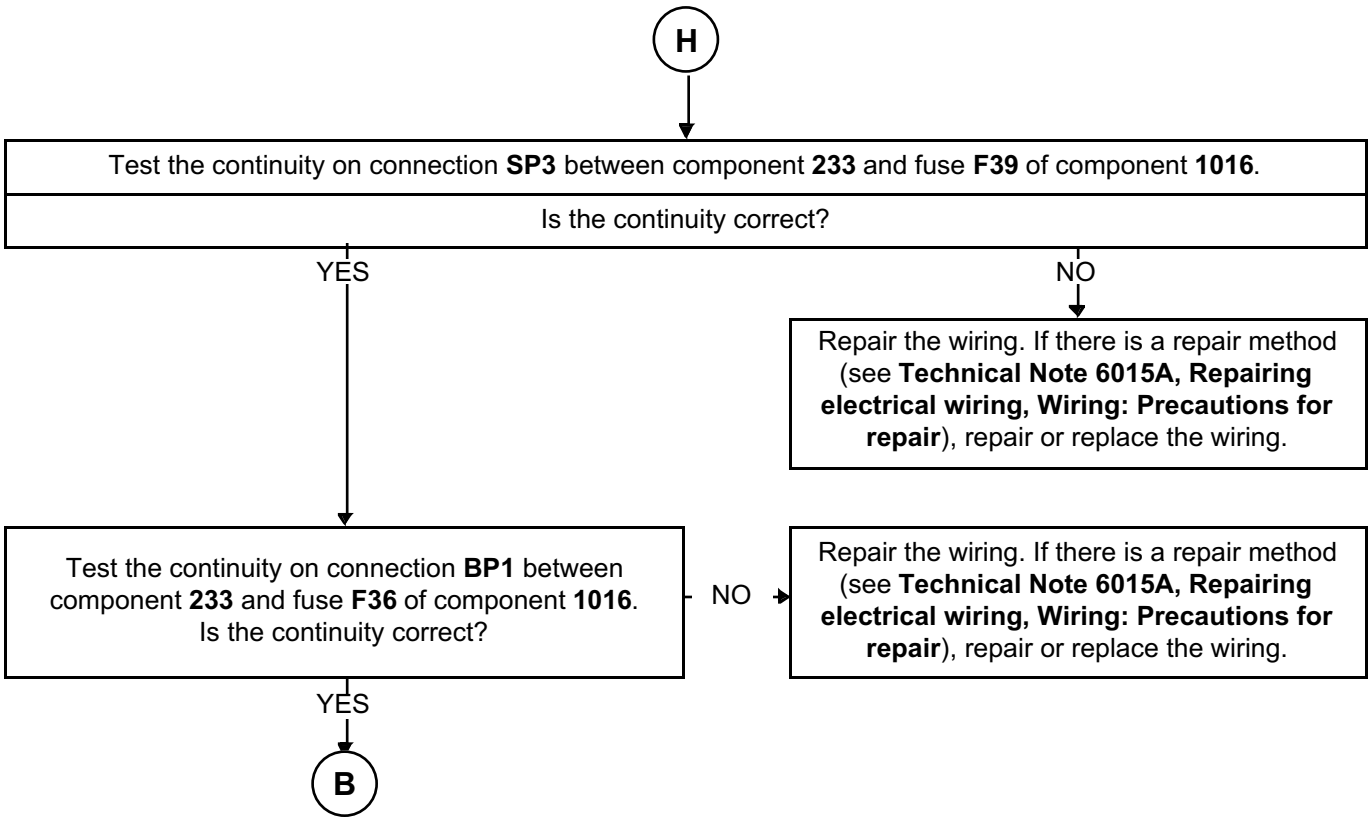
| ALP 5<br>CONTINUED 6 | |
|---|---|




| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 8 | No cold air |
|---|---|

| *NOTES* | Consult this customer complaint after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>Check that the engine speed is greater than **750 rpm** and that the exterior temperature is above **3°C**.<br>Check that the fuses are in good condition.<br>Use a multimeter and a **21 W** test light.<br>Use the **Technical Note Wiring Diagram for DUSTER**. |
|---|---|

Engine running, air conditioning in maximum cold position, maximum ventilation speed. After **10 minutes**, are the high pressure outlet pipes of the compressor hot, whereas the low pressure outlet pipes of the evaporator are cold and covered in frost?

YES → (2)

NO ↓

Check the cleanliness of the condenser. Touch the pipes: are they warmer at the inlet than the outlet?

NO → Replace the condenser (see **MR 451 Mechanical, 62A, Air conditioning, Condenser: Removal - Refitting**).

YES ↓

Is the dehydrator reservoir pipe hot at the inlet and outlet?

NO → Replace the dehydration canister.

YES ↓

(A)

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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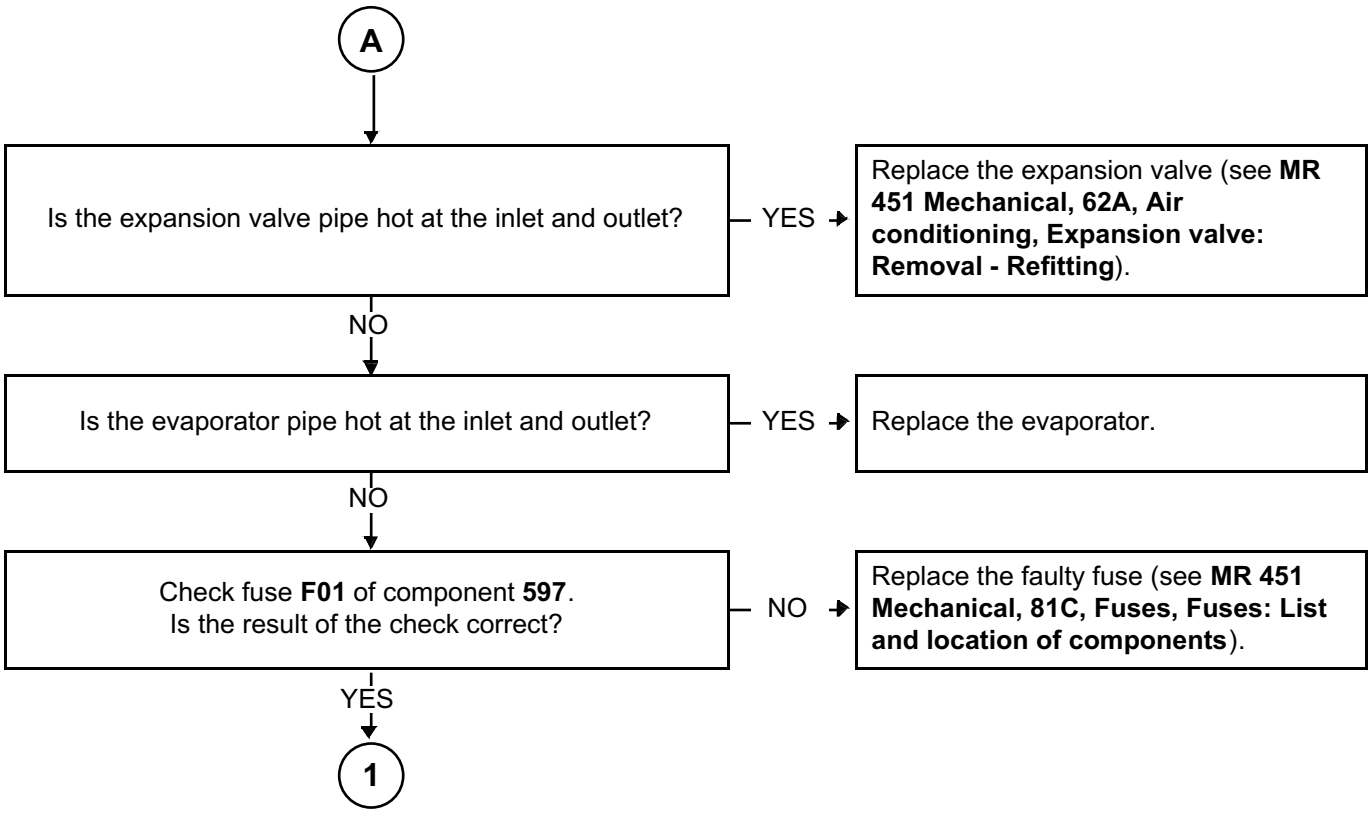
| ALP 8<br>CONTINUED 1 | |
|---|---|




| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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**ALP 8 CONTINUED 2**

1

Using the **diagnostic tool** statuses and parameters screen (**Injection cold loop sub-function**), check that the temperature signals are consistent (no sensor drift resulting in incorrect measurement).

– Using parameter **PR064 Coolant temperature**.

**Are the temperature signals consistent?**

NO →

Carry out **a conformity check**:

– For the coolant temperature sensor, **see 13B, Diesel injection, Fault summary table or 17B Petrol injection, Fault summary table**.

Replace any faulty components.

YES

Start the engine and switch on the air conditioning by pressing the AC button (with a request for maximum cold temperature and the passenger compartment blower running).

On the **Cold loop** sub-function screen, display the following status: **ET018 Air-conditioning request** should be **ACTIVE**.

Note: the status indicates whether the signal for the AC* button pressed on the control panel is read by the injection computer correctly.

Is status **ET018 ACTIVE**?

NO →

Continuity fault on connection **38Z**.
Use an ohmmeter to test the continuity on connection **38Z** between components **319** and **120**. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES

B

* AC: air conditioning

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |

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| ALP 8<br>CONTINUED 3 | |
|---|---|

B

Using the **diagnostic tool** (injection cold loop sub-function screen), display the following statuses:
– **ET321: Air conditioning compressor**

**Is status ET321 ACTIVE?** — YES → D

NO

Carry out **fault finding on the injection system** to ensure that no fault is present (if faults are displayed by the injection computer, engagement of the air conditioning may be inhibited). If there are present or stored faults, **carry out the necessary repairs** (see **13B, Diesel injection or 17B, Petrol injection**).

Check that the **refrigerant pressure** is correct (neither too low nor too high) using parameter **PR037 Refrigerant fluid pressure** (see **Conformity check, Cold loop sub-function**).

C

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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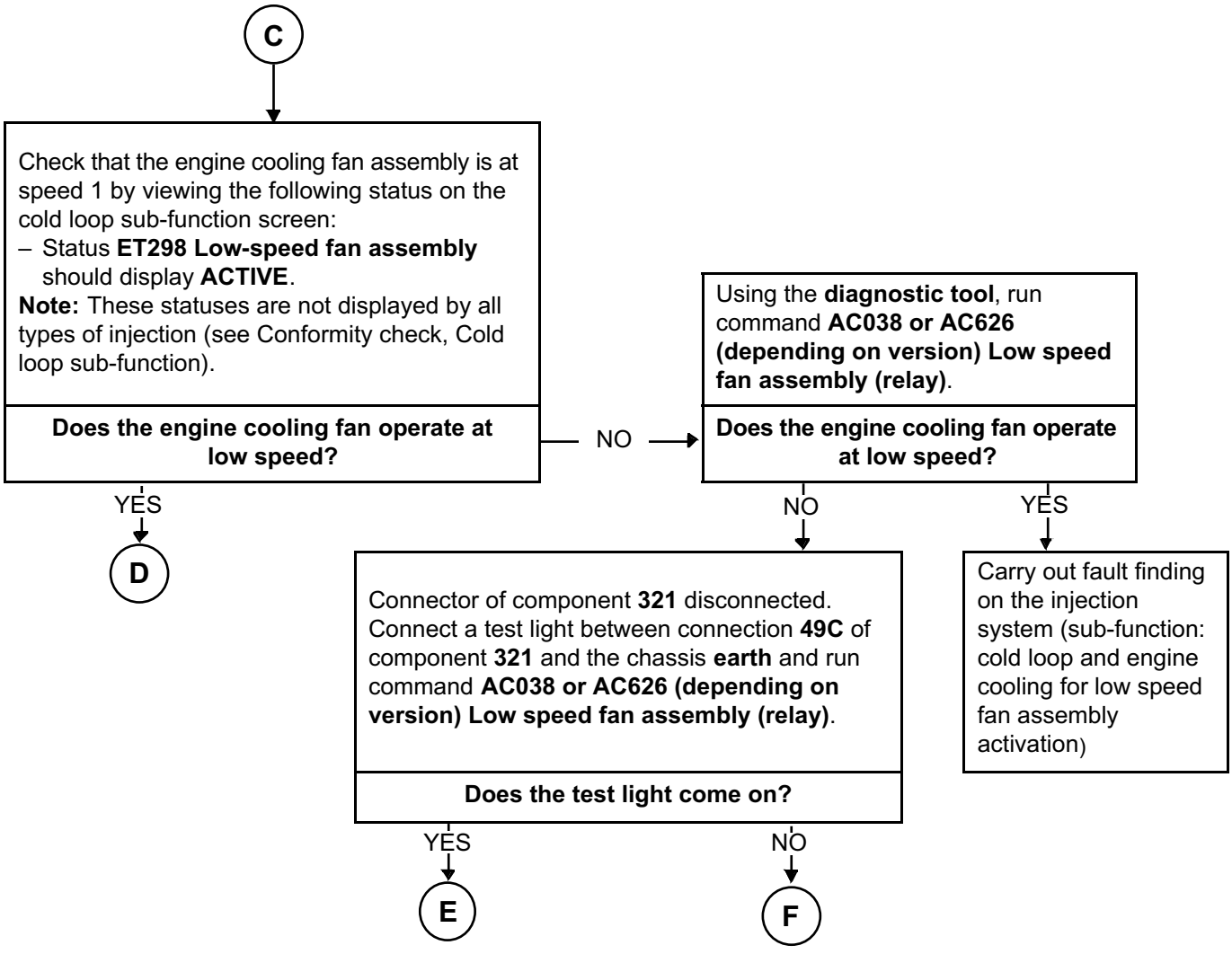
| ALP 8<br>CONTINUED 4 | |
|---|---|




| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 8<br>CONTINUED 5 | |
|---|---|

E

Measure the resistance of component **321** between connections **49C** and **49B** of component **321.** If the measured resistance is infinite, replace the fan assembly resistor (component **321**).

F

Check the continuity of connection **49C** between components **321** and **784**.

**Is the continuity correct?**

NO

Continuity fault on connection **49C**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

Check that the low speed fan assembly relay (component **784**) operates correctly. Replace it if faulty. (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**)

| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 8<br>CONTINUED 6 | |
|---|---|

D

Check the air conditioning compressor **belt tension** (see **Technical Note 3786A, Engine and cylinder block assembly, 10A, Belt tension setting tool Hz measurement: tension values**).

**Is the tension correct?**

NO → **Replace** the belt. (see **MR 451, Mechanical, 11A, Top and front of engine, Accessories belt: Removal - Refitting**).

YES

With the engine stopped, use the diagnostic tool to run command (depending on version) **AC180 Air conditioning compressor relay control, AC003** or **AC070 Air conditioning compressor** (injection command mode menu).

**Does the compressor clutch stick?**

NO → Connect a test light between **connections 38R** and **compressor earth** (component **171**) and run command (depending on version) **AC180 Air conditioning compressor relay control, AC003 or AC070 Air conditioning compressor**.

**Does the test bulb illuminate?**

YES → Check the condition of the diode (component **597**). Replace the diode if it is faulty.

G

NO → F

YES → E

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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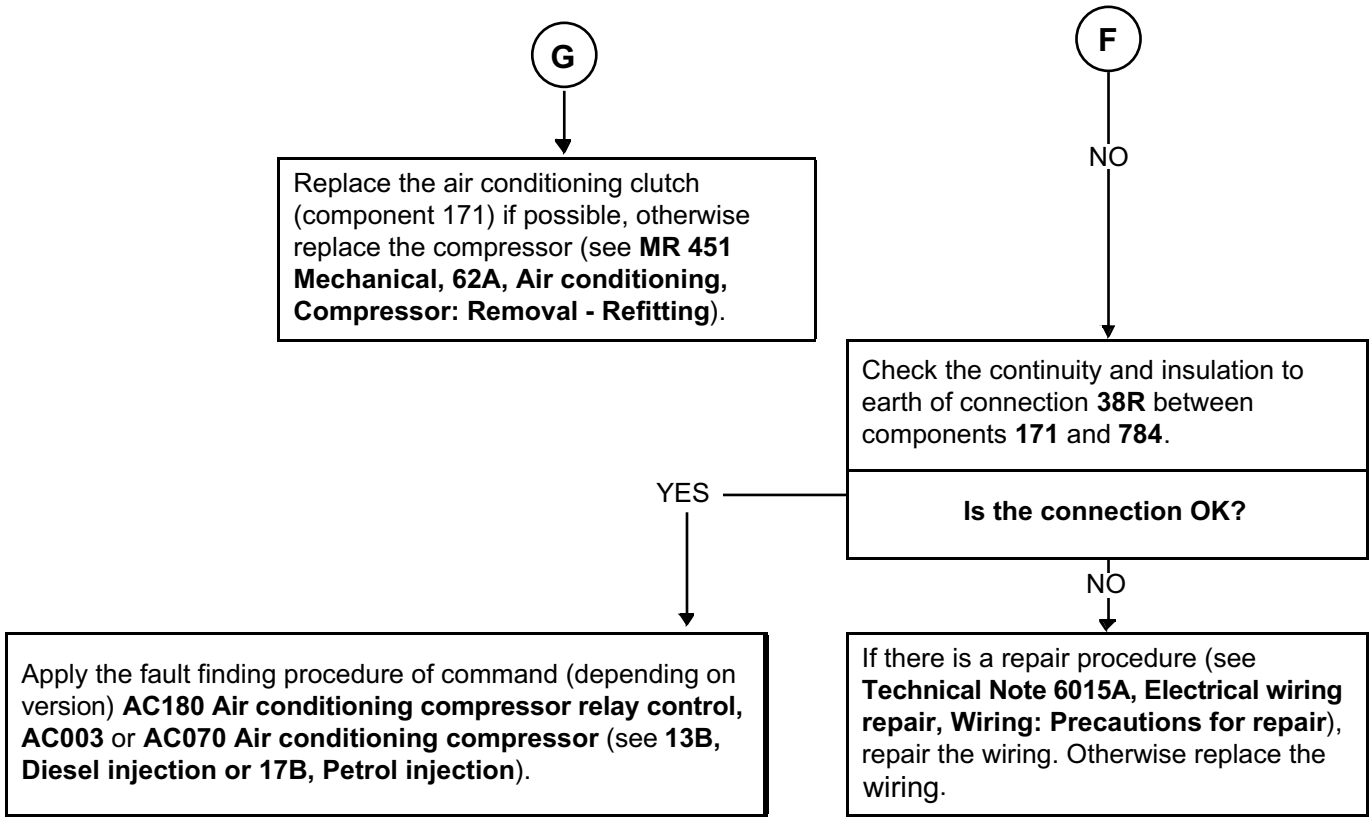
| ALP 8<br>CONTINUED 7 | |
|---|---|




| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |
|---|---|

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**ALP 8**
**CONTINUED 8**

E

2

With the engine warm and the passenger compartment ventilation operating, vary the position of the **mixing flap** from the maximum hot position to the maximum cold position and check subjectively that there is a difference in temperature.

**Is a difference in temperature noted?**

NO

Check the condition and routing of the mixing flap control cable. Eliminate any constraints on it: kinks, cable restricted by plastic clips, etc.
Replace the lead if necessary. Unclip the cable from the side of the heating/air conditioning unit and check the stiffness of movement of each component: control button and flap control on the air distribution unit. Check that there is no mechanical fault with the mixing flap (flap jammed inside the unit, etc.). Carry out any necessary repairs.

**Is the fault still present?**

NO

**End of fault finding procedure.**

YES

Check the cold loop by checking the condition of the pipes and ensuring that the air conditioning system does not have any refrigerant leaks (see **Technical Note 6001A, Air conditioning, 62A, Air conditioning, Air conditioning: Check**). Repair the faulty pipes or components.

H

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |

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| ALP 8 CONTINUED 9 | |
|---|---|

H

**Top up** the refrigerant (see **MR 451 Mechanical, 62A, Air conditioning, Refrigerant circuit: Draining - Filling**).

**Is the fault still present?**

NO

**End of fault finding procedure.**

YES

**Replace the air conditioning compressor.**

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 9 | Too much cold air |
|---|---|

| *NOTES* | Consult this customer complaint after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).<br>Check that the fuses are in good condition.<br>Use a multimeter and a **21 W** test light.<br>Use the **Technical Note Wiring Diagram for DUSTER**. |
|---|---|

With the engine at idle speed and the air conditioning off (**AC** button not pressed), check that the air conditioning compressor clutch is not engaged.

**Is the air conditioning compressor clutch engaged?**

NO → A

YES ↓

With the engine stopped, check the correct operation of the compressor clutch electric control by using the diagnostic tool to run command (depending on version) **AC180 Air conditioning compressor relay control**, **AC003** or **AC070 Air conditioning compressor**.
– During the command, connection **38R** of component **171** must be supplied with **+ 12 V**.
– After the command, connection **38R** of component **171** must no longer be supplied with **+ 12 V**.

**Is the connection still supplied with + 12V after the command?**

YES ↓

Check the continuity and insulation from **+ 12 V** of connection **38R** between components **171** and **784**.

**Is the connection OK?**

NO ↓ B

YES ↓ C

NO ↓

Check that the air conditioning compressor clutch is not jammed (mechanical fault).

**Is the clutch still engaged?**

YES ↓ D

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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**ALP 9 CONTINUED 1**

B
NO

If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

C
YES

With the vehicle ignition off, check that the compressor clutch relay is not "jammed", by checking the continuity between connection **38R** and connection **BP7** of component **784**.

**Is the continuity present?**

YES → **Replace the air conditioning compressor clutch relay**

NO

Apply the fault finding procedure of command (depending on version) **AC180 Air conditioning compressor relay control, AC003** or **AC070 Air conditioning compressor** (see **13B, Diesel injection or 17B, Petrol injection**).

**Is the fault still present?**

A

D
YES

Replace the air conditioning compressor (see **MR 451, Mechanical, 62A, Air conditioning, Compressor: Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |

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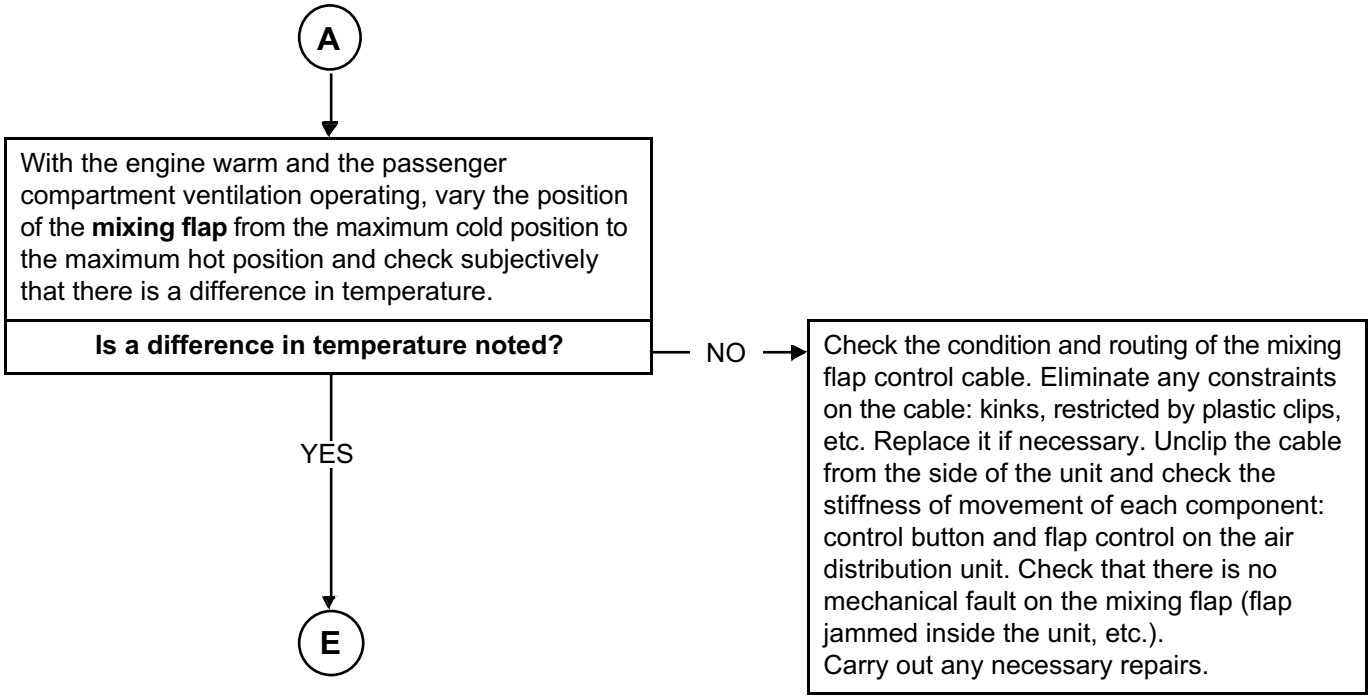
| ALP 9<br>CONTINUED 2 | |
|---|---|




| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 9<br>CONTINUED 3 | |
|---|---|

E

Using the **diagnostic tool** statuses and parameters screen (Injection cold loop sub-function), check that the temperature signals are consistent (no sensor drift resulting in incorrect measurement).

– Using parameter **PR064 Coolant temperature.**

**Are the temperature signals consistent?**

NO →

Carry out **a conformity check**:

– For the coolant temperature sensor, see **13B, Diesel injection, Fault summary table or 17B Petrol injection, Fault summary table**.

Replace any faulty components.

YES ↓

Check the refrigerant level (see **Technical Note 6001A, Air conditioning, 62A, Air conditioning, Air conditioning: Check**).

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 10 | Inefficient rear screen de-icing and demisting |
|---|---|

| | |
|---|---|
| ***NOTES*** | Carry out this conformity check after a **complete check** using the **diagnostic tool** (fault reading, especially UCH and injection faults and configuration checks).<br>Check that the fuses are in good condition.<br>Use a multimeter and a **21 W** test light.<br>Use the **Technical Note Wiring Diagram for DUSTER**. |
| | **Special notes:**<br>Check that the inside of the glass is not **greasy** as this lowers the de-icing efficiency. |
| | **Note:**<br>The de-icing control is only authorised when the engine is running to save power.<br>The heated rear screen is controlled by pressing the heated rear screen button (with time delay and door mirror de-icer if fitted). |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |

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| ALP 10 CONTINUED 1 | |
|---|---|

Ensure that there are no water leaks in the passenger compartment which would significantly increase the moisture and reduce the effectiveness of the demisting function (see **ALP 12** if the fault is noted).

**Is the fault still present?**

NO → **End of fault finding procedure.**

YES ↓

Check fuses **F01** and **F32** of component **1016**.
Are the checks correct?

NO → Replace the faulty fuse.

YES ↓

Check that the UCH receives the signal about the status and operation of the engine. On the **Cold loop sub-function screen**, status **ET091 Engine running** should display **YES**.

**Is status ET091 YES?**

NO → Carry out fault finding on the UCH (interpretation of status **ET091**) and on the wire network.

YES ↓

(A)

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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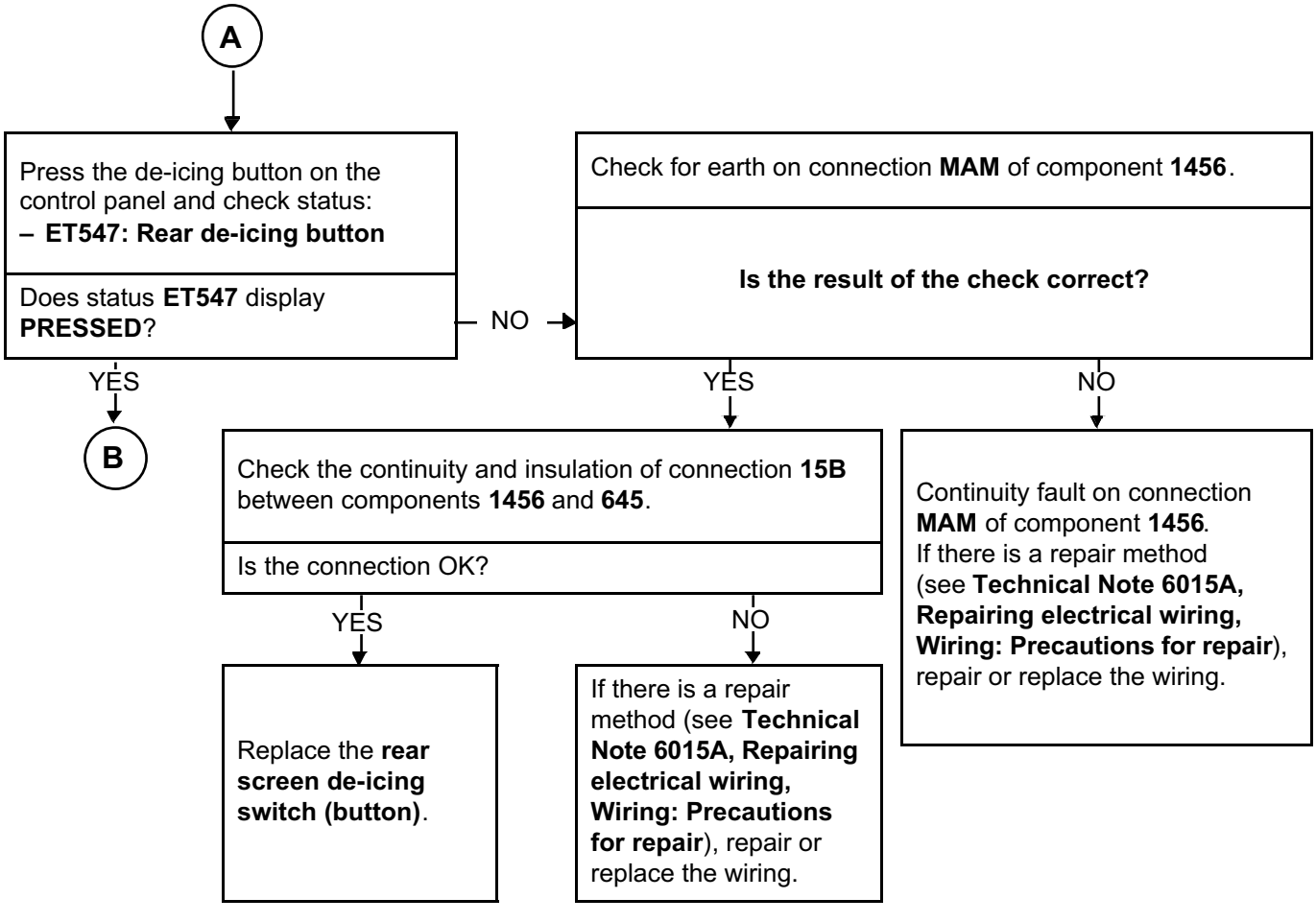
| ALP 10<br>CONTINUED 2 | |
|---|---|




| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 10<br>CONTINUED 3 | |
|---|---|

B

Press the de-icing button on the control panel and check for earth on connection **15M** of component **235**.

Is the result of the check correct?

NO → Continuity fault on connection **15M**. Use an ohmmeter to perform a continuity test on connection **15M** between components **235** and **645**. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES

Connect a test light between connection **AP7** of component **235** and a **chassis earth**.

**Does the test bulb illuminate?**

NO → Continuity fault on connection **AP7**. Use an ohmmeter to test the continuity on connection **AP7** between component **235** and fuse **F01** of component **1016**. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES

Connect a test light between connection **BP15** of component **235** and a **chassis earth**.

**Does the test bulb illuminate?**

NO → Continuity fault on connection **BP15**. Use an ohmmeter to test the continuity on connection **BP15** between component **235** and fuse **F32** of component **1016**. If there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

YES

C

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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**ALP 10 CONTINUED 4**

C

Connect a test light between connection **15LP** of component **200** and a **chassis earth**.

**Does the test bulb illuminate?**

NO → Check the continuity of connection **15LP** between components **235** and **200**.

**Is the connection OK?**

YES → Replace the **heated rear screen relay** (component code **235**).

NO → If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES

Check for earth on connection **MG** of component **200**.

**Is the result of the check correct?**

NO → If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES

Replace the **rear screen**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |

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| ALP 11 | Unpleasant odours in the passenger compartment |
|---|---|

| *NOTES* | **None.** |
|---|---|

Check that the cabin filter is not blocked or damaged.

**Is the fault still present?**

NO → **End of fault finding procedure.**

YES ↓

Check that the condensate drain pipe (water from the evaporator) is not blocked.

**Is the fault still present?**

NO → **End of fault finding procedure.**

YES ↓

(A)

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 11 CONTINUED | |
|---|---|

(A)

YES

Check that the heating unit is completely sealed and there are no leaks into the engine compartment:
- Foam seal on the heater matrix coolant pipes fitted and in good condition.
- Rubber seal on the radiator tank fitted and in good condition (seal under the bonnet separating the engine compartment from the windscreen aperture).
- Drain valve on the radiator tank fitted and in good condition.

Repair if necessary.

**Is the fault still present?**

NO → **End of fault finding procedure.**

YES

Remove the cabin filter to apply air conditioning system cleaner using an extension pipe on the evaporator. Spray the entire contents of the aerosol. Leave the product to work for **15 minutes**.

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 12 | Water is present in the passenger compartment |
|---|---|

| *NOTES* | None. |
|---|---|

Pressurise the cooling circuit.

**Is there any coolant leaking into the vehicle?**

YES → **Repair.**

NO ↓

Check that the condensation evacuation pipe (water from the evaporator) is not blocked. Repair if necessary.

**Is the fault still present?**

NO → **End of fault finding procedure.**

YES ↓

Make sure that the **scuttle panel** (under the windscreen aperture) is not filled with water. If it is, check that the drain valve is fitted to the scuttle panel and is in good condition.
Replace the valve if necessary.

↓

**Has the customer just washed the vehicle?**

NO → **End of fault finding procedure.**

YES ↓

Explain to the customer that when washing the car using a hose pipe, the water jet must not be left for too long on the air inlet in the scuttle panel (on the bonnet).

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 13 | No lighting on the control panel in night mode |
|---|---|

| *NOTES* | Check fuse **F19** or **F18** (depending on model: **F19** for **left-hand drive** and **F18** for **right-hand drive**) of component **1016**. |
|---|---|

Check fuse **F19** (**left-hand drive**) or **F18** (**right-hand drive**) of component **1016**. Is the test correct?

NO → Replace the faulty fuse.

YES

Using a test light, check for **+12 V** between connection **LPD** or **LPG** (depending on model) and connection **NC** of component **319**.

Does the test bulb illuminate?

YES

Check the condition of the air conditioning control panel bulbs.

B

A

NO

Perform a continuity test on connection **LPD** (or **LPG**) between component **319** and **F19** (**left-hand drive**) or **F18** (**right-hand drive**) of component **1016**.

C

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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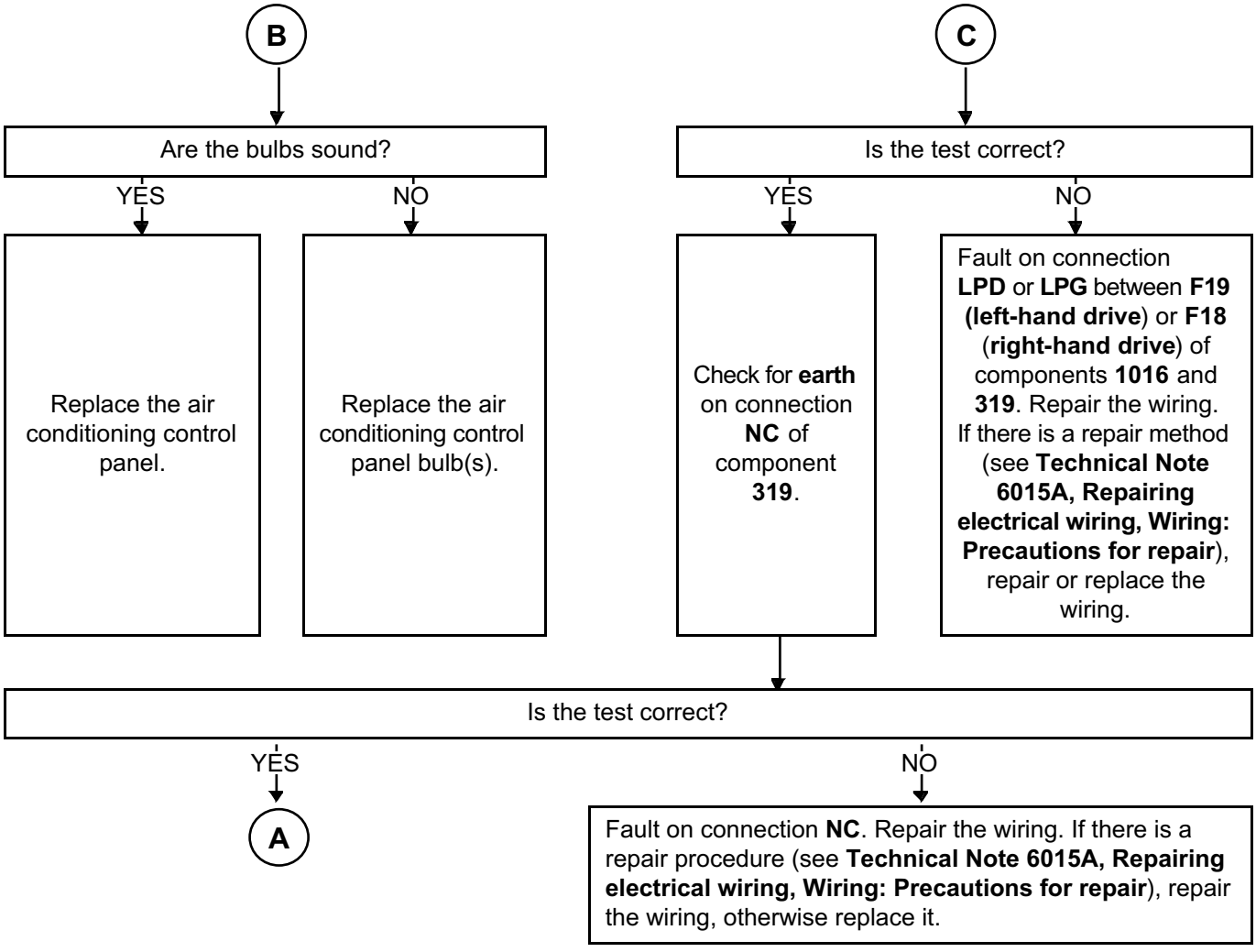
**ALP 13 CONTINUED**




| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |

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| ALP 14 | Compressor noise |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with the **diagnostic tool**. |
|---|---|
| | **Note:**<br>Before starting any work, check that the noise is indeed coming from the compressor. |

Check that the **compressor belt is in good condition** and **check its tension** (for engines without automatic tensioning) (see **MR 451, Mechanical, 11A**, **Top and front of engine, Accessories belt: Removal - Refitting**).

↓

Check that the compressor is **correctly attached** (see **MR 451, Mechanical, 62A, Air conditioning, Compressor: Removal - Refitting**).

↓

Check the refrigerant fluid and look for any leaks. Significant loss of fluid causes the compressor to make noises. (see **Technical Note 6001A, Air conditioning, 62A, Air conditioning, Air conditioning: Check**).

↓

If the fault is still present, **replace** the air conditioning compressor (see **MR 451, Mechanical, 62A, Air conditioning, Compressor: Removal - Refitting**).

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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# 8 Electrical equipment

## 80A BATTERY


| | |
|---|---|
| Battery – Specifications | 80A - 2 |
| Battery – Advice | 80A - 3 |
| Battery – Check | 80A - 4 |
| Battery – Test | 80A - 6 |




"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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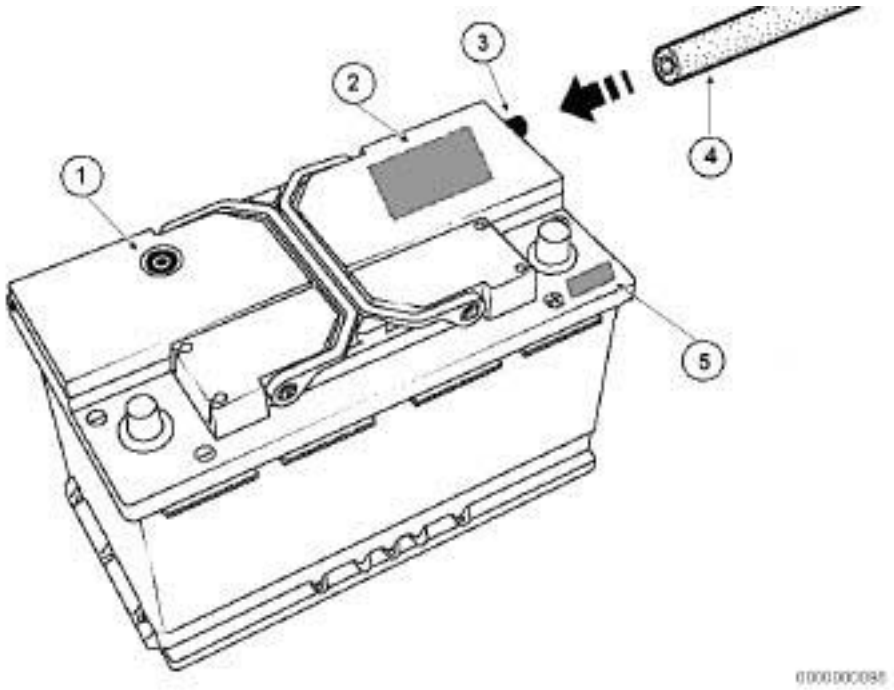
## Battery – Specifications

**Battery specifications:**
Always replace a battery with one that has the same electrical and dimensional specifications.




**Visual inspection of the battery**
Make sure there are no cracks or breakages, traces of acid, or creepage (sulphation) on the terminals. If any of the above are present, replace the battery and clean the surrounding area.
Check that the degassing pipe is properly connected to the battery vent.

Check that the degassing pipe (4) is correctly positioned.

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## Battery – Advice

**IMPORTANT**

- All vehicles are equipped with low water consumption batteries. Opening the battery and topping up the electrolyte level are PROHIBITED.
- Batteries contain sulphuric acid, which is a hazardous chemical.
- Battery charging produces hydrogen and oxygen, which are very flammable gases and thus there is a risk of explosion.
- Any batteries with filling plugs must not be opened under any circumstances but replaced immediately with Renault approved batteries.

**Battery recharging:**

When parked, vehicles consume power through their permanent consumers and through any accessories fitted as After-Sales options. To keep battery discharging to a minimum, limit the number of times the vehicle is started, periods with the ignition on, doors open, etc., as much as possible.
A discharged battery must be recharged using a Renault-approved battery charger (see **Technical Note 6512A Battery charging**)

**IMPORTANT**

- Simultaneous recharging of several batteries in series or in parallel is forbidden.
- A battery charger used on a battery connected to a vehicle can irreparably damage the vehicle computers due to the high voltages created when charging.
- The location of the charger must take this into account (ventilation).
- A battery charger or a booster not approved by Renault can damage the electrical components.

**Battery storage:**

Even when stored off the vehicle, a battery gradually discharges, and more rapidly if the ambient temperature is high.
In order that a battery remains operational for a long time, it must be stored at a temperature of around **15˚C** and protected from humidity. To retain a good level of charge, it is recommended that a battery is completely recharged after it has been stored for 3 months.
A new battery that has been stored for more than one year must not be fitted to a vehicle.

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**Test procedure using the MIDTRONICS tool**

| Special tooling required | |
|---|---|
| Elé. 1593 | Battery tester<br>MIDTRONICS R330 |

**Test conditions**

The measurement must be taken when the vehicle is stationary and the ignition is off.

If the engine has been run in the last hour, switch the battery status to test and carry out the following operations:
– engine switched off,
– switch on the main beam headlights for **2 minutes**,
– switch off the main beam headlights,
– wait for **2 minutes**,
– switch off the ignition.

**Equipment to be used:**

– Tester approved by the Service Department: MIDTRONICS MICRO R330.
– Tool available as part no.: Elé. 1593.
– Equipment available in France from the Parts Department.
– Tool available in 6 languages.
– For other countries, consult your contact in your country.

**WARNING**
Failure to observe the procedure or poorly maintained equipment may result in incorrect measurements, which could be:
– detrimental to the customer (the battery is not sound),
– detrimental to RENAULT (unnecessary replacement of a sound or rechargeable battery),
– detrimental to the dealership (if the battery is tested as sound or rechargeable for a part return under warranty, the warranty reimbursement request will be cancelled).

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**Mode (test on vehicle)**

– Connect the tool directly to the battery terminals, without disconnecting the vehicle battery, as close as possible to the battery terminal but ensuring it is not after the fuse (on-vehicle test) or carry out the battery test after disconnecting the two terminals if necessary,
– check that the vehicle ignition is switched off,
– select the "battery connected to the vehicle" or "battery disconnected" test type using buttons and . Confirm using the green button .
– The test is carried out to the EN standard by default. Confirm using the green button .
– Select the starting power on the battery label (see page 3) using buttons and .
– Confirm using the green button .
– The tool displays **TEST IN PROGRESS**.
– The MIDTRONICS tool carries out the test and gives the results of the fault finding procedure.

To set the tool language, carry out the following operations:

– before connecting the tool, simultaneously press buttons and ,
– connect the device to the battery,
– release the buttons,
– scroll through the languages using buttons and ,
– confirm using the green button .

Note:
The battery must always be disconnected in the following order:
– Wait for at least **1 minute** between switching the ignition off and disconnecting the battery, to enable the computer systems to go on standby.
– Wait for the engine cooling fan to stop completely.
– Disconnect the negative terminal first.

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| *NOTES* | None |
|---|---|

| CHECKING THE BATTERY | → | TEST1 |
|---|---|---|

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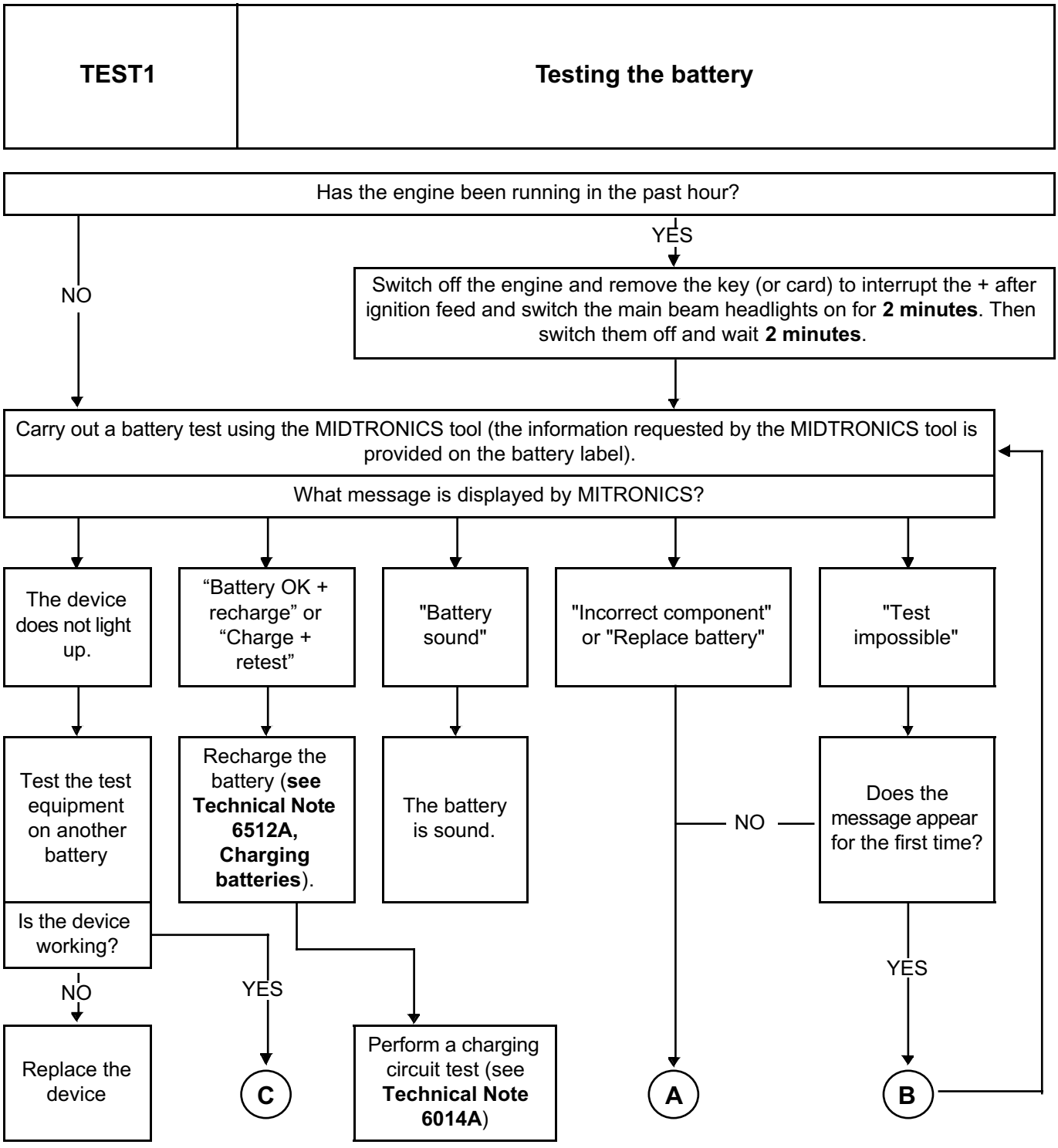

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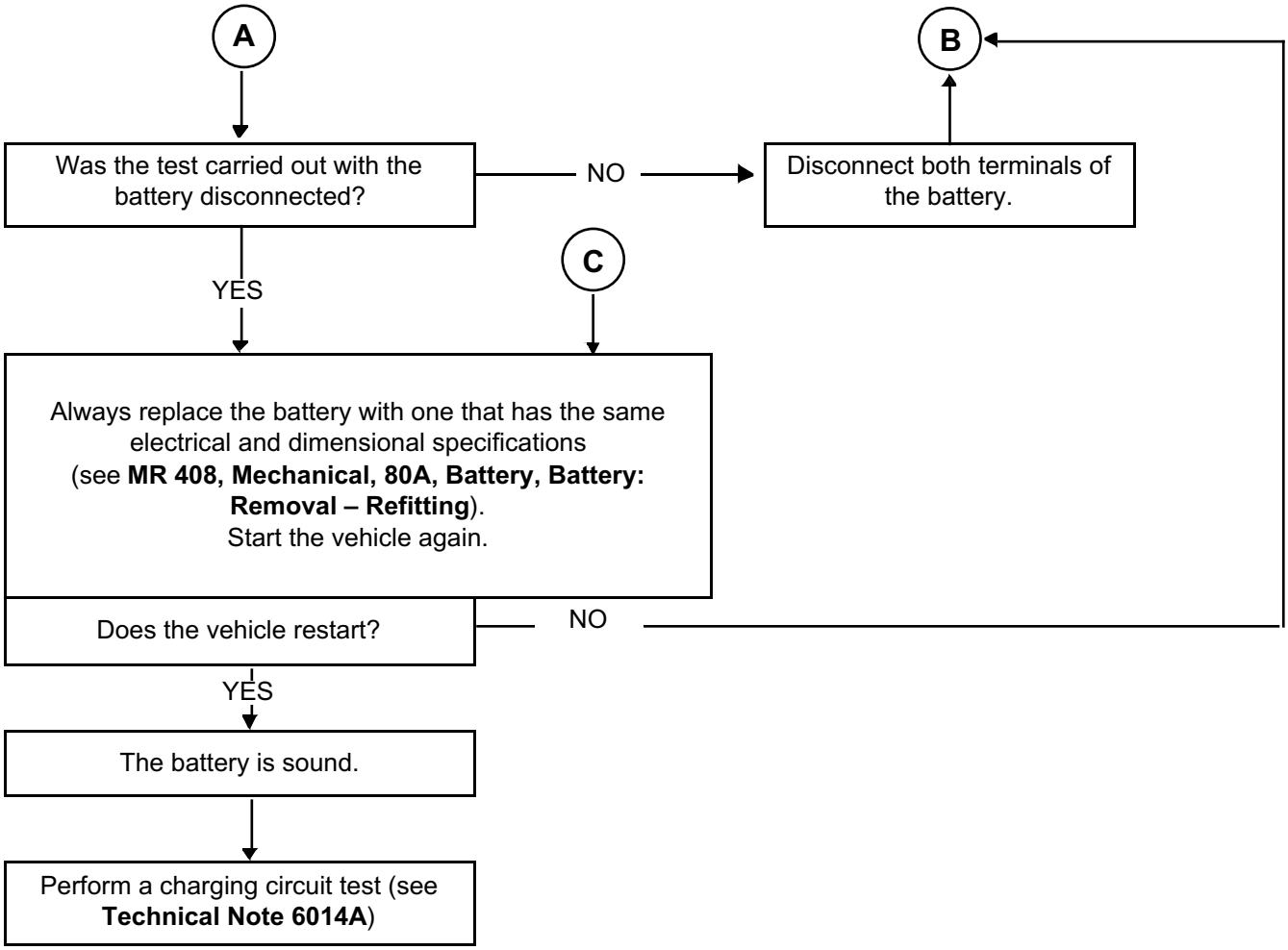
**TEST1 CONTINUED**



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# 8 Electrical equipment

## 80D LIGHTING

**UCH**
**Vdiag No.: 09**


| | |
|---|---|
| Fault finding – Introduction | 80D - 2 |
| Fault finding – List and location of components | 80D - 4 |
| Fault finding – Role of components | 80D - 5 |
| Fault finding – Function | 80D - 6 |
| Fault finding – Configuration | 80D - 8 |
| Fault finding – Conformity check | 80D - 9 |
| Fault finding – Status summary table | 80D - 11 |
| Fault finding – Interpretation of statuses | 80D - 12 |
| Fault finding – Command summary table | 80D - 21 |
| Fault finding – Interpretation of commands | 80D - 22 |
| Fault finding – Customer complaints | 80D - 28 |
| Fault finding – Fault Finding Chart | 80D - 29 |




"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

| | |
|---|---|
| *Vehicle(s)*: **DUSTER**<br>*Function concerned*: **LIGHTING** | *Name of computer:***UCH**<br>*Vdiag No.:* **09** |

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type**
**Fault finding procedures** (this document):
– Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.
**Wiring Diagrams:**
– Visu-Schéma.

**Type of diagnostic tools**

**– CLIP**

**Special tooling required**

| **Special tooling required:** | |
|---|---|
| | **Diagnostic tool** |
| | Multimeter |
| **Elé. 1622** | Bornier |
| **Elé. 1681** | Universal bornier |

**If the information obtained by the fault finding tool requires the electrical continuity to be checked, connect bornier Elé. 1622 or universal bornier Elé. 1681.**

**WARNING:**
– All tests with bornier **Elé. 1622** or **Elé. 1681** must be conducted with the battery disconnected.
– The bornier is only designed to be used with a multimeter. Never power the test points with **12 V**.

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## 3. SAFETY INSTRUCTIONS

The safety instructions must be followed at all times when working on components, to avoid damage or injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the appropriate tools

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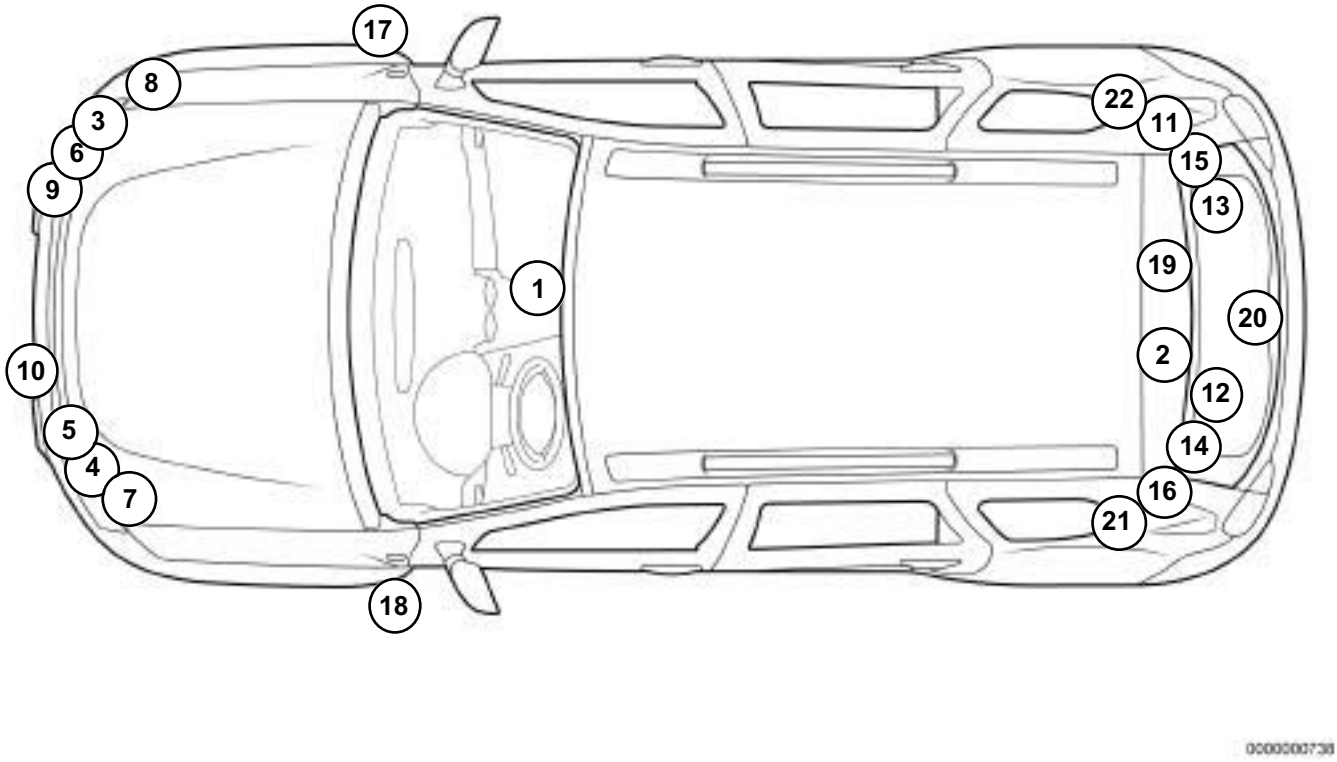
## Fault finding – List and location of components

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| | |
|---|---|
| 1- interior lights | 12- left-hand reversing light |
| 2- luggage compartment lighting | 13- rear right-hand side light |
| 3- right-hand side light | 14- rear left-hand side light |
| 4- left-hand side light | 15- right-hand brake light |
| 5- left-hand dipped headlight | 16- left-hand brake light |
| 6- right-hand dipped headlight | 17- right-hand side-mounted indicator |
| 7- front left-hand indicator light | 18- left-hand side-mounted indicator |
| 8- front right-hand indicator light | 19- high-level brake light |
| 9- front right-hand fog light | 20- number plate light |
| 10- front left-hand fog light | 21- rear left-hand indicator light |
| 11- rear right-hand fog light | 22- rear right-hand indicator light |

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**Side lights:**
The side lights are switched on directly using the lighting stalk, via the passenger compartment fuse box.
This function lights all the side lights (front and rear) as well as the number plate lighting.

**Dipped headlights:**
The dipped beam headlights are switched on directly using the lighting stalk, via the passenger compartment fuse box.
This function lights only the two bulbs providing the dipped headlights function.

**Main beam headlights:**
The main beam headlights are switched on directly using the lighting stalk, via the passenger compartment fuse box.
This function lights only the two bulbs providing the main beam headlights function.

**Rear fog lights:**
The rear fog light is switched on directly using the lighting stalk, via the passenger compartment fuse box.
This function lights only the rear fog lights.

**Hazard warning lights:**
The "hazard warning lights illumination request" signal from the hazard warning lights switch is sent to the UCH, which controls the hazard warning lights.
This function lights only the hazard warning lights.

**Indicators:**
The "left-hand or right-hand indicators illumination request" signal initiated by the driver using the lighting stalk is sent to the UCH, which controls the left-hand and right-hand indicators.

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**Layout of the lighting function**

The interior lighting function (courtesy lights, air conditioning indicator light, central door locking indicator light, etc.) and the signalling function are provided by the UCH computer. This computer is connected via a wire connection.
The UCH interprets the driver's intention via the steering column switch, then transmits the lighting requests.
These requests are controlled by the UCH.
The exterior lighting is controlled directly by the steering column switch.

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The LIGHTING function is divided into two sub-functions: **lighting control and lighting power**.
This function is managed directly, without the intervention of the UCH.

## 1. Lighting control

**Operated by the driver**
The UCH receives the driver's request via the steering column switches and the hazard warning lights button.
View the statuses of the available commands (see Status summary table).

## 2. Lighting power

The UCH manages the supply to the interior lighting, the heating and air conditioning system indicator lights, and the central locking indicator lights.
The UCH manages the supply to the indicators.
The functioning of the lights supplied by the UCH can be checked using the actuator commands **AC022 Left-hand indicator, AC023 Right-hand indicator, and AC145 Front courtesy lights**.

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| Equipment required: |
| --- |
| CLIP diagnostic tool |

**Configurations of the lighting function in the UCH**

– Configuration available on **diagnostic tool SC008, with the associated configuration reading**:

| Configuration | Configuration reading | Name of configuration | Option | Configuration |
| --- | --- | --- | --- | --- |
| CF054 | LC009 | Hazard warning lights illuminated upon impact | WITH or WITHOUT | SC008 UCH type (See 87B, Passenger compartment connection unit) |
| CF063 | LC047 | Timed courtesy light | WITH or WITHOUT | |
| CF072 | LC168 | Courtesy light timer | AUTHORISED or PROHIBITED | |

Check the configurations in the **Read configurations** menu

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| NOTES | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **Engine stopped, ignition on**. |
|---|---|

**SUB-FUNCTION: LIGHTING CONTROL**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| **Lighting control** | **ET324** | Side lights request | **"PRESENT" or "ABSENT"** | **In the event of an inconsistency**, apply the interpretation of status **ET324**. |
| | **ET485** | Hazard warning lights signal | **"PRESENT" or "ABSENT"** | **In the event of an inconsistency**, apply the interpretation of status **ET485**. |
| | **ET084** | Right-hand indicator request | **"PRESENT" or "ABSENT"** | **In the event of an inconsistency**, apply the interpretation of status **ET084**. |
| | **ET083** | Left-hand indicator request | **"PRESENT" or "ABSENT"** | **In the event of an inconsistency**, apply the interpretation of status **ET083**. |

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| NOTES | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **Engine stopped, ignition on**. |
|---|---|

**SUB-FUNCTION: LIGHTING CONTROL (CONTINUED)**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| **Lighting control** | **AC023** | Right-hand indicator | This command is used to activate the right-hand indicators. | **In the event of a fault**, apply the interpretation of command **AC023**. |
| | **AC022** | Left-hand direction indicator | This command is used to activate the left-hand indicators. | **In the event of a fault**, apply the interpretation of command **AC022**. |
| | **AC145** | Front courtesy lights | This command is used to illuminate the front courtesy light. | **In the event of a fault**, apply the interpretation of command **AC145**. |

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## Fault finding – Status summary table

| Tool status | Diagnostic tool title |
|---|---|
| **ET083** | Left-hand indicator request |
| **ET084** | Right-hand indicator request |
| **ET324** | Side lights request |
| **ET485** | Hazard warning lights signal |

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| | |
|---|---|
| **ET083** | LEFT-HAND INDICATOR REQUEST |

| | |
|---|---|
| ***STATUS DEFINITION*** | **PRESENT** when the left-hand indicator is switched on.<br>**ABSENT** if there is no request for the left-hand indicator. |

| | |
|---|---|
| ***NOTES*** | There must be no **present** or **stored** faults.<br>Switch on the ignition.<br>Activate the left-hand indicator lights control using the lighting stalk.<br>The status should be **PRESENT**. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the connection and condition of the indicator lighting stalk connector, component code **209** and the UCH connector, component code **645**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **earth** on connection **MAM** of component **209**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| ET083 CONTINUED | |
|---|---|

| |
|---|
| Check the operation of the indicator lighting stalk in the left-hand indicator position:<br>Check the **continuity** between connections **64T** and **MAM**. |
| Disconnect the left-hand indicator connector from the UCH.<br>Check the **insulation, continuity**, and the **absence of interference resistance** on the following connections:<br>• **64T** between components **209** and **645**.<br>• **MAM** between component **209** and **earth**.<br><br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the earth and the connections are correct, replace the lighting stalk, component code **209** (see **MR 451 Mechanical, 84A, Controls - Signals, Signals lighting switch: Removal - Refitting).** |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| ET084 | RIGHT-HAND INDICATOR REQUEST |
|---|---|

| *STATUS DEFINITION* | **PRESENT** when the right-hand indicator is switched on.<br>**ABSENT** if there is no request for the right-hand indicator. |
|---|---|

| *NOTES* | There must be no **present** or **stored** faults.<br>Switch on the ignition.<br>Activate the left-hand indicator lights control using the lighting stalk.<br>The status should be **PRESENT**. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the connection and condition of the lighting stalk connector, component code **209** and the UCH connector, component code **645**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **earth** on connection **MAM** of component **209**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the operation of the lighting stalk, component code **209** in the right-hand indicator position:<br>Check the **continuity** between connections **64S** and **MAM**. |

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

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| ET084 CONTINUED | |
|---|---|

Disconnect the right-hand indicator connector from the UCH.
Check the **insulation, continuity**, and the **absence of interference resistance** on the following connections:
- **64S** between components **209** and **645**.
- **MAM** between component **209** and **earth**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the earth and the connections are correct, replace the lighting stalk, component code **209** (see **MR 451 Mechanical, 84A, Controls - Signals, Signals lighting switch: Removal - Refitting).**

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

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| | |
|---|---|
| **ET324** | SIDE LIGHTS REQUEST |

| | |
|---|---|
| ***STATUS DEFINITION*** | **PRESENT** when the side lights are switched on.<br>**ABSENT** if there is no request for the side lights. |

| | |
|---|---|
| ***NOTES*** | There must be no **present** or **stored** faults.<br>Move the side lights switch.<br>The status should be **PRESENT** and the side lights illuminated. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the presence and condition of fuses **F18 (10 A)** and **F19 (10 A)** on the passenger compartment fuse box, component code **1016, and fuses F1 (60 A)** and **F2 (60 A)** on the engine fuse and relay box, component code **597** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the connection and the condition of the connector of the engine fuse and relay box, component code **597**, the UCH computer, component code **645**, and the lighting stalk, component code **209**.<br><br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+12 V** on connections **BP13 and BP11** of component **209**.<br><br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| ET324<br>CONTINUED 1 | |
|---|---|

Check between the lighting stalk and the engine fuse and relay box:
Check the continuity and insulation of the following connections:
- **BP11** between components **209 and 597**,
- **BP13** between components **209 and 597**,

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+12 V** (when side lights are requested) on the following connection:
- **LPG** of component **645** for right-hand drive
- **LPD** of component **645** for left-hand drive

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **continuity and the insulation** of the following connections:
- **LPG** between components **1016** and **645** for right-hand drive
- **LPD** between components **1016** and **645** for left-hand drive
- **L** between components **1016** and **209**

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

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| ET324 CONTINUED 2 | |
|---|---|

Check for **+12 V** (when side lights are requested) on the following connection:
- **L** of component **209**

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the feeds and the connections are correct, replace the lighting stalk, component code **209** (see **MR 451 Mechanical, 84A, Controls - Signals, Signals lighting switch: Removal - Refitting).**

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

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| | |
|---|---|
| **ET485** | HAZARD WARNING LIGHTS SIGNAL |

| | |
|---|---|
| ***STATUS DEFINITION*** | **PRESENT** when the hazard warning lights are switched on.<br>**ABSENT** if there is no request for the hazard warning lights. |

| | |
|---|---|
| ***NOTES*** | There must be no **present** or **stored** faults.<br>Activate the hazard warning lights switch using the button.<br>The status should be **PRESENT**. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the connection and condition of the hazard warning lights switch connector, component code **125**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **earth** on connection **MAN** of component **125**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the operation of the hazard warning lights control.<br>Check **the continuity** between the following connections **MAN** and **64Q** of component **125**:<br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| ET485 CONTINUED | |
|---|---|

Check the **insulation, continuity**, and the **absence of interference resistance** on the following connections:
- **64Q** between components **125** and **645.**
- **MAN** between component **125** and **earth** .

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

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## Fault finding – Command summary table

| Tool commands | Diagnostic tool title | Comments |
|---|---|---|
| **AC022** | Left-hand direction indicator | This command is used to activate the left-hand indicator. |
| **AC023** | Right-hand indicator | This command is used to activate the right-hand indicator. |
| **AC145** | Front courtesy lights | This command is used to activate the front courtesy lights. |

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| | |
|---|---|
| **AC022** | LEFT-HAND INDICATOR |

| | |
|---|---|
| ***NOTES*** | This command is used to activate the left-hand indicator.<br>There must be no **present** or **stored** faults.<br>Switch on the ignition. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the condition of the left-hand indicator light bulb. Replace the bulb if necessary (see **MR 451 Mechanical, 80B, Headlights, Side indicator: Removal - Refitting**).

Check the connection and condition of the connector of the UCH, component code **645**, the rear left-hand light, component code **173**, the left-hand headlight, component code **227**, and the left-hand repeater, component code **268**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **earth** on the following connections:
- **MB** of component **227**,
- **MB** of component **268**,
- **MG** of component **173**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the **diagnostic tool**. |

UCH_V09_AC022

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| AC022 CONTINUED | |
|---|---|

Check the **continuity**, **insulation** and **absence of interference resistance** on the following connections:
- **64C** between components **645** and **173**,
- **64C** between components **645** and **227**,
- **64C** between components **645** and **268**,
- **MB** between component **268** and **earth**,
- **MB** between component **227** and **earth**,
- **MG** between component **173** and **earth**,

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a road test, followed by a check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **AC023** | RIGHT-HAND INDICATOR |

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|---|---|
| ***NOTES*** | This command is used to activate the right-hand indicator.<br>There must be no **present** or **stored** faults.<br>Switch on the ignition. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the condition of the right-hand indicator light bulb. Replace the bulb if necessary (see **MR 451 Mechanical, 80B, Headlights, Side indicator: Removal - Refitting**).

Check the connection and condition of the connector of the UCH, component code **645**, the rear right-hand light, component code **172**, the right-hand headlight, component code **226**, and the right-hand repeater, component code **267**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **earth** on the following connections:
- **MA** of component **226**,
- **MA** of component **267**,
- **MF** of component **172.**

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the **diagnostic tool**. |

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| AC023 CONTINUED | |
|---|---|

Check the **continuity**, **insulation and absence of interference resistance** on the following connections:
- **64D** between components **645** and **172**,
- **64D** between components **645** and **226**,
- **64D** between components **645** and **267**,
- **MA** between component **267** and **earth**,
- **MA** between component **226** and **earth**,
- **MF** between component **172** and **earth**,

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a road test, followed by a check with the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **AC145** | FRONT COURTESY LIGHTS |

| | |
|---|---|
| ***NOTES*** | This command is used to activate the front courtesy light.<br>There must be no **present** or **stored** faults.<br>Switch on the ignition. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the correct operation of the courtesy light in the **ON** position and the condition of the front courtesy light bulb, component code **213**. Replace the bulb if necessary (see **MR 451 Mechanical, 81B, Interior lighting, Courtesy light: Removal - Refitting**).

Check for **+12 V** on the front courtesy light, component code **213** on the following connection:

- **BPT** of component **213.**

Check **the continuity and insulation** of the following connection:
**BPT** between components **213** and **645**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test, followed by a check with the **diagnostic tool**. |

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| AC145 CONTINUED | |
|---|---|

Check for **earth** on the front courtesy light, component code **213** on the following connection:
- **MAM** of component **213**.

Check **the continuity and insulation** of the following connection:
**MAM** between component **213** and **earth**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Put the courtesy light in the **AUTO** position and run command **AC145**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **13A** or **13E** between components **645** and **213**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a road test, followed by a check with the **diagnostic tool**. |
|---|---|

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| *NOTES* | **Only consult these customer complaints after a complete check with the diagnostic tool.** |
|---|---|

**LIGHTING**

| | |
|---|---|
| **No side lights** | **ALP2** |
| **No dipped headlights** | **ALP3** |
| **No main beam headlights** | **ALP4** |
| **No front fog lights** | **ALP5** |
| **No rear fog light** | **ALP6** |
| **The glovebox light does not work** | **ALP7** |
| **The luggage compartment lights do not work** | **ALP8** |
| **The brake lights operate erratically** | **ALP9** |
| **The brake lights are still illuminated and the brake light switch is released** | **ALP10** |
| **The reversing light operates erratically** | **ALP11** |
| **The flashing light of the hazard warning lights control button does not work** | **ALP12** |
| **The backlighting of the hazard warning lights control button operates erratically** | **ALP 13** |
| **The front fog lights are always illuminated** | **ALP14** |
| **The timed courtesy light does not work** | **ALP15** |

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| ALP 2 | No side lights |
|---|---|

| *NOTES* | Only consult this customer complaint after a full check with the **diagnostic tool**.<br>There must be no **present** or **stored** faults.<br>Check the conformity of status **ET324 Side lights request**.<br>If not correct, refer to the interpretation of this status. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the condition of the bulbs. Replace the bulbs if they are defective (see **MR 451 Mechanical, 81A, Rear lighting, Rear light bulb: Removal - Refitting**). |
| Check the presence and condition of fuses **F18 (10 A)** and **F19 (10 A)** on component **1016.**<br>Replace the fuse if the check is not correct. |
| Check the condition and connection of the connectors of the left-hand headlight, component code **227**, the rear left-hand light, component code **173**, the right-hand headlight, component code **226**, the rear right-hand light, component code **172**, the right-hand number plate light, component code **166**, the left-hand number plate light, component code **167**, and the lighting stalk, component code **209**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+12 V** (when side lights are requested) on the following connections:<br>• **LPD** of components **226 and 172**,<br>• **LPG** of components **227 and 173** .<br>Check for **earth** on the following connections:<br>• **MB** of component **227**,<br>• **MG** of component **173**,<br>• **MA** of component **226**,<br>• **MF** of component **172.**<br><br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 2<br>CONTINUED 1 | |
|---|---|

**Side lights check:**
Check **the continuity and insulation** of the following connections:
Front left-hand side light:
- **LPG** between components **227** and **1016**,
- **MB** between component **227** and **earth**,

**Rear left-hand side light:**
- **LPG** between components **173** and **1016**,
- **MG** between component **173** and **earth**,

**Front right-hand side light:**
- **LPD** between components **226** and **1016**,
- **MA** between component **226** and **earth**,

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 2<br>CONTINUED 2 | |
|---|---|

**Rear right side light:**
- **LPD** between components **172** and **1016**,
- **MF** between component **172** and **earth**,

**Right-hand number plate light:**
- **LPD** between components **166** and **1016**,
- **MF** between component **166** and **earth**,

**Left-hand number plate light:**
- **LPD** between components **167** and **1016**,
- **MG** between component **167** and **earth**,

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 3 | No dipped headlights |
|---|---|

| *NOTES* | Only consult this customer complaint after a full check with the **diagnostic tool**.<br>There must be no **present** or **stored** faults.<br>Check the conformity of status **ET324 Side lights request**.<br>If not correct, refer to the interpretation of this status. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Put the lighting stalk, component code **209** in the dipped headlights position. |
| Check the presence and condition of the supply fuse of the left-hand headlight, component code **227**:<br>• **F09 (10 A)** on component **1016**,<br>Replace the fuse(s) if the checks are not correct (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the presence and condition of the supply fuse of the right-hand headlight, component code **226**:<br>• **F10 (10 A)** on component **1016**,<br>Replace the fuse(s) if the checks are not correct (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the condition of the bulbs. Replace the bulbs if they are defective (see **MR 451 Mechanical, 80B, Front lighting: List and location of components**). |

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 3<br>CONTINUED 1 | |
|---|---|

Check the **condition** and **connection** of the connectors of the left-hand headlight, component code **227**, the right-hand headlight, component code **226**, and the lighting stalk, component code **209**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check for **+12 V** (when the dipped headlights are requested) on the following connections:
- **CPG** of component **227**,
- **CPD** of component **226** .

Check for **earth** on the following connections:
- **MB** of component **227**,
- **MA** of component **226**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 3<br>CONTINUED 2 | |
|---|---|

Check **the continuity and insulation** of the following connections:
- **CDO** between components **209** and **1016**.

**Front right-hand dipped beam headlight:**
- **CPG** between components **227** and **1016**,
- **MB** between component **227** and **earth**,

**Front right-hand dipped beam headlight:**
- **CPD** between components **226** and **1016**.
- **MA** between component **226** and **earth**,

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

With the dipped headlights control activated, check for **+12 V** on connection **CDO** of the lighting stalk, component code **209**.
If not correct, replace the lighting stalk **(**see **MR451 Mechanical 84A, Control - Signals, - Lighting - signals switch: Removal - Refitting)**

If the fault is still present, contact the Techline.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 4 | No main beam headlights |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**.<br>There must be no **present** or **stored** faults.<br>Check the conformity of status **ET324 Side lights request**.<br>If not correct, refer to the interpretation of this status. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| Put the lighting stalk, component code **209** in the main beam headlights position. |
|---|
| Check the presence and condition of the supply fuse of the left-hand headlight, component code **227**:<br>• **F11 (10 A)** on component **1016**,<br>Replace the fuse(s) if the checks are not correct (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the presence and condition of the supply fuse of the right-hand headlight, component code **226**:<br>• **F12 (10 A)** on component **1016**,<br>Replace the fuse(s) if the checks are not correct (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the condition of the bulbs. Replace the bulbs if they are defective (see **MR 451 Mechanical, 80B, Front lighting: List and location of components**). |

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 4<br>CONTINUED 1 | |
|---|---|

Check the **condition** and **connection** of the connectors of the left-hand headlight, component code **227**, the right-hand headlight, component code **226**, and the lighting stalk, component code **209**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check for **+12 V** (when the dipped headlights are requested) on the following connections:
- **RPG** of component **227**,
- **RPD** of component **226** .

Check for **earth** on the following connections:
- **MB** of component **227**,
- **MA** of component **226**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 4<br>CONTINUED 2 | |
|---|---|

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **R** between components **209** and **1016**.

**Front left-hand main beam headlight:**
- **RPG** between components **227** and **1016**,
- **MB** between component **227** and **earth**,

**Front right-hand main beam headlight:**
- **RPD** between components **226** and **1016**.
- **MA** between component **226** and **earth**,

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

With the main beam headlights control activated, check for **+12 V** on connection **R** of the lighting stalk, component code **209**.
If not correct, replace the lighting stalk (see **MR 451 Mechanical 84A, Control - Signals, - Lighting - signals switch: Removal - Refitting**)

If the fault is still present, contact the Techline.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 5 | No front fog lights |
|---|---|

| *NOTES* | Only consult this customer complaint after a full check with the **diagnostic tool**.<br>There must be no **present** or **stored** faults.<br>Check the conformity of status **ET324 Side lights request**.<br>If not correct, refer to the interpretation of this status. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the condition of the bulbs. Replace the bulbs if they are defective (see **MR 451 Mechanical, 80B, Front headlight, Front fog light bulb: Removal - Refitting**). |
| Check the presence and condition of the front fog light relay (component code **231**) and **fuse F31 (15 A)**.<br>Replace the relay and the fuse if the check is not correct. |
| Check the condition and connection of the connectors of the front fog light relay, component code **231**, the front right-hand fog light, component code **176**, the front left-hand fog light, component code **177**, and the lighting stalk, component code **209**,<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+12 V** (when the front fog lights are requested) on the following connection:<br>• **8FB** of components **176 and 177**,<br><br>Check for **earth** on the following connection:<br>• **MB** of components **176 and 177**,<br><br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 5<br>CONTINUED 1 | |
|---|---|

Front fog lights check:
Check **the continuity and insulation** of the following connections:

**Right-hand front fog light:**
- **8B** between components **231** and **176**,

**Left-hand front fog light:**
- **8B** between components **231** and **177**,

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 5<br>CONTINUED 2 | |
|---|---|

Check for **+12 V** (when the front fog lights are requested) on the following connections:
- **8A** of component **231**,
- **BP16** of component **231**,

Check for **earth** on the following connection:
- **MB** of component **231**,

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Front fog lights relay check:
Check the continuity and insulation of the following connections:
- **8A** between components **209** and **231**,
- **BP16** between components **231** and **1016**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+12 V** on the following connections:
- **BP11** of component **209**,
- **BP13** of component **209**,

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 5<br>CONTINUED 3 | |
|---|---|

Check between the lighting stalk and the engine fuse and relay box:
Check the **insulation and the continuity** of the following connections:
- **BP11** between components **209 and 597**,
- **BP13** between components **209 and 597**,

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the supplies and the connections are correct, replace the lighting stalk.

If the fault is still present, contact the Techline.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| | |
|---|---|
| **ALP 6** | **No rear fog light** |

| | |
|---|---|
| ***NOTES*** | Only address this customer complaint after a **complete check** with **the diagnostic tool**.<br>There must be no **present** or **stored** faults.<br>Check the conformity of status **ET324 Side lights request**.<br>If not correct, refer to the interpretation of this status. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Put the lighting stalk, component code **209** in the rear fog lights position. |
| Check the presence and condition of fuse **F20 (7.5 A)** on the passenger compartment fuse box, component code **1016**.<br><br>Replace the fuse(s) if the checks are not correct (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the condition of the bulb. Replace the bulb if it is defective (see **MR 451 Mechanical, 80B, Rear lighting: List and location of components**). |
| Check the **condition** and **connection** of the connectors of the rear left-hand light, component code **173** for a left-hand drive vehicle, the rear right-hand light, component code **172** for a right-hand drive vehicle, and the lighting stalk, component code **209**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |

| | |
|---|---|
| ***AFTER REPAIR*** | Check the system operation. |

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| ALP 6<br>CONTINUED 1 | |
|---|---|

Check for **+12 V** (when the rear fog lights are requested) on the following connections:
- **9P** of component **172** for a right-hand drive vehicle,
- **9P** of component **173** for a left-hand drive vehicle,

Check for **earth** on the following connection:
- **MF** of component **172** for a right-hand drive vehicle**,**
- **MG** of component **173** for a left-hand drive vehicle,

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connections:

- **9J** between components **209** and **1016**.
- **9P** between components **172** and **1016** (for a right-hand drive vehicle),
- **9P** between components **173** and **1016** (for a left-hand drive vehicle),
- **MF** between components **172** and **earth** (for a right-hand drive vehicle),
- **MG** between components **173** and **earth** (for a left-hand drive vehicle),

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 6 CONTINUED 2 | |
|---|---|

| |
|---|
| With the rear fog lights control activated, check for **+12 V** on connection **9J** of the lighting stalk, component code **209**.<br>If not correct, replace the lighting stalk (see **MR 451 Mechanical 84A, Control - Signals, - Lighting - signals switch: Removal - Refitting**) |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Check the system operation. |

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| ALP 7 | The glovebox light does not work |
|---|---|

| *NOTES* | Only address this customer complaint after a **complete check** with **the diagnostic tool**.<br>Put the lighting stalk, component code **209** in the side lights position.<br>There must be no **present** or **stored** faults.<br>Check the conformity of status **ET324 Side lights request**.<br>If not correct, refer to the interpretation of this status. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the condition of the passenger glovebox light and the bulb.
Replace the passenger glovebox light and the bulb if necessary (see **MR 451 Mechanical, 81B, Interior lighting, Glovebox light: Removal - Refitting**).

Check the **condition** and **connection** of the connectors of the passenger glovebox light, component code **168** and the passenger glovebox switch, component code **161**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check for **+12 V** on the passenger glovebox light, component code **168** on the following connection:
- **LPG** of component **168** (for a right-hand drive vehicle),
- **LPD** of component **168** (for a left-hand drive vehicle).

Check the **continuity** of the following connection:
- **LPG** between components **1016** and **168** (for a right-hand drive vehicle),
- **LPD** between components **1016** and **168** (for a left-hand drive vehicle).

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 7 CONTINUED | |
|---|---|

Check for **earth** on the passenger glovebox switch, component code **161** on the following connection:
- **MAN** of component **161**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connection:
- **17A** between components **168** and **161**,

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for correct operation of the passenger glovebox switch, component code **161**.
Check the **continuity** between connections **17A** and **MAN** of the passenger glovebox switch. If not correct, ensure the conformity of the switch.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 8 | The luggage compartment light does not work |
|---|---|

| *NOTES* | Only consult this customer complaint after a full check with the **diagnostic tool**. There must be no **present** or **stored** faults. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

**For mid-range and high-end versions (SOP02 and SOP03)**

| |
|---|
| Close the rear doors of the vehicle and open the tailgate and check that **ET 551** is **OPEN**. If not, deal with **ET 551** (see **87B, Passenger compartment connection unit**). |
| Check that the left-hand luggage compartment light, component code **165** is illuminated.<br>If not, check the condition of the left-hand luggage compartment bulb, component code **165**. Replace the left-hand luggage compartment bulb if necessary (see **MR 451 Mechanical, 81B, Interior lighting, Luggage compartment light: Removal - Refitting**). |
| Run command **AC145** to illuminate the bulb.<br>If not correct, check the condition and connection of the connectors of the UCH, component code **645** and the luggage compartment light, component code **165**.<br>If the connector(s) are faulty and there is a repair procedure (see Technical Note **6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 8<br>CONTINUED 1 | |
|---|---|

Check for **+12 V** on the luggage compartment light, component code **165** on the following connection:
- **BPT** of component 165.

Check the continuity and insulation of the following connection:
- **BPT** between components **645** and **165**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **13E** between components **645** and **165**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 8<br>CONTINUED 2 | |
|---|---|

**For the entry-level version (SOP01)**

Check the presence and condition of the supply fuses of the luggage compartment light, component code **165**:

- **F28 (15 A)** on component **1016**,

Replace the fuses if the checks are not correct.

Check that the left-hand luggage compartment light, component code **165** is illuminated.
If not, check the condition of the left-hand luggage compartment bulb, component code **165**. Replace the left-hand luggage compartment bulb if necessary (see **MR 451 Mechanical, 81B, Interior lighting, Luggage compartment light: Removal - Refitting**).

Check the **condition** and **connection** of the connectors of the luggage compartment light, component code **165** and the tailgate lock, component code **1322**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check for +12 V on the luggage compartment light, component code **165** on the following connection:
- **BC** of component **165**.

Check **the continuity and insulation** of the following connection:
**BC** between components **1016** and **165**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 8<br>CONTINUED 3 | |
|---|---|

Check for **earth** on the tailgate lock, component code **1322** on the following connection:
- **MG** of component **1322**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connection:
- **18A** between components **165** and **1322**

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for correct operation of the tailgate lock switch, component code **1322**.
Check the **continuity** between connections **18A** and **MG** of the tailgate lock switch. If not correct, ensure the conformity of the switch.

If the fault is still present, contact the Techline.

| ***AFTER REPAIR*** | Check the system operation. |
|---|---|

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| ALP 9 | The brake lights operate erratically |
|---|---|

| *NOTES* | Only consult this customer complaint after a full check with the **diagnostic tool**. There must be no **present** or **stored** faults. |
|---|---|
| | **Special note:** Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the condition of the bulbs. Replace the bulbs if they are defective (see **MR 451 Mechanical, 81A, Rear lighting, Rear light bulb: Removal - Refitting**). |
| Check the presence and condition of fuse **F03 (10 A)** on component **1016**.<br>Replace the fuse if the check is not correct. |
| Check the condition and connection of the connectors of the brake lights switch, component code **160**, the high-level brake light, component code **639**, the rear right-hand light, component code **172**, and the rear left-hand light, component code **173**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |
| Check for **+12 V after ignition feed** on the brake lights switch, component code **160** on the following connection:<br>• **AP1** of component **160**.<br>Check **the continuity and insulation** of the following connection:<br>• **AP1** between components **1016** and **160**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for **+12 V after ignition feed** (when the brake lights are requested by the brake pedal) on the following connection:<br>• **65A** of component **172, 173 and 639**,<br>Check for **earth** on the following connections:<br>• **MF** of component **172**,<br>• **MG** of component **173** and **639**.<br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 9 CONTINUED | |
|---|---|

| |
|---|
| Check **the continuity and insulation** of the following connection:<br>• **65A** between components **160** and **639, 172, 173**,<br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for correct operation of the brake lights switch, component code **160**.<br>When the brake lights are requested by the brake pedal, check the **continuity** between connections **AP1** and **65A** of the brake lights switch. If it is not correct, ensure the conformity of the switch. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Check the system operation. |

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| ALP 10 | The brake lights are still illuminated and the brake light switch is released |
|---|---|

| *NOTES* | Only consult this customer complaint after a full check with the **diagnostic tool**. There must be no **present** or **stored** faults. |
|---|---|
| | **Special note:** Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the condition and connection of the connectors of the brake lights switch, component code **160**, the high-level brake light, component code **639**, the rear right-hand light, component code **172**, and the rear left-hand light, component code **173**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check the **insulation to +12 V feed** of the following connection:
- **65A** of component **172, 173 and 639**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 11 | The reversing light operates erratically |
|---|---|

| *NOTES* | Only consult this customer complaint after a full check with the **diagnostic tool**.<br>There must be no **present** or **stored** faults. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the condition of the bulb. Replace the bulb if it is defective (see **MR 451 Mechanical, 81A, Rear lighting, Rear light bulb: Removal - Refitting**). |
| Check the presence and condition of fuse **F27 (20 A)** on component **1016**.<br>Replace the fuse if the check is not correct. |
| Check the condition and connection of the connectors of the reversing lights switch, component code **155 (BVM5)** or **1109 (BVM6)** and the rear right-hand light, component code **172** for left-hand drive or the rear left-hand light, component code **173** for right-hand drive**.**<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+12 V after ignition feed** on the reversing lights switch, component code **155** or **1109 (depending on equipment)** on the following connection:<br>• **AP9** of component **155** or **1109**.<br>Check **the continuity and insulation** of the following connection:<br>• **AP9** between components **1016** and **155 or 1109**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 11 CONTINUED | |
|---|---|

| |
|---|
| Check for **+12 V after ignition feed** (when the reversing lights are requested) on the following connection:<br>• **H66P** of component **172** for left-hand drive,<br>• **H66P** of component **173** for right-hand drive.<br>Check for earth on the following connections:<br>• **MF** of component **172** for left-hand drive,<br>• **MG** of component **173** for right-hand drive.<br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check **the continuity and insulation** of the following connection:<br>**H66P** between components **155** or **1109** and **172** or **173**,<br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for correct operation of the reversing lights switch, component code **155 (BVM5)** or **1109 (BVM6)**.<br>When the reversing lights are requested, check the **continuity** between connections **H66P** and **MG** or **MF** of the reversing lights switch. If not correct, ensure the conformity of the switch. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Check the system operation. |

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| | |
|---|---|
| **ALP 12** | **The flashing light of the hazard warning lights control button does not work** |

| | |
|---|---|
| ***NOTES*** | There must be no **present** or **stored** faults.<br>Press the hazard warning lights control.<br>Check if status **ET485 Hazard warning lights signal** is **PRESENT** and the hazard warning lights are illuminated,<br>If not correct, refer to the interpretation of this status. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the connection and condition of the connectors of the hazard warning lights control, component code **125** and the UCH, component code **645**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for earth on the following connection:<br>• **MAN** of component **125**.<br><br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| | |
|---|---|
| ***AFTER REPAIR*** | Check the system operation. |

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| ALP 12 CONTINUED | |
|---|---|

Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:
- **64D** between components **125** and **645.**

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 13 | The backlighting of the hazard warning lights control button operates erratically |
|---|---|

| *NOTES* | **Only address this customer complaint after a complete check with the diagnostic tool.**<br>There must be no **present** or **stored** faults.<br>Check the conformity of status **ET324 Side lights request** and **ET485 Hazard warning lights signal**.<br>If not correct, refer to the interpretation of this status. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Put the lighting stalk, component code **209** in the side lights position. |
| Check the condition and connection of the hazard warning lights control connector, component code **125**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+12 V** (when side lights are requested) on the following connections:<br>• **LPG** of component **125**,<br>Check for **earth** on the following connection:<br>• **MAN** of component **125**,<br><br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 13 CONTINUED | |
|---|---|

Check **the continuity** of the following connection:
- **LPD** between components **125** and **1016** (for a left-hand drive vehicle),
- **LPG** between components **125** and **1016** (for a right-hand drive vehicle),

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 14 | The front fog lights are always illuminated |
|---|---|

| *NOTES* | **Only address this customer complaint after a complete check with the diagnostic tool.**<br>There must be no **present** or **stored** faults. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| Check the condition of the front fog lights relay, component code **231**. Replace the relay if necessary. |
|---|
| Check the condition and connection of the connectors of the front fog lights relay, component code **231** and the lighting stalk, component code **209**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation to +12 V** of the following connections:<br>• **8A** between components **209** and **231**,<br>• **8B** between components **231** and **176** for the front right-hand fog light; **177** for the front left-hand fog light.<br><br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 15 | The timed courtesy light does not work |
|---|---|

| *NOTES* | **Only address this customer complaint after a complete check with the diagnostic tool.**<br>There must be no **present** or **stored** faults. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check by reading configuration **LC047 timed courtesy light** that the configuration corresponds to the vehicle equipment.<br>Carry out the configuration using command **SC008 UCH type** if necessary. |
| Put the courtesy light in the **AUTO** position and run command **AC145**. If the courtesy light does not illuminate, refer to the interpretation of this command. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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DUSTER

# 8 Electrical equipment

## 82D ACCESS – SAFETY

**UCH**
**Vdiag No.: 09**


| | |
|---|---|
| Fault finding – Introduction | 82D - 2 |
| Fault finding – List and location of components | 82D - 8 |
| Fault finding – Role of components | 82D - 9 |
| Fault finding – Function | 82D - 10 |
| Fault finding – Configuration | 82D - 13 |
| Fault finding – Programming | 82D - 15 |
| Fault finding – Fault summary table | 82D - 18 |
| Fault finding – Interpretation of faults | 82D - 19 |
| Fault finding – Conformity check | 82D - 23 |
| Fault finding – Status summary table | 82D - 26 |
| Fault finding – Interpretation of statuses | 82D - 27 |
| Fault finding – Parameter summary table | 82D - 30 |
| Fault finding – Interpretation of parameters | 82D - 31 |
| Fault finding – Command summary table | 82D - 32 |
| Fault finding – Interpretation of commands | 82D - 33 |
| Fault finding – Customer complaints | 82D - 38 |
| Fault finding – Fault location chart | 82D - 39 |




"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. APPLICABILITY OF THE DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

| | |
|---|---|
| *Vehicle:* **DUSTER** | *Computer name:* **UCH** |
| *Function concerned:* **ACCESS/SAFETY** | *Vdiag No.:* **09** |

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type**

**Fault finding procedures** (this manual):
– Assisted fault finding (integrated into the **diagnostic tool**),
– Dialogys.

**Wiring Diagrams:**
– Visu-Schéma.

**Type of diagnostic tools**

**– CLIP**

**Special tooling required**

| Special tooling required | |
|---|---|
| **Diagnostic tool** | |
| | Multimeter |
| **Elé. 1622** | Bornier |
| **Elé. 1681** | Universal bornier |

**If the information obtained by the diagnostic tool requires checking electrical continuity, connect bornier Elé. 1622 or universal bornier Elé. 1681.**

**WARNING:**
– All tests with bornier **Elé. 1622** or **Elé. 1681** must be conducted with the battery disconnected.
– The bornier is only designed to be used with a multimeter. Never supply the test points with **12 V**.

## 3. SAFETY INSTRUCTIONS

The safety instructions must be followed at all times when working on components, to avoid damage or injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the proper tools.

**Procedure for disconnecting the battery:**
– switch off the ignition,
– switch off all electrical consumers,
– Wait at least **1 minute** for the electronic systems to switch off,
– disconnect the battery, starting with the negative terminal.

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**Faults**

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the **diagnostic tool** is used after the + after ignition feed (without activating the system components).

For a **present fault**, apply the procedure described in the Interpretation of faults section.
For a **stored fault**, note the faults displayed and apply the Notes section.

If the fault is **confirmed** when the instructions are applied, the fault is present. Deal with the fault.
If the fault is **not confirmed**, check:
– the electrical connections that correspond to the fault,
– the connectors for this connection,
– the resistance of the faulty component,
– the condition of the wires.
**Refer to paragraphs 4.1 Checking wiring and 4.2 Checking connectors**

**Conformity check**

The aim of the conformity check is to check data which does not produce a fault on **the diagnostic tool** when the data is inconsistent. Therefore, this stage is used to:
– carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint,
– check that the system is operating correctly and that there is no risk of a fault recurring after repair.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

If a status is not behaving normally or a parameter is outside permitted tolerance values, you should consult the corresponding fault finding page.

**Customer complaints - Fault finding chart**

If the test with **the diagnostic tool** is OK but the customer complaint is still present, the fault should be dealt with by **customer complaints**.

**A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.**

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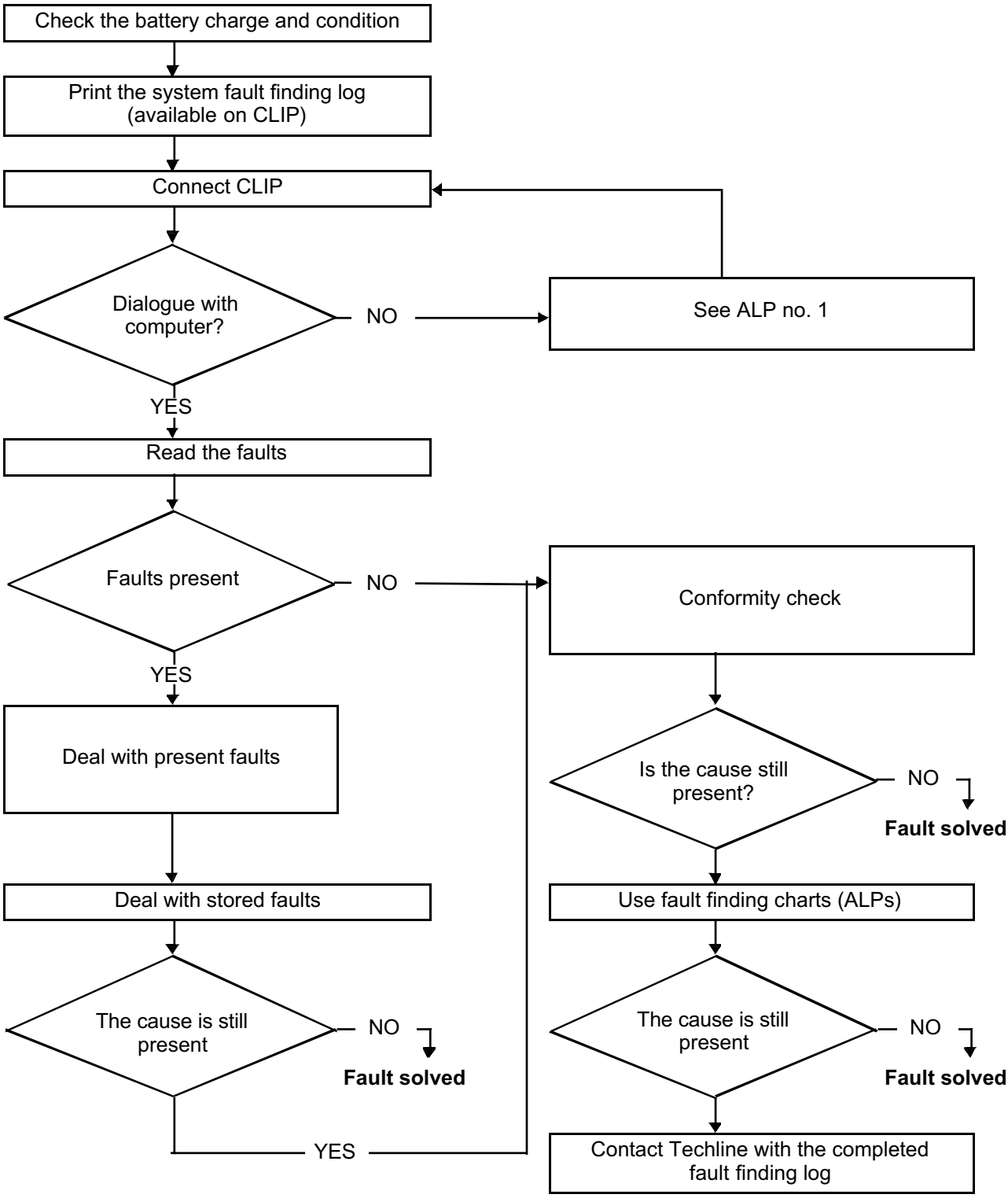
## 4. FAULT FINDING PROCEDURE



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**FAULT FINDING PROCEDURE (CONTINUED)**

### 4.1 Wiring check

**Fault finding problems**
Disconnecting the connectors and/or manipulating the wiring may temporarily clear the cause of a fault.

**Visual inspection**
Look for damage under the bonnet and in the passenger compartment.
Carefully check the protectors, insulation, and routing of the wiring, as well as the mountings.

**Physical inspection**
When manipulating the wiring, either use the **diagnostic tool** to detect a change in status, from "stored" to "present", or the multimeter to view the status changes.
Make sure that the connectors are firmly secured.
Apply light pressure to the connectors.
Twist the wiring harness.

**Checking earth insulation**
This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the **12 V** or **5 V**. The correct measured value is **0 V.**

**Checking insulation against + 12 V or + 5 V**
This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the earth. In the first instance, the earth may be taken on the chassis. The correct measured value should be **0 V**

**Continuity check**
A continuity check is carried out by measuring the resistance (multimeter in ohmmeter mode), with the connectors disconnected at both ends. The expected result is **1 Ω ± 1 Ω** for each connection. The line must be fully checked, and the intermediate connections are only included in the method if this saves time during the fault finding procedure. The continuity check on the multiplex lines must be carried out on both wires. The measured value should be **1 Ω ± 1 Ω**.

**Checking the supply**
This check may be carried out using a test light (**21 W** or **5 W** depending on the maximum authorised load).

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### 4.2 Connector check

Note:
Carry out each requested check visually.
Do not remove a connector if it is not required.

Note:
Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:
The check is carried out on the 2 parts of the connection. There may be two types of connection:
– Connector/Connector.
– Connector/Device.

**Visual inspection of the connection:**
– Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

**Visual inspection of the area around the connection:**
– Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
– Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
– Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

**Visual inspection of the plastic casing:**
– Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
– Check that there is no heat damage (casing melted, darker, deformed, etc.).
– Check that there are no stains (grease, mud, liquid, etc.).

• **Visual inspection of the metal contacts:**
*(The female contact is called CLIP. The male contact is called TAB).*
– Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The contact comes out of the connector when the wire is pulled gently.
– Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
– Check that there is no oxidation on the metal contacts.

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- **Visual inspection of the sealing:**

*(Only for watertight connectors)*

Check for the seal on the connection (between the 2 parts of the connection).

– Check the seal at the back of the connectors:
  – For unit *joints* (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
  – For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
  – For *gel* seals, check for gel in all of the openings without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
  – For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and electrical wires, and that the hardened glue comes out of the side of the wire.
– Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, consult **Technical Note 6015A, Repairing electrical wiring.**

## FAULT FINDING LOG

**IMPORTANT!**

**IMPORTANT**
Any fault on a complex system requires thorough fault finding with the appropriate tools.
The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE ESSENTIAL THAT THE FAULT FINDING LOG IS FILLED OUT EVERY TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS DEPARTMENT.**

You will always be asked for this log:
– when requesting technical assistance from the Techline,
– when requesting approval before replacing parts for which approval is compulsory,
– to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

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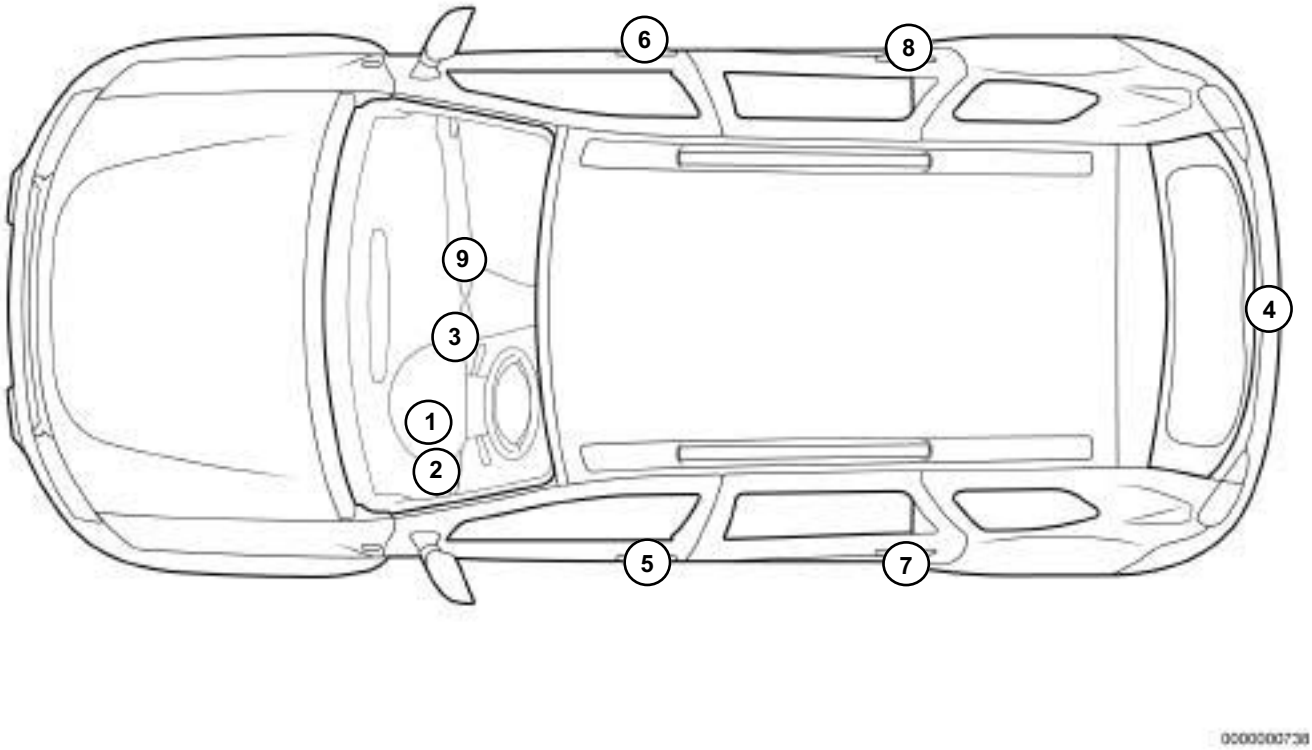
## Fault finding – List and location of components

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| | | | |
|---|---|---|---|
| 1 | UCH | 6 | Passenger lock |
| 2 | Passenger compartment fuse box | 7 | Rear left-hand lock |
| 3 | Transponder ring | 8 | Rear right-hand lock |
| 4 | Tailgate or boot lid lock | 9 | CPE* button |
| 5 | Driver's lock | CPE*: electric central door locking | |

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**Electric central door locking:**
The doors can be centrally locked and unlocked using the CPE* button.

**Tailgate lock:**
The tailgate locking and unlocking function is controlled by the UCH.

**Front driver and passenger locks:**
The front driver and passenger door locking and unlocking command is provided by the UCH.

**Transponder and radiofrequency key:**
– the **transponder** in the key enables the following signals to be sent to the UCH:
– Key identifier signal.
– Immobiliser code signal.
The transponder is also involved in the Immobiliser function.

**The radiofrequency** key is used to transmit the key identifier information after pressing the button once. A radiofrequency wave is sent to the UCH to carry out the user's request if the key is allocated to the vehicle (locking or unlocking the doors and the tailgate).

**Injection**
When the authentication messages with the UCH have been exchanged, the injection can be unlocked and authorise the starting of the engine.
The injection system is unlocked and engine starting is authorised as soon as the UCH has authenticated the injection computer.

CPE*: electric central door locking.

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**Engine immobiliser**

The immobiliser function is divided between three coded computers (the UCH, the injection computer and the key). Communication between the key and the UCH is ensured by the transponder ring through a magnetic field created between the transponder ring and the key.

When the + After ignition is switched on, the key sends its identifier to the UCH via the transponder ring, located on the ignition switch. The UCH runs through an authentication procedure with the key via the transponder ring. If the key is allocated to the vehicle, then operation of the starter motor is authorised and the injection system is unlocked.

The injection computer has no reference code in its memory: the code which is transmitted is stored.

If the code supplied by the key is not recognised by the UCH, then the system remains locked. The red engine immobiliser warning light flashes (quickly). The vehicle cannot be started.

**IMPORTANT**
When the vehicle battery has a low charge, the drop in voltage caused by operating the starter could reactivate the immobiliser. If the voltage is too low, the engine cannot be started, even by pushing the vehicle.

**Recognition of keys in normal operation**

| | **IMMOBILISER WARNING LIGHT** |
|---|---|
| Vehicle protected (without After Ignition) | Indicator light flashes at **1 Hz** |
| Key recognised, injection protection lifted | Warning light continuously illuminated for **3 seconds** and then goes out |
| Key not recognised, injection protected | Warning light flashes at **4 Hz** |

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**Locking / Unlocking**

This system can function with up to four remote control units (the UCH can only manage four different codes).

The radio frequency signal receiver is integrated in the UCH.

The central door locking button is inhibited once the doors have been locked by the remote control.

Locking and unlocking the doors with the remote control is confirmed by the hazard warning lights flashing (if all the doors are closed properly):
– locking: 2 flashes,
– unlocking: 1 flash.

Depending on the equipment level, the system automatically locks the vehicle opening elements (without the hazard warning lights flashing) if the doors are not opened for **30 seconds** after they have been unlocked.
The UCH controls the vehicle interior lighting. If a courtesy light is left on, the UCH will cut the lighting supply after a period of approximately **30 minutes**.

**Note:**
Unlocking can be performed by the UCH, if the airbag computer has detected an impact or if it is faulty (see **88C, Airbag - Seat belt pretensioners**).

The "top of the range" version gradually dims the interior lights after one of the vehicle doors has been opened. After the doors have been closed using the radiofrequency remote control, the interior lights are switched off immediately.

Replacement keys are assigned to the vehicle VIN when they are ordered from the spare parts department.
It is possible in the event of a key being stolen or lost or at the customer's request, for a vehicle key to be de-allocated.
It can be reassigned to the same vehicle if necessary.

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**Starting**

The UCH controls the command and supply part of the start-up function and the starting and charging process is controlled by the UCH. For this function to operate normally, the protection function must have been successfully completed.

**IMPORTANT:**
When the vehicle battery has a low charge, the drop in voltage caused by operating the starter could reactivate the immobiliser. If the voltage is too low, the engine cannot be started, even by pushing the vehicle.

**Note:**
If several, i.e. three or four, attempts have been made using a key not allocated to the vehicle, the injection computer locks. Insert a key allocated to the vehicle for **20 seconds** in **+ after ignition feed**, then switch off the ignition and wait for the end of power-latch (**20 minutes**) to allow the injection computer to unlock.

* Powerlatch: Injection computer power supply duration after + 12V after ignition cut-off to the ignition switch.

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## CONFIGURATION

New parts are not coded. Once fitted on the vehicle, they must be programmed with a code to become operational.

To perform this procedure, it is essential that some parts on the vehicle are already correctly coded (with the vehicle code).

Refer to the allocation table.

## ALLOCATION TABLE

| AFTER-SALES OPERATION | STATE OF COMPONENTS | | | REPAIR CODE NEEDED |
|---|---|---|---|---|
| | UCH | Key | Injection computer | |
| Programming thePassenger Compartment Central Unit (UCH) | Blank | Coded | Coded | YES |
| Key allocation or cancellation | Coded | Blank* | - | YES |
| Programming the injection computer | Coded | Coded | Blank | NO |

Blank*: The key allocated to a vehicle must be blank or already programmed to this vehicle.

A new UCH is not coded. You must therefore program a code into a new UCH fitted to a vehicle to make the UCH operational.

To perform this procedure, at least one of the vehicle's old keys and the repair code are required and the injection computer must be correctly coded (refer to the allocation table).

**IMPORTANT:**
If a code is programmed into the UCH, the UCH is allocated to the vehicle. It is impossible to erase the code or program in another one. The programmed code cannot be erased.

**WARNING:**
The keys submitted during this procedure will only work if:
they have already been coded on this vehicle,
or they are new (not coded).

**Note:**
If only the UCH is replaced, there is no operation to perform on the injection computer, as it retains the same immobiliser code.

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| Equipment required: |
|---|
| **CLIP diagnostic tool** |

**Access and Safety function configurations in the UCH**

Configuration readings available using the **diagnostic tool**:

| Configuration reading | Name of configuration | Option | Configuration |
|---|---|---|---|
| **LC012** | Automatic relocking | **WITH** OR **WITHOUT** | **SC008 UCH type** |
| **LC097** | Type of key | **ONE BUTTON** or **TWO BUTTONS** | |
| **LC113** | Airbag | **WITH** OR **WITHOUT** | |
| **LC149** | Key locking | **WITH** OR **WITHOUT** | |
| **LC165** | Seat belt not fastened sensor | **ACTIVE** or **INACTIVE** | |
| **LC169** | Vehicle locked by RAID* function | **YES** or **NO** | |
| **LC170** | RAID* function authorisation by diag tool | **WITH** OR **WITHOUT** | |
| **LC171** | Radiofrequency function | **WITH** OR **WITHOUT** | |
| **LC172** | Type of central door locking button (CPE)* | **1 POSITION** or **2 POSITIONS** | |

* RAID: Renault Anti-Intruder Device.
* CPE: Electric central door locking.

- Check the configurations in the **Read configurations** menu

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## UCH PROGRAMMING PROCEDURE

The UCH programming procedure is carried out using the **diagnostic tool**.

– Establish dialogue with the UCH computer.
– In the menu **Special commands**, select the command **SC004 Program UCH**.

The tool displays **Remove the key from the anti-theft switch**,

The tool displays **Please enter the After-Sales code**. With the ignition off, enter the secret After-Sales code and validate.

If the code format is correct, the tool displays **Insert a key which has already been programmed to the vehicle** and the programming procedure starts.

The tool displays **UCH programming completed, please start key programming procedure**, the UCH is coded.

Enter key programming mode to allocate the other keys (maximum of three keys). Several seconds may elapse before this message appears.

**IMPORTANT:**
The maximum delay between each operation is **5 minutes**, otherwise the procedure is cancelled.
Once the UCH is coded, it is impossible to clear or program it with a new code.

## SPECIAL CASES

**If the screen displays:**

– **The After-Sales code entered does not correspond with the key inserted. Check that you have entered the code correctly and you have inserted a key belonging to the vehicle:**
– The code read is incorrect or the UCH has already been coded on another vehicle.

– **The UCH is not blank. Please start the key programming procedure:** the UCH is already coded on this vehicle.

– **Check the After-Sales code**: the code entered is incorrect. Check, then try entering the data again,

– **UCH programming failure, key cannot be used on this vehicle:** the key code does not correspond to the code entered (the key belongs to a vehicle from a different range).

– **The key inserted is blank. Please present another key which has already been programmed to this vehicle**: the key is blank, present a key which has already been coded on this vehicle.

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**KEY ALLOCATION PROCEDURE**

**WARNING:**
If none of the keys are available, it will be necessary to carry out a reallocation procedure for all keys.

Establish dialogue with the UCH computer.

In the menu **Special commands**, validate the command **SC015 Key allocation**.

Key programming is split into 2 parts:

1. Key insertion stage.
2. Key allocation.

**IMPORTANT:**
Keys which are not presented will no longer be active and will not be able to be used in the key allocation stage. Restart the procedure to reallocate them.

Switch off the ignition and click on Next.

Ensure that you have all the vehicle's keys. Keys not inserted during this procedure will not work.

**IMPORTANT:**
Only 2 blank keys are authorised via the key allocation procedure.

Switch on the ignition and insert the key to be allocated.

Switch off the ignition.

The tool asks "**Register another key?**".

To allocate additional keys, switch on the ignition for several seconds with the other vehicle keys to be allocated (three maximum) and then validate.

After each additional key allocation, switch off the ignition.

The tool displays "**Vehicle VIN**".

Enter the vehicle VIN.

Enter the programming key below into Code Management with the vehicle VIN.

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IMPORTANT:
You now have **60 minutes** to enter the code provided.
DO NOT DISCONNECT THE DIAGNOSTIC TOOL

Enter the immobiliser code found in Code Management.

The tool displays **Command in progress**.

Insert the key to be allocated. It is important not to leave the previously allocated key in the ignition switch. Switch on the ignition and then validate.

The tool displays **Allocation in progress. Do not remove the key**.

Switch off the ignition after allocation has finished.

Insert the next key to be allocated.

It is important not to leave the previously allocated key in the ignition switch. Switch on the ignition and then validate.

The tool displays **Allocation in progress. Do not remove the key**.

Switch off the ignition after allocation has finished.

The tool displays **End of programming procedure**.

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## Fault finding – Fault summary table

| Tool fault | Diagnostic tool title |
|---|---|
| **DF180** | Decoder -> ring connection |
| **DF272** | Coded line circuit |
| **DF274** | Electric central locking button |

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| | |
|---|---|
| **DF180 PRESENT OR STORED** | DECODER -> RING CONNECTION<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V |

| | |
|---|---|
| ***NOTES*** | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| | |
|---|---|
| ***CC.0*** | Check the connection and condition of the transponder ring connector, component code **957**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| | Check the connection and condition of the UCH connector, component code **645**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| | Check the **continuity and insulation against earth** of the following connections:<br>– **80X** between components **645** and **957**.<br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_DF180

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| DF180 CONTINUED | |
|---|---|

| | |
|---|---|
| ***CC.1*** | Check the connection and condition of the transponder ring connector, component code **957**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| | Check the connection and condition of the UCH connector, component code **645**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| | Check the **continuity** and **insulation to + 12 V** on the following connections:<br>• **80X** between components **645** and **957**.<br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| | |
|---|---|
| **DF272 PRESENT OR STORED** | CODED LINE CIRCUIT<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to + 12 V |

| | |
|---|---|
| ***NOTES*** | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the connection and condition of the injection computer connector, component code **120**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the connection and condition of the UCH connector, component code **645**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity** and **insulation** of the following connection:
- **H17** between components **645** and **120**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Deal with any other faults.<br>Clear the **stored** faults. |

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| | |
|---|---|
| **DF274**<br>**STORED** | ELECTRIC DOOR LOCKING BUTTON<br>1.DEF: (-) button jammed<br>2.DEF: (+) button jammed |

| | |
|---|---|
| ***NOTES*** | The fault is declared **stored** after activation of the door locking button. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the connection and condition of the UCH connector, component code **645** and check the central door locking control connector, component code **123** or the driver's door electric lock connector, component code **140**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation** and **continuity** of the following connections:
- **20B** between components **645** and **123 or 140 without TRF**,
- **20A** between components **645** and **123 or 140 without TRF**,
- **MAN** of component **123**.
- **MAM** of component **140**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_DF274M

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| *NOTES* | Only check conformity after a complete check with **the diagnostic tool.**<br>The values shown in this conformity check are given as a guide.<br>Application condition: **engine off, ignition on**. |
|---|---|

## SUB-FUNCTION: STARTING

| Function | Parameter or Status Checked or Action | | Display and notes | Fault finding |
|---|---|---|---|---|
| **Supply** | **ET004:** | **+ 12 V** after ignition feed | **YES** | **In the event of a fault,** consult the interpretation of status **ET004 (see 87B, Passenger compartment connection unit)**. |
| **Engine immobiliser** | **ET184:** | Valid key code | **YES** when the ignition is switched on | **In the event of a fault**, apply the interpretation of status **ET184**. |
| | **ET185:** | Key code received | **YES when the ignition is switched on** | **In the event of a fault, apply the interpretation of status ET185.** |
| | **ET549:** | Immobiliser active | **NO** | **In the event of a fault**, apply the interpretation of status **ET549**. |
| | **ET127:** | Immobiliser warning light | **OFF** | **In the event of a fault,** apply the interpretation of status **ET127 (see 87B, Passenger compartment connection unit)**. |
| **Key** | **PR056:** | Number of keys allocated | **2 keys** on leaving the factory and programming of up to **4 keys** in After-Sales | **In the event of a fault**, apply the interpretation of parameter **PR056**. |
| **Engine immobiliser** | **AC003:** | Immobiliser warning light | This command is used to illuminate the immobiliser warning light | **In the event of a fault**, apply the procedure for command **AC003 (see 87B, Passenger compartment connection unit)**. |

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| *NOTES* | Only perform this conformity check after a complete check with the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **Engine stopped, ignition on**. |
|---|---|

## SUB-FUNCTION: ACCESS

| Function | Parameter or Status Checked or Action | | Display and notes | Fault finding |
|---|---|---|---|---|
| **Supply** | **ET004:** | **+ 12 V** after ignition feed | **YES** | **In the event of a fault,** consult the interpretation of status **ET004 (see 87B, Passenger compartment connection unit)**. |
| **Speed** | **PR008:** | Vehicle speed | **X** in **mph (km/h)** | **In the event of a fault,** run a test on the computer which gives the vehicle speed signal (see **83A Instrument panel**) |
| **Opening elements** | **ET489:** | Front doors | **OPEN** when opening a front door.<br>**CLOSED** if the doors are closed. | **In the event of a fault,** apply the interpretation of status **ET489** (see **87B, Passenger compartment connection unit**). |
| | **ET551:** | Rear doors or luggage compartment | **OPEN** when opening a rear door or the luggage compartment lid.<br>**CLOSED** if the doors are closed. | **In the event of a fault,** apply the interpretation of status **ET551** (see **87B, Passenger compartment connection unit**). |
| **Unlocking command** | **AC005:** | Opening element unlocking | This command is used to test whether the 4 doors and the tailgate unlocking function is operating correctly | In the event of a fault, refer to the procedure for command **AC005** (see **87B, Passenger compartment connection unit**). |
| **Central door locking** | **AC136:** | Central door locking buzzer | This command is used to test the UCH buzzer | If the fault is still present, contact Techline. |
| **Locking command** | **AC004:** | Central door locking | This command is used to test whether central door locking is working | In the event of a fault, refer to the procedure for command **AC004** (see **87B, Passenger compartment connection unit**). |

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**STATUS TEST**

It is possible to determine the fault on a vehicle by means of the various pieces of information provided by checking the statuses.

**ET004**: **+ 12 V** after ignition
**ET185**: Key code received
**ET184**: Key code valid
**ET549**: Immobiliser active

| | | |
|---|---|---|
| If | **ET004** status **YES**<br>**ET185** status **YES**<br>**ET184** status **YES**<br>**ET549** status **NO** | Check the injection system using the diagnostic tool and make sure that the injection computer is not locked. Check the dialogue between the UCH and the injection computer |
| If | **ET004** status **YES**<br>**ET185** status **YES**<br>**ET184** status **NO**<br>**ET549** status **YES** | The coded key does not belong to the vehicle. If the key does belong to the vehicle, reallocate the keys. If the key still does not work, replace the key. |
| If | **ET004** status **YES**<br>**ET185** status **NO**<br>**ET184** status **NO**<br>**ET549** status **YES** | The key is out of order or does not correspond with the type of vehicle. |

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## Fault finding – Status summary table

| Tool status | Diagnostic tool title |
|---|---|
| **ET184** | Valid key code |
| **ET185** | Key code received |
| **ET549** | Immobiliser active |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| | |
|---|---|
| **ET184** | KEY CODE VALID |

| | |
|---|---|
| ***NOTES*** | The status is **YES** when the ignition is switched on (+ after ignition feed) using a key for the vehicle.<br>If the state remains **NO**, try another key assigned to the vehicle before performing any operation. |

**ET184: NO despite the ignition being switched on, a key that belongs to the vehicle and the key code received (ET185 YES).**

| |
|---|
| Check that status **ET004 + 12 V After ignition feed** is **YES** with the ignition on. |
| Re-allocate the keys with the After-Sales code using the scenario **SC015 Key allocation**.<br>If the fault persists, replace the faulty vehicle key. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_ET184

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| ET185 | KEY CODE RECEIVED |
|---|---|

| *NOTES* | Check that no fault is **present** or **stored**.<br>The status is **YES** when the ignition is switched on (+ after ignition feed) with a valid key.<br>If the state remains **NO**, try another key assigned to the vehicle before performing any operation. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

**ET185: NO with ignition on and a key that belongs to the vehicle.**

Check that status **ET004 + 12 V After ignition feed** is **YES** with the ignition on.

Remove any metal objects from the key-ring and try again.

Switch on the ignition with the key from another vehicle, changing the key inserts:

If status **KEY CODE RECEIVED** changes to **YES**, replace the vehicle key.

If status **KEY CODE RECEIVED** remains **NO**:

Check the **condition** and **connection** of the connectors of the transponder ring, component code **957** and of the UCH, component code **645**.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation and the absence of interference resistance** of the following connections:
- **AP10** between components **957** and **645**,
- **NC** between components **957** and **645**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the problem persists, replace the transponder ring.

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

UCH_V09_ET185

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| | |
|---|---|
| **ET549** | ENGINE IMMOBILISER ACTIVE |

| | |
|---|---|
| ***NOTES*** | The immobiliser active status should change to **inactive** when the + after ignition is switched on.<br>The immobiliser status should be **active** when the key is absent from the ignition switch. |

**ET549**: **YES** despite the presence of a key in the ignition switch and + after ignition feed

| |
|---|
| Check that there is no fault before dealing with this status. |
| Check that status **ET004 + 12 V After ignition feed** is **YES** with the ignition on.<br>Deal with status **ET004** if it is **NO** with the ignition on. |
| Check status **ET185 Key code received** and status **ET184 Key code valid** with the ignition on.<br>If statuses **ET185** and **ET184** are **YES**, perform fault finding on the injection computer.<br>If status **ET185** is **NO**, deal with this status first.<br>If status **ET185** is **YES** and status **ET184** is **NO**, deal with status **ET184** first. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_ET549

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## Fault finding – Parameter summary table

| Tool Parameter | Diagnostic tool title |
|---|---|
| **PR056** | Number of keys allocated |

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| | |
|---|---|
| **PR056** | NUMBER OF KEYS ALLOCATED |

| | |
|---|---|
| ***NOTES*** | Check that no fault is **present**. |

This parameter indicates the number of keys allocated to the vehicle.
The maximum number of allocated keys is 4.

In the event of a fault, perform fault finding on the UCH (see **87B, Passenger compartment connection unit**).

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_PR056

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## Fault finding – Command summary table

| Tool command | Diagnostic tool title |
|---|---|
| **AC004** | Central door locking |
| **AC005** | Central door unlocking |
| **SC003** | Spare |
| **SC015** | Key allocation |

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| AC004 | OPENING ELEMENT LOCKING |
|---|---|

| *NOTES* | There must be no **present** or **stored** faults.<br>This command is for testing locking relay operation.<br>This command lasts for **2 seconds**. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the condition and the connection of the UCH connector, component code **645** (see **MR 451, Mechanical, 87B, Passenger compartment connection unit**).<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the condition and connection of the connectors of the following faulty lock(s): the rear right-hand door electric lock, component code **138**, the rear left-hand door electric lock, component code **139,** the driver's door electric lock, component code **140**, the passenger door electric lock, component code **141**, the boot lid electric lock, component code **142**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:<br>• **20C** between components **138** and **645**,<br>• **20C** between components **139** and **645**,<br>• **20C** between components **140** and **645**,<br>• **20C** between components **141** and **645**,<br>• **20C** between components **142** and **645**.<br><br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

UCH_V09_ AC004

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| AC005 | OPENING ELEMENT UNLOCKING |
|---|---|

| *NOTES* | There must be no **present** or **stored** faults.<br>This command is for testing locking relay operation.<br>This command lasts for **2 seconds**. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the condition and the connection of the UCH connector, component code **645** (see **MR 451, Mechanical, 87B, Passenger compartment connection unit**).
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the condition and connection of the connectors of the following faulty lock(s): the rear right-hand door electric lock, component code **138**, the rear left-hand door electric lock, component code **139,** the driver's door electric lock, component code **140**, the passenger door electric lock, component code **141**, the boot lid electric lock, component code **142**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **20D** between components **138** and **645,**
- **20D** between components **139** and **645,**
- **20D** between components **140** and **645,**
- **20D** between components **141** and **645,**
- **20D** between components **142** and **645**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

UCH_V09_AC005

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| SC003 | SPARE |
|---|---|

| Equipment required |
|---|
| CLIP |

This command is used to recover a code which will allow the Techline to supply the After-Sales code.

**Recovery procedure for Reserve code:**
– Establish dialogue with the UCH.
– Select the menu **Repair mode**.
– Select the menu **Programming**.
– Select the line **SC003 Spare**.

Follow the instructions on the **Clip diagnostic tool**.

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

UCH_V09_SC003

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| SC015 | ALLOCATE KEY |
|---|---|

| Equipment required |
|---|
| CLIP |

This key allocation operation enables you to assign keys to the vehicle.

To add one or more keys, replace one or more keys, de-allocate one or more keys (in the event of theft for example).

**IMPORTANT**
It is not possible to allocate more than two blank keys per operation.
If more than two keys must be allocated: program 2 blank keys then repeat the procedure with all the keys.

Before starting this operation, check that there are no components likely to interfere with the electromagnetic field (for example: CB (Citizen Band), mobile phones, etc.).

**WARNING**
If not all of the keys are available, all the keys will have to be reallocated. Keys not inserted will no longer be allocated to this vehicle.

**WARNING**
The only keys which can be submitted are those ordered for the vehicle concerned, or the vehicle's old keys.

**IMPORTANT**
Do not interrupt the procedure when it is in progress.
If it is interrupted, restart the procedure in "not connected mode"; a new programming key will be displayed.

The UCH must **not be blank** in order to be able to program keys.
With this system it is not possible to replace some components, such as the UCH and the key as these parts are sold blank and uncoded.

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

UCH_V09_SC015

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| SC015 CONTINUED | |
|---|---|

**IMPORTANT**
When the programming operation is complete, only remove the key once the **Remove key** message is displayed on the screen. Otherwise the programming operation fails and the key will be unusable.

**WARNING**
When the tool issues the programming key, the user has a limited time in which to enter the immobiliser code.
If the time has elapsed, the CLIP tool displays the message: **Time elapsed. Restart the procedure**.

**Key allocation procedure**
– Establish dialogue with the UCH.
– Select the menu **Repair mode**.
– Select the menu **Programming**.
– Select line **SC015 Allocate key**.

The procedure for allocating keys is divided in two parts:
1. Key insertion stage.
2. Key allocation stage.

**1- Key insertion stage**

Clip requires that the keys to be allocated are inserted.
Insert ALL the keys to be allocated (old and new blank keys). Any keys not inserted at this stage will be rejected at the **Key allocation** stage and the operation will have to be restarted from the beginning.
Once all the keys are inserted, the **Clip diagnostic tool** displays the programming key in "not connected" mode.
To obtain the immobiliser code, (see **Technical Note 5037A, Code delivery procedure**).

**IMPORTANT**
In "not connected" mode, the programming key can only be used for a limited amount of time, as indicated by the **CLIP diagnostic tool**. After this time, the programming key and associated immobiliser code are no longer valid.
The operation must be restarted from the beginning.

**2- Key allocation stage:**

Continue the procedure following the instructions on the **Clip diagnostic tool**.
Once the keys have been allocated, make sure that all the keys can lock and start the vehicle.

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

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| NOTES | Only refer to these customer complaints after carrying out a complete check with the diagnostic tool |
|---|---|

Starting fault

| | |
|---|---|
| The vehicle will not start | ALP 9 |
| The opening elements locking/unlocking button indicator light does not illuminate | ALP 10 |
| The locking/unlocking button indicator light remains lit | ALP 11 |
| The electric locking/unlocking command of the doors operates erratically | ALP 12 |

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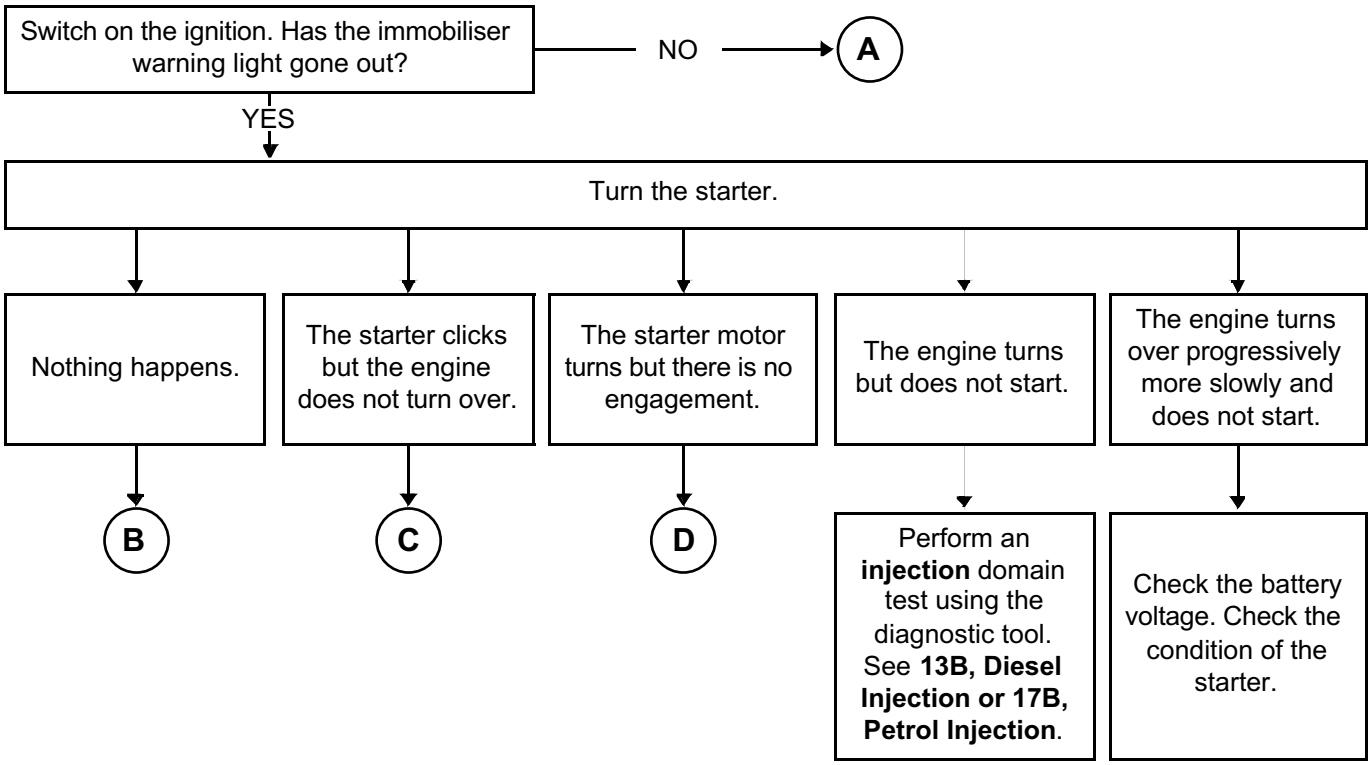
| ALP 9 | The vehicle will not start |
|---|---|

| *NOTES* | **Only refer to the customer complaints after performing a complete check using the diagnostic tool.** |
|---|---|
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |




| *AFTER REPAIR* | Carry out a complete check with the **diagnostic tool**. |
|---|---|

UCH_V09_ALP9

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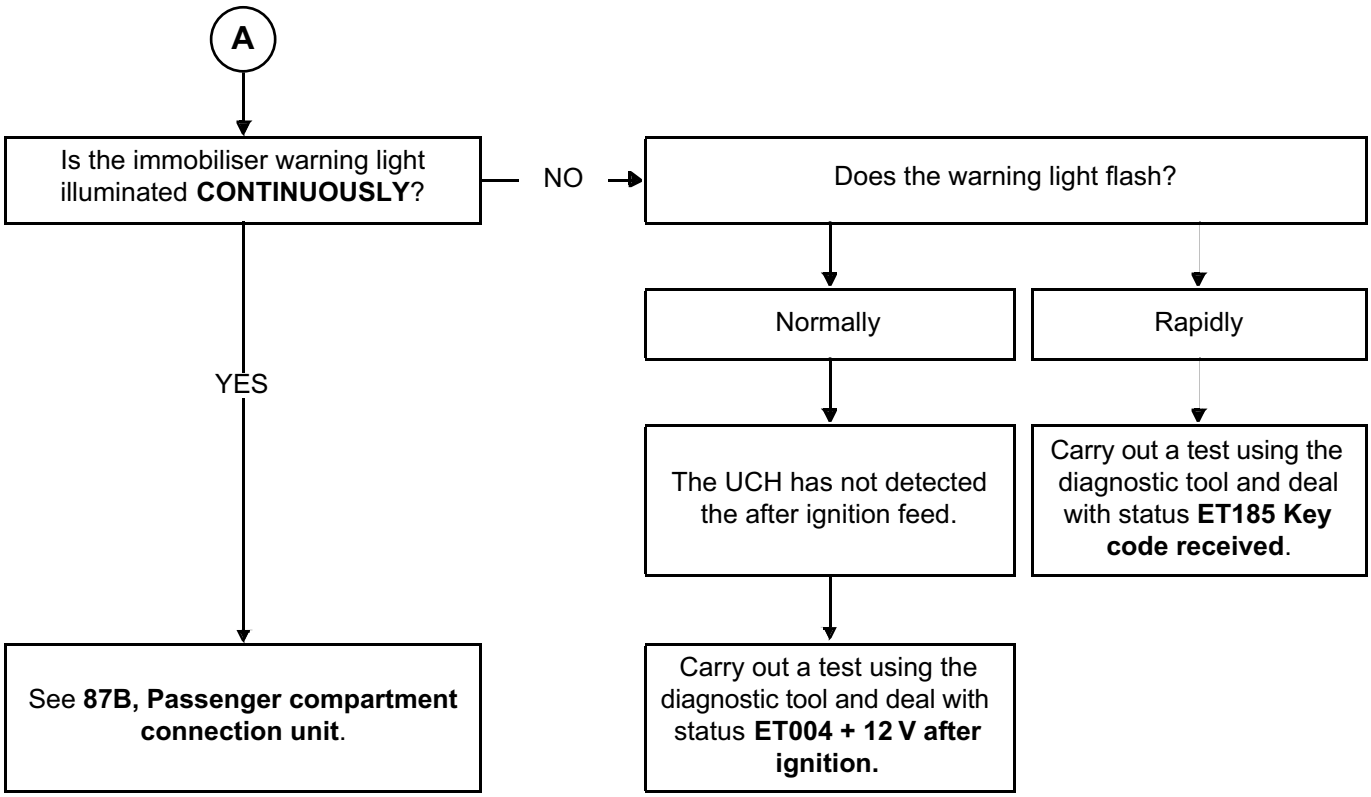
| ALP 9<br>CONTINUED 1 | |
|---|---|




| *AFTER REPAIR* | Carry out a complete check with the **diagnostic tool**. |
|---|---|

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| ALP 9 CONTINUED 2 | |
|---|---|

B

Check the battery voltage with the starter motor activated and the + starter supply.

Check the condition of the starter exciter terminal. Repair if necessary.
Check for **+ 12 V** at the starter excitation terminal, when the starter is activated.
Repair if necessary (ignition switch supply, correct operation of the ignition switch and ignition switch/starter connection).

If the fault is still not resolved, check that the starter motor is operating correctly. Replace the starter if necessary (see **MR 451, Mechanical, 16A, Starting - Charging, Starter: Removal - Refitting**).

| *AFTER REPAIR* | Carry out a complete check with the **diagnostic tool**. |
|---|---|

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| ALP 9 CONTINUED 3 | |
|---|---|

C

Check the battery **voltage** when the starter is turning and check the earth straps connecting the engine and transmission assembly to the vehicle chassis.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **B** between components **163** and **107**,
- **D** between components **107** and **104**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that the starter motor has not seized or locked.

If the fault is still present, replace the starter (see **MR 451 Mechanical, 16A, Starting - Charging, Starter: Removal - Refitting**).

| *AFTER REPAIR* | Carry out a complete check with the **diagnostic tool**. |
|---|---|

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| ALP 9 CONTINUED 4 | |
|---|---|

D

Check that the starter operates correctly.
Replace the starter if necessary (see **MR 451, Mechanical, 16A, Starting - Charging, Starter: Removal - Refitting**).

If the fault is still present, check the timing belt (see **MR 451 Mechanical, 11A, Top and front of engine, Timing belt: Removal - Refitting**).

| *AFTER REPAIR* | Carry out a complete check with the **diagnostic tool**. |
|---|---|

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| ALP 10 | The opening elements locking/unlocking button indicator light does not illuminate |
|---|---|

| *NOTES* | **Only refer to the customer complaints after performing a complete check using the diagnostic tool.** |
|---|---|
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Set the stalk to the side lights position. |
| Check for the presence and condition of fuse **F19 (10A)** for left-hand drive, or **F18 (10A)** for right-hand drive on component **1016**.<br><br>Replace the fuses if the checks are not correct. |
| Check the **condition** and **connection** of the connectors of the central door locking switch, component code **123** and of the passenger compartment fuse box, component code **1016**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the LED status with another supply and another earth. |
| Check the continuity of the following connections:<br>• **LPD** between components **123** and **1016** (for a left-hand drive vehicle).<br>• **LPG** between components **123** and **1016** (for a right-hand drive vehicle).<br>• **MAN** between components **123** and **earth**.<br><br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out a complete check with the **diagnostic tool**. |
|---|---|

UCH_V09_ALP10

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| ALP 11 | The opening elements locking/unlocking button indicator light remains lit |
|---|---|

| *NOTES* | **Only refer to the customer complaints after performing a complete check using the diagnostic tool.** |
|---|---|
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Set the stalk to position 0. |
| Check the **condition** and **connection** of the connectors of the central door locking switch, component code **123** and of the passenger compartment fuse box, component code **1016**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the insulation to **+ 12V** feed of the following connection:<br>• **LPD** between components **123** and **1016** (for a left-hand drive vehicle).<br>• **LPG** between components **123** and **1016** (for a right-hand drive vehicle).<br><br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out a complete check with the **diagnostic tool**. |
|---|---|

UCH_V09_ALP11

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| ALP 12 | The electric door locking/unlocking control operates erratically |
|---|---|

| *NOTES* | **Only refer to the customer complaints after performing a complete check using the diagnostic tool.** |
|---|---|
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the **connection and condition of the UCH connector**, component code **645** and check the **electric door locking** control connector, component code **123**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

For locking:
Check the **continuity and the insulation** of the following connections:
- **20A** between components **123** and **645**,
- **MAN** between components **123** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

For unlocking:
Check the **continuity and the insulation** of the following connections:
- **20B** between components **123** and **645**,
- **MAN** between components **123** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a complete check with the **diagnostic tool**. |
|---|---|

UCH_V09_ALP12

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# DUSTER

# 8 Equipement électrique

## 83A INSTRUMENT PANEL INSTRUMENTS


| | |
|---|---|
| Fault finding – Introduction | 83A - 2 |
| Fault finding – System operation | 83A - 8 |
| Fault finding – Replacement of components | 83A - 14 |
| Fault finding – Customer complaints | 83A - 15 |
| Fault finding – Fault Finding Chart | 83A - 20 |


V1 Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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# Fault finding – Introduction

## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

*Vehicle(s):* **H79**

*Function concerned:* **Instrument panel**

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type**

**Fault finding procedures** (this manual):
– Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.
**Wiring Diagrams:**
– Visu-Schéma.

**Type of diagnostic tools**

**– CLIP**

**Special tooling required**

| Special tooling required: |
|---|
| **Diagnostic tool** |
| Multimeter |

## 3. REMINDERS

**Procedure**

To run fault finding on the instrument panel, switch on the ignition in fault finding mode (+ after ignition).

**Customer complaints - Fault finding chart**

As the RENAULT diagnostic tool cannot be used to carry out fault finding on the instrument panel, fault finding is carried out by means of customer complaints and fault finding charts

**A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.**

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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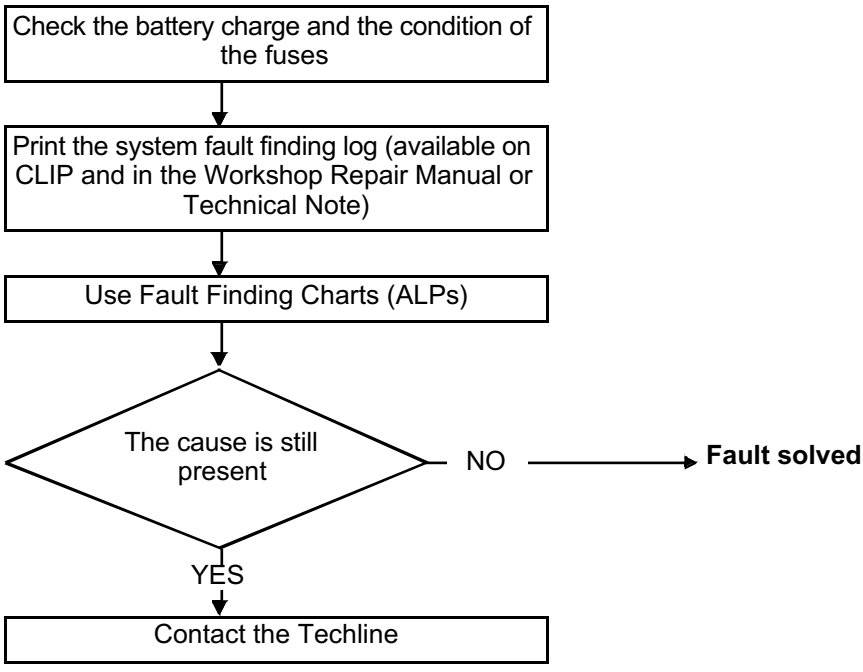
## 4. FAULT FINDING PROCEDURE




| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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**FAULT FINDING PROCEDURE (continued)**

**Wiring check**

**Fault finding problems**

Disconnecting the connectors and/or manipulating the wiring may temporarily remove the cause of a fault.
Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

**Visual inspection**

Look for damage under the bonnet and in the passenger compartment.
Carefully check the fuses, insulators and wiring harness routing.
Look for signs of oxidation.

**Physical inspection**

While manipulating the wiring, use the diagnostic tool to note any change in fault status from stored to present.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Twist the wiring harness.
If there is a change in status, try to locate the source of the fault.

**Inspection of each component**

Disconnect the connectors and check the appearance of the clips and tabs, as well as their crimping (no crimping on the insulating section).
Make sure that the clips and tabs are properly locked in the sockets.
Check that no clips or tabs have been dislodged during connection.
Check the clip contact pressure using an appropriate model of tab.

**Resistance check**

Check the continuity of entire lines, then section by section.
Look for a short circuit to earth, to **+ 12 V** or with another wire.
If a fault is detected, repair or replace the wiring harness.

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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## 5. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the proper tools.

## 6. SELF-TEST FUNCTION

Testing the various display devices consists of:
– activating the needle indicators and the LCD numerical indicators.

**IMPORTANT**
The warning lights are controlled via a wire connection (conventional control by means of a wire connecting the warning light to the computer). They are not tested via the instrument panel.
To test the warning lights, use a diagnostic tool (CLIP or NXR) in **warning light fault test** command mode for the computers controlling the warning light to be checked, except the low fuel level warning light, which is tested via the instrument panel.
Failure of any of the warning lights requires the instrument panel to be replaced.

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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**ACCESS TO FAULT FINDING MODE AND CHANGE OF PAGES**

This function is viewed:

**Version with and without trip computer**

**Input:**

– By pressing and holding the odometer Reset button for **5 seconds** when switching on the **APC**.

**Scrolling:**

– To scroll the trip computer information, press the odometer Reset button repeatedly.

**Output:**

– The fault finding phase ends automatically after **5 minutes**.
– The fault finding phase ends after the ignition is switched off.
– The fault finding phase can be ended by pressing and holding the mileage counter reset button, which clears the stored faults.

**DESCRIPTION OF THE NEEDLE INDICATOR TEST SEQUENCE**

The needle indicators are activated at the same time.
The speedometer displays, for **1 second** in **24 mph (40 km/h)** stages, speeds ranging from **0 to 102 mph (170 km/h)**.
The rev counter displays, for **1 second** in **1000 rpm** stages, values ranging from **0 to 7000 rpm**.

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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**DISPLAYING THE TRIP COMPUTER PAGES AND FAULT FINDING HELP**

First page: all the warning lights are illuminated with software version + clock on the trip computer page.

Second page: all the segments are illuminated on the trip computer.

Third page: **Number of litres display**
If an "open circuit or short circuit" fault is present, "- - -" is displayed.

Fourth page: **Fuel flow in litres/hour** information with the engine running.
If an "open circuit or short circuit" fault is present, "- -" is displayed.

Fifth page: **Stored sensor faults,** no present or stored fault displayed as "- - - - -".
– The stored and present "coolant temperature" faults are displayed as "- - -TO" for open circuit and "- - -TC" for short circuit.

The "coolant temperature" faults are not significant, the "TO" fault must not be taken into account when the engine is cold.

– The stored and present "fuel gauge" faults are displayed as "-JO- -" for open circuit and "-JC- -" for short circuit.

– The stored and present "fuel flow" faults are displayed as "D- - - -" for no fuel flow signal.

The "fuel flow" faults are to be taken into account only on the versions with the trip computer.

All the displayed faults of the "stored sensor faults" page are faults that were detected, but no longer confirmed as present.

In case of several stored or present faults, they are all displayed on a single line.

To clear the stored faults and end the self-test procedure sequence, press and hold the odometer Reset button.

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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## 1. OPERATION OF THE NEEDLE INDICATORS

### Speedometer

The vehicle speed signal is transmitted to the instrument panel by a wire link.
The vehicle speed signal can be supplied by:
– the vehicle speed sensor located on the gearbox (for a 4x2 vehicle without ABS or ESP),
– the ETC torque distribution computer (for a 4x4 vehicle without ABS, without ESP),
– the ABS computer (for a vehicle with ABS),
– the ESP computer (for a vehicle with ESP).

### Engine speed indicator

The engine speed signal is transmitted to the instrument panel by a wire connection (signal provided by the injection computer).

## 2. OPERATION OF THE TRIP COMPUTER

### Coolant temperature bargraph

The coolant temperature signal is transmitted to the instrument panel by a wire connection.
The signal is produced by the coolant temperature sensor.
Above **115˚C (inclusive)**, all the segments are illuminated with the warning light.
From **105˚C** (inclusive) to **115˚C** (not inclusive), nine segments are illuminated.
From **80˚C** (inclusive) to **105˚C** (not inclusive), six segments are illuminated.
From **50˚C** (not inclusive) to **80˚C** (not inclusive), three segments are illuminated.
No segments are illuminated when the temperature is below **50˚C**.

### Fuel level bargraph and low fuel level warning light

The separate "**low fuel level**" warning light comes on when the reserve level is reached and nine segments of the bargraph are extinguished.
The wire signal from the fuel sender is processed to calculate the fuel level and manage the warning light.

**SPECIAL NOTE ABOUT OPERATION WHEN THE IGNITION IS SWITCHED ON:**

A **3 second** self-test is run on the "low fuel level" warning light when the ignition is switched on.

**Case 1:** if the fuel sender is connected but the fuel level in the tank is lower than the reserve threshold, the continued illumination of the warning light after **3 seconds** depends on the fuel level signal (smoothed and taking into account recalibrations).

| | |
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| ***AFTER REPAIR*** | Check for correct operation. |

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**Case 2:** if the fuel sender is not connected and it is the first time the fault appears when switching on the ignition, the **low fuel level warning light** first flashes quickly for **2 seconds**, then after **1 minute 40 seconds maximum** (fault detection time), the fuel level bargraph goes out, then the low fuel level warning light is illuminated continuously.

**Case 3**: if the fuel sender is not connected and the warning light had been illuminated before the ignition was switched on this time, the **low fuel level** warning light stays illuminated, then after **1 minute 40 seconds**, all the bargraph segments go out.

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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**Oil pressure warning light**

When the ignition is switched on, the oil pressure warning light illuminates.
When the engine is running and the oil pressure is sufficient, the warning light goes out.
The oil pressure signal is transmitted to the instrument panel by a wire connection.
The signal is produced by the oil pressure switch.

## 3. ODOMETER

**Total mileage**

The total mileage is displayed as soon as the ignition is switched on.
Press the **Trip computer** scroll button or the **Reset** button to move to the next page.

**Trip mileage**

The trip mileage is displayed instead of the total mileage when the **Trip computer** or the **Reset** button is pressed briefly.
Except in the following cases:
– it is reset by a long press of the instrument panel **Reset** button,
– resetting the trip mileage is different from resetting the **trip computer** (distance travelled).

**Trip computer**

The various sequences of the trip computer can be displayed instead of the mileage by pressing the button at the end of the wiper stalk (**Trip computer** button). It is reset by a long press of the **Reset** button.

The signals from the trip computer are displayed after the trip mileage as follows:
– **Fuel consumed** (in litres per 100 km) since the last reset,
– **Average consumption** (in litres per 100 km) since the last reset.

This is only displayed after the vehicle has travelled **400 m**.
This takes into consideration the distance covered and the fuel consumption since the last time the reset button was pressed.

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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**Estimated range with remaining fuel (in km).**

This is only displayed after the vehicle has travelled approximately **400 m**. This is the potential distance remaining calculated on the basis of distance travelled, amount of fuel remaining in the tank and fuel consumption.
Note:
The range is no longer displayed **3 minutes after** the low fuel level warning light illuminates.
– **Distance travelled** since the last reset.
– **Average speed** since the last reset.

This is displayed after the vehicle has travelled **400 m**. It is obtained by dividing the distance travelled by the time elapsed since the last reset. The time base is internal to the on-board computer.

**HANDBRAKE APPLIED AND BRAKING CIRCUIT FAULT DETECTED WARNING LIGHT**

– Handbrake switch.
– Low brake fluid switch.
– Electronic braking distribution fault (**ONLY WITH ABS OR ESP**).
– Electronic front - rear torque distribution (**ETC**) fault.

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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| Warning light | | Control | Tested | Signal transmitter |
|---|---|---|---|---|
| **1** | Opening elements | **Earth** | **NO** | UCH |
| **2** | Dipped headlights | **+ 12 V** | **NO** | Lighting stalk |
| **3** | Main beam headlights | **+ 12 V** | **NO** | Lighting stalk |
| **4** | Rear fog lights | **+ 12 V** | **NO** | Lighting stalk |
| **5** | Front fog lights | **+ 12 V** | **NO** | Lighting stalk |
| **6** | Left-hand and right-hand direction indicator lights | **+ 12 V** | **NO** | UCH |
| **7** | Battery charge fault | **Earth** | **NO** (but illuminated when engine stopped) | Alternator |
| **8** | Coolant temperature | **Earth** | **3 seconds** by injection | Injection computer |
| **9** | Oil pressure alert | **Earth** | **NO** (but illuminated when engine stopped) | Oil pressure sensor |
| **10** | Handbrake applied + low brake fluid (without ABS, without ESP, without ETC) | **Earth** | **NO** | Handbrake switch Low brake fluid switch |
| | Handbrake applied + low brake fluid + electronic braking distribution (with ABS OR ESP OR ETC) | | **3 seconds** by ABS OR ESP OR ETC | Handbrake switch + Low brake fluid switch + ABS OR ESP OR ETC computer |
| **11** | ESP | **Earth** | **3 seconds** by ESP | ESP computer |
| **12** | ABS system (active) | **Earth** | **3 seconds** by ABS OR ESP | ABS OR ESP computer |
| **13** | Airbag | **Earth** | **3 seconds** by Airbag | Airbag computer |
| **14** | Airbag Off | **Earth** | **3 seconds** by Airbag | Airbag computer |
| **15** | Heated rear screen | **Earth** | **NO** (but illuminated when engine stopped) | Relay plate |
| **16** | Minimum fuel level alert | **Earth** | **3 seconds** Instrument panel | Instrument panel management (sender unit signal) |
| **18** | OBD | **Earth** | **3 seconds** by injection | Injection computer |
| **19** | Safety reminder | **Earth** | **NO** (but illuminated when engine stopped) | Seat belt switch |
| **20** | Injection fault level 2 | **Earth** | **3 seconds** by injection | Injection computer |

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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| Warning light | | Control | Tested | Signal transmitter |
|---|---|---|---|---|
| **21** | 4x4 | **Earth** | **3 seconds** by the front - rear torque distribution (ETC) computer | Front - rear torque distribution (ETC) |
| **22** | 4X2 | **Earth** | **3 seconds** by the front - rear torque distribution (ETC) computer | Front - rear torque distribution (ETC) |
| **23** | IVP | **Earth** | **3 seconds** by injection | Injection computer |
| **24** | PARTICLE FILTER REGEN. | **Earth** | **3 seconds** by injection | Injection computer |
| **25** | Water in diesel fuel | **Earth** | **3 seconds** by injection | Injection computer |
| **26** | Diesel preheating Electronic fault level 1 | **Earth** | **3 seconds** by injection | Injection computer |
| **27** | Software lock | **Earth** | **3 seconds** by UCH | UCH computer |

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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**Replacement operation**

– Carry out fault finding before replacing the instrument panel.

– Operation of removing and refitting the instrument panel: see **Mechanical**, **83A**, **Instrument panel instruments, Instrument panel: Removal - Refitting**.

– The instrument panel may be replaced when the Techline has given its approval.

| | |
|---|---|
| ***AFTER REPAIR*** | Check for correct operation. |

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| | |
|---|---|
| **ENGINE SPEED** | |
| **DISPLAY AT ZERO OR INCONSISTENT SIGNAL** | **ALP1** |
| **COOLANT TEMPERATURE** | |
| **NO SIGNAL OR INCONSISTENT SIGNAL** | **ALP2** |
| **Fuel level** | |
| **THE FUEL LEVEL INDICATOR DOES NOT DISPLAY FULL** | **ALP3** |
| **ADDITION OF FUEL NOT REGISTERED (NOT FULL)** | **ALP4** |
| **DISPLAY JAMMED WHEN DRIVING (NOT MECHANICAL)** | **ALP5** |
| **FAULT WITH NO WARNING GIVEN BY WARNING LIGHT (NO ADDITION OF FUEL SINCE THE FAULT)** | **ALP6** |
| **FAULT WITH NO WARNING GIVEN BY WARNING LIGHT (ADDITION OF FUEL SINCE THE FAULT)** | **ALP7** |
| **FAULT WITH DELAYED WARNING** | **ALP8** |
| **COOLANT TEMPERATURE** | |
| **THE WARNING LIGHT REMAINS LIT** | **ALP9** |
| **LEVEL 1 INJECTION FAULT** | |
| **THE WARNING LIGHT REMAINS LIT** | **ALP10** |
| **VEHICLE SPEED** | |
| **DISPLAY AT ZERO OR INCONSISTENT SIGNAL** | **ALP11** |

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## Fault finding – Customer complaints

| | |
|---|---|
| **AIRBAG FAULT** | |
| **THE WARNING LIGHT REMAINS LIT** | **ALP12** |
| **OIL PRESSURE WARNING** | |
| **THE WARNING LIGHT REMAINS LIT** | **ALP13** |
| **DIPPED HEADLIGHTS** | |
| **THE WARNING LIGHT OPERATES INCONSISTENTLY** | **ALP14** |
| **MAIN BEAM HEADLIGHTS** | |
| **THE WARNING LIGHT OPERATES INCONSISTENTLY** | **ALP15** |
| **REAR FOG LIGHTS** | |
| **THE WARNING LIGHT OPERATES INCONSISTENTLY** | **ALP16** |
| **FRONT FOG LIGHTS** | |
| **THE WARNING LIGHT OPERATES INCONSISTENTLY** | **ALP17** |
| **ABS FAULT** | |
| **THE WARNING LIGHT OPERATES INCONSISTENTLY** | **ALP18** |
| **DIRECTION INDICATOR LIGHTS** | |
| **THE WARNING LIGHT OPERATES INCONSISTENTLY** | **ALP19** |

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| | |
|---|---|
| **ENGINE IMMOBILISER** | |
| THE ENGINE IMMOBILISER WARNING LIGHT REMAINS LIT OR FLASHES WHEN DRIVING | ALP20 |
| WARNING LIGHT REMAINS NOT LIT WHEN NOT UNDER AFTER IGNITION FEED | ALP21 |
| **BATTERY CHARGE FAULT** | |
| THE WARNING LIGHT REMAINS LIT (ENGINE RUNNING) | ALP22 |
| **HANDBRAKE APPLIED AND FAULT DETECTED ON BRAKING CIRCUIT** | |
| THE WARNING LIGHT OPERATES INCONSISTENTLY (WITHOUT ABS, WITHOUT ESP, WITHOUT ETC) | ALP23 |
| THE WARNING LIGHT OPERATES INCONSISTENTLY (WITH ABS OR WITH ESP OR WITH ETC) | ALP24 |
| **HEATED REAR SCREEN** | |
| THE WARNING LIGHT DOES NOT LIGHT UP | ALP25 |
| **INSTRUMENT PANEL** | |
| NO DISPLAY WHEN IGNITION IS SWITCHED ON | ALP26 |
| **TRIP COMPUTER OR TRIP METER OR CLOCK** | |
| RESET WHENEVER THE IGNITION IS SWITCHED OFF | ALP27 |
| **DOOR OPEN WARNING LIGHT** | |
| THE WARNING LIGHT DOES NOT LIGHT UP | ALP28 |

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| | |
|---|---|
| **INJECTION FAULT WARNING LIGHTS** | |
| **THE OBD INJECTION FAULT WARNING LIGHT REMAINS LIT** | **ALP29** |
| **THE LEVEL 2 INJECTION FAULT WARNING LIGHT REMAINS LIT** | **ALP30** |
| **SEAT BELT REMINDER WARNING LIGHT** | |
| **THE WARNING LIGHT OPERATES INCONSISTENTLY** | **ALP31** |
| **PARTICLE FILTER WARNING LIGHT** | |
| **THE WARNING LIGHT REMAINS LIT** | **ALP32** |
| **IVP WARNING LIGHT** | |
| **THE WARNING LIGHT REMAINS LIT** | **ALP33** |
| **4X2 AND 4X4 WARNING LIGHTS** | |
| **THE 4X2 WARNING LIGHT REMAINS LIT** | **ALP34** |
| **THE 4X4 WARNING LIGHT REMAINS LIT** | **ALP35** |
| **WATER IN DIESEL FUEL WARNING LIGHT** | |
| **THE WARNING LIGHT REMAINS LIT** | **ALP36** |
| **GEAR ENGAGED INDICATOR** | |
| **GEAR ENGAGED INDICATOR INOPERATIVE** | **ALP37** |

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**PASSENGER AIRBAG OFF WARNING LIGHT**

**THE WARNING LIGHT REMAINS LIT** → **ALP38**

**ESP FAULT**

**THE ESP WARNING LIGHT OPERATES INCONSISTENTLY** → **ALP39**

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| ALP 1 | Engine speed display at zero or inconsistent signal Message from: Injection computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Establish dialogue with the **injection computer**.
Check that the engine speed signal is present and consistent.
If the engine speed signal is absent or inconsistent, run fault finding on the injection (see **13B**, **Diesel injection** or **17B**, **Petrol injection**).
Deal with any other faults.

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity, and the absence of interference resistance** on the following connection:
– **H7** between components **120** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, activate a self-test sequence for the instrument panel.
If the self-test sequence is not correct, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 2 | **No coolant temperature signal or inconsistent signal Signal from the coolant temperature sensor** |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Check the **condition** and **connection** of the connectors of the **coolant temperature sensor**, component code **244** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the resistance of the **coolant temperature sensor**, component code **244** between connection **42A** and **earth**.
For **diesel injection** check the resistance of the **coolant temperature sensor**, component code **244** between connection **42A** and **connection NH**.
Replace the **coolant temperature sensor**, component code **244** (see **MR451, Mechanical, 19A Cooling, Coolant temperature sensor: Removal – Refitting**) if the resistance is not:
– **50** to **80˚C** = **825** Ω < **X** < **927** Ω
– **80** to **105˚C** = **273** Ω < **X** < **300** Ω
– **105** to **115˚C** = **124** Ω < **X** < **136** Ω
Warning temperature **+115˚C** = **103** Ω

Check the **insulation, continuity, and the absence of interference resistance** on the following connection:
– **42A** between components **247** and **244**.
For **diesel injection** check the **insulation, continuity**, and the **absence of interference resistance** on the following connection:
– **NH** between component **244** and **earth**.
If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise change the wiring.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 3 | The fuel level indicator does not display full |
|---|---|

| *NOTES* | The fuel tank must be filled with the ignition switched off (advise the customer to remove the key). |
|---|---|
| | Ideally the customer must fill the tank with at least **15 litres**. |
| | Use the **Technical Note Wiring Diagrams for H79**. |

Ask the customer if the tank is filled up under the following conditions:
- the customer filled the tank up to the 3rd cut-out
- the customer has changed filling station
- the customer filled the tank in a flat-level station (not on a slope).

**Did the customer fill the tank while observing all of these conditions?**

NO → Ask the customer to return just after having filled the tank under the conditions mentioned above.

YES ↓

With the ignition off, disconnect the fuel sender connector, component code **833** (**Petrol**) or **199** (**Diesel**) and then check the resistance using a multimeter.
The value should be **51** Ω.

**Is the value measured less than the corresponding value, according to the vehicle equipment?**

NO → Replace the **sender**, component code **833** (**Petrol**) or **199** (**Diesel**) (see **MR 451, Mechanical, 19C, Fuel tank, Fuel level sensor module: Removal - Refitting**).

If the fault is still present, contact Techline.

YES ↓

Compare the value measured to the value supplied by the **CLIP tool**.

**Are the value measured and the value provided by the CLIP tool the same to within ±5 Ω?**

NO → (A)

YES ↓

Contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 3<br>CONTINUED 1 | |
|---|---|

(A)

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **fuel sender**, component code **833** (**Petrol**) or **199** (**Diesel**).
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check the **continuity**, **insulation and the absence of interference resistance** of the following connections:
- **41A** between components **247** and **833** (**Petrol**) or **199** (**Diesel**),
- **47A** between components **247** and **833** (**Petrol**) or **199** (**Diesel**).

Are the checks correct? — NO → (B)

YES ↓

Measure the resistance of the sender and the wiring using a multimeter via the connector, on the instrument panel side.

**Are the value measured and the value provided by the CLIP tool the same to within ±5 Ω?** — YES → Contact the Techline.

NO ↓

Replace the instrument panel, component code **247** (see **MR 451, Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**).

Is the fault still present? — NO → The problem disappears.

YES ↓

Contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 3<br>CONTINUED 2 | |
|---|---|

B

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

Is the fault still present? — YES → Contact the Techline.

NO

The problem disappears.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 4 | Addition of fuel not registered (not full) |
|---|---|

| *NOTES* | None. |
|---|---|

Consult the interpretation of **ALP3 The fuel level indicator does not display full**.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 5 | Display jammed when driving (not mechanical) |
|---|---|

| *NOTES* | For economical driving, the blocks on the display may remain illuminated or the needle may remain jammed up to **120 miles (200 km)**. |
|---|---|

| |
|---|
| Check that there is no mechanical jamming. |
| If the fault is on the block at the top of the display or the needle is jammed at full:<br>check that the customer has travelled a sufficient amount of miles **(km)** for the block at the top of the display to go out or for the needle to move from the full section. |
| Check that the customer has not exceeded **3** filler cut-outs when filling the tank with fuel. |
| If the fault is still present or if the needle or the display is jammed in any position other than full, contact the Techline. |

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 6 | Fault with no warning given by warning light (no addition of fuel since the fault) |
|---|---|

| *NOTES* | Put the vehicle in **+ after ignition**. |
|---|---|
| | Use the **Technical Note Wiring Diagrams for H79**. |

Check the instrument panel warning lights, component code **247**.

**Does the fuel warning light illuminate for 3 seconds when + after ignition is switched on?**

NO → Replace the instrument panel, component code **247** (see **MR 451, Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**).

YES ↓

Record the resistance value provided by the **CLIP tool**.

Compare the value of the **CLIP tool** to the **warning resistance** equal to **280** Ω (**Petrol**) or **269** Ω (**Diesel**).

**Is this value greater than or equal to the warning resistance corresponding to the type of fuel?**

YES → Contact the Techline.

NO ↓

Rock the vehicle and check whether the resistance changes within **±5** Ω.

Is there a change in the resistance value?

YES → Contact the Techline.

NO ↓

With the ignition off, disconnect the fuel sender connector, component code **833** (**Petrol**) or **199** (**Diesel**) and then check the resistance using a multimeter.

**Is this value greater than or equal to the warning R value corresponding to the type of fuel?**

NO → Replace the sender, component code **833** (**Petrol**) or **199** (**Diesel**) (see **MR 451, Mechanical, 19C, Fuel tank, Fuel level sensor module: Removal - Refitting**).

YES ↓

Compare the value measured to the value supplied by the **CLIP tool**.

**Are the value measured and the value provided by the CLIP tool the same to within ±5 Ω?**

NO → (A)

YES ↓

Contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 6<br>CONTINUED 1 | |
|---|---|

A

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **fuel sender**, component code **833** (**Petrol**) or **199** (**Diesel**).
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check the **continuity**, **insulation and absence of interference resistance** on the following connections:
- **41A** between components **247** and **833** (**Petrol**) or **199** (**Diesel**),
- **47A** between components **247** and **833** (**Petrol**) or **199** (**Diesel**).

**Are the checks correct?**

NO → B

YES

C

B

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

**Is the fault still present?**

YES → C

NO

The problem disappears.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 6<br>CONTINUED 2 | |
|---|---|

C

Measure the resistance of the sender and the wiring via the connector, on the instrument panel side.

**Are the value measured and the value provided by the CLIP tool the same to within ±5 Ω?**

YES → Contact the Techline.

NO

Replace the instrument panel, component code **247** (see **MR 451, Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**).

**Is the fault still present?**

YES → Contact the Techline.

NO

The problem disappears.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 7 | Fault with no warning given by warning light (addition of fuel since the fault) |
|---|---|

| *NOTES* | Put the vehicle in **+ after ignition**. |
|---|---|
| | Use the **Technical Note Wiring Diagrams for H79**. |

Check the **instrument panel** warning lights, component code **247**.

**Does the fuel warning light illuminate for 3 seconds when + after ignition is switched on?**

NO → Replace the **instrument panel**, component code **247** (see **MR 451, Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**).

YES ↓

With the ignition off, disconnect the fuel sender connector, component code **833** (**Petrol**) or **199** (**Diesel**) and then check the resistance using a multimeter.
Compare the value measured to the value supplied by the **CLIP tool**.

**Are the value measured and the value provided by the CLIP tool the same to within ±5 Ω?**

NO → (A)

YES ↓

Contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 7<br>CONTINUED 1 | |
|---|---|

A

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **fuel sender**, component code **833** (**Petrol**) or **199** (**Diesel**).
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check the **continuity**, **insulation and absence of interference resistance** on the following connections:
- **41A** between components **247** and **833** (**Petrol**) or **199** (**Diesel**),
- **47A** between components **247** and **833** (**Petrol**) or **199** (**Diesel**).

**Are the checks correct?**

NO → B

YES

C

B

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

**Is the fault still present?**

YES → Contact the Techline.

NO

The problem disappears.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 7<br>CONTINUED 2 | |
|---|---|

C

Measure the resistance of the sender and the wiring via the connector, on the instrument panel side.

**Are the value measured and the value provided by the CLIP tool the same to within ±5 Ω?**

YES → Contact the Techline.

NO

Replace the instrument panel, component code **247** (see **MR 451, Mechanical, 83A, Instrument panel, Instrument panel: Removal - Refitting**).

**Is the fault still present?**

NO → The problem disappears.

YES

Contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 8 | Fault with delayed warning |
|---|---|

| *NOTES* | None. |
|---|---|

Ask the customer the distance travelled since the warning appeared until the fault occurred.

**Did the fault take place after travelling more than 30 miles (50 km)?**

YES → Explain to the customer that the guaranteed distance is **30 miles (50 km)** from the warning.

NO ↓

**Has the customer added any fuel since the fault?**

YES → See **ALP7 Fault with no warning given by warning light (addition of fuel since the fault)**.

NO ↓

See **ALP6 Fault with no warning given by warning light (no addition of fuel since the fault)**.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 9 | The warning light remains illuminated<br>Message from: injection computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Run fault finding on the injection system.
Deal with any other faults.

Check **the condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check the **insulation, continuity, and the absence of interference resistance** on the following connection:
– **31A** between components **120** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 10 | The OBD injection fault warning light remains illuminated<br>Message from: injection computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Run fault finding on the injection system.
Deal with any other faults.

Check **the condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check the **insulation, continuity**, and the **absence of interference resistance** on the following connections:
– **137C** between components **120** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 11 | Vehicle speedometer at zero or inconsistent signal |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

| **If the vehicle speed signal is delivered by the speed sensor, for vehicles that are not equipped with an ABS, ESP or ETC**. |
|---|
| Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **speed sensor**, component code **250**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.<br><br>Check the **insulation**, **continuity** and the **absence of interference resistance** on the following connections:<br>– **47F** between components **247** and **250**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| **If the vehicle speed signal is delivered to the other computers by the ABS computer**, activate a self-test sequence for the instrument panel. |
|---|
| Check the correct operation of the needle in all the speed ranges.<br>If the self-test sequence is not correct, contact the Techline. |
| If there is no vehicle speed signal on the ABS, deal with all the faults (see **38 C, Anti-lock braking system**). |
| If there is a vehicle speed signal on the ABS, check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **ABS computer**, component code **118**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.<br>Check the **insulation**, **continuity** and the **absence of interference resistance** on the following connections:<br>– **47F** between components **247** and **118**,<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 11<br>CONTINUED 1 | |
|---|---|

**If the vehicle speed signal is delivered to the other computers by the ESP computer** Check that the ESP computer is in good condition.
If the fault is still present, use the diagnostic tool to check that the ESP correctly receives the vehicle speed signal during a road test.
Deal with any faults (see **38C, Anti-lock braking system**).

If the fault is not resolved, check the connection and condition of the connectors of the **ESP computer**, component code **1094** and the **instrument panel**, component code **247**.
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
– **47F** between components **247** and **1094**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

**If the vehicle speed signal is delivered to the other computers by the ETC front - rear torque distribution computer**
Check that the ETC front - rear torque distribution computer is in good condition.
If the fault is still present, use the diagnostic tool to check that the ETC front - rear torque distribution computer correctly receives the vehicle speed signal during a road test.
Deal with any faults (see **26A, Rear final drive**).

If the fault is not resolved, check the connection and condition of the connectors of the **front - rear torque distribution ETC computer**, component code **2017** and the **instrument panel**, component code **247**.
If the connector is faulty and there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
– **47F** between components **247** and **2017**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| ***AFTER REPAIR*** | Check for correct operation. |
|---|---|

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| ALP 12 | The airbag fault warning light remains illuminated Signal from the airbag computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

| |
|---|
| Run fault finding on the **airbags and pretensioners** function (see **88C**, **Airbags and pretensioners**).<br>Deal with any other faults. |
| Check the **condition** and **connection** of the connectors of the **airbag computer**, component code **756** and the **instrument panel**, component code **247**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.<br><br>Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:<br>– **60A** between components **756** and **247**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 13 | The oil pressure warning light remains illuminated Signal from the oil pressure sensor |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

| |
|---|
| Check the general level of engine wear (oil level, oil pressure, oil circuit, etc.).<br>Check there is no major external oil leakage.<br>Repair if necessary. |
| With the engine running, move the wiring harness between the oil pressure sensor and the instrument panel to note whether the warning light goes out.<br>Look for possible damage to the wiring harness. |
| Check the **condition** and **connection** of the connectors of the **oil pressure sensor**, component code **205** and the **instrument panel**, component code **247**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.<br><br>With the engine running, check the **insulation**, **continuity**, and the **absence of interference resistance** on the following connection:<br>– **28A** between components **205** and **247**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.<br><br>If there is an **earth**, replace the **oil pressure sensor**, component code **205** (see **10A, Engine and cylinder block assembly, Oil pressure: Check**). |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 14 | The dipped headlight indicator light operates inconsistently |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Follow this fault finding procedure only if:
– the dipped headlights are illuminated and the warning light remains off,
– the dipped headlights are off and the warning light remains illuminated.

**The dipped headlights are illuminated but the warning light remains off.**

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **passenger compartment fuse box**, component code **1016**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Lighting stalk in the dipped headlights on position.
Check for **+12 V** on connection **CPG** between components **247** and **1016**.
**If there is +12 V**, replace the **instrument panel**, component code **247** (see **MR 451, 83A, Instrument panel, Instrument panel: Removal - Refitting**).
**If there is no +12 V**, check the **insulation**, **continuity** and the **absence of interference resistance** on the following connection:
– **CPG** between components **1016** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

**The dipped headlights are off but the warning light remains illuminated.**

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **passenger compartment fuse box**, component code **1016**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 14 CONTINUED | |
|---|---|

Lighting stalk in the rest position.
Check for **+12 V** of connection **CPG** between components **247** and **1016**.
– **If there is no +12 V**, replace the **instrument panel**, component code **247** (see **MR 451, 83A, Instrument panel, Instrument panel: Removal - Refitting**).
– **If there is +12 V**, check the **insulation**, **continuity**, and the **absence of interference resistance** on connection:
**CPG** between components **1016** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 15 | The main beam indicator light operates inconsistently |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Follow this fault finding procedure only if:
– the dipped headlights are illuminated and the warning light remains off,
– the dipped headlights are off and the warning light remains illuminated.

**The main beam headlights are illuminated but the warning light remains off.**

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **passenger compartment fuse box**, component code **1016**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Lighting stalk in the main beam headlights on position.
Check for **+12 V** on connection **RPG** between components **1016** and **247**.
– **If there is +12 V**, replace the **instrument panel**, component code **247 (**see **MR 451, 83A, Instrument panel, Instrument panel: Removal - Refitting**).
– **If there is no +12 V**, check the **insulation**, **continuity**, and the **absence of interference resistance** on the following connection
**RPG** between components **1016** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

**The main beam headlights are off but the warning light remains illuminated.**

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **passenger compartment fuse box**, component code **1016**.
If the connector or connectors are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 15 CONTINUED | |
|---|---|

Lighting stalk in the rest position.
Check for **+12 V** on connection **RPG** between components **1016** and **247**.
– **If there is no +12 V**, replace the **instrument panel**, component code **247** (see **MR 451, 83A, Instrument panel, Instrument panel: Removal - Refitting**).
– **If there is +12 V**, check the **insulation**, **continuity**, and the **absence of interference resistance** on the following connection:
– **RPG** between components **1016** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 16 | The rear fog light warning light operates inconsistently |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Follow this fault finding procedure only if:
– the rear fog lights are on and the indicator light remains off,
– the rear fog lights are off and the indicator light remains on.

**The rear fog lights are on but the indicator light remains off.**

Check the connection and condition of the connectors of the **instrument panel**, component code **247** and the **passenger compartment fuse box**, component code **1016**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Lighting stalk in rear fog lights on position.
Check for **+12 V** on connection **9P** of component **247**.
– **If there is +12 V**, replace the **instrument panel**, component code **247** (see **MR 451, 83A, Instrument panel, Instrument panel: Removal - Refitting**).
– **If there is no +12 V**, check the **insulation**, **continuity** and the **absence of interference resistance** on the following connection:
– **9P** between components **1016** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

**The rear fog lights are off but the indicator light remains on.**

Check the connection and condition of the connectors of the **instrument panel**, component code **247** and the **passenger compartment fuse box**, component code **1016**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 16 CONTINUED | |
|---|---|

Lighting stalk in the rest position.
Check for **+12 V** on connection **9P** of component **247**.
**If there is no +12 V**, replace the **instrument panel**, component code **247** (see **MR 451, 83A, Instrument panel, Instrument panel: Removal - Refitting**).
**If there is +12 V**, check the **insulation**, **continuity**, and the **absence of interference resistance** on the following connection:
– **9P** between components **1016** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 17 | The front fog light warning light operates inconsistently |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Follow this fault finding procedure only if:
– the rear fog lights are on and the indicator light remains off,
– the rear fog lights are off and the indicator light remains on.

**The rear fog lights are on but the indicator light remains off.**

Check the connection and condition of the connectors of the **instrument panel**, component code **247** and the **front fog relay**, component code **231**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Lighting stalk in front fog lights on position.
Check for **+12 V** on connection **8B** of component **247**.
– **If there is +12 V**, replace the **instrument panel**, component code **247** (see **MR 451, 83A, Instrument panel, Instrument panel: Removal - Refitting**).
– **If there is no +12 V**, check the **insulation**, **continuity** and the **absence of interference resistance** on the following connection:
– **8B** between components **231** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

**The front fog lights are off but the warning light remains illuminated.**

Check the connection and condition of the connectors of the **instrument panel**, component code **247** and the **front fog relay**, component code **231**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 17 CONTINUED | |
|---|---|

Lighting stalk in the rest position.
Check for **+12 V** on connection **8B** of component **247**.
**If there is no +12 V**, replace the **instrument panel**, component code **247** (see **MR 451, 83A, Instrument panel, Instrument panel: Removal - Refitting**).
**If there is +12 V**, check the **insulation**, **continuity**, and the **absence of interference resistance** on the following connection:
– **8B** between components **231** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 18 | The ABS warning light operates inconsistently<br>Message from: ABS/ESP computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

**The ABS warning light remains constantly off even when the ignition is switched on.**

Run fault finding on the ABS or the ESP.
Deal with any faults (see **38C, Anti-lock braking system**).

Check the connection and condition of the connectors of the **instrument panel**, component code **247** and the **ABS computer**, component code **118** or the **ESP computer**, component code **1094**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Disconnect the **ABS computer**, component code **118** or the **ESP computer**, component code **1094** and check that the instrument panel warning light illuminates.
If the warning light does not illuminate, check the **insulation** from **earth**, the **continuity**, and the **absence of interference resistance** on the following connection:
– **4Z** between components **118** or **1094** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

**The ABS warning light remains constantly illuminated.**

Run fault finding on the ABS or the ESP.
Deal with any faults (see **38C, Anti-lock braking system**).

Check the connection and condition of the connectors of the **instrument panel**, component code **247** and the **ABS computer**, component code **118** or the **ESP computer**, component code **1094**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation** to **+12 V**, the **continuity**, and the **absence of interference resistance** of the following connection:
– **4Z** between components **118** or **1094** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 18 CONTINUED | |
|---|---|

With the **ABS** or **ESP computer**, component code **118** or **1094** connected, the ignition switched on, and the **instrument panel**, component code **247** disconnected.
Check the **insulation** to **earth**, the **continuity**, and **absence of interference resistance** on the following connection:
– **4Z** between components **118** or **1094** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 19 | The direction indicator signal light operates erratically<br>Message transmitted by: UCH |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

**If the direction indicators are not operating normally, run fault finding on the UCH** (see **87B, Passenger compartment connection unit**).

**Left-hand drive**

Check the connection and condition of the connectors of the **instrument panel**, component code **247** and the **UCH**, component code **645**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Disconnect the connectors of the instrument panel, component code **247** and the **UCH**, component code **645**.
Check the **insulation**, **continuity** and the **absence of interference resistance** on the following connection:
– **64E** between components **645** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

**Right-hand drive**

Check the connection and condition of the connectors of the **instrument panel**, component code **247** and the **UCH**, component code **645**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Disconnect the connectors of the instrument panel, component code **247** and the **UCH**, component code **645**.
Check the **insulation**, **continuity** and the **absence of interference resistance** on the following connection:
– **64C** between components **645** and **247** for the left-hand warning light,
– **64D** between components **645** and **247** for the right-hand warning light.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 20 | **The immobiliser warning light remains lit or flashes when the vehicle is driven**<br>**Message from: UCH** |
|---|---|

| ***NOTES*** | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

**The immobiliser warning light is only for left-hand drive**

**The immobiliser warning light remains illuminated.**

Run fault finding on the immobiliser.
Check that when command **AC003** is run, the immobiliser warning light goes off and then comes on again.

Switch off the ignition, then disconnect the UCH connector.
If the indicator light is not illuminated, the UCH could be faulty, contact the Techline.

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **UCH**, component code **645**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

If the warning light is still illuminated, check the **insulation** to **+12V**, the **continuity**, and the **absence of interference resistance** of the following connection:
**80T** between components **645** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

**The immobiliser warning light flashes when driving.**

Run fault finding on the immobiliser.
Check that the index **ET127** becomes **OFF** with the engine running.
If this is not the case (see **82A, Engine immobiliser, System operation**).

| ***AFTER REPAIR*** | Check for correct operation. |
|---|---|

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| ALP 20 CONTINUED | |
|---|---|

| |
|---|
| Switch off the ignition, then disconnect the UCH connector.<br>If the indicator light is not illuminated, the UCH could be faulty, contact the Techline. |
| Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **UCH**, component code **645**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.<br><br>If the warning light is still illuminated, check the **insulation** to **+12V, the continuity**, and the **absence of interference resistance** of the following connection:<br>– **80T** between components **645** and **247**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| ***AFTER REPAIR*** | Check for correct operation. |
|---|---|

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| ALP 21 | The immobiliser warning light remains lit when not under an after ignition feed<br>Message transmitted by: UCH |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

**The immobiliser warning light is only for left-hand drive**

Run fault finding on the immobiliser.
Check that when command **AC003** is run, the immobiliser warning light goes off and then comes on again.

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **UCH**, component code **645**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

If the warning light is still off, check the **insulation**, the **continuity**, and the **absence of interference resistance** of the following connection:
– **80T** between components **645** and **247**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 22 | The battery charge fault warning light remains lit (engine running)<br>Signal from the alternator |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

| |
|---|
| Check the charging circuit.<br>Repair if necessary. |
| Manipulate the wiring harness between the alternator and the instrument panel to note whether the warning light goes out.<br>Look for possible damage to the wiring harness. |
| If the fault is still present, disconnect the connector of the **instrument panel**, component code **247**.<br><br>Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **alternator**, component code **103**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br><br>Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:<br>– **2A** between components **103** and **247**.<br>If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 23 | The handbrake applied and fault detected on braking circuit warning light operates inconsistently (WITHOUT ABS, WITHOUT ESP, WITHOUT ETC) |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

**The brake warning light remains illuminated even with the handbrake released.**

Check the brake fluid level.
Top up if necessary.
Check that there are no leaks in the brake circuit:

Disconnect the brake fluid MINIMUM level switch.
Make sure that the brake fluid minimum level switch is working correctly.
– With the switch inserted in the fluid, no continuity between connections **H1** and **MB**.
– With the switch out of the fluid, continuity between connections **H1** and **MB**.
Replace the switch if necessary.

Check the condition and connection of the **instrument panel** connectors, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.
Check for earth on the **instrument panel**, component code **247** between the following connection:
– **4Z** of component **247**,
– **4DB** of component **247**.
Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:
– **4Z** between component **247** and **earth**,
– **4DB** between component **247** and **earth**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Disconnect the handbrake switch connector.
Check that there is no **earth** with the switch in the rest position, and check for **earth** with the switch depressed.
Replace the switch if necessary.

Check the condition and connection of the **handbrake switch** connectors, component code **156**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.
Check **the insulation to earth, the continuity**, and **the absence of interference resistance** on the following connection:
– **H1** between components **247** and **156**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 23 CONTINUED | |
|---|---|

**The brake warning light remains off even with the handbrake applied.**

Disconnect the handbrake switch connector.
Check that there is no **earth** with the switch in the rest position, and check for **earth** with the switch depressed.
Replace the switch if necessary.

Check the condition and connection of the connectors of the **handbrake switch**, component code **156** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.
Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:
– **H1** between components **247** and **156**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 24 | The handbrake applied and fault detected on braking circuit warning light and the electronic braking distribution fault warning light operate inconsistently (WITH ABS/ESP/ETC) |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

**The brake warning light remains illuminated even with the handbrake released.**

Run fault finding on the ABS, the ESP (see **38C**, **Anti-lock braking system**), or the ETC (see **26A**, **Rear final drive**).
Deal with any other faults.

Check the brake fluid level.
Top up if necessary.
Check that there are no leaks in the brake circuit:

Disconnect the **brake fluid MINIMUM level switch**.
Make sure that the brake fluid minimum level switch is working correctly.
– With the switch inserted in the fluid, no continuity between connections **MB** and **H1**.
– With the switch out of the fluid, continuity between connections **MB** and **H1**.
Replace the switch if necessary.

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **brake fluid minimum level switch**, component code **207**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
– **H1** between components **247** and **207**,
– **MB** between components **207** and **earth**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the condition and connection of the connectors of the **brake fluid minimum level switch**, component code **207**, the **ABS computer**, component code **118** or the **ESP computer**, component code **1094** or **the front - rear torque distribution ETC computer**, component code **2017** and the **handbrake switch**, component code **156**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:
– **4DB** between components **247** and **118** or **1094**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 24 CONTINUED | |
|---|---|

Disconnect the connector of the **handbrake switch**, component code **156**.
Check that there is no **earth** with the switch in the rest position, and check for **earth** with the switch depressed.
Replace the switch if necessary.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:
– **H1** between components **247** and **156**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:
– **H1** between components **156** and **2017**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

**The brake warning light remains off even with the handbrake applied.**

Disconnect the handbrake switch connector.
Check that there is no **earth** with the switch in the rest position, and check for **earth** with the switch depressed.
Replace the switch if necessary.

Check the condition and connection of the connectors of the **instrument panel**, component code **247** and the **handbrake switch**, component code **156**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:
– **H1** between components **247** and **156**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 25 | The heated rear screen warning light does not light up<br>Message transmitted by: UCH |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Run fault finding on the **UCH**, component code **645** (see **87B**, **Passenger compartment connection unit**).
Deal with any other faults.

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **heated rear screen relay**, component code **235**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+12 V** on connection **15LP** of the **instrument panel**, component code **247**, with the **switch depressed**.
If there is no **+12 V**, check the **insulation, continuity** and the **absence of interference resistance** on the following connection:
– **15LP** between components **247** and **235**.
If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 26 | There is no instrument panel display when the ignition is switched on |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **passenger compartment fuse box**, component code **1016**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check the condition of fuses **F02 (5 A)** and **F28 (15 A)** in the **passenger compartment fuse box** (component code **1016**).
Replace the fuses if the checks are not correct.
Check for **+12 V** on connection **BC** and for **+ after ignition** on connection **AP29** of the **instrument panel**, component code **247**.

Check for earth on connection **NC** of the **instrument panel**, component code **247**.

Check the continuity, insulation and absence of interference resistance on the following connections:
– **BC** between components **247** and **1016**,
– **AP29** between components **247** and **1016**,
– **NC** between component **247** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 27 | The trip computer or the trip meter or the clock reset to zero each time the ignition is switched off |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **passenger compartment fuse box**, component code **1016**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Check the condition of fuses **F02 (5 A)** and **F28 (15 A)** in the **passenger compartment fuse box** (component code **1016**).
Replace the fuses if the checks are not correct.

Check for **+12 V** on connection **BC** and for **+ after ignition** on connection **AP29** of the **instrument panel**, component code **247**.

Check for earth on connection **NC** of the instrument panel, component code **247**.
Check the continuity, insulation and absence of interference resistance on the following connections:
– **BC** between components **247** and **1016**,
– **AP29** between components **247** and **1016**,
– **NC** between component **247** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 28 | Door open warning light does not light up<br>Message transmitted by: UCH |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Run fault finding on the **UCH**, component code **645** (see **87B**, **Passenger compartment connection unit**).
Deal with any other faults.
Check that when the rear doors or the luggage compartment are opened, status **ET551** is **OPEN** and that, with the rear doors or the luggage compartment closed, status **ET489** is **CLOSED**.

Check that when each front door is opened, status **ET489** is **OPEN**, and that with the front doors closed, status **ET551** is **CLOSED**.

If this is not the case, see **87B, Passenger compartment connection unit, Interpretation of statuses**.

Check the condition and connection of the connectors of the **instrument panel**, component code **247** and the **UCH**, component code **645**.
If the connector or connectors are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. If the fault is still present, check the **insulation**, the **continuity** and the **absence of interference resistance** of connection:
– **87H** between components **247** and **645**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 29 | The OBD injection fault warning light remains illuminated<br>Message from: injection computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Run fault finding on the petrol injection (see **17B, Petrol injection**) or the diesel injection (see **13B, Diesel injection**).
Deal with any other faults.

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
– **137C** between components **120** and **247**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 30 | The injection fault severity level 2 warning light remains illuminated<br>Message from: injection computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Run fault finding on the petrol injection (see **17B, Petrol injection**) or the diesel injection (see **13B, Diesel injection**).
Deal with any other faults.

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
– **3NY** between components **120** and **247**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 31 | The fasten seat belt reminder warning light operates inconsistently |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

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| Disconnect the seat belt switch connector.<br>Check that the switch is open when the seat belt is fastened and that the switch is closed when the seat belt is not fastened.<br>Replace the switch if necessary. |
| Activate a self-test sequence for the instrument panel (see **Fault finding - Introduction**)<br>If the diagnostic sequence is incorrect, contact the Techline. |
| If the self-test sequence reveals no faults, move the wiring harness between the **seat belt switch** and the **instrument panel** to note any change in the status of the warning light.<br>Look for possible damage to the wiring harness. |
| Check the **condition** and **connection** of the connectors of the **seat belt switch**, component code **333** and the **seat belt warning module**, component code **1601**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br><br>Check for **earth** on the **seat belt switch**, component code **333** between the following connection:<br>– **MAM** of component **333**.<br><br>Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:<br>– **MAM** between component **333** and **earth**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:<br>– **96A** between components **1601** and **333**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 32 | The particle filter warning light remains illuminated<br>Message from: injection computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Carry out fault finding on the injection (see **13B**, **Diesel injection**).
Deal with any other faults.

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
– **3TE** between components **120** and **247**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 33 | The IVP warning light remains illuminated<br>Message from: injection computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Run fault finding on the diesel injection (see **13B**, **Diesel injection**) or the petrol injection (see **17B**, **Petrol injection**).
Deal with any other faults.

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
– **3TJ** between components **120** and **247**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 34 | The 4X2 warning light remains illuminated<br>Message from: ETC torque distribution computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

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| Check if the 4X4 mode control is positioned on **AUTO** mode.<br>If not, put it on **AUTO** mode. |
| If the fault is still present, run fault finding on the ETC front - rear torque distributor (see **26A**, **Rear final drive**).<br>Deal with any other faults. |
| Check the **condition** and **connection** of the connectors of the **ETC front - rear torque distribution computer**, component code **2017** and the **instrument panel**, component code **247**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br><br>Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:<br>– **85M** between components **2017** and **247**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 35 | The 4X4 warning light remains illuminated<br>Message from: ETC torque distribution computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Run fault finding on the ETC front - rear torque distributor (see **26A**, **Rear final drive**).
Deal with any other faults.

Check the **condition** and **connection** of the connectors of the **ETC front - rear torque distribution computer**, component code **2017** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
– **85L** between components **2017** and **247**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 36 | The water in diesel fuel warning light remains illuminated<br>Message from: injection computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Carry out fault finding on the injection (see **13B**, **Diesel injection**).
Deal with any other faults.

Check the **condition** and **connection** of the connectors of the **injection computer**, component code **120** and the **instrument panel**, component code **247**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
– **3WTA** between components **120** and **247**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 37 | Gear engaged indicator inoperative<br>Message from: automatic transmission computer |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

Run fault finding on the **automatic transmission computer** (see **23A**, **Automatic gearbox**).
Deal with any other faults.

Check the **condition** and **connection** of the connectors of the **instrument panel**, component code **247** and the **automatic transmission computer**, component code **119**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
– **5CQ** between components **119** and **247**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 38 | The passenger airbag off warning light remains illuminated |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

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|---|
| Check if the passenger airbag inhibition key is in the **ON** position.<br>If not, put the passenger airbag inhibition key in the **ON** position. |
| Run fault finding on the "airbags and pretensioners" function (see **88C**, **Airbags and pretensioners**).<br>Deal with any other faults. |
| If the self-test sequence reveals no faults, move the wiring harness between the **seat belt warning module**, the **airbag computer**, and the **passenger airbag inhibition key** to note any change in the warning light status.<br>Look for possible damage to the wiring harness. |
| Check the **condition** and **connection** of the connectors of the **seat belt warning module**, component code **1601**, the **airbag computer**, component code **756**, and the **instrument panel**, component code **247**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.<br><br>Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:<br>– **60CD** between components **1601** and **756**,<br>– **60A** between components **756** and **247**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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| ALP 39 | The ESP warning light operates inconsistently |
|---|---|

| *NOTES* | Use the **Technical Note Wiring Diagrams for H79**. |
|---|---|

**The ESP warning light remains constantly off even when the ignition is switched on.**

| |
|---|
| Carry out fault finding on the ESP (see **38C**, **Anti-lock braking system**).<br>Deal with any other faults. |
| Check the **condition** and **connection** of the connectors of the **ESP computer**, component code **1094** and the **instrument panel**, component code **247**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Disconnect the **ESP computer**, component code **1094** and check that the instrument panel warning light illuminates.<br>If the warning light does not illuminate, check the **insulation** to **earth**, the **continuity, and the absence of interference resistance** of connection **4DA** between the **ESP computer**, component code **1094** and the **instrument panel**, component code **247**. |
| If the fault is still present, contact the Techline. |

**The ESP warning light remains constantly illuminated.**

| |
|---|
| Carry out fault finding on the ESP (see **38C**, **Anti-lock braking system**).<br>Deal with any other faults. |
| Check the **condition** and **connection** of the connectors of the **ESP computer**, component code **1094** and the **instrument panel**, component code **247**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation** to **+12V**, the **continuity, and the absence of interference resistance** of connection **4DA** between the **ESP computer**, component code **1094** and the **instrument panel**, component code **247**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| With the ESP computer connected, the ignition switched on, and the instrument panel disconnected, check the **insulation** to **earth** of connection **4DA** between the **ESP computer**, component code **1094** and the **instrument panel**, component code **247**.<br>If there is earth, contact the Techline. |

| *AFTER REPAIR* | Check for correct operation. |
|---|---|

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# 8 Electrical equipment

## 85A WIPERS - WASHERS

**UCH**
**Vdiag No.: 09**


| | |
|---|---|
| Fault finding – Introduction | 85A - 2 |
| Fault finding – List and location of components | 85A - 10 |
| Fault finding – Role of components | 85A - 11 |
| Fault finding – Function | 85A - 12 |
| Fault finding – Configuration | 85A - 14 |
| Fault finding – Interpretation of faults | 85A - 15 |
| Fault finding – Conformity check | 85A - 17 |
| Fault finding – Interpretation of statuses | 85A - 19 |
| Fault finding – Customer complaints | 85A - 24 |
| Fault finding – Fault Finding Chart | 85A - 25 |




"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

| | |
|---|---|
| *Vehicle(s):* **DUSTER**<br>*Function concerned:* **Wiping / washing** | *Name of computer:* **UCH**<br>*Vdiag No.:* **09** |

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type**

**Fault finding procedures** (this document):
– Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.

**Wiring Diagrams:**
– Visu-Schéma.

**Type of diagnostic tools**

**– CLIP**

**Special tooling required**

| Special tooling required | |
|---|---|
| | **Diagnostic tool** |
| | Multimeter |
| **Elé. 1622** | Bornier |
| **Elé. 1681** | Universal bornier |

**If the information obtained by the diagnostic tool requires the electrical continuity to be checked, connect bornier Elé. 1622 or universal bornier Elé. 1681.**

**WARNING:**
– All tests with bornier **Elé. 1622** or **Elé. 1681** must be conducted with the battery disconnected.
– The bornier is only designed to be used with a multimeter. Never power the test points with **12 V**.

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## 3. SAFETY INSTRUCTIONS

The safety instructions must be followed at all times when working on components, to avoid damage or injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the proper tools.

**Procedure for disconnecting the battery:**
– switch off the ignition,
– switch off all electrical consumers,
– wait at least **1 minute** for the electronic systems to switch off,
– disconnect the battery, starting with the negative terminal.

### Faults

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).

Consider the fault status, **present** or **stored** when the **diagnostic tool** is used after the + after ignition feed (without operating the system components).

For a **present fault**, apply the procedure described in the Interpretation of faults section.
For a **stored fault**, note the faults displayed and apply the Notes section.

If the fault is **confirmed** when the instructions are applied, the fault is present. Deal with the fault.
If the fault is **not confirmed**, check:
– the electrical connections that correspond to the fault,
– the connectors for this connection,
– the resistance of the faulty component,
– the condition of the wires.
**Refer to paragraphs 4.1 Checking wiring and 4.2 Checking connectors**

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**Conformity check**

The aim of the conformity check is to check data that does not produce a fault on the **diagnostic tool** when the data is inconsistent. Therefore, this stage is used to:
– carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint,
– check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

**Customer complaints - Fault finding chart**

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **customer complaints**.

**A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.**

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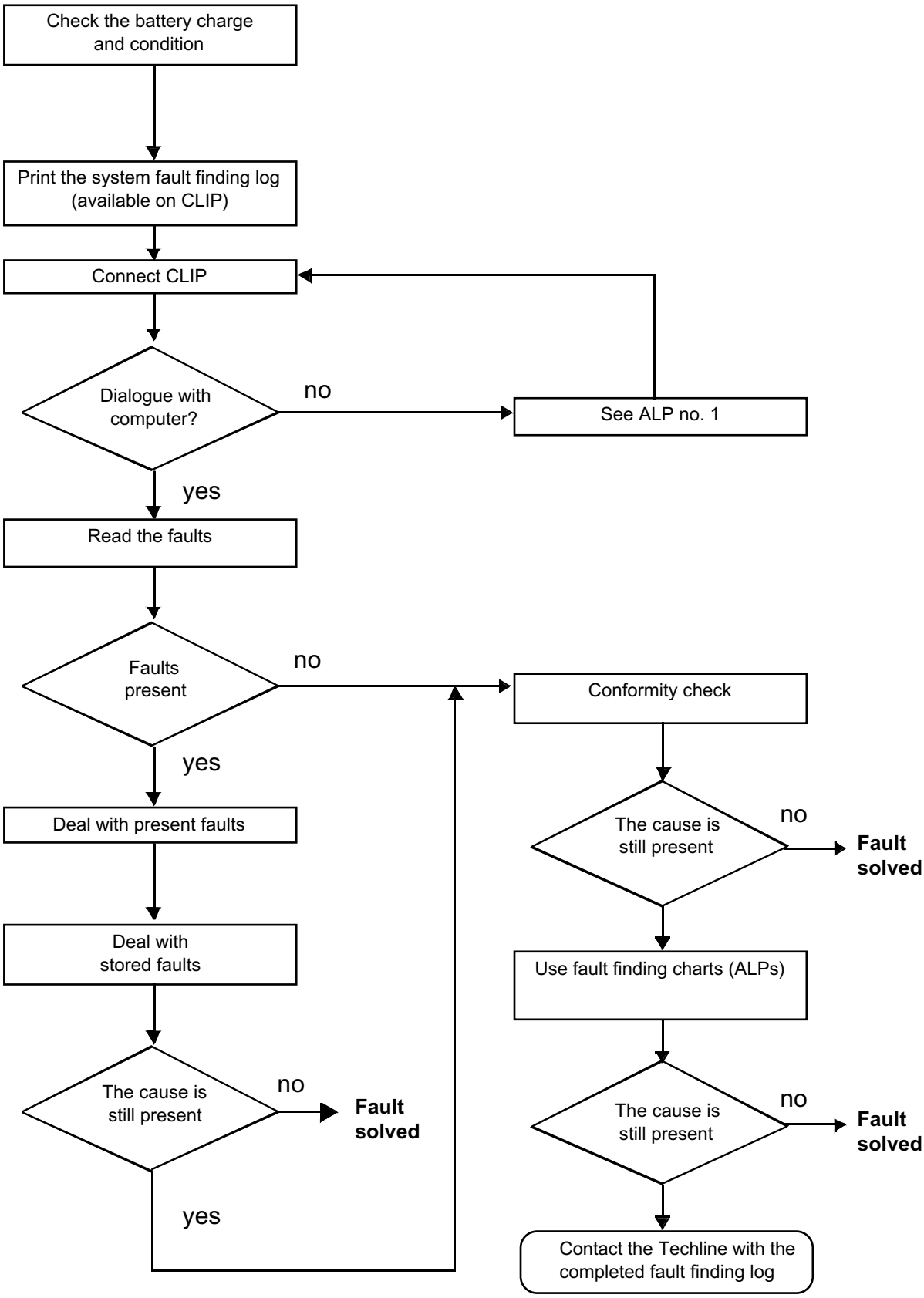
## 4. FAULT FINDING PROCEDURE



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## 4. FAULT FINDING PROCEDURE (CONTINUED)

### 4.1 Wiring check

**Fault finding problems**
Disconnecting the connectors and/or manipulating the wiring may temporarily remove the cause of a fault.

**Visual inspection**
Look for damage under the bonnet and in the passenger compartment.
Carefully check the protectors, insulation, and routing of the wiring, as well as the mountings.

**Physical inspection**
While manipulating the wiring, use either the **diagnostic tool** to detect a change in status from "stored" to "present", or use the multimeter to view the status changes.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Twist the wiring harness.

**Checking earth insulation**
This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the **12 V** or **5 V**. The correct measured value is **0 V**.

**Checking insulation against + 12 V or + 5 V**
This check is carried out by measuring the voltage (multimeter in voltmeter mode) between the suspect connection and the earth. In the first instance, the earth may be taken on the chassis. The correct measured value should be **0 V**

**Continuity check**
A continuity check is carried out by measuring the resistance (multimeter in ohmmeter mode), with the connectors disconnected at both ends. The expected result is **1 Ω ± 1 Ω** for every connection. The line must be fully checked, and the intermediate connections are only included in the method if this saves time during the fault finding procedure. The continuity check on the multiplex lines must be carried out on both wires. The measured value should be **1 Ω ± 1 Ω**.

**Checking the supply**
This check may be carried out using a test light (**21 W** or **5 W** depending on the maximum authorised load).

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### 4.2 Checking the connectors

Note:
Carry out each requested check visually.
Do not remove a connector if it is not required.

Note:
Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:
The check is carried out on the 2 parts of the connection. There may be two types of connection:
– Connector/Connector.
– Connector/Device.

**Visual inspection of the connection:**
– Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

**Visual inspection of the area around the connection:**
– Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
– Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
– Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

**Visual inspection of the plastic casing:**
– Check that there is no mechanical damage (casing crushed, split, broken, etc.), in particular to the fragile components (lever, lock, sockets, etc.).
– Check that there is no heat damage (casing melted, darker, deformed, etc.).
– Check that there are no stains (grease, mud, liquid, etc.).

**Visual inspection of the metal contacts:**
*(The female contact is called CLIP. The male contact is called TAB).*
– Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The contact comes out of the connector when the wire is pulled gently.
– Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
– Check that there is no oxidation on the metal contacts.

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**Visual inspection of the sealing:**
*(Only for watertight connectors)*
– Check for the seal on the connection (between the 2 parts of the connection).
  – Check the seal at the back of the connectors:
  – For *unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
  – For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
  – For gel seals, check for gel in all of the sockets without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
  – For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and the electrical wires, and that the hardened glue comes out of the side of the wire.
– Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, consult **Technical Note 6015A, Repairing electrical wiring**.

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## 5. FAULT FINDING LOG

**IMPORTANT!**

**IMPORTANT**
Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE ESSENTIAL THAT THE FAULT FINDING LOG IS FILLED OUT EVERY TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS DEPARTMENT.**

You will always be asked for this log:
– when requesting technical assistance from Techline,
– for approval requests when replacing parts for which approval is mandatory,
– to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

## 6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the proper tools.

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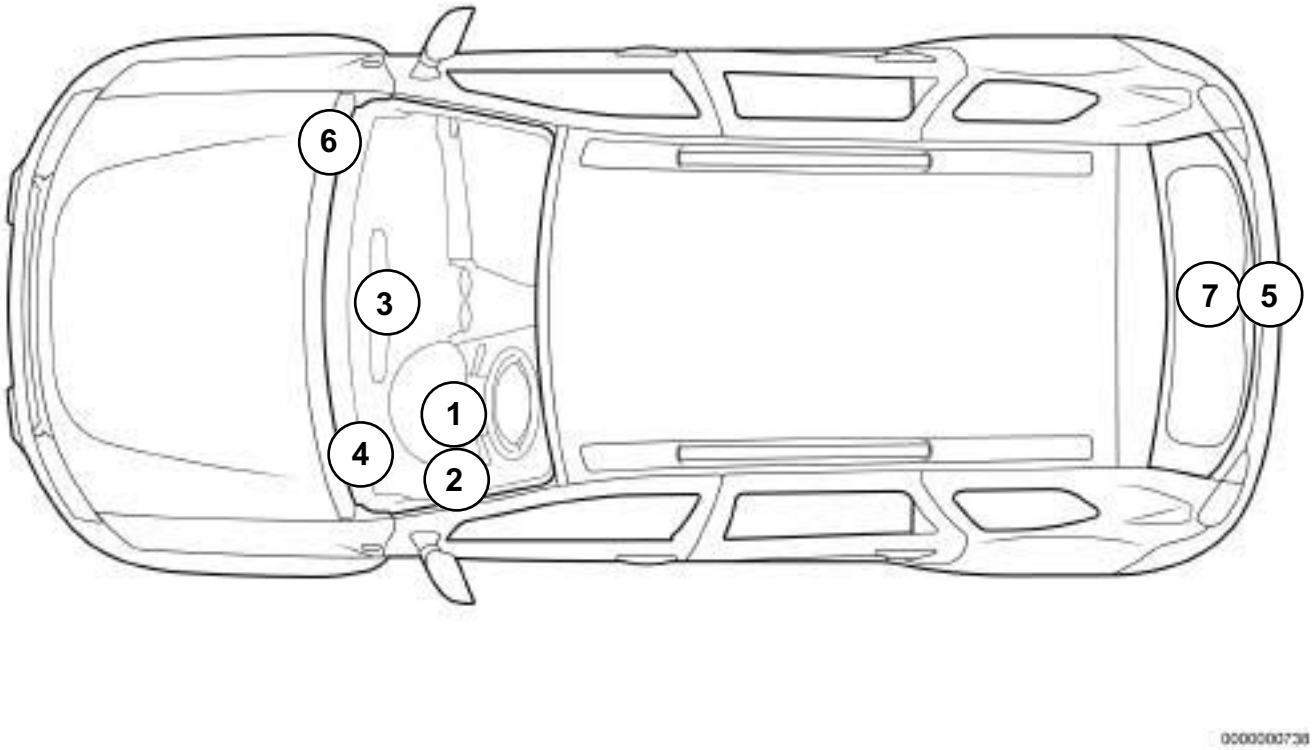


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| | | | |
|---|---|---|---|
| 1 | UCH | 5 | Rear screen wiper motor |
| 2 | Passenger compartment fuse box | 6 | Washer pump |
| 3 | Combined wiper-washer | 7 | Heated rear screen |
| 4 | Windscreen wiper motor | | |

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**Screen wiper motor:**
The role of the windscreen wiper motor is to provide windscreen cleaning.

**Rear screen wiper motor:**
The role of the rear screen wiper motor is to provide rear screen cleaning.

**Combined wiper-washer:**
The role of the combined wiper-washer control is to control the various washing and wiping functions.

**Screen washer pump:**
– Without rear screen wiping:
The role of the screen washer pump is to supply washer fluid to the windscreen.
– With rear screen wiping:
The role of the bi-directional screen washer pump is to supply washer fluid from the same reservoir to either the windscreen or the rear screen.

**Heated rear screen:**
The role of the heated rear screen is to defrost the rear screen.

**UCH:**
The UCH is used to manage all wiper functions (activation, wiper speed, etc).

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**Windscreen washing/wiping**

The UCH receives the intermittent wiper speed and the windscreen wiper park information.
This provides the following functions:
– intermittent wiper speed,
– extended wiper time after washing,
– return to park position.
In the park position, the switch is closed to **earth**, and the UCH receives logical information **0**.

This function is only active if **+ after ignition feed** is present.
When the **+ after ignition feed** is switched on, if the windscreen wiper park position is not detected, the wiper motor relay is held.

Operation is interrupted in the following cases:
– wiper request stopped or no request,
– **+ after ignition** switched off,
– UCH reads park information.

Detection of the park position should be made on transition and not level, that is, if the wiper stalk is moved from the intermittent position to the park position while the wiper blade is in the park position and the wiper motor is running, it will not be stopped until the next reading of the park position. This condition is necessary in order to obtain an exact park position.

**Intermittent**
The intermittent wiper speed function is only active if the **+ after ignition** is present and if the switch is in the intermittent position.
The time delay between two wipes is **5 seconds**, and this cannot be modified by the **diagnostic tool**.

When the windscreen intermittent speed function is activated, the windscreen intermittent speed relay is held by the UCH until the park position is detected. When the intermittent speed time delay has elapsed, the relay is held again and the cycle begins again.

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**Rear screen washing/wiping**

The UCH does not control the rear screen wiper, this function is managed by a direct command.

**Heated rear screen time delay**

This output controls a diode relay external to the UCH, delivering the power to supply the heated rear screen.

The de-icing time delay is activated by pressing the heated rear screen button located on the central console panel.

The heated rear screen time delay is deactivated:
– by pressing the button again if the time delay between activation and deactivation is less than **50 seconds**,
– automatically if the time delay has elapsed,
– directly if there is a cut in the **+ after ignition** or engine speed signal.

The minimum time delay between two presses of the button so that the command is taken into account, should not be less than **200 ms**.

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| Equipment required: |
| --- |
| CLIP diagnostic tool |

**Configurations of the wiper function in the UCH**

Individual configuration available on **diagnostic tool**, with the associated configuration reading:

| | |
| --- | --- |
| **Configuration** | **CF069** |
| **Configuration reading** | **LC116** |
| **Name of configuration** | **Intermittent variation according to speed** |
| **Option** | **WITH or WITHOUT** |
| **Configuration** | **SC008 UCH type** |

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| | |
|---|---|
| **DF099 PRESENT OR STORED** | WINDSCREEN WIPER PARK POSITION CIRCUIT |

| | |
|---|---|
| ***NOTES*** | **Conditions for applying the fault finding procedure to stored faults:**<br>The fault is declared present following operation of the windscreen wiper.<br>**Special notes:** random operation of the wipers in intermittent speed position (time delay not respected). |
| | Use the **Wiring Diagrams Technical Note for DUSTER**. |

Check the connection and condition of the connectors of the UCH, component code **645,** of the windscreen wiper motor, component code **212** and of the combined wiper-washer, component code **145**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check that the windscreen wipers function correctly in the intermittent position and that status **ET558** is **YES**; if status is **NO**, refer to the interpretation of this status.

Otherwise check the **insulation, continuity** and the **absence of interference resistance** on the following connections:
- **14C** between components **645** and **212**,
- **14D** between components **645** and **145**,
- **MB** between component **212** and **earth**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_DF099

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| DF099 CONTINUED | |
|---|---|

| |
|---|
| Check that the windscreen wiper functions correctly in the low speed position using command **AC056** |
| Otherwise check the **insulation and continuity** of the following connections:<br>• **14A** between components **212** and **145**,<br>• **MB** between component **212** and **earth**.<br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for **+ 12V** (when the low speed combined wiper-washer is requested) on connection **14A** of the combined wiper-washer, component code **145**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Otherwise replace the combined wiper-washer, component code **145** (see **MR 451 Mechanical, 84A, Wiper switch: Removal - Refitting**). |
| Check the operation and fitting of the windscreen wiper motor, component code **212**.<br>The windscreen wiper motor may need to be replaced (see **MR 451 Mechanical, 85A, Wiping - Washing, Windscreen wiper motor: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| | |
|---|---|
| ***NOTES*** | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **Engine stopped, ignition on**. |

**SUB-FUNCTION: WIPER CONTROL**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| **Wiper** | **ET004** | **+ 12 V** after ignition | **YES**<br>**NO** | **In the event of a fault**, consult the interpretation of status **ET004**. |
| | **ET027:** | Windscreen wiper park position | When the wiper control is in the intermittent position, the status is **ACTIVE** during the park phases of the wiper and **INACTIVE** during the wiping phases | **In the event of a fault**, apply the interpretation of the fault **DF097 Windscreen wiper park position**. |
| | **ET558:** | Windscreen wiper speed setting selection | **YES** when the wiper control is in the intermittent position.<br>**NO** when the wiper control is in position 0 or low speed or high speed | **In the event of a fault**, apply the interpretation of status **ET558**. |

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| *NOTES* | Only carry out this conformity check after a complete check using the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Test conditions: **Engine stopped, ignition on**. |
|---|---|

**SUBFUNCTION: WIPER CONTROL (CONTINUED)**

| Function | Parameter or status Checked or action | Display and notes | Fault finding |
|---|---|---|---|
| **Wiper** | **PR001:** Battery voltage | **12 V < X < 12.5 V** | **In the event of a fault**, run fault finding on the charging circuit (see **Technical Note 6014A**, **Checking the charging circuit**). |
| | **AC056** Low-speed wiper | This command activates the low speed wiper. | **In the event of a fault**, apply the interpretation of the fault **DF097 Windscreen wiper park position**. |
| | **ET547:** Heated rear screen button | **PRESSED** when the heated rear screen button is pressed.<br>**RELEASED** if the heated rear screen button is not pressed | **In the event of a fault**, apply the interpretation of status **ET547**. |

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| | |
|---|---|
| **ET004** | + 12 VOLTS AFTER IGNITION |

| | |
|---|---|
| ***NOTES*** | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

**ET004: "NO" with the ignition on**

Check fuse **F04 (10 A)** in the passenger compartment fuse box, component code **1016** (see **MR 451, Mechanical, 81C, Fuses, Fuses: List and location of components**).
Using a multimeter, check for **+ 12 V** after ignition on connection **AP10** of the UCH connector, component code **645**.
Using a multimeter, check for **+ 12 V** on connection **BP56** of the UCH connector, component code **645**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If there is no voltage, check **the continuity** and the **insulation** to **earth** on the following connection:
- **AP10** between components **645** and **1016**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| ET004 CONTINUED | |
|---|---|

**ET004: "YES" with the ignition off**

Using a multimeter, check that there is no **+12 V** with the ignition off on connection **AP10** of the UCH connector, component code **645**.
If the voltage is present, check the insulation to **+ 12 V** on the following connection:
- **AP10** between components **645** and **1016**.

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

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| | |
|---|---|
| **ET558** | WINDSCREEN WIPER SPEED SETTING SELECTION |

| | |
|---|---|
| ***NOTES*** | There must be no **present** or **stored** faults.<br>Switch on the ignition. |
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| | |
|---|---|
| **ET558<br>"NO" WITH THE CONTROL STALK IN THE INTERMITTENT POSITION** | Check the presence and condition of fuse **F01 (20 A)** in the passenger compartment fuse box, component code **1016** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| | Check the connection and condition of the combined wiper-washer connector, component code **145** and check the UCH connector, component code **645**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| | Check for **+ 12 V after ignition feed** on connection **AP7** of component **145**,<br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| | |
|---|---|
| **ET558 CONTINUED 1** | |

| | |
|---|---|
| **ET558 "NO" WITH THE CONTROL STALK IN THE INTERMITTENT POSITION (CONTINUED)** | Ensure **the continuity** and **the insulation** of the following connection:<br>• **AP7** between components **145** and **1016**.<br><br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | Check for **+ 12 V** (when the intermittent speed combined wiper-washer is requested) on connection **14E** of component **645**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | Check the **continuity** and **insulation to earth** of the following connection:<br>• **14E** between components **645** and **145**,<br><br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | Check for **+ 12 V** (when the intermittent speed combined wiper-washer is requested) on connection **14E** of component **145**.<br>Otherwise replace the combined wiper-washer, component code **145** (see **MR 451 Mechanical, 84A, Wiper switch: Removal - Refitting**). |
| | If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| ET558 CONTINUED 2 | |
|---|---|

| ET558 "YES" WITH THE CONTROL STALK IN A POSITION OTHER THAN INTERMITTENT SPEED | |
|---|---|
| | Check the connection and condition of the combined wiper-washer connector, component code **145** and check the UCH connector, component code **645**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| | With the wiper switch in the rest position, check the **insulation to + 12V** of the following connection:<br>• **14E** between components **645** and **145**<br><br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| | If the fault is still present, contact the Techline. |

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

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| NOTES | Only consult these customer complaints after a complete check with the diagnostic tool. |
|---|---|

**WIPERS - WASHERS**

| | |
|---|---|
| The windscreen wiper does not work at high speed | ALP 16 |
| Incorrect operation of the rear screen wiper | ALP 17 |
| The front and rear bidirectional washer pump does not rotate when its control is activated | ALP 18 |

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| ALP 16 | The windscreen wiper does not work at high speed |
|---|---|

| *NOTES* | Only consult this customer complaint after a full check with the **diagnostic tool**.<br>There must be no **present** or **stored** faults. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the presence and condition of fuse **F01 (20 A)** in the passenger compartment fuse box, component code **1016** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the connection and condition of the connectors of the wiper stalk, component code **145** and of the rear screen wiper motor, component code **211**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **+ 12 V after ignition supply** on connection **AP7** of the stalk, component code **145**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check for **+ 12 V** (when the high speed combined wiper-washer is requested) on the following connection:<br>• **14B** of component **212**,<br>Check for **earth** on the following connection:<br>• **MB** of component **212**.<br><br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| *AFTER REPAIR* | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |
|---|---|

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| | |
|---|---|
| **ALP 16 CONTINUED** | |

Check the **insulation** of the following connection:
- **14B** between components **145** and **212**,

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
Check that the motor operates correctly.

Check the operation of the wiper control.
Check for **+ 12 V** (when the high speed combined wiper-washer is requested) on connection **14B** of component **145**.
Otherwise replace the combined wiper-washer, component code **145** (see **MR 451 Mechanical, 84A, Wiper switch: Removal - Refitting**).

Check that the wiper mechanism or motor are not jammed.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| ALP 17 | Incorrect operation of the rear screen wiper |
|---|---|

| *NOTES* | Only consult this customer complaint after a full check with the **diagnostic tool**. There must be no **present** or **stored** faults. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| |
|---|
| Check the presence and condition of fuse **F27 (20 A)** in the passenger compartment fuse box, component code **1016** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the connection and condition of the connectors of the wiper stalk, component code **145** and of the rear screen wiper motor, component code **211**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for the **+ 12 V after ignition feed** on the following connection:<br>• **AP9** of component **145**,<br><br>Check for **earth** on the following connection:<br>**MAM** of component **145 (This connection provides the park position function),**<br><br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 17<br>CONTINUED 1 | |
|---|---|

Check the **insulation** of the following connection:
- **AP9** between components **1016** and **145**,

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+12 V** (when the rear screen wiper is requested) on the following connections:
- **36G** of component **211**,
- **AP9** of component **211**,

Check for **earth** on the following connection:
- **MG** of component **211**,

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation** on the following connections:
- **AP9** between components **1016** and **211 (This connection provides the park position function)**,
- **36G** between components **145** and **211**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| ***AFTER REPAIR*** | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 17 CONTINUED 2 | |
|---|---|

Check for **+12 V** (when the rear screen wiper is requested) on the following connection:
- **36G** of component **145**.

Otherwise replace the combined wiper-washer, component code **145** (see **MR 451 Mechanical, 84A, Wiper switch: Removal - Refitting**).

Check the operation and fitting of the rear screen wiper motor.
The rear screen wiper motor may need to be replaced (see **MR 451 Mechanical, 85A, Wiping - Washing, Rear screen wiper motor: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 18 | The front and rear bidirectional washer pump does not rotate when its control is activated |
|---|---|

| *NOTES* | Only consult this customer complaint after a full check with the **diagnostic tool**. There must be no **present** or **stored** faults. |
|---|---|
| | **Special note:**<br>Use the **Wiring Diagrams Technical Note for DUSTER**. |

| Check the presence and condition of fuse **F27 (20 A)** in the passenger compartment fuse box, component code **1016** (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
|---|
| Check the connection and condition of the connectors of the front and rear bidirectional screen washer pump, component code **677** and of the wiper stalk, component code **145**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check for **+ 12 V after ignition feed** on the following connection:<br>• **AP9** of component **145**,<br><br>Check for **earth** on the following connection:<br>• **MAM** of component **145**,<br><br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 18 CONTINUED 1 | |
|---|---|

Check the **insulation** of the following connection:
- **AP9** between components **1016** and **145**,

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+12 V** (when the windscreen washer is requested) on the following connection:
- **16A** of component **677**,

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation** of the following connection:
- **16A** between components **677** and **145**,

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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| ALP 18 CONTINUED 2 | |
|---|---|

Check for **+12 V** (when the rear screen washer is requested) on the following connection:
- **24A** of component **677**,

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check the **insulation** of the following connection:
- **24A** between components **677** and **145**,

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **+12 V** (when the windscreen washer is requested) on the following connection:
- **16A** of component **145**,

Check for **+12 V** (when the rear screen washer is requested) on the following connection:
- **24A** of component **145**,

Otherwise replace the combined wiper-washer, component code **145** (see **MR 451 Mechanical, 84A, Wiper switch: Removal - Refitting**).

Check the operation and fitting of the front and rear bidirectional screen washer pump.
If the pump is not correct, replace it (see **MR 451 Mechanical, 85A, Wiping – Washing, Screen washer pump: Removal - Refitting**).

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out a full check with the **diagnostic tool**. |
|---|---|

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# 8 Electrical equipment

## 86A RADIO


| | |
|---|---|
| Introduction | 86A - 2 |
| Role of components | 86A - 3 |
| Features | 86A - 4 |
| Defect and safe modes | 86A - 5 |
| Configuration – Settings | 86A - 6 |
| Self-test procedure | 86A - 7 |
| Security code recovery procedure | 86A - 8 |
| Anti-theft code | 86A - 10 |
| Customer complaints | 86A - 12 |
| Fault finding chart | 86A - 13 |
| Test | 86A - 27 |


V1 Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

Vehicle(s): **DUSTER**

Function concerned: **Radio R0-08**

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type**

**Fault finding procedures** (this document):
– Dialogys.

**Wiring Diagrams:**
– Visu-Schéma.

**Special tooling required**

| Special tooling required |
|---|
| Multimeter. |

## 3. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any material damage or personal injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the proper tools.

## 4. GENERAL INFORMATION

For repairs or fault finding, the radio has a test menu (see **self-test procedure**).

The radio supply must be between **10.5 V** and **16 V**.

The radio will operate for approximately **60 minutes** without the ignition being switched to the accessories position.

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## Role of components

**Radio**
The radio transmits audio signals into the vehicle via the speakers.

**Aerial**
The aerial receives radio waves from different stations.

**Compact disc player**
The compact disc player reads compact discs and reproduces the music on the radio.

**Display**
The display shows various radio information such as the name/frequency of the radio station being listened to, the sound level, as well as various audio settings.

**Speakers**
The speakers receive audio signals from the radio and reproduce the sound in the vehicle.

**Steering wheel controls**
The steering wheel controls provide access to various functions of the radio.

**Accessories socket on front panel (mini type jack)**
The audio accessories socket on the radio front panel provides connectivity for a mobile device (e.g.: MP3 player, etc.).

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Functions provided by the radio:

– FM - AM reception,
– CD player, audio CD or CD/MP3 (depending on the vehicle equipment),
– Monochrome display with two backlighting levels (day / night),
– Control by satellite control on the steering wheel,
– Temporary sound cut-off with the mute button by simultaneously pressing two buttons of the satellite control,
– Bass, treble, and sound distribution settings (balance and fader),
– Automatic tracking of stations with the RDS* function,
– Selection of AM (LW and MW) and FM bands,
– Audio type jack on the radio front panel for connecting a mobile device (e.g.: MP3 player, etc.),
– Anti-theft protection using a 4-digit code,
– Display the name of the station using RDS*, which automatically switches to the best transmitter (**AF** function).

* RDS: Radio Data System

**Radio operation**

The radio uses 3 FM bands:
FM1 with storage of 6 preselections (preset)
FM2 with storage of 6 preselections (preset)
FMT for preselections recorded by the autostore function (AST), which selects the 6 best stations.

**CD function**

The CD player can play conventional discs and any audio tracks on a CD-ROM (MP3 type, etc.).

CDs can be played in order or tracks can be chosen at random.

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**Defect modes:**

If the 4-digit anti-theft code entered is incorrect, the system locks and the message "CODE" appears on the display.
Before trying to enter the code again, wait for the system to come on and unlock itself.

**Thermal protection**

A thermal protection is integrated into the CD radio in order to protect the laser diode.
It switches off the CD function from **70˚C**.
The CD player function is restored when the temperature falls below this threshold.

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**TUNER CONFIGURATION**

The radio configuration can be corrected or changed when the anti-theft code is first entered.

With the radio off, press buttons **1**, **5** and **ON** simultaneously.

This mode allows users to choose the preferred type of tuner.

The tuner choices are Europe, United States, Asia, or Arabia.

Exit the mode to confirm the configuration using the ON/OFF button.

Note:
By default, the mode is configured to the Europe tuner.

Note:
These configurations are not required when the secret code is entered after the power supply has been cut.

**SETTINGS**

**To adjust the various parameters:**

Press the menu button:

- activation of the **AF mode** (automatic resetting, also called RDS)

Press the AUD button:

- activation of **Loudness** mode,
- **bass, treble, balance, and fader** adjustments.

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## Self-test procedure

**The radio self-test modes are used to check certain basic functions by pressing a combination of buttons.**

### Reception level fault finding

This mode activates fault finding on the radio reception level.

With the radio off, press buttons **3**, **6**, and **ON** simultaneously.

After entering into this mode, the display indicates:
– first three digits: the frequency level 0 to 256 (256 being the highest reception level and 55 the lowest acceptable level),

– last five digits: the tuner frequency.

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## Security code recovery procedure

The pre-code is recovered by removing the radio and noting the four characters on the barcode that follow the letter **T** (see photo below).

0000001134

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## Security code recovery procedure

There are three ways to recover the radio code (4 digits):

1 – Only the VIN is available: connect to code management on Renault.Net and enter the VIN. The code server gives the original radio code entered in the World Vehicle Database (BVM).

If the code has not been entered in the BVM or is incorrect when the code is entered in the radio, follow the procedure below:

2 – The pre-code is available: go back to code management on Renault.net and enter the pre-code to obtain the radio code.

If this code is correct, the radio will operate again; if not, follow the procedure below:

3 – On Renault.Net, write a help message to be sent to the assistance unit.

**WHEN REPLACING PARTS, OR FOR AN UNKNOWN VIN, WRITE A HELP MESSAGE IN CODE MANAGEMENT ON RENAULT.NET TO UPDATE THE DATABASE.**

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## Anti-theft code

The radio is protected by a four digit code. This code must be entered using the radio keypad every time the battery is disconnected:

Enter the digits using buttons 1, 2, 3 and 4, and then confirm with button 6.

If the code is entered incorrectly, the radio will be locked (**1 minute** for the first error, **2 minutes** for the second error, **4 minutes** for the third error, etc., for a maximum of **32 minutes after each attempt**).
After several attempts, if the fault is still present, contact Techline.

Some configurations must be programmed after the code has been entered for the first time (see **Configuration - Parameters**).These settings are stored when the battery is disconnected.

**Reminder:**
The radio will operate for approximately **2 minutes** in scrambled mode without the code having been entered (with regular warning beeps).

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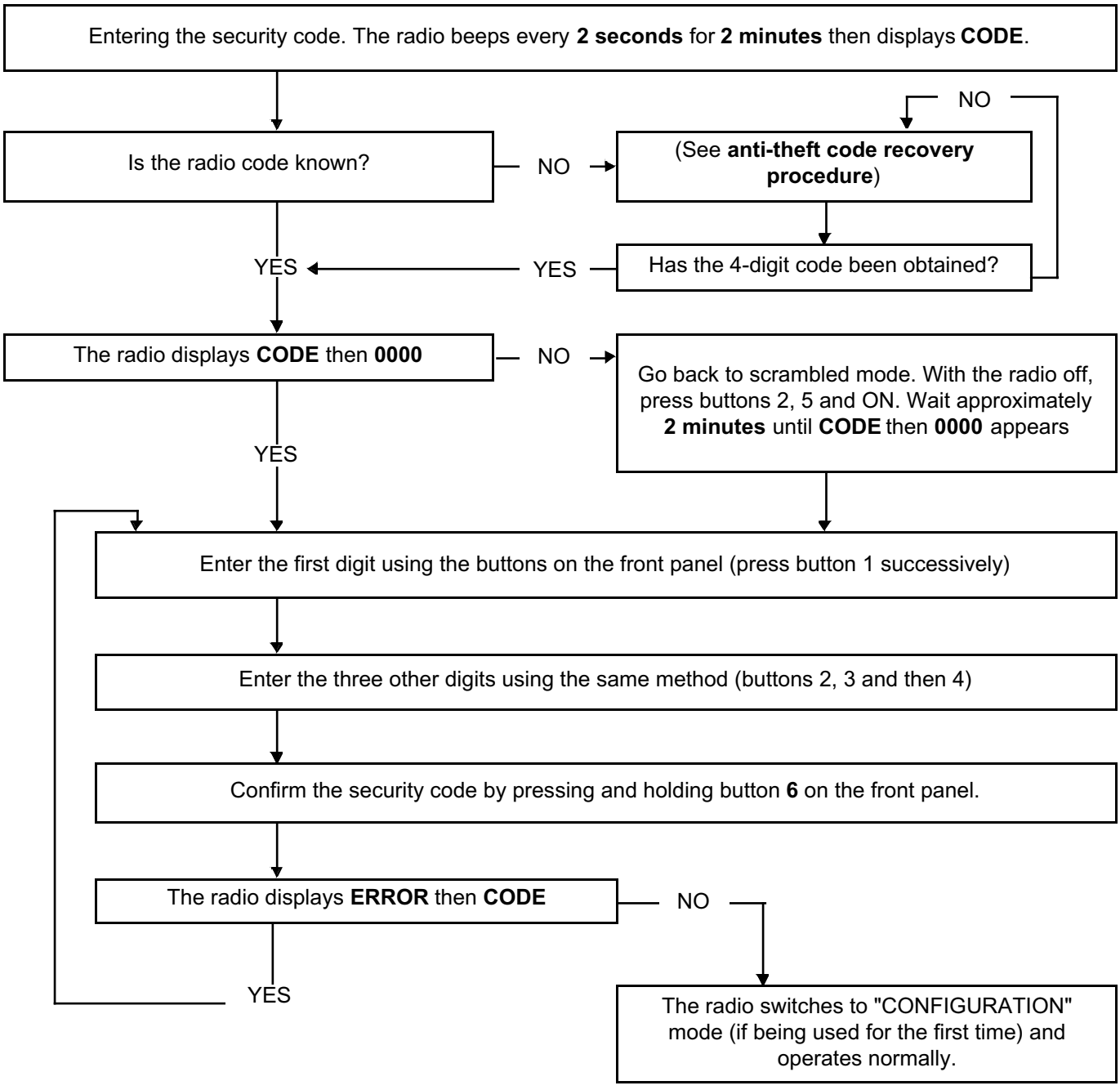
**THE DISPLAY SHOWS "CODE" OR "0000"**



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## Customer complaints

| | |
|---|---|
| THE CD DOES NOT EJECT FROM THE PLAYER | ALP 1 |
| THE RADIO BEEPS EVERY 2 SECONDS | ALP 2 |
| THE RADIO DOES NOT OPERATE WHEN THE ON BUTTON IS PRESSED | ALP 3 |
| RADIO RECEPTION FAULTS | ALP 4 |
| THE RADIO DOES NOT SWITCH ON AUTOMATICALLY WHEN THE IGNITION IS SWITCHED ON OR GOES OFF AFTER 60 MINUTES | ALP 5 |
| LIGHTING DOES NOT CHANGE WHEN THE VEHICLE LIGHTS ARE SWITCHED ON | ALP 6 |
| THE CD IS PLAYED IN RANDOM MODE | ALP 7 |
| THE SATELLITE CONTROL DOES NOT WORK | ALP 8 |
| THE RADIO DOES NOT RECEIVE ALL STATIONS | ALP 9 |
| THE MINI JACK DOES NOT WORK | ALP 10 |

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| ALP 1 | The CD does not eject from the player |
|---|---|

| *NOTES* | There is no manual procedure for ejecting a CD if it is stuck in the player. |
|---|---|

| The CD does not eject from the player. |
|---|
| Disconnect and reconnect the battery (**see MR 451, Mechanical, 80A Battery, Battery: Removal - Refitting**). |
| Try again to eject the CD by pressing the radio button. |
| If the fault is still present, replace the radio (see **MR 451, Mechanical, 86A Radio, Radio: Removal - Refitting**). |

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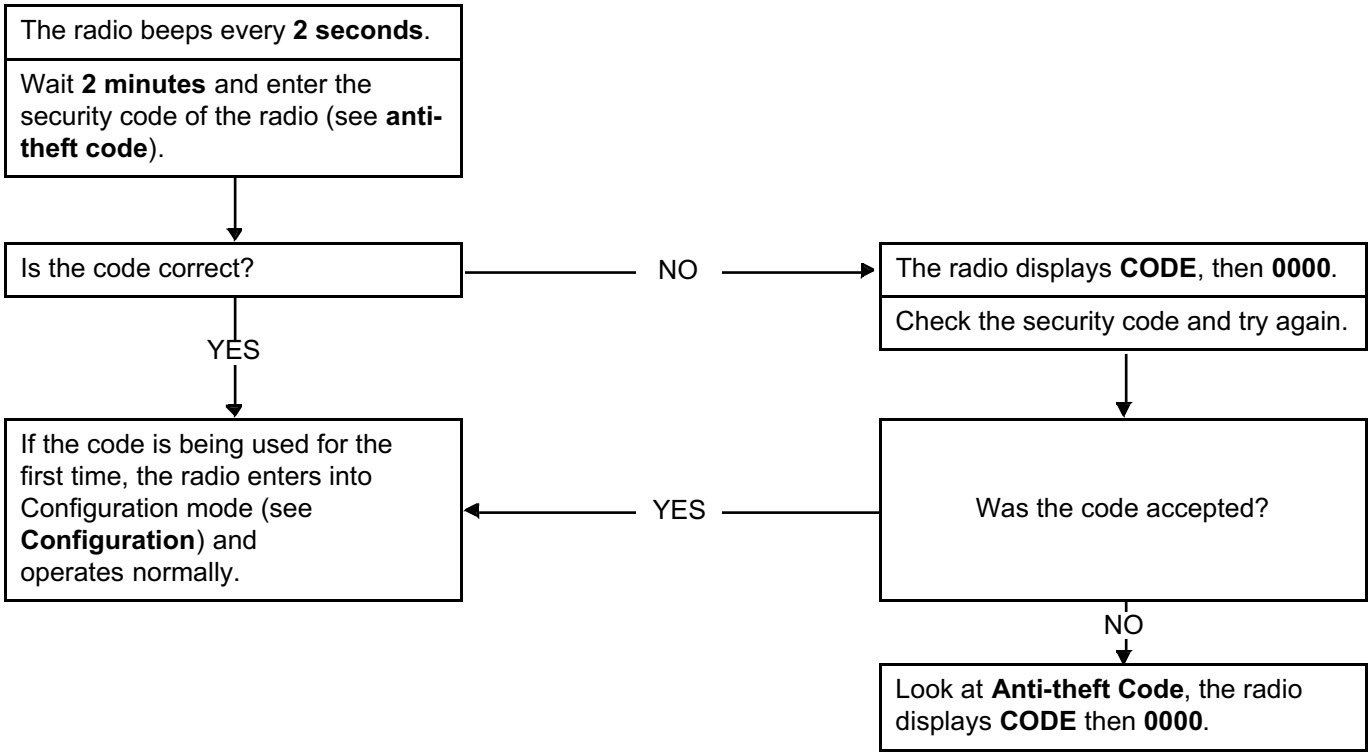
| ALP 2 | The radio beeps every 2 seconds |
|---|---|



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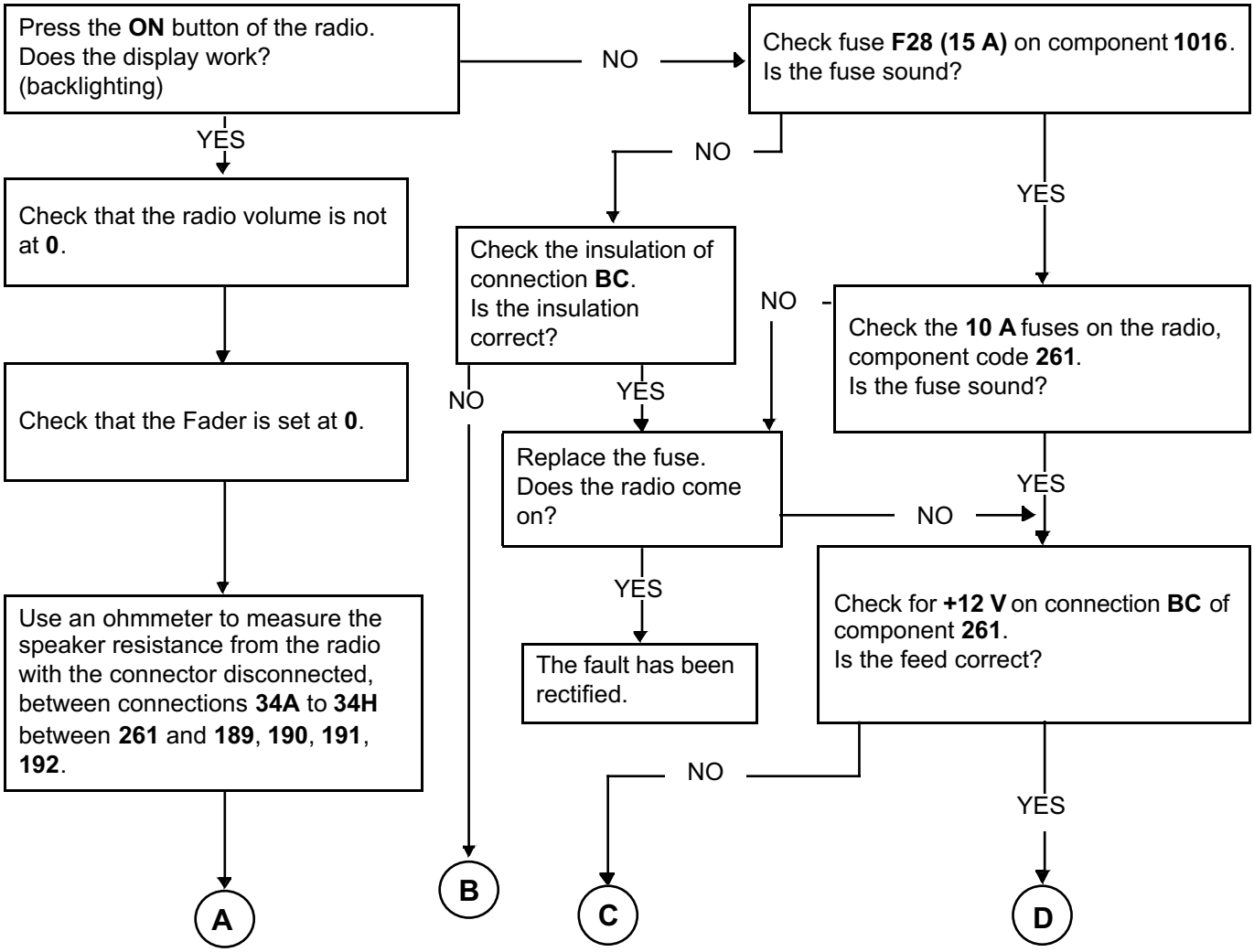
| ALP 3 | The radio does not operate when the ON button is pressed |
|---|---|



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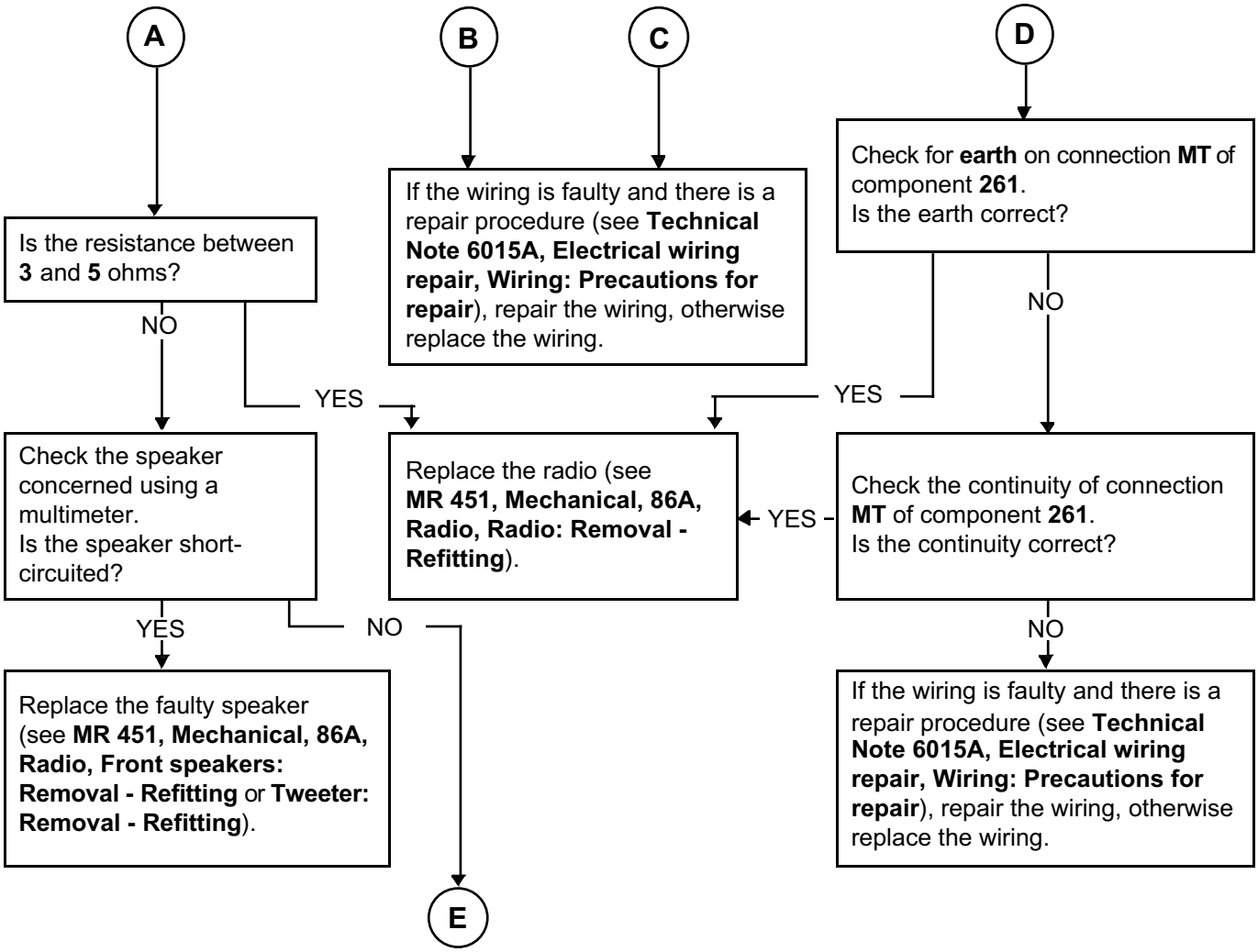
**ALP 3**
**CONTINUED 1**



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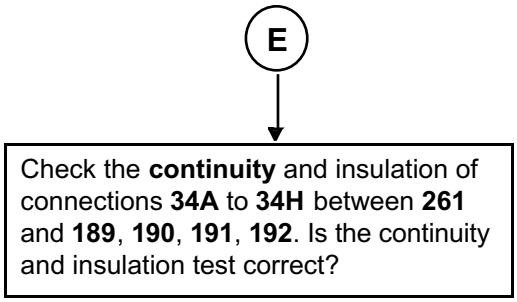
| | |
|---|---|
| **ALP 3 CONTINUED 2** | |



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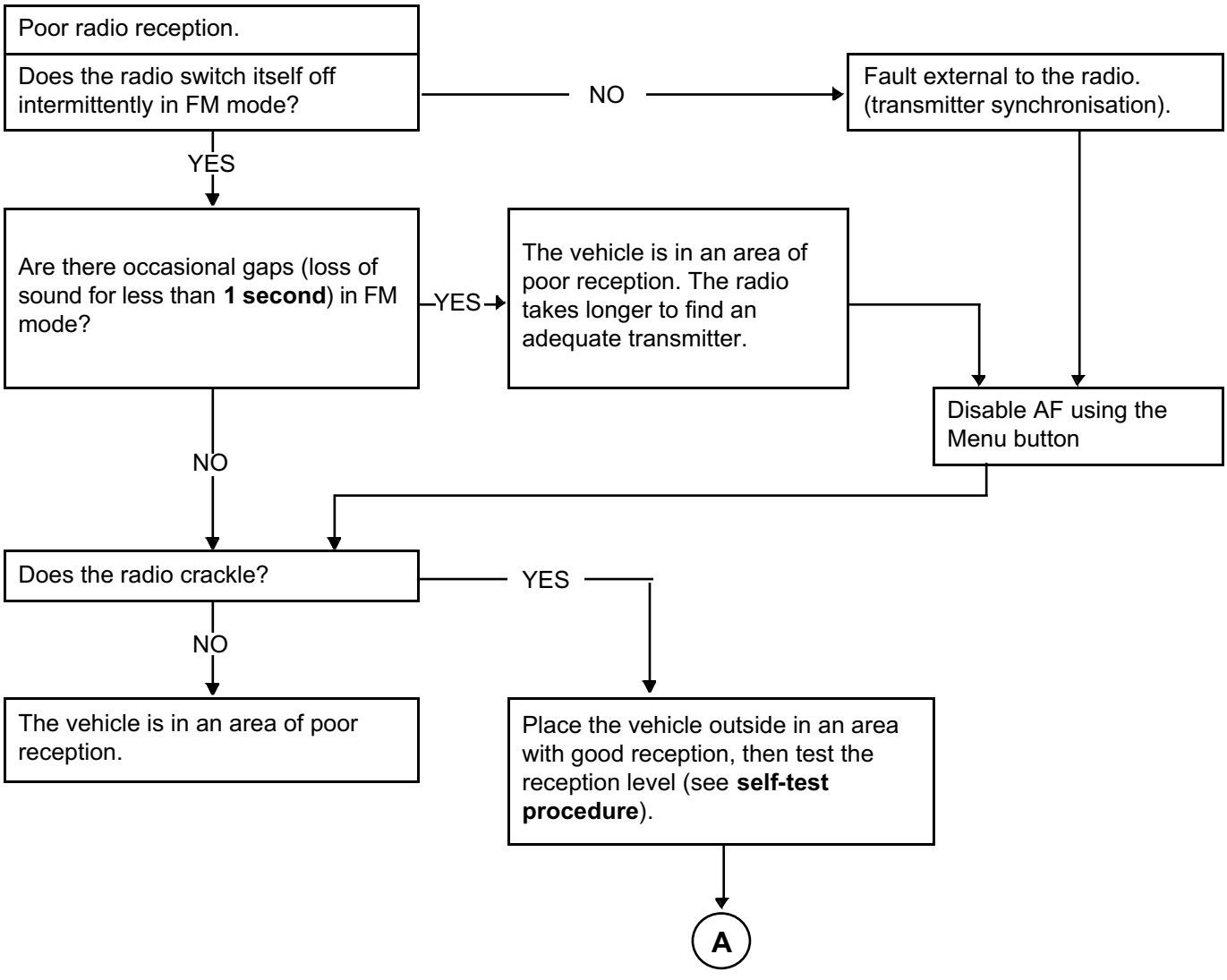
| ALP 4 | Radio reception faults |
|---|---|

| *NOTES* | Run the self-test procedure of the aerial (see **Self-test procedure**) before running this ALP. |
|---|---|



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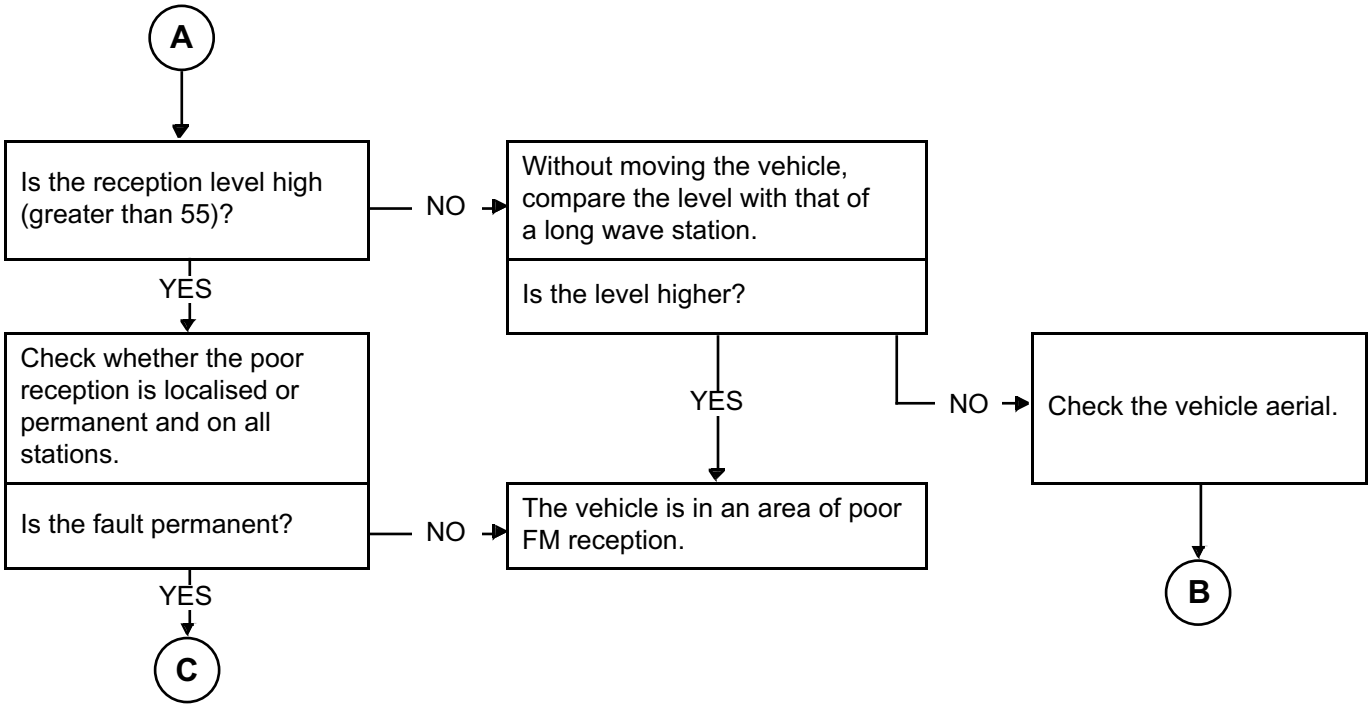
**ALP 4 CONTINUED 1**



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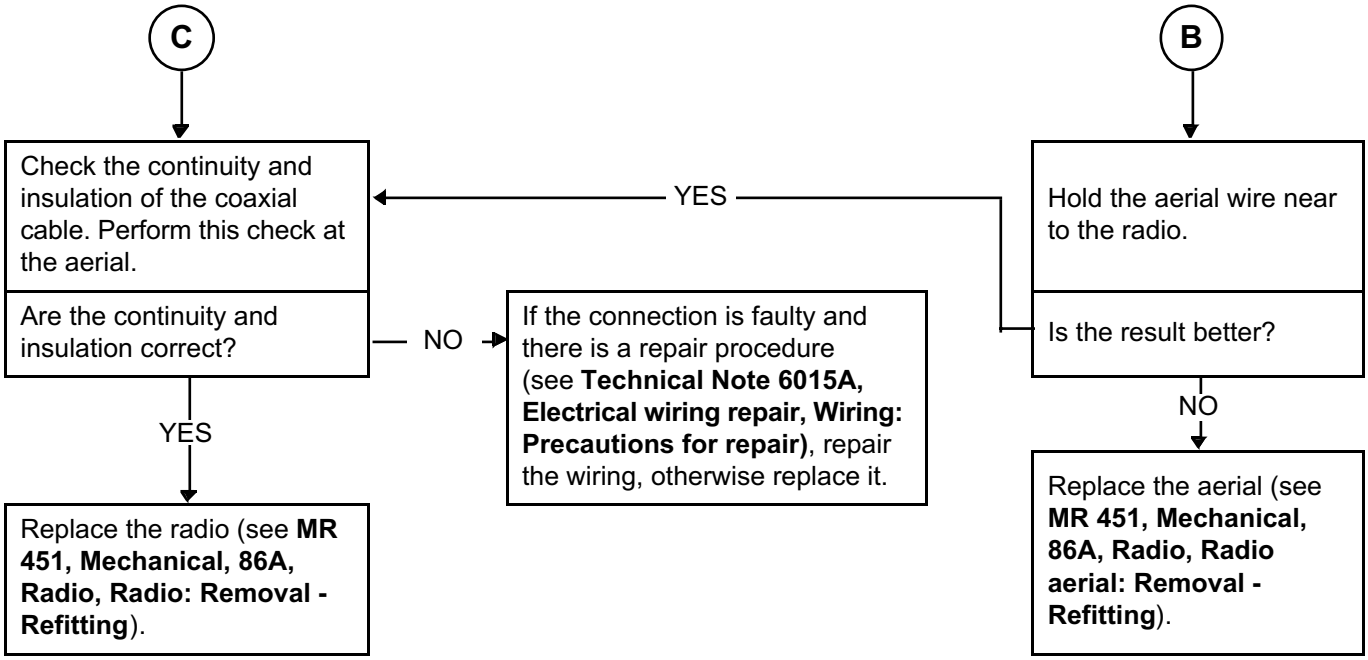
**ALP 4 CONTINUED 2**



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| ALP 5 | The radio does not switch on automatically when the ignition is switched on or goes off after 60 minutes |
|---|---|

Check that the system is operating correctly:
– Switch to **+ accessories feed**,
– Switch on the radio,
– Cut the **+ accessories feed**; the radio should switch off,
– Restore the **+ accessories feed**; the radio should switch on.

Has the fault disappeared?

YES → End

NO

Check the **+ accessories feed** using a multimeter.

With the ignition on, is there a voltage of approximately **12 V** on connection **SP2** of component **261**?

NO → Check the supply fuses **F38 (15A)** on component **1016**.

Are the fuses correct?

NO → Replace the fuse on component **1016**.

YES

YES → Replace the radio (see **MR 451, Mechanical, 86A, Radio, Radio: Removal - Refitting**).

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| ALP 6 | Lighting does not change when the vehicle lights are switched on |
|---|---|

The radio lighting does not change when the vehicle lights are switched on.

With the lights on, is there a voltage of approximately **12 V** on connection **LPD for left-hand drive or LPG for right-hand drive** of component **261**?

YES → Replace the radio (see **MR 451, Mechanical, 86A, Radio, Radio: Removal - Refitting**).

NO ↓

The fault is not associated with the audio equipment. Check the **continuity** and **insulation** of connection **LPD for left-hand drive or LPG for right-hand drive** between components **261** and **1016**.

Is the result of the check correct?

YES → Replace the radio (see **MR 451, Mechanical, 86A, Radio, Radio: Removal - Refitting**).

NO ↓

If the connection is faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

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| ALP 7 | The CD is played in random mode |
|---|---|

The radio plays the CD, but in a random manner.

When playing an audio track, does the CD "jump"?

YES → Check that the CD is in good condition.

NO ↓

Is the CD player configured for random CD playing?

NO → Replace the radio (see **MR 451, Mechanical, 86A, Radio, Radio: Removal - Refitting**).

YES ↓

Reconfigure the CD player for continuous play (see driver's handbook).

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| ALP 8 | The satellite control does not work |
|---|---|

The radio works, but the satellite control does not.

Is the satellite control correctly connected?

NO → Reconnect the satellite control and check that the system operates correctly.

YES

Check the resistances of the satellite control using a multimeter by running **Test 1 Resistance check of the radio satellite control**.

Are the resistances correct?

NO → Replace the satellite control (see **MR 451, Mechanical, 86A Radio, Radio control satellite: Removal - Refitting**).

YES

Check the continuity and insulation of the wiring.

Is the check correct?

NO → Replace the satellite control (see **MR 451, Mechanical, 86A Radio, Radio control satellite: Removal - Refitting**).

YES

Replace the radio (see **MR 451, Mechanical, 86A, Radio, Radio: Removal - Refitting**).

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| ALP 9 | The radio does not receive all stations |
|---|---|

The radio works but does not receive all stations.

↓

Check that the radio tuner is correctly configured.

↓

Is the tuner operating area correctly configured? — NO → Reconfigure the radio tuner (see **Configuration – settings**).

YES ↓

Are the stations recognised? — NO → See **ALP 4 Radio reception faults**

YES ↓

The fault has been rectified.

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| ALP 10 | The mini jack does not work |
|---|---|

| *NOTES* | Check the correct operation of the mobile device before applying this fault finding chart. |
|---|---|

Connect a mobile device to the mini jack on the radio front panel.

Check that the auxiliary source "AUX" becomes available via the radio source menu (press the SRC button).

NO → Try the mobile device with another jack cable.

YES

Check the volume of the mobile device.

Check the radio volume.

Has the fault disappeared?

YES → End

NO

Replace the radio (see **MR 451, Mechanical, 86A, Radio, Radio: Removal - Refitting**).

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| Resistance check of the radio satellite control | → | TEST 1 |
|---|---|---|

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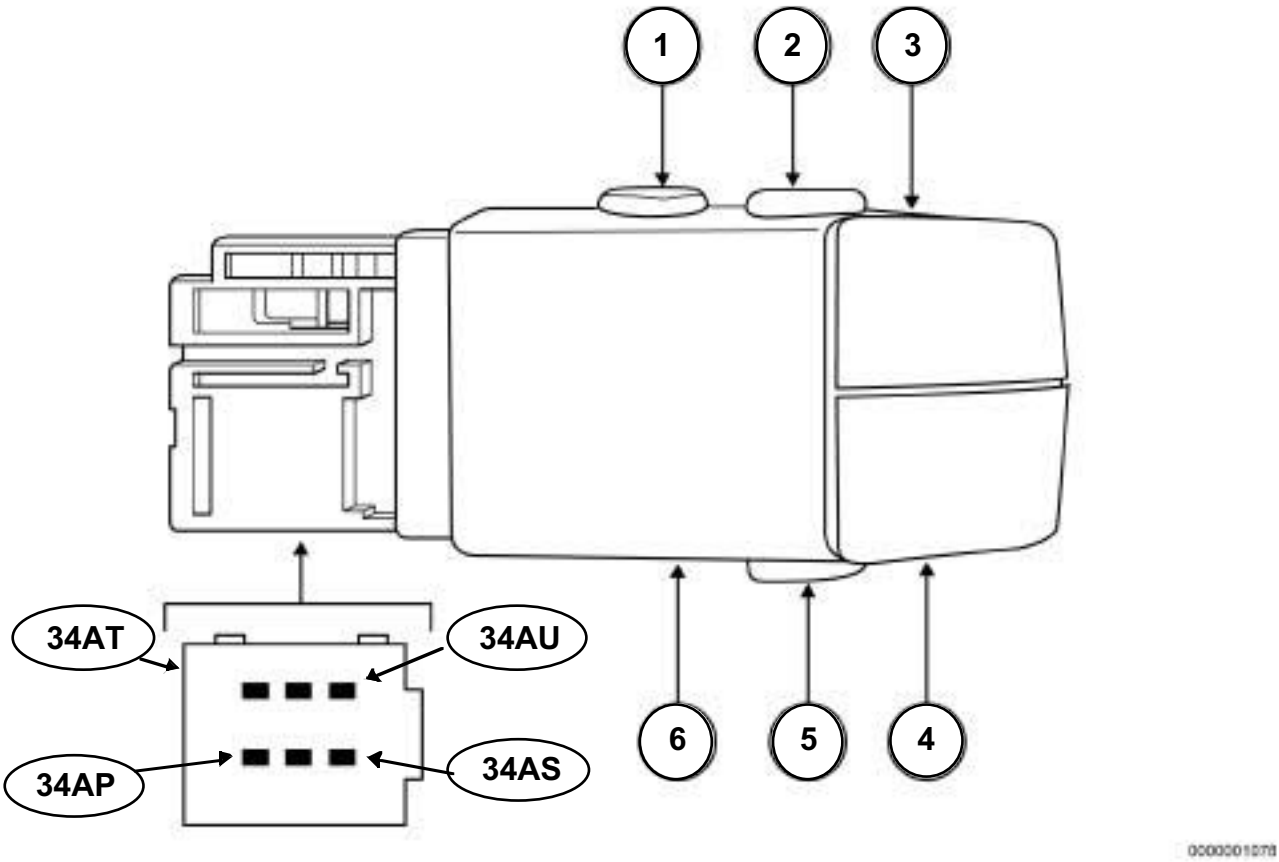
| TEST 1 | Resistance check of the radio satellite control |
|---|---|

| *NOTES* | The check is carried out using a multimeter in the ohmmeter position between the tracks of the radio control satellite connector. |
|---|---|



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| TEST 1 CONTINUED | |
|---|---|

| Radio control satellite in use | Connector tracks | Resistance (Ω) |
|---|---|---|
| Lower button (**5**) | between 34AU and 34AP | **< 150** |
| Decrease volume (**4**) | between 34AS and 34AP | **< 150** |
| Increase volume (**3**) | between 34AT and 34AP | **< 150** |
| Upper right button (**2**) | between 34AU and 34AQ | **< 150** |
| Upper left button (**1**) | between 34AS and 34AQ | **< 150** |
| Wheel 1st position (**6**) | between 34AU and 34AR | **< 150** |
| Wheel 2nd position (**6**) | between 34AS and 34AR | **< 150** |
| Wheel 3rd position (**6**) | between 34AT and 34AR | **< 150** |

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# 8 Electrical equipment

## 87B PASSENGER COMPARTMENT CONNECTION UNIT

**UCH**
**Vdiag No.: 09**


| | |
|---|---|
| Fault finding – Introduction | 87B - 2 |
| Fault finding – List and location of components | 87B - 7 |
| Fault finding – Role of components | 87B - 8 |
| Fault finding – Configuration | 87B - 9 |
| Fault finding – Replacement of components | 87B - 11 |
| Fault finding – Fault summary table | 87B - 12 |
| Fault finding – Interpretation of faults | 87B - 13 |
| Fault finding – Conformity check | 87B - 19 |
| Fault finding – Interpretation of statuses | 87B - 22 |
| Fault finding – Command summary table | 87B - 28 |
| Fault finding – Interpretation of commands | 87B - 29 |
| Fault finding – Customer complaints | 87B - 35 |
| Fault finding – Fault Finding Chart | 87B - 37 |




"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

| | |
|---|---|
| *Vehicle(s):* **DUSTER**<br><br>*Function concerned:* **PASSENGER COMPARTMENT CONNECTION UNIT** | *Name of computer: UCH*<br><br>*Vdiag No.:* **09** |

## 2. PREREQUISITES FOR FAULT FINDING

**Documentation type**

**Fault finding procedures** (this manual):
– Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.
**Wiring Diagrams:**
– Visu-Schéma.

**Type of diagnostic tools**

**– CLIP**

**Special tooling required**

| | Special tooling required: |
|---|---|
| | **Diagnostic tool** |
| | Multimeter |
| **Elé. 1622** | Bornier |
| **Elé. 1622** | Universal bornier |

**If the information obtained by the diagnostic tool requires checking electrical continuity, connect bornier Elé. 1622 or universal bornier Elé. 1681.**

**WARNING:**
– All tests with bornier **Elé. 1622** or **Elé. 1681** must be conducted with the battery disconnected.
– The bornier is only designed to be used with a multimeter. Never power the test points with **12 V**.

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## 3. REMINDERS

**Procedure**

**To run diagnostics on the vehicle computers, switch on the ignition using the key.**

**Faults**

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the **diagnostic tool** is used after switching on the **+ after ignition feed** (without acting on the system components).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the **Notes** section.

If the fault is **confirmed** when the instructions are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:
– the electrical lines which correspond to the fault,
– the connectors on these lines (corrosion, bent pins, etc.),
– the **resistance** of the faulty component,
– the condition of the wires (melted or cut insulation, wear).

**Conformity check**

The conformity check is designed to check the statuses and parameters that do not display any faults on the **diagnostic tool** when they are inconsistent. Therefore, this stage is used to:

– carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint,
– check that the system is operating correctly and that there is no risk of a fault recurring after repair.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

If a status is not behaving normally or a parameter is outside permitted tolerance values, you should consult the corresponding fault finding page.

**Customer complaints - Fault finding chart**

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be dealt with by **customer complaints**.

**A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.**

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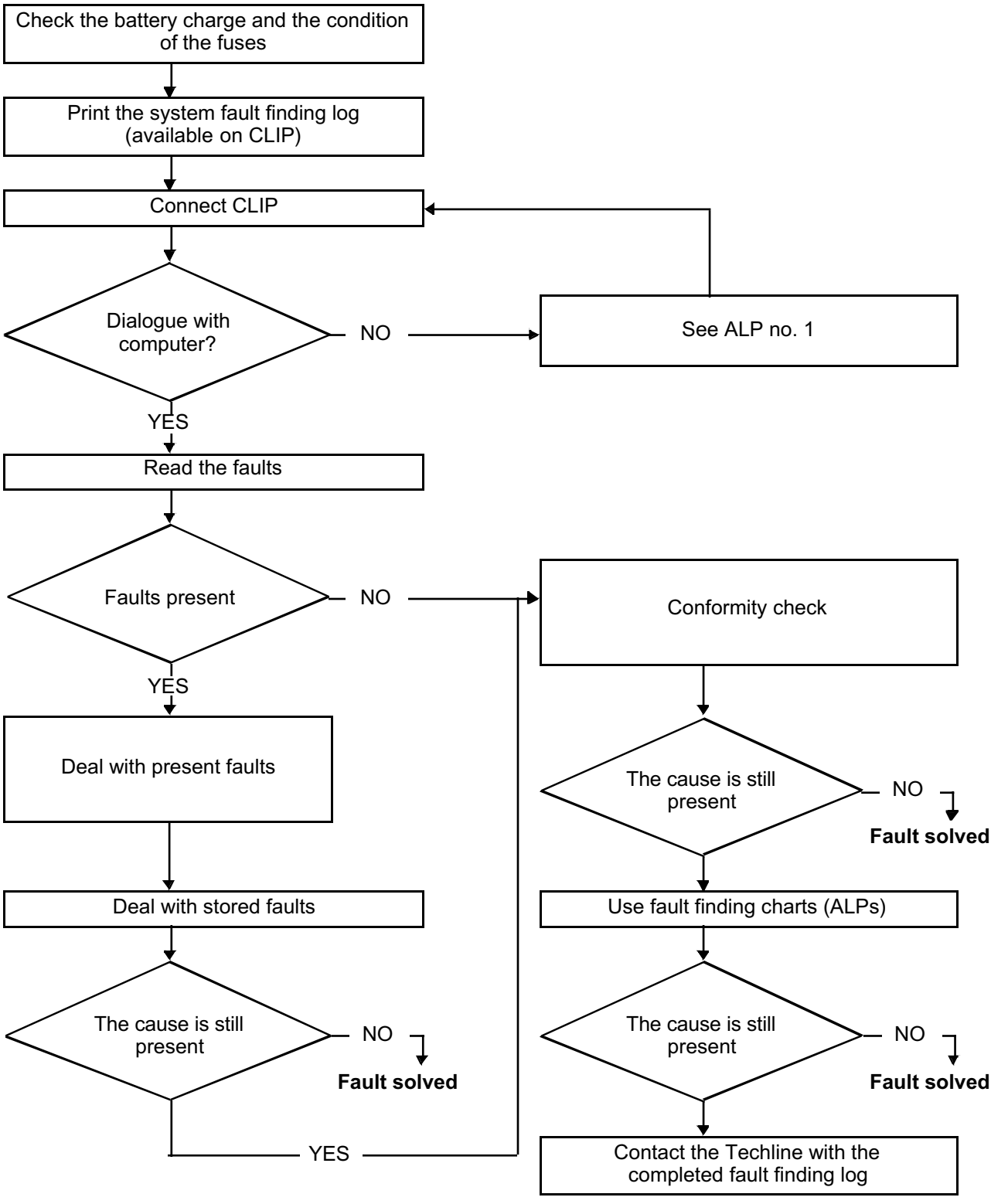
## 4. FAULT FINDING PROCEDURE



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## 4. FAULT FINDING PROCEDURE (CONTINUED)

### Wiring check

**Note:**
Carry out each requested check visually. Do not remove a connector if it is not required.

**Note:**
Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

**Note:**
The check is carried out on the 2 parts of the connection. There may be two types of connection:
– Connector / Connector
– Connector / Device

**Fault finding problems**
Disconnecting the connectors and/or manipulating the wiring may temporarily clear the cause of a fault.
Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

**Visual inspection of the connection:**
- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

**Visual inspection of the area around the connection:**
- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

**Visual inspection of the plastic casing:**
- Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

**Visual inspection of the metal contacts:**
(The female *contact* is called CLIP. The male contact is called TAB).
- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The spring contact of the connector when the wire is gently pulled.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

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**Visual inspection of the sealing:**
*(Only for watertight connectors)*
- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
– *For unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
– For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
– For *gel* seals, check for gel in all of the openings without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
– For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, repair or replace the wiring (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**).

## 5. FAULT FINDING LOG

**IMPORTANT!**

**IMPORTANT**
All faults involving a complex system call for thorough diagnostics with the appropriate tools. The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE MANDATORY TO FILL IN A FAULT FINDING LOG EACH TIME IT IS REQUESTED BY TECHLINE OR THE WARRANTY RETURNS DEPARTMENT.**

You will always be asked for this log:
– when requesting technical assistance from the Techline,
– when requesting approval before replacing parts for which approval is compulsory,
– to be attached to monitored parts for which reimbursement is requested. The log is needed for
– warranty reimbursement, and enables better analysis of the parts removed.

## 6. SAFETY INSTRUCTIONS

The safety instructions must be followed at all times when working on components in order to avoid damage or injury:

– check the battery voltage to avoid incorrect operation of computer functions,
– use the appropriate tools

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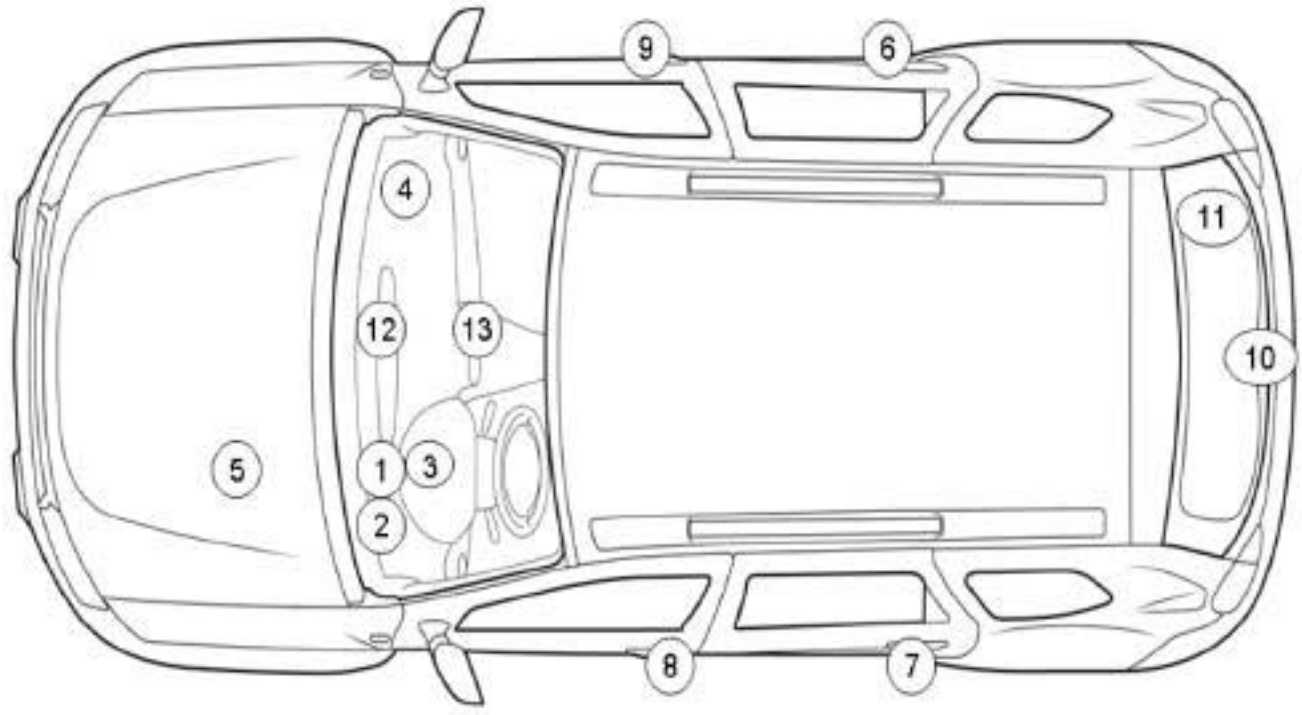
## Fault finding - List and location of components

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| | |
|---|---|
| 1 | UCH |
| 2 | Passenger Compartment Fuse and Relay Box |
| 3 | Instrument panel |
| 4 | Diagnostic socket |
| 5 | Injection computer |
| 6 | Rear right-hand door rabbet switch |
| 7 | Rear left-hand door rabbet switch |
| 8 | Driver's door rabbet switch |
| 9 | Passenger's door rabbet switch |
| 10 | Luggage compartment switch |
| 11 | Heated rear screen |
| 12 | Heated rear screen switch |
| 13 | Airbag computer / pretensioner |

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## GENERAL OPERATION

The UCH is involved in the following four functions (shared between several computers):

**– Access - Security Function**

This function is divided into three sub-functions, which are: Access, Protection, and Starting (see **82D, Access – Security**).

**– Heating and manual air conditioning function**

In this function, the UCH manages the heated rear screen operation indicator lights, heating controls and air conditioning activation requests, via the UCH sending requests to the engine management computer:
– In the case of a vehicle fitted with manual air conditioning, by pressing on the air conditioning button.

**– Wiping function**

This function is divided into two sub-functions, which are: Wiper control and Wiper power (see **85A, Wiping - Washing**).

**– Lighting Function**

This function is divided into two sub-functions, which are: Lighting control and Lighting power (see **80D, Lighting**).

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## UCH CONFIGURATIONS

The configuration options for the UCH are:

| Configuration | Configuration reading | Name of configuration | Configuration |
|---|---|---|---|
| **CF020** | **LC020** | Factory fitted perimeter protection | **SC008 UCH type Screen 1** |
| **CF052** | **LC166** | De-icing function | |
| **CF053** | **LC178** | Starter relay request | |
| **CF054** | **LC009** | Hazard warning lights illuminated upon impact | |
| **CF059** | **LC012** | Automatic relocking | |
| **CF060** | **LC170** | RAID* function authorisation by diag tool | |
| **CF061** | **LC169** | Vehicle locked by RAID function | |
| **CF063** | **LC047** | Timed courtesy light | |
| **CF067** | **LC167** | Heated rear screen when driving | **SC008 Screen 2** |
| **CF070** | **LC113** | Airbag | |
| **CF072** | **LC168** | Courtesy light timer | |
| **CF073** | **LC097** | Type of key | |
| **CF077** | **LC124** | Retrofitted alarm | |
| **CF047** | **LC171** | Radiofrequency function | |
| **CF130** | **LC163** | Overspeed alarm | |
| **CF051** | **LC023** | Engine type | **SC008 Screen 3** |
| **CF068** | **LC179** | Trailer signalling warning | |
| **CF069** | **LC116** | Intermittent variation according to speed | |
| **CF082** | **LC149** | Key locking | |
| **CF048** | **LC165** | Seat belt not fastened sensor | |
| **CF071** | **LC164** | Software lock | |
| **CF064** | **LC172** | Type of central door locking button (CPE)* | |
| | **LC064** | Rear screen wiper | **SC008** |
| | **LC142** | Rear fog lights | |
| **CF167** | **LC065** | Flashing buzzer | **CF167** |

* RAID: Renault Anti-Intruder Device.
* CPE: Electric central door locking.

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## CONFIGURATION OF THE UCH COMPUTER

- With the ignition on, establish dialogue with the UCH computer.
- In the **Repair Mode** menu, go to the **Configuration** tab.

Choose the scenario: **SC008 UCH type** and follow the instructions on the **diagnostic tool**.

Check that the configuration has been correctly stored using the **Read configuration** menu.

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## Fault finding – Replacement of components

When replacing the UCH, component code **645** (see **MR 451, Mechanical, 87B, Passenger compartment connection unit, UCH: Removal - Refitting**), perform the programming and configurations in the following order:
– Enter the VIN, using command **VP004 Enter VIN** (see **Programming**).
– Program the UCH using command **SC004 UCH Programming** (see **Interpretation of commands**).
– Configure the UCH (in the Configuration and programming menu) using command **SC008 UCH type** (see **Interpretation of commands**).
– Allocate the keys using command **SC015 Key allocation** (see **Interpretation of commands**).

The removal of the UCH is carried out after the left storage compartment has been removed.

The UCH is clipped onto its mounting.

**WARNING:**
Do not remove the UCH mounting as this may damage it.
If it is removed it must be replaced.

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## Fault finding – Fault summary table

| Tool fault | Diagnostic tool title |
|---|---|
| **DF162** | Heated rear screen relay control |
| **DF177** | Siren circuit |
| **DF184** | Impact detected signal |
| **DF271** | UCH internal electronic fault |
| **DF273** | Impact connection |

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| | |
|---|---|
| **DF162 PRESENT OR STORED** | HEATED REAR SCREEN RELAY CONTROL<br>CO.0: Open circuit or short circuit to earth<br>CC.1: Short circuit to + 12 V |

| | |
|---|---|
| ***NOTES*** | **Conditions for applying the fault finding procedure to a stored fault:**<br>The fault is declared present after activation of the heated rear screen, with the engine running. |
| | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

| | | |
|---|---|---|
| **CO.0** | ***NOTES*** | None. |

Check the condition of fuse **F01 (20 A)** in the passenger compartment fuse box, component code **1016** and the correct operation of the heated rear screen relay, component code **235**. Replace the fuse (see **MR 451 Mechanical, 81C, Fuses, 80B, Fuses: List and location of components**) and the heated rear screen relay if it is faulty.

Check the **condition** and the **connection** of the connectors of the heated rear screen relay, component code **235**. If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+12 V** on the heated rear screen relay, component code **235** on the following connection:
- **AP7** of component **235**.

Check **the continuity and insulation** of the following connection:
- **AP7** between components **1016** and **235**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the continuity, the insulation to earth**, and **the absence of interference resistance** on the following connection:
- **15M** between components **645** and **235**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_DF162

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| | |
|---|---|
| **DF162 CONTINUED** | |

| | | |
|---|---|---|
| **CC.1** | ***NOTES*** | None. |

| |
|---|
| Check the **condition** and the **connection** of the connectors of the heated rear screen relay, component code **235**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation to +12 V** and the **absence of interference resistance** on the following connection:<br>• **15M** between components **1016** and **235**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| | |
|---|---|
| **DF177 PRESENT OR STORED** | SIREN CIRCUIT<br>CC.1: Short circuit to + 12 V<br>CO.0: Open circuit or short circuit to earth |

| | |
|---|---|
| ***NOTES*** | If the vehicle is fitted with an alarm:<br>– Check that the vehicle is configured with an alarm. |
| | Use **the Wiring Diagrams Technical Note for DUSTER.** |

| |
|---|
| Check the condition and presence of fuse **F17** (**15 A**).<br>Replace the fuse if necessary (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**). |
| Check the **condition** and **connection** of the siren connector (tabs bent, oxidised, broken).<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_DF177

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## Fault finding – Interpretation of faults

| | |
|---|---|
| **DF184 STORED** | IMPACT DETECTED SIGNAL |

| | |
|---|---|
| ***NOTES*** | The fault is declared **stored** after an impact is detected. |

| |
|---|
| Perform fault finding on the airbag function (see **88C, Airbags and pretensioners**). |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_DF184M

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| | |
|---|---|
| **DF271 PRESENT** | UCH INTERNAL ELECTRONIC FAULT |

| | |
|---|---|
| ***NOTES*** | **Special notes**: if there is a fault **stored**, check whether there are any other faults **present** and clear them.<br>Fault declared **present** when the ignition is switched off. |

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_DF271P

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| | |
|---|---|
| **DF273 PRESENT OR STORED** | IMPACT CONNECTION |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>The fault is **present 8 seconds** after the ignition is switched on and becomes **stored** after the ignition is switched off.<br><br>**Note:**<br>If this fault is present, the door locking function while driving is inhibited. |
| | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

| |
|---|
| Perform fault finding on the airbag function (see **88C, Airbags and pretensioners**). |
| Check the **connection** and **condition** of the UCH connectors, component code **645**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **connection** and **condition** of the airbag computer connectors, component code **756**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:<br>• **60BR** between components **645** and **756**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Follow the instructions.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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## Fault finding – Conformity check

| NOTES | Only check conformity after a full check with the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Application condition: **engine off, ignition on**. |
|---|---|

**Main screen**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| **Engine immobiliser** | **ET549:** | Immobiliser active | **YES**<br>**NO** | In the event of a fault, apply the interpretation of status **ET549**. |
| **Blank UCH** | **ET008:** | Blank UCH | **YES**<br>**NO** | In the event of a fault, apply the scenario **SC004 UCH programming**. |
| **Supply** | **PR001:** | Battery voltage | **12 V < X < 12.5 V** | In the event of a fault, run fault finding on the charging circuit (see **Technical Note 6014A (Renault) or Technical Note 9859A (Dacia), Checking the charging circuit**). |
| | **ET004:** | + 12V after ignition feed | **YES**<br>**NO** | In the event of a fault, apply the interpretation of status **ET004**. |
| | **ET091:** | Engine running | **YES**<br>**NO** | In the event of a fault, perform a test on the injection computer (see **13B, Diesel injection or 17B, Petrol injection**). |
| **Speed** | **PR008:** | Vehicle speed | **X in mph (km/h)** | In the event of a fault, perform a test on the vehicle speed or ABS computer (see **38C, Anti-lock braking system**). |

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## Fault finding – Conformity check

| NOTES | Only check conformity after a full check with the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Application condition: **engine off, ignition on**. |
|---|---|

**Function: Access – Security**
**Sub-function: Access**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| **Supply** | **ET004:** | + 12V after ignition feed | **YES**<br>**NO** | In the event of a fault, apply the interpretation of status **ET004**. |
| **Speed** | **PR008:** | Vehicle speed | **X** in **km/h** | In the event of a fault, perform a test on the vehicle speed or ABS computer (see **38C, Anti-lock braking system**). |
| **Opening elements** | **ET489:** | Front doors | **OPEN** when a front door is open.<br>**CLOSED** if the doors are closed. | In the event of a fault, apply the interpretation of status **ET489**. |
| | **ET551:** | Rear doors or luggage compartment | **OPEN** when a rear door or the luggage compartment lid is open.<br>**CLOSED** if the doors are closed. | In the event of a fault, apply the interpretation of status **ET551**. |
| **Safety** | **AC176:** | Alarm siren | This command is used to activate the siren. | In the event of a fault, apply the procedure for dealing with command **AC176**. |

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## Fault finding – Conformity check

| *NOTES* | Only check conformity after a full check with the **diagnostic tool**.<br>The values shown in this conformity check are given as a guide.<br>Application condition: **engine off, ignition on**. |
|---|---|

**Function: Access – Security**
**Sub-function: Starting**

| Function | Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|---|
| **Supply** | **ET004:** | + 12V after ignition feed | **YES**<br>**NO** | In the event of a fault, apply the interpretation of status **ET004**. |
| **Opening elements** | **ET184:** | Valid key code | **YES**<br>**NO** | In the event of a fault, apply the interpretation of status **ET184** (see **82D, Access – Security**). |
| **Engine immobiliser** | **ET549:** | Immobiliser active | **NO** when the + after ignition is switched on<br>**YES** when the key is not in the ignition switch | If the status is inconsistent, apply the interpretation of status **ET549**. |
| **Immobiliser warning light** | **ET127:** | Immobiliser warning light | **OFF** when the + after ignition is switched on.<br>**ILLUMINATED** when the key is not in the ignition switch | In the event of a fault, apply the interpretation of status **ET127**. |
| **Key** | **PR056:** | Number of keys allocated | **1** to **4** | In the event of a fault, apply the interpretation of parameter **PR056** (see **82D, Access – Security**). |
| | **ET185:** | Key code received | **YES** when the ignition is switched on<br>**NO** if the ignition is not switched on | In the event of a fault, apply the interpretation of status **ET185** (see **82D, Access – Security**). |
| **Engine immobiliser** | **AC003:** | Immobiliser warning light | This command is used to illuminate the immobiliser warning light | In the event of a fault, apply the procedure for dealing with command **AC003**. |
| **De-icing** | **ET547:** | Heated rear screen button | **PRESSED** when the heated rear screen button is pressed.<br>**RELEASED** if the heated rear screen button is not pressed | In the event of a fault, apply the interpretation of status **ET547**. |

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| | |
|---|---|
| **ET004** | + 12 VOLTS AFTER IGNITION |

| | |
|---|---|
| ***NOTES*** | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

**ET004: NO with the ignition on.**

Check fuse **F04** (**10 A**) in the passenger compartment fuse box, component code **1016** (see **MR 451, Mechanical, 81C, Fuses, Fuses: List and location of components**).

Check for **+12 V** after ignition feed on the UCH, component code **645** on the following connection:
- **AP10** of component **645**.

Check the **continuity** and **insulation to earth** of the following connection:
- **AP10** between components **645** and **1016**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

**ET004: YES with the ignition off.**

Using a multimeter, check that there is no **+12 V** with the ignition off on connection **AP10** of the UCH connector, component code **645**.
If the voltage is present, check the insulation to **+12 V** of the following connection:
- **AP10** between components **645** and **1016**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_ET004

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| | |
|---|---|
| **ET127** | IMMOBILISER WARNING LIGHT |

| | |
|---|---|
| ***NOTES*** | The immobiliser warning light status should be **OFF** when the + after ignition feed is switched on.<br>The immobiliser warning light status should be **ON** when the key is not in the ignition switch. |
| | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

| |
|---|
| Check the **connection** and **condition** of the instrument panel connector, component code **247**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **connection** and **condition** of the UCH connector, component code **645**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Using a multimeter, check the **continuity** and **insulation** of the following connection:<br>• **80T** between components **645** and **247**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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## Fault finding – Interpretation of statuses

| | |
|---|---|
| **ET489** | FRONT DOORS |

| | |
|---|---|
| ***NOTES*** | Check that no fault is **present**.<br>Open the front doors one after another. |
| | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

| |
|---|
| Check that status ET489 is OPEN if one of the front doors is open and that the status is CLOSED if all the front doors are closed. |
| Check the connection and wiring of the left-hand side door rabbet switch, component code **1193** and the passenger's side door rabbet switch, component code **1192**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity** and the **insulation** of the following connections:<br>• **13A** between components **1193** and **645**,<br>• **13A** between components **1192** and **645**,<br>• **MG** between component **1193** and **earth**,<br>• **MG** between component **1192** and **earth**.<br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check **the continuity** between the two connections of the door rabbet switches.<br>Pull the handle to open the lock and check that there is no longer any continuity between the two connections.<br>Check that the lock engages into the striker plate properly. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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| | |
|---|---|
| **ET547** | HEATED REAR SCREEN BUTTON |

| | |
|---|---|
| ***NOTES*** | There must be no **present** or **stored** faults. |
| | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

| |
|---|
| Check the **condition** and **connection** of the connector on the heated rear screen button, component code **1456** (bent tabs, broken, etc.).<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check **the earth** on connection **MAM** of the connector on the heated rear screen button, component code **1456**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **condition** and **connection** of the UCH connector, component code **645** (tabs bent, broken, etc.).<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **insulation, continuity** and the **absence of interference resistance** on the following connection:<br>• **15B** between components **1456** and **645**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the heated rear screen button (see **MR 451 Mechanical, 84A, Controls - Signals, Heated rear screen button: Removal - Refitting**). |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

UCH_V09_ET547

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## Fault finding – Interpretation of statuses

| | |
|---|---|
| **ET549** | ENGINE IMMOBILISER ACTIVE |

| | |
|---|---|
| ***NOTES*** | The immobiliser status **YES** should change to **NO** when the + after ignition feed is switched on.<br>The immobiliser status should be **YES** when the key is not in the ignition switch.<br>First check the conformity of **ET004 +12 V after ignition feed, ET184 Valid key code**, and **ET185 Key code received**. |

Check status **ET185** and status **ET184** with the ignition on.
If status **ET185** and **ET184** are **YES**, run fault finding on the injection computer (see **13B, Diesel injection** or **17B, Petrol injection**).
If status **ET185** is **NO**, deal with this status first.
If status **ET185** is **YES** and status **ET184** is **NO**, deal with status **ET184** first.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out another fault finding check on the system.<br>Deal with any other faults.<br>Clear the **stored** faults. |

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## Fault finding – Interpretation of statuses

| | |
|---|---|
| **ET551** | REAR DOORS OR LUGGAGE COMPARTMENT |

| | |
|---|---|
| ***NOTES*** | Check that no fault is **present**.<br>Open the rear doors one after another, then open the luggage compartment. |
| | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

Check that when a rear door or the luggage compartment is opened, status **ET551** is **OPEN** and that, with the rear doors or luggage compartment closed, status **ET551** is **CLOSED**.

Check the connection and wiring of the rabbet switch on the rear right-hand door, component code **178**, the rabbet switch on the rear left-hand door, component code **179** and the tailgate lock, component code **1322**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **continuity** and the **insulation** of the following connections:
- **13N** between components **179** et **645**,
- **13N** between components **178** et **645**,
- **MG** between component **179** and **earth**,
- **MG** between component **178** and **earth**,
- **MG** between component **1322** and **earth**,
- **13N** between components **1322** et **645**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the continuity** between the two connections of the rabbet switches for the doors and the luggage compartment.
Pull the handle to open the lock and check that there is no longer any continuity between the two connections.
Check that the lock engages into the striker plate properly.

If the fault is still present, contact the Techline.

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## Fault finding – Command summary table

| Tool command | Diagnostic tool title | Comments |
|---|---|---|
| **AC003** | Immobiliser warning light | See interpretation of the command. |
| **AC176** | Alarm siren | See interpretation of the command. |
| **VP004** | VIN entry | See interpretation of the command. |
| **SC004** | UCH programming | See interpretation of the command. |
| **SC008** | Type of UCH | See interpretation of the command. |
| **RZ001** | Fault memory | Use this command to clear the faults stored in the computer. |

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| | |
|---|---|
| **AC003** | IMMOBILISER WARNING LIGHT |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults.<br>Run the command and note whether the warning light comes on (**3 seconds**). |
| | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

| |
|---|
| Check the **connection** and **condition** of the **instrument panel** connector, component code **247**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **connection** and **condition** of the **UCH** connector, component code **645**.<br>If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Using a multimeter, check the **continuity** and **insulation** of the following connection:<br>• **80T** between components **645** and **247**.<br>If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

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| | |
|---|---|
| **AC176** | ALARM SIREN |

| | |
|---|---|
| ***NOTES*** | There must be no present or stored faults.<br>Run the command and note whether the alarm siren works. |

In the event of a fault, consult the interpretation of fault **DF177 Siren circuit**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test followed by a check with the **diagnostic tool**. |

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| | |
|---|---|
| **VP004** | ENTERING THE VIN |

| | |
|---|---|
| ***NOTES*** | This command enables the vehicle identification number to be entered manually in the computer.<br>Use this command each time the computer is replaced.<br>**The vehicle identification number is indicated on the manufacturer's plate on the right-hand side door pillar.** |

**Procedure for writing the VIN**
– establish dialogue with the UCH,
– select the **"repair mode"** menu,
– select the **"Other parameters"** menu,
– select the line **VP004**,
– enter the VIN twice,
– exit fault finding mode,
– switch off the ignition,
– wait for the end of **powerlatch**,
– re-read the VIN using **ID019 VIN Code** in the **Identification** menu for confirmation.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test followed by a check with the **diagnostic tool**. |

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| SC004 | PROGRAMMING THE UCH |
|---|---|

| Equipment required |
|---|
| CLIP |

Use this command only with a new and blank UCH.

A new UCH has no immobiliser code and is therefore not assigned to the vehicle; once it is fitted on the vehicle, it must be programmed to assign it to the vehicle.

To carry out this programming, always obtain **a key belonging to the vehicle** (assigned to the old UCH).

Before starting this operation, make sure that there are no components likely to interfere with the electromagnetic field (e.g.: CB (Citizen Band), mobile phone, etc.).

**Note:**
After only the UCH has been replaced, there are no operations to be performed on the injection computers. The computers keep the same immobiliser code.

**IMPORTANT:**
When the UCH programming procedure is successfully completed, the UCH is no longer blank and is permanently assigned to the vehicle. It will not work on another vehicle.

**IMPORTANT:**
At the end of the programming operation, only remove the key when the **Programming complete** message is displayed on the screen. Otherwise, the programming will fail and the UCH can no longer be used.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

UCH_V09_SC004

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| SC004 CONTINUED | |
|---|---|

**IMPORTANT:**
Do not interrupt the procedure when it is in progress.
If it is interrupted, restart the procedure in "not connected mode"; a new programming key will be displayed.

**UCH programming procedure**
– Establish dialogue with the UCH.
– Select the **Repair mode** menu.
– Select the **Programming** menu.
– Select line **SC004 Program UCH**.

Follow the instructions on the **Clip diagnostic tool**.
In "not connected" mode, when the **CLIP diagnostic tool** displays the programming key, make a note of this key and the VIN.
To obtain the immobiliser code, see **Technical Note 5037A**, **Code delivery procedure**.

**IMPORTANT:**
In "not connected" mode, the programming key can only be used for a limited amount of time, as indicated by the **CLIP diagnostic tool**.
After this time, the programming key and associated immobiliser code are no longer valid. The operation must be restarted from the beginning.

**Operations to be carried out after programming the UCH**
Enter the vehicle's VIN into the computer using command **VP004 Enter VIN**.
After programming the UCH, allocate all the keys using command **SC015 Allocate key**.
Configure the equipment that is present or not on the vehicle using command **SC008 UCH type**.

| *AFTER REPAIR* | Repeat the conformity check from the start. |
|---|---|

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| | |
|---|---|
| **SC008** | UCH TYPE |

| Equipment required |
|---|
| **CLIP** |

This procedure will enable the UCH to be configured in relation to the vehicle to provide optimum running.
– Click on the **Repair** mode and in the **Programming** menu,
– confirm line **SC008**,
– follow the procedure and enter the vehicle equipment,
– check that the options configured are those desired and finish.

| | |
|---|---|
| ***AFTER REPAIR*** | Repeat the conformity check from the start. |

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## Fault finding – Customer complaints

| NOTES | Only refer to the customer complaints after performing a complete check using the diagnostic tool. |
|---|---|

| DIALOGUE FAULT | 87B |
|---|---|
| No dialogue with the computer | ALP 1 |

| LIGHTING | 80D |
|---|---|
| No side lights | ALP 2 |
| No dipped headlights | ALP 3 |
| No main beam headlights | ALP 4 |
| No front fog lights | ALP 5 |
| No rear fog light | ALP 6 |
| The glovebox light does not work | ALP 7 |
| The luggage compartment light does not work | ALP 8 |
| The brake lights operate erratically | ALP 9 |
| The brake lights are still illuminated and the brake light switch is released | ALP 10 |
| The reversing light operates erratically | ALP 11 |
| The flashing light of the hazard warning lights control button does not work | ALP 12 |
| The backlighting of the hazard warning lights control button operates erratically | ALP 13 |
| The front fog lights are always illuminated | ALP 14 |
| The timed courtesy light does not work | ALP 15 |

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## Fault finding – Customer complaints

| | |
|---|---|
| **WIPERS/WASHERS** | **85A** |
| **The windscreen wiper does not work at high speed** | **ALP 16** |
| **Incorrect operation of the rear screen wiper** | **ALP 17** |
| **The front and rear bidirectional washer pump does not rotate when its control is activated** | **ALP 18** |
| **ACCESS - SAFETY** | **82D** |
| **The vehicle will not start** | **ALP 19** |
| **The backlighting of the opening elements locking / unlocking button operates erratically** | **ALP 20** |
| **The doors electric locking / unlocking control operates erratically** | **ALP 21** |
| **DE-ICING** | **87B** |
| **The backlighting of the de-icing one-touch control button operates erratically** | **ALP 22** |
| **The heated rear screen operates all the time** | **ALP 23** |
| **Heated rear screen does not operate** | **ALP 24** |

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| ALP 1 | No dialogue with the computer |
|---|---|

| *NOTES* | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |
|---|---|

Test the **diagnostic tool** on another vehicle which is in perfect working order.

Check the presence and condition of the supply fuses of the UCH, component code **645**:

- **F01 (20 A), F04 (10 A), F18 (10 A), F19 (10 A), F28 (15 A), F29 (15 A)**, and **F30 (20 A)** on component **1016**,

Replace the fuses if the checks are not correct (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**).

Check for **+12 V** on the UCH, component code **645** on the following connections:
- **BP56** of component **645**,
- **AP10** of component **645**,
- **AP7** of component **645**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **BP56** between components **645** and **1016**,
- **AP10** between components **645** and **1016**,
- **AP7** between components **645** and **1016**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **earth** on the UCH, component code **645** on the following connection:
- **NC** of component **645**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **NC** between component **645** and **earth**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| ALP 1 CONTINUED | |
|---|---|

Check the presence and condition of the supply fuses of the diagnostic socket, component code **225**:

- **F4 (10 A)** and **F29 (15 A)** on component **1016**,

Replace the fuses if the checks are not correct (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**).

Check for **+12 V** on the diagnostic socket, component code **225** on the following connections:
- **BP56** of component **225**,
- **AP10** of component **225**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **BP56** between components **225** and **1016**,
- **AP10** between components **225** and **1016**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **earth** on the diagnostic socket, component code **225** on the following connections:
- **NC** of component **225**,
- **MAN** of component **225**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **NC** between component **225** and **earth**,
- **MAN** between component **225** and **earth**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **HK** between components **225** and **645**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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| | |
|---|---|
| **ALP 22** | **The backlighting of the de-icing one-touch control button operates erratically** |

| | |
|---|---|
| ***NOTES*** | **Only address this customer complaint after a complete check with the diagnostic tool.**<br>There must be no **present** or **stored** faults.<br>Check the conformity of status **ET324 Side lights request**.<br>If not correct, refer to the interpretation of this status. |
| | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

| |
|---|
| Put the lighting stalk in the side lights position. |
| Check for **+12 V** (when side lights are requested) on the following connection:<br>• **LPG** or **LPD** of component **1456**.<br><br>Check for **earth** on the following connection:<br>• **MAN** of component **1456**.<br><br>If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| Check the **continuity and insulation** of the following connection:<br>• **LPD** between components **1016** and **1456** (for a left-hand drive vehicle),<br>• **LPG** between components **1016** and **1456** (for a right-hand drive vehicle),<br><br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Check the system operation. |

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| | |
|---|---|
| **ALP 23** | **The heated rear screen operates all the time** |

| | |
|---|---|
| ***NOTES*** | **Only address this customer complaint after a complete check with the diagnostic tool.**<br>There must be no **present** or **stored** faults. |
| | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

| |
|---|
| Check the condition of the heated rear screen relay, component code **235**. Replace the relay if necessary. |
| Check the condition and the connection of the connectors of the heated rear screen relay, component code **235** and of the UCH, component code **645**.<br><br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |
| Check the insulation to **+12 V** feed of the following connection:<br>• **15LP** between components **235** and **200**,<br>Check the insulation to earth of the following connection:<br>• **15M** between components **235** and **645**.<br><br>If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Check the system operation. |

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| ALP 24 | Heated rear screen does not operate |
|---|---|

| *NOTES* | **Only address this customer complaint after a complete check with the diagnostic tool.**<br>There must be no **present** or **stored** faults. |
|---|---|
| | **Special note:**<br>Use **the Wiring Diagrams Technical Note for DUSTER.** |

Check the presence and the condition of the supply fuses of the heated rear screen relay, component code **235**:

- **F32 (30 A)** and **F01 (20 A)** on component **1016**.

Replace the fuses if the checks are not correct (see **MR 451 Mechanical, 81C, Fuses, Fuses: List and location of components**).

Check the **condition** and the **connection** of the connector of the heated rear screen relay, component code **235** and of the heated rear screen contact, component code **200**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check for **+12 V** on the heated rear screen relay, component code **235** on the following connections:
- **BP15** of component **235**,
- **AP7** of component **235**.

Check **the continuity and insulation** of the following connections:
- **BP15** between components **235** and **1016**,
- **AP7** between components **235** and **1016**,
- **15M** between components **235** and **645**.

If the connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check for **earth** on the heated rear screen, component code **200** on the following connection:
- **MG** of component **200**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connection:
- **15LP** between components **235** and **200**.

If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Check the system operation. |
|---|---|

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# DUSTER

# 8 Electrical equipment

## 88B MULTIPLEXING


| | |
|---|---|
| Fault finding – Introduction | 88B - 2 |
| Fault finding – List and location of components | 88B - 6 |
| Fault finding – Operating diagram | 88B - 7 |
| Fault finding – Interpretation of faults | 88B - 8 |
| Fault finding – Fault Finding Chart | 88B - 12 |


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"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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## INTRODUCTION

### Description of the multiplex network:

The multiplex network consists of a twisted pair of wires connected to several vehicle computers.
These two wires are called multiplex line H and multiplex line L.

On this vehicle, there is only one multiplex network. Depending on the vehicle options, it can include the following computers: ABS, ESP, torque distributor – ETC, injection, and DP0.

Data is exchanged by the computers on the **multiplex** network at a communication speed of 500 kbit/s.

In contrast to standard **multiplex** networks that have two **120** Ω resistors at the two network terminations, this network has just one **60 Ω** resistor. This **60** Ω line resistor is located in the injection computer**.**

## PURPOSE

– The purpose of the multiplex network test is to determine the various computers present on the vehicle's multiplex network as well as the cause of possible inter-computer communication faults.

– It also serves to determine the functions installed in the vehicle which are often housed in various computers (distributed functions, e.g.: Air conditioning, Security access, etc.).

– The multiplex network test can also run fault finding on computers disconnected from the multiplex network; this provides an overview of the vehicle's electronic layout.

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**MULTIPLEX NETWORK OPERATIONAL TEST**

**Vehicle computer power supply for fault finding:**

Depending on the type of vehicle equipment, proceed as follows:

| |
|---|
| **Standard key / radio frequency key,** switch on the ignition with the key. |

To cut off the + after ignition feed, proceed as follows:

**Standard key / radio frequency key,** switch off the ignition with the key

**This step is the essential starting point for any computer fault finding procedure.**

It ensures that the network is correctly connected at the terminals of each computer and that the signal is correctly sent to it and received by it. This function also reads the faults present in the computers.

**The multiplex network test function is started after the user selects the vehicle then selects the Test computers icon.**

**After the network check, the other functions become accessible.**

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## MULTIPLEX NETWORK TEST PROCEDURE

– Establish dialogue with the computers storing the vehicle configuration (read identification).

– Read the computers that support fault finding.

– Computer interrogation.

– Physical (electrical) measurements on the multiplex line network.

## IMPORTANT

**Two fault finding lines are present on this vehicle depending on the equipment:**

**Multiplex line:**
**– Injection (depending on the engine)**
**– Torque distributor - ETC**

**Line K:**
**– Airbag**
**– ABS/ESP**
**– GEPDA**

## ACQUISITION AND DISPLAY OF THE RESULTS

The acquisition screen is made up of a bar graph which changes when the various initialisation, acquisition and data analysis stages are updated.
At the end of the test, the tool displays a screen with the test result.

## COMPUTERS

– **Valid:** green border, green lettering.
– **Not detected:** red border, red lettering.
– **Cannot support fault finding:** black border, black lettering.
– **Not recognised:** red border, red lettering + exclamation mark.

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**Interpreting test result charts**

On the **Faults** tab, the computers are organised into the following groups:
– **Not detected** if the computer failed to respond to the tool's identification request.
– **Not recognised** if the computer is detected but cannot be identified from its response.

On the **Information** tab, the computers are organised and listed as follows:
– **Cannot support fault finding**, if the computer cannot support fault finding with the tool and therefore was not queried.
– **Valid** if the computer responded correctly to the tool's request.

If the **Proceed** icon in the bottom right-hand corner is selected, a new screen will appear with the following tab:

Under the **Results** tab the computers are organised into the following groups:
– **Faulty** if the computer is known and has a non-zero number of faults.
– **OK** if the computer was detected, recognised and has no faults.
– **Not recognised** if the computer was detected but could not be identified from its response.
– **Not detected** if the computer can support fault finding but failed to respond.

**FUNCTION TESTING**

The function test can be accessed by clicking on the **List of functions** icon.
– The vehicle function tests screen resembles the multiplex network test screen with a diagram of the network layout if this is known and displayed.
– The **Function** tab displays the different computers involved in the functions whether distributed or not over the various computers.
Examples:
- **Air conditioning: UCH, INJ,** and **CLIM.**
- **Access - Safety: UCH** and **INJ**
- **Wiping: UCH**
- **Lighting: UCH**

– The **Info** tab displays the other possible functions found on the vehicle concerned.
– Selecting a function from the list of functions enables computers not involved in this function to be shaded, thus indicating the computers involved in this function.
– The **Fault finding** button runs fault finding on the function selected from the list.

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## Fault finding – List and location of components

The different components of the vehicle are listed below:

| | | | |
|---|---|---|---|
| 118 | ABS computer | 502 | GEPDA computer |
| 119 | Automatic transmission computer | 645 | UCH |
| 120 | Injection computer | 756 | Airbag / pretensioners computer |
| 225 | Diagnostic socket | 1016 | Passenger compartment fuse box |
| 247 | Instrument panel | 1094 | ESP computer |
| 261 | Radio | 2017 | Torque distributor - ETC computer |
| 419 | Air conditioning | | |

The location of the components is available under Visu-Schéma.

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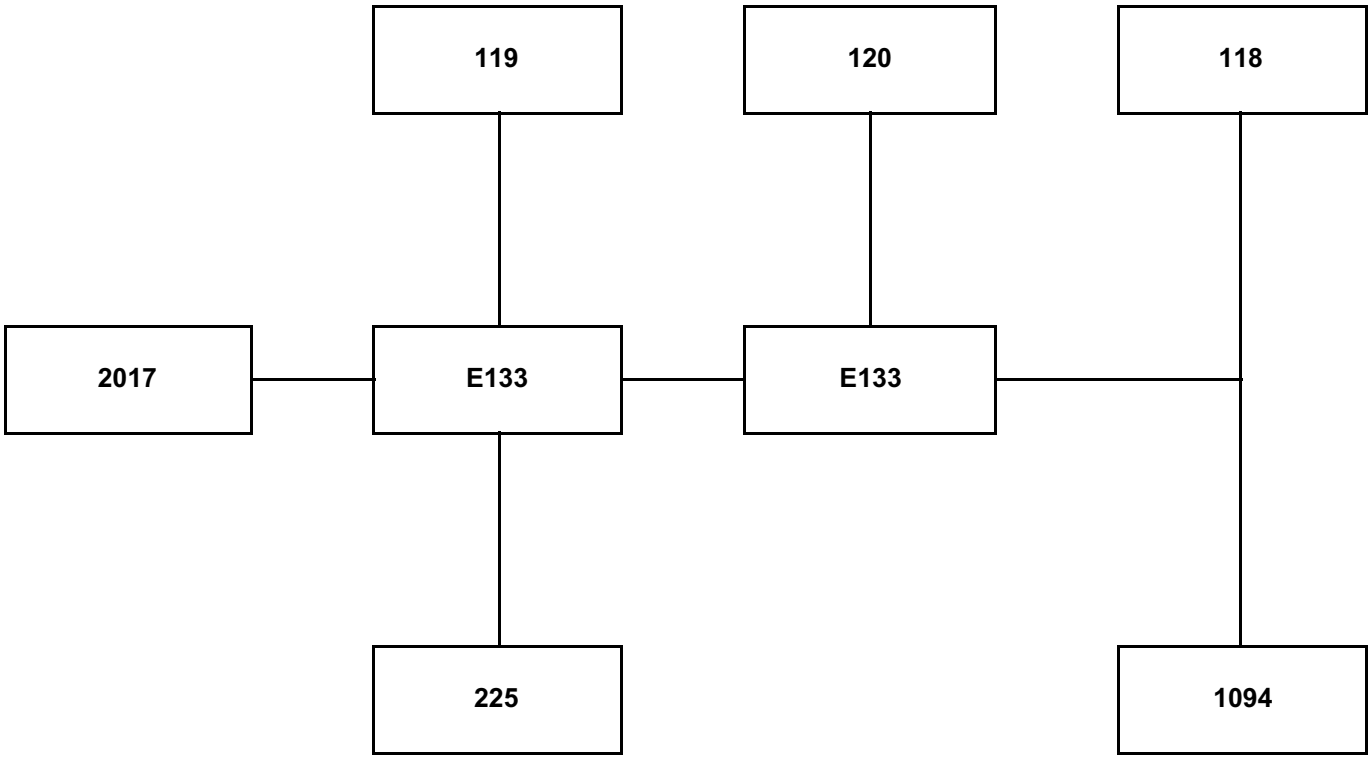
**The multiplex network diagram may be similar to the following:**




| Number | Description |
|---|---|
| 118 | ABS computer |
| 119 | Automatic transmission computer |
| 120 | Injection computer |
| 225 | Diagnostic socket |
| 1094 | ESP computer |
| 2017 | Torque distributor - ETC computer |
| E133 | Splice |

**WARNING**

**The CLIP tool does not display this network on the screen. Only a list of the computers is displayed. This list is essential in order to have all the important information about the computers (computer not recognised, not present, faulty, etc.).**

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## FAULTY COMPUTER

| | |
|---|---|
| ***NOTES*** | Make sure that the computers installed in the vehicle are the correct type and are compatible with the vehicle.<br>Check that the computers are correctly supplied (earth, + battery, + accessories or + after ignition). |

Make sure that the computer **wake-up mode** is in full working order on the vehicle and is properly assimilated by the computers.

The wake-up mode is:
– **+ accessories feed:** ABS, ESP, torque distributor - ETC computer
– **+ after ignition feed:** Injection (the injection will not appear in **+ accessories feed**)

– Switch to **computer fault finding** mode.

Attempt to establish dialogue with computers.
– No dialogue between computers and the diagnostic tool: see ALP 1 **No dialogue with the computer** for computer(s) on which there is no dialogue with the diagnostic tool.
Check the connections to the computers and that there are no open circuits.
Repair if necessary.
– Computers are not displaying all the information on their identifications:
Check in the Workshop Repair Manual or the World Vehicle Database that the computer is compatible with the vehicle.
Check that the CLIP diagnostic tool update is recent enough to be able to deal with faults on the vehicle.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a new test using the diagnostic tool.<br>Clear the stored faults on all the computers connected to the network.<br>Deal with any other faults. |

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**FAULTY COMPUTER (CONTINUED 1)**

Measure the resistance of component **225** between the following connections:
- Connection code **133B**
- Connection code **133C**

What **is the value obtained?**

| | |
|---|---|
| **0 Ω** | The two lines are in short circuit (see **Introduction - Repair advice**). |
| **60 Ω ± 10 Ω** | Check that each of the computers present on the network is correctly supplied.<br><br>**For the ABS:**<br>Check for earth on connections **MAH** and for the supply on connections **AP5**, **BP14**, and **BP88** of component **118**.<br><br>**For the ABS / ESP:**<br>Check for earth on connections **MAH** and for the supply on connections **AP5**, **BP14**, and **BP88** of component **1094**.<br><br>**For the torque distributor - ETC:**<br>Check for earth on connections NC and for the supply on connections **AP4**, **BP1U**, **LPD**, and **LPG** of component **2017**.<br><br>**For the injections:**<br>Check for earth on connections NH and for the supply on connections **AP29** or **AP29/BP17** or **BP38/3FB/3FBA** of component **120**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a new test using the diagnostic tool.<br>Clear the stored faults on all the computers connected to the network.<br>Deal with any other faults. |

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**FAULTY COMPUTER (CONTINUED 2)**

| | |
|---|---|
| **> 70 Ω** | For each of connections 133B and 133C, check that there is no interference resistance and then check that there is no short circuit to earth or to the + battery feed.<br><br>Open circuit on one or two lines.<br><br>**For the ABS:**<br>Disconnect component **118** and check multiplex connections **133B** and **133C** between components **225** and **118**. Repair if necessary.<br><br>**For the ABS / ESP:**<br>Disconnect component **1094** and check multiplex connections **133B** and **133C** between components **225** and **1094**. Repair if necessary.<br><br>**For the torque distributor - ETC:**<br>Disconnect component **2017** and check multiplex connections **133B** and **133C** between components **225** and **2017**. Repair if necessary.<br><br>**For the injections:**<br>Disconnect component **120** and check multiplex connections **133B** and **133C** between components **225** and **120**. Repair if necessary.<br><br>If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a new test using the diagnostic tool.<br>Clear the stored faults on all the computers connected to the network.<br>Deal with any other faults. |

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## COMPUTERS NOT RECOGNISED

| | |
|---|---|
| ***NOTES*** | Check computer compatibility with the vehicle. |

Check that the CLIP diagnostic tool update is recent enough to be able to deal with faults on the vehicle.

Switch to **computer fault finding** mode.

Attempt to establish dialogue with computers.

– No dialogue between computers and the diagnostic tool: see **ALP 1 No dialogue with the computers** for computer(s) on which there is no dialogue with the diagnostic tool.
Check the connections to the computers and that there are no open circuits.
Repair if necessary.

– If there is communication with computers:
Make sure that the computer identification information is correct and matches the vehicle in fault finding.

Check that the following computer information is correct:

– Vdiag
– Program no. for the injection computers

If no faults or open or short circuits have been detected after these tests, contact Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a new test using the diagnostic tool.<br>Clear the stored faults on all the computers connected to the network.<br>Deal with any other faults. |

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| ALP 1 | No dialogue with computers |
|---|---|

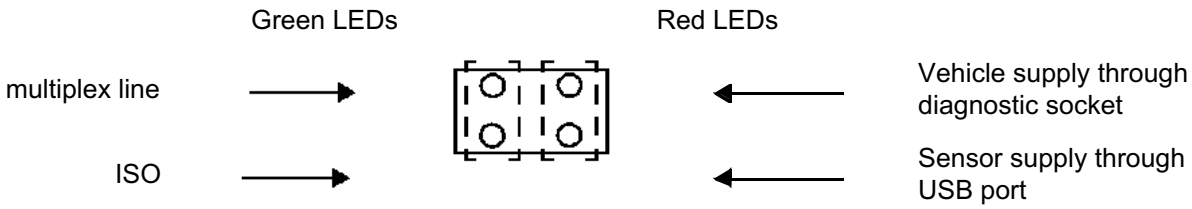
| *NOTES* | **Vehicle computer power supply for fault finding:**<br>Engine stopped, ignition on.<br>Connect the **diagnostic tool** and perform the required operations. |
|---|---|

Try the **diagnostic tool** on another vehicle.
Check that the tool has been updated with the latest version.

Check:
– the connection between the **diagnostic tool** and the diagnostic socket (**component 225**) (connection and cable in good condition),
– the supplies of the computers,
– the engine and passenger compartment fuses.

Check for the supply and earth on the diagnostic socket (component **225**) through the following connections: **BP56** (**+12 V**), **MAN** and **NC** (earths). If the checks are correct then move on to the next step, depending on the type of sensor used:

1. **Renault fault finding sensor** (with wire connection only):
Check that the CLIP sensor is supplied via the computer's USB port and the diagnostic socket by checking that the red diodes illuminate. If this is not the case, try again with another cable or sensor or even another clip sensor in order to determine the faulty component.
Check that the CLIP sensor is communicating correctly with the vehicle computers; this can be confirmed by the illumination of the two green diodes on the sensor. If it is not, check that the test conditions have been met (+ after ignition feed, vehicle selection etc.) otherwise apply the electrical checks below.




2. **Alliance fault finding sensor** (with wireless connection possible):
Deal with the fault finding for each warning light in the following order of priority: from warning light 1 to warning light 3.

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| ALP 1 CONTINUED 1 | |
|---|---|

| Description of warning lights displayed on the sensor from left to right | ○ **Warning light 1 shows the supply status** | ○ **Warning light 2 shows the type and status of the connection** | ○ **Warning light 3 shows the level of communication with the vehicle** | ○ **Reserved for the Nissan tool** |
|---|---|---|---|---|
| **Off** | Sensor not connected to the vehicle or connection fault | No connection to clip or connection fault | No dialogue with the computers | - |
| **Green** | Sensor supplied | Wireless connection | Green flashing: communication in progress | - |
| **Orange** | - | Connection with USB port | - | - |
| **Red** | Initialisation fault | - | Communication error | - |

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| ALP 1 CONTINUED 2 | |
|---|---|

| Description of warning lights displayed on the sensor from left to right | ○ **Warning light 1 shows the supply status** | ○ **Warning light 2 shows the type and status of the connection** | ○ **Warning light 3 shows the level of communication with the vehicle** | ○ **Reserved for the Nissan tool** |
|---|---|---|---|---|
| **To be checked** | **If red or off:**<br>– Initialisation or connection fault. Disconnect and reconnect the sensor several times. If the result is not conclusive, try with another sensor. | **If off:**<br>– Wireless connection: Try connecting with a USB cable. If the warning light illuminates orange, then check the configuration of the wireless connection. If it is not correct, call the Techline.<br>– With a wired connection: Try with another USB cable, another clip or another sensor in order to determine the defective component. | **If warning light 3 is off or red and warning light 2 is illuminated:**<br>– in this case, during the multiplex network test check that the green warning light flashes and that the test conditions have been met (+ after ignition feed, vehicle selection, etc.) otherwise apply the electrical checks below. | **If the warning light is on:**<br>Contact the Techline. |

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| ALP 1<br>CONTINUED 3 | |
|---|---|

Check the following connections on the diagnostic socket:
**BP 56** → **+ Battery**
**MAN and NC** → **Earth**
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.

**Computer connected to multiplex line V**
If the fault is still present, check the **continuity** and the **insulation** of the following connections:
**Multiplex line H (133B of component 225).**
**Multiplex line L (133C of component 225).**

Use a multimeter to check that the voltages at the terminals of component **225** are approximately:
– **2.5 V** between **CAN H (133B)** and earth (**MAN and NC**) (Average values)
– **2.5 V** between **CAN L (133C)** and earth (**MAN and NC**) (Average values).

Refer to the **Introduction - Repair advice** to detect a short circuit on the vehicle's multiplex network.

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| ALP 2 | Communication fault between computers |
|---|---|

| *NOTES* | **Vehicle computer power supply for fault finding:**<br>Engine stopped, ignition on.<br>Connect the **diagnostic tool** and perform the required operations. |
|---|---|

**Computer connected to multiplex line V**
Check the **continuity** and **insulation** of the following connections:
- 133B between the faulty components,
- 133C between the faulty components,

**Important: Several computers can be present on the line.**

If the fault is still present, refer to the repair procedure of ALP1 "Faulty computers".

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# 8 Electrical equipment

## 88C AIRBAGS AND PRETENSIONERS

**TEMIC AIRBAG**
**Vdiag No.: 18**
**Computer type No.: 0000**


| | |
|---|---|
| Fault finding – Introduction | 88C - 2 |
| Fault finding – List and location of components | 88C - 4 |
| Fault finding – Role of components | 88C - 10 |
| Fault finding – Operating diagram | 88C - 11 |
| Fault finding – Function | 88C - 15 |
| Fault finding – Configuration | 88C - 18 |
| Fault finding – Programming | 88C - 22 |
| Fault finding – Replacement of components | 88C - 23 |
| Fault finding – Fault summary table | 88C - 24 |
| Fault finding – Interpretation of faults | 88C - 26 |
| Fault finding – Conformity check | 88C - 83 |
| Fault finding – Status summary table | 88C - 85 |
| Fault finding – Parameter summary table | 88C - 86 |
| Fault finding – Customer complaints | 88C - 87 |
| Fault finding – Fault Finding Chart | 88C - 88 |


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## 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding method applicable to all computers with the following specifications:

| | |
|---|---|
| *Vehicle(s):* **DUSTER**<br>*Function concerned:* **AIRBAG** | *Computer name:* **TEMIC Airbag**<br>*Computer type No.:* **0000**<br>*Vdiag No.:* **18** |

## 2. PREREQUISITES FOR FAULT FINDING

### Documentation type

**Fault finding procedures** (this document):
– Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.

**Wiring Diagrams:**
– Visu-Schéma.

### Type of diagnostic tools

**CLIP** + Set of adapters and borniers used for the **airbag wiring check** function, including the **50-track ELO** base type **adapter** with 7 shunts, coding D-H, TYCO, orange colour, part number **9-1393474-4**, **Elé 1830**.

### Special tooling required

| Special tooling required | |
|---|---|
| | **Diagnostic tool** |
| | Adapters **B32, B35** |
| **Elé. 1641** | **Bornier B55** |
| **Elé. 1617** | **(3/4)** |
| **Elé. 1484-10** | 30-track computer bornier |
| **Elé. 1830** | 50-track computer bornier |
| **Elé. 1287** | Airbag and pretensioner destruction tool |

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## 3. REMINDERS

**Procedure**

To run fault finding on the vehicle computers, switch on the ignition.

Connect the diagnostic tool and perform the required operations.

## 4. SAFETY INSTRUCTIONS

All operations on the airbag system must be carried out by qualified trained personnel.

Safety rules must be observed during any work on a component to prevent any damage or injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the appropriate tools,
– During any operation on the airbag system, it is essential to use the computer locking command to avoid any risk of accidental triggering (all the trigger lines will be inhibited).

**WARNING:**
During any operation on the airbag systems, it is essential to use the computer locking command to avoid any risk of accidental triggering (all the trigger lines will be inhibited).
The locked mode is indicated when the instrument panel warning light comes on.

**Note:**
If the operation is being performed following an impact that triggered the airbags, the computer cannot be locked until the unlocking command has been given.
After an impact that triggered the airbags, the faults stored in the computer cannot be cleared until the "Read impact context" command has been given, followed by the unlocking command.

Never measure the airbag trigger lines using any tool other than the **XRBAG** or the airbag wiring check function on the **CLIP** and **NXR** tools.

Before using a dummy ignition module, check that its resistance is between: **1.8 Ω** and **2.5 Ω**.

During the procedure, **make sure the computer voltage does not drop below 10 V**.

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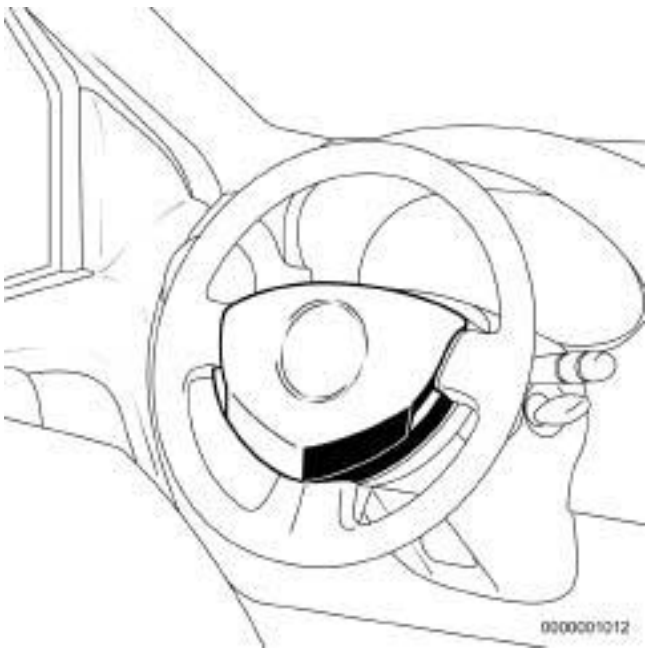
## I - LIST OF COMPONENTS

| Number | Description |
|---|---|
| 1 | Driver's frontal airbag |
| 2 | Passenger frontal airbag |
| 3 | Front side airbag |
| 4 | Airbag computer |
| 5 | Airbag inhibition key |

## II - LOCATION OF COMPONENTS

### 1. DRIVER'S FRONTAL AIRBAG



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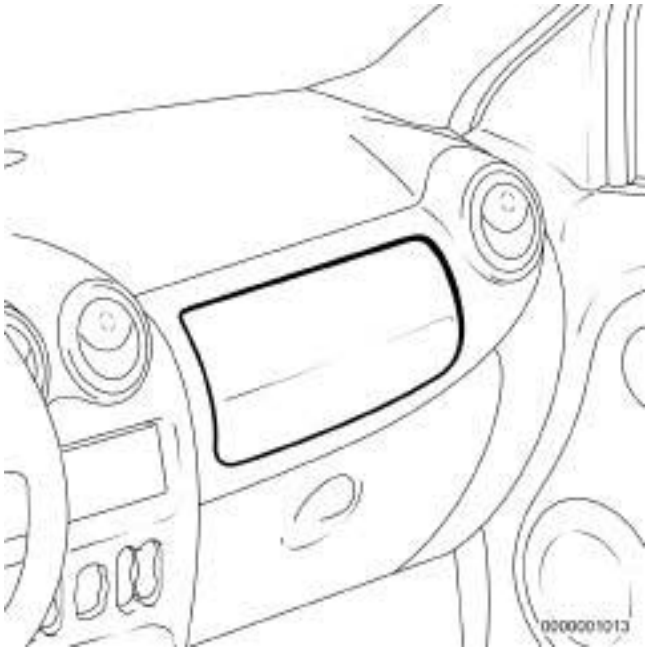
## 2. PASSENGER FRONTAL AIRBAG




## 3. FRONT SIDE AIRBAG

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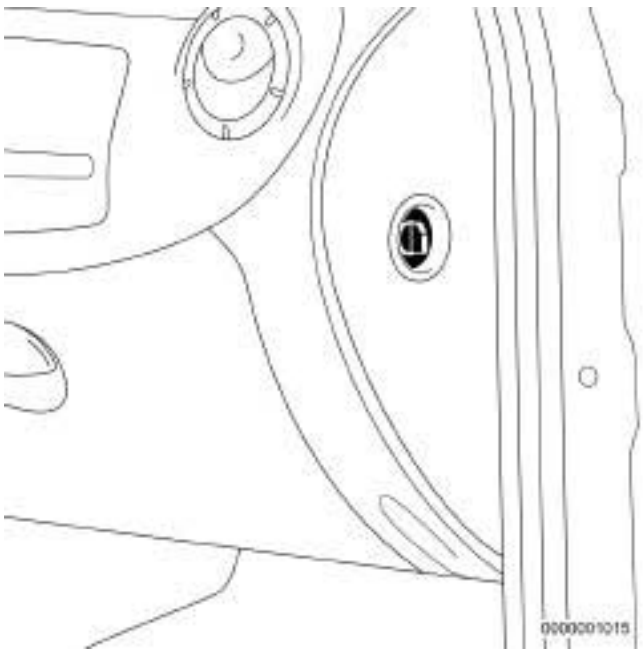
## 4. AIRBAG COMPUTER

## 5. AIRBAG INHIBITION KEY



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**System outline**

| Number | Description |
|---|---|
| 1 | Airbag computer |
| 2 | Driver's lateral acceleration sensor (satellite) |
| 3 | Front passenger lateral acceleration sensor (satellite) |
| 4 | Driver's frontal airbag |
| 5 | Front passenger frontal airbag |
| 6 | Pyrotechnic inertia reel of driver's front seat belt buckle |
| 7 | Pyrotechnic inertia reel of passenger front seat belt buckle |
| 8 | Driver's side airbag |
| 9 | Front passenger side airbag |
| 10 | Front passenger airbag inhibition switch |
| 11 | Driver's seat belt buckle contact |
| 12 | Front passenger seat belt buckle contact |
| 13 | Occupant presence detection sensor |
| 14 | Instrument panel (warning light functions) |
| 15 | Radio ("mute" function) |
| 16 | Buzzer (audible warning function) |

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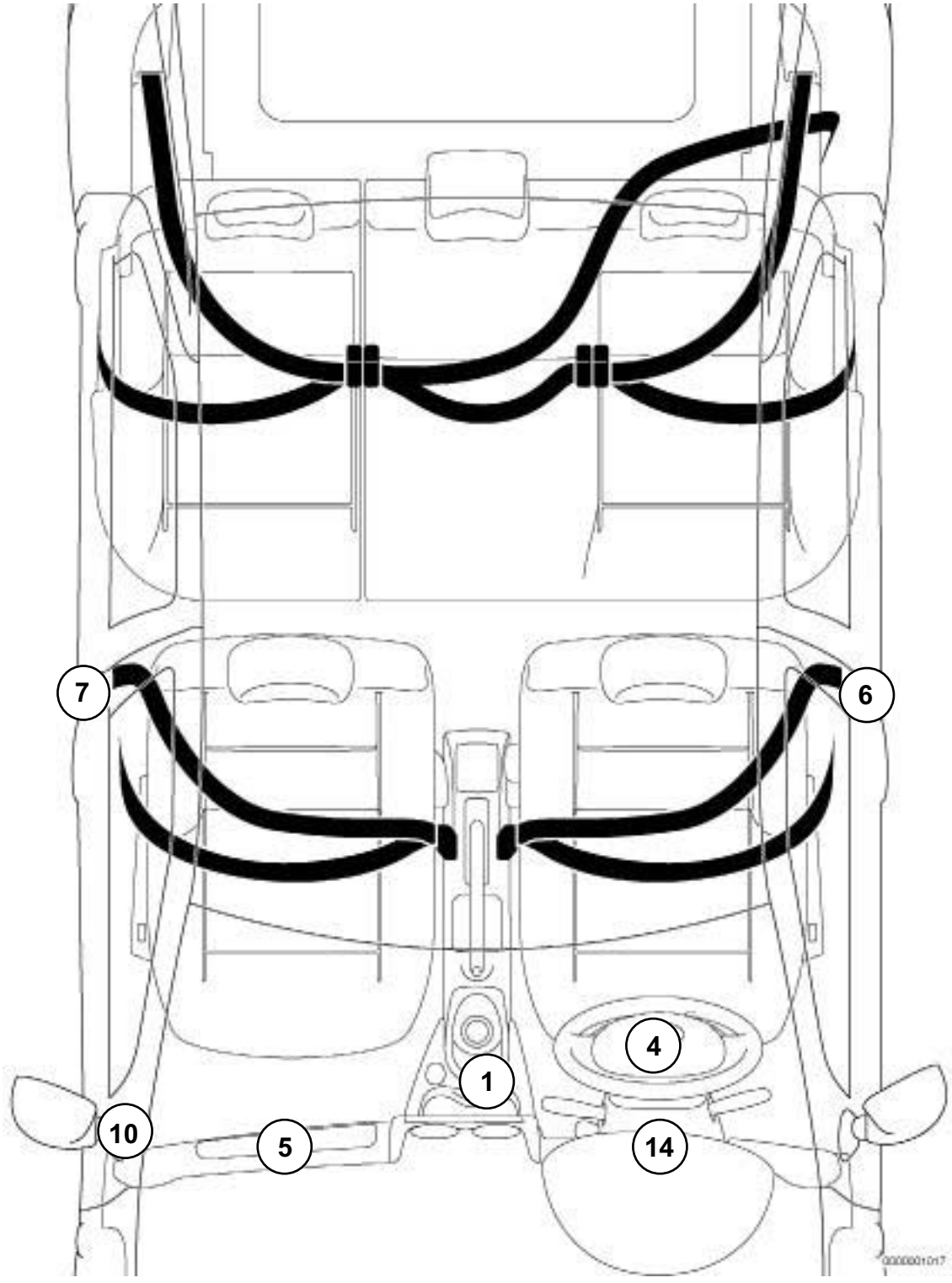
**Passive Safety Architecture – Computer with 4 trigger lines.**



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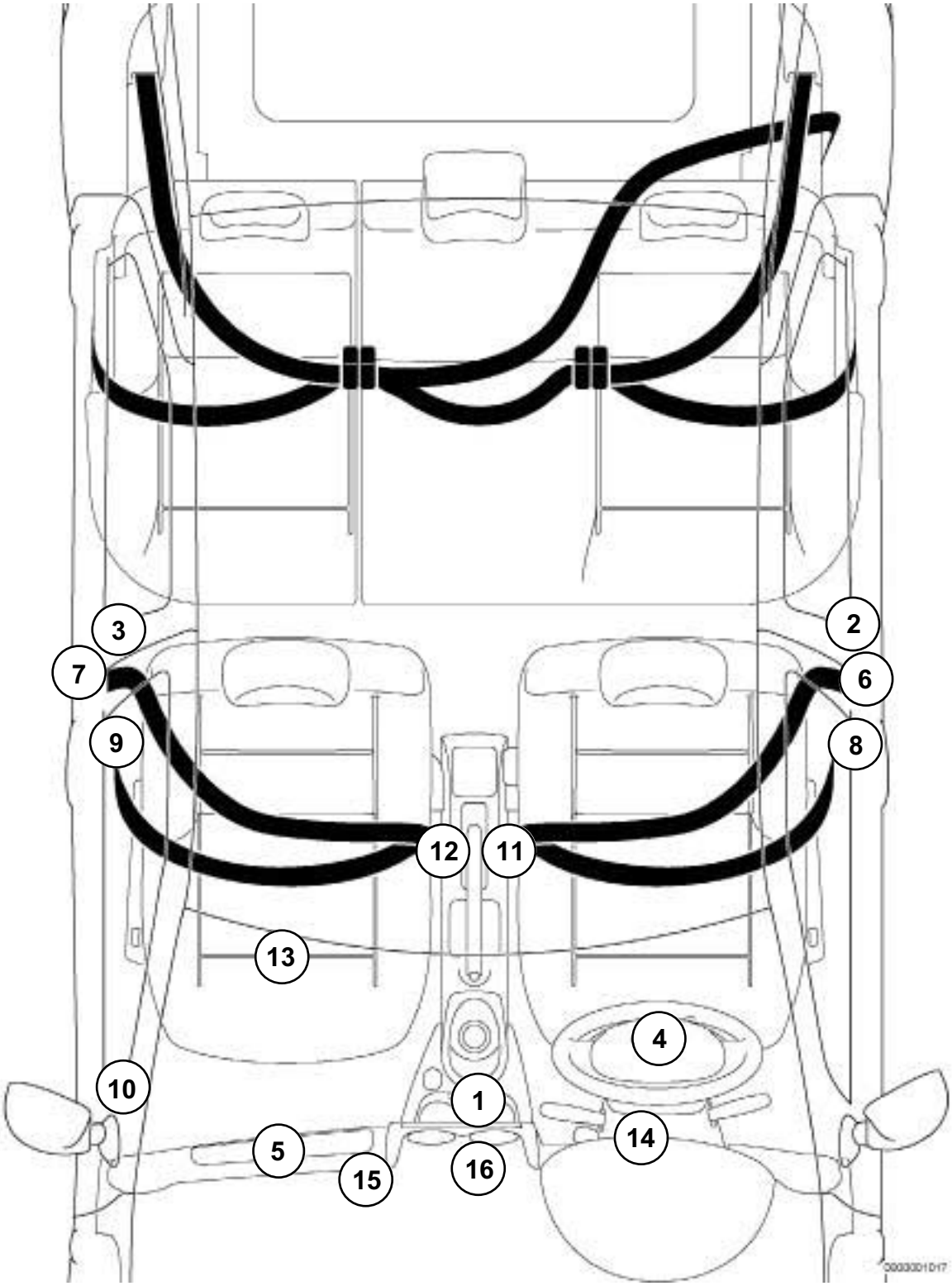
**Passive Safety Architecture – Computer with 6 trigger lines.**



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**Driver's front airbag.**
The role of the driver's frontal airbag is to protect the driver's head in case of frontal impact.

**Passenger front air bag.**
The role of the passenger frontal airbag is to protect the front passenger's head in case of frontal impact.

**Driver's side airbag.**
The role of the driver's side airbag is to protect the driver's chest and head in case of side impact.

**Front passenger side airbag.**
The role of the front passenger side airbag is to protect the front passenger's chest and head in case of side impact.

**Airbag computer.**
The role of the airbag computer is to take control of all of the vehicle's restraint devices intended to ensure occupant protection (driver, front and rear passengers).

**Inhibition key.**
The passenger airbag inhibitor (by key) informs the airbag computer of a request to inhibit the passenger front airbag and passenger chest airbag.

**The driver's and passenger pyrotechnic inertia reels:**
The pyrotechnic seat belt retractor holds the occupant in the seat in the event of a crash.

**Seat belt locking monitoring:**
This function is performed by the instrument panel. The computer only sends the driver's seat belt buckle sensor status. A warning light on the instrument panel is displayed if the driver is not wearing his seat belt, and a buzzer reminds the driver of this when the vehicle speed exceeds **12 mph** (**20 km/h**). For the passenger, the computer sends the statuses of the passenger seat belt buckling sensor and the passenger presence detection sensor.

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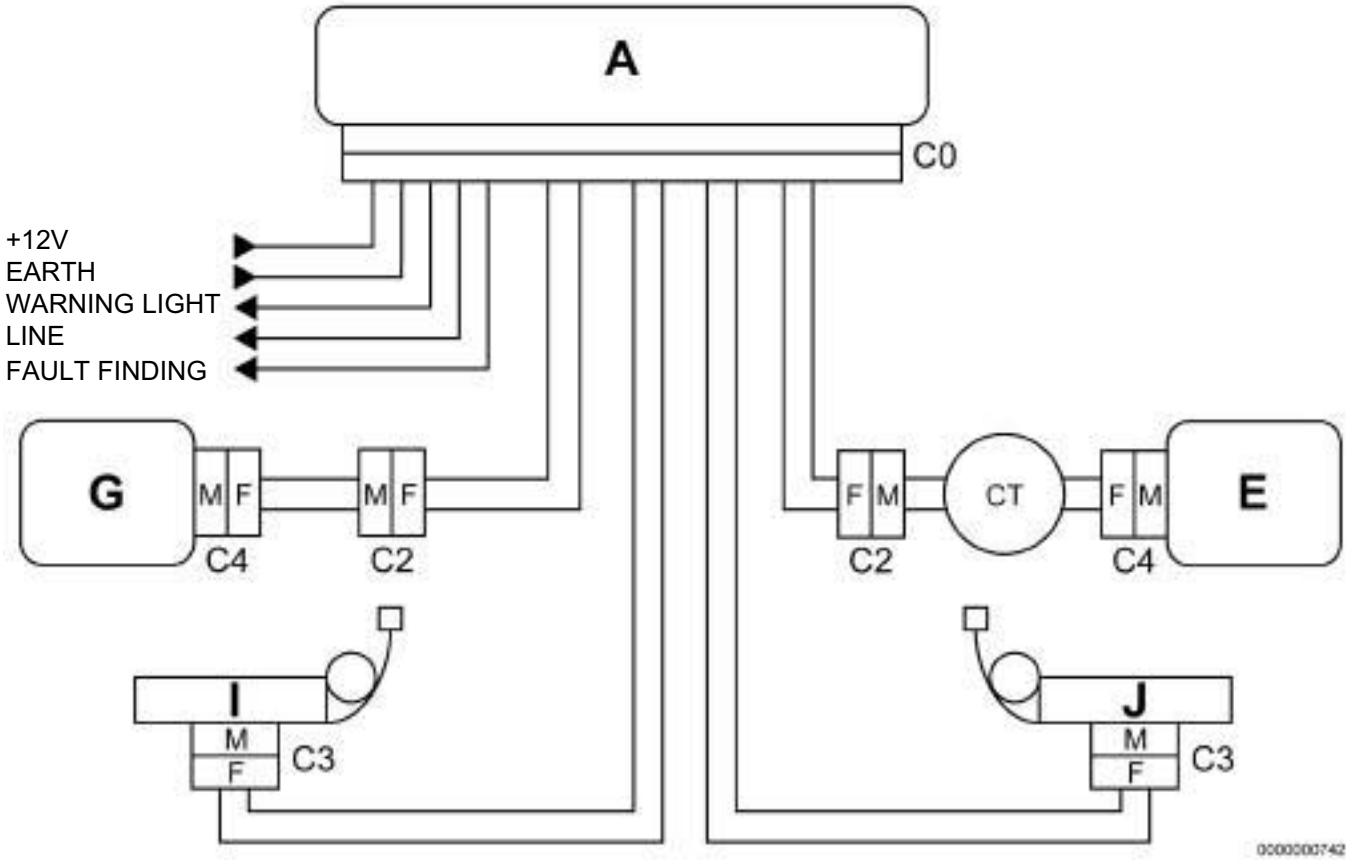
**FAULT FINDING - CONFIGURATION SHEET system with 4 trigger lines.**




| | |
|---|---|
| **A** | COMPUTER |
| **E** | DRIVER'S AIRBAG IGNITION MODULE |
| **G** | PASSENGER AIRBAG IGNITION MODULE |
| **I/J** | DRIVER'S / PASSENGER FRONT INERTIA REEL |
| **CT** | ROTARY SWITCH |
| **C0** | 30-TRACK AIRBAG COMPUTER CONNECTOR |
| **C2, C3, C4** | MEASURING POINT |

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## Fault finding – Operating diagram

| | DRIVER'S AND PASSENGER FRONT AIRBAGS | |
|---|---|---|
| | Measuring point | Correct value |
| Driver | C0, C2 and C4 | **1.3 Ω** to **5.2 Ω** |
| Passenger | C0, C2 and C4 | **1.3 Ω** to **5.2 Ω** |
| | DRIVER'S AND PASSENGER INERTIA REEL | |
| | Measuring point | Correct value |
| | C3 | **1.3 Ω** to **5.2 Ω** |

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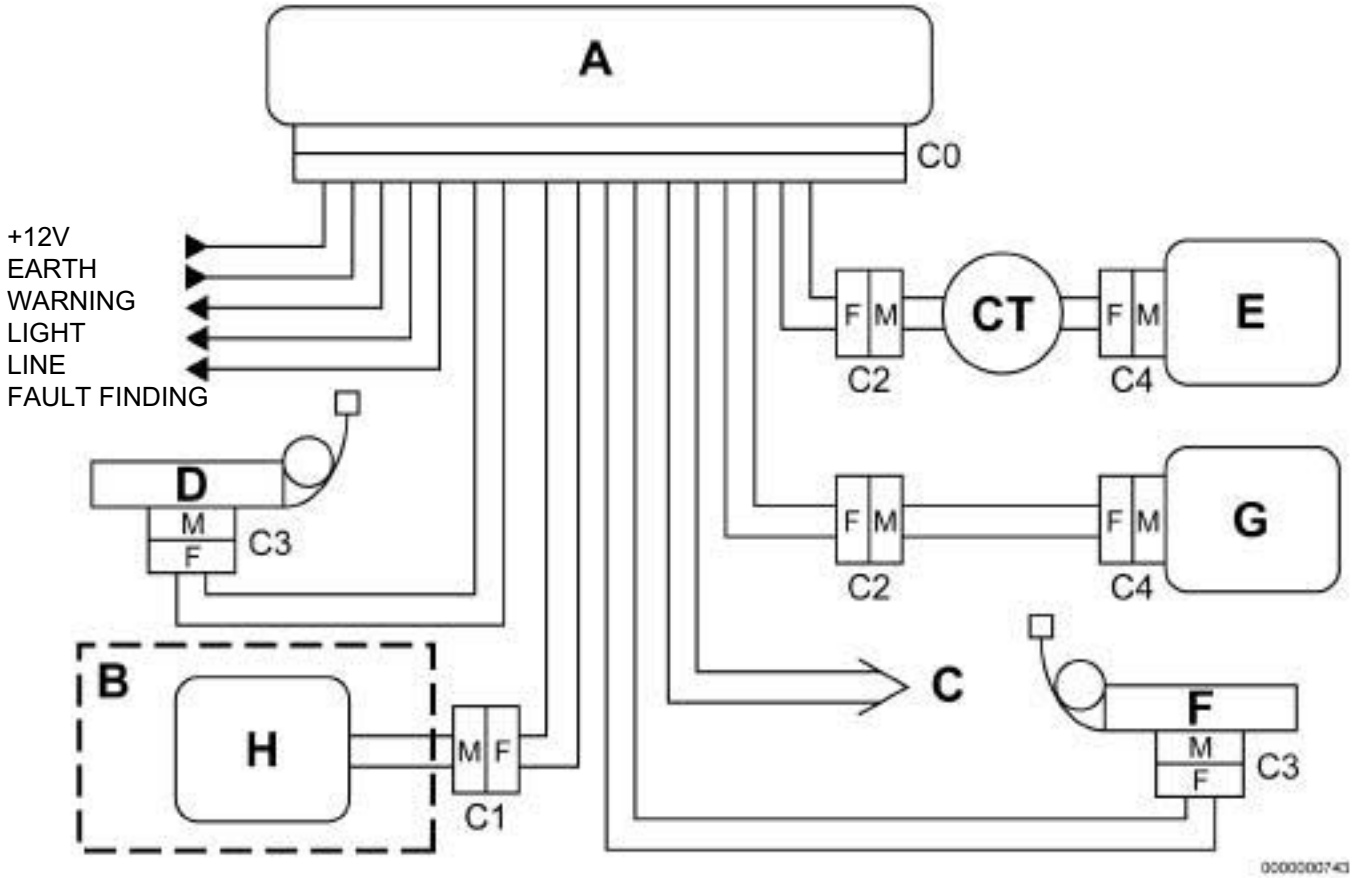
**FAULT FINDING - CONFIGURATION SHEET system with 6 trigger lines.**




| | | | |
|---|---|---|---|
| A | COMPUTER | C0 | 50-TRACK AIRBAG COMPUTER CONNECTOR |
| E | DRIVER'S AIRBAG IGNITION MODULE | C1, C2, C3, C4 | MEASURING POINT |
| G | PASSENGER AIRBAG IGNITION MODULE | | |
| H | FRONT CHEST-LEVEL SIDE AIRBAG IGNITION MODULE | | |
| D/F | FRONT PYROTECHNIC INERTIA REEL | | |
| B | DRIVER'S SEAT | | |
| C | PASSENGER SEAT | | |
| CT | ROTARY SWITCH | | |

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## Fault finding – Operating diagram

| | DRIVER'S AND PASSENGER FRONT AIRBAGS | |
|---|---|---|
| | Measuring point | Correct value |
| Driver | C0, C2 and C4 | **1.3 Ω** to **5.2 Ω** |
| Passenger | C0, C2 and C4 | **1.3 Ω** to **5.2 Ω** |
| | DRIVER'S AND PASSENGER CHEST-LEVEL AIRBAGS | |
| | Measuring point | Correct value |
| | C1 | **1.3 Ω** to **5.2 Ω** |
| | DRIVER'S AND PASSENGER INERTIA REEL | |
| | Measuring point | Correct value |
| | C3 | **1.3 Ω** to **5.2 Ω** |

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The airbag computer monitors all of the vehicle's restraint devices intended to ensure occupant protection (driver, front and rear passengers).

The computer is designed to carry out the following functions:
– detection and confirmation of front longitudinal impacts and/or side impacts,
– corresponding activation of the pyrotechnic restraint devices (e.g. inertia reels, airbag),
– management of the inhibiting function of the trigger lines and the lateral acceleration sensors,
– management and monitoring of the **Airbag fault** and **Airbag Off** warning lights on the instrument panel (wire connections),
– management of the warning lights for the SBR*,
– management of the audible function for the SBR*,
– management of the radio cut-off for the SBR*,
– management of the fault finding signals (signals provided by the fault manager in response to fault finding requests regarding internal faults or input - output fault finding).

**Special notes:**

**1. Longitudinal impacts:**

The detection of front or rear longitudinal impacts takes into account the signals from the internal accelerometers of the computer.

A frontal algorithm produces a characterisation of the impact using the sensor signals in order to initiate an adapted protection. The programs used by other computers that might use this signal are not part of the present functional description.

Additional information, for example the position of the inhibitor key, is used to modify the behaviour of the system accordingly in order to better meet the protection requirements resulting from the situation which has been identified and characterised.

**2. Side impacts:**

A side algorithm produces a characterisation of the impact using the signals from side sensors and from an internal sensor in the computer to initiate an adapted protection on the impact side. The programs used by other computers that might use this signal are not part of the present functional description.

Additional information, for example the position of the inhibitor key, can (depending on the configuration used) be used to modify the behaviour of the system accordingly in order to better meet the protection requirements resulting from the situation which has been identified and characterised.

SBR*: Seat Belt Reminder

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**3. Inhibition of passenger trigger lines:**

This function is managed by the airbag computer, according to the position of the passenger airbag inhibition switch and taking into account the vehicle context.
The change of status of the inhibition switch responds to transverse programming (manufacturer's industry regulation) that authorises taking it into account **10 seconds** after the vehicle ignition is switched on (computer supply).

Inhibition programming:
– trigger lines inhibited and **Airbag Off** warning light illuminated if switch is **OFF (100 Ω),**
– trigger lines authorised if the switch is **ON** (**400** Ω),
– trigger lines inhibited, **Airbag Fault** and **Airbag Off** warning lights illuminated if a fault is detected, if the switch is not configured and detected as present, or if there is a change of position not fulfilling the conditions.

By default, when the key is in the inhibition position, the following protections and signals are inhibited in the event of a crash:
– front passenger front airbag.
– front passenger chest airbag.
– SBR* warnings: the inhibition key causes the inhibition of the warning light and buzzer, and deactivates the radio cut-off warning for the occupant.

This remains configurable by the diagnostic procedure except for the SBR* warnings.

The passenger front airbag and passenger chest airbag are inhibited when the locking switch is positioned on **OFF** or when **DF028 PASSENGER AIRBAG STATUS INDICATOR LIGHT CIRCUIT** or **DF193 PASSENGER AIRBAG LOCKING STATUS CHANGE** is present in the computer memory.

**4. Seat belt locking monitoring:**

This function is managed by the computer (warning light and audible signal):
– driver's seat belt buckled (contact open),
– driver's seat belt not buckled (contact closed).

**5. Management and monitoring of the airbag warning lights:**

The airbag computer controls and checks the status of the **Airbag fault** and **Airbag Off** warning lights on the instrument panel. These signals are exchanged via wire.

The **Airbag fault** warning light illuminates for **4 seconds** when the ignition is switched on (**+ after ignition**), the time necessary for the system to be operational after the vehicle is started. It then remains off except under the following conditions:
– detection and recording of an airbag system fault (input - output fault, configuration fault),
– a crash has been detected and registered,
– if the computer is **crash locked** by a **diagnostic tool**,
– if the computer must be programmed or reprogrammed.

The **Airbag Off** warning light represents the actual inhibition status of the passenger airbags:
– **off** = active (switch **ON)**,
– **illuminated** = passenger airbags inactive (switch **OFF** or detection of a fault on the switch line).

The 2 warning lights can be illuminated simultaneously.

SBR*: Seat Belt Reminder

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**6. Management of fault finding signals.**

– fault finding of internal functions (self-test when switched on, verification of the configuration),
– fault finding of external functions (pyrotechnic ignition modules and sensors),
– fault finding of the supply,
– storage of faults identified when the vehicle is started, while the engine is running, or when the ignition is switched off,
– permanent storage of parameters relating to the crash algorithm and the signals obtained during a crash,
– permanent storage of system faults present before a crash,
– warning light control.

The airbag system components must be configured in accordance with the vehicle equipment criteria.

All the inputs and outputs of the airbag computer (ignition modules and sensors) are configurable independently of one another.

Any incorrect configuration is detected by the recording of the fault and the illumination of the Airbag fault warning light:
– "open circuit" fault if an ignition module (or sensor) is configured, but the component is not connected,
– "configuration" fault if an ignition module (or sensor) is unconfigured and the component is connected.

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## CONFIGURATION/CONFIGURATION READING

| | |
|---|---|
| - | The configuration reading commands (**LCxxx**) are used to display the current computer configuration in relation to the trigger lines and sensors installed in the vehicle. |
| - | The configuration commands (**CFxxx**) are used to adjust the computer configuration to the equipment actually installed in the vehicle. |

**– CONFIGURABLE COMPONENTS for the version with 6 trigger lines**

**Trigger lines "WITH" or "WITHOUT"**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| DRIVER'S FRONT INERTIA REEL | **LC130** | **CF020** |
| PASSENGER FRONT INERTIA REEL | **LC131** | **CF021** |

**Sensors "WITH or "WITHOUT"**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| DRIVER'S FRONT SIDE IMPACT SENSOR | **LC082** | **CF285** |
| PASSENGER FRONT SIDE IMPACT SENSOR | **LC083** | **CF286** |
| DRIVER'S SEAT BELT BUCKLE SENSOR | **LC073** | **CF273** |
| PASSENGER'S SEAT BELT BUCKLE SENSOR | **LC074** | **CF274** |
| PASSENGER PRESENCE DETECTION SENSOR | **LC075** | **CF275** |

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**Warning lights "WITH" or "WITHOUT"**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| PASSENGER AIRBAG INHIBITION WARNING LIGHT | **LC116** | **CF036** |
| SEAT BELT WARNING LIGHT | **LC134** | **CF049** |

**Seat belt reminder buzzer "WITH" or "WITHOUT"**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| SEAT BELT REMINDER BUZZER | **LC133** | **CF048** |

**Vehicle type reading "DUSTER" or "INCORRECT"**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| VEHICLE TYPE | **LC034** | **WITHOUT** |

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**– CONFIGURABLE COMPONENTS for the version with 4 trigger lines**

**Trigger lines "WITH" or "WITHOUT"**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| DRIVER'S FRONTAL AIRBAG | **LC027** | **CF209** |
| PASSENGER FRONTAL AIRBAG | **LC028** | **CF210** |
| DRIVER'S FRONT INERTIA REEL | **LC130** | **CF020** |
| PASSENGER FRONT INERTIA REEL | **LC131** | **CF021** |

**WITH or WITHOUT impact signal connection**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| IMPACT SIGNAL CONNECTION | **LC029** | **CF211** |

**Passenger airbag locking mode "WITH KEY" or "WITHOUT"**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| PASSENGER AIRBAG LOCKING MODE | **LC060** | **CF248** |

**"LEFT-HAND" or "RIGHT-HAND" driving side**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| STEERING SIDE | **LC088** | **CF291** |

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**Vehicle type reading "DUSTER" or "INCORRECT"**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| VEHICLE TYPE | **LC034** | **WITHOUT** |

**Warning lights "WITH" or "WITHOUT"**

| Diagnostic tool title | Configuration reading | Configuration |
|---|---|---|
| PASSENGER AIRBAG INHIBITION WARNING LIGHT | **LC116** | **CF036** |

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**PARAMETER SETTINGS:**

**VP006:** Lock computer.
This command should be used for any operation on the system. It inhibits all of the trigger lines.

**VP007:** Unlock computer
This command is used to unlock the computer when it is new or if it has been deactivated via command VP006.

**VP010:** Enter VIN.
This command is used to enter the VIN number into the computer.

**SC004:** Read impact context
Use this command during repair of the vehicle following impact. The command enables the list of trigger lines active and the system status upon impact to be accessed in the computer which is being replaced.

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## REPLACING A SYSTEM COMPONENT

Disconnect the battery before any removal or refitting of a pyrotechnic component (airbag module, inertia reels).
The computer must always be locked before any operation on a system component.

## REPLACING THE AIRBAG COMPUTER

Before replacing the computer, it is essential to contact the techline.

When **DF001 Computer** is **present** or **stored**, it is strictly prohibited to use command **RZ001 Fault memory** to allow the failure of the returned computer to be analysed.

The airbag computers are sold in locked mode to avoid all risk of accidental triggering (all ignition lines are inhibited).

The locked mode is indicated when the instrument panel warning light comes on.

Apply the following procedure when replacing an airbag computer:
– check that the ignition is switched off,
– replace the computer,
– modify the computer configuration if necessary,
– write the VIN to the computer using the **diagnostic tool** command **VP010 Write VIN**,
– switch off the ignition,
– carry out a check using the **diagnostic tool**,
– unlock the computer only if no fault is reported by the **diagnostic tool** and check that the warning light is off.

After the replacement, in the event of incorrect configuration, the **Airbag** warning light is illuminated on the instrument panel.
Then perform the following checks:
– there is no impact signal connection, it must be deconfigured using command **CF211 Impact signal connection**. Configuration reading **LC029 Impact signal connection** must be **without**.
– check the other configurations.
– the conformity of the configurations (trigger lines and impact signal connection) is confirmed by the **airbag** warning light going out.

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| Tool fault | Associated DTC | Diagnostic tool title |
|---|---|---|
| **DF001** | 9080 | Computer |
| **DF002** | 9042 | Computer voltage supply |
| **DF003** | 9007 | Driver's frontal airbag circuit |
| **DF004** | 9005 | Passenger's frontal airbag circuit |
| **DF028** | 9041 | Passenger airbag status warning light circuit |
| **DF034** | 907E | Computer locked |
| **DF039** | 9035 | Driver's side sensor circuit |
| **DF040** | 9036 | Passenger's side sensor circuit |
| **DF044** | 9058 | Impact signal circuit |
| **DF068** | 900C | Passenger's chest front side airbag circuit |
| **DF077** | 900B | Driver's front side chest airbag circuit |
| **DF091** | 9034 | Airbag locking switch circuit |
| **DF165** | 9040 | Airbag fault warning light circuit |

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## Fault finding – Fault summary table

| Tool fault | Associated DTC | Diagnostic tool title |
|---|---|---|
| **DF166** | 9029 | Driver's inertia reel circuit |
| **DF167** | 902A | Passenger inertia reel circuit |
| **DF193** | 907C | Passenger airbag locking status change. |
| **DF194** | 907F | Computer to be replaced following impact |
| **DF232** | 9051 | Driver's seat belt buckle sensor circuit |
| **DF233** | 9052 | Passenger's seat belt buckle sensor circuit |
| **DF234** | 9053 | Passenger presence detection sensor circuit |
| **DF242** | 907B | Left-hand/right-hand drive configuration |
| **DF279** | 9055 | Seat belt warning light circuit |
| **DF425** | 9056 | Seat belt reminder buzzer circuit |

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| | |
|---|---|
| **DF001 PRESENT OR STORED** | COMPUTER |

| | |
|---|---|
| ***NOTES*** | None. |

Replace the airbag computer, component code **756** (see **MR 451, Mechanical, 88C, Airbags and pretensioners, Airbag computer: Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| | |
|---|---|
| **DF002 PRESENT** | COMPUTER SUPPLY VOLTAGE<br>1.DEF: Supply voltage too high<br>2.DEF: Supply voltage too low |

| | |
|---|---|
| ***NOTES*** | **Special notes:**<br>Use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

Perform the necessary operations to obtain the correct supply voltage of the airbag computer, component code **756** (**9 V ± 0.1 < correct voltage < 18 V ± 0.1**).
Check the tightness and condition of the battery terminals, component code **107**.
Run fault finding on component **107** and the charging circuit (see **Technical Note 6014A (Renault) or Technical Note 9859A (Dacia), Checking the charging circuit**).
Check the **earth** on connection **NAP** of component **756**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check that the connections on the airbag computer, component code **756**, are in good condition and correctly locked.
If the connector is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| | |
|---|---|
| **DF003 PRESENT** | DRIVER'S FRONTAL AIRBAG CIRCUIT<br>CO: Open circuit<br>CC: Short circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 volts<br>1.DEF: Configuration<br>2.DEF: Short circuit between trigger lines |

| | |
|---|---|
| ***NOTES*** | If **1.DEF**, check and adjust the computer configuration. |
| | **Special notes:**<br>Never carry out any measuring procedures on the trigger lines with any tool other than the **CLIP** tool.<br>Use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CO - CC** | ***NOTES*** | None. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Switch off the ignition and remove the steering wheel airbag, component code **899** (see **MR 451, Mechanical, 88C, Airbags and pretensioners, Driver's front airbag: Removal - Refitting**).
Check that the steering wheel airbag is correctly connected.

Disconnect the airbag cushion and connect a dummy ignition module to the ignition module connector.
Switch on the ignition and carry out a check using the **diagnostic tool**.
If the fault becomes **stored**, replace the steering wheel airbag (see **MR 451, Mechanical, 88C, Airbag and pretensioners, Driver's front airbag: Removal - Refitting**).

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer.<br>Destroy the steering wheel airbag (component **899**) if it has been replaced (tool **Elé. 1287**). |

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| DF003 CONTINUED 1 | |
|---|---|

With the ignition off, disconnect then reconnect the connector of the **cruise control and airbag** switch, component code **689**.
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

The **CLIP tool** must be used for checking resistance at **point C2** of the driver's airbag circuit.
If the obtained value is not correct, replace component **689** (see **MR 451, Mechanical, 84A, Controls - Signals, Rotary switch: Removal - Refitting**).

Reconnect component **689**, disconnect the airbag computer connector and fit adapter **Elé. 1830 or Elé. 1484-10**.
The **CLIP** tool must be used for measuring the resistance on the **cable marked A** of adapter **Elé. 1830 or Elé. 1484-10**.
If the value obtained is not correct, check the connections on the computer connector between connections **60AM** and **60AN**.
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

| *AFTER REPAIR* | Clear the computer fault memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer.<br>Destroy the steering wheel airbag (component **899**) if it has been replaced (tool **Elé. 1287**). |
|---|---|

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| DF003 CONTINUED 2 | |
|---|---|

If the checks carried out have not shown the presence of a fault, check on the base of the airbag computer for the presence of the **seven shunt opening pins** of the computer connector.
Check the condition of the airbag computer connections, component code **756**.
Check the condition of the airbag computer connector (locking system, connections, etc.).
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

| CC.0-CC.1 | ***NOTES*** | None. |
|---|---|---|

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Switch off the ignition and remove the steering wheel airbag, component code **899** (see **MR 451 Mechanical, 88C, Airbag and pretensioner, Driver's front airbag: Removal - Refitting**).
Check the condition and correct connection of the trigger line.

The **CLIP** tool must be used for measuring the insulation appropriate to the type of fault at **point C2** of the driver's frontal airbag circuit.
If the value obtained is not correct, replace the cruise control and airbag switch, component code **689** (see **MR 451, Mechanical, 84A, Controls - Signals, Rotary switch: Removal - Refitting**).

Reconnect component **689**, disconnect the airbag computer connector and fit **Elé. 1830**.
It is essential to use the **CLIP** tool for measuring the insulation appropriate to the type of fault on the **cable marked A** of adapter **Elé. 1830 or Elé. 1484-10.**
If the value obtained is not correct, check the connections on the computer connector between connections **60AM** and **60AN**.
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer.<br>Destroy the steering wheel airbag (component **899**) if it has been replaced (tool **Elé. 1287**). |
|---|---|

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| **DF003 CONTINUED 3** | |

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|---|---|---|
| **2.DEF** | ***NOTES*** | **Special notes**: This fault corresponds to the detection of a short circuit between 2 trigger lines. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Check the **insulation** of the circuits of the two ignition modules concerned.
Concerned connections of component **689**:
- **60AM** and **60AN** of component **689**.

If there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer.<br>Destroy the steering wheel airbag (component **899**) if it has been replaced (tool **Elé. 1287**). |

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| | |
|---|---|
| **DF004 PRESENT** | PASSENGER FRONTAL AIRBAG CIRCUIT<br>CO: Open circuit<br>CC: Short circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 volts<br>1.DEF: Configuration<br>2.DEF: Short circuit between trigger lines |

| | |
|---|---|
| ***NOTES*** | If **1.DEF**, check and adjust the computer configuration (see **Configuration**). |
| | **Special notes:**<br>Never carry out any measuring procedures on the trigger lines with any tool other than the **CLIP** tool.<br>Use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CO - CC** | ***NOTES*** | None. |

| |
|---|
| Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.<br>Switch off the ignition and check the condition of the dashboard intermediate connection **R292**.<br>If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Fit adapter **Elé. 1617 (3/4)**.<br>The **CLIP** tool must be used for checking resistance on the **cable marked C** of adapter **Elé. 1617 (3/4)**. |

| | |
|---|---|
| ***AFTER REPAIR*** | Reconnect the computer and component **861**. Switch on the ignition again.<br>Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer.<br>Destroy component **861** if it has been replaced (tool **Elé. 1287**). |

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| DF004 CONTINUED 1 | |
|---|---|

If the value obtained is not correct, switch off the ignition and remove any necessary components in order to access the wiring of component **861** (see **MR 451, Mechanical, 88C, Airbag and pretensioner, Passenger front airbag: Removal - Refitting**).
Disconnect connection **R292**, connect a dummy ignition module to the ignition module connector, then measure the resistance again on the **cable marked C** of adapter **Elé. 1617 (3/4)**.
If the value obtained is correct, replace connection **292** (see **MR 451, Mechanical, 88C, Airbag and pretensioner, Driver's front airbag: Removal - Refitting**).

If the value obtained is still incorrect, there is a wiring fault between the connector of component **756** and the dashboard intermediate connection **R292**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the obtained value is correct, reconnect connection **R292**.
Disconnect the airbag computer connector and check the connections on the computer connector between connections 60H and 60K.
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

| *AFTER REPAIR* | Reconnect the computer and component **861**. Switch on the ignition again.<br>Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer.<br>Destroy component **861** if it has been replaced (tool **Elé. 1287**). |
|---|---|

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| DF004<br>CONTINUED 2 | |
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Fit adapter **Elé. 1830 or Elé. 1484-10.**
The **CLIP** tool must be used for measuring the resistance on the **cable marked B** of adapter **Elé. 1830 or Elé. 1484-10**. If the obtained value is not correct, there is a wiring fault between components **756** and **connection R292** on connections **60H** and **60K**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| CC.0-CC.1 | ***NOTES*** | None. |
|---|---|---|

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Switch off the ignition and check the connection and the condition of the passenger frontal airbag connector, component code **861**.
Fit adapter **Elé. 1617 (3/4)**.
It is essential to use the **CLIP** tool for measuring the insulation appropriate to the type of fault on the **cable marked C** of adapter **Elé. 1617 (3/4)**.

If the value obtained is not correct, replace the wiring harness (C4/C2).

If the value obtained is correct, reconnect the dashboard intermediate connection **R292.**
Disconnect the computer connector and check the condition of the connections on the dashboard intermediate connection **R292** between connections **60H** and **60K**
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Fit adapter **Elé. 1830 or Elé. 1484-10.**
The **CLIP** tool must be used for measuring the resistance on the **cable marked B** of adapter **Elé. 1830 or Elé. 1484-10**.
If the value obtained is not correct, there is a wiring fault between components **756** and connection **R292** on connections **60H** and **60K**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it

| ***AFTER REPAIR*** | Reconnect the computer and component **861**. Switch on the ignition again.<br>Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer.<br>Destroy component **861** if it has been replaced (tool **Elé. 1287**). |
|---|---|

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| **DF004 CONTINUED 3** | |

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|---|---|---|
| **2.DEF** | ***NOTES*** | **Special notes**: This fault corresponds to the detection of a short circuit between 2 trigger lines. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Check the **insulation** of the circuits of the two ignition modules concerned.
Concerned connections of component **861**:
- **60H** and **60K** of component **861**.

If there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Reconnect the computer and component **861**. Switch on the ignition again.<br>Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer.<br>Destroy component **861** if it has been replaced (tool **Elé. 1287**). |

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|---|---|
| **DF028 PRESENT** | PASSENGER AIRBAG STATUS WARNING LIGHT CIRCUIT<br>CC.1: Short circuit to +12 volts<br>CO.0: Open circuit or short circuit to earth. |

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|---|---|
| ***NOTES*** | **Special note:**<br>Use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CC.1** | ***NOTES*** | None. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Check the condition of the warning light bulb.
Check the **insulation** to **+ 12 V** on connection **60A** between the instrument panel, component code **247**, and the airbag computer, component code **756**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| **DF028 CONTINUED 1** | |

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|---|---|---|
| **CO.0** | ***NOTES*** | None. |

**Warning light off under + after ignition feed**

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Check the **condition** of the **airbag fault warning light**.
Check the **continuity** on connection **60A** between the instrument panel, component code **247**, and the airbag computer, component code **756**.
Check the presence of **+ 12 V** on the warning light.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| DF028 CONTINUED 2 | |
|---|---|

**Warning light on under + after ignition feed**

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Disconnect the airbag computer and check for the presence, on the base, of the **7 pins** which open the connector shunts.
Check the **insulation** from **earth** on connection **60A** between components **247** and **756.**
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |
|---|---|

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|---|---|
| **DF034 PRESENT** | COMPUTER LOCKED<br>1.DEF: Computer locked |

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|---|---|
| ***NOTES*** | None. |

This fault allows display of the locked state of the computer.
When it is **present**, all the trigger lines are inhibited, preventing triggering of the airbags.
This fault is normally **present** in two cases:
– the computer is new (it is sold locked),
– the computer locking command using the **fault finding tool** was used during an operation on the vehicle.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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|---|---|
| **DF039 PRESENT** | DRIVER'S SIDE SENSOR CIRCUIT<br>CC.O: Short circuit to earth<br>CC.1: Short circuit to +12 V<br>1.DEF: Configuration<br>2.DEF: Sensor internal electronic fault<br>3.DEF: No communication<br>4.DEF: Component in poor condition |

| | |
|---|---|
| ***NOTES*** | **Special notes**: Use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CC.0**<br>**CC.1**<br>**3.DEF** | ***NOTES*** | None. |

Lock the computer with command **VP006 Lock computer** using the **diagnostic tool**.
Check that the driver's side sensor, component code **1028**, is connected correctly and check its connections.
Check the condition of the connections on the airbag computer connector, component code **756**, between connections **60AG** and **60AH**.
Check the condition of the airbag computer connector (locking system, connections, etc.).
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check the **continuity** and **insulation** of the following connections:

- **60AG** between components **756** and **1028**,
- **60AH** between components **756** and **1028**.

If the connections are faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| DF039 CONTINUED 1 | |
|---|---|

| 1.DEF | *NOTES* | None. |
|---|---|---|

Contact the Techline.

| 2.DEF | *NOTES* | None. |
|---|---|---|

Replace the **driver's side sensor** component code **1028** (see **MR 451, Mechanical, 88C, Airbag and pretensioners, Side impact sensor: Removal - Refitting**).

| *AFTER REPAIR* | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |
|---|---|

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|---|---|
| **DF039 CONTINUED 2** | |

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|---|---|---|
| **4.DEF** | ***NOTES*** | None. |

Lock the computer with command **VP006 Lock computer** using the **diagnostic tool**.
Check that the driver's side sensor is connected correctly and check its connections.
Check the condition of the connections on the airbag computer connector, component code **756**, between connections **60AG** and **60AH**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check the **continuity** and **insulation** of the following connections:
- **60AG** between components **756** and **1028**,
- **60AH** between components **756** and **1028**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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|---|---|
| **DF040 PRESENT** | PASSENGER SIDE SENSOR CIRCUIT<br>CC.O: Short circuit to earth<br>CC.1: Short circuit to +12 V<br>1.DEF: Configuration<br>2.DEF: Sensor internal electronic fault<br>3.DEF: No communication<br>4.DEF: Component in poor condition |

| | |
|---|---|
| ***NOTES*** | **Special notes**: Use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CC.0**<br>**CC.1**<br>**3.DEF** | ***NOTES*** | None. |

Lock the computer with command **VP006 Lock computer** using the **diagnostic tool**.
Check that the passenger side sensor, component code **1029**, is connected correctly and check its connections.
Check the condition of the connections on the airbag computer connector, component code **756**, between connections **60AF** and **60AJ**.
Check the condition of the airbag computer connector (locking system, connections, etc.).
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check the **continuity** and **insulation** of the following connections:

- **60AF** between components **756** and **1029**,
- **60AJ** between components **756** and **1029**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| DF040 CONTINUED 1 | |
|---|---|

| 1.DEF | *NOTES* | None. |
|---|---|---|

Contact the Techline.

| 2.DEF | *NOTES* | None. |
|---|---|---|

Replace the passenger side sensor, component code **1029** (see **MR 451, Mechanical, 88C, Airbag and pretensioners, Side impact sensor: Removal - Refitting**).

| *AFTER REPAIR* | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |
|---|---|

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| DF040 CONTINUED 2 | |
|---|---|

| 4.DEF | *NOTES* | None. |
|---|---|---|

Lock the computer with command **VP006 Lock computer** using the **diagnostic tool**.
Check that the passenger side sensor, component code **1029**, is connected correctly and check its connections.
Check the condition of the connections on the airbag computer connector, component code **756**, between connections **60AF** and **60AJ**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check the **continuity** and **insulation** of the following connections:
- **60AF** between components **756** and **1029**,
- **60AJ** between components **756** and **1029**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |
|---|---|

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| | |
|---|---|
| **DF044 PRESENT** | IMPACT SIGNAL CIRCUIT<br>CC.1: Short circuit to +12 V<br>CO.0: Open circuit or short circuit to earth |

| | |
|---|---|
| ***NOTES*** | There is no **impact signal circuit** on **DUSTER**. |

Use **LC029 Impact signal connection** to check that the computer configuration is **WITHOUT** (the computer is configured to **WITH** by default).
If this is not the case, configure the computer to **WITHOUT** using **CF211**.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer. |

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| | |
|---|---|
| **DF068 PRESENT** | PASSENGER FRONT CHEST-LEVEL SIDE AIRBAG CIRCUIT<br>CO: Open circuit<br>CC: Short circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V<br>1.DEF: Configuration<br>2.DEF: Short circuit between trigger lines |

| | |
|---|---|
| ***NOTES*** | If **1.DEF**, check and modify the computer configuration. |
| | **Special notes:**<br>Never carry out any measuring procedures on the trigger lines with any tool other than the **CLIP** tool.<br>Use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CO - CC** | ***NOTES*** | **Special notes:**<br>Correct the trigger line configuration if the vehicle is not fitted with passenger front side thorax airbags> |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Disconnect the airbag computer connector, component code **756**, and fit **adapter Elé. 1830**.
The **CLIP** or **XRBAG tool** must be used to measure the resistance on the adapter **cable marked D**.

| | |
|---|---|
| ***AFTER REPAIR*** | Reconnect the computer and component **1027**, then switch on the ignition. Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer. When replacing the airbag module (component **1027**), do not forget to reconnect the earth on the new module.<br>Destroy component **1027** if it has been replaced (tool **Elé. 1287**). |

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| DF068 CONTINUED 1 | |
|---|---|

If the value obtained is correct on **cable D** of the adapter, check the condition of the connections on the airbag computer connector between connections 60BB and **60BC**.

If the value obtained is incorrect on cable D of the adapter, check the condition of the connections on the airbag computer connector between connections **60BB** and **60BC**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Strip down the passenger seat and check that intermediate connection **R334** is correctly connected.
Disconnect connection **R334**, connect a dummy ignition module to connection **R334**, and measure again the resistance on **cable D**.
If the value obtained is correct, replace component **1027** (see **MR 451, Mechanical, 88C, Airbag and pretensioners, Front (chest) side airbag: Removal - Refitting**).
If the value remains incorrect, the wiring is faulty between the airbag computer and connection **R334** on connections **60BB** and **60BC**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
**NAP** between component **1027** and **earth**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Reconnect the computer and component **1027**, then switch on the ignition. Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer. When replacing the airbag module (component **1027**), do not forget to reconnect the earth on the new module.<br>Destroy component **1027** if it has been replaced (tool **Elé. 1287**). |
|---|---|

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| **DF068 CONTINUED 2** | |

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|---|---|---|
| **CC.1 – CC.0** | ***NOTES*** | None. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Disconnect the airbag computer connector, component code **756**, and fit **adapter Elé. 1830**.
The **CLIP** or **XRBAG tool** must be used to measure the resistance on the adapter **cable marked D**.

If the value obtained is correct on **cable D** of the adapter, check the condition of the connections on the airbag computer connector between connections **60BB** and **60BC**.
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
If the value obtained is incorrect, the wiring is faulty between the airbag computer, component code **756**, and connection **R334** on connections **60BB** and **60BC**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Reconnect the computer and component **1027**, then switch on the ignition. Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer. When replacing the airbag module (component **1027**), do not forget to reconnect the earth on the new module.<br>Destroy component **1027** if it has been replaced (tool **Elé. 1287**). |

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| DF068 CONTINUED 3 | |
|---|---|

Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **NAP** between component **1027** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| 2.DEF | *NOTES* | **Special notes**: This fault corresponds to the detection of a short circuit between 2 trigger lines. |
|---|---|---|

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Check the **insulation** of the circuits of the two ignition modules concerned.
Concerned connections of component **1027**:
- **60BB** and **60BC** of component **1027**.

If there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Reconnect the computer and component **1027**, then switch on the ignition. Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer. When replacing the airbag module (component **1027**), do not forget to reconnect the earth on the new module.<br>Destroy component **1027** if it has been replaced (tool **Elé. 1287**). |
|---|---|

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|---|---|
| **DF077 PRESENT** | DRIVER'S CHEST-LEVEL FRONT SIDE AIRBAG CIRCUIT<br>CO: Open circuit<br>CC: Short circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V<br>1.DEF: Configuration<br>2.DEF: Short circuit between trigger lines |

| | |
|---|---|
| ***NOTES*** | If **1.DEF,** check and modify the computer configuration. |
| | **Special notes:**<br>Never carry out any measuring procedures on the trigger lines with any tool other than the **CLIP** tool.<br>Use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CO - CC** | ***NOTES*** | **Special notes:**<br>Correct the trigger line configuration if the vehicle is not fitted with passenger front side thorax airbags. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Disconnect the airbag computer connector, component code **756**, and fit **adapter Elé. 1830 or Elé. 1484-10**.
The **CLIP** or **XRBAG tool** must be used to measure the resistance on the adapter **cable marked C**.

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| ***AFTER REPAIR*** | Reconnect the computer and component **1026**, then switch on the ignition. Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer. When replacing the airbag module (component **1026**), do not forget to reconnect the earth on the new module.<br>Destroy component **1026** if it has been replaced (tool **Elé. 1287**). |

AIRBAGTEMIC_V18_DF077P

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| DF077<br>CONTINUED 1 | |
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If the value obtained is correct, on cable C of the adapter, check the condition of the connections on the airbag computer connector between connections **60AB** and **60AC**.

If the value obtained is incorrect, on cable C of the adapter, check the condition of the connections on the airbag computer connector between connections **60AB** and **60AC**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Strip down the driver's seat and check that intermediate connection **R335** is correctly connected.
Disconnect connection **R335**, connect a dummy ignition module to connection **R335**, and measure again the resistance on **cable C**.
If the value obtained is correct, replace component **1026** (see **MR 451, Mechanical, 88C, Airbag and pretensioners, Front (chest) side airbag: Removal - Refitting**).
If the value remains incorrect, the wiring is faulty between the airbag computer and the connector of component **1026** on connections **60AB** and **60AC**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Reconnect the computer and component **1026**, then switch on the ignition. Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer. When replacing the airbag module (component **1026**), do not forget to reconnect the earth on the new module.<br>Destroy component **1026** if it has been replaced (tool **Elé. 1287**). |
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| DF077 CONTINUED 2 | |
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Check the **continuity, insulation** and **absence of interference resistance** on the following connections:
- **NAP** between component **1026** and **earth**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| CC.1 – CC.0 | *NOTES* | None. |
|---|---|---|

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Disconnect the **airbag computer** connector, component code **756**, and fit **adapter Elé. 1830 or Elé. 1484-10**.
The **CLIP** or **XRBAG tool** must be used to measure the resistance on the adapter **cable marked C**.

If the value obtained is correct, on **cable C** of the adapter, check the condition of the connections on the airbag computer connector between connections **60AB** and **60AC**.
If the connector is faulty and there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

If the value obtained is incorrect, the wiring is faulty between the airbag computer and connection **R335**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Reconnect the computer and component **1026**, then switch on the ignition. Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer. When replacing the airbag module (component **1026**), do not forget to reconnect the earth on the new module.<br>Destroy component **1026** if it has been replaced (tool **Elé. 1287**). |
|---|---|

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| DF077 CONTINUED 3 | |
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| 2.DEF | *NOTES* | **Special notes**: This fault corresponds to the detection of a short circuit between 2 trigger lines. |
|---|---|---|

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Check that the circuits of the two ignition modules concerned are insulated.
Concerned connections of component **1026**:
- **60AB** and **60AC** of component **1026**.

If there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Reconnect the computer and component **1026**, then switch on the ignition. Clear the computer memory. Switch off the ignition.<br>Carry out the check again using the diagnostic tool and, if there is no fault, unlock the computer. When replacing the airbag module (component **1026**), do not forget to reconnect the earth on the new module.<br>Destroy component **1026** if it has been replaced (tool **Elé. 1287**). |
|---|---|

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|---|---|
| **DF091 PRESENT** | AIRBAG LOCKING SWITCH CIRCUIT<br>CC.0: Short circuit to earth<br>CC.1: Open circuit or short circuit to + 12 volts<br>1.DEF: Configuration<br>2.DEF: Consistency |

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|---|---|
| ***NOTES*** | If **1.DEF,** check and modify the computer configuration. |
| | **Special notes:**<br>Lock the computer via command **VP006 Lock computer** using the **diagnostic tool**. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CC.0** | ***NOTES*** | None. |

Check the condition of the computer connector, component code **756** (locking system, connections etc.).
Check the condition of the connector of the **passenger airbag inhibition** key, component code **1441**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check the **insulation** against **earth** and the **continuity** on the following connections:

- **60DS** between components **756** and **1441**,
- **60DT** between components **756** and **1441**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

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| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| DF091 CONTINUED 1 | |
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| CO.1 | *NOTES* | None. |
|---|---|---|

Check the condition of the computer connector, component code **756** (locking system, connections etc.).
Check the condition of the connector of the **passenger airbag inhibition** key, component code **1441**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check the **insulation** against **+ after ignition feed** and the **continuity** on the following connections:

- **60DS** between components **756** and **1441**,
- **60DT** between components **756** and **1441**.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |
|---|---|

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| DF091 CONTINUED 2 | |
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| 2.DEF | *NOTES* | Check the consistency of **PR147 Airbag locking circuit impedance**. |
|---|---|---|

Check the condition of the computer connector (locking system, connections etc.).
Check the condition of the connections on the intermediate connection **R292**.
Check the condition of the wiring.
Check the insulation and the continuity on connections **60DS** and **60DT** between components **756** and connection **R292**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
Check the **connector of the passenger airbag locking switch**, component code **1441**.
Check the condition of the connections on the intermediate connection **R292**.
Check the condition of the wiring.
Check the insulation and the continuity on connections **60DS** and **60DT** between connection **R292** and the connector of the passenger airbag locking switch.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |
|---|---|

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|---|---|
| **DF165 PRESENT** | AIRBAG FAULT WARNING LIGHT CIRCUIT<br>CC.1: Short circuit to +12 volts<br>CO.0: Open circuit or short circuit to earth. |

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| ***NOTES*** | **Special notes**: Use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CC.1** | ***NOTES*** | None. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Check the condition of the warning light bulb.
Check the **insulation** to **+12 V** on connection **60A** between the instrument panel, component code **247**, and the airbag computer, component code **756**.
If the connection is faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| DF165 CONTINUED 1 | |
|---|---|

| CO.0 | *NOTES* | None. |
|---|---|---|

**Warning light off under + after ignition feed**

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Check the status of the airbag fault warning light.
Check **the continuity** on connection **60A** between components **247** and **756**.
Check for **+12 V** on connection **60A** (on the warning light) of component **247**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If the checks carried out did not show the presence of a fault, disconnect the computer connector and fit **Elé. 1830** or **Elé. 1484-10**.
Use the **CLIP tool** function for testing the instrument panel warning light, component code **247**, using the **grey cable marked 1** of adapter **Elé**. **1830 or Elé. 1484-10**.
If the warning light can be illuminated by the tool, replace the airbag computer, component code **756** (see **MR 451, Mechanical, 88C, Airbag and pretensioners, Airbag computer: Removal - Refitting**).
If not, repeat the checks described previously.

| *AFTER REPAIR* | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |
|---|---|

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| DF165 CONTINUED 2 | |
|---|---|

**Warning light on under + after ignition feed**

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Disconnect the airbag computer and check for the presence, on the base, of the **7 pins** which open the connector shunts.
Check the **insulation** from **earth** on connection **60A** between components **247** and **756**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |
|---|---|

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|---|---|
| **DF166 PRESENT** | DRIVER'S SEAT BELT INERTIA REEL CIRCUIT<br>CO: Open circuit<br>CC: Short circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V<br>1.DEF: Configuration<br>2.DEF: Short circuit between trigger lines |

| | |
|---|---|
| ***NOTES*** | If **1.DEF,** check and modify the **computer configuration**. |
| | **Special notes**: Never carry out measuring operations on trigger lines using any tool other than **CLIP** or **XRBAG**.<br>Use the **50-track or 30-track adapter Elé. 1830 or Elé. 1484-10** for operations on the **computer** connector, and the **2-track adapter B35** for operations on the **inertia reel** connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CO - CC** | ***NOTES*** | None. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Switch off the ignition and check that the connector of the **driver's side front inertia reel**, component code **1363**, is correctly connected.
Check the **condition** and **connection** of the connector of the **driver's side front inertia reel**, component code **1363**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

| | |
|---|---|
| ***AFTER REPAIR*** | Reconnect the computer and the driver's front inertia reel before switching the ignition back on.<br>Clear the computer fault memory. Switch off the ignition.<br>Carry out another test using the diagnostic tool and if there are no faults, unlock the computer.<br>If the inertia reel has been replaced, destroy the old one (tool **Elé. 1287**). |

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| DF166 CONTINUED 1 | |
|---|---|

Fit the **2-track adaptor B35**.
The **CLIP** or **XRBAG** tool must be used to measure the resistance.
If the value obtained is incorrect, the driver's side front inertia reel is faulty.
Replace the driver's side front inertia reel, component code **1363** (see **MR 451, Mechanical, 88C, Airbags and pretensioners, Airbag computer: Removal - Refitting).**

Check the **condition** and **connection** of the **computer connectors**, component code **756**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Fit the **50-track or 30-track** adapter **Elé. 1830 or Elé. 1484-10**.
The **CLIP** or **XRBAG** tool must be used to measure the resistance on **cable E** of the adapter.
If the value obtained is incorrect, the wiring, connections **60CM** and **60CN**, between the computer and the **driver's side front inertia reel connector** (**C0/C3**) is faulty.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Reconnect the computer and the driver's front inertia reel before switching the ignition back on.<br>Clear the computer fault memory. Switch off the ignition.<br>Carry out another test using the diagnostic tool and if there are no faults, unlock the computer.<br>If the inertia reel has been replaced, destroy the old one (tool **Elé. 1287**). |
|---|---|

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| DF166<br>CONTINUED 2 | |
|---|---|

| CC.0 - CC.1 | *NOTES* | None. |
|---|---|---|

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.

Switch off the ignition, and check the **condition** and **connection** of the connector of the **driver's side front inertia reel**, component code **1363**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Fit the **2-track adaptor B35**.
The **CLIP** or **XRBAG** tool must be used to measure the insulation appropriate to the type of fault.
If the value obtained is incorrect, the driver's side front inertia reel is faulty.
Replace the driver's side front inertia reel, component code **1363** (see **MR 451, Mechanical, 88C, Airbags and pretensioners, Airbag computer: Removal - Refitting**).

Check the **condition** and **connection** of the **airbag computer** connectors, component code **756**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

Fit the **50-track or 30-track** adapter **Elé. 1830 or Elé. 1484-10**.
The **CLIP** or **XRBAG** tool must be used to correctly measure the insulation appropriate to the type of fault on adapter **cable E**.
If the value obtained is incorrect, the wiring, connections **60CM** and **60CN**, between the computer and the **driver's side front inertia reel** connector (**C0/C3**) is faulty.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Reconnect the computer and the driver's front inertia reel before switching the ignition back on.<br>Clear the computer fault memory. Switch off the ignition.<br>Carry out another test using the diagnostic tool and if there are no faults, unlock the computer.<br>If the inertia reel has been replaced, destroy the old one (tool **Elé. 1287**). |
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|---|---|
| **DF166 CONTINUED 3** | |

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|---|---|---|
| **2. DEF** | ***NOTES*** | **Special notes**: This fault corresponds to the detection of a short circuit between 2 trigger lines. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Check that the circuits of the two ignition modules concerned are insulated.
Concerned connections of component **1363**:
- **60CM** and **60CN** of component **1363**.

If there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Reconnect the computer and the driver's front inertia reel before switching the ignition back on.<br>Clear the computer fault memory. Switch off the ignition.<br>Carry out another test using the diagnostic tool and if there are no faults, unlock the computer.<br>If the inertia reel has been replaced, destroy the old one (tool **Elé. 1287**). |

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|---|---|
| **DF167 PRESENT** | PASSENGER SEAT BELT INERTIA REEL CIRCUIT<br>CO: Open circuit<br>CC: Short circuit<br>CC.0: Short circuit to earth<br>CC.1: Short circuit to +12 V<br>1.DEF: Configuration<br>2.DEF: Short circuit between trigger lines |

| | |
|---|---|
| ***NOTES*** | If **1.DEF,** check and modify the **computer configuration**. |
| | **Special notes**: Never carry out measuring operations on trigger lines using any tool other than **CLIP** or **XRBAG**.<br>Use the **50-track or 30-track adapter Elé. 1830 or Elé. 1484-10** for operations on the **computer** connector, and the **2-track adapter B35** for operations on the **inertia reel** connector. |
| | Use the **Technical Note Wiring Diagrams for DUSTER**. |

| | | |
|---|---|---|
| **CO - CC** | ***NOTES*** | None. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.

Switch off the ignition and check that the connector of the **passenger side front inertia reel**, component code **1364**, is correctly connected.
Check the **condition** and **connection** of the connector of the **passenger side front inertia reel**, component code **1364**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

| | |
|---|---|
| ***AFTER REPAIR*** | Reconnect the computer and the driver's front inertia reel before switching the ignition back on.<br>Clear the computer fault memory. Switch off the ignition.<br>Carry out another test using the diagnostic tool and if there are no faults, unlock the computer.<br>If the inertia reel has been replaced, destroy the old one (tool **Elé. 1287**). |

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| DF167 CONTINUED 1 | |
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Fit the **2-track adaptor B35**.
The **CLIP** or **XRBAG** tool must be used to measure the resistance.
If the value obtained is incorrect, the front passenger side seat belt inertia reel is faulty.
Replace the passenger side front inertia reel, component code **1364** (see **MR 451, Mechanical, 88C, Airbags and pretensioners, Airbag computer: Removal - Refitting**).

Check the **condition** and **connection** of the **airbag computer** connectors, component code **756**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Fit the **50-track or 30-track** adapter **Elé. 1830 or Elé. 1484-10**.
The **CLIP** or **XRBAG** tool must be used for checking the resistance on **cable F** of the adapter.
If the value obtained is incorrect, the wiring, connections **60CP** and **60CQ**, between the computer and the **passenger side front inertia reel** connector (**C0/C3**) is faulty.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Reconnect the computer and the driver's front inertia reel before switching the ignition back on.<br>Clear the computer fault memory. Switch off the ignition.<br>Carry out another test using the diagnostic tool and if there are no faults, unlock the computer.<br>If the inertia reel has been replaced, destroy the old one (tool **Elé. 1287**). |
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| **DF167 CONTINUED 2** | |

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|---|---|---|
| **CC.0 - CC.1** | ***NOTES*** | None. |

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.

Switch off the ignition, and check the **condition** and **connection** of the connectors of the **passenger side front inertia reel**, component code **1364**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Fit the **2-track adaptor B35**.
The **CLIP** or **XRBAG** tool must be used to measure the insulation appropriate to the type of fault.
If the value obtained is incorrect, the front passenger side seat belt inertia reel is faulty.
Replace the passenger side front inertia reel, component code **1364** (see **MR 451, Mechanical, 88C, Airbags and pretensioners, Airbag computer: Removal - Refitting**).

Check the **condition** and **connection** of the **airbag computer** connectors, component code **756**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Fit the **50-track** or **30-track** adapter **Elé. 1830 or Elé. 1484-10**.
The **CLIP** or **XRBAG** tool must be used to correctly measure the insulation for the type of fault on adapter **cable F**.
If the value obtained is incorrect, the wiring, connections **60CP** and **60CQ**, between the computer and the **passenger side front inertia reel** connector (**C0/C3**) is faulty.

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| | |
|---|---|
| ***AFTER REPAIR*** | Reconnect the computer and the driver's front inertia reel before switching the ignition back on.<br>Clear the computer fault memory. Switch off the ignition.<br>Carry out another test using the diagnostic tool and if there are no faults, unlock the computer.<br>If the inertia reel has been replaced, destroy the old one (tool **Elé. 1287**). |

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| DF167 CONTINUED 3 | |
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| 2. DEF | *NOTES* | **Special notes**: This fault corresponds to the detection of a short circuit between 2 trigger lines. |
|---|---|---|

Lock the computer via the command **VP006 "Lock computer"**, using the **diagnostic tool**.
Check that the circuits of the two ignition modules concerned are insulated.
Concerned connections of component **1364**:
- **60CP** and **60CQ** of component **1364**.

If there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Reconnect the computer and the driver's front inertia reel before switching the ignition back on.<br>Clear the computer fault memory. Switch off the ignition.<br>Carry out another test using the diagnostic tool and if there are no faults, unlock the computer.<br>If the inertia reel has been replaced, destroy the old one (tool **Elé. 1287**). |
|---|---|

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|---|---|
| **DF193 PRESENT OR STORED** | PASSENGER AIRBAG LOCKING CHANGE OF STATUS |

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|---|---|
| ***NOTES*** | **Special notes:**<br>The vehicle user has **10 seconds** after switching on **+ after ignition feed** to inhibit the passenger airbag using the key. After this time, the computer will store this fault and light up the warning light on the instrument panel. Switching the ignition off and on restores system operation. |

| |
|---|
| Set the locking switch to the desired position, switch the ignition off and wait for a few seconds.<br>Switch on the ignition again and clear the computer fault memory using command **RZ001 Fault memory**. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| | |
|---|---|
| **DF194 PRESENT** | COMPUTER TO BE REPLACED FOLLOWING IMPACT |

| | |
|---|---|
| ***NOTES*** | None. |

Consult scenario **SC004 Read impact context**.
Replace all the pyrotechnic components activated at the time of impact.
Replace the airbag computer, component code **756**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| | |
|---|---|
| **DF232 PRESENT** | DRIVER'S SEAT BELT BUCKLE SENSOR CIRCUIT<br>CC.1: Short circuit to +12 V<br>1.DEF: Configuration |

| | |
|---|---|
| ***NOTES*** | If **1.DEF,** check and modify the computer configuration. |
| | **Special notes**: Use the **50-track or 30-track adapter Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams** for **DUSTER**. |

| | | |
|---|---|---|
| **CC.1** | ***NOTES*** | None. |

| |
|---|
| Check the **condition** and **connection** of the airbag computer connectors, component code **756**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |
| Check the **condition** and **connection** of the connectors of the **intermediate connection R146**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out another check using the **diagnostic tool**. |

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| DF232 CONTINUED | |
|---|---|

| |
|---|
| Check the **condition** and **connection** of the **driver's seat belt buckle sensor** connectors, component code **333**. If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |
| Check the **continuity, insulation** and **absence of interference resistance** on the following connections:<br>• **60DU** between components **333** and **756**,<br>• **60DV** between components **333** and **756**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **driver's seat belt buckle sensor**, component code **333**. |
| If the fault is still present, contact the Techline. |

| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out another check using the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **DF233 PRESENT** | PASSENGER SEAT BELT BUCKLE SENSOR<br>CC.1: Short circuit to +12 V<br>1.DEF: Configuration |

| | |
|---|---|
| ***NOTES*** | If **1.DEF,** check and modify the computer configuration. |
| | **Special notes**: Use the **50-track or 30-track adapter Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams** for **DUSTER**. |

| | | |
|---|---|---|
| **CC.1** | ***NOTES*** | None. |

| |
|---|
| Check the **condition** and **connection** of the airbag computer connectors, component code **756**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |
| Check the **condition** and **connection** of the connectors of the **intermediate connection R146**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring. |

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out another check using the **diagnostic tool**. |

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| DF233 CONTINUED | |
|---|---|

| |
|---|
| Check the **condition** and **connection** of the **passenger seat belt buckle sensor** connectors, component code **486**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity, insulation** and **absence of interference resistance** on the following connections:<br>• **60GH** between components **486** and **756**,<br>• **60GK** between components **486** and **756**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **passenger seat belt buckle sensor**, component code **486**. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out another check using the **diagnostic tool**. |

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| | |
|---|---|
| **DF234 PRESENT** | PASSENGER PRESENCE DETECTION SENSOR CIRCUIT<br>CC.1: Short circuit to +12 V<br>2.DEF: Values outside of limits<br>1.DEF: Configuration |

| | |
|---|---|
| ***NOTES*** | If **1.DEF,** check and modify the computer configuration. |
| | **Special notes**: Use the **50-track or 30-track adapter Elé. 1830 or Elé. 1484-10** for operations on the computer connector, and the **8-track adapter Elé. 1617** for operations on the seat. |
| | Use the **Technical Note Wiring Diagrams** for **DUSTER**. |

| |
|---|
| Check the **condition** and **connection** of the **airbag computer** connectors, component code **756**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **condition** and **connection** of the connectors of the **intermediate connection R146**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| DF234 CONTINUED | |
|---|---|

| |
|---|
| Check the **condition** and **connection** of the **passenger presence detection sensor** connectors, component code **1576**.<br>If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **continuity, insulation** and **absence of interference resistance** on the following connections:<br>• **60GL** between components **1576** and **756**,<br>• **60GM** between components **1576** and **756**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **passenger presence detection sensor**, component code **1576**. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| | |
|---|---|
| **DF242 PRESENT** | LEFT-HAND DRIVE/RIGHT-HAND DRIVE CONFIGURATION<br>1.DEF: Configuration |

| | |
|---|---|
| ***NOTES*** | None. |

| |
|---|
| This fault occurs because left-hand/right-hand drive has not been configured.<br>Configure the computer using command **CF291 Driving side**.<br>Read the driving side configuration **LC088 Driving side** under the **Read configuration** heading. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out the check again using the **diagnostic tool** and, if there is no fault, unlock the computer. |

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| | |
|---|---|
| **DF279 PRESENT** | SEAT BELT WARNING LIGHT CIRCUIT<br>CC.1: Short circuit to +12 V<br>CO.0: Open circuit or short circuit to earth. |

| | |
|---|---|
| ***NOTES*** | **Special note**: Use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams** for **DUSTER**. |

| | | |
|---|---|---|
| **CC.1** | ***NOTES*** | None. |

Lock the computer with command **VP006 Lock computer** using the diagnostic tool.
Check the **condition** of the **warning light bulb**.
Check the **condition** and **connection** of the connectors of the **airbag computer**, component code **756** and the **seat belt warning module**, component code **1601**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the **insulation** to **+12 V** of the following connections:
- **60CD** between components **756** and **1601**,
- **96A** between components **756** and **1601**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out another check using the **diagnostic tool**. |

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| DF279 CONTINUED 1 | |
|---|---|

| CO.0 | *NOTES* | None. |
|---|---|---|

Warning light **off** under **+** after ignition feed:
Lock the computer with command **VP006 Lock computer** using the diagnostic tool.
Check the **condition** of the **warning light bulb**.
Check the **condition** and **connection** of the connectors of the **airbag computer**, component code **756** and the **seat belt warning module**, component code **1601**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check the **condition** of the **airbag fault warning light**.
Check for **+12 V** on the **airbag computer**, component code **756**, and on the **seat belt warning module**, component code **1601**, on the following connections:
- **60CD** of component **756**,
- **96A** of component **756**.

Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:
- **60CD** between components **756** and **1601**,
- **96A** between components **756** and **1601**.

If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

| *AFTER REPAIR* | Clear the computer fault memory. Switch off the ignition.<br>Carry out another check using the **diagnostic tool**. |
|---|---|

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| DF279 CONTINUED 2 | |
|---|---|

Warning light **illuminated** under **+** after ignition feed:
Lock the computer with command **VP006 Lock computer** using the diagnostic tool.
Disconnect the airbag computer and check for the presence, on the base, of the **7 pins** which open the connector **shunts**.
Check the earth insulation on connections **60CD** and **96A** (except for Middle East countries) between components **1601** and **756**.
If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

| *AFTER REPAIR* | Clear the computer fault memory. Switch off the ignition.<br>Carry out another check using the **diagnostic tool**. |
|---|---|

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| | |
|---|---|
| **DF425 PRESENT** | SEAT BELT REMINDER BUZZER CIRCUIT<br>CC.1: Short circuit to +12 V<br>CO.0: Configuration |

| | |
|---|---|
| ***NOTES*** | If **1.DEF,** check and modify the computer configuration. |
| | **Special notes**: Use the **50-track or 30-track adapter Elé. 1830 or Elé. 1484-10** to work on the computer connector. |
| | Use the **Technical Note Wiring Diagrams** for **DUSTER**. |

| | | |
|---|---|---|
| **CC.1** | ***NOTES*** | This fault is displayed only if the component is present on the vehicle. |

Check the **condition** and **connection** of the **airbag computer connectors**, component code **756**.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair),** repair the connector, otherwise replace the wiring.

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out the check again using the **diagnostic tool** and if there are no faults, unlock the computer. |

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| DF425 CONTINUED | |
|---|---|

| |
|---|
| Check the **condition** and **connection** of the **connectors** of the **intermediate connection**, component code **R146**. If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check the **condition** and **connection** of the **seat belt reminder buzzer connectors,** component code **735**. If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring. |
| Check **the continuity, insulation** and **the absence of interference resistance** of the following connection:<br>• **96H** between components **735** and **756**.<br>If the connection or connections are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. |
| If the fault is still present, replace the **seat belt reminder buzzer**, component code **735**. |
| If the fault is still present, contact the Techline. |

| | |
|---|---|
| ***AFTER REPAIR*** | Clear the computer fault memory. Switch off the ignition.<br>Carry out the check again using the **diagnostic tool** and if there are no faults, unlock the computer. |

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| NOTES | Only carry out a conformity check after a **complete check** with the **diagnostic tool**. The values shown in this conformity check are given as a guide.<br>**Application condition: engine off, ignition on**. |
|---|---|

**FUNCTION: MAIN SCREEN**

| Parameter or status Checked or action | | Display and notes | Fault finding |
|---|---|---|---|
| **ET144** | Fault present or stored | **YES or NO**<br>This status indicates if the computer has detected at least a present or a stored fault. | In the event of a fault, apply the interpretation of the fault concerned. |
| **ET073:** | Computer locked by tool | **YES or NO**<br>This status indicates whether or not the computer is locked. | In the event of a fault, apply the interpretation of **DF034 Computer locked**. |
| **ET143:** | Passenger airbag(s) locked | **YES or NO**<br>This status indicates the locking of the passenger trigger lines (passenger front airbag, passenger chest-level airbag). | In the event of a fault, apply the interpretation of **DF193 Passenger airbag locking status change**. |
| **ET076:** | Computer to be replaced | **YES or NO**<br>This status indicates whether the computer should be replaced or not. | In the event of a fault, apply the interpretation of **DF001 Computer** and **DF194 Computer to be replaced following impact**. |

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| NOTES | Only carry out a conformity check after a **complete check** with the **diagnostic tool**. The values shown in this conformity check are given as a guide.<br>**Application condition: engine off, ignition on.** |
|---|---|

**FUNCTION: MAIN SCREEN (CONT.)**

| Parameter or status<br>Checked or action | | Display<br>and notes | Fault finding |
|---|---|---|---|
| **ET010:** | Impact detected. | **YES or NO**<br>This status indicates whether an impact has been detected by the computer. | In the event of a fault, apply the interpretation of **DF194 Computer to be replaced following impact**. |
| **ET074:** | Fault warning light activated. | **YES or NO**<br>This status permits a check on the request by the computer for the **airbag fault** indicator light to be lit or not. | In the event of a fault, apply the interpretation of **DF165 Airbag fault warning light circuit**. |
| **ET072:** | Passenger airbag status indicator light activated. | **YES or NO**<br>This status permits a check on the request by the computer for the **passenger airbag** indicator light to be lit. | In the event of a fault, apply the interpretation of **DF028 Passenger airbag status indicator circuit.** |
| **PR001:** | Computer supply. | This parameter indicates the computer supply voltage.<br>The voltage should be between **9 V < X < 14 V** | In the event of a fault, apply the interpretation of **DF002 Computer supply voltage**. |

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## Fault finding – Status summary table

| Tool status | Diagnostic tool title |
|---|---|
| **ET010** | Impact detected |
| **ET072** | Passenger airbag status indicator light activated |
| **ET073** | Computer locked by tool |
| **ET074** | Command fault warning light |
| **ET076** | Computer to be replaced |
| **ET143** | Passenger airbag(s) locked |
| **ET144** | Fault present or stored |

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| Tool Parameter | Diagnostic tool title |
|---|---|
| **PR001** | Computer feed voltage |
| **PR011** | Driver's side airbag resistance |
| **PR012** | Passenger side airbag resistance |
| **PR013** | Driver's frontal airbag resistance |
| **PR014** | Passenger frontal airbag resistance |
| **PR034** | Driver's front inertia reel resistance |
| **PR035** | Passenger front inertia reel resistance |
| **PR147** | Airbag locking circuit impedance |
| **PR148** | Passenger detection sensor impedance |

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| *NOTES* | **Only refer to the customer complaints after performing a complete check using the diagnostic tool.** |
|---|---|

| | |
|---|---|
| **NO DIALOGUE WITH THE AIRBAG COMPUTER** | **ALP 1** |

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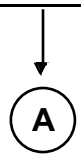
| ALP 1 | No communication with the airbag computer |
|---|---|

| *NOTES* | None. |
|---|---|
| | Use the **Technical Note Wiring Diagrams** for **DUSTER**. |

Try to establish dialogue with a computer on another vehicle to make sure that the diagnostic tool is not faulty.
If the **diagnostic tool** is not causing the fault and dialogue cannot be established with any other computer on the same vehicle, it may be that a faulty computer is disrupting fault finding line **HK**.
Use a process of successive disconnections to locate this computer.
Check the battery voltage, component code **107**, and make the necessary adjustments to obtain the correct voltage **(10.5 V < battery voltage < 16 V)**.




| *AFTER REPAIR* | When communication is established, deal with any faults indicated. |
|---|---|

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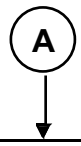
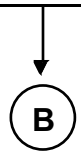
| ALP 1<br>CONTINUED 1 | |
|---|---|




Check the presence and condition of the airbag computer supply fuse.
Check that the computer connector is properly connected and check the condition of its connections.
If the connectors are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check that the supply to the computer is correct:
– disconnect the airbag computer and use adapter **Elé. 1830 or Elé. 1484-10** to work on the computer connector,
– check and ensure the presence of **+ after ignition feed** between connections **AP25** and **NAP**.
If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.




| *AFTER REPAIR* | When communication is established, deal with any faults indicated. |
|---|---|

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| ALP 1<br>CONTINUED 2 | |
|---|---|

B

Check that the **diagnostic socket**, component code **225**, is correctly supplied on the following connections:
- **BP56** and **AP 10** between components **225** and **1016**,
- **MAM** and **NC** of component **225.**

Check the **continuity** and **insulation** of the following connection:
- **HK** between components **225** and **756.**

If the connection or connections are faulty and if there is a repair procedure (see **Technical Note 6015A (Renault) or Technical Note 9804A (Dacia), Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If dialogue is still not established after these various checks, replace the **airbag computer**, component code **756** (see **Replacement of components**).

| *AFTER REPAIR* | When communication is established, deal with any faults indicated. |
|---|---|