

MEGANE

1 Engine and peripherals

13B

DIESEL INJECTION

EDC16

PROGRAM No: C1

Vdiag No.: 51

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V6

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(s): **MEGANE II, SCENIC II**
Engine type and suffix: **F9Q 804**
Function concerned: **DIESEL INJECTION**

Name of computer: **BOSCH EDC16 C3**
Program no.: **C1**
Vdiag No.: **51**

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 (CD-ROM), paper version.

Type of diagnostic tools

- **CLIP + CAN sensor**

Special tooling required

Special tooling required	
Multimeter	
+ Elé. 1590	Computer connection bornier
Or Elé. 1681	Universal bornier

3. RECAP

Procedure

To run fault finding on the vehicle's computers, switch on the ignition in fault finding mode (forced + after ignition feed).

- vehicle's card in reader;
- press and hold the Start button (longer than 5 seconds) with start-up conditions not present,
- connect the diagnostic tool and perform the required operations.

To cut off the + after ignition feed, proceed as follows:

- disconnect the diagnostic tool,
- vehicle card in reader,
- press the Start button twice briefly (less than 3 seconds),
- ensure that the + after ignition feed has been cut off by checking that the computer indicator lights on the instrument panel have gone out.

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 **present** or **stored** status of faults should be taken into consideration when the diagnostic tool is switched on after the + after ignition feed (without any system components being active).

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 instructions in 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 component detected as faulty,
- 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 because 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.

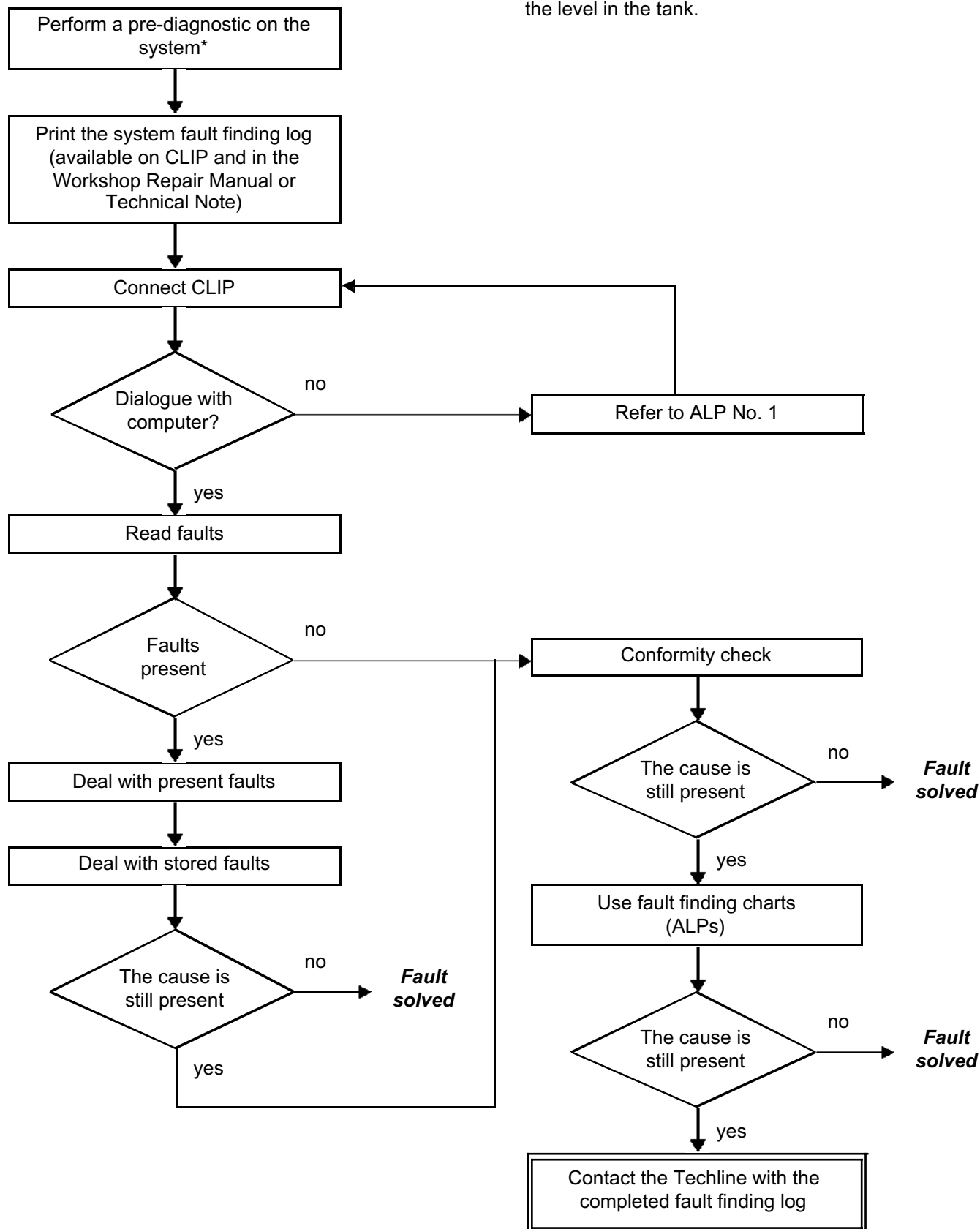
Customer complaints - Fault finding chart

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

4. FAULT FINDING PROCEDURE

* Check the battery charge, the condition of the fuses and the level in the tank.



FAULT FINDING PROCEDURE (continued)

Wiring check

Fault finding problems

Disconnecting the connectors and/or manipulating the wiring harness 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.

Tactile inspection

While manipulating the wiring harness, 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 to another wire.

If a fault is detected, repair or replace the wiring harness.

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 procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

**IT IS THEREFORE COMPULSORY TO COMPLETE A FAULT FINDING LOG
EVERY TIME A FAULT FINDING PROCEDURE IS PERFORMED**

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 ADVICE

Safety rules must be observed during any work on a component to prevent any damage or injury:

- make sure that the battery is properly charged to avoid damaging the computers with a low load,
- use the appropriate tools.

7. CLEANLINESS ADVICE TO FOLLOW WHEN CARRYING OUT OPERATIONS ON THE HIGH PRESSURE DIRECT INJECTION SYSTEM

Risks relating to contamination

The system is highly sensitive to contamination. The risks associated with contamination are:

- damage to or destruction of the high pressure injection system and the engine,
- a component seizing or leaking.

All After-Sales operations must be performed under very clean conditions. This means that no impurities (particles a few microns in size) should be allowed to penetrate the system during dismantling or get into the circuits via the fuel unions.

The cleanliness guidelines must be applied from the filter through to the injectors.

I - RISKS ASSOCIATED WITH CONTAMINATION

The high pressure direct injection system is highly sensitive to contamination. The risks associated with contamination are:

- damage to or destruction of the high pressure injection system,
- components jamming,
- a component leaking.

All After-Sales operations must be performed under very clean conditions. This means that no impurities (particles a few microns in size) should have entered the system during dismantling.

The cleanliness principle must be applied from the filter to the injectors.

What are the sources of contamination?

metal or plastic swarf,

- paint,
- fibres:
- from cardboard,
- from brushes,
- from paper,
- from clothing,
- from cloths,
- foreign bodies such as hair,
- ambient air,
- 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 electrical connection faults.

II - NOTES TO BE FOLLOWED BEFORE ANY OPERATION

IMPORTANT

Before any work is carried out on the high pressure injection system, protect:

- the accessories and timing 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.

Check that you have plugs for the unions to be opened (set of plugs available from the Parts Department). The plugs are single-use only. After use, they must be discarded (once used they are soiled and cleaning is not sufficient to make them reusable). Unused plugs must be discarded.

Check 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 number **77 11 211 707**). Using normal cloth or paper is prohibited. They are not lint-free and could contaminate the fuel circuit. Each cloth should only be used once.

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, the parts, unions and injection system zones). 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.

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. Ambient air carries contamination.

All components removed from the injection system must be stored in a hermetically sealed plastic bag once they have been plugged.

Using a brush, cleaning agent, air gun, sponge 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.

System outline

The high pressure injection system is designed to deliver a precise quantity of diesel fuel to the engine at a set moment.

It is fitted with a **112-track BOSCH EDC16 C3 type computer**.

The system is comprised of:

- a priming bulb on the low pressure circuit,
- a diesel filter,
- a high pressure pump with a built-in low pressure pump (transfer pump),
- a high pressure regulator mounted on the pump,
- an injector rail,
- a diesel fuel pressure sensor built into the rail,
- four solenoid injectors,
- a coolant temperature sensor,
- a cylinder reference sensor,
- an engine speed sensor,
- a turbocharger pressure sensor,
- an accelerator pedal potentiometer,
- an EGR solenoid valve,
- an atmospheric pressure sensor integrated into the injection computer,
- an air flow sensor with an air temperature sensor,
- a turbocharging pressure limitation solenoid valve,
- a motorised damper valve.

The **common rail** direct high pressure injection system works sequentially (based on the petrol engine multipoint injection).

This injection system reduces operating noise, reduces the volume of pollutant gases and particles and produces high engine torque at low engine speeds thanks to a pre-injection procedure.

The high pressure pump generates the high pressure and transmits it to the injector rail. The actuator located on the pump controls the quantity of diesel fuel supplied, according to the requirement determined by the computer. The rail supplies each injector through a steel pipe.

a) The computer:

Determines the value of injection pressure necessary for the engine to operate correctly and then controls the pressure regulator.

Checks that the pressure value is correct by analysing the value transmitted by the pressure sensor located on the rail. Determines the injection duration necessary for supplying the correct quantity of diesel and the moment when injection is required; controls each injector electrically and individually after determining these values.

The flow injected into the engine is determined by:

- the duration of injector control,
- the rail pressure (regulated by the computer),
- the injector opening and closing speed,
- the needle stroke (determined by a constant for the type of injector),
- the nominal hydraulic flow of the injector (specific to each injector).

The computer manages:

- idling regulation,
- exhaust gas flow reinjection to the inlet (EGR),
- fuel supply check (advance, flow and rail pressure),
- the CMV control via the Protection and Switching Unit (centralised coolant temperature management function),
- the air conditioning (cold loop function),
- the cruise control/speed limiter function,
- pre-post heating control,
- fault warning lights via the multiplex network.

The high pressure pump is supplied at low pressure by an integrated low pressure pump (transfer pump).

It supplies the rail, the pressure of which is controlled by the fuel flow actuator (MPROP) for charging, and for discharging by the injector valves. This compensates for pressure drops. The fuel flow actuator enables the high pressure pump to supply the exact quantity of diesel fuel required to maintain the rail pressure. This component minimises the heat generated and improves engine output. In order to discharge the rail using the injector valves, the valves are controlled by brief electrical pulses which are:

- short enough not to open the injector (passing through the feedback circuit from the injectors),
- long enough to open the valves and discharge the rail.

b) Multiplex connection between the different vehicle computers.

The electronic system fitted in this vehicle is multiplexed.

This enables dialogue between the various vehicle computers. As a result:

- the activation of the fault warning lights on the instrument panel is performed by the multiplex network, with the vehicle speed sensor on the gearbox deactivated,
- vehicle faults are displayed by the multiplex network,
- the vehicle speed sensor on the gearbox is not needed.

The vehicle speed signal on the instrument panel is transmitted by the ABS computer via a wire connection, then sent out on the multiplex network by the instrument panel. The vehicle speed signal is used mainly by the injection computer and the airbag computer.

Some vehicles have adopted a sensor for detecting water in the diesel fuel, located in the filter. If there is water in the diesel fuel, the orange "Injection and pre-post heating" warning light will come on.

WARNING

The engine must not operate with:

- Diesel fuel containing more than 10 % diester,
- petrol, even in tiny quantities.

The system can inject diesel fuel into the engine at a pressure of up to **1600 bar**. Before each operation, check that the injector rail is depressurised and that the fuel temperature is not too high.

You must respect the cleanliness guidelines and safety advice specified in this document for any work on the high pressure injection system.

Removal of the internal parts of the pump and injectors is prohibited. Only the fuel flow actuator, the diesel fuel temperature sensor and the venturi can be replaced.

For safety reasons, it is strictly prohibited to undo a high pressure pipe union when the engine is running.

It is not possible to remove the pressure sensor from the fuel rail because this may cause circuit contamination faults. If the pressure sensor fails, the pressure sensor, the rail and the five high pressure pipes must be replaced.

It is forbidden to remove any injection pump pulley bearing the number **070 575**. If the pump needs to be replaced, replace the pulley.

Supplying **+ 12 V** directly to any component in the system is prohibited.

Ultrasonic decoking and cleaning are prohibited.

Never start the engine unless the battery is connected correctly.

Disconnect the injection computer when carrying out any welding work on the vehicle.

c) Hosted functions:

Air conditioning management assistance:

In the case of vehicles with climate control, the EDC16 system has the option of deactivating the air conditioning via the UCH, under certain conditions of use:

- 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 transitory phases (such as demands for high acceleration when overtaking, anti-stall and start-up) These conditions are only taken into account when they do not occur repeatedly, to prevent instability in the system (erratic deactivations),
- when certain faults appear.

Cold loop air conditioning management:

The air conditioning is the cold loop type and its management shared between several computers.

The injection computer is responsible for:

- authorising cold requests according to the refrigerant pressure, the engine coolant temperature and the engine speed,
- calculating the power absorbed by the compressor (from the refrigerant pressure),
- requesting operation of the GMV, from the UPC, according to the vehicle speed, the refrigerant pressure and the engine coolant temperature.

The driver requests the air conditioning to be switched on by means of the ventilation selector coupled to a switch. The cold air request is authorised or denied depending on the pressure measured. If this pressure is outside the operating limits, the cold loop program is not activated.

Management of the damper valve:

The damper valve currently has three functions:

- the valve closes in order to block the passage of air towards the cylinders to shut off the engine. The aim of this is to stop the engine as quickly as possible and to reduce instabilities as the engine is switched off.
- "valving" function depending on the engine operation: the damper valve closes by a few % to create a "venturi" effect at the EGR valve passage section.

The aim of this is to accelerate the air flow of EGR gases and to reduce the emission of pollutants.

Passenger Compartment Heating Resistor Management:

In order to reduce the time required to heat up the passenger compartment, the vehicle is fitted with **Passenger Compartment Heating resistors (RCH)**. These passenger compartment heating resistors are run and controlled by the UCH. The injection computer authorises or prohibits the operation of the passenger compartment heating resistors according to the operating phases and engine power needs.

Cruise control/speed limiter management:

The vehicle cruise control function, when activated, allows you to keep the vehicle speed at a selected value regardless of the driving conditions encountered.

Using the control buttons, the driver can increase or reduce the speed of the vehicle.

If the driver wishes to exceed the cruising speed, he may:

- depress the accelerator pedal and exceed the cruising speed (the vehicle will return to the initial cruising speed once the driver takes his foot off the pedal),
- press the system control buttons.

The cruise control function can be deselected either by:

- the system control buttons,
- deactivating the cruise control switch,
- when system events are detected, such as the brake pedal or clutch being depressed,
- when system errors are detected such as an inconsistent vehicle speed.

The cruise function can also be temporarily disabled when the driver wants to increase speed by depressing the accelerator pedal. The cruising speed is resumed when the driver releases the accelerator pedal.

The vehicle will then attempt to reach the cruising speed at a controlled acceleration rate.

It is possible to reactivate the vehicle speed control and resume the last cruising speed after deactivation (computer supply not cut off).

When activated (using the selection switch) **the vehicle speed limiter function** limits the vehicle speed to a preselected value. The driver controls the vehicle in the normal way using the accelerator pedal until the limit speed is reached.

If an attempt is made to exceed this speed, the system ignores the pedal request and controls the vehicle speed in the same way as the cruise control function, provided that the driver keeps the accelerator pedal sufficiently depressed.

Like the cruise control function, the limit speed can be modified by pressing or pressing and holding the control buttons.

For safety reasons, it is possible to exceed the limit speed by depressing the accelerator pedal and exceeding the pedal position limit value. The vehicle speed is then totally controlled as a function of pedal position until the speed falls back below the limit speed when the speed limiter function will once again be reactivated.

If the driver wishes to exceed the cruising speed, he may:

- exceed the accelerator pedal's kickdown point,
- increase the limit speed by pressing or pressing and holding the limit speed switch.

The speed limiter function can be deselected either:

- the system control buttons,
- by switching off the speed limiter switch,
- when system events are detected, such as the brake pedal or clutch being depressed,
- when system errors are detected such as an inconsistent vehicle speed.

Exhaust gas recirculation management

The exhaust gas recirculation system comprises a direct current EGR valve controlled by an H bridge in the computer. This system has a built-in valve position feedback potentiometer.
The EGR valve is controlled in a closed loop on the change in the air flow measured by the flow sensor.
The potentiometer is used in the fault finding procedure for the EGR valve position.

Warning light management:

Instrument panel display

The computer manages the data display on the instrument panel relating to engine operation. This involves six functions:

- the pre-postheating warning light,
- the coolant temperature warning light or warning message;
- the fault level 1 warning light (non-critical fault),
- the fault level 2 warning light (emergency stop),
- the OBD warning light (European On Board Diagnostic).

These five functions are represented by 4 or 5 warning lights and/or messages sent by the trip computer.

A **3 second** visual inspection is carried out by the injection computer when ignition is switched on (automatic procedure for test managed by the instrument panel).

Orange Pre-post heating/non-critical fault SERVICE warning light (level 1)

This light is used both as an in-operation indicator light and as a system fault indicator:

- Continuously lit with + after ignition feed:

Indicates preheating of the spark plugs.

- Continuous lighting accompanied by the message **CHECK INJECTION** or **ELECTRONIC FAULT**:

Indicates a **level 1** fault (implies operation in injection system defect mode).

The driver should carry out repairs as soon as possible.

Temperature warning light/red EMERGENCY STOP (level 2)

This indicator light is used both as an in-operation indicator light and as a system fault warning light. Lights up for **3 seconds** when the ignition is switched on (automatic test procedure managed by the instrument panel):

- Continuously lit **or** alternately lit with **ENGINE OVERHEATING** message:

Indicates engine overheating (the driver is free to choose whether or not to stop the vehicle).

- Continuously lit with the **FAULTY INJECTION** message:

Indicates a **level 2** fault (In this case, the injection is automatically cut after a few seconds).

The driver should carry out repairs as soon as possible.

ORANGE OBD excess pollution warning light

An engine symbol accompanied by the message **CHECK EMISSION CONTROL**.

This warning light comes on if the system has one or more OBD faults.

This warning light is used to warn the driver of injection faults leading to excessive pollution or that the EOBD* system has been deactivated.

The injection computer requests activation of the OBD warning light for a present fault only after three successive driving cycles.

A **3 second** visual inspection is carried out by the injection computer when ignition is switched on (automatic procedure for test managed by the instrument panel).

*EOBD: Electronic on board diagnostics.

EOBD* management:

The **OBD (On Board Diagnostic)** system enables the detection of any faults relating to the vehicle emission control system (OBD EURO IV emission control standards exceeded).

This system should be active for the entire life of the vehicle.

1. Conditions causing an OBD fault

An OBD fault will be detected after **3 driving cycles** and the following parameters will be registered in the computer:

- engine load,
- vehicle speed
- air temperature
- coolant temperature,
- turbocharging pressure,
- rail pressure,
- air flow,
- distance travelled in miles by the vehicle since activation of the **OBD** warning light.

It allows the driver to know whether the vehicle has a fault directly linked to the emission control system.

2. System faults indicated by the OBD

Only a few faults are indicated by the OBD system:

- **DF001 Coolant temperature sensor circuit.**
- **DF003 Atmospheric pressure sensor circuit.**
- **DF011 Sensor feed voltage no. 1.**
- **DF012 Sensor feed voltage no. 2.**
- **DF013 Sensor feed voltage no. 3.**
- **DF038 Computer in 6.DEF EEPROM fault.**
- **DF040 Cylinder 1 injector circuit in CO Open circuit.**
- **DF041 Cylinder 2 injector circuit in CO Open circuit.**
- **DF042 Cylinder 3 injector circuit in CO Open circuit.**
- **DF043 Cylinder 4 injector circuit in CO Open circuit.**
- **DF054 Turbocharging solenoid valve control circuit in CC.0 Short circuit to earth.**
- **DF056 Air flow sensor circuit.**
- **DF209 EGR valve position sensor circuit.**
- **DF621 EGR valve jammed open.**

Some repair operations require programming to ensure that certain engine components function correctly. Follow the programming procedures (see Replacement of components), if replacing the exhaust gas recirculation valve or an injector.

*EOBD: Electronic on board diagnostics

3. Conditions for clearing an OBD fault

An OBD fault is cleared in several steps.

The fault **present** in the diagnostic tool is not **stored** (following repair) until after 3 trips with the vehicle.

The OBD warning light will only light up after these 3 driving cycles.

The warning light coming on does not always mean that there is a fault on the system.

In order that the OBD fault and the display parameters are cleared from the computer, the system needs to go through 40 engine heating cycles.

An engine heating cycle is a driving cycle during which:

- the engine coolant temperature reaches at least 71.1 °C,
- the engine coolant temperature varies by 22.2 °C in relation to the engine starting temperature.

If one of these conditions is not fulfilled, the OBD fault will still be present or stored in the injection computer.

Fault finding – Allocation of computer tracks

1 - black connector A, 32 tracks

Track	Description
A1	Not used
A2	Cruise control on/off switch
A3	Passenger compartment L1 multiplex line network signal
A4	Passenger compartment H1 multiplex line network signal
B1	Air conditioning inhibition control
B2	Engine speed signal
B3	Not used
B4	K line diagnostic socket output
C1	Not used
C2	Not used
C3	Speed limiter on/off switch
C4	Clutch contact input
D1	Protection and Switching Unit supply (+ after ignition feed)
D2	Cruise control programming control
D3	Cruise control programming feedback signal
D4	Fuel flow signal
E1	Not used
E2	Air conditioning cycle control
E3	Not used
E4	Normally-closed brake switch input
F1	Not used
F2	Accelerator potentiometer load 2 supply
F3	Accelerator potentiometer load 2 signal
F4	Accelerator potentiometer load 2 earth

1 - black connector A, 32 tracks (continued)

Track	Description
G1	Protection and Switching Unit supply (+ BAT 1 after relay)
G2	Accelerator potentiometer load 1 supply
G3	Not used
G4	Battery earth
H1	Battery earth
H2	Accelerator potentiometer load 1 signal
H3	Accelerator potentiometer load 1 earth
H4	Battery earth

Fault finding – Allocation of computer tracks

2 - brown connector B, 48 tracks

Track	Description
A1	Camshaft sensor earth (cylinder 1 reference)
A2	Not used
A3	Not used
A4	Fuel rail pressure sensor supply
B1	TDC sensor supply signal (engine speed)
B2	Damper valve fault finding
B3	Not used
B4	Air flow sensor supply
C1	TDC sensor earth signal (engine speed)
C2	EGR valve engine supply signal
C3	Engine CAN H2 network signal (automatic gearbox)
C4	Fuel rail pressure sensor earth
D1	Camshaft sensor signal (cylinder reference 1)
D2	EGR valve engine earth signal
D3	Engine CAN L2 network signal (automatic gearbox)
D4	Turbocharger pressure sensor earth
E1	Main power supply relay control
E2	Air temperature and air flow sensor earth signal
E3	Not used
E4	Not used
F1	Refrigerant pressure sensor signal
F2	Coolant temperature sensor supply signal
F3	Refrigerant pressure sensor supply
F4	EGR valve position potentiometer feed

2 - Brown 48-track connector B (continued)

Track	Description
G1	Air flow sensor supply signal
G2	Air temperature signal
G3	Fuel rail pressure sensor signal
G4	Turbocharging pressure sensor supply
H1	Coolant temperature sensor earth
H2	Not used
H3	Not used
H4	Electric coolant pump relay control
J1	Not used
J2	EGR valve position potentiometer signal
J3	Not used
J4	Damper valve solenoid valve control
K1	Not used
K2	Turbocharger pressure sensor signal
K3	Not used
K4	Not used
L1	Not used
L2	Not used
L3	Not used
L4	Flow sensor earth
M1	Not used
M2	Protection and Switching Unit supply (+ BAT 2 after relay)
M3	Not used
M4	Fuel pressure regulation solenoid valve control (fuel flow actuator)

3 - Grey 32-track connector C

Track	Description
A1	Not used
A2	Water in diesel detection sensor signal
A3	Alternator charge signal
A4	Preheating unit diagnostic signal
B1	Not used
B2	Not used
B3	Not used
B4	Not used
C1	Not used
C2	EGR valve position potentiometer earth
C3	Refrigerant pressure sensor earth
C4	Not used
D1	Not used
D2	Not used
D3	Not used
D4	Not used
E1	Turbocharging pressure solenoid valve control
E2	Preheating unit control
E3	Not used
E4	Not used
F1	Not used
F2	Not used
F3	Not used
F4	Not used
G1	Injector 4 feed
G2	Injector 2 feed
G3	Injector 1 control
G4	Injector 2 control
H1	Injector 1 feed
H2	Injector 3 feed
H3	Injector 4 control
H4	Injector 3 control

Fault finding – Replacement of components

COMPUTER REPLACEMENT OR REPROGRAMMING

Operations to be carried out before reprogramming the injection computer:

Before reprogramming the injection computer, move **the main CC/SL switch to the rest position**. The information about the cruise control or the speed limiter displayed on the instrument panel disappears.

Otherwise, if the main switch remains in the cruise control or speed limiter position during and after reprogramming, the Cruise control/Speed limiter function will not be operational.

The procedure for resetting the function is as follows:

- Vehicle ignition on.
- Move the cruise control/speed limiter switch to the **rest position** (the computer detects the rest position at that moment).
- Move the cruise control/speed limiter switch to the **Cruise control** position to activate the Cruise control function.
- Move the cruise control/speed limiter switch to the **Speed limiter** position to activate the Speed limiter function.

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 < 60° and air temperature < 50°).
- The GMV are activated automatically when the computer is being reprogrammed.

Two operations must be performed when replacing or reprogramming the computer:

SC003 Save computer data and SC001 Enter saved data.

- Use **SC003 before the computer is replaced or reprogrammed**. This enables certain data to be saved **in the diagnostic tool** so that the new computer* can be reconfigured like the old one. The saved data are: injector codes, EGR programming, vehicle options.
- Run **SC001 after the computer is replaced or reprogrammed**. It enables you to rewrite the data (saved by command **SC003**) to the new computer*.

If you cannot establish dialogue with the computer being replaced: you will not be able to save anything. After replacing the computer, enter the IMA code of each injector manually, reading the code on each injector (see **INJECTOR REPLACEMENT**).

Exhaust gas recirculation valve data is programmed automatically the 1st time the new computer is switched on*.

* new computer or reprogrammed computer.

Fault finding – Replacement of components

→ PROCEDURE:

● Before replacing or reprogramming the computer:

- Select **SC003 Save computer data**,
- if the following message appears: **there is a saved file; do you want to overwrite this data?:** (*this file is the last save carried out on the tool*)
- select **YES**,

When the backup is complete, replace the computer or reprogram, then proceed to the next step.

● After replacing or reprogramming the computer:

- Select **SC001 Write saved data**, then follow the instructions given by the diagnostic tool,
- if the VIN is not entered (see **Computer identification** on the main screen),
- select **VP010 Enter VIN**,

When both these commands have finished:

- **switch off the ignition** and wait **1 minute** before switching the ignition on again.
- then check the system faults, and clear any stored faults;
- if there are faults, deal with the present faults,
- clear the faults from the computer memory.

Carry out a road test followed by a complete check with the diagnostic tool.

IMPORTANT

- The injection computer retains the same 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.
- If the injection computer appears to be faulty, contact the Techline and refer to the fault finding log.

End of operation.

REPLACING THE INJECTORS

Note:

The IMA coding (individual injector correction) is a calibration made in production on **each injector** to **adjust the flow** accurately.

These correction values are etched onto the Bakelite body of each injector (6 alphanumeric characters) and then entered into the computer which then controls each injector taking into account their **manufacturing variation**.

After replacing one or more injectors, re-enter the IMA codes.

The system must be configured via the diagnostic socket using the RENAULT CLIP diagnostic tool.

→ **PROCEDURE** to be followed **after one or more injectors are replaced**:

IMPORTANT

Cylinder no. 1 is located **at the engine flywheel end**.

- make a note of the **IMA** code(s) engraved on the injector body,
- enter these codes in the computer using command **SC002 Enter injector codes**, then follow the instructions given by the diagnostic tool,
- once the command has finished,
- **switch off the ignition**,
- wait **1 min** before switching on the ignition again,
- return to fault finding mode,
- select the **Computer identification** function from the main screen,
- check that the injector codes entered into the computer match those found on the bodies of the injectors:
- if the codes do not match, repeat the procedure for command **SC002 Enter injector codes**;
- if the codes do match, check system faults and clear any stored faults;
- if there are faults, deal with the present faults,
- clear the faults from the computer memory.

Carry out a road test followed by a complete check with the diagnostic tool.

IMPORTANT

Engines can only operate correctly if the correct IMA codes have been entered.

If no code has been entered or if an invalid code has been entered, the fault DF276 Injector code programming, is present and the engine will be in defect mode (speed heavily limited).

If another injector's code has been entered, the system will accept it but will make the wrong correction.

This could lead to engine damage, loss of performance and excessive pollution.

Always use the correct injector codes for the engine cylinder/computer.

End of operation.

REPLACING OR CLEANING THE EXHAUST GAS RECIRCULATION VALVE (EGR valve)

After the exhaust gas recirculation valve has been replaced or cleaned, the computer must store the new valve's offset and the offset measured the last time the ignition was switched off, which is when the valve closed. Using this data, the computer can detect whether the valve is clogged or seized.

When the valve is replaced or cleaned, clear the stored offsets so that the program uses the new valve's offset value.

The data linked to this program is compiled in the **Emission control/OBD** sub-function.

- **PR128: First EGR valve offset.**
- **PR129: Last EGR valve offset** or = **PR128** for a new valve.

Programming **PR128** and **PR129** must be cleared every time the exhaust gas recirculation valve is replaced.

→ **PROCEDURE:**

- run command **SC036 Reset programming;**
- select **EGR valve** as the operation type then follow the instructions given by the diagnostic tool,

Note:

When the reinitialisation is completed, the **Emission Control/OBD** sub-function displays:
PR128 = PR129 > 100%

When the command is finished,

- **switch off the ignition,**
- wait **1 minute** before switching on the ignition again.

When the ignition is next switched on again the new EGR valve offset is automatically reprogrammed.

Note:

When the new EGR valve offset has been reprogrammed, the **Emission control/OBD** sub-function displays:
10% < PR128 < 40%
PR129 > 100%

- start the vehicle to enable the latest EGR valve offset to be programmed,
- **switch off the ignition,**
- wait **1 minute** before switching on the ignition again.

The last EGR valve offset reprogrammed is stored on the computer.

Note:

When the last new EGR valve offset has been reprogrammed, the **Emission control/OBD** sub-function displays:
10% < PR128 < 40%
10% < PR129 < 40%

- then check the system faults, and clear any stored faults;
- otherwise deal with faults which are present and clear the faults in the computer memory.

Carry out a road test followed by a complete check with the diagnostic tool.

End of operation.

Fault finding – Replacement of components

REPLACING THE DAMPER VALVE

After replacing the damper valve, reconfigure the computer.

The system must be configured via the diagnostic socket using the RENAULT CLIP tool.

→ **PROCEDURE** to be followed **after the damper valve is replaced**:

- switch on the ignition,
- establish dialogue with the injection computer,
- run command **SC036 Reset programming**;
- select **Damper valve** as the operation type then follow the instructions given by the diagnostic tool,
- **switch off the ignition**,
- wait **1 min** before switching on the ignition again,
- check that **PR420 Damper valve error counter = 0**;
- then check the system faults, and clear any stored faults;
- if there are faults, deal with the present faults,
- clear the faults from the computer memory.

Carry out a road test followed by a complete check with the diagnostic tool.

End of operation.

Summary of available configuration readings

NOTES	Configuration readings are used to check the status of the configurations made. The configuration readings cannot be changed. The computer is configured as soon as the one of the vehicle's optional system components is operated. In the event of a fault, consult the interpretation of command RZ005 PROGRAMMING .
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LC009:	Air conditioning WITH OR WITHOUT
LC065:	Water in diesel fuel sensor WITH OR WITHOUT
LC120:	Cruise control WITH OR WITHOUT
LC121:	Speed limiter WITH OR WITHOUT

DIESEL INJECTION

Fault finding – Fault summary table

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WARNING LIGHT MANAGEMENT:

Management of instrument panel warning lights according to the faults notified.

Tool fault	DIAGNOSTIC TOOL DESCRIPTION	Associated DTC	LEVEL 1 FAULT WARNING LIGHT (Orange heater plugs On indicator light)	LEVEL 2 FAULT WARNING LIGHT (Red overheating warning light)	NO FAULT WARNING LIGHT ON	OBD WARNING LIGHT ON
DF001	Coolant temperature sensor circuit	115	CO.1/CC.0	...	...	CO.1/CC.0
DF003	Atmospheric pressure sensor circuit	105	1.DEF/ 2.DEF/3.DEF	...	...	1.DEF/ 2.DEF/ 3.DEF
DF004	Turbocharging pressure sensor circuit	235	CO.0/CC.1/ 1.DEF	...	...	...
DF005	Engine speed sensor circuit	335	...	1.DEF/ 2.DEF	...	...
DF007	Rail pressure sensor circuit	190	...	CO.1/CC.0/ 1.DEF	...	...
DF008	Pedal potentiometer circuit gang 1	225	CO.0/CC.1/ 1.DEF	...	2.DEF	...
DF009	Pedal potentiometer gang 2 circuit	2120	CO.0/CC.1/ 1.DEF	...	...	...
DF011	Sensor supply voltage no. 1	641	1.DEF/2.DEF	...	...	1.DEF/ 2.DEF
DF012	Sensor feed voltage no. 2	651	1.DEF/2.DEF	...	...	1.DEF/ 2.DEF
DF013	Sensor supply voltage no. 3	697	...	1.DEF/ 2.DEF	...	1.DEF/ 2.DEF
DF015	Main relay control circuit	685	1.DEF/2.DEF	...	...	...
DF017	Pre-postheating unit control circuit	380	CC.0/CC.1 / CO /1.DEF	...	...	...
DF025	Pre-postheating unit diagnostic line	670	X	...	...	...
DF037	Engine immobiliser	C167	...	X	...	...

DIESEL INJECTION

Fault finding – Fault summary table

13B

Tool fault	DIAGNOSTIC TOOL DESCRIPTION	Associated DTC	LEVEL 1 FAULT WARNING LIGHT (Orange heater plugs On indicator light)	LEVEL 2 FAULT WARNING LIGHT (Red overheating warning light)	NO FAULT WARNING LIGHT ON	OBD WARNING LIGHT ON
DF038	Computer	606	6.DEF/8.DEF/ 12.DEF	1.DEF/2.DEF/ 3.DEF/4.DEF/ 5.DEF/7.DEF/ 10.DEF/11.DEF/ 13.DEF/14.DEF	...	6.DEF
DF039	Inlet air temperature sensor circuit	110	...	CC.0/CO.1	...	...
DF040	Cylinder 1 injector circuit	201	CO	CC.1/CC.1.DEF	...	CO
DF041	Cylinder 2 injector circuit	202	CO	CC.1/CC.1.DEF	...	CO
DF042	Cylinder 3 injector circuit	203	CO	CC.1/CC.1.DEF	...	CO
DF043	Cylinder 4 injector circuit	204	CO	CC.1/CC.1.DEF	...	CO
DF046	Battery voltage	560	...	...	1.DEF/ 2.DEF	...
DF047	Computer feed voltage	615	...	...	1.DEF	...
DF049	Refrigerant sensor circuit	530	...	...	CC.1/CO.0	...
DF050	Brake switch circuit	571	...	...	1.DEF/ 2.DEF	...
DF051	Cruise control/speed limiter function	575	...	...	1.DEF/ 2.DEF/ 3.DEF	...
DF053	Rail pressure regulation function	89	3.DEF	CC.0/CC.1/CO/ 1.DEF/2.DEF/ 4.DEF/5.DEF/ 6.DEF/7.DEF	...	..
DF054	Turbocharging solenoid valve control circuit	33	CO/CC.0/CC.1/ 1.DEF/2.DEF/ 3.DEF/4.DEF/ 5.DEF	...	...	CC.0

DIESEL INJECTION

Fault finding – Fault summary table

13B

Tool fault	DIAGNOSTIC TOOL DESCRIPTION	Associated DTC	LEVEL 1 FAULT WARNING LIGHT (Orange heater plugs On indicator light)	LEVEL 2 FAULT WARNING LIGHT (Red overheating warning light)	NO FAULT WARNING LIGHT ON	OBD WARNING LIGHT ON
DF055	Turbocharging pressure regulation circuit	243	1.DEF/2.DEF	...	...	..
DF056	Air flow sensor circuit	100	CO.0/CC.1/ 1.DEF/2.DEF	...	...	CO.0/CC.1/ 1.DEF/ 2.DEF
DF057	Water in diesel fuel detector circuit	2264	...	...	X	...
DF059	Misfiring on cylinder 1	301	...	...	X	...
DF060	Misfiring on cylinder 2	302	...	...	X	...
DF061	Misfiring on cylinder 3	303	...	...	X	...
DF062	Misfiring on cylinder 4	304	...	...	X	...
DF069	Impact detected signal	1620	...	1.DEF	...	...
DF070	Clutch switch circuit	830	...	...	1.DEF/ 2.DEF	...
DF086	Coolant pump relay control circuit	2600	CO.0/CC.1	...	...	...
DF091	Vehicle speed signal	500	...	...	1.DEF/ 2.DEF 3.DEF/ 4.DEF	...
DF097	Camshaft sensor circuit	340	1.DEF/2.DEF	...	...	...
DF118	EGR solenoid valve servo-control	409	2.DEF	...	1.DEF	...
DF195	Camshaft/engine speed sensor consistency	16	1.DEF	...	...	...
DF209	EGR valve position sensor circuit	486	...	...	CO.0/ CC.1/ 1.DEF	CO.0/CC.1/ 1.DEF

DIESEL INJECTION

Fault finding – Fault summary table

13B

Tool fault	DIAGNOSTIC TOOL DESCRIPTION	Associated DTC	LEVEL 1 FAULT WARNING LIGHT (Orange heater plugs On indicator light)	LEVEL 2 FAULT WARNING LIGHT (Red overheating warning light)	NO FAULT WARNING LIGHT ON	OBD WARNING LIGHT ON
DF226	Damper valve circuit	638	CO/CC/CC.0/ CC.1/1.DEF/ 2.DEF/3.DEF	...	...	...
DF250	ESP function	C122	...	...	1.DEF/ 2.DEF	...
DF272	EGR valve control circuit	403	1.DEF	...	2.DEF	...
DF276	Injector code programming	611	1.DEF/2.DEF	...	...	...
DF485	Catalytic converter fault finding	422	...	...	X	...
DF532	Alternator charge signal	2502	CC.0/CC.1/ 1.DEF/2.DEF	...	...	...
DF619	EGR valve jammed open	2142	X	...	...	...
DF620	EGR valve fouled	2141	X	...	...	...
DF621	EGR valve is jammed open (OBD fault)	2413	...	...	X	X
DF652	Turbine upstream temperature sensor circuit	242A	CC.0/CO.1			
DF778	Turbine upstream temperature control	242B	1.DEF/2.DEF			
DF1070	Cold loop	534				

DF001 PRESENT OR STORED	<u>COOLANT TEMPERATURE SENSOR CIRCUIT</u> CC.0 : Short circuit to earth CO.1 : Short circuit or open circuit to + 12 V
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NOTES	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present:</p> <ul style="list-style-type: none"> – when an attempt is made to start the engine, – when the engine is running. <p>Special notes: If the fault is present:</p> <ul style="list-style-type: none"> – the coolant temperature: PR064 Coolant temperature is fixed at 119°C, – the preheating phase is greater than 10 seconds, – the low speed motor-driven fan assembly (GMV 1) is continuously supplied, – if there is a fault with GMV 1, then start GMV 2 for vehicles with air conditioning. – the level 1 warning light is lit, – the OBD warning light will illuminate after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting 1 minute). <p>Use bornier Ele. 1681 or Ele. 1590 for all operations on the computer connectors.</p>
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Check the connections of the **coolant temperature sensor 4-track connector**.

Check the injection computer connections.

Repair if necessary.

Measure the **resistance** of the **coolant temperature sensor** between **tracks 2 and 3** of its black connector.

Replace the sensor if its resistance is not approximately:

75780 ± 7000 Ω at - 40°C
12460 ± 122 Ω at - 10°C
2252 ± 112 Ω at 25°C
811 ± 39 Ω at 50°C
283 ± 8 Ω at 80°C
115 ± 3 Ω at 110°C
87 ± 2 Ω at 120°C

Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Injection computer brown 48-track connector B track F2	→	Track 3 coolant temperature sensor
Injection computer brown 48-track connector B track H1	→	Track 2 coolant temperature sensor

Repair if necessary.

If the fault is still present, replace the coolant temperature sensor.

AFTER REPAIR	<p>Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF003 PRESENT OR STORED	<u>ATMOSPHERIC PRESSURE SENSOR CIRCUIT</u> 1.DEF: Signal outside upper limit 2.DEF: Signal outside lower limit 3.DEF: Inconsistent signal
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NOTES	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present:</p> <ul style="list-style-type: none"> – when an attempt is made to start the engine, – when the engine is running. <p>Special notes: The atmospheric pressure sensor is integrated into the injection computer and cannot be separated. If the fault is present:</p> <ul style="list-style-type: none"> – there is light smoke at the exhaust, – the atmospheric pressure value changes to safe mode, PR035 Atmospheric pressure = 750 mbar. – the level 1 warning light is lit, – the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting 1 minute). <p>Use bornier Ele. 1681 or Ele. 1590 for all operations on the computer connectors.</p>
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Disconnect the injection computer and check the condition of the contacts and connector.
Repair if necessary.
Display the value of parameter **PR041 Turbocharger pressure**.
If this value is stuck at **750 mbar**, refer to interpretation of fault **DF004 Turbocharging pressure sensor circuit**.
If the fault is still present, contact the Techline.

AFTER REPAIR	<p>Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF004 PRESENT OR STORED	<u>TURBOCHARGING PRESSURE SENSOR CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Inconsistency of the signal
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present: <ul style="list-style-type: none"> – when an attempt is made to start the engine, – when the engine is running.
	Special notes: If the fault is present: <ul style="list-style-type: none"> – the EGR function is inhibited, – the turbocharging pressure sensor is in defect mode, PR041 = 750 mbar, – the level 1 warning light is lit. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.
	Order of priority in the event of more than one fault: Deal with fault DF011 Sensor supply voltage no. 1 first if it is present or stored.

CO.0	NOTES	None
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Check the turbocharger pressure sensor connections. Check the injection computer connections. Repair if necessary.		
Check the continuity and insulation against earth of the following connections:		
Injection computer brown 48-track connector B, track G4	————→	Track 3 turbocharging pressure sensor connector
Injection computer brown 48-track connector B, track K2	————→	Track 4 turbocharger pressure sensor connector
Repair if necessary.		
If the fault is still present, replace the turbocharging pressure sensor.		

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF004 CONTINUED 1	
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CC.1	NOTES	None
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Check the turbocharger pressure sensor connections.
Check the injection computer connections.
Repair if necessary.

Check **the continuity and insulation against + 12 volts** of the following connections:

Injection computer brown 48-track connector B, track G4	→	Track 3 turbocharging pressure sensor connector
Injection computer brown 48-track connector B, track D4	→	Track 1 turbocharging pressure sensor connector
Injection computer brown 48-track connector B, track K2	→	Track 4 turbocharger pressure sensor connector

Repair if necessary.

If the fault is still present, replace the turbocharging pressure sensor.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF004 CONTINUED 2	
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1.DEF	NOTES	None
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In the event of a combination of faults with DF003 Atmospheric pressure sensor circuit, display parameter PR041 Turbocharging pressure.

If this value is locked at **750 mbar** and **PR035 Atmospheric pressure is displaying a different value**, replace the turbocharging pressure sensor.

Check the turbocharger pressure sensor connections.
Check the injection computer connections.
Repair if necessary.

Check the **continuity and the absence of interference resistance** of the following connections:

Injection computer brown 48-track connector B, track G4	—————▶	Track 3 turbocharging pressure sensor connector
Injection computer brown 48-track connector B, track D4	—————▶	Track 1 turbocharging pressure sensor connector
Injection computer brown 48-track connector B, track K2	—————▶	Track 4 turbocharger pressure sensor connector

Repair if necessary.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF005 PRESENT OR STORED	<u>ENGINE SPEED SENSOR CIRCUIT</u> 1.DEF: No signal 2.DEF: Inconsistent signal
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NOTES	<p>Conditions for applying the fault finding procedure to a stored fault: The fault is declared present:</p> <ul style="list-style-type: none"> – when an attempt is made to start the engine, – when the engine is running. <p>Special notes: Use bornier Ele. 1681 or Ele. 1590 for all operations on the computer connectors. The engine speed sensor is consistent with the camshaft sensor. If the fault is present:</p> <ul style="list-style-type: none"> – it is impossible to start the engine or the engine stops, – the level 2 warning light is lit.
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<p>Check the engine speed sensor connections.</p> <p>Check the injection computer connections.</p> <p>If one of the connectors is 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.</p>						
<p>Check that the sensor is correctly mounted and that the flywheel target is not damaged.</p> <p>Check that the gap between the engine speed sensor and the flywheel is 0.5 to 1.8 mm.</p>						
<p>Measure the resistance of the engine speed sensor between terminals A and B of its black connector.</p> <p>If the winding resistance is not between 510 Ω and 850 Ω at an engine temperature of 20°C, replace the engine speed sensor.</p>						
<p>Check for continuity and the absence of interference resistance of the following connections:</p> <table><tr><td>Injection computer brown 48-track connector B track B1</td><td>————→</td><td>Track A engine speed sensor</td></tr><tr><td>Injection computer brown 48-track connector B track C1</td><td>————→</td><td>Track B engine speed sensor</td></tr></table> <p>If the connection or connections 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.</p>	Injection computer brown 48-track connector B track B1	————→	Track A engine speed sensor	Injection computer brown 48-track connector B track C1	————→	Track B engine speed sensor
Injection computer brown 48-track connector B track B1	————→	Track A engine speed sensor				
Injection computer brown 48-track connector B track C1	————→	Track B engine speed sensor				
<p>Repair if necessary.</p> <p>If the fault is still present, contact the Techline.</p>						

AFTER REPAIR	<p>Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF007 PRESENT OR STORED	<u>RAIL PRESSURE SENSOR CIRCUIT</u> CC.0 : Short circuit to earth CO.1 : Short circuit or open circuit to + 12 V 1.DEF: Offset at minimum threshold
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after repeated engine starts or with the engine running.
	Special notes: Use bornier Ele. 1681 or Ele. 1590 for all operations on the computer connectors. If the fault is present: <ul style="list-style-type: none"> – the engine will stop immediately, – it is impossible to restart, – the level 2 warning light is lit.
	Priorities when dealing with a number of faults: Deal with fault DF013 Sensor supply voltage no. 3 first, if it is present or stored.

CC.0	NOTES	None
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Check the rail pressure sensor connectors. Check the injection computer connections. Repair if necessary.
Check the continuity and insulation to earth of the following connections: <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="text-align: center;"> Injection computer brown 48-track connector B track G3 </div> <div style="text-align: center;"> —————> </div> <div style="text-align: center;"> Track 2 rail pressure sensor </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="text-align: center;"> Brown 48-track connector B injection computer track A4 </div> <div style="text-align: center;"> —————> </div> <div style="text-align: center;"> Track 3 rail pressure sensor </div> </div>
Repair if necessary.
If the fault is still present, replace the rail pressure sensor and tighten to 35 ± 5 Nm . Follow the recommended safety advice (see cleanliness advice).

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF007 CONTINUED 1	
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CO.1	NOTES	None
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Check the rail pressure sensor connectors.
Check the injection computer connections.
Repair if necessary.

Check **for continuity** and **insulation to + 12 V** on the following connections:

Injection computer brown 48-track connector B track G3	→	Track 2 rail pressure sensor
Injection computer brown 48-track connector B track C4	→	Track 1 rail pressure sensor
Injection computer brown 48-track connector B track A4	→	Track 3 rail pressure sensor

Repair if necessary.

If the fault is still present, replace the rail pressure sensor and tighten to **35 ± 5 Nm**.
Observe the safety advice in the Introduction.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF007 CONTINUED 2	
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1.DEF	NOTES	None
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Check the rail pressure sensor connectors.
Check the injection computer connections.
Repair if necessary.

Check for **continuity** and absence of **interference resistance** of the following connections:

Injection computer brown 48-track connector B track G3	→	Track 2 rail pressure sensor
Injection computer brown 48-track connector B, track A4	→	Track 3 rail pressure sensor
Injection computer brown 48-track connector B, track C4	→	Track 1 rail pressure sensor

Repair if necessary.

With the ignition on, and engine switched off for over **1 minute**:
Display the parameter **PR038 Rail pressure** in the **Fuel circuit, Engine control function** tab,
– If the value is below **50 bar**, the sensor is in order.
In this case, contact the Techline.
– If the pressure is above **50 bar**, replace the rail pressure sensor and tighten to **35 ± 5 Nm**.
Follow the recommended safety advice (see **cleanliness advice**).

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF008 PRESENT OR STORED	<u>PEDAL POTENTIOMETER CIRCUIT GANG 1</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Inconsistency of the signal 2.DEF: Accelerator pedal sensor locked
--	---

NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a series of full-load/no-load actions on the accelerator pedal.
	Special notes: Turbocharging, Passenger Compartment Heating Resistor activation and cruise control/speed limiter are not authorised. If CO.0, CC.1, 1.DEF is present the level 1 warning light is lit. The engine speed is set at 1,400 rpm if there is a fault on gang 1 and 2 of the pedal potentiometer and the engine torque is limited. Use bornier Ele. 1681 or Ele. 1590 for all operations on the computer connectors.
	Priorities when dealing with a number of faults: Deal with fault DF011 Sensor supply voltage no. 1 first if it is present or stored.

WARNING

This fault may appear if the wiring harness has been damaged.
Follow the procedure described in the Wiring Check in the Introduction.
This check enables the condition and the conformity of the engine wiring harness to be checked.


CO.0	NOTES	Priorities when dealing with a number of faults: If fault DF009 Pedal potentiometer circuit gang 2 is present at the same time, check that the pedal sensor connector is connected correctly.
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Check the pedal potentiometer connections.
Check the injection computer connections.
Repair if necessary.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF008
CONTINUED 1**

Check the **continuity** and **insulation to earth** of the following connections:

Injection computer 32-track black connector A, **track H2**  **Track 4** pedal potentiometer connector

Injection computer 32-track black connector A, **track G2**  **Track 3** pedal potentiometer connector

Repair if necessary.

Measure the **resistance** on the pedal potentiometer on **gang 1** between **tracks 5** and **3**.
Replace the pedal potentiometer if the resistance is not approximately **1.7 ± 0.9 kΩ**.


CC.1


NOTES


None

Check the pedal potentiometer connections.
Check the injection computer connections.
Repair if necessary.

Check **for continuity** and **insulation to + 12 V** on the following connections:

Injection computer 32-track black connector A, **track H2**  **Track 4** pedal potentiometer connector

Injection computer 32-track black connector A, **track G2**  **Track 3** pedal potentiometer connector

Injection computer 32-track black connector A, **track H3**  **Track 5** pedal potentiometer connector

Repair if necessary.

Measure the **resistance** on the pedal potentiometer on **gang 1** between **tracks 5** and **3**.
Replace the pedal potentiometer if the resistance is not approximately **1.7 ± 0.9 kΩ**.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF008 CONTINUED 2	
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1.DEF	NOTES	None
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Check the pedal potentiometer connections.
Check the injection computer connections.
Repair if necessary.

Check for **continuity** and absence of **interference resistance** of the following connections:

Injection computer black 32-track connector A, track H2	—————▶	Track 4 pedal potentiometer sensor
Injection computer black 32-track connector A, track G2	—————▶	Track 3 pedal potentiometer sensor
Injection computer black 32-track connector A, track H3	—————▶	Track 5 pedal potentiometer sensor
Injection computer black 32-track connector A, track F3	—————▶	Track 1 pedal potentiometer sensor
Injection computer black 32-track connector A, track F2	—————▶	Track 2 pedal potentiometer sensor
Injection computer black 32-track connector A, track F4	—————▶	Track 6 pedal potentiometer sensor

If the fault is still present, replace the pedal potentiometer.

2.DEF	NOTES	None
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Check the mechanical condition of the accelerator pedal:

- locked in full load position,
- with the pedal blocked by an external component.

Repair if necessary.

Vary the position of the pedal and refer to the conformity check in order to check the operating values of the accelerator pedal potentiometer.

If the values displayed are inconsistent, replace the accelerator pedal potentiometer.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
---------------------	--

**DF008
CONTINUED 3**

2.DEF

NOTES

The brake pedal has been depressed while the accelerator is depressed and jammed.

Check the brake light switch.

This is a test procedure designed to detect an accelerator pedal that is jammed in the depressed position. It monitors the accelerator pedal in relation to the brake pedal.

If the test procedure detects depression of the brake pedal over **600 ms**, it registers a fault which is stored in the computer. While this fault is present (both pedals depressed simultaneously) the engine switches to limp home mode and the engine speed is set at **1,400 rpm**.

Once the fault is no longer present (e.g. brake and accelerator pedals released) safe mode is deactivated and the engine immediately regains its ability to respond to speed/torque requests.

This fault may occur even if the accelerator pedal is not jammed, if there is driver error during use:

- "Heel-and-toe" type driving,
- Vehicle with driving school option,

The procedure in this case should be to clear the fault and take another reading.

If the fault is still present, check the mechanical condition of the accelerator pedal:

- locked in full load position,
- with the pedal blocked by an external component.

Repair if necessary.

Vary the position of the pedal and refer to the conformity check in order to check the operating values of the accelerator pedal potentiometer.

If the values displayed are inconsistent, replace the accelerator pedal potentiometer.

AFTER REPAIR

Deal with any faults.

Carry out a road test followed by another check with the diagnostic tool.

DF009 PRESENT OR STORED	<u>PEDAL POTENTIOMETER CIRCUIT GANG 2</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Inconsistency of the signal
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a series of full-load/no-load actions on the accelerator pedal.
	Special notes: Turbocharging, passenger compartment heating resistor activation and the cruise control/speed limiter are not activated. If the fault is present, the level 1 warning light is lit. The engine speed is set at 1,400 rpm if there is a fault on gang 1 and 2 of the pedal potentiometer and the engine torque is limited. Use bournier Ele. 1681 or Ele. 1590 for all operations on the computer connectors.
	Priorities when dealing with a number of faults: Deal with fault DF012 Sensor feed no. 2 voltage first, if it is present or stored.

WARNING

This fault may appear if the wiring harness has been damaged.
Follow the procedure described in the Wiring Check in the Introduction.
This check enables the condition and the conformity of the engine wiring harness to be checked.


CO.0	NOTES	Priorities when dealing with a number of faults: If fault DF008 Pedal potentiometer circuit track 1 is present at the same time, check that the sensor is connected correctly.
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Check the pedal potentiometer connections.
Check the injection computer connections.
Repair if necessary.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
---------------------	--

DF009 CONTINUED 1

Check the **continuity** and **insulation to earth** of the following connections:

Injection computer 32-track black connector A
track F3  **Track 1** pedal potentiometer connector

Injection computer 32-track black connector A
track F2  **Track 2** pedal potentiometer connector

Repair if necessary.

Measure the **resistance** on the pedal potentiometer on **gang 2** between **tracks 2** and **6**.
Replace the pedal potentiometer if the resistance is not approximately **2.85 ± 2.05 kΩ**.

CC.1


NOTES


Priorities when dealing with a number of faults:


If fault **DF008 Pedal potentiometer circuit track 1** is present at the same time, check that the sensor is connected correctly.

Check the pedal potentiometer connections.
Check the injection computer connections.
Repair if necessary.

Check **for continuity** and **insulation to + 12 V** on the following connections:

Injection computer 32-track black connector A
track F3  **Track 1** pedal potentiometer connector

Injection computer 32-track black connector A
track F2  **Track 2** pedal potentiometer connector

Injection computer 32-track black connector A,
track F4  **Track 6** pedal potentiometer connector

Repair if necessary.

Measure the **resistance** on the pedal potentiometer on **gang 2** between **tracks 2** and **6**.
Replace the pedal potentiometer if its resistance is not approximately: **2.85 ± 2.05 kΩ**.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF009 CONTINUED 2	
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1.DEF	NOTES	None
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Check the rail pressure sensor connectors.
Check the injection computer connections.
Repair if necessary.

Check for **continuity** and absence of **interference resistance** of the following connections:

Injection computer black 32-track connector A, track F3	—————▶	Track 1 pedal potentiometer sensor
Injection computer black 32-track connector A, track F2	—————▶	Track 2 pedal potentiometer sensor
Injection computer black 32-track connector A, track F4	—————▶	Track 6 pedal potentiometer sensor
Injection computer black 32-track connector A, track H2	—————▶	Track 4 pedal potentiometer sensor
Injection computer black 32-track connector A, track G2	—————▶	Track 3 pedal potentiometer sensor
Injection computer black 32-track connector A, track H3	—————▶	Track 5 pedal potentiometer sensor

Repair if necessary.

If the fault is still present, replace the pedal potentiometer.

AFTER REPAIR	<p>Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF011 PRESENT OR STORED	<u>SENSOR SUPPLY VOLTAGE NO. 1</u> 1.DEF: Sensor reference voltage too low 2.DEF: Sensor reference voltage too high
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after carrying out a road test or after several attempts at starting the engine.
	Special notes: If the fault is present: – the cruise control/speed limiter function is inhibited, – turbocharging is inhibited, – the engine speed is limited, – the level 1 warning light is lit, – the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting 1 minute). Use bournier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

WARNING

This fault may appear if the wiring harness has been damaged.
Follow the procedure described in the Wiring Check in the Introduction.
This check enables the condition and the conformity of the engine wiring harness to be checked.

1.DEF 2.DEF	NOTES	Priorities when dealing with a number of faults: If fault DF008 Pedal potentiometer circuit track 1 is present at the same time, check that the sensor is connected correctly. In the event of the simultaneous presence of fault DF004 Turbocharging pressure sensor circuit , check that the turbocharger pressure sensor circuit connector is connected correctly.
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The sensors connected to **supply no. 1** are:

- **Turbocharger pressure sensor.**
- **Accelerator pedal potentiometer sensor, gang 1.**

To locate a faulty sensor and/or connection, disconnect one of these sensors then check whether the fault becomes stored.

If the fault is still present, start the operation again with the other sensor.

(Wait a few seconds after each disconnection so that the computer can carry out the check).

If the fault is stored after a disconnection, replace the faulty sensor or repair its connection.

Clear the faults created by the multiple disconnections.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF011 CONTINUED

If the fault is still present when both these sensors have been disconnected:

1. Check the **earth insulation** of the following connections:

Injection computer brown 48-track connector B, track G4	→	Track 3 of the turbocharger pressure sensor
Injection computer brown 48-track connector B, track K2	→	Track 4 of the turbocharger pressure sensor
Injection computer black 32-track connector A, track G2	→	Track 3 of the accelerator pedal potentiometer gang 1
Injection computer black 32-track connector A, track H2	→	Track 4 of the accelerator pedal potentiometer gang 1

Repair if necessary.

2. Check the **insulation from + 12 V** of the following connections:

Injection computer brown 48-track connector B, track K2	→	Track 4 of the turbocharger pressure sensor
Injection computer brown 48-track connector B, track D4	→	Track 1 of the turbocharger pressure sensor
Injection computer brown 48-track connector B, track G4	→	Track 3 of the turbocharger pressure sensor
Injection computer black 32-track connector A, track H3	→	Track 5 of the accelerator pedal potentiometer gang 1
Injection computer black 32-track connector B, track H2	→	Track 4 of the accelerator pedal potentiometer gang 1
Injection computer black 32-track connector B, track G2	→	Track 3 of the accelerator pedal potentiometer gang 1

Repair if necessary.

3. Check the **insulation** between the following connections **after disconnecting the sensors** and the injection computer:

- tracks **1** and **3** of the **turbocharging pressure sensor connector**,
- tracks **3** and **5** of the **pedal track 1 sensor connector**.

If these checks do not produce the correct results, replace the faulty sensor(s).

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF012 PRESENT OR STORED	SENSOR SUPPLY VOLTAGE No. 2 1.DEF: Sensor reference voltage too low 2.DEF: Sensor reference voltage too high
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present following a road test or after attempting to start the engine several times.
	Special notes: If the fault is present: <ul style="list-style-type: none">– the EGR functions and passenger compartment heating resistance functions are inhibited,– the cruise control/speed limiter function is inhibited,– the engine speed is limited,– the level 1 warning light is lit,– the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting 1 minute). Use bournier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

WARNING

This fault may appear if the wiring harness has been damaged.
Follow the procedure described in the Wiring Check in the Introduction.
This check enables the condition and the conformity of the engine wiring harness to be checked.

The sensors connected to **feed no. 2** are:

- **EGR valve position sensor.**
- **Accelerator pedal potentiometer sensor gang 2.**
- **Refrigerant pressure sensor.**

To locate a faulty sensor and/or connection, disconnect one of these sensors then check whether the fault becomes stored.

If the fault is still present, repeat the operation with the other sensors.

(Wait a few seconds after each disconnection so that the computer can carry out the check).

If the fault is stored after a disconnection, replace the faulty sensor or repair its connection.

Clear the faults created by the multiple disconnections.

Check the condition of the connector of the EGR valve position sensor, component code **1460**, of the accelerator pedal potentiometer sensor gang 2, component code **921** and of the refrigerant pressure sensor, component code **1202**.

Check the condition 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.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF012 CONTINUED 1	
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If the fault is still present when the three sensors have been disconnected: 1. Check the earth insulation of the following connections:	
Injection computer brown 48-track connector B, track F4	→ Track 2 of the EGR valve connector
Injection computer brown 48-track connector B, track J2	→ Track 6 of the EGR valve connector
Injection computer black 32-track connector A, track F2	→ Track 2 of the accelerator pedal potentiometer gang 2
Injection computer black 32-track connector A, track F3	→ Track 1 of the accelerator pedal potentiometer gang 2
Injection computer brown 48-track connector B, track F3	→ Track B of the refrigerant pressure sensor
Injection computer brown 48-track connector B, track F1	→ Track C of the refrigerant pressure sensor
Repair if necessary.	

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
---------------------	--

**DF012
CONTINUED 2**

2. Check the **insulation from + 12 V** of the following connections:

Injection computer brown connector B track F4	→	Track 2 of the EGR valve connector
Injection computer brown connector B track J2	→	Track 6 of the EGR valve connector
Injection computer grey connector C track C2	→	Track 4 of the EGR valve connector
Injection computer black connector A, track F2	→	Track 2 of the accelerator pedal potentiometer gang 2
Injection computer black connector A, track F3	→	Track 1 of the accelerator pedal potentiometer gang 2
Injection computer black connector A, track F4	→	Track 6 of the accelerator pedal potentiometer gang 2
Injection computer brown 48-track connector B, track F3	→	Track B of the refrigerant pressure sensor
Injection computer brown 48-track connector B, track F1	→	Track C of the refrigerant pressure sensor
Injection computer grey 32-track connector C, track C3	→	Track A of the refrigerant pressure sensor

Repair if necessary.

3. Check the **insulation** between the following connections **after disconnecting the sensors and the injection computer**:

- tracks **2** and **6** of the **pedal track 2 sensor** connector.
 - tracks **2** and **4** of the **EGR valve position sensor** connector.
 - tracks **B** and **A** of the **refrigerant pressure sensor** connector.
- If these checks do not produce the correct results, replace the faulty sensor(s).
If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF013 PRESENT OR STORED	<u>SENSOR SUPPLY VOLTAGE No. 3</u> 1.DEF: Sensor reference voltage too low 2.DEF: Sensor reference voltage too high
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present following a road test or after attempting to start the engine several times.
	Special notes: If the fault is present: <ul style="list-style-type: none">– the EGR function is inhibited,– the engine stops,– the level 2 warning light is lit,– the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting 1 minute). Use bournier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

WARNING

This fault may appear if the wiring harness has been damaged.

Follow the procedure described in the Wiring Check in the Introduction.

This check enables the condition and the conformity of the engine wiring harness to be checked.

The sensors connected to **supply no. 3** are:

- **Rail pressure sensor.**
- **Air flow sensor..**

To locate a faulty sensor and/or connection, disconnect one of these sensors then check whether the fault becomes stored.

If the fault is still present, repeat the operation with the other sensors.

(Wait a few seconds after each disconnection so that the computer can carry out the check).

If the fault is stored after a disconnection, replace the faulty sensor or repair its connection.

Clear the faults created by the multiple disconnections.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF013
CONTINUED**

If the fault is still present when both these sensors have been disconnected:

1. Check the **earth insulation** of the following connections:

Injection computer brown 48-track connector B, track G3	————→	Track 2 of the rail pressure sensor
Injection computer 48-track brown connector B, track A4	————→	Track 3 of the rail pressure sensor
Injection computer brown 48-track connector B, track G1	————→	Track 5 of the air flowmeter
Injection computer 48-track brown connector B, track B4	————→	Track 3 of the air flowmeter
Injection computer brown 48-track connector B, track E2	————→	Track 2 of the air flow sensor

Repair if necessary.

2. Check the **insulation from + 12 V** of the following connections:

Injection computer brown connector B track G3	————→	Track 2 of the rail pressure sensor
Injection computer brown connector B track A4	————→	Track 3 of the rail pressure sensor
Injection computer brown connector B, track C4	————→	Track 1 of the rail pressure sensor
Injection computer brown connector B track G1	————→	Track 5 of the air flowmeter
Injection computer brown connector B track B4	————→	Track 3 of the air flowmeter
Injection computer brown connector B track E2	————→	Track 2 of the air flow sensor
Injection computer brown connector B track L4	————→	Track 6 of the air flowmeter

Repair if necessary.

3. Check the **insulation** between the following connections **after disconnecting the sensors and the injection computer**:

Tracks **1** and **3** of the **rail pressure sensor** and tracks **2** and **3** of the **air flow sensor connector**.

If these checks do not produce the correct results, replace the faulty sensor(s).


If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF015 PRESENT OR STORED	<u>MAIN RELAY control CIRCUIT</u> 1.DEF: Relay cut off too soon 2.DEF: Relay cut off too late
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NOTES	Conditions for applying the fault finding procedure to stored faults: Only deal with this fault if it is stored.
	Special notes: The injection control unit supply relay (50A) is located on the relay plate in the engine connection unit, under the Protection and Switching Unit. If the fault is present, the level 1 warning light is lit. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

Check the Protection and Switching Unit connections. Check the injection computer connections. Repair if necessary. Check the condition of the battery terminals making sure they are correctly tightened. Check the condition of the injection supply relay and its mounting. Check the 5D (5A) + after ignition feed injection fuse located on the UPC. Repair if necessary.	
Check the continuity , and absence of interference resistance of the following connection: Injection computer brown 48-track connector B —————▶ Track 2 injection supply relay mounting track E1	
Repair if necessary. If the fault is still present, contact the Techline.	
 IMPORTANT!	WARNING If the UPC does not detect the injection computer frames the engine fan assembly 1 will be switched on until the battery is completely discharged. In the event that engine cooling fan 1 is not working, GMV 2 will be supplied.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF017 PRESENT OR STORED	<u>PRE-POSTHEATING UNIT CONTROL CIRCUIT</u> CC.1 : Short circuit to + 12 V CC.0 : Open circuit or short circuit to earth CO : Open circuit 1.DEF: Internal electronic fault
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after attempting to start the engine several times or after an actuator command AC001 Preheating unit .
	Special notes: If the fault is present, it is difficult or even impossible to start the vehicle when cold. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

CC.1	NOTES	None
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Check the pre-postheating unit connections and the heating plug supply cables. Check the injection computer connections. Repair if necessary.
Check the condition of the F2 (70A) supply fuse on the power supply fuse board. Check the continuity and insulation against + 12 V of the following connections: Injection computer grey 32-track connector C, track E2 —————▶ Track 8 preheating unit Injection computer grey 32-track connector C, track A4 —————▶ Track 3 preheating unit
Repair if necessary. If the fault is still present, replace the pre-postheating unit.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF017 CONTINUED	
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CC.0 CO	NOTES	<p>Special notes: If the preheating unit is short circuited to earth, there is a possibility that the plugs will be permanently activated. The heater plugs and the engine may be damaged.</p>
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Check the pre-postheating unit connections and the heating plug supply cables.
Check the injection computer connections.
Repair if necessary.

Check the condition of the **F2 (70A)** supply fuse on the power supply fuse board.
Check the **continuity and insulation to earth** of the following connections:

Injection computer grey 32-track connector C, **track A4** —————> **Track 3** preheating unit

Injection computer grey 32-track connector C, **track E2** —————> **Track 8** preheating unit

Repair if necessary.

If the fault is still present, replace the pre-postheating unit.

1.DEF	NOTES	None
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Check the pre-postheating unit connections and the heating plug supply cables.
Check the injection computer connections.
Repair if necessary.

Check the condition of the **F2 (70A)** supply fuse on the power supply fuse board.
Check the **continuity and insulation to earth** of the following connections:

Injection computer grey 32-track connector C, **track A4** —————> **Track 3** preheating unit

Injection computer grey 32-track connector C, **track E2** —————> **Track 8** preheating unit

Repair if necessary.

If the fault is still present, replace the pre-postheating unit.

AFTER REPAIR	<p>Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF025 PRESENT OR STORED	<u>PRE-POSTHEATING UNIT DIAGNOSTIC LINE</u>
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NOTES	<p>Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after several attempts to start the engine, or following actuator command AC001 Preheating unit.</p> <p>Special notes: It is difficult or even impossible to start the engine when cold. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.</p>
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<p>Check the pre-postheating unit connections.</p> <p>Check the connections on all the heater plugs.</p> <p>Repair if necessary.</p>												
<p>Check fuse F2 (70A) on the power supply fuse board.</p> <p>Check the resistance of the heater plugs:</p> <p>Replace any plug whose resistance is not below 2 Ω at + 20°C.</p> <p>Check the continuity and absence of interference resistance of the following connections:</p> <table><tr><td>preheating unit track 1</td><td>————→</td><td>cylinder 3 heater plug</td></tr><tr><td>preheating unit track 2</td><td>————→</td><td>cylinder 1 heater plug</td></tr><tr><td>preheating unit track 6</td><td>————→</td><td>cylinder 4 heater plug</td></tr><tr><td>preheating unit track 7</td><td>————→</td><td>cylinder 2 heater plug.</td></tr></table> <p>Check for presence of + 12 V on track 4 of the pre-postheating unit (via fuse F2, 70A).</p>	preheating unit track 1	————→	cylinder 3 heater plug	preheating unit track 2	————→	cylinder 1 heater plug	preheating unit track 6	————→	cylinder 4 heater plug	preheating unit track 7	————→	cylinder 2 heater plug.
preheating unit track 1	————→	cylinder 3 heater plug										
preheating unit track 2	————→	cylinder 1 heater plug										
preheating unit track 6	————→	cylinder 4 heater plug										
preheating unit track 7	————→	cylinder 2 heater plug.										
<p>If the fault is still present,</p> <p>Check the injection computer connections.</p> <p>Check the following connections for continuity and make sure there is no extraneous resistance:</p> <table><tr><td>Injection computer grey 32-track connector C, track A4</td><td>————→</td><td>track 3 preheating unit connector</td></tr><tr><td>Injection computer grey, 32-track connector C, track E2</td><td>————→</td><td>track 8 of the preheating unit connector</td></tr></table> <p>If the fault is still present, replace the pre-postheating unit.</p>	Injection computer grey 32-track connector C, track A4	————→	track 3 preheating unit connector	Injection computer grey, 32-track connector C, track E2	————→	track 8 of the preheating unit connector						
Injection computer grey 32-track connector C, track A4	————→	track 3 preheating unit connector										
Injection computer grey, 32-track connector C, track E2	————→	track 8 of the preheating unit connector										

AFTER REPAIR	<p>Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF037 PRESENT OR STORED	<u>ENGINE IMMOBILISER</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after an attempt to start engine.
	Special notes: It is impossible to start the vehicle. If the fault is present, the level 2 warning light will light up. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

Check the UCH connections.
Check the injection computer connections.
Repair if necessary.

Test the multiplex network (see **38B, Multiplexing**) and carry out a complete fault finding on the UCH.
Refer to the UCH Technical Note (see **87B, Passenger compartment connection unit**) if the fault is displayed as present.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF038 PRESENT OR STORED	<p>COMPUTER</p> <ul style="list-style-type: none">1.DEF : Permanent high signal2.DEF : Permanent low signal3.DEF : Configuration absent or incorrect4.DEF : Analogue/digital converter fault5.DEF : Dialogue disrupted6.DEF : EEPROM fault7.DEF : Watchdog activation8.DEF : Signal outside upper limit10.DEF : Injector control11.DEF : Injector control condenser fault12.DEF : Injection fault under deceleration13.DEF : Initialisation error14.DEF : Open circuit or internal electronic fault.
NOTES	<p>Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after one attempt to start the engine, or with the engine running.</p> <p>Special notes: If 6.DEF, 8.DEF or 12.DEF are present the level 1 warning light is lit. If one of the other faults is present, the level 2 warning light comes on. If 6.DEF is still present, the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting for 1 minute). Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.</p> <p>Priority when dealing with a number of faults: Deal with fault DF046 Battery voltage first if it is present or stored.</p>
1.DEF to 5.DEF 7.DEF, 8.DEF 10.DEF 12.DEF to 14.DEF	<p>Check the injection computer connections and the continuity of all the supplies. Repair if necessary. Clear the faults. Switch off the ignition, wait 1 minute and switch the ignition on again. If the fault is still present, contact the Techline and complete the fault finding log.</p>
AFTER REPAIR	<p>Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.</p>

**DF038
CONTINUED 1**

6.DEF

Run command **RZ034 Computer memory**.
Switch off the ignition and run a **complete powerlatch**.
Read the faults.

If the problem disappears:

- run command **SC036 Reinitialise programming**, and select **After replacing injection computer with no save option**,
- enter the injector codes using command **SC002 Enter injector codes** (see **Interpretation of commands**),

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

**DF038
CONTINUED 2**

11.DEF

NOTES

If there are a number of faults, deal with the other system faults first.

Display the stored context for fault **DF038**.
PR142 Computer fault = 10

NO

Contact the Techline

YES

Main screen parameters
PR071 Computer supply voltage > 10 V

YES

Contexts stored from **DF038**
PR071 Computer supply voltage > 10 V

YES

Check the charge circuit and carry out the necessary repairs:
– Check the condition of the battery terminals.
– Carry out fault finding on the alternator.
Recharge or replace the battery.

Check the condition of the wiring harness between the computer and the battery, carry out the necessary repairs.
– Start the vehicle.
– Clear the stored faults.
– Check the faults:
– If **DF038** is stored, end fault finding.
– If **DF038** is present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF039 PRESENT OR STORED	<u>INLET AIR TEMPERATURE SENSOR CIRCUIT</u> CO.1 : Short circuit or open circuit to + 12 V CC.0 : Short circuit to earth
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after one attempt to start the engine, or with the engine running.
	Special notes: If the fault is present: – the air temperature value enters defect mode, i.e. PR059 Inlet air temperature = 20°C . – the EGR function is inhibited, – the level 2 warning light is lit. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

CO.1	NOTES	None
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<p>Check the air flowmeter connections. Check the injection computer connections. Repair if necessary. Check the continuity of the following connection:</p> <p style="text-align: center;">Injection supply relay mounting Track 5 —————> track 4 air flow sensor connector</p> <p>Repair if necessary. Check the continuity and insulation against + 12 V of the following connections:</p> <p style="text-align: center;">Injection computer brown 48-track connector B, track G2 —————> Track 1 air flowmeter connector</p> <p>Injection computer brown 48-track connector B, track E2 —————> Track 2 air flowmeter connector</p> <p>Injection computer brown 48-track connector B, track B4 —————> Track 3 air flowmeter connector</p> <p>Injection computer brown 48-track connector B, track L4 —————> Track 6 air flow sensor connector</p> <p>Repair if necessary.</p>
--

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF039
CONTINUED**

Measure the air temperature sensor resistance between **tracks 1** and **2** of the air flow sensor.
Replace the air flowmeter if the resistance displayed is not:

$3714 \pm 161 \Omega$ at 10°C

$2448 \pm 96 \Omega$ at 20°C

$1671 \pm 59 \Omega$ at 30°C

CC.0

NOTES

None

Check the air flowmeter connections.
Check the injection computer connections.
Repair if necessary.

Check **the continuity** and **insulation against earth** of the connection between:

Injection computer brown 48-track connector B, **track G2** —————→ **Track 1** air flowmeter connector

Injection computer brown 48-track connector B, **track E2** —————→ **Track 2** air flowmeter connector

Injection computer brown 48-track connector B, **track B4** —————→ **Track 3** air flowmeter connector

Injection supply relay mounting **Track 5** —————→ **track 4** air flow sensor connector

Repair if necessary.

Measure the air temperature sensor resistance between **tracks 1** and **2** of the air flow sensor.
Replace the air flowmeter if the resistance is not approximately:

$3714 \pm 161 \Omega$ at 10°C

$2448 \pm 96 \Omega$ at 20°C

$1671 \pm 59 \Omega$ at 30°C

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF040 PRESENT OR STORED	<u>CYLINDER 1 INJECTOR CIRCUIT</u> CC.1 : Short circuit to + 12 V CO : Open circuit CC : Short circuit 1.DEF: Injector control
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine has been started.
	Special notes: If CC.1, CC, or 1.DEF is present, the level 2 warning light is lit. If CO is present the level 1 warning light is lit. If CO is still present, the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting for 1 minute). If the fault is present, the injection on cylinder 1 is disabled. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

WARNING

This fault may appear if the wiring harness has been damaged.

Follow the procedure described in the **Wiring Check in the Introduction**.

This test enables the condition and the conformity of the engine wiring harness to be checked.

CC.1 CO CC 1.DEF	NOTES	None
-------------------------------------	--------------	------

Check the connections on injector no 1.
 Check the injection computer connections.
 Repair if necessary.

Disconnect injector no. 1.

Measure the **resistance** of injector no. 1 between **tracks 1 and 2**.

Replace the injector if it has a **short circuit ($R = 0 \Omega$)** or **open circuit (infinite resistance measurement)**.

Otherwise **reconnect injector no. 1**.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
---------------------	--

**DF040
CONTINUED**

Check **the continuity and absence of interference resistance** of the following connections:

Injection computer grey 32-track connector C **track G3** —————▶ **Track 2** injector no. 1

Injection computer grey 32-track connector C, **track H1** —————▶ **Track 1** injector no. 1

If the fault is still present: apply **test 8: POOR INJECTOR OPERATION**.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF041 PRESENT OR STORED	<u>CYLINDER 2 INJECTOR CIRCUIT</u> CC.1 : Short circuit to + 12 V CO : Open circuit CC : Short circuit 1.DEF: Injector control
--	---

NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine has been started.
	Special notes: If CC.1, CC, or 1.DEF is present, the level 2 warning light is lit. If CO is present the level 1 warning light is lit. If CO is still present, the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting for 1 minute). If the fault is present, the injection on cylinder 2 is disabled. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

WARNING

This fault may appear if the wiring harness has been damaged.

Follow the procedure described in the **Wiring Check in the Introduction**.

This test enables the condition and the conformity of the engine wiring harness to be checked.

CC.1 CO CC 1.DEF	NOTES	None
-------------------------------------	--------------	------

Check the connections on injector no. 2.
 Check the injection computer connections.
 Repair if necessary.

Disconnect injector no. 2.

Measure the **resistance** of injector no. 2 between **tracks 1 and 2**.

Replace the injector if it has a **short circuit ($R = 0 \Omega$)** or **open circuit (infinite resistance measurement)**.


Otherwise **reconnect injector no. 2**.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF041
CONTINUED**

Check **the continuity and absence of interference resistance** of the following connections:

Injection computer grey 32-track connector C track **G4**  **Track 2** injector no. 2

Injection computer grey 32-track connector C, track **G2**  **Track 1** injector no. 2

If the fault is still present: apply **test 8: POOR INJECTOR OPERATION**.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF042 PRESENT OR STORED	<u>CYLINDER 3 INJECTOR CIRCUIT</u> CC.1 : Short circuit to + 12 V CO : Open circuit CC : Short circuit 1.DEF: Injector control
--	---

NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine has been started.
	Special notes: If CC.1, CC, or 1.DEF is present, the level 2 warning light is lit. If CO is present the level 1 warning light is lit. If CO is still present, the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting for 1 minute). If the fault is present, the injection on cylinder 3 is disabled. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

WARNING

This fault may appear if the wiring harness has been damaged.

Follow the procedure described in the **Wiring Check in the Introduction**.

This test enables the condition and the conformity of the engine wiring harness to be checked.

CC.1 CO CC 1.DEF	NOTES	None
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Check the connections on injector no. 3.
 Check the injection computer connections.
 Repair if necessary.

Disconnect injector no.3.

Measure the **resistance** of injector no. 3 between **tracks 1 and 2**.

Replace the injector if it has a **short circuit ($R = 0 \Omega$)** or **open circuit (infinite resistance measurement)**.

Otherwise **reconnect injector no. 3**.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF042
CONTINUED**

Check **the continuity and absence of interference resistance** of the following connections:

Injection computer grey 32-track connector C, **track H4** —————▶ **Track 2** injector no. 3

Injection computer grey 32-track connector C, **track H2** —————▶ **Track 1** injector no. 3

If the fault is still present: apply **test 8: POOR INJECTOR OPERATION**.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF043 PRESENT OR STORED	<u>CYLINDER 4 INJECTOR CIRCUIT</u> CC.1 : Short circuit to + 12 V CO : Open circuit CC : Short circuit 1.DEF: Injector control
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine has been started.
	Special notes: If CC.1, CC, or 1.DEF is present, the level 2 warning light is lit. If CO is present the level 1 warning light is lit. If CO is still present, the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting for 1 minute). If the fault is present, the injection on cylinder 4 is disabled. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

WARNING

This fault may appear if the wiring harness has been damaged.

Follow the procedure described in the **Wiring Check in the Introduction**.

This test enables the condition and the conformity of the engine wiring harness to be checked.

CC.1 CO CC 1.DEF	NOTES	None
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Check the connections on injector no 4.
 Check the injection computer connections.
 Repair if necessary.

Disconnect injector no. 4.

Measure the **resistance** of injector no. 4 between **tracks 1 and 2**.

Replace the injector if it has a **short circuit ($R = 0 \Omega$)** or **open circuit (infinite resistance measurement)**.

Otherwise **reconnect injector no. 4**.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF043
CONTINUED**

Check **the continuity and absence of interference resistance** of the following connections:

Injection computer grey 32-track connector C, **track H3** —————→ **Track 2** injector no. 4

Injection computer grey 32-track connector C, **track G1** —————→ **Track 1** injector no. 4

If the fault is still present: apply **test 8: POOR INJECTOR OPERATION**.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DIESEL INJECTION

Fault finding – Interpretation of faults

13B

DF046 PRESENT OR STORED	BATTERY VOLTAGE 1.DEF: Excess voltage 2.DEF: Undervoltage
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present following a road test or after attempting to start the engine.
	Special notes: Computer operating voltage: 9 V < operating voltage < 16 V . Battery voltage that is too low can cause the level 1 fault warning light to come on thereby causing other faults to appear. It is then not possible to start the engine. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

1.DEF	NOTES	None
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Check the charge circuits:

- Condition of the battery.
- Condition of the alternator (full fault finding procedure).
- Carry out the necessary repairs.

2.DEF	NOTES	None
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With the ignition off, measure the voltage across the battery terminals.
 If the voltage is less than **11.5 V**, test the battery.
 If the battery is faulty, replace the battery then test the charge circuit.

With the ignition on and the with the starter motor turning, measure the voltage between the battery terminals
 If the voltage drops below **9.6 V**, check the tightness and condition of the battery terminals.
 Repair if necessary.

If the terminals are in good condition, test the battery.
 If they are faulty, replace the battery.

If the starter is cranking the engine correctly, but the fault is still present,

- Check the **continuity and absence of interference resistance** of the following connections:

+ 12 V Supply relay track 5	→	track M2 connector B of the engine management computer
track 4 of Protection and Switching Unit grey connector	→	track G1 connector A of the engine management computer
Battery earth	→	tracks G4, H4, H1 injection computer connector A

Repair if necessary.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF047 PRESENT OR STORED	<u>COMPUTER SUPPLY VOLTAGE</u> 1.DEF: Voltage outside permitted range of values
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after several starting attempts, or with the engine running.
	Special notes: Computer operating voltage: 9 V < operating voltage < 16 V. Battery voltage that is too low can cause the level 1 fault warning light to come on thereby causing other faults to appear. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

<p>Check continuity and make sure there is no interference resistance on the following connection:</p> <p>injection computer black 32-track connector A, track D1 —————▶ track 1 UPC black connector</p> <p>Repair if necessary.</p>
<p>Check fuse F5D (5A) located on the UPC. Check the condition of the injection control unit supply relay (50A) located on the relay plate in the engine connection unit under the Protection and Switching Unit (no false contacts, or oxidation on the relay mounting clips). Repair if necessary.</p> <p>If the fault does not recur, start the engine and wait 1 min. Carry out a road test and check the system faults. If there are no faults, fault finding is complete. If the fault is still present, contact the Techline.</p>

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF049 PRESENT OR STORED	<u>REFRIGERANT SENSOR CIRCUIT</u> CC.1 : Short circuit to + 12 V CO.0 : Open circuit or short circuit to earth
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present following a road test, or if the air conditioning is switched on.
	Special notes: If the fault is present, air conditioning is not authorised. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

CC.1	NOTES	None
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Check the refrigerant pressure sensor connectors.
 Check the injection computer connections.
 Repair if necessary.

Check that the configuration reading **LC009 Air conditioning** is WITH.
 If **LC009** is WITHOUT, run command **RZ005 Programming** to reinitialise the vehicle configurations.
 If necessary, operate the air conditioning to reconfigure the computer to WITH.
 Connect an air conditioning filling station (equipped with a high pressure gauge) to the vehicle.
 Display parameter **PR037 Refrigerant pressure** and compare the value displayed by the filling station.
If the values match, run fault finding on the air conditioning (see **62A, Air conditioning**).

If the values do not match, check the continuity and insulation against + 12 V of the following connections:

Injection computer brown 48-track connector B, track F1	—————➔	Track C refrigerant sensor connector
Injection computer brown 48-track connector B, track F3	—————➔	Track B refrigerant sensor connector
Injection computer grey 32-track connector C, track C3	—————➔	Track A refrigerant sensor connector

Repair if necessary.

If the fault is still present, replace the refrigerant pressure sensor.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF049 CONTINUED	
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CO.0	NOTES	None
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Check the refrigerant pressure sensor connectors.
 Check the injection computer connections.
 Repair if necessary.
 Check that the configuration reading **LC009 Air conditioning** is WITH.
 If **LC009** is WITHOUT, run command **RZ005 Programming** to reinitialise the vehicle configurations.
 If necessary, operate the air conditioning to reconfigure the computer to WITH.
 Connect an air conditioning filling station (equipped with a high pressure gauge) to the vehicle.
 Display parameter **PR037 Refrigerant pressure** and compare the value displayed by the filling station.
If the values match, carry out a fault finding procedure as described in the fault finding note for that vehicle.

If the values do not match, check **the continuity and insulation against earth** of the following connections:

Injection computer brown 48-track connector **B, track F1** —————> **Track C** refrigerant sensor connector

Injection computer brown 48-track connector **B, track F3** —————> **Track B** refrigerant sensor connector

Repair if necessary.

If the fault is still present, replace the refrigerant pressure sensor.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF050 PRESENT OR STORED	<u>BRAKE SWITCH CIRCUIT</u> 1.DEF: Open circuit or short circuit 2.DEF: Inconsistent signal
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the brake pedal is depressed, or during a road test.
	Special notes: If the fault is present, the cruise control/speed limiter is deactivated. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

WARNING

This fault may appear if the wiring harness has been damaged.

Follow the procedure described in the **Wiring Check in the Introduction**.

This check enables the condition and the conformity of the engine wiring harness to be checked.

1.DEF	NOTES	None
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Check the brake pedal switch connections.
Check the condition and adjustment of the brake pedal switch.
Repair if necessary.

Check **the conformity of the brake light switch**:

Brake pedal released:	continuity between tracks 3 and 4 infinite resistance between tracks 1 and 2
Brake pedal depressed:	infinite resistance between tracks 3 and 4 continuity between tracks 1 and 2 .

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF050 CONTINUED

Replace the switch if necessary.

Check the condition of fuse **H 15A** on the passenger compartment fuse and relay plate.

Replace the fuse if necessary.

Check **the feeds** to the switch:

+ 12 V after ignition —————> **track 2** of the brake pedal switch connector

+ 12 V battery feed —————> **track 4** of the brake pedal switch connector
(via the **UCH**)

Replace the switch if necessary.

Check **the continuity and insulation** of the following connections:

Injection computer black 32-track connector **A**, **track E4** —————> **Track 3** of the brake pedal switch connector

Repair if necessary.

2.DEF

NOTES

None

Check the brake pedal switch connections.

Check the condition and adjustment of the brake pedal switch.

Repair if necessary.

Check the continuity and the absence of interference resistance on the following connection:

Injection computer **black 32-track connector A** —————> **Track 3** of the brake switch
track E4

Repair if necessary.

Check the conformity of the switch by consulting the interpretation of statuses **ET704 Brake switch no. 1** and **ET705 Brake switch no. 2**.

If the fault is still present, carry out fault finding on the ABS computer.

AFTER REPAIR

Deal with any faults.

Carry out a road test followed by another check with the diagnostic tool.

DF051 PRESENT OR STORED	<u>CRUISE CONTROL/SPEED LIMITER FUNCTION</u> 1.DEF: Inconsistency of the signal 2.DEF: Inconsistent vehicle speed 3.DEF: Steering wheel controls
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine is started or following a road test.
	Special notes: The cruise control/speed limiter function is inhibited. Use bornier Elé. 1681 or Elé. 1590 for any operation on the injection computer connectors.

WARNING

This fault may appear if the wiring harness has been damaged.

Follow the procedure described in the Wiring Check in the Introduction.

This check enables the condition and the conformity of the engine wiring harness to be checked.

If the fault is declared present, refer to the section of the conformity check on the **Cruise control/Speed limiter**, and to the interpretation of statuses:

ET042 Cruise control/speed limiter.

ET415 Deactivation of cruise control/speed limiter.

ET703: Cruise control/speed limiter buttons

Check that by pressing the buttons the statuses change and that, with the ignition switched on, all the values are correct.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF053 PRESENT OR STORED	<p><u>RAIL PRESSURE REGULATION FUNCTION</u></p> <p>CC.1 : Short circuit to + 12 V CC.0 : Short circuit to earth CO : Open circuit</p> <p>1.DEF: Internal electronic fault 2.DEF: Measured pressure too low 3.DEF: Measured pressure too high 4.DEF: Insufficient pressure 5.DEF: Pressure < minimum 6.DEF: Pressure > maximum 7.DEF: Extensive pump command 8.DEF: Above maximum threshold.</p>
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NOTES	<p>Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after:</p> <ul style="list-style-type: none"> – the engine is started, – a road test, – an actuator command AC011 Rail pressure regulator.
	<p>Special notes: If the fault is present:</p> <ul style="list-style-type: none"> – It is not possible to start the engine. – engine stops if already started, – if 3.DEF is present, the level 1 warning light is lit, – if one of the other faults is present, the level 2 warning light comes on. <p>Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.</p>

CC.1	NOTES	None
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<p>Check the rail pressure regulator connectors. Check the injection computer connections. Check the low-pressure circuit: run Test 2 Low-pressure circuit check. Check the conformity of the fuel used by applying test 10 Diesel fuel conformity check. Check the injector return flow, run test 8 Poor injector operation. Check the operation of the overpressure valve if fitted to the vehicle, run test 11 Incorrect operation of the overpressure valve. Repair if necessary.</p>

AFTER REPAIR	<p>Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.</p>
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**DF053
CONTINUED 1**

**CC.0
CO**

NOTES

None

Measure the **resistance** of the rail pressure regulator between **tracks 1 and 2**.

If the resistance is not **$3 \pm 1 \Omega$ at 20°C**, replace the injection pump.

Check the **continuity and insulation from the + 12 V feed** of the following connection:

Injection computer brown 48-track connector **B, track M4**  **Track 2** of the rail pressure regulator (fuel flow actuator)

Check the rail pressure sensor using the interpretation of **DF007 Rail pressure sensor circuit**.

If the fault is still present, replace the injection pump.

Check the rail pressure regulator connectors.

Check the injection computer connections.

Check the low pressure circuit by applying **test 2 Low pressure circuit check**.

Check the conformity of the fuel used by applying **test 10 Diesel fuel conformity check**.

Check the injector return flow, run **test 8 Poor injector operation**.

Check the operation of the overpressure valve if fitted to the vehicle, run test **11 Incorrect operation of the overpressure valve**.

Repair if necessary.

Measure the **resistance** of the rail pressure regulator between **tracks 1 and 2**.

If the resistance is not **$3 \pm 1 \Omega$ at 20°C**, replace the injection pump.

Check **the continuity, and insulation from earth** of the following connection:

Injection computer brown 48-track connector **B, track M4**  **Track 2** of the rail pressure regulator (fuel flow actuator)

With the ignition on, check for **+ 12 V** after relay on **track 1** of the rail pressure regulator.

If there is not **+ 12 V** on **track 1**, check **the continuity and absence of interference resistance** of the following connection:

Rail pressure regulator **track 1**  Injection supply relay mounting **track 5**

Repair if necessary.

Check the rail pressure sensor using the interpretation of **DF007 Rail pressure sensor circuit**.

If the fault is still present, replace the injection pump.

AFTER REPAIR

Deal with any faults.

Carry out a road test followed by another check with the diagnostic tool.

DF053 CONTINUED 2	
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1.DEF	NOTES	None
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Check the rail pressure regulator connectors.
Check the injection computer connections.
Check the low pressure circuit by running **test 2 Low pressure circuit check**.
Check the conformity of the fuel used by applying **test 10 Diesel fuel conformity check**.
Check the injector return flow, run **test 8 Poor injector operation**.
Check the operation of the overpressure valve if fitted to the vehicle, run test **11 Incorrect operation of the overpressure valve**.

Repair if necessary.

Measure the **resistance** of the rail pressure regulator between **tracks 1 and 2**.

If the resistance is not **$3 \pm 1 \Omega$ at 20°C**, replace the injection pump.

Check the **continuity and absence of interference resistance** of the following connections:

Injection computer brown 48-track connector **B**, **track M4** —————▶ **Track 2** of the rail pressure regulator (fuel flow actuator)

Injection supply relay mounting **track 5** —————▶ **track 1** of the rail pressure regulator (fuel flow actuator)

Repair if necessary.

Check the rail pressure sensor using the interpretation of **DF007 Rail pressure sensor circuit**.

Repair if necessary.

If the fault is still present, **check that the computer output is working correctly**.

● Either using an ammeter:

With the regulator connected, connect the current clamp to the regulator's **track 1** connection, **respecting the direction of the current**.

Clear any rail pressure sensor faults and use command **AC011 Rail pressure regulator**.

The ammeter should display ten cycles of two successive currents: **~ 0.6A** then **~ 2A**.

AFTER REPAIR	<p>Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.</p>
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**DF053
CONTINUED 3**

● Or using a voltmeter:

With the regulator connected, connect the negative terminal of the voltmeter to **track 2** of the rail pressure regulator and the positive terminal to **track 1**. Clear any fuel pressure solenoid valve faults, then run command **AC011 Rail pressure regulator**:

The voltmeter should display two successive voltage readings:

~ **3.15 volts** for an opening cycle ratio of 25% then ~ **9.45 V** for an opening cycle ratio of 75% (ten cycles).

● Or using an oscilloscope (at 5 V range/division and 1 ms/div time base):

With the regulator connected, connect the negative terminal of the oscilloscope to the battery earth and the positive terminal to **track 2** of the fuel pressure solenoid valve, clear any rail pressure regulator faults, and run command **AC011 Rail pressure regulator**:

the oscilloscope should display a square pulse signal with an amplitude of 12.5 V at a frequency of 185 Hz (with an OCR* alternating successively from 25 to 75%).

if the measurement does not show any control or continuous voltage, contact the techline.

***Opening cyclic ratio**

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF053 CONTINUED 4	
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2.DEF to 8.DEF	NOTES	None
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Check the rail pressure regulator connectors.
Check the injection computer connections.
Check the low pressure circuit by running **test 2 Low pressure circuit check**.
Check the conformity of the fuel used by applying **test 10 Diesel fuel conformity check**.
Check the injector return flow, run **test 8 Poor injector operation**.
Check the operation of the overpressure valve if fitted to the vehicle, run test **11 Incorrect operation of the overpressure valve**.

Repair if necessary.

Measure the **resistance** of the pressure regulator between its **tracks 1 and 2**.
If the resistance is not **$3 \pm 1 \Omega$ at 20°C**, replace the injection pump.
Check the **continuity and for the absence of interference resistance** on the following connections:

Injection computer brown 48-track connector **B**, **track M4** —————> **Track 2** of the rail pressure regulator

Injection supply relay mounting **track 5** —————> **track 1** of the rail pressure regulator

Repair if necessary.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF053
CONTINUED 5**

In the event of rail overpressure:

Check the operation of the injectors: refer to **test 8 Poor injector operation**.

Check that the rail pressure sensor is operating correctly using command **AC011 Rail pressure regulator**. Display parameter **PR038 Rail pressure**, and refer to the conformity check to check the operating values.

If these checks do not reveal any faults, and if the fault is still present, replace the injection pump.

in the event of rail underpressure:

Check that the rail pressure sensor is operating correctly using command **AC011 Rail pressure regulator**. Display parameter **PR038 Rail pressure**, and refer to the conformity check to check the operating values.

Check the low pressure diesel circuit priming.

Check the conformity of the diesel filter connections.

Check the condition of the filter (clogging and water saturation).

Check that there are no air bubbles between the filter and the high pressure pump.

Check the low and high pressure diesel fuel circuit sealing (visual inspections, odour, etc.): pump housing, pressure relief valve, pipes, rail and injector unions, injector wells, etc.

Check the operation of the injectors: refer to **test 8 Poor injector operation**.

Carry out the necessary operations.

If the fault is still present, replace the injection pump.

AFTER REPAIR

Deal with any faults.

Carry out a road test followed by another check with the diagnostic tool.

DF054 PRESENT OR STORED	<u>TURBOCHARGING SOLENOID VALVE CONTROL CIRCUIT</u> CC.1 : Short circuit to + 12 V CC.0 : Short circuit to earth CO : Open circuit 1.DEF: Internal electronic fault 2.DEF: Inconsistent signal 3.DEF: Below minimum threshold 4.DEF: Above maximum threshold 5.DEF: Permanent high signal
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after: <ul style="list-style-type: none"> – the engine is started, – a road test, – actuator command AC004 Turbocharging solenoid valve.
	Special notes: If the fault is present: <ul style="list-style-type: none"> – turbocharging is no longer authorised, – the EGR function is inhibited, – the vehicle performance is reduced, – the level 1 warning light is lit, – If CC.0 is present, the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting for 1 minute). Use bournier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

CC.1 4.DEF 5.DEF	NOTES	None
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Check the turbocharging solenoid valve connections. Check the injection computer connections. Repair if necessary.
Measure the resistance of the turbocharging solenoid valve between tracks 1 and 2 : If the resistance displayed is not 15.4 ± 0.7 Ω at 20°C , replace the turbocharger solenoid valve.
Check the continuity and insulation from the + 12 V feed of the following connection: <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="text-align: center;"> Injection computer grey 32-track connector C, track E1 </div> <div style="margin: 0 10px;"> </div> <div style="text-align: center;"> Track 1 turbocharging solenoid valve </div> </div> Repair if necessary. If the fault is still present, replace the turbocharging solenoid valve.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF054 CONTINUED 1	
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CC.0 CO 3.DEF	NOTES	None
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Check the turbocharging solenoid valve connections.
Check the injection computer connections.
Repair if necessary.

Measure the resistance of the turbocharging solenoid valve between **tracks 1** and **2**:
If the resistance displayed is not **15.4 ± 0.7 Ω at 20°C**, replace the turbocharger solenoid valve.

Check the **continuity and insulation against earth** of the following connections:

Injection computer grey 32-track connector **C**, **track E1** —————→ **Track 1** turbocharging solenoid valve

UPC PPM1 connector **Track 1** —————→ **Track 2** turbocharger solenoid valve

Repair if necessary.

If the fault is still present, replace the turbocharging solenoid valve.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF054 CONTINUED 2	
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1.DEF 2.DEF	NOTES	None
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Check the turbocharging solenoid valve connections.
Check the injection computer connections.
Repair if necessary.

Measure the resistance of the turbocharging solenoid valve between **tracks 1 and 2**:
If the resistance displayed is not **15.4 ± 0.7 Ω at 20°C**, replace the turbocharger solenoid valve.

Check the **continuity and insulation against earth** of the following connections:

Injection computer grey 32-track connector **C**, **track E1**  **Track 1** turbocharging solenoid valve

UPC PPM1 connector **Track 1**  **Track 2** Turbocharger solenoid valve

If the fault is still present, **check that the computer output is working correctly**.
With the turbocharging solenoid valve connected:

Using a voltmeter:

- Connect the negative terminal of the voltmeter to **track 1** of the solenoid valve and the negative terminal to **track 2**.
- Clear any solenoid valve faults and run command **AC004 Turbocharger solenoid valve**.

The voltmeter should display **ten cycles** of two successive voltages: **~ 2.5 V** (opening cyclic ratio* of **20%**) then **~ 8.75 V** (opening cyclic ratio* of **70%**).

Or using an oscilloscope (at 5 V range/division and 1 ms/div time base):

- Connect the negative terminal of the oscilloscope to the battery earth and the positive terminal to **track 2** of the solenoid valve.
- Clear any solenoid valve faults and run command **AC004 Turbocharging solenoid valve**.

The oscilloscope should display a square wave signal with an amplitude of **12.5V** (~ battery voltage) at a frequency of **140 Hz** (with an OCR changing successively from **~ 20 to ~ 70%**).

- if the measurement is correct, replace the solenoid valve.
- if the measurement does not show any control or continuous voltage, contact the techline.

***Opening cyclic ratio**

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF055 PRESENT OR STORED	<u>TURBOCHARGING PRESSURE REGULATION CIRCUIT</u> 1.DEF: Pressure too low 2.DEF: Pressure too high
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine is started or following a road test.
	Special notes: If the fault is present: <ul style="list-style-type: none"> – turbocharging is no longer authorised, – the EGR function is inhibited, – the level 1 warning light is lit. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

1.DEF	NOTES	None
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Check the turbocharger pressure sensor connections.
 Check the connections of the turbocharging pressure relief solenoid valve.
 Check the injection computer connections.
 Repair if necessary.

Check the sealing of the high pressure air circuit:

- disconnected or pierced pipes,
- pressure sensor disconnected or poorly fitted (seal present),
- intercooler pierced (to check the intercooler: with the vehicle stationary, stabilise the engine speed between **3,500 and 4,000 rpm** and check that there are no leaks).

Check the conformity of the turbocharger pressure signal and apply **test 9 Air line at the turbocharger**, then **test 5 Turbocharger control solenoid valve check** and **test 6 Turbocharger**.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
---------------------	--

**DF055
CONTINUED 1**

Check that the turbocharger and the control circuit are working:

- With the engine stopped, make sure that the control rod is in the resting position.
- Start the engine and make sure that the control rod actuates to the upper stop.

(when the engine stops, the control rod should return to the rest position).

If the control rod does not move correctly, carry out the following checks:

1 Check the control vacuum pressure:

- disconnect the solenoid valve inlet **hose** and connect it to a pressure gauge,
- start the engine and stabilise it at idle speed,
- If the vacuum does not reach **800 mbar \pm 100**: check the vacuum pressure circuit from the vacuum pump,
- stop the engine, reconnect the inlet hose and proceed to step 2.

2 Solenoid valve control check:

- Disconnect the solenoid valve outlet **hose**,
- start the engine and stabilise it at idle speed,
- place your hand on the solenoid valve and block the outlet **connection** with your thumb,
- if there is no detectable vibration of the solenoid valve, check that the computer output is operating correctly (see **DF054 Turbocharging solenoid valve control circuit 1.DEF**).

3 Solenoid valve operation check:

- Attach the pressure gauge to the solenoid valve outlet **union**,
- start the engine and stabilise it at idle speed,
- if the vacuum pressure does not reach **800 mbar \pm 100**, replace the solenoid valve.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF055 CONTINUED 2	
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2.DEF	NOTES	Priority when dealing with a number of faults: Deal with fault DF004 Turbocharger pressure sensor circuit first if it is present or stored.
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Check the turbocharging pressure sensor connections,
 Check the connections of the turbocharging solenoid valve,
 Check the injection computer connections.
 Repair if necessary.

Check the conformity of the turbocharging pressure signal (refer to the interpretation of parameter **PR041 Turbocharging pressure**).

Make sure the turbocharging pressure relief solenoid valve is not jammed open:

- With the engine switched off, disconnect the **inlet and outlet hoses** from the solenoid valve.
- connect a vacuum pump to the inlet **union** and apply a vacuum pressure.
- if the vacuum pressure **is not maintained**: replace the solenoid valve.

Check that the turbocharger control rod has not seized:

- with the engine stopped, make sure the turbocharger control rod is in the rest position.
- apply a vacuum pressure of **800 mbar ± 100**, to the hose connected to the turbocharger control diaphragm,
- if the diaphragm is affected by the vacuum, check the movement and setting of the turbocharger control rod (see **MR 364 (MEGANE II) and 370 (SCENIC II), Mechanical, 12B, Turbocharging**).

If the control rod is seized, replace the turbocharger.

If the fault is still present, apply **test 9 Air line at the turbocharger**, then **test 5 Turbocharger control solenoid valve check** and **test 6 Turbocharger**.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF056 PRESENT OR STORED	<u>AIR FLOWMETER CIRCUIT</u> CC.1 : Short circuit to + 12 V CO.0 : Open circuit or short circuit to earth 1.DEF: Offset at maximum threshold 2.DEF: Offset at minimum threshold
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after a road test.
	Special notes: If the fault is present: <ul style="list-style-type: none"> – the level 1 warning light is lit, – the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting 1 minute). Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.
	Priorities when dealing with a number of faults: Deal with fault DF013 Sensor supply voltage no. 3 first, if it is present or stored.

CC.1	NOTES	None
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Check the air flowmeter connections. Check the injection computer connections. Repair if necessary.		
Check the continuity and the insulation to + 12 V of the following connections:		
Injection computer brown 48-track connector B, track E2	————→	Track 2 of the air flow sensor
Injection computer brown 48-track connector B, track L4	————→	Track 6 of the air flow sensor
Injection computer brown 48-track connector B, track G1	————→	Track 5 of the air flow sensor
Injection computer brown 48-track connector B, track B4	————→	Track 3 of the air flow sensor
If the fault is still present, replace the air flowmeter.		

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF056
CONTINUED 1

CO.0

NOTES

None

Check there is a **+ 5 V** supply on track **3** of the air flow sensor.
Repair if necessary.
Check the air flowmeter connections.
Check the injection computer connections.
Repair if necessary.

Check the continuity and insulation to **earth** between:

Injection computer brown 48-track connector B, **track E2** —————→ **Track 2** of the air flow sensor

Injection computer brown 48-track connector B, **track B4** —————→ **Track 3** of the air flow sensor

Injection computer brown 48-track connector B, **track G1** —————→ **Track 5** of the air flow sensor

UPC black connector **Track 2** —————→ **Track 4** of the air flow sensor

Repair if necessary.
If the fault is still present and remains present, replace the air flowmeter.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF056 CONTINUED 2	
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1.DEF	NOTES	None
2.DEF		Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the ignition has been switched off for 1 minute .

Check the air flowmeter connections.
Check the injection computer connections.
Repair if necessary

Check the continuity and absence of interference resistance of the following connections:

Injection computer brown 48-track connector B, track B4	—————▶	Track 3 of the air flow sensor
Injection computer brown 48-track connector B, track G1	—————▶	Track 5 of the air flow sensor
Injection computer 48-track brown connector B track L4	—————▶	Track 6 of the air flow sensor
Injection computer, brown 48-track connector B track E2	—————▶	Track 2 of the air flow sensor
UPC black connector Track 2	—————▶	Track 4 of the air flow sensor

Repair if necessary.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF056
CONTINUED 3**

Repair if necessary

If the fault is still present, apply **test 3: Checking the turbocharged air inlet circuit** and **test 4: Air flow sensor**,

- check that the damper valve is open (valve control **pushing on the body** of the air vent unit)
- with the flow sensor **connected**, the vehicle **ignition on** and **engine stopped**:
- check the voltage between **tracks 2** and **5** of the air flow sensor:
If the value is not **0.6 V ± 0.1**, replace the air flow sensor.

● **Check the EGR valve is not jammed open:**

- Deal with any faults.
- Use the conformity check and **EMISSION CONTROL/OBD** sub-function.

If these checks show that the valve is jammed or irrevocably seized, replace the EGR valve.

If no faults are revealed, but the fault is still present, replace the air flowmeter.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF057 PRESENT OR STORED	<u>WATER IN DIESEL FUEL DETECTOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine is started or following a road test.
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Check the conformity of the fuel used by applying **test 10 Diesel fuel conformity check**.
 Check the sealing of the tank and low pressure circuit by applying **test 2 Low pressure circuit check**.

A) Make sure the water in diesel fuel 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 the fault finding procedure.
- If the fault does recur, go to **step C**.

B) If the water detection sensor is absent:

- **Insulate the electrical connector not connected to the vehicle** (risk of dampness, oxidation, and erratic appearance of faults).
 Check that the configuration reading **LC065 Water detected in the diesel** is **NONE**.
 If **LC065** is **WITH**, run command **RZ005 Programming** to reinitialise the vehicle configurations.
- Clear the faults.
- 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 sensor is properly connected:

- Bleed the diesel filter unit (see **MR 364, Mechanics, 13A, Fuel supply**).
- 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**.

D) If the fault recurs:

- Check for **continuity and the absence of interference resistance** on the connection between:

Injection computer 32-track grey connector **track A2**  **Track 3** of the water detection sensor

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF057
CONTINUED**

Check the power supply to the water detection sensor:

+ 12 V after relay ➔ **track 1** water detection sensor
earth ➔ **track 2** water detection sensor

Carry out the necessary repairs.

If none of these checks reveal any faults:

- Replace the water detection sensor (see **MR 364, Mechanics, 13A, Fuel supply**).
- 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:

if the level of water in the fuel filter unit is lower than the sensor electrodes, certain driving conditions (on a bend, hill) may cause the injection warning light to light up erratically.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF059 PRESENT OR STORED	<u>COMBUSTION MISFIRES ON CYLINDER 1</u>
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine is started or following a road test.
	Special notes: If the fault is present, engine performance is reduced and engine instabilities may occur.
	Priority when dealing with a number of faults: Deal with fault DF040 Cylinder 1 injector circuit first, if it is present or stored.

Check that the IMA code of injector no. 1 has been entered correctly and that it matches the code marked on the corresponding injector. Enter the code to the unprogrammed/incorrectly programmed injector, if necessary. Refer to the interpretation of commands, SC002 Entering injector codes .
Check the engine compression. Repair if necessary.
Check the valve clearance and adjust if necessary.
When dealing with several combustion misfire faults, check the conformity of the fuel by applying test 10 Diesel fuel conformity check .
Visually inspect the return pipe of injector no. 1. Repair if necessary.
If the fault is still present, carry out test 8 INCORRECT INJECTOR OPERATION .
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF060 PRESENT OR STORED	<u>COMBUSTION MISFIRING ON CYLINDER 2</u>
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine is started or following a road test.
	Special notes: If the fault is present, engine performance is reduced and engine instabilities may occur.
	Priority when dealing with a number of faults: Deal with fault DF041 Cylinder 2 injector circuit first, if it is present or stored.

Check that the IMA code of injector no. 2 has been entered correctly and that it matches the code marked on the corresponding injector. Enter the code to the unprogrammed/incorrectly programmed injector, if necessary. Consult the interpretation of commands, SC002 Entering injector codes .
Check the engine compression. Repair if necessary.
Check the valve clearance and adjust if necessary.
When dealing with several combustion misfire faults, check the conformity of the fuel by applying test 10 Diesel fuel conformity check .
Visually inspect the return pipe of injector no. 2. Repair if necessary.
If the fault is still present, carry out test 8 INCORRECT INJECTOR OPERATION .
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF061 PRESENT OR STORED	<u>COMBUSTION MISFIRING ON CYLINDER 3</u>
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine is started or following a road test.
	Special notes: If the fault is present, engine performance is reduced and engine instabilities may occur.
	Priority when dealing with a number of faults: Deal with fault DF042 Cylinder 3 injector circuit first, if it is present or stored.

Check that the IMA code of injector no. 3 has been entered correctly and that it matches the code marked on the corresponding injector. Enter the code to the unprogrammed/incorrectly programmed injector, if necessary. Consult the interpretation of commands, SC002 Entering injector codes .
Check the engine compression. Repair if necessary.
Check the valve clearance and adjust if necessary.
When dealing with several combustion misfire faults, check the conformity of the fuel by applying test 10 Diesel fuel conformity check .
Visually inspect the return pipe of injector no. 3. Repair if necessary.
If the fault is still present, carry out test 8 INCORRECT INJECTOR OPERATION .
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF062 PRESENT OR STORED	<u>COMBUSTION MISFIRING ON CYLINDER 4</u>
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine is started or following a road test.
	Special notes: If the fault is present, engine performance is reduced and engine instabilities may occur.
	Priority when dealing with a number of faults: Deal with fault DF043 Cylinder 4 injector circuit first, if it is present or stored.

Check that the injector no. 4 IMA code has been entered correctly and that it matches the code marked on the corresponding injector. Enter the code to the unprogrammed/incorrectly programmed injector, if necessary. Consult the interpretation of commands, SC002 Entering injector codes .
Check the engine compression. Repair if necessary.
Check the valve clearance and adjust if necessary.
When dealing with several combustion misfire faults, check the conformity of the fuel by applying test 10 Diesel fuel conformity check .
Visually inspect the return pipe of injector no. 4. Repair if necessary.
If the fault is still present, carry out test 8 INCORRECT INJECTOR OPERATION .
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF069 PRESENT OR STORED	<u>IMPACT DETECTED SIGNAL</u> 1.DEF: Impact stored by the injection computer
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NOTES	Conditions for applying the fault finding procedure to stored faults: Only apply the procedure if the fault is present and if the vehicle does not start.
	Special notes: The fault appears when the injection computer receives a frontal impact signal from the Airbag computer via the multiplex network. As soon as the injection computer receives this signal: <ul style="list-style-type: none">– engine operation is prohibited,– the level 2 warning light is lit. Use bournier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

If the vehicle has been involved in an accident:

Carry out any necessary repairs,

- clear the fault,
- switch off the ignition,
- wait for **1 minute**,
- switch on the ignition,

If the fault does not recur, end the fault finding procedure.

If the fault recurs, carry out fault finding on the **AIRBAG** computer.

If the vehicle has not been involved in an accident:

Run fault finding on the **AIRBAG** computer

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF070 PRESENT OR STORED	<u>CLUTCH SWITCH CIRCUIT</u> 1.DEF: No signal 2.DEF: Inconsistent signal
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the clutch pedal is depressed, or during a road test.
	Special notes: If this fault is present, the cruise control/speed limiter function will be inhibited. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

WARNING

This fault may appear if the wiring harness has been damaged.

Follow the procedure described in the Wiring Check in the Introduction.

This check enables the condition and the conformity of the engine wiring harness to be checked.

Check the conformity and adjustment of the clutch switch (position, connection).

- display status **ET405 Clutch pedal switch**:
- when the clutch pedal is engaged, status **ET405** should be **INACTIVE**,
- when the clutch pedal is disengaged, status **ET405** should be **ACTIVE**.

If these checks are not OK, replace the clutch switch.


If the check show the correct results:

Check the connections of the clutch pedal switch.

Check the injection computer connections.

Repair if necessary.

Check continuity and make sure there is no interference resistance on the following connection:

Injection computer black 32-track connector A,  **Track 1** clutch pedal switch
track C4

Repair if necessary.

Check for **the presence of earth** on **track 2** of the clutch pedal switch.

Repair if necessary.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF086 PRESENT OR STORED	<u>COOLANT PUMP RELAY CONTROL CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched off and after a wait of 1 minute, or following a AC195 Electric coolant pump actuator command.
	Special notes: The control relay is located in the engine compartment connection unit. If the fault is present: – the EGR function is inhibited, – the level 1 warning light is lit. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

CO.0	NOTES	None
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Test the electric coolant pump relay (A 20A) and check it is operating correctly. Check the injection computer connections. Repair if necessary.
Check the continuity between the following connections: Tracks B1 and B5 of the coolant pump relay mounting. If the check show the correct results, Check the continuity and insulation to earth of the following connections: <div style="margin-top: 10px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <div>Injection computer brown 48-track connector B, track H4</div> <div style="text-align: center;">→</div> <div>Track B2 of the coolant pump relay mounting</div> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <div>Injection supply relay mounting, Track 5</div> <div style="text-align: center;">→</div> <div>Track B1 of the coolant pump relay mounting</div> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <div>Injection supply relay mounting, Track 5</div> <div style="text-align: center;">→</div> <div>Track B5 of the coolant pump relay mounting</div> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <div>Turbocharger bearing coolant pump connector, Track 1</div> <div style="text-align: center;">→</div> <div>Track B3 of the coolant pump relay mounting</div> </div> </div> Check for the earth on Track 2 of the turbocharger bearing coolant pump connector. Repair if necessary. If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF086 CONTINUED	
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CC.1	NOTES	None
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Test the **electric coolant pump relay (A 20A)** and check it is operating correctly.
Check the injection computer connections.
Repair if necessary.

Check the continuity between the following connections: Tracks **B1** and **B5** of the coolant pump relay mounting.
Check **the continuity and insulation to + 12 V** on the following connections:

Injection computer brown 48-track connector B, **track H4** —————> Track **B2** of the coolant pump relay mounting

Turbocharger bearing coolant pump connector, **Track 2** —————> **Earth**

Repair if necessary.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF091 PRESENT OR STORED	<u>VEHICLE SPEED SIGNAL</u> 1.DEF: Inconsistent signal 2.DEF: Signal outside upper limit 3.DEF: Configuration absent or incorrect 4.DEF: CAN connection fault
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test.
	Special notes: Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

Check the ABS computer connections.

Check the injection computer connections.

Repair if necessary.

Carry out fault finding on the multiplex network and the ABS (**see 38C, anti-lock braking system**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF097 PRESENT OR STORED	<u>CAMSHAFT SENSOR CIRCUIT</u> 1.DEF: No signal 2.DEF: Inconsistent signal
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after the engine is started or following a road test. A drop in engine speed followed by nominal behaviour from the vehicle is possible.
	Special notes: If this fault is present: – It is impossible to start the vehicle, – the level 1 warning light is lit. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

1.DEF 2.DEF	NOTES	Check the conformity of the + 12 V after relay supply line, from track 2 of the UPC PPM1 connector . (Use the Wiring Diagrams for the vehicle)
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Check the camshaft sensor connections.
Check the injection computer connections.
Check that the camshaft sensor is correctly positioned and mounted.
Also check the general condition, (damaged housing, heating up, etc.)
Carry out the necessary repairs.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF097
CONTINUED**

Check **the continuity and absence of interference resistance** of the following connections:

Injection computer brown 48-track connector **B**,
Track D1 —————> **Track 2** Camshaft sensor

Injection computer brown 48-track connector **B**,
Track A1 —————> **Track 1** Camshaft sensor

With the ignition on and the camshaft sensor connected:

Use a voltmeter to measure the voltage between **tracks 1** and **3** of the camshaft sensor:

The voltage displayed should be equal to the battery voltage **0.08 V**)

- If the voltage is outside permitted tolerance values, take the measurement again on the connector, with the **camshaft sensor disconnected**,
- If the voltage is still outside permitted tolerance values with the sensor disconnected.

Check **for continuity and absence of interference resistance** on the following connection:

Camshaft sensor, **track 3** —————> **Track 5** injection supply relay mounting

- If the measured voltage is correct with the sensor disconnected.

Measure the camshaft sensor **resistance** between **tracks 2** and **3**.

Replace the sensor if its resistance is not **10,250 ± 500 Ω at 20°C**



If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF118 PRESENT OR STORED	<u>EGR SOLENOID VALVE SERVO-CONTROL</u> 1.DEF: Insufficient EGR valve flow 2.DEF: Excessive EGR valve flow
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NOTES	<p>Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after:</p> <ul style="list-style-type: none"> – the engine is started – a road test <p>Special notes: If the fault is present the EGR function is disabled. If 2.DEF is present,</p> <ul style="list-style-type: none"> – the level 1 warning light is lit, – there is smoke coming from the exhaust. <p>Use bournier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.</p> <p>Priority when dealing with a number of faults:</p> <ul style="list-style-type: none"> – DF272 EGR valve control circuit if it is present or stored. <p>IMPORTANT If the EGR valve needs to be replaced to resolve the fault, use command SC036 Reinitialise programming and select EGR valve to reinitialise the EGR valve offsets (see Replacement of components).</p>
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Check the EGR valve connections. Check the injection computer connections. Repair if necessary.
Check for continuity and the absence of interference resistance of the following connections: Injection computer, brown 48-track connector B , track C2  Track 1 EGR valve connector Injection computer brown 48-track connector B , track D2  Track 5 EGR valve connector If the connection or connections 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 there are no leaks on the EGR circuit (pipes pierced or damaged) and that the clamps are properly tightened.
Measure the resistance of the EGR valve motor between tracks 1 and 5 . If the resistance measured is not between 1 Ω < X < 400 Ω at 20°C , replace the EGR valve.
If the valve is jammed or irrevocably seized, replace the EGR valve. Run command SC036 Reset programming and select EGR valve to reset the EGR valve offsets (see Replacement of components).

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF195 PRESENT OR STORED	<u>ENGINE SPEED/CAMSHAFT SENSOR CONSISTENCY</u> 1.DEF: Inconsistency of the signal
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault becomes present after an attempt to start.
	Special notes: If the fault is stored , clear the fault from the computer memory. Switch off the ignition, start the engine and check that the fault does not reappear. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

Check the **engine speed sensor** and **camshaft sensor** connectors.
Check the injection computer connections.
Repair if necessary.

With the connector disconnected, check **the continuity and absence of interference resistance** on the following connections:

injection computer connector B, track A1	—————▶	track 1 of the camshaft sensor
injection computer connector B, track D1	—————▶	track 2 of the camshaft sensor
injection computer connector B, track B1	—————▶	track 1 of the engine speed sensor
injection computer connector B, track C1	—————▶	track 2 of the engine speed sensor

Repair if necessary.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF195
CONTINUED**


With the ignition on and the camshaft sensor connected:

Use a voltmeter to measure the voltage between **tracks 1** and **3** of the camshaft sensor:

The voltage displayed should be equal to the battery voltage **0.08 V**)

- If the voltage is outside permitted tolerance values, take the measurement again on the connector, with the **camshaft sensor disconnected**,
- If the voltage is still outside permitted tolerance values with the sensor disconnected.

Check **for continuity and absence of interference resistance** on the following connection:

Camshaft sensor, **track 3**  **+ after ignition feed after relay**

- If the measured voltage is correct with the sensor disconnected,
Measure the **resistance** of the **camshaft sensor** between **tracks 2** and **3**.
Replace the sensor if its resistance is not **10,250 ± 500 Ω at 20°C**

Check that the engine speed sensor is correctly mounted and that the flywheel target is not damaged.

Check that the gap between the engine speed sensor and the flywheel is **0.5 to 1.8 mm**.

Measure the resistance of the engine speed sensor between **terminals A and B** of its black connector.

If the **winding resistance** is not between **510 Ω and 850 Ω** at an engine temperature of **20°C**, replace the engine speed sensor.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF209 PRESENT OR STORED	<u>EGR POSITION SENSOR CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Micro-breaks
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine is started or following a road test.
	Special notes: If the fault is present: <ul style="list-style-type: none"> – there is smoke coming from the exhaust, – the EGR offset fault finding function is disabled, – the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting 1 minute). Use bournier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.
	Priorities when dealing with a number of faults: <ul style="list-style-type: none"> – DF012 Sensor supply voltage no. 2 if it is present or stored.
	IMPORTANT If the EGR valve needs to be replaced to resolve the fault, use command SC036 Reinitialise programming and select EGR valve to reinitialise the EGR valve offsets (see Replacement of components).

WARNING

This fault may appear if the wiring harness has been damaged.
Follow the procedure described in the Wiring Check in the Introduction.
This check enables the condition and the conformity of the engine wiring harness to be checked.

CO.0	NOTES	None.
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Check the EGR valve connections.
Check the injection computer connections.
Repair if necessary.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF209
CONTINUED 1

Check the **continuity** and **insulation to earth** of the following connections:

Injection computer 48-track brown connector B, **track J2** —————→ **Track 6** EGR valve.

Injection computer brown 48-track connector B, **track F4** —————→ **Track 2** EGR valve

If the connection or connections 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.

EGR valve with a square connector:

Measure the **resistance** of the EGR valve position feedback potentiometer between **tracks 2** and **4**.

If the resistance measured is not between **3.9 kΩ < X < 9.1 kΩ at 20°C**, replace the EGR valve.

EGR valve with a flat connector:

Replace the EGR valve.

If the valve is jammed or irrevocably seized, replace the EGR valve.

When replacing the EGR valve, run command **SC036 Reinitialise programming** and select **EGR valve** to reinitialise the EGR valve offsets (see **Replacement of components**).

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF209 CONTINUED 2	
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CC.1 1.DEF	NOTES	None.
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Check the EGR valve connections.
Check the injection computer connections.
Repair if necessary.

Check **for continuity** and **insulation to + 12 V** on the following connections:

Injection computer brown 48-track connector B, **track J2** \longrightarrow **Track 6** EGR valve.

Injection computer 32-track grey connector C **track C2** \longrightarrow **Track 4** EGR valve

Injection computer brown 48-track connector B, **track F4** \longrightarrow **Track 2** EGR valve

If the connection or connections 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.

Ensure the presence of **+ 5 V** on **track 2** of the EGR valve.

EGR valve with a square connector:

Measure the **resistance** of the EGR valve position feedback potentiometer between **tracks 2** and **4**.

If the resistance displayed is not between **3.9 k Ω < X < 9.1 k Ω at 20°C**, replace the EGR valve.

EGR valve with a flat connector:

Replace the EGR valve.

If the valve is jammed or irrevocably seized, replace the EGR valve.

When replacing the EGR valve, run command **SC036 Reinitialise programming** and select **EGR valve** to reinitialise the EGR valve offsets (see **Replacement of components**).

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF226 PRESENT OR STORED	<p><u>DAMPER VALVE CIRCUIT</u></p> <p>CC.1 : Short circuit to + 12 V CC.0 : Short circuit to earth CO : Open circuit CC : Short circuit 1.DEF: Internal electronic fault 2.DEF: External fault finding 3.DEF: Values outside tolerances</p>
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NOTES	<p>Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after:</p> <ul style="list-style-type: none"> – the engine is started, – a road test, – actuator command AC012 Damper valve; – switching off the ignition and waiting for 1 minute. <p>Special notes: If the fault is present:</p> <ul style="list-style-type: none"> – it is difficult or even impossible to start the vehicle, – the engine stops noisily, – the level 1 warning light is lit. <p>Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.</p>
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CC.1	NOTES	<p>After any work is carried out on the damper valve, run SC036 Reinitialise programming and select Damper valve, then switch off the ignition and wait 1 minute.</p>
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<p>Check the damper valve connections.</p> <p>Check the injection computer connections.</p> <p>Repair if necessary.</p>											
<p>Check the continuity and insulation from the + 12 V feed of the following connection:</p> <table><tr><td>Earth</td><td>————→</td><td>Track 1 of the damper valve</td></tr><tr><td>Injection computer brown 48-track connector B, track J4</td><td>————→</td><td>Track 3 of the damper valve</td></tr><tr><td>Injection computer brown 48-track connector B, track B2</td><td>————→</td><td>Track 4 of the damper valve</td></tr></table> <p>Repair if necessary.</p>			Earth	————→	Track 1 of the damper valve	Injection computer brown 48-track connector B, track J4	————→	Track 3 of the damper valve	Injection computer brown 48-track connector B, track B2	————→	Track 4 of the damper valve
Earth	————→	Track 1 of the damper valve									
Injection computer brown 48-track connector B, track J4	————→	Track 3 of the damper valve									
Injection computer brown 48-track connector B, track B2	————→	Track 4 of the damper valve									
<p>If the fault is still present, replace the damper valve.</p>											

AFTER REPAIR	<p>Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF226
CONTINUED 1

CO
CC.0

NOTES

After any work is carried out on the damper valve, run **SC036 Reinitialise programming** and select **Damper valve**, then switch off the ignition and wait **1 minute**.

Check the damper valve connections.
Check the injection computer connections.
Repair if necessary.

Check the **continuity and insulation to earth** of the following connections:

Injection computer brown 48-track connector B, **track J4** —————> **Track 3** of the damper valve

Injection supply relay mounting, **Track 5** —————> **Track 2** of the damper valve

Injection computer brown 48-track connector B, **track B2** —————> **Track 4** of the damper valve

Repair if necessary.

If the fault is still present, replace the damper valve.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF226 CONTINUED 2	
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CC	NOTES	After any work is carried out on the damper valve, it is necessary to run SC036 Reset programming and select Damper valve , then switch off the ignition and wait 1 minute .
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Check the damper valve connections. Check the injection computer connections. Repair if necessary.		
Check the continuity, insulation and absence of interference resistance of the following connections:		
Earth	————→	Track 1 of the damper valve
Injection supply relay mounting, Track 5	————→	Track 2 of the damper valve
Injection computer brown 48-track connector B, track J4	————→	Track 3 of the damper valve
Injection computer brown 48-track connector B, track B2	————→	Track 4 of the damper valve
Repair if necessary. If the fault is still present, replace the damper valve.		

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF226 CONTINUED 3	
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1.DEF to 3.DEF	NOTES	After any work is carried out on the damper valve, run SC036 Reinitialise programming and select Damper valve , then switch off the ignition and wait 1 minute .
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Check the damper valve connections. Check the injection computer connections. Repair if necessary.		
Check the continuity, insulation and absence of interference resistance of the following connections:		
Earth	————→	Track 1 of the damper valve
Injection supply relay mounting, Track 5	————→	Track 2 of the damper valve
Injection computer brown 48-track connector B, track J4	————→	Track 3 of the damper valve
Injection computer brown 48-track connector B, track B2	————→	Track 4 of the damper valve
Repair if necessary.		
If the fault is still present, check that the computer output is working correctly.		
Damper valve connected: – connect the negative terminal of the voltmeter to track 1 of the damper valve, – connect the positive terminal of the voltmeter to track 3 of the damper valve, – use command AC012 Damper valve :		
The voltmeter should display ten cycles of two successive voltages: ~ 2.5 V (OCR of 20%) then ~ 8.75 V (OCR of 70%).		
If the voltmeter does not indicate any control while the command is running (ten 1-second cycles), contact the Techline.		

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF250 PRESENT OR STORED	<u>ELECTRONIC STABILITY PROGRAM FUNCTION</u> 1.DEF: Inconsistency of the signal 2.DEF: Multiplex line connection fault
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present during a road test.
	Special notes: Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.

Check the ABS computer connections.
Check the injection computer connections.
Repair if necessary.

Run fault finding on the multiplex network, (see **88C, Airbags - seat belt pretensioners**) and the ABS, (see **38C, Anti-lock braking system**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF272 PRESENT OR STORED	<u>EGR VALVE CONTROL CIRCUIT</u> 1.DEF: Valve jammed open 2.DEF: Valve jammed closed
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NOTES	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.</p> <p>Special notes: The EGR function is deactivated if several faults with DF226 Damper valve circuit are present. If 1.DEF is present, – the level 1 warning light is lit, – the vehicle performance is reduced, – there is smoke coming from the exhaust. Use bournier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.</p>
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Check the EGR valve connections. Check the injection computer connections. Repair if necessary.
Check the continuity and the absence of interference resistance on the following connections: Injection computer brown 48-track connector B, track C2 \longrightarrow Track 1 EGR valve connector Injection computer brown 48-track connector B, track D2 \longrightarrow Track 5 EGR valve connector If the connection or connections 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 there are no leaks on the EGR circuit (pipes pierced or damaged) and that the clamps are properly tightened.
Measure the resistance of the EGR valve motor between tracks 1 and 5 . If the resistance displayed is not between $1\Omega < X < 400\Omega$ at 20°C , replace the EGR valve.
If the valve is jammed or irrevocably seized, replace the EGR valve. Run command SC036 Reset programming and select EGR valve to reset the EGR valve offsets (see Replacement of components).

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF276 PRESENT	<u>INJECTOR CODE PROGRAMMING</u> 1.DEF: Internal electronic fault when writing 2.DEF: No code in memory
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NOTES	Condition for applying fault finding ONLY to a present fault: The fault is declared present after: <ul style="list-style-type: none"> – reprogramming the injection computer, – replacing and programming the injection computer.
	Special notes: If the fault is present: <ul style="list-style-type: none"> – the engine speed is limited, – the level 1 warning light is lit.

1.DEF	NOTES	None.
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Program the injector codes using command **SC002 Enter injector codes**.
 Carry out the procedure described in the **Interpretation of commands** section.

If the fault is still **present** after switching off the ignition, waiting for 1 minute and then re-establish dialogue,
 Follow the interpretation of command **SC002 Entering injector codes**.
 If the fault is still present, contact the Techline.

Otherwise clear the fault memory using **RZ007 Fault memory**.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF276 CONTINUED	
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2.DEF	NOTES	This fault appears on any blank computer (new or recently reprogrammed).
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WARNING

A computer without the IMA option can be replaced by a computer with this option. The codes are not saved during command **SC003 Save computer data**.

In this case, status **ET104 Use of Injector Codes** becomes **YES**, fault **DF276 Injector Code Programming** will be present, and the engine will operate in defect mode.

Program the injector codes using command **SC002 Enter injector codes**.

Carry out the procedure described in the **Interpretation of commands** section.

If the fault is still **present** after switching off the ignition, waiting 1 minute and then re-establish dialogue:

Follow the interpretation of command **SC002 Entering injector codes**.


If the fault is still present, contact the Techline.

Otherwise clear the fault memory using **RZ007 Fault memory**.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF532 PRESENT OR STORED	<u>ALTERNATOR CHARGE SIGNAL</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Above maximum threshold 2.DEF: Below minimum threshold
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the ignition is switched on or with the engine running.
	Special notes: If the fault is present, the level 1 warning light comes on.
	IMPORTANT The fault can appear after the alternator has been saturated for too long. For stored faults, clear the fault, switch off the ignition and wait for 1 minute before carrying out a road test to confirm the fault before any operation.

Run a multiplex network test (see 88B, Multiplexing).
If the fault is still present, check the insulation and continuity on the following connection: Injection computer, connector C, track A3  Alternator, Track 2, black connector Repair if necessary.
If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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DF619 PRESENT OR STORED	<u>EGR VALVE JAMMED OPEN</u>
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after a road test.
	Priorities when dealing with a number of faults: <ul style="list-style-type: none">– DF118 EGR solenoid valve servo-control,– DF209 EGR valve position sensor circuit,– DF272 EGR valve control circuit, if they are present or stored.
	Special note: If the fault is present: <ul style="list-style-type: none">– The EGR and turbocharging functions are inhibited.– The level 1 warning light is lit. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.
	IMPORTANT If the EGR valve needs to be replaced to resolve the fault, use command SC036 Reinitialise programming and select EGR valve to reinitialise the EGR valve offsets (see Replacement of components).

Check the EGR valve connections.
Check the injection computer connections.
Repair if necessary.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF619
CONTINUED**

Check the operation of the EGR valve:

- exit fault finding mode in CLIP,
- switch off the vehicle ignition,
- disconnect the EGR valve connector,
- remove the EGR valve.
- Check that there are no particles blocking the movement of the piston.
- Clean the EGR valve, (see **Technical Note 3916A Cleaning the EGR valve**).
- Refit the EGR valve, run command **SC036 Reinitialise programming** and select **EGR valve** to reinitialise the EGR valve offsets (see **Replacement of components**).

If the valve is jammed or irrevocably seized, replace the EGR valve. Run command **SC036 Reinitialise programming** and select **EGR valve** to reinitialise the EGR valve offsets (see **Replacement of components**).

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF620 PRESENT OR STORED	<u>EGR VALVE FOULED</u>
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after a road test.
	Priorities when dealing with a number of faults: <ul style="list-style-type: none">– DF118 EGR solenoid valve servo-control,– DF209 EGR valve position sensor circuit,– DF272 EGR valve control circuit, if they are present or stored.
	Special note: If the fault is present: <ul style="list-style-type: none">– the EGR function is inhibited,– turbocharging is inhibited,– the level 1 warning light is lit. Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.
	IMPORTANT If the EGR valve needs to be replaced to resolve the fault, use command SC036 Reinitialise programming and select EGR valve to reinitialise the EGR valve offsets (see Replacement of components).

Check the EGR valve connections.
Check the injection computer connections.
Repair if necessary.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF620
CONTINUED**

Check the operation of the EGR valve:

- exit fault finding mode in CLIP,
- switch off the vehicle ignition,
- disconnect the EGR valve connector,
- remove the EGR valve.
- Check that there are no particles blocking the movement of the piston.
- Clean the EGR valve, (see **Technical Note 3916A Cleaning the EGR valve**).
- Refit the EGR valve, run command **SC036 Reinitialise programming** and select **EGR valve** to reinitialise the EGR valve offsets (see **Replacement of components**).

If the valve is jammed or irrevocably seized, replace the EGR valve. Run command **SC036 Reinitialise programming** and select **EGR valve** to reinitialise the EGR valve offsets (see **Replacement of components**).

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF621 PRESENT OR STORED	<u>EGR VALVE JAMMED OPEN (OBD FAULT)</u>
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present after a road test.
	Priorities when dealing with a number of faults: <ul style="list-style-type: none">– DF118 EGR solenoid valve servo-control,– DF209 EGR valve position sensor circuit,– DF272 EGR valve control circuit, if they are present or stored.
	Special note: If the fault is present: <ul style="list-style-type: none">– there is heavy smoke coming from the exhaust,– the OBD warning light will come on after three consecutive driving cycles (starting + 5 seconds + switching off the ignition and waiting 1 minute). Use bornier Ele. 1681 or Ele. 1590 for any operation on the injection computer connectors.
	IMPORTANT If the EGR valve needs to be replaced to resolve the fault, use command SC036 Reinitialise programming and select EGR valve to reinitialise the EGR valve offsets (see Replacement of components).

Check the EGR valve connections.
Check the injection computer connections.
Repair if necessary.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF621
CONTINUED**

Check the operation of the EGR valve:

- exit fault finding mode in CLIP,
- switch off the vehicle ignition,
- disconnect the EGR valve connector,
- remove the EGR valve.
- Check that there are no particles blocking the movement of the piston.
- Clean the EGR valve, (see **Technical Note 3916A Cleaning the EGR valve**).
- Refit the EGR valve, run command **SC036 Reinitialise programming** and select **EGR valve** to reinitialise the EGR valve offsets (see **Replacement of components**).

If the valve is jammed or irrevocably seized, replace the EGR valve. Run command **SC036 Reinitialise programming** and select **EGR valve** to reinitialise the EGR valve offsets (see **Replacement of components**).

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF652 PRESENT OR STORED	<u>TURBINE UPSTREAM TEMPERATURE SENSOR CIRCUIT</u> CC.0 : Short circuit to earth CO.1 : Short circuit or open circuit to + 12 V
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault becomes present: <ul style="list-style-type: none">– ignition is on (CC.0),– following a road test, engine warm (CO.1).
	Special notes: If the fault is present: <ul style="list-style-type: none">– the EGR function is inhibited,– particle filter regeneration is inhibited,– the vehicle performance is reduced,– the level 1 warning light is illuminated.
	Priorities when dealing with a number of faults: DF011 Sensor voltage supply no. 1 IMPORTANT The turbine upstream temperature sensor only measures temperatures above 200°C.

Check the condition of the turbine upstream temperature sensor connector (see **Wiring Diagram Technical Note, Mégane II, Scénic II, component code 1589**).

Check the condition of the engine management computer connector (see **Wiring Diagram Technical Note, Mégane II, Scénic II, component code 120**).

If one of the connectors is 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	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF652
CONTINUED**

Check the **continuity, the absence of interference resistance, and the insulation** to **+5 V** and **+12 V** of the following connections:

- connection code **3ABS**,
- connection code **3ABT**.

Between components **120** and **1589**.

Check the **continuity, the absence of interference resistance, and the insulation** to **earth** of connection **3ABS** between components **120** and **1589**.

Check for **earth** on connection **3ABT** of the turbine upstream temperature sensor

If the connection or connections 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.

Otherwise, replace the turbine upstream temperature sensor.

If the fault is still present, contact the Techline.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF778 PRESENT OR STORED	<u>TURBINE UPSTREAM TEMPERATURE CONTROL</u> 1.DEF: Temperature measured too high 2.DEF: Parameter at max limit
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault becomes present: <ul style="list-style-type: none">– the engine is started with a speed greater than 1750 rpm and a fuel flow greater than 30 mg/st,– a road test.
	Special notes: If the fault is present: <ul style="list-style-type: none">– particle filter regeneration is inhibited,– the vehicle performance is reduced,– the level 1 warning light is illuminated.
	IMPORTANT This fault can result in a rapid and significant fouling of the particle filter.

Apply **TEST 3 Turbocharged air inlet circuit check**.

Check the turbine upstream temperature sensor connections.

check the engine management computer connections.

If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool.
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**DF778
CONTINUED**

Check **the continuity, the absence of interference resistance, and the insulation to +5 V and +12 V** of the following connections:

- connection code **3ABS**,
- connection code **3ABT**.

Between components **120 and 1589**.

Check the **continuity, the absence of interference resistance, and the insulation to earth** of connection **3ABS** between components **120 and 1589**.

Check for **earth** on connection **3ABT** of the turbine upstream temperature sensor.

If the connection or connections 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 the fault is still present, replace the turbine upstream temperature sensor.

AFTER REPAIR

Deal with any faults.
Carry out a road test followed by another check with the diagnostic tool.

DF1070 PRESENT OR STORED	<u>COLD LOOP</u>
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NOTES	Conditions for applying the fault finding procedure to a stored fault: The fault is declared present with the engine running and with a heating and air conditioning system request.
	Priorities when dealing with a number of faults: – DF049 Refrigerant sensor circuit if it is present or stored.

When the fault is present or stored, the heating and air conditioning system is inhibited.
Check fuse F22 (10A) of the UPC and the condition of the air conditioning compressor 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 air conditioning compressor wiring. If the wiring is faulty and there is a repair procedure (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.
Manually check if the compressor is jammed (turn the clutch plate manually to check that there is no point of resistance). In the event of sticking, replace the air conditioning compressor (see MR 364 (Mégane II) or 370 (Scénic II), Mechanical, Heating and air conditioning system, 62A, Air conditioning, Compressor: Removal - Refitting).
Top up the refrigerant, check for any leaks and repair if necessary (see MR 364 (Mégane II) or 370 (Scénic II), Mechanical, Heating and air conditioning system, 62A, Air conditioning, Refrigerant circuit: check, Refrigerant circuit: Draining - Filling).

AFTER REPAIR	Deal with any faults. Carry out a road test followed by another check with the diagnostic tool .
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DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

MAIN COMPUTER STATUSES AND PARAMETERS

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Vehicle impact	ET077: Impact detected	NO	In the event of a fault, refer to the interpretation of fault DF069 Impact detected signal .
2	Power supply	ET001: Computer + after ignition feed	PRESENT	In the event of a fault, refer to the interpretation of DF015 Main relay control circuit .
		PR071: Computer feed voltage	9 V < X < 16 V	In the event of a fault, carry out a fault finding procedure on the charging circuit and refer to the interpretation for DF047 Computer supply voltage .
		PR358: Sensor reference voltage	3.4 V < X < 3.8 V	None
3	Speed	PR190: Engine idle speed setpoint.	Indicates the engine's rotational speed setpoint in rpm.	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit .
		PR055: Engine speed	Gives the engine's rotational speed in rpm. With the ignition on at 0 rpm	
4	Speed signal	PR089: Vehicle speed	Gives the vehicle speed in mph. This parameter is transmitted by the ABS computer. This signal is transmitted to the injection on the multiplex network.	In the event of a fault, test the multiplex network. (See 88B, Multiplexing).

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

MAIN COMPUTER STATUSES AND PARAMETERS (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
5	Injection configuration	ET104: Injector code use	YES	This status indicates that the IMA function is activated. In the event of a fault, consult the interpretation of DF276 Injector code programming .
6	Pressure	PR035: Atmospheric pressure	Indicates the atmospheric pressure in mbar. The sensor is built into the computer. Default value: 750 mbar.	In the event of a fault, consult the interpretation of DF003 Atmospheric pressure sensor circuit .
		PR038: Rail pressure	0 < X < 30 bar	In the event of a fault, consult the interpretation of fault DF007 Rail pressure sensor circuit .
7	Temperature	PR059: Inlet air temperature	Shows the inlet air temperature Ignition on PR061 = PR059 Default value: 20 °C	In the event of a fault, refer to the interpretation for DF039 Inlet air temperature circuit sensor
8		PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit .
9	Torque	PR015: Engine torque		This parameter is only valid when the engine has been started.
10	Charging circuit	PR016: Alternator flow	0 mA	In the event of a fault, check the charging circuit.

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

AIR CIRCULATION (TURBOCHARGING/INLET)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine speed	PR055: Engine speed	Indicates the engine's rotational speed in rpm. Ignition on at 0 rpm	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
2	Temperature	PR059: Inlet air temperature	Indicates the inlet air temperature Default value: 20 °C	In the event of a fault, refer to the interpretation of fault DF039 Inlet air temperature sensor circuit
		PR061: Exterior air temperature	Gives the exterior air temperature in °C. This parameter is controlled by the UCH and transmitted to the injection on the multiplex network. Default value: 20 °C	In the event of a fault, see the UCH (see 87B, Passenger compartment connection unit).
3	Turbocharging	PR009: Turbocharging pressure setpoint	790 < X < 1,190 mbar	None
		PR041: Turbocharging pressure	PR041 = PR035 ± 10 mbar	In the event of a fault, consult the interpretation of DF004 Turbocharging pressure sensor circuit.
		PR047: Turbocharging pressure OCR*	X < 5 %	The Opening Cyclic Ratio should be identical to the correction of the solenoid valve position
		PR011: Turbocharging solenoid valve position sensor	X < 5 %	

*Opening cyclic ratio signal

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

AIR CIRCULATION (TURBOCHARGING/INLET) (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
4	Air circulation	PR035: Atmospheric pressure	Indicates the atmospheric pressure in mbar. The sensor is built into the computer. Default value: 750 mbar.	In the event of a fault, consult the interpretation of DF003 Atmospheric pressure sensor circuit.
		PR132: Air flow	0 < X < 10 kg/h	In the event of a fault, consult the interpretation of parameter DF056 Air flow sensor circuit.
		PR672: Damper valve position setpoint	X < 5 %	In the event of a fault, consult the interpretation for fault DF226 Damper valve circuit.
		PR417: OCR inlet air flap	X < 5 %	
		PR420: Damper valve error counter	X = 0	
5	Sensor feed	PR081: Inlet temperature sensor voltage	1.90 < X < 3.10 V Safe value: 5 V	In the event of a fault, refer to the interpretation of fault DF039 Inlet air temperature sensor circuit.
		PR079: Atmospheric pressure sensor voltage	3.80 < X < 4 V	In the event of a fault, consult the interpretation of DF003 Atmospheric pressure sensor circuit.
		PR073: Air flowmeter feed voltage	0.5 < X < 1 V Safe value: 0 V	In the event of a fault, refer to the interpretation of fault DF013 Sensor feed voltage no. 3.

*Opening cyclic ratio signal

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

FUEL CIRCUIT

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine speed	PR055: Engine speed	Indicates the engine's rotational speed in rpm. With the ignition on, 0 rpm.	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
2	Injector codes	ET104: Injector code use	YES Indicates whether the injector codes have been programmed	In the event of a fault, consult the interpretation of DF276 Injector code programming.
3	Pressure	PR008: Rail pressure setpoint	Indicates the theoretical pressure value for optimum engine operation X = 250 ± 50 bar	In the event of a fault, refer to the interpretation of faults DF053 Rail pressure regulation function and DF007 Rail pressure sensor circuit.
		PR038: Rail pressure	0 < X < 10 bar Default value: 250 bar.	
		PR048: OCR* rail pressure regulation valve	X = 15 %	
		PR213: Rail pressure loop difference	X = PR008 - PR038	The fuel pressure variation is the difference between the rail pressure and the rail pressure setpoint. In the event of a fault, consult the interpretation of faults DF007 Rail pressure sensor circuit and DF053 Rail pressure regulation function.

*Opening cyclic ratio signal

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

FUEL CIRCUIT (continued)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
4	Flow	PR157: Fuel flow setpoint	0 < X < 60 mg/st	None
		PR017: Fuel flow	PR017 = PR157	None
		PR364: Cylinder no. 1 fuel flow correction	0.0 mg/st	In the event of a fault, refer to test 8: POOR INJECTOR OPERATION.
		PR405: Cylinder no. 2 fuel flow correction		
		PR406: Cylinder no. 3 fuel flow correction		
		PR365: Cylinder no. 4 fuel flow correction		
5	Rail current	PR007: Rail pressure regulator current setpoint	X = 400 ± 5 mA Default value: 1600 mA	In the event of a fault, consult the interpretation of faults DF053 Rail pressure regulation function and DF007 Rail pressure sensor circuit.
		PR006: Rail pressure regulator current	X = PR007 ± 5 mA Default value: 1600 mA	
		PR080: Rail pressure sensor voltage	X = 0.5 V Safe value: 5 V	In the event of a fault, refer to the interpretation of fault DF013 Sensor feed voltage no. 3.
6	Sensor voltage	PR080: Rail pressure sensor voltage	0.5 < X < 1 V Safe value: 5 V	

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

EMISSION CONTROL/OBD

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine speed	PR055: Engine speed	Gives the engine's speed in rpm	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
2	Exhaust gas recirculation	ET651: EGR programming cut-off	NONE	In the event of a fault, refer to the interpretation of ET651 EGR programming cut-off.
		PR005: EGR valve opening setpoint	Gives a theoretical EGR valve opening value for optimum engine operation. - 10 < X < 0 %	In the event of a fault, refer to fault interpretation DF272 EGR control circuit.
		PR051: EGR valve position feedback	- 10 < X < 0 %	In the event of a fault, consult the interpretation of DF118 EGR solenoid valve control The EGR valve position feedback loop difference must equal the difference between the EGR valve position and the position feedback.
		PR022: EGR valve position feedback loop difference	X = PR005 - PR051	
		PR128: First EGR valve offset	10 % < X < 40 % (average value)	In the event of a fault, apply command SC036 Reinitialisation of programming and EGR valve.
		PR129: Last EGR valve offset	10 % < X < 40 % (average value)	

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

EMISSION CONTROL/OBD (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
3	Air regulation	PR171: Air flow setpoint for the EGR	750 ± 200 mg/st	In the event of a fault, consult the interpretation of parameter DF056 Air flow sensor circuit.
		PR132: Air flow	0 < X < 10 kg/h	
		PR146: Inlet air flow	Indicates the air flow entering the engine in mg/st 0 mg/st	
		PR131: EGR air flow variation	X = PR146 - PR171 should be close to 0 with ignition on	
4	Sensor feed	PR077: EGR valve position sensor voltage	0.5 < X < 1.5 V default value: 0 V	In the event of a fault, refer to the interpretation of fault DF012 Sensor supply voltage no. 2.
5	Temperature	PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

DRIVER PARAMETERS

Order	Function	Parameter or Status checked or Action		Display and Notes		Fault finding
1	Engine	PR190:	Idle speed setpoint	Indicates the engine's rotational speed setpoint in rpm.		In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
		PR055:	Engine speed	Gives the engine's speed in rpm		
2	Accelerator pedal position *	PR030:	Accelerator pedal position	Indicates the accelerator pedal position. If no pressure is being applied to the pedal PR030 = 0 %		In the event of a fault, refer to the interpretation of fault DF008 Pedal potentiometer circuit gang 1 or DF009 Pedal potentiometer circuit gang 2.
3	Sensor feed	PR147:	Pedal potentiometer voltage gang 1	Accelerator pedal released 0.70 < X < 0.80 V		In the event of a fault, refer to the interpretation of fault DF008 Pedal potentiometer voltage track 1 or DF009 Pedal potentiometer voltage track 2.
		PR148:	Pedal potentiometer voltage gang 2	Accelerator pedal released 0.35 < X < 0.40 V		
4	Brake contact	ET704:	Brake contact no. 1	Indicates recognition of brake pedal contacts INACTIVE		In the event of a fault, consult the interpretation of status ET704 Brake switch no. 1.
		ET705:	Brake contact no. 2			In the event of a fault, consult the interpretation for status ET705 Brake switch no. 2.
5	Clutch pedal	ET405:	Clutch pedal switch	Indicates recognition of clutch pedal contacts RELEASED (MANUAL) or WITHOUT (AUTOMATIC)		In the event of a fault, consult the interpretation of status ET405 Clutch pedal switch.
(*) Pedal voltages - cold, ignition on (average values stated for information only).						
Pedal load		0 %	25 %	50 %	100 %	120 %
Gang 1 voltage		0.74 V	1.52 V	2.09 V	3.23 V	3.67 V
Gang 2 voltage		0.37 V	0.77 V	1.06 V	1.64 V	1.87 V

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

IGNITION/PREHEATING

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Power supply	ET001: Computer + after ignition feed	PRESENT	In the event of a fault, perform fault finding for DF047 Computer supply voltage.
2	Engine	ET038: Engine	STOPPED	None
		PR055: Engine speed	Gives the engine's speed in rpm	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
3	Temperature	PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.
		PR059: Inlet air temperature	Indicates the inlet air temperature in °C Default value: 20 °C	In the event of a fault, refer to the interpretation of fault DF039 Inlet air temperature sensor circuit
4	Preheating	ET007: Preheating unit control	Status ET007 is ACTIVE a few seconds after the ignition is switched on and for the postheating	In the event of a fault (ET007 locked on ACTIVE), consult the interpretation of fault DF017 Preheating unit control circuit.
5	Power supply	PR071: Computer feed voltage	9 V < voltage < 16 V	In the event of a fault, consult the interpretation of fault DF047 computer supply voltage.

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

ENGINE COOLING

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Coolant temperature	PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.
2	Fan assemblies	ET021: Low speed fan assembly request	With the ignition switched on, engine < 80° INACTIVE	If the fan units are supplied with the ignition on, the injection may be in defect mode. Carry out a system fault test and refer to the interpretation of faults.
		ET022: High speed fan assembly request		
		ET014: Monitor cooling fan 1	With the ignition switched on, engine < 80° STOPPED	
		ET015: Monitor cooling fan 2		
3	Sensor feed	PR084: Coolant temperature sensor voltage	3 < X < 4 V Safe value: 5 V	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

COLD LOOP

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine	PR055: Engine speed	Gives the engine speed of rotation in rpm	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
2	Driver control	ET088: Compressor actuation request	INACTIVE	If the air conditioning is authorised or the compressor actuated see 62A air conditioning.
		ET004: Air conditioning authorisation	NO	
3	Air conditioning speed	PR053: Speed requested by air conditioning		This parameter is only valid when the engine has been started
4	Output	PR125: Power absorbed by the air conditioning compressor*	0 W	None
5	Engine cooling	ET022: Low speed fan assembly request	With the ignition switched on, engine < 80° INACTIVE	If the fan assemblies are supplied with ignition on, the injection system may be in defect mode. Carry out a system fault test and refer to the interpretation of any faults.
		ET021: High speed fan assembly request		
		ET014: Monitor cooling fan 1	With the ignition switched on, engine < 80° STOPPED	
		ET015: Monitor cooling fan 2		

*Air Conditioning

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

COLD LOOP (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
6	Coolant temperature	PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.
7	Vehicle speed	PR089: Vehicle speed	Gives the vehicle speed in mph. This parameter is transmitted by the ABS computer. This signal is transmitted to the injection on the multiplex network.	In the event of a fault, test the multiplex network. For the interpretation of possible faults (see 38C, Anti-lock braking system).
8	Pressure	PR037: Refrigerant pressure	2 bar < PR037 < 27 bar	In the event of a fault, refer to the fault finding procedure for fault DF049 Refrigerant sensor circuit.
9	Voltage	PR076: Refrigerant sensor voltage	0 V < X < 5 V	

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

HEATING

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Coolant temperature	PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.
2	Passenger Compartment Heating Resistors (RCH)	ET111: Set number of Passenger Compartment Heating Resistors	Depending on the requirements of the injection system (e.g. torque reduction, power requirements), the injection computer sets the number of activated passenger compartment heating resistors (no more or no fewer than required)	If there is a fault, (see 87B, Passenger compartment connection unit).
		ET112: Passenger Compartment Heating Resistor cut-off	Status ET112 shows whether the injection computer has requested the passenger compartment heating resistors to be cut out ET112 = YES	

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

CRUISE CONTROL/SPEED LIMITER

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Cruise control/speed limiter	ET042: Cruise control/speed limiter	<ul style="list-style-type: none"> - NOT DETECTED: Vehicle not equipped with cruise control/speed limiter function buttons or after reprogramming the injection computer, the switch is in the rest position. - INACTIVE: When no buttons are pressed. - SPEED LIMITER: Main switch to speed limiter position. - CRUISE CONTROL: Main switch to cruise control position. 	If there is a fault, refer to the interpretation of status ET042 Cruise control/speed limiter.
		ET703: Cruise control/speed limiter buttons	<ul style="list-style-type: none"> - INACTIVE: No cruise control/speed limiter buttons are pressed. These buttons are located on the steering wheel. - PLUS: When the cruise control/speed limiter "+" button is pressed. This button is on the steering wheel, on the left-hand side. - MINUS: When the cruise control/speed limiter - button is pressed. This button is on the steering wheel, on the left-hand side. - SUSPEND: When the cruise control/speed limiter "0" button is pressed. This button is located on the steering wheel, to the right. - RESUME: when the cruise control/speed limiter "R" button is pressed. This button is located on the steering wheel, to the right. 	In the event of a fault, consult the interpretation of status ET703 Cruise control/speed limiter button.

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

CRUISE CONTROL/SPEED LIMITER (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
2	Brake contact	ET704: Brake switch No. 1	- INACTIVE - ACTIVE (brake pedal depressed)	In the event of a fault, consult the interpretation of status ET704 Brake switch no. 1
3		ET705: Brake switch No. 2	- ACTIVE (brake pedal released) - INACTIVE	In the event of a fault, consult the interpretation of status ET705 Brake switch no. 2
4	Clutch pedal switch	ET405: Clutch pedal switch	- ACTIVE - INACTIVE	In the event of a fault, consult the interpretation of status ET405 Clutch switch.
5	Cruise control setpoint	PR130: Cruise control setpoint	Indicates the reference values requested by the driver (in mph (km/h))	NONE
6	Vehicle speed	PR089: Vehicle speed	0 mph (kmh) Shows the vehicle speed in mph (km/h). This parameter is transmitted by the ABS computer or vehicle speed ECU*. This signal is transmitted to the injection system on the multiplex network.	Test the multiplex network. See fault finding for the ABS system or the vehicle speed ECU*.

*ECU: Electronic Control Unit

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

CRUISE CONTROL/SPEED LIMITER (continued 2)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
7	Cruise control/speed limiter deactivation	ET415: Cruise control/speed limiter deactivation	<p>NONE: This status is present on the diagnostic tool when: the computer has been reinitialised, The computer has been reprogrammed.</p> <ul style="list-style-type: none"> - STATUS 1: Traction control request - STATUS 2: Brake pedal depressed. - STATUS 3: Clutch pedal depressed. - STATUS 4: Cancel button pressed - STATUS 5: Cruise control or speed limiter monitoring. - STATUS 6: Gear lever in neutral (manual gearbox) or neutral position (automatic transmission). - STATUS 7: Inconsistency between the request and the vehicle speed. - STATUS 8: Automatic transmission in defect mode. - STATUS 9: Vehicle speed monitoring. - STATUS 10: Monitoring by injection computer. 	In the event of a fault, consult the interpretation of status ET415 Cruise control/speed limiter deactivation.

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

STARTING

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Power supply	ET001: Computer + after ignition feed	PRESENT	In the event of a fault, carry out a full fault finding procedure on the charging circuit.
2	Starting	ET238: Synchronisation	NOT PERFORMED	In the event of a fault, refer to fault interpretation DF195 Camshaft/engine speed sensor consistency.
		ET076: Starting	AUTHORISED: the injection authorises starting	If status ET076 is PROHIBITED , carry out a complete fault finding procedure on the multiplex network.
3	Engine operation.	ET038: Engine	STOPPED	None
4	Power supply	PR071: Computer feed voltage	9 V < voltage < 16 V	In the event of a fault, consult the interpretation of fault DF047 Computer supply voltage.
		PR358: Sensor reference voltage	3.4 V < voltage < 3.8 V	None

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test conditions: **ENGINE OFF, IGNITION ON.**

PROTECTION

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine immobiliser	ET341: Immobiliser code programmed	YES	If status ET341 is frozen on NO , see 87B , Passenger compartment connection unit .
		ET003: Engine immobiliser	INACTIVE	If status ET003 is frozen on ACTIVE , see 87B , Passenger compartment connection unit .
2	Vehicle impact	ET077: Impact detected	NO	In the event of a fault, refer to the interpretation of fault DF069 Impact detected signal .
3	Starting	ET076: Starting	AUTHORISED: the injection authorises starting	If status ET076 is PROHIBITED , see 87B , Passenger compartment connection unit .

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

MAIN COMPUTER STATUSES AND PARAMETERS

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Vehicle impact	ET077: Impact detected	NO	In the event of a fault, refer to the interpretation of fault DF069 Impact detected signal.
2	Power supply	ET001: Computer + after ignition feed	PRESENT	In the event of a fault, refer to the interpretation of DF015 Main relay control circuit.
		PR071: Computer feed voltage	9 V < X < 16 V	In the event of a fault, carry out a fault finding procedure on the charging circuit and refer to the interpretation for DF047 Computer supply voltage.
		PR358: Sensor reference voltage	3.4 V < X < 3.8 V	None
3	Engine running	PR055: Engine speed	Gives the engine's rotational speed in rpm.	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
4	Injection configuration	ET104: Injector code use	YES	This status indicates that the IMA function is activated. In the event of a fault, consult the interpretation of DF276 Injector code programming.

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

MAIN COMPUTER STATUSESAND PARAMETERS (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
5	Pressure	PR035: Atmospheric pressure	Indicates the atmospheric pressure in mbar. The sensor is built into the computer. Default value: 750 mbar.	In the event of a fault, consult the interpretation of DF003 Atmospheric pressure sensor circuit.
		PR038: Rail pressure	250 < X < 350 bar	In the event of a fault, consult the interpretation of fault DF007 Rail pressure sensor circuit.
6	Temperature	PR059: Inlet air temperature	Shows the inlet air temperature PR061 = PR059 Default value: 20 °C	In the event of a fault, refer to the interpretation for DF039 Inlet air temperature circuit sensor
		PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.
7	Torque	PR015: Engine torque	20 < X < 40 Nm	This parameter is only valid when the engine has been started.
8	Charging circuit	PR016: Alternator flow	Warm engine 1500 < X < 2500 mA With consumers: 2500 < X < 3600 mA	In the event of a fault, check the charging circuit.
9	Speed signal	PR089: Vehicle speed	Gives the vehicle speed in mph. This parameter is transmitted by the ABS computer. This signal is transmitted to the injection on the multiplex network.	In the event of a fault, test the multiplex network. See 38C Anti-lock braking system.

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

AIR CIRCULATION (TURBOCHARGING/INLET)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine speed	PR055: Engine speed	Indicates the engine's rotational speed in rpm.	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit .
2	Temperature	PR059: Inlet air temperature	Indicates the inlet air temperature Default value: 20 °C	In the event of a fault, refer to the interpretation of fault DF039 Inlet air temperature sensor circuit
		PR061: Exterior air temperature	Gives the exterior air temperature in °C. This parameter is controlled by the UCH and transmitted to the injection on the multiplex network. Default value: 20 °C	In the event of a fault, see the UCH (see 87B, Passenger compartment connection unit).
3	Turbocharging	PR041: Turbocharging pressure	X = PR035 ± 10 mbar	In the event of a fault, consult the interpretation of DF004 Turbocharging pressure sensor circuit .
		PR009: Turbocharging pressure setpoint	790 < X < 1,110 mbar	None
		PR047: Turbocharging pressure OCR*	60 < X < 90 %	The Opening Cyclic Ratio should be identical to the correction of the solenoid valve position
		PR011: Turbocharging solenoid valve position sensor	60 < X < 90 %	

*Opening cyclic ratio signal

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

AIR CIRCULATION (TURBOCHARGING/INLET) (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
4	Air circulation	PR035: Atmospheric pressure	Indicates the atmospheric pressure in mbar. The sensor is built into the computer. Default value: 750 mbar.	In the event of a fault, consult the interpretation of DF003 Atmospheric pressure sensor circuit.
		PR132: Air flow	25 < X < 50 kg/h	In the event of a fault, consult the interpretation of parameter DF056 Air flow sensor circuit.
		PR672: Damper valve position setpoint	X < 5 %	In the event of a fault, consult the interpretation for fault DF226 Damper valve circuit.
		PR417: OCR inlet air flap	X < 5 %	
		PR420: Damper valve error counter	X = 0	
5	Sensor feed	PR081: Inlet temperature sensor voltage	1.90 < X < 2.90 V Safe value: 5 V	In the event of a fault, refer to the interpretation of fault DF039 Inlet air temperature sensor circuit.
		PR079: Atmospheric pressure sensor voltage	3.80 < X < 4 V	In the event of a fault, consult the interpretation of DF003 Atmospheric pressure sensor circuit.
		PR073: Air flowmeter feed voltage	1.5 < X < 2.5 V Safe value: 0 V	In the event of a fault, refer to the interpretation of fault DF013 Sensor feed voltage no. 3

*Opening cyclic ratio signal

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

FUEL CIRCUIT

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine speed	PR055: Engine speed	Indicates the engine's rotational speed in rpm.	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
2	Injector codes	ET104: Injector code operation	YES Indicates whether the injector codes have been programmed	In the event of a fault, consult the interpretation of DF276 Injector code programming.
3	Pressure	PR008: Rail pressure setpoint	Indicates the theoretical pressure value for optimum engine operation X = 270 ± 50 bar	In the event of a fault, refer to the interpretation of fault DF053 Rail pressure regulator function.
		PR038: Rail pressure	X = ~ 315 bar Default value: 250 bar.	In the event of a fault, consult the interpretation of fault DF007 Rail pressure sensor circuit.
		PR048: OCR* rail pressure regulation valve	35 < X < 45 %	
		PR213: Rail pressure loop difference	X = PR008 - PR038	The fuel pressure variation is the difference between the rail pressure and the rail pressure setpoint. In the event of a fault, consult the interpretation of fault DF007 Rail pressure sensor circuit.

*Opening cyclic ratio signal

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

FUEL CIRCUIT (continued)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
4	Flow	PR017: Fuel flow	X = 0 < X < 60 mg/st	None
		PR157: Fuel flow setpoint	PR017 = PR157	None
		PR364: Cylinder no. 1 fuel flow correction	± 1 mg/st	In the event of a fault, refer to the interpretation of test 8: POOR INJECTOR OPERATION.
		PR405: Cylinder no. 2 fuel flow correction		
		PR406: Cylinder no. 3 fuel flow correction		
		PR365: Cylinder no. 4 fuel flow correction		
5	Rail current	PR007: Rail pressure regulator current setpoint	X = 1400 ± 50 mA Default value: 1600 mA	In the event of a fault, consult the interpretation of fault DF007 Rail pressure sensor circuit.
		PR006: Rail pressure regulator current	X = PR007 ± 5 mA Default value: 1600 mA	
		PR080: Rail pressure sensor voltage	1 < X < 1.5 V Safe value: 5 V	In the event of a fault, refer to the interpretation of fault DF013 Sensor feed voltage no. 3

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

EMISSION CONTROL/OBD

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine speed	PR055: Engine speed	Gives the engine's speed in rpm	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
2	Exhaust gas recirculation	ET651: EGR programming cut-off	NONE	In the event of a fault, refer to the interpretation of ET651 EGR programming cut-off.
		PR005: EGR valve opening setpoint	Gives a theoretical EGR valve opening value for optimum engine operation. 10 < X < 40 %	In the event of a fault, refer to fault interpretation DF272 EGR control circuit.
		PR051: EGR valve position feedback	10 < X < 40 %	In the event of a fault, refer to the interpretation of DF118 EGR solenoid valve control. The EGR valve position feedback loop difference must equal the difference between the EGR valve position and the position feedback.
		PR022: EGR valve position feedback loop difference	X = PR005 - PR051 must be close to 0 at idle speed	
		PR128: First EGR valve offset	10 % < X < 40 % (average value)	In the event of a fault, apply command SC036 Reinitialise programming and EGR valve.
		PR129: Last EGR valve offset	10 % < X < 40 % (average value)	

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

EMISSION CONTROL/OBD (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
3	Air regulation	PR171: Air flow setpoint for the EGR	750 ± 400 mg/st	In the event of a fault, consult the interpretation of parameter DF056 Air flow sensor circuit.
		PR132: Air flow	Approximately 30 kg per hour	
		PR146: Inlet air flow	Shows the flow of air entering the engine in mg/st.	
		PR131: EGR air flow variation	X = PR146 - PR171 must be close to 0 at idle speed	
4	Sensor feed	PR077: EGR valve position sensor voltage	1.5 < X < 2.5 V default value: 0 V	In the event of a fault, refer to the interpretation of fault DF012 Sensor supply voltage no. 2.
5	Temperature	PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

DRIVER PARAMETERS

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine	PR055: Engine speed	Gives the engine speed of rotation in rpm	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
		PR190: Idle speed setpoint	Indicates the engine's rotational speed setpoint in rpm.	
2	Accelerator pedal position*	PR030: Accelerator pedal position	Indicates the accelerator pedal position. If no pressure is being applied to the pedal PR030 = 0 %	In the event of a fault, refer to the interpretation of fault DF008 Pedal potentiometer circuit gang 1 or DF009 Pedal potentiometer circuit gang 2.
3	Sensor feed	PR147: Pedal potentiometer voltage gang 1	Accelerator pedal released 0.70 < PR147 < 0.80 V	In the event of a fault, refer to the interpretation of fault DF008 Pedal potentiometer voltage gang 1 or DF009 Pedal potentiometer voltage gang 2.
		PR148: Pedal potentiometer voltage gang 2	Accelerator pedal released 0.35 < PR088 < 0.40 V	
4	Brake contact	ET704: Brake contact no. 1	Indicates recognition of brake pedal contacts INACTIVE	In the event of a fault, consult the interpretation of status ET704 Brake switch no. 1.
		ET705: Brake contact no. 2		In the event of a fault, consult the interpretation for status ET705 Brake contact no. 2.
5	Clutch pedal	ET405: Clutch pedal switch	Indicates recognition of clutch pedal contacts RELEASED (MANUAL) or WITHOUT (AUTOMATIC)	In the event of a fault, consult the interpretation of status ET405 Clutch pedal switch.

(*) Pedal voltages - cold, ignition on (average values stated for information only).

Pedal load	0 %	25 %	50 %	100 %	120 %
Gang 1 voltage	0.74 V	1.52 V	2.09 V	3.23 V	3.67 V
Gang 2 voltage	0.37 V	0.77 V	1.06 V	1.64 V	1.87 V

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

IGNITION/PREHEATING

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Power supply	ET001: Computer + after ignition feed	PRESENT	In the event of a fault, carry out a fault finding procedure on the charge circuit.
2	Engine	ET038: Engine	RUNNING	None
		PR055: Engine speed	Gives the engine's speed in rpm	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit.
3	Temperature	PR058: Air temperature	Indicates the inlet air temperature in °C Default value: 20 °C	In the event of a fault, refer to the interpretation of fault DF039 Inlet air temperature sensor circuit
		PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.
4	Preheating	ET007: Preheating unit control	Status ET007 is ACTIVE a few seconds after the ignition is switched on and for the postheating	In the event of a fault, (ET007 locked in ACTIVE), refer to the interpretation of fault DF017 Preheating unit control circuit.
5	Power supply	PR071: Computer feed voltage	9 V < voltage < 16 V	In the event of a fault, consult the interpretation of fault DF047 computer supply voltage.

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

ENGINE COOLING

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Coolant temperature	PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.
2	Fan assemblies	ET022: Low speed fan assembly request	ACTIVE if air conditioning request	If the fan units are supplied with the ignition on, the injection may be in defect mode. Carry out a system fault test and refer to the interpretation of faults.
		ET021: High speed fan assembly request	INACTIVE	
		ET014: Monitor cooling fan 1	RUNNING if air conditioning requested	
		ET015: Monitor cooling fan 2	STOPPED	
3	Sensor feed	PR084: Coolant temperature sensor voltage	1 < X < 2 V Safe value: 5 V	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.
4	Electric coolant pump (turbocharger)	ET589: Electric coolant pump control (turbocharger)	INACTIVE (command "ACTIVE" only with engine running and with high temperature).	In the event of a fault, apply command AC195 Electric coolant pump.

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

COLD LOOP

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine	PR055: Engine speed	Gives the engine's speed in rpm	In the event of a fault, refer to the interpretation for fault DF005 Engine speed sensor circuit .
2	Driver control	ET088: Compressor actuation request	ACTIVE if air conditioning request	If the air conditioning is authorised or the compressor is actuated (see 62A Air conditioning).
		ET004: Air conditioning authorisation	YES if air conditioning request	
3	Air conditioning speed	PR053: Speed requested by air conditioning	875 rpm according to the computer program	This parameter is only valid when the engine has been started
4	Output	PR125: Power absorbed by the air conditioning compressor	Indicates the power absorbed by the air conditioning compressor	This parameter is only valid when the engine has been started
5	Engine cooling	ET021: Low speed fan assembly request	ACTIVE if air conditioning request	If the fan assemblies are supplied with ignition on, the injection system may be in defect mode. Carry out a system fault test and refer to the interpretation of any faults.
		ET022: High speed fan assembly request	INACTIVE	
		ET014: Monitor cooling fan 1	RUNNING if air conditioning requested	
		ET015: Monitor cooling fan 2	STOPPED	

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

COLD LOOP (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
6	Coolant temperature	PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.
7	Vehicle speed	PR089: Vehicle speed	Gives the vehicle speed in mph. This parameter is transmitted by the ABS computer. This signal is transmitted to the injection on the multiplex network.	In the event of a fault, test the multiplex network. For the interpretation of possible faults (see 38C, Anti-lock braking system).
8	Refrigerant	PR037: Refrigerant pressure	1 < X < 27 bar	In the event of a fault, refer to the fault finding procedure for fault DF049 Refrigerant sensor circuit.
		PR076: Refrigerant sensor voltage	0 V < X < 5 V	

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

HEATING

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Coolant temperature	PR064: Coolant temperature	Shows the engine coolant temperature in °C Default value: 119 °C	In the event of a fault, refer to the interpretation of DF001 Coolant temperature sensor circuit.
2	Passenger Compartment Heating Resistors (RCH)	ET111: Set number of Passenger Compartment Heating Resistors	Depending on the requirements of the injection system (e.g. torque reduction, power requirements), the injection computer sets the number of activated passenger compartment heating resistors (no more or no fewer than required) ET111 = NO	If there is a fault, (see 87B, Passenger compartment connection unit).
		ET112: Passenger Compartment Heating Resistor cut-off	Status ET112 shows whether the injection computer has requested the passenger compartment heating resistors to be cut out ET112 = NO	

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

CRUISE CONTROL/SPEED LIMITER

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Cruise control/speed limiter	ET042 Cruise control/speed limiter	<ul style="list-style-type: none"> - NOT DETECTED: Vehicle not equipped with cruise control/speed limiter function buttons or after reprogramming the injection computer, the switch is in the rest position. - INACTIVE: When no button is pressed. - SPEED LIMITER: Main switch to speed limiter position. - CRUISE CONTROL: Main switch to cruise control position. 	In the event of a fault, refer to the interpretation of status ET042 Cruise control/speed limiter .
2	Keys	ET703: Cruise control/speed limiter buttons	<ul style="list-style-type: none"> - INACTIVE: No cruise control/speed limiter buttons are pressed. These buttons are located on the steering wheel. - PLUS: When the cruise control/speed limiter "+" button is pressed. This button is on the steering wheel, on the left-hand side. - MINUS: When the cruise control/speed limiter "-" button is pressed. This button is on the steering wheel, on the left-hand side. - SUSPEND: When the cruise control/speed limiter "0" button is pressed. This button is located on the steering wheel, to the right. - RESUME: When the cruise control/speed limiter "R" button is pressed. This button is located on the steering wheel, to the right. 	In the event of a fault, consult the interpretation of status ET703 Cruise control/speed limiter button .

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

CRUISE CONTROL/SPEED LIMITER (CONTINUED)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
3	Brake contact	ET704: Brake switch No. 1	- INACTIVE - ACTIVE (brake pedal depressed)	In the event of a fault, consult the interpretation of status ET704 Brake switch no. 1
4		ET705: Brake switch No. 2	- ACTIVE (brake pedal released) - INACTIVE	In the event of a fault, consult the interpretation of status ET705 Brake switch no. 2
5	Clutch pedal switch	ET405: Clutch pedal switch	- ACTIVE - INACTIVE	In the event of a fault, consult the interpretation of status ET405 Clutch switch.
6	Cruise control setpoint	PR130: Cruise control setpoint	Indicates the reference values requested by the driver (in mph (km/h))	NONE
7	Vehicle speed	PR089: Vehicle speed	0 mph Gives the vehicle speed in mph (km/h). This parameter is transmitted by the ABS computer or vehicle speed ECU*. This signal is transmitted to the injection system on the multiplex network.	Test the multiplex network. See fault finding for the ABS system or the vehicle speed ECU*.

*ECU: Electronic control Unit

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

CRUISE CONTROL/SPEED LIMITER (continued 2)

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
8	Cruise control/speed limiter deactivation	ET415: Cruise control/speed limiter deactivation	<p>NONE: This status is present on the diagnostic tool when:</p> <p>The computer has been reinitialised.</p> <p>The computer has been reprogrammed.</p> <ul style="list-style-type: none"> - STATUS 1: Traction control request - STATUS 2: Brake pedal depressed. - STATUS 3: Clutch pedal depressed. - STATUS 4: Cancel button pressed - STATUS 5: Cruise control or speed limiter monitoring. - STATUS 6: Gear lever in neutral (manual gearbox) or neutral position (automatic transmission). - STATUS 7: Inconsistency between the request and the vehicle speed. - STATUS 8: Automatic transmission in defect mode. - STATUS 9: Vehicle speed monitoring. - STATUS 10: Monitoring by injection computer. 	In the event of a fault, consult the interpretation of status ET415 Cruise control/speed limiter deactivation.

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

STARTING

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Power supply	ET001: Computer + after ignition feed	PRESENT	In the event of a fault, carry out a full fault finding procedure on the charging circuit.
2	Starting	ET238: Synchronisation	DONE	In the event of a fault, refer to fault interpretation DF195 Camshaft/engine speed sensor consistency.
		ET076: Starting	AUTHORISED	If status ET076 is PROHIBITED , carry out a complete fault finding procedure on the multiplex network.
3	Engine operation.	ET038: Engine	RUNNING	None
4	Power supply	PR071: Computer feed voltage	9 V < voltage < 16 V	In the event of a fault, consult the interpretation of fault DF047 Computer supply voltage.
		PR358: Sensor reference voltage	3.4 V < voltage < 3.8 V	None

DIESEL INJECTION

Fault finding – Conformity check

13B

NOTES

Only check conformity after a complete check using the diagnostic tool. The values shown in this conformity check are given as a guide.
Test Conditions: **ENGINE AT IDLE SPEED, COOLANT TEMPERATURE > 80 °C.**

PROTECTION

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Engine immobiliser	ET341: Immobiliser code programmed	YES	If status ET341 is locked on NO (see 87B , Passenger compartment connection unit).
		ET003: Engine immobiliser	INACTIVE	If status ET003 is locked on ACTIVE (see 87B , Passenger compartment connection unit).
2	Vehicle impact	ET077: Impact detected	NO	In the event of a fault, refer to the interpretation of fault DF069 Impact detected signal .
3	Starting	ET076: Starting	AUTHORISED: injection authorises starting	If status ET076 is PROHIBITED (see 87B , Passenger compartment connection unit).

DIESEL INJECTION

Fault finding – Status summary table

13B

Tool status	Diagnostic tool title
ET001	+ After ignition computer feed
ET003	Engine immobiliser
ET004	Air conditioning authorisation
ET007	Preheating unit control
ET014	Monitor cooling fan 1
ET015	Monitor cooling fan 2
ET021	High speed fan assembly request
ET022	Low speed fan assembly request
ET038	Engine
ET042	Cruise control/speed limiter
ET076	Starting
ET077	Impact detected
ET079	Air conditioning present
ET088	Compressor actuation request
ET104	Injector code use
ET111	Set number of passenger compartment heating resistors (RCH)
ET112	Passenger compartment heating resistor cut-off
ET123	Brake contact signal no. 2
ET233	Clutch pedal
ET238	Synchronisation
ET341	Immobiliser code programmed
ET405	Clutch pedal switch
ET415	Deactivation of cruise control/speed limiter
ET589	Electric coolant pump control (turbocharger)
ET651	EGR programming cut-off
ET703	Cruise control/speed limiter buttons
ET704	Brake switch no. 1
ET705	Brake switch no. 2

ET001	<u>COMPUTER + AFTER IGNITION FEED</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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ABSENT	NOTES	Ignition on
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Check the condition and conformity of supply fuse **F5D (5A)** of the Protection and Switching Unit.
Repair if necessary.

Check for an earth on the following connections:

Injection computer black, 32-track connector A, **Track G4** —————> **Battery earth**

Injection computer black 32-track connector A, **Track H4** —————> **Battery earth**

Injection computer black 32-track connector A, **Track H1** —————> **Battery earth**

Repair if necessary.

Check for **+ 12 V** on track **D1** of connector A of the injection computer.

If there is no voltage, check the continuity and insulation to **earth** of the following connection:

Injection computer black 32-track connector A, **track D1** —————> **Track 1** of the UPC black connector

Repair if necessary.

PRESENT	NOTES	Ignition on
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Check that there is not a **+ 12 V** with ignition switched off on track D1 of connector A of the injection computer.
Repair if necessary.

AFTER REPAIR	Carry out a road test followed by another check with the diagnostic tool.
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ET003	<u>ENGINE IMMOBILISER</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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ACTIVE	(See 87B Passenger compartment connection unit).
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INACTIVE	(See 87B Passenger compartment connection unit).
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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Fault finding – Interpretation of statuses

ET004	<u>AC AUTHORISED</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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YES	The air conditioning authorisation only changes to YES if: <ul style="list-style-type: none"> – the air conditioning request has been made by the driver (air conditioning switch in AC or AUTO position with minimum ventilation), – the engine is not under full load, – the air conditioning system is not faulty.
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NO	<p>Status ET004 remains at NO under the following conditions:</p> <ul style="list-style-type: none"> – Vehicle stopped with the ignition on, – faults present in the air conditioning circuit, – no air conditioning request made by the driver, – engine under full load. <p>If status ET004 remains NO then the air conditioning should be authorised; check:</p> <ul style="list-style-type: none"> – that the air conditioning compressor is activated correctly, – the air conditioning system supply fuses, – the presence of refrigerant in the air conditioning circuit, – that the refrigerant fluid pressure value is consistent at idle speed. <p>If the fault is still present, check the climate control computer faults (see 62C, Air conditioning).</p>
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET007	<u>PREHEATING UNIT CONTROL</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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YES	<p>When the vehicle is started from cold, the injection computer controls the pre-postheating unit so that the vehicle can be started. Status ET007 becomes YES a few seconds after the ignition is switched on and during pre/postheating.</p> <p>If the vehicle does not start and status ET007 becomes YES, check:</p> <ul style="list-style-type: none"> – the F2 (70A) supply fuse on the preheating unit, located on the power supply fuse plate in the engine connection unit, below the Protection and Switching Unit, – the resistance of the heater plugs. <p>Replace any plug whose resistance is not below 2 Ω. If the vehicle starts and status ET007 remains YES during the engine operating phase, refer to the interpretation of faults:</p> <ul style="list-style-type: none"> – DF017 Preheating relay control circuit. – DF025 Preheating unit diagnostic connection.
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NO	<p>After the engine is started and the preheating phase, the injection computer should stop the pre-postheating unit operating. Status ET007 should become NO.</p> <p>In the event that the vehicle does not start and status ET007 remains NO, check the continuity and absence of interference resistance of the following connections:</p> <p>Injection computer Track A4 grey —————> Track 9 preheating unit 32-track connector C</p> <p>Injection computer Track E2 grey —————> Track 8 preheating unit 32-track connector C</p> <p>Repair if necessary. If the fault is still present, refer to the interpretation of faults:</p> <ul style="list-style-type: none"> – DF017 Preheating relay control circuit. – DF025 Preheating unit diagnostic connection.
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET014	<u>CHECK COOLING FAN 1</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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NOTE: Status ET014 test and status ET022 GMV1 low speed request change their status at the same time.

RUNNING	<p>The low-speed engine fan unit is supplied in three scenarios:</p> <ul style="list-style-type: none"> – the engine coolant temperature is above 89 °C; – the air conditioning is operating – the injection computer has system faults that could lead to the engine overheating. <p>When the low-speed engine fan is supplied:</p> <ul style="list-style-type: none"> – status ET014 GMV 1 test becomes RUNNING status ET022 Low speed GMV request becomes ACTIVE. <p>If the low speed GMV does not work (see 87G, engine compartment connection unit).</p>
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STOPPED	<p>The low-speed engine fan assembly stops when:</p> <ul style="list-style-type: none"> – the engine coolant temperature is below 89 °C; – the air conditioning is not switched on by the driver.
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 IMPORTANT	WARNING If the UPC does not detect the injection computer frames, the low speed engine fan is supplied until the battery is completely discharged. In the event that the low-speed engine fan assembly is faulty, the high-speed engine fan assembly will then be activated.
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET015	<u>CHECK COOLING FAN 2</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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NOTE:

Status **ET015 GMV 2 test** and status **ET021 High speed GMV request** change their status at the same time.

RUNNING	<p>The engine fan assembly can be supplied when:</p> <ul style="list-style-type: none">– the engine coolant temperature is above 99 °C.– the injection computer has system faults that could lead to the engine overheating. <p>When the high speed fan is supplied:</p> <ul style="list-style-type: none">– status ET015 GMV 2 test becomes RUNNING and status ET021 High speed GMV request becomes ACTIVE.
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STOPPED	<p>The high-speed engine fan assembly stops when:</p> <ul style="list-style-type: none">– the engine coolant temperature is below 99 °C;
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 IMPORTANT	WARNING If the UPC does not detect the injection computer frames, the low speed engine fan is supplied until the battery is completely discharged. In the event that the low-speed engine fan assembly is faulty, the high-speed engine fan assembly will then be activated.
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET021	<u>HIGH-SPEED FAN REQUEST</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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NOTE:

Status **ET021 High speed GMV request** and status **ET015 GMV 2 test** change their status at the same time.

ACTIVE	The injection computer requests the activation of the high speed GMV when: <ul style="list-style-type: none"> – the engine coolant temperature is above 99 °C. – the injection computer has system faults that could lead to the engine overheating. When the high speed fan is supplied: <ul style="list-style-type: none"> – status ET021 High speed GMV request becomes RUNNING and status ET015 GMV 2 test becomes ACTIVE.
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INACTIVE	The high-speed engine fan assembly stops when: <ul style="list-style-type: none"> – the engine coolant temperature is below 99 °C; – no fault which could cause engine overheating is present in the injection system.
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 IMPORTANT	WARNING If the UPC does not detect the injection computer frames, the low speed engine fan is supplied until the battery is completely discharged. In the event that the low-speed engine fan assembly is faulty, the high-speed engine fan assembly will then be activated.
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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Fault finding – Interpretation of statuses

ET022	<u>LOW SPEED GMV CONTROL</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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NOTE:

Status **ET022 Low speed GMV request** and status **ET014 GMV 1 test** change their status at the same time.

ACTIVE	<p>The injection computer requests the activation of the low speed GMV when:</p> <ul style="list-style-type: none">– the engine coolant temperature is above 89 °C;– the injection computer has system faults that could lead to the engine overheating,– the air conditioning is switched on by the driver. <p>When the high speed fan is supplied:</p> <ul style="list-style-type: none">– status ET022 Low speed GMV request becomes ACTIVE and status ET014 GMV 1 test becomes RUNNING.
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INACTIVE	<p>The low-speed engine fan assembly stops when:</p> <ul style="list-style-type: none">– the engine coolant temperature is below 89 °C;– no fault which could cause engine overheating is present in the injection system.– the air conditioning is not switched on by the driver.
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 IMPORTANT	WARNING If the UPC does not detect the injection computer frames, the low speed engine fan is supplied until the battery is completely discharged. In the event that the low-speed engine fan assembly is faulty, the high-speed engine fan assembly will then be activated.
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET038	<u>Engine</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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STOPPED	Status ET038 is STOPPED if the engine ignition is on but there has been no starter operation.
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STARTER ACTIVATED	Status ET038 is “starting” when the engine is in starting phase.
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RUNNING	Status ET038 is RUNNING if the engine has started.
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STALLED	Status ET038 is STALLED when the engine has stalled. The vehicle will still be on + after ignition feed.
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET042	<u>CRUISE CONTROL/SPEED LIMITER</u>
NOTES	<p>Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.</p>
NOT DETECTED	<p>If the vehicle is not fitted with cruise control/speed limiter function buttons, status ET042 is permanently NOT DETECTED. This confirms that the cruise control/speed limiter function is not present on the vehicle.</p> <p>If the vehicle is fitted with cruise control or speed limiter function buttons, the main switch is in rest (or neutral) position and the injection computer has just been programmed or reprogrammed, then status ET042 is NOT DETECTED. To activate the cruise control or speed limiter function, press the main switch in the cruise control position and then in the speed limiter position. Return to rest position. The tool displays status ET042: INACTIVE. If not, several steps must be checked: 1 - Return to the page about testing the multiplex network with the CLIP program. Repeat the multiplex network test. Re-establish dialogue with the injection computer. Check status ET042. If ET042 is INACTIVE, the injection computer has detected the various positions of the main switch. The cruise control/speed limiter is active. 2 - If status ET042 is still NOT DETECTED, check that the owner of the vehicle has not, sometime in the past, asked for the cruise control/speed limiter function to be deactivated. Contact the Techline.</p>

AFTER REPAIR	Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .
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ET042 CONTINUED 1	
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INACTIVE	<p>When the main switch is in rest position (or neutral), status ET042 is "INACTIVE".</p> <p>If "CRUISE CONTROL" or "SPEED LIMITER" appears despite the main button being in the rest position (or neutral), carry out the following operations: Check the connections of the cruise control/speed limiter main switch.</p> <p>Check for + 12 V APC on the main switch connector.</p> <ul style="list-style-type: none"> – Connection code AP43 of component 1081 (Mégane II) – Connection code AP43 of component 1546 (Scénic II) <p>Disconnect the main switch and with it in the rest position, check the insulation between:</p> <ul style="list-style-type: none"> – Connection codes AP43 and 3FX of component 1081 (Mégane II) – Connection codes AP43 and 3PD of component 1081 (Mégane II) – Connection codes AP43 and 3FX of component 1546 (Scénic II) – Connection codes AP43 and 3PD of component 1546 (Scénic II) <p>Check the continuity between connections AP43 and 3PD of component 1081 (Mégane II) and component 1546 (Scénic II) in speed limiter position.</p> <p>Check the continuity between connections AP43 and 3FX of component 1081 (Mégane II) and component 1546 (Scénic II) in cruise control position.</p> <p>If these checks are not in order, replace the switch.</p> <p>Check the insulation, continuity and the absence of interference resistance on the following connections:</p> <ul style="list-style-type: none"> – Connection code 3FX, – connection code 3PD. <p>Between components 1081 and 120 (Mégane II) Between components 1546 and 120 (Scénic II)</p> <p>Also check the engine management computer connectors.</p> <p>If there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Repair precautions), repair the wiring, otherwise replace it.</p>
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AFTER REPAIR	Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .
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ET042 CONTINUED 2	
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SPEED LIMITER	<p>When the driver presses the main switch in the speed limiter position, status ET042 becomes SPEED LIMITER.</p> <p>If CRUISE CONTROL or INACTIVE appears although the switch was pressed in the speed limiter position, carry out the following operations:</p> <p>Check the connections of the cruise control/speed limiter main switch.</p> <p>Check for + 12 V after ignition feed on the main switch connector.</p> <ul style="list-style-type: none"> ● Connection code AP43 of component 1081 (Mégane II). ● Connection code AP43 of component 1546 (Scénic II). <p>Disconnect the main switch and with it in the rest position, check the insulation between:</p> <ul style="list-style-type: none"> ● Connection code AP43 and 3FX, of component 1081 (Mégane II). ● Connection code AP43 and 3PD, of component 1081 (Mégane II). ● Connection code AP43 and 3FX, of component 1546 (Scénic II). ● Connection code AP43 and 3PD, of component 1546 (Scénic II). <ul style="list-style-type: none"> – Check the continuity between connections AP43 and 3PD of component 1081 (Mégane II) and component 1546 (Scénic II) in speed limiter position. – Check the continuity between connections AP43 and 3FX of component 1081 (Mégane II) and component 1546 (Scénic II) in cruise control position. <p>If these checks show incorrect values, replace the main switch.</p> <p>Check the insulation, continuity and the absence of interference resistance on the following connections:</p> <ul style="list-style-type: none"> ● Connection code 3FX, ● Connection code 3PD, <p>between components 1081 and 120 (Mégane II). between components 1546 and 120 (Scénic II).</p> <p>Also check the engine management computer connectors.</p> <p>If there is a repair method (See Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.</p>
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AFTER REPAIR	<p>Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.</p>
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ET042 CONTINUED 3	
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CRUISE CONTROL	<p>When the driver presses the main switch in the cruise control position, status ET042 becomes CRUISE CONTROL.</p> <p>If SPEED LIMITER or INACTIVE appears although the driver pressed the switch in the cruise control position, carry out the following operations:</p> <p>Check the connections of the cruise control/speed limiter main switch.</p> <p>Check for + 12 V after ignition feed on the main switch connector.</p> <ul style="list-style-type: none"> ● Connection code AP43 of component 1081 (Mégane II). ● Connection code AP43 of component 1546 (Scénic II). <p>Disconnect the switch and when it is in the rest position, check the insulation between:</p> <ul style="list-style-type: none"> ● Connection code AP43 and 3FX, of component 1081 (Mégane II). ● Connection code AP43 and 3PD, of component 1081 (Mégane II). ● Connection code AP43 and 3FX, of component 1546 (Scénic II). ● Connection code AP43 and 3PD, of component 1546 (Scénic II). <ul style="list-style-type: none"> – Check the continuity between connections AP43 and 3PD of component 1081 (Mégane II) or component 1546 (Scénic II) in speed limiter position. – Check the continuity between connections AP43 and 3FX of component 1081 (Mégane II) or component 1546 (Scénic II) in cruise control position. <p>If these checks show incorrect values, replace the main switch.</p> <p>Check the insulation, continuity and the absence of interference resistance on the following connections:</p> <ul style="list-style-type: none"> ● Connection code 3FX, ● connection code 3PD. <p>Between components 1081 and 120 (Mégane II). Between components 1546 and 120 (Scénic II).</p> <p>Also check the engine management computer connectors.</p> <p>If there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Repair precautions), repair the wiring, otherwise replace it.</p>
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AFTER REPAIR	Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .
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ET076	<u>STARTING</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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AUTHORISED	Starting the vehicle is authorised when the UCH authorises starting. Status ET076 changes to AUTHORISED if the vehicle cards are recognised and the engine immobiliser is inactive.
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PROHIBITED	If the card is not recognised by the UCH, starting the vehicle is prohibited. Status ET076 is PROHIBITED and the vehicle cannot be started. Run fault finding on the UCH (see 87B, Passenger compartment connection unit).
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET077	<u>IMPACT DETECTED</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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YES	<p>If the vehicle has been involved in an accident, the injection computer receives the impact signal via the multiplex network and may switch off the ignition. Status ET077 is YES.</p> <p>Switch off the ignition for 1 minute then switch on the ignition again so the engine can be started.</p> <p>Carry out a multiplex network test and deal with any faults.</p>
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NO	Under normal operating conditions, status ET077 is NO when the computer has received no impact signal.
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET088	<u>REQUEST TO START COMPRESSOR</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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ACTIVE	<p>Status ET088 becomes ACTIVE if there has been a request for air conditioning (press the AC or AUTO button, with maximum cold) and if status ET004 is YES.</p> <p>The selection is made on the air conditioning control panel, the request for air conditioning is transmitted to the UCH which in turn transmits the request to the injection computer which either authorises or does not authorise the compressor to switch on. If the injection computer authorises the compressor to switch on, it sends the compressor on request to the UPC and status ET088 COMPRESSOR ON REQUEST becomes ACTIVE (Climate control).</p> <p>If the vehicle is equipped with manual air conditioning, the air conditioning request is transmitted from the air conditioning control panel to the UCH which then accepts or does not accept the air conditioning compressor coming on depending on the operating status of the passenger compartment fan. When the request has been accepted, the request to switch on the compressor is transmitted to the injection computer which either authorises or does not authorise the compressor to start.</p> <p>If the injection computer authorises the compressor to switch on, it sends the compressor on request to the UPC and status ET088 COMPRESSOR ON REQUEST becomes ACTIVE.</p> <p>If there has been no compressor on request and status ET088 remains ACTIVE (see 62A, Air conditioning).</p> <p>Note: Switching on the compressor is only authorised when the engine is running. Switching on the compressor is ultimately controlled the UPC.</p>
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INACTIVE	<p>Status ET088 is INACTIVE when there has been no air conditioning request and when the compressor has not been authorised to come on (ET004 is NO or when the driver turns off the air conditioning).</p> <p>If there has been no compressor on request and status ET088 remains INACTIVE (see 62A, Air conditioning).</p> <p>Note: Switching on the compressor is only authorised when the engine is running. Switching on the compressor is ultimately controlled the UPC.</p>
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET104	<u>INJECTOR CODE USE</u>
NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
YES	<p>Status ET104 is YES if the IMA option (individual injector correction) is activated in the injection computer.</p> <p>All the injectors have IMA codes etched on the bakelite body, but not all computers use them.</p> <p>In the case of a computer configured with the IMA option, the injector codes must be entered into the injection computer in the following scenarios:</p> <ul style="list-style-type: none">– when one or more injectors is replaced,– when the injection computer is replaced,– when the injection computer is reprogrammed. <p>If the injector codes are not programmed after these operations, fault DF276 Injector code programming will be present, and the engine will operate in defect mode.</p> <p>In this case, run command SC002 Enter injector codes, applying the procedure described in the interpretation of this command.</p>
NO	<p>Status ET104 is NO if the computer is not configured to interpret the IMA codes (individual injector correction).</p> <p>In this case, run command SC002 Enter injector codes, applying the procedure described in the interpretation of this command.</p>
DEFECTIVE	<p>Status ET104 is FAULTY if the computer does not have IMA codes in the memory. Fault DF276 Injector code programming is present and the engine runs in defect mode.</p> <p>Run command SC002 Enter injector codes applying the procedure described in the interpretation of this command.</p> <p>If at the end of the procedure status ET104 remains FAULTY, contact Techline.</p>
AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.

Fault finding – Interpretation of statuses

ET111	<u>SET NUMBER OF PASSENGER COMPARTMENT HEATING RESISTORS</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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YES	Depending on the requirements of the injection system (e.g. torque reduction, power requirements), the injection computer sets the number of activated passenger compartment heating resistors (no more or no fewer than required) Status ET111 becomes YES when the number of activated passenger compartment heating resistors is set by the injection computer.
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NO	Depending on the requirements of the injection system (e.g. torque reduction, power requirements), the injection computer sets the number of activated passenger compartment heating resistors (no more or no fewer than required) Status ET111 becomes NO when the number of activated passenger compartment heating resistors can be freely controlled by the UCH.
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET112	<u>PASSENGER COMPARTMENT HEATING RESISTOR CUT-OFF</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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YES	Depending on the requirements of the injection system (e.g. torque reduction, power requirements), the injection computer cuts off the passenger compartment heating resistors. Status ET112 becomes YES when the passenger compartment heating resistors are cut off by the injection computer.
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NO	Depending on the requirements of the injection system (e.g. torque reduction, power requirements), the injection computer cuts off the passenger compartment heating resistors. Status ET112 becomes NO when the passenger compartment heating resistors can be freely controlled by the UCH.
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AFTER REPAIR	Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.
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ET238	<u>SYNCHRONISATION</u>
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NOTES	Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.
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WARNING

Synchronisation is carried out during the engine starting phase. This is established between the camshaft position sensor and the TDC sensor.

Once this synchronisation has been carried out, it enables the computer to identify cylinder no. 1 and to calculate the precise position of the cylinder's Top Dead Centre.

NOT PERFORMED

When the engine is stopped but the ignition switched on, cylinder no. 1 is no longer indicated.

Status **ET238** is **NOT DONE**; synchronisation between the crankshaft and the camshaft has not been carried out.

COMPLETED

Synchronisation is carried out during the engine starting phase.
Cylinder No. 1 is indicated and synchronisation will be performed once the engine is started.

Status **ET238** is **DONE**.

If after several attempts to start the engine, status **ET238** remains **NOT DONE**, refer to the interpretation of the following faults:

- **DF005 Engine speed sensor circuit.**
- **DF097 Camshaft sensor circuit.**

If the engine does still not start, consult the **Customer complaints section, ALP2 Starting faults**.

AFTER REPAIR

Switch off the ignition and carry out a road test followed by a test with the diagnostic tool

Fault finding – Interpretation of statuses

ET341	<u>IMMOBILISER CODE PROGRAMMED</u>
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NOTES	<p>Special notes: Only perform these tests if the statuses do not correspond with the system programming functions.</p>
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YES	<p>Status ET341 becomes YES if dialogue is established between the UCH and the injection computer and the card code is recognised. The engine is only authorised to start if the code is recognised by the UCH computer and status ET003 Engine immobiliser is INACTIVE.</p>
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NO	<p>The code remains NO if dialogue between the UCH and the injection computer is not possible. Status ET003 Engine immobiliser is ACTIVE.</p> <p>The cause of the malfunction may be due to the incorrect programming of the cards, (see 97B, Passenger compartment connection unit, configuration and programming); follow the card programming procedure.</p> <p>If the malfunction is not due to the card codes, test the multiplex network (when fault finding is carried out for functions) and check that there is dialogue between the UCH, the Protection and Switching Unit and the injection computer. If dialogue is not established, contact the Techline.</p>
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AFTER REPAIR	Carry out a road test followed by a complete test with the diagnostic tool.
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ET405	<u>CLUTCH PEDAL SWITCH</u>
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NOTES	Special notes: Only apply the checks if the INACTIVE and ACTIVE statuses are not consistent with the pedal position.
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STATUS INACTIVE with clutch pedal depressed.

- Check the condition and fitting of the **clutch switch**.
Check the **continuity** on the connection between **track 1** of the **clutch switch** connector and **track C4** of the black 32-track connector **A** of the **injection computer**.
Check for **earth** on **track 2** of the **clutch switch** connector.
Repair if necessary.
- Remove the **clutch switch** and test its operation:

	Continuity between tracks	Insulation between tracks
Switch pressed (Clutch pedal released)	1 and 2	
Switch released (Clutch pedal depressed)		1 and 2

- Replace the switch if necessary.

STATUS ACTIVE with 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)	1 and 2	
Switch released (Clutch pedal depressed)		1 and 2

- Replace the switch if necessary.
Check the **earth** insulation of the connection between **track 1** of the **clutch switch** connector and **track C4** of the black 32-track connector **A** of the **injection computer** and repair if necessary.

AFTER REPAIR	Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.
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ET415	<u>CRUISE CONTROL/SPEED LIMITER DEACTIVATION</u>
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NOTES	<p>Special note: Apply the conformity check to see if the statuses are consistent with the operating programs of the system.</p>
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Note:

Cruise control can be activated when the vehicle speed exceeds **18 mph (30 km/h)**.

Status **ET415** shows various things that cause deactivation of the cruise control/speed limiter function, due to a driver request or the external environment (e.g. **STATUS 1**).

IMPORTANT

Clear the fault memory by running command **RZ007 Fault memory**, to reset this status to **WITHOUT**.

NONE	
	<p>This status is present on the diagnostic tool when: The computer has been reinitialised, The computer has been reprogrammed.</p>

STATUS 1	<p>Traction control request</p> <p>If the vehicle is fitted with a traction control system, the cruise control function is deactivated every time the ABS computer calls for traction control.</p> <p>Status ET415 becomes STATUS 1 when driving, with cruise control active (ET042: Cruise control/Speed limiter: CRUISE CONTROL) and upon a traction control request. This deactivates cruise control.</p> <p>Reinitialise status ET415 on the injection computer by running command RZ007 "Fault memory".</p> <p>If status ET415 becomes STATUS 1 without a traction control request (see 38C, ABS).</p>
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AFTER REPAIR	<p>Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.</p>
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Fault finding – Interpretation of statuses

ET415 1(CONTINUED)	
STATUS 2	<p>Brake pedal depressed</p> <p>The cruise control function is deactivated when the brake pedal is depressed.</p> <p>Status ET415 becomes STATUS 2 when driving with cruise control active (ET042 Cruise control/Speed limiter: CRUISE CONTROL) and the brake pedal is depressed. This deactivates cruise control.</p> <p>Reinitialise status ET415 on the injection computer by running command RZ007 "Fault memory".</p> <p>If status ET415 becomes STATUS 2 without pressing the brake pedal, consult the interpretation of statuses ET704 and ET705 Brake contact No. 1 and No. 2.</p>
STATUS 3	<p>Clutch pedal depressed</p> <p>Manual gearbox ONLY</p> <p>The cruise control function is deactivated when the gearbox is not coupled to the engine (clutch pedal depressed).</p> <p>Status ET415 becomes STATUS 3 when driving with cruise control active (ET042 Cruise control/speed limiter: CRUISE CONTROL) and the clutch pedal is depressed. This deactivates cruise control.</p> <p>Reinitialise status ET415 on the injection computer by running command RZ007 "Fault memory".</p> <p>If status ET415 becomes STATUS 3 without the clutch pedal being depressed, consult the interpretation of status ET405: Clutch pedal.</p> <p>If the vehicle is fitted with automatic transmission: Test the multiplex network: check the configuration of the multiplex network in relation to the vehicle's technical specification, especially the configuration of the automatic transmission computer (see 88B, Multiplexing)</p>
AFTER REPAIR	<p>Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.</p>

Fault finding – Interpretation of statuses

ET415 (CONTINUED 2)	
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STATUS 4	<p>Cancel button pressed</p> <p>The cruise control/speed limiter function is deactivated each time the suspend button is pressed. Status ET415 becomes STATUS 4 while driving when:</p> <ul style="list-style-type: none"> - Either the cruise control is active, or - the speed limiter is active - and the driver presses the 0 button. <p>This action deactivates the Cruise control/Speed limiter.</p> <p>Reinitialise status ET415 on the injection computer by running command RZ007 "Fault memory".</p> <p>If status ET415 becomes STATUS 4 without pressing the 0 button, refer to the interpretation of status ET703 Cruise control/speed limiter buttons and test the R/0 control button located on the steering wheel, to the right.</p>
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STATUS 5	<p>Cruise control or speed limiter monitoring</p> <p>This status appears when the vehicle brakes or decelerates sharply without the injection computer receiving a signal indicating that the brake pedal switch has been pressed.</p> <p>If status ET415 is STATUS 5, refer to the interpretation of:</p> <ul style="list-style-type: none"> - status ET042 Cruise control/Speed limiter, - status ET703 Cruise control/speed limiter buttons, - status ET704 Brake contact no. 1, - and status ET705 Brake contact No 2, <p>to test the cruise control/speed limiter system components and find the defective component.</p> <p>Also check the operation of the accelerator pedal, and check for any faults on the diagnostic tool relating to this component. Deal with them if necessary.</p> <p>Reinitialise status ET415 on the injection computer by running command RZ007 "Fault memory".</p> <p>If status ET415 changes to STATUS 5, deal with present faults or those stored in the injection computer.</p> <p>If the fault is still present, contact Techline.</p>
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AFTER REPAIR	<p>Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.</p>
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ET415 (CONTINUED 3)	
STATUS 6	<p>Gear lever in neutral (manual gearbox) or the neutral position (automatic gearbox)</p> <p>Status ET415 becomes STATUS 6, when driving with cruise control active (ET042: Cruise control/speed limiter: CRUISE CONTROL) and:</p> <ul style="list-style-type: none">- If the driver puts the gear lever in neutral position on a manual gearbox without declutching or,- if the gear lever is in neutral on an automatic gearbox. <p>This deactivates cruise control.</p> <p>Reinitialise status ET415 on the injection computer by running command RZ007 "Fault memory".</p> <p>If status ET415 becomes STATUS 6 without shifting the gear lever into neutral on a manual gearbox without declutching, or into neutral on an automatic transmission, test the ABS computer and check the configuration of the tyre size stored in the computer. If the configuration is correct, contact the Techline.</p>
STATUS 7	<p>Inconsistency between the request and the vehicle speed</p> <p>Status ET415 becomes STATUS 7 if the computer detects too great a difference between the speed requested by the driver and the vehicle speed.</p> <p>This could occur when driving with cruise control active (ET042 Cruise control/ speed limiter: CRUISE CONTROL) and when there is a significant difference.</p> <p>This inconsistency deactivates cruise control.</p> <p>Reinitialise status ET415 on the injection computer by running command RZ007 "Fault memory".</p> <p>If status ET415 changes to STATUS 7 where there is no significant difference in the levels, contact the Techline.</p>
AFTER REPAIR	<p>Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.</p>

ET415 (CONTINUED 4)	
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STATUS 8	<p>Automatic transmission in defect mode.</p> <p>Status ET415 becomes STATUS 8, when driving with cruise control active (ET042: Cruise control/speed limiter: CRUISE CONTROL) and if the automatic transmission is in defect mode.</p> <p>This signal is conveyed on the multiplex line and deactivates the cruise control.</p> <p>Carry out a multiplex network test, then run fault finding on the automatic transmission computer.</p> <p>Deal with any present or stored faults (see 23A, Automatic transmission, interpretation of faults).</p> <p>Clear the automatic transmission computer memory by running command RZ007 “Fault memory”.</p> <p>Reinitialise status ET415 on the injection computer by running command RZ007 “Fault memory”.</p> <p>If status 8 continues, contact the Techline.</p>
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STATUS 9	<p>Vehicle speed monitoring.</p> <p>Status ET415 becomes STATUS 9 if the vehicle speed received by the computer is invalid or absent.</p> <p>This signal is conveyed on the multiplex line and deactivates the cruise control.</p> <p>Carry out a multiplex network test, then run fault finding on the ABS computer.</p> <p>Deal with any present or stored faults (see 38C, Anti-lock braking system, interpretation of faults).</p> <p>Reinitialise status ET415 on the injection computer by running command RZ007 “Fault memory”.</p> <p>If status 9 continues, contact the Techline.</p>
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AFTER REPAIR	<p>Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.</p>
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ET415 (CONTINUED 5)	
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STATUS 10	<p>Monitoring by the injection computer.</p> <p>Status ET415 becomes STATUS 10 when driving with cruise control active (ET042 Cruise control/speed limiter: CRUISE CONTROL) if the injection computer detects a fault anywhere in the engine management system, or an engine speed that is too high or too low.</p> <p>This signal is conveyed on the multiplex line and deactivates the cruise control.</p> <p>Carry out a multiplex network test, then run fault finding on the injection computer. Deal with any present or stored faults (see 13B, Anti-lock braking system, interpretation of faults).</p> <p>Reinitialise status ET415 on the injection computer by running command RZ007 “Fault memory”.</p> <p>If status 10 continues, contact the Techline.</p>
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AFTER REPAIR	<p>Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.</p>
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ET589	<u>ELECTRIC COOLANT PUMP (TURBOCHARGER)</u>
NOTES	Special notes: Only perform these tests if the status does not correspond with the system programming functions.
ACTIVE	The electric coolant pump (turbocharger) command status is active (AC195 Electric coolant pump).
INACTIVE	The electric coolant pump (turbocharger) command status is inactive (AC195 Electric coolant pump).

AFTER REPAIR	Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.
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ET651	<u>EGR PROGRAMMING CUT-OFF</u>
NOTES	Special notes: Only perform these tests if the status does not correspond with the system programming functions.
NONE	No EGR cut-off, the EGR valve is working properly in accordance with the computer programs.
STATUSES 1, 5, 6, 7, 9, 10, 12, 13, 15, 19, 23, 24	Switch off the ignition and wait 1 minute . Switch the ignition on and check for faults. Check the engine battery voltage with the engine stopped and then running. If no faults are present or stored, restart the vehicle and test at idle speed. Do not accelerate too much and reach an engine speed that is too high.
STATUS 3, 14, 16	Accelerate above idling speed for a few seconds.
STATUS 2	Check that the clutch pedal (ET405 Clutch pedal switch) is not pressed and that the vehicle has stopped completely.
STATUS 4, 17	Test the present and stored faults and repair.
STATUS 8	Reinitialise the EGR offsets by consulting the interpretation of command SC036 Reinitialisation of programming and select EGR valve ".
STATUS 11, 22	Allow the engine to heat up until this cut-off disappears.
STATUS 18	Check that the regeneration of the particle filter in progress has completely finished.
STATUS 20	Allow the engine to cool until this cut-off disappears.
STATUS 21	Too low atmospheric pressure, the EGR valve is disabled.
AFTER REPAIR	Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.

ET703	<u>CRUISE CONTROL/SPEED LIMITER BUTTONS</u>
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NOTES	Special notes: Carry out these checks if the statuses do not correspond with system operation programming.
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INACTIVE	<p>Status ET703 becomes INACTIVE when none of the cruise control/speed limiter buttons is pressed. These buttons are located on the steering wheel.</p> <p>If status ET703 does not display INACTIVE,</p> <ul style="list-style-type: none"> - check the condition of the cruise control/speed limiter “+/-” button and the condition of its connector. check the condition of the cruise control/speed limiter “R/0” button and the condition of its connector.
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INCREASE	<p>Status ET703 becomes “PLUS” when the cruise control/speed limiter “+” button is pressed. This button is on the steering wheel, on the left-hand side.</p> <p>If status ET703 does not display PLUS, check the condition of the cruise control/speed limiter “+/-” button, and the condition of its connector. Repair if necessary.</p> <p>To carry out these checks and measurements in complete safety, observe the recommendations for removing the driver's front airbag (see MR 364 (Mégane) or 370 (Scénic), Mechanical, 88C, Airbag and seat belt pretensioners, Driver's front airbag, Removal - Refitting).</p> <p>Measure the resistance of the following connections while pressing the + button (on the button tracks):</p> <ul style="list-style-type: none"> ● Connection code 86G, of component 331. ● Connection code 86M of component 331. <p>If the resistance is not approximately 300 Ω, check the continuity of the connection when the button is in the rest position.</p> <p>If there is continuity, replace the +/- control button.</p> <p>If there is a repair method (See Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.</p>
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AFTER REPAIR	Switch off the ignition and carry out a road test followed by a test with the diagnostic tool
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Fault finding – Interpretation of statuses

<p>ET703 (CONTINUED 1)</p>	
<p>DECREASE</p>	<p>Status ET703 becomes MINUS when the cruise control/speed limiter - button is pressed. This button is on the steering wheel, on the left-hand side.</p> <p>If status ET703 does not change to MINUS, check the condition of the cruise control/speed limiter “+/-” button, and the condition of its connector. Repair if necessary.</p> <p>To carry out these checks and measurements in complete safety, observe the recommendations for removing the driver's front airbag (see 364 (Mégane) or 370 (Scénic), Mechanical, 88C, Airbag and seat belt pretensioners, Driver's front airbag, Removal - Refitting).</p> <p>Measure the resistance of the following connection whilst pressing the - button (on the button tracks):</p> <ul style="list-style-type: none"> ● Connection code 86G, of component 331. ● Connection code 86M of component 331. <p>If the resistance is not approximately 100 Ω, check the continuity of the connection when the button is in the rest position.</p> <p>If there is continuity, replace the +/- control button.</p> <p>If there is a repair method (see Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring</p>
<p>SUSPEND</p>	<p>Status ET703 becomes “SUSPEND” when the cruise control/speed limiter “0” button is pressed. This button is located on the steering wheel, to the right.</p> <p>If status ET703 does not change to SUSPEND, check the condition of the cruise control/speed limiter “R/0” button, and the condition of its connector.</p> <p>To carry out these checks and measurements in complete safety, observe the recommendations for removing the driver's front airbag (see 364 (Mégane) or 370 (Scénic), Mechanical, 88C, Airbag and seat belt pretensioners, Driver's front airbag, Removal - Refitting).</p> <p>Measure the resistance of the following connection whilst pressing the 0 button (on the button tracks):</p> <ul style="list-style-type: none"> ● Connection code 86G, of component 331. ● Connection code 86M of component 331. <p>If the resistance is not approximately 0Ω, replace the R/0 control button.</p> <p>If there is continuity, replace the R/0 control button.</p> <p>If there is a repair method (See Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.</p>
<p>AFTER REPAIR</p>	<p>Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.</p>

Fault finding – Interpretation of statuses

ET703 (CONTINUED 2)	
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RESUME	<p>Status ET703 becomes RESUME when the cruise control/speed limiter R button is pressed. This button is located on the steering wheel, to the right.</p> <p>If status ET703 does not become RESUME, check the condition of the cruise control/speed limiter R/O button and the condition of its connector. Repair if necessary.</p> <p>To carry out these checks and measurements in complete safety, observe the recommendations for removing the driver's front airbag (see MR 364 (Mégane) or 370 (Scénic), Mechanical, 88C, Airbag and seat belt pretensioners, Driver's front airbag, Removal - Refitting).</p> <p>Measure the resistance of the following connection whilst pressing the R button (on the button tracks):</p> <ul style="list-style-type: none"> ● Connection code 86G, of component 331. ● Connection code 86M of component 331. <p>If the resistance is not approximately 900 Ω, check the continuity of the connection when the button is in the rest position.</p> <p>If there is continuity, replace the R/O control button.</p> <p>If there is a repair method (See Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.</p>
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AFTER REPAIR	<p>Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.</p>
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Fault finding – Interpretation of statuses

ET704 ET705	<u>BRAKE CONTACT No. 1</u> <u>BRAKE CONTACT No. 2</u>
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NOTES	Special note: Only perform the tests if the statuses do not correspond with the system programming functions.
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Note:

Statuses **ET704** and **ET705** should change at the same time. If they are not consistent, refer to the interpretation of fault **DF050 Brake switch circuit**.

ACTIVE or INACTIVE	<p>If the brake lights are working:</p> <ul style="list-style-type: none"> – check the continuity and make sure there is no interference resistance on the following connection: ● connection code 5A, <p>between components 160 and 120/645/119.</p> <p>If there is a repair method (See Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair), repair the wiring, otherwise replace the wiring.</p> <p>If the brake lights are not operational, check:</p> <ul style="list-style-type: none"> – the condition and fitting of the brake switch, – the condition and conformity of the brake lights fuse, – the conformity of the values in the following table: <p>disconnect the switch and carry out the following checks:</p> <p>for MEGANE II and SCENIC II with ESP:</p>		
		Continuity between connections	Insulation between connections
	Switch engaged (Brake pedal released)	5A and BPT	65G and SP17
	Switch released (Brake pedal depressed)	65G and SP17	5A and BPT
	For MEGANE II and SCENIC II without ESP		
		Continuity between connections	Insulation between connections
	Switch engaged (Brake pedal released)	5A and BPT	65A and SP17
	Switch released (Brake pedal depressed)	65G and SP17	5A and BPT

AFTER REPAIR	Switch off the ignition and carry out a road test followed by a test with the diagnostic tool .
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DIESEL INJECTION

Fault finding – Parameter summary table

13B

Tool parameter	Diagnostic tool title
PR005	EGR valve opening setpoint
PR006	Rail pressure regulator current
PR007	Rail pressure regulator current setpoint
PR008	Rail pressure setpoint
PR009	Turbocharging pressure setpoint
PR011	Turbocharging solenoid valve position correction
PR015	Engine torque
PR016	Alternator flow
PR017	Fuel flow
PR022	EGR valve position feedback loop difference
PR030	Accelerator pedal position
PR035	Atmospheric pressure
PR037	Refrigerant pressure
PR038	Rail pressure
PR041	Turbocharging pressure
PR047	Turbocharging pressure OCR*
PR048	OCR* rail pressure regulation valve
PR051	EGR valve position feedback
PR053	Speed requested by air conditioning
PR055	Engine speed
PR059	Inlet air temperature
PR061	Exterior air temperature
PR064	Coolant temperature
PR071	Computer feed voltage
PR073	Air flowmeter feed voltage
PR076	Refrigerant sensor voltage
PR077	EGR valve position sensor voltage

OCR*: opening cyclic ratio

DIESEL INJECTION

Fault finding – Parameter summary table

13B

Tool parameter	Diagnostic tool title
PR079	Atmospheric pressure sensor voltage
PR080	Rail pressure sensor voltage
PR081	Inlet temperature sensor voltage
PR084	Coolant temperature sensor voltage
PR089	Vehicle speed
PR128	First EGR valve offset
PR129	Last EGR valve offset
PR130	Cruise control setpoint
PR131	EGR air flow variation
PR132	Air flow
PR146	Inlet air flow
PR147	Pedal potentiometer voltage gang 1
PR148	Pedal potentiometer voltage gang 2
PR157	Fuel flow setpoint
PR171	Air flow setpoint for EGR
PR190	Engine idle speed setpoint.
PR213	Rail pressure loop difference
PR220	EGR valve OCR*
PR358	Sensor reference voltage
PR364	Cylinder no. 1 fuel flow correction
PR365	Cylinder no. 4 fuel flow correction
PR385	Exhaust pipe flow
PR405	Cylinder no. 2 fuel flow correction
PR406	Cylinder no. 3 fuel flow correction
PR417	Air inlet valve OCR
PR420	Damper valve error counter
PR672	Damper valve position setpoint

OCR*: opening cyclic ratio

DIESEL INJECTION
Fault finding – Command summary table

Tool command	Diagnostic tool title
SC001	Write saved data
SC002	Enter injector codes
SC003	Save computer data
SC036	Reinitialise programming
RZ005	Programming
RZ007	Fault memory
RZ034	Computer memory
LC009	Air conditioning
LC065	Water in diesel fuel sensor
LC120	Cruise control
LC121	Speed limiter
VP010	Enter VIN
AC001	Preheating unit
AC004	Turbocharging solenoid valve
AC011	Rail pressure regulator
AC012	Damper valve
AC195	Electric coolant pump

Fault finding – Interpretation of commands

SC001	<u>WRITE SAVED DATA</u>
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NOTES	All data must be saved with command SC003 SAVE COMPUTER DATA for this command to be run. Writing is carried out after the computer has been reprogrammed or replaced.
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Validating this command writes the data saved using command **SC003 SAVE COMPUTER DATA**.

The data is as follows:

- vehicle idle speed,
- injector calibration codes (if the vehicle is fitted with IMA),
- programming of exhaust gas recirculation valve data,
- options available on the vehicle and managed by the computer (E.g. air conditioning).

This data configures the computer and prevents:

- engine malfunction after reprogramming or replacing the computer,
- incorrect interpretation of the information provided by the CLIP diagnostic tool.

Fault finding – Interpretation of commands

SC002	<u>ENTER INJECTOR CODES</u>
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NOTES	<p>This command should be run after the injectors have been replaced and only if the vehicle has been configured with IMA. (ET104 USE OF INJECTOR CODES to YES). If this command is not performed, the DF276 INJECTOR CODE PROGRAMMING fault will be present.</p>
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WARNING

The letters **J** and **Q**, and figures **0** and **9** are not **used in IMA coding**.
If these characters are used the entry will be **invalid**.

Cylinder no. 1 is the cylinder located **at the engine flywheel end**.

Procedure to be followed:

- Read the **6-character** alphanumeric codes etched on the upper section of the injector bodies.
- Use command **SC002**.
- Select the cylinder number for the cylinder concerned in the **Desired**, column, then confirm.
- Enter the injector code displayed for the cylinder.
- Enter the new codes for each cylinder, then confirm.
- When the command is completed, the modified codes appear in the **Current** column.
- Check that the codes correspond to those read earlier.
- If the codes entered appear in neither the **Current** column nor the **Desired** column, check the codes read and make sure the data has been entered correctly,

The possible confusions are:

digit "1" with the letter "I"
figure 8 with the letter B
figure 5 with the letter S

- Exit fault finding mode.
- Switch off the ignition and **wait for 1 min**.
- Switch the ignition back on and check for faults.
- **DF276 INJECTOR CODE PROGRAMMING** should be stored.

If fault **DF276** is still present, the command has not been performed correctly.

Start the procedure again and follow the instructions.

If the codes are still not recognised, check whether the computer's standby has been correctly set:

Switch off the ignition and **wait for 1 min**.

If the warning light flashes when the ignition is switched off, the computer has not been put on standby and the command will be ignored.

If all these checks still do not enable the command to be confirmed, contact the Techline.

Fault finding – Interpretation of commands

SC003	<u>SAVE COMPUTER DATA</u>
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NOTES	The data is saved before computer reprogramming or the computer is replaced.
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On the CLIP tool, select the **SC003 Save computer data**.

If the following message appears:

"a saved file exists, do you want to overwrite this data?"

(this file corresponds to the last save carried out on the tool)

Select **YES**.

Confirming this command saves the following vehicle-specific data:

- injector codes,
- the EGR valve data programming;
- options available on the vehicle and managed by the computer (E.g. air conditioning).

This information will be saved on the CLIP tool.

After saving has finished, use the command **SC001 Enter saved data** to be able to set the new computer parameters, after programming and reprogramming.

Fault finding – Interpretation of commands

SC036	<u>REINITIALISE PROGRAMMING</u>
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NOTES	<p>This command is used to reset the computer parameters according to the type of operation or component repaired or replaced from the following list:</p> <ul style="list-style-type: none">– the EGR valve,– the damper valve. <p>Ignition on and engine stopped.</p>
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To run this command, select the **SC036 Reinitialise programming** scenario on the CLIP tool.

Procedure to be followed:

- on the main screen, select the component to reinitialise after an operation (removal - refitting or replacement of component),
- select **YES** then **OK** to begin reinitialisation,
- select **Finish** on the **Configuration done** screen to return to the main screen,
- end of operation.

Fault finding – Interpretation of commands

RZ005	<u>PROGRAMMING</u>
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NOTES	This command enables you to reinitialise the entire computer configuration according to the vehicle.
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Command **RZ005** reconfigures the computer.

If the computer does not have any configuration data, use command **RZ005** to enter the vehicle options:

- air conditioning,
- thermoplungers,
- cruise control/speed limiter.

These options are detected by the computer even if command **RZ005** is not used.

The computer is configured as soon as the one of the vehicle's optional system components is operated.

Fault finding – Interpretation of commands

RZ034	<u>COMPUTER MEMORY</u>
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NOTES	IMPORTANT Only use this command if DF038 Computer is Present . Ignition on and engine stopped.
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Command **RZ034** reinitialises the computer memory.

- With the ignition on:
- Use command **RZ034**.
- Switch off the ignition and wait for the message Communication lost with computer.
- Switch on the ignition again.
- Run the programming commands (see **Configuration and programming**)
- Use command **SC036 Reinitialise programming** and choose **After injection computer replacement with no save option**,
- Enter the injector codes using command **SC002 Enter injector codes** (see **Interpretation of commands**),
- Switch off the ignition and wait for the message Communication lost with computer.

Perform a road test to reinitialise the parameters of the vehicle.

Fault finding – Interpretation of commands

AC001	<u>PREHEATING UNIT</u>
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NOTES	<p>This command is only carried out if the fault DF025 Preheating unit fault finding connection, or DF017 Preheating unit control circuit is present or stored and if no other fault is present.</p> <p>Refer to the Wiring diagrams Technical Note for the vehicle to locate the fuses and relays concerned.</p>
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Connect the diagnostic tool and turn on the ignition.

With the preheating unit connected:

- connect the negative terminal of the voltmeter to **track 8** of the preheating unit,
- connect the positive terminal of the voltmeter to the **+ 12 V** battery,
- run command **AC001 Preheating unit**.

if the voltmeter does not indicate the battery voltage while the command is running (ten 1 second ON/OFF cycles):

1 Check the condition of the preheating unit supply fuse F01 (**70A**).

Replace it if necessary.

2 Check the following connections for **continuity and the absence of interference resistance**:

Injection computer connector C **track E2** —————> **track 8** of the preheating unit connector

Injection computer connector C **track A4** —————> **Track 3** of the preheating unit connector

Repair if necessary.

3 Check the connections on the pre-postheating unit, heater plugs and injection computer.

Repair if necessary.

4 Measure the resistance of the heater plugs. If this resistance is greater than **2 Ω** replace the faulty plug(s).

5 Check **the continuity and absence of interference resistance** between:

preheating unit **track 1** —————> **cylinder 3** heater plug

preheating unit **track 2** —————> **cylinder 1** heater plug

preheating unit **track 6** —————> **cylinder 4** heater plug

preheating unit **track 7** —————> **cylinder 2** heater plug.

6 Then check for **+ 12 V supply** on **track 4** of the preheating relay connector.

If the fault is still present, replace the preheating unit.

AC004	<u>TURBOCHARGING SOLENOID VALVE</u>
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NOTES	This command is used to check the turbocharging circuit.
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This command checks that the turbocharger and the control circuit are working properly.

Introduction

1-Check the sealing of the high pressure air circuit:


Pipes not joined or pierced, pressure sensor disconnected or poorly fitted (seal present), intercooler pierced.
To test the intercooler: stabilise the engine speed between **3,500** and **4,000 rpm** with the vehicle stopped and check that there are no leaks.

Check the resistance of the turbocharging limitation solenoid valve between **tracks 1 and 2**.

Replace the solenoid valve if its resistance is not **15.4 $\Omega \pm 0.7$ at 20°C**.

Check the injection computer connections.

Check for **continuity and make sure there is no interference resistance** on the following connection:

Injection computer grey 32-track connector **C**,  **Track 1** turbocharging solenoid valve
track E1

Repair if necessary.

Check for the presence of **+ 12 V** after relay on **track 2** of the turbocharging solenoid valve.

2 - Turbocharger control circuit check

- With the engine stopped, make sure that the control rod is in the resting position.
- Start the engine and make sure that the control rod actuates to the upper stop.
- (when the engine is switched off, the control rod should return to the rest position)
- If the control rod does not move correctly, carry out the following checks:

1) Vacuum pressure command check:

- Disconnect the solenoid valve inlet **hose** and connect it to a pressure gauge.
- Start the engine and run it at a stable idle speed.
- If the vacuum pressure does not reach **800 mbar \pm 100**: check the vacuum pressure circuit from the vacuum pump.
- Stop the engine, reconnect the inlet hoses and go to step **no. 2**.

2) Solenoid valve control check:

- Disconnect the solenoid valve outlet **hose**.
- Start the engine and run it at a stable idle speed.
- Place your hand on the solenoid valve and block the outlet **union** with your thumb.
- If you notice no solenoid valve vibration, check the operation of the computer output (**step 5**). Solenoid valve operation check:
- Connect the pressure gauge to the solenoid valve outlet **union**.
- Start the engine and run it at a stable idle speed.

If the vacuum pressure does not reach **800 mbar \pm 100**, replace the solenoid valve.

Fault finding – Interpretation of commands

AC004 CONTINUED

Turbocharger control circuit check (continued)

4) Turbocharger operation check:

a) Connect a vacuum pump to the **hose** connected to the turbocharger control diaphragm.

Apply a negative pressure of **800 ± 100 mbar**:

If there is a leak, replace the turbocharger (diaphragm included).

b) Check the control rod movement and setting (see **MR 364, Mechanics, 12B, Turbocharging**).

If the control rod is sticking, replace the turbocharger.

c) Engine cold and stopped:

Remove the turbocharger inlet duct and check that the compressor turns freely on the axis.

d) If the fault persists:

Check that the exhaust manifold is not leaking.

Check that the exhaust is not blocked.

Carry out the necessary repairs.

5) Computer output stage check: (solenoid valve connected).

This operation **can only be carried out** if the checks indicated in **step no. 2** are not **conclusive**.

Either with the voltmeter: Connect the voltmeter earth lead on **track 2** of the solenoid valve and the positive lead on **track 1**.

Clear any solenoid valve fault then run command **AC004**:

●The voltmeter should display **ten cycles** of two successive voltages ~ = battery voltage X opening cycle ratio* in process.

that is: ~ **2.5 V** (opening cyclic ratio* of **20%**) then ~ **8.7 V** (opening cyclic ratio* of **70%**).

Or with the oscilloscope (at 5 V range/division and 1 ms/div time base): Connect the earth lead of the oscilloscope to the battery earth and the positive test pin to **track 2** of the solenoid valve.

Clear any solenoid valve faults, then run command **AC004**:

●the oscilloscope should display a square wave signal of 12.5 V in amplitude at a frequency of 140 Hz (with an opening cyclic ratio* passing from ~ 20 to ~ 70%).

If the measurement is correct, replace the solenoid valve.

If the measurement does not show any control or continuous voltage, contact the Techline.

* Opening cyclic ratio signal

Fault finding – Interpretation of commands

AC011	<u>RAIL PRESSURE REGULATOR</u>
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NOTES	<p>This command is used to check:</p> <ul style="list-style-type: none"> – the operation of the pressure regulator, – and the high pressure injection circuit.
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Step 1

Measure the pressure regulator resistance between **tracks 1** and **2**.

– Replace the regulator if its resistance is not approximately: **3 Ω ± 0.5 at 20°C**.

Check **the continuity and absence of interference resistance** of the following connections:

Injection computer brown 48-track connector **B**,
track M4  **track 2** of the rail pressure regulator connector

+ 12 V after relay  **track 1** of the rail pressure regulator connector

If, when running command **AC011**, you can hear a slight whistling noise and a crunching noise from the pressure regulator, go to **step 2**. Otherwise, ensure that the computer output stage is functioning correctly:

Using a voltmeter:

With the solenoid valve connected, connect the voltmeter earth lead to **track 2** of the fuel pressure solenoid valve and the positive cable to **track 1**. Clear any fuel pressure solenoid valve faults, then run command **AC011**:

- The voltmeter should display two successive voltages: ~ **2.5 V** for an opening cyclic ratio of **20%** then ~ **8.75 V** for an opening cyclic ratio* of **70%** (ten cycles).

Or using an oscilloscope (range 5 V/division and with time base 1 ms/division):

With the solenoid valve connected, connect the oscilloscope earth to the battery earth and the positive contact point on **track 2** of the fuel pressure solenoid valve; clear any fuel pressure solenoid valve faults then run command **AC011**:

- the oscilloscope should display a square wave signal with an amplitude of 12.5 V at a frequency of 185 Hz (with an OCR* passing from 20 to 70%).

If the measurement is correct, replace the regulator.

If the measurement is not correct, contact the Techline.

* Opening cyclic ratio signal

AC011 CONTINUED	
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Step 2

In the event of rail overpressure:
Check the injectors are working:
see **test 8 Incorrect injector operation.**

Check that the rail pressure sensor is operating correctly:
Fault interpretation **DF007 RAIL PRESSURE SENSOR CIRCUIT.**
Carry out the necessary repairs.
If these checks do not reveal any faults, and if the fault is still present, replace the rail pressure sensor.

In the event of rail underpressure:
Check that the rail pressure sensor is operating correctly:
Fault interpretation **DF007 RAIL PRESSURE SENSOR CIRCUIT.**
Check the low pressure diesel circuit priming.
Check the conformity of the diesel filter connections.
Check the condition of the filter (clogging and water saturation).
Check there are no air bubbles between the filter and the high pressure pump.
Check the sealing of the high pressure and low pressure diesel circuit.
(odour and visual inspections): pump body, overpressure valve, pipes, rail and injector unions, injector wells.
Check the conformity of the seal fitting on the pressure regulator.
Check the injectors are working:
see **test 8 Incorrect injector operation.**
Carry out the necessary repairs.
If these checks do not reveal any faults, and if the fault is still present, replace the rail pressure sensor.

Fault finding – Interpretation of commands

AC012	<u>DAMPER VALVE</u>
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NOTES	This command allows you to check the operation of the damper valve.
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– Measure the **resistance** of the damper valve solenoid valve between **tracks 1 and 2**.
Replace the solenoid valve if the resistance is not: **$46 \pm 3 \Omega$ at $+ 25^{\circ}\text{C}$** .

– Check for continuity and for the absence of interference resistance on the following connections:

Injection computer, brown 48-track connector B, track M1	→	track 1 of the damper valve solenoid valve connector
+ 12 V after relay	→	track 2 of the damper valve solenoid valve connector

A) Engine running at idle speed

Make sure that there is a pressure of **~ 900 mbar** on the solenoid valve inlet hose.
Make the necessary repairs (pressure circuit conformity and seal).

B) With the vehicle ignition on, engine stopped

Make sure the **damper valve** is **open**.
If not, clean or replace the air vent unit.
Disconnect the solenoid valve inlet and outlet hoses,
Connect a vacuum pump to the inlet union and apply a pressure of **~900 mbar**
If there is a leak, replace the solenoid valve.
Run command **AC012**.

Otherwise, with the solenoid valve connected, check operation of the computer output stage with a voltmeter:

Voltmeter earth cable	→	track 1 of the solenoid valve
Voltmeter positive lead	→	track 2 of the solenoid valve

Clear any solenoid valve faults,
Run command **AC012**.
The voltmeter should display ten ON-OFF cycles (**8.75 V then 2.5 V**).
If the measurement is correct, replace the solenoid valve.
If the measurement does not show any lights, contact the Techline.

C) Vehicle with ignition off

Connect a vacuum pump to the flap control diaphragm and apply a pressure of **~900 mbar**:
If the diaphragm **does not maintain the negative pressure**, replace the air vent unit (the diaphragm cannot be disconnected).
If the diaphragm **maintains the vacuum** and **the flap does not operate**, clean or replace the air vent unit.
If the diaphragm **maintains the underpressure** and **the valve operates**, then operate it several times to ensure that there is no blockage.
Check for clogging of the air vent unit and its valve, and clean if necessary.

AC195	<u>ELECTRIC COOLANT PUMP</u>
--------------	------------------------------

NOTES	This command allows you to check the operation of the electric coolant pump.
--------------	--

Test the electric coolant pump relay (A 20A) and check it is operating correctly. Check the injection computer connections. Repair if necessary.	
Check the continuity between the following connections: Tracks B1 and B5 of the coolant pump relay mounting. If the checks yield the correct results, check the continuity and absence of interference resistance on the following connections:	
Injection computer brown 48-track connector B, track H4	→ Track B2 of the coolant pump relay mounting
Injection supply relay mounting, Track 5	→ Track B1 of the coolant pump relay mounting
Injection supply relay mounting, Track 5	→ Track B5 of the coolant pump relay mounting
Turbocharger bearing coolant pump connector, Track 1	→ Track B3 of the coolant pump relay mounting
Turbocharger bearing coolant pump connector, Track 2	→ Earth
Repair if necessary. If the fault is still present, contact the Techline.	

NOTES

Before dealing with this customer complaint, check that there are no faults, and the conformity (or otherwise) of the **parameters** and **statuses** using the diagnostic tool. If the customer complaint is not eliminated, then proceed according to the corresponding fault finding chart.

NO DIALOGUE WITH ENGINE MANAGEMENT COMPUTER

ALP1

STARTING FAULT OR STARTING IMPOSSIBLE

ALP2

INJECTION NOISE

ALP3

POOR PERFORMANCE

ALP4

IRREGULAR ENGINE OPERATION

ALP5

EXTERNAL LEAKS FROM THE FUEL CIRCUIT

ALP6

ROUGH IDLE

ALP7

OIL LEAKS FROM THE TURBOCHARGER

ALP8

TURBOCHARGER NOISES

ALP9

SMOKE FROM THE EXHAUST

ALP10

ALP1

No dialogue with engine management computer

Try to establish dialogue with a computer on another vehicle to make sure that the diagnostic tool is not faulty.

Check the battery voltage and make the necessary adjustments to obtain a correct voltage (**9.5 V < Battery voltage < 17.5 V**).

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.

disconnect the engine management computer.

try to establish dialogue with another computer.

if the fault is still present, reconnect the computer and proceed by elimination by successively disconnecting all the following computers (according to wiring diagram and equipment): air conditioning, airbag, abs and esp, uch, instrument panel, central communication unit, proximity sensor.

Try to establish dialogue after disconnecting each line:

if, after a disconnection, you manage to establish dialogue, perform the fault finding procedure for the relevant computer.

perform fault finding on the multiplex network using the diagnostic tool.

Check for the presence and the condition of the injection fuses on the UPC, and/or the engine fuse box.

check the connection of the computer connectors 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:

Earth on tracks H1, G4 and H4 of black 32-track connector A.

+ after ignition feed on track D1 of black 32 track connector A.

Check that the power supply to the diagnostic socket is correct:

+ before ignition feed on track 16.

+ after ignition feed on track 1.

Earth on tracks 4 and 5.

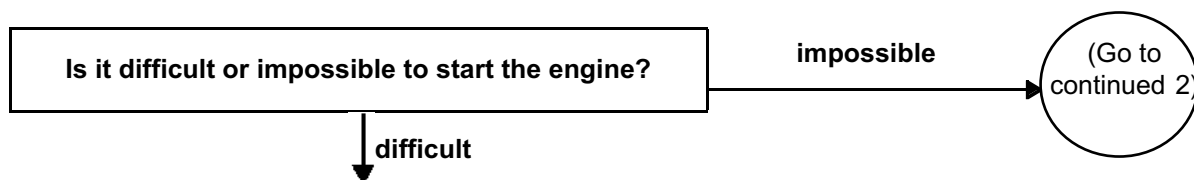
If dialogue has still not been established after these checks, contact the techline.

AFTER REPAIR

Carry out a road test followed by a complete check with the diagnostic tool.

ALP2	starting difficult or impossible
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NOTES	<p>Before dealing with this customer complaint, check that there are no faults, and the conformity (or otherwise) of the parameters and statuses using the diagnostic tool.</p> <p>If the customer complaint is not ironed out, perform the following checks:</p>
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PART A:

Check the engine earths.

Ensure that engine speed reaches **250 rpm** with the starter motor, as displayed on the parameter screen (**PR055 Engine speed**).

If the engine speed is less than **250 rpm**, refer to **Technical Note 6014A, Checking the charging circuit, Starter motor fault finding, Starter motor**.

If the engine speed under CLIP is zero and the engine is running, measure the **resistance** of the engine speed sensor between **terminals A and B** of its black connector. If the **winding resistance** is not between **510 Ω and 850 Ω** at an engine temperature of **20°C**, replace the engine speed sensor.

Check the **continuity** of the following connections:

- engine computer, **connector B track D1** —————→ **track A** of the engine speed sensor
- engine computer, **connector B track C1** —————→ **track B** of the engine speed sensor

Check that the engine earthing is in order (oxidation, tightness, etc.).

Check the mounting, air gap and condition (overheating) of the sensor.

Replace if necessary.

Check the synchronisation of the camshaft sensors and the engine speed sensors with the display of **ET238 Synchronisation**.

If synchronisation is not active, refer to the checks described in **DF195 Camshaft/engine speed consistency**.

check the fuel circuit sealing.

If the fault is still present, see **DF053 Rail pressure regulation function 2.def, stage 4**.

AFTER REPAIR	carry out a road test followed by a complete check with the diagnostic tool.
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**ALP2
CONTINUED 1**

Check that the heater plugs are actuated using the **AC001 Preheating unit** command.

Check the sealing and condition of the inlet circuit: run **test 3 Turbocharged air inlet circuit check** and follow the fault finding procedure.

Check that there are no foreign bodies on the flowmeter grille: run **test 4 Air flowmeter** and follow the fault finding procedure.

Check that the exhaust is not blocked: run **test 1 Exhaust pipe check** and follow the related fault finding procedure.

Check the consistency of the signal from the engine coolant temperature sensor.

Check the pressure regulator is working properly (see command **AC011 Rail pressure regulator**).

Check the operation of the injectors (excessive return leak, clogging, seizing): run **test 8 Poor injector operation**.

Check the engine timing (and the position of the high pressure pump sprocket).

Check the balance of the compressions, according to the power consumption during the starting phase (**Compression test** menu on the CLIP Technic tool).

If you do not have the CLIP Technic or if there is an imbalance, use a compression gauge to get an accurate measurement.

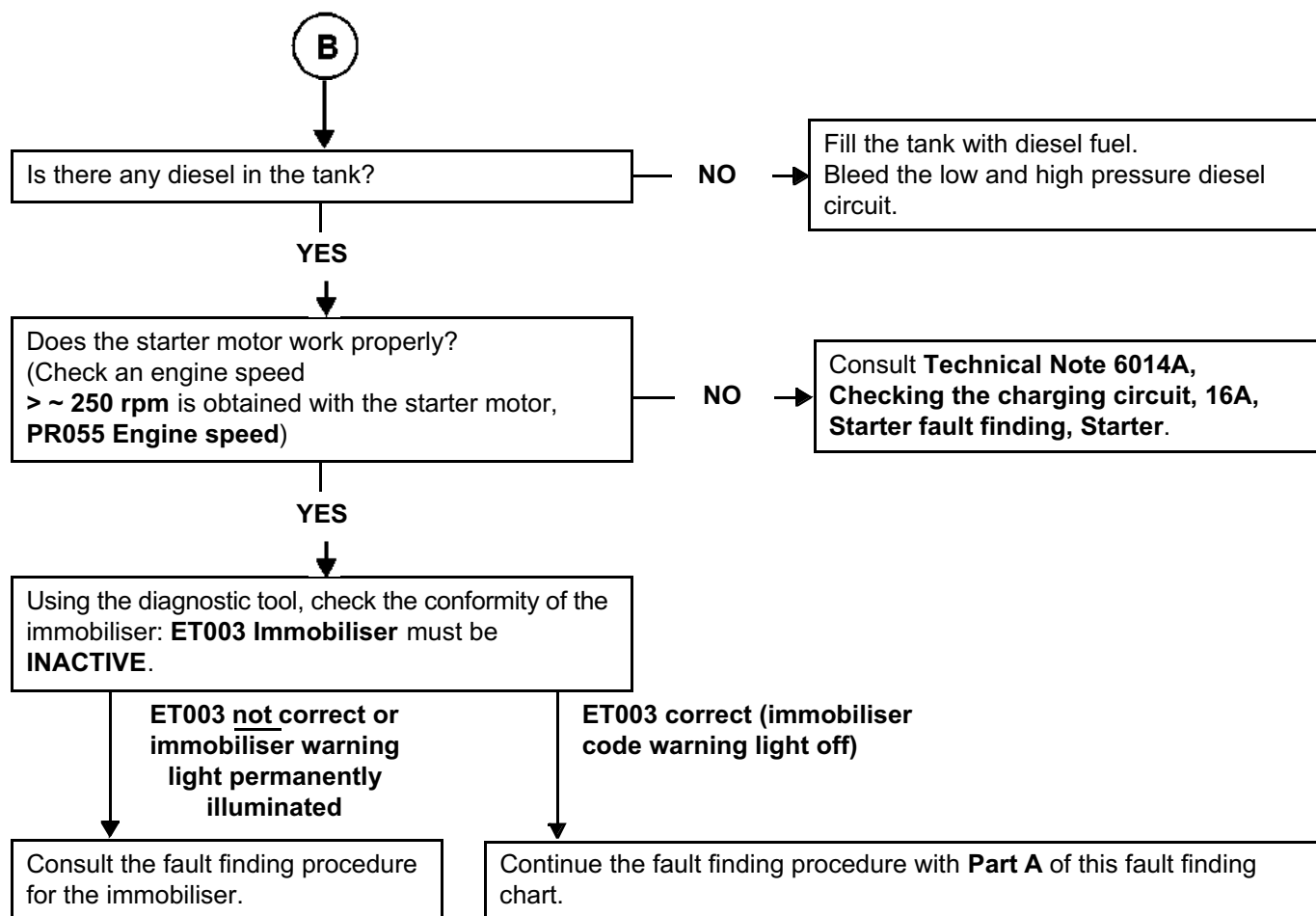
after the operation, clear the faults caused by disconnecting the regulator and the heater plugs.

End of part A

AFTER REPAIR

carry out a road test followed by a complete check with the diagnostic tool.

**ALP2
CONTINUED 2**



AFTER REPAIR

carry out a road test followed by a complete check with the diagnostic tool.

ALP3	Injection noise
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NOTES	<p>Before dealing with this customer complaint, check that there are no faults, and the conformity (or otherwise) of the parameters and statuses using the diagnostic tool.</p> <p>If the customer complaint is not ironed out, perform the following checks:</p>
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If the injection noise occurs after starting from cold:

- Check the low pressure diesel circuit priming.
- Check the fuel heater supply.
- Check the operation of the preheating system.
- Check that fuel and engine temperatures are consistent.



If the injection noise occurs at idle speed:

- Check the condition of the injector connector and pressure regulator terminals.
- Check the conformity of the air flow signal: use fault finding procedures: **PR132 Air flow** or run **test 3 Turbocharged air inlet circuit check**.

If the complaint is still present, perform the injector fault finding procedure: run **test 8 Poor injector operation**.

does the injection noise occur at all engine speeds?

- Run fault finding on the injectors: run **test 8 Incorrect injector operation**.
- Check the condition of the injector connector and pressure regulator terminals.
- Check the conformity of the fuel used, apply **test 10 Diesel fuel conformity check**.

- If the diesel fuel is not correct:
- Replace the diesel fuel.
 - Change the diesel filter.
 - Bleed the low and high pressure diesel circuit.

Check the conformity of the air flow signal: use the interpretation of the fault finding procedure **PR132 Air flow**.

If the customer complaint is still present:

Run command **AC011 Rail pressure regulator**.

Then apply the conformity check to confirm:

- the conformity of the fuel pressure between **PR008 Rail pressure setpoint** and **PR038 Rail Pressure**,
- the conformity of the pump fuel flow between **PR157 Fuel flow setpoint** and **PR017 Fuel flow**.

If the fault is still present, contact the Techline.

AFTER REPAIR	carry out a road test followed by a complete check with the diagnostic tool.
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ALP4

Poor performance

NOTES

Before analysing this customer complaint, check that there are no faults, and the conformity (or otherwise) of the parameters and statuses, using the diagnostic tool.

If the customer complaint is not ironed out, perform the following checks:

IMPORTANT

In the event of the engine overheating above **119°C**, the computer will voluntarily limit the fuel flow (overheating warning light comes on from **115°C**).

– Please observe the cleanliness guidelines and safety advice.

Is the poor performance accompanied by smoke?

NO

A

YES

Check:

– The conformity of the fuel used: apply **test 10 Diesel fuel conformity check**.

If the diesel fuel is not correct:

– Replace the diesel fuel.

– Change the diesel filter.

– Bleed the low and high pressure diesel circuit.

– The conformity of the assembly of the injectors (presence and **conformity of the sealing washer**).

Checking procedure:

– Take a straightedge approximately **40 cm** long and place it on the 4 injectors. The straightedge should rest on the 4 injectors.

– If 1 injector protrudes, remove the injector and check that the washer is correct.

– If one injector does not touch the straightedge (clearance of more than **1 mm**), remove the injector and check that the washer is present.

– Clean the injector well and the injector, refit the injector with its correct sealing washer.

The sealing and condition of the inlet circuit: apply **test 3 Turbocharged air inlet circuit check**.

– The condition of the air flowmeter: apply **test 4 Air flowmeter**.

– The turbocharger: apply **test 9 Air line at the turbocharger, then test 5 Turbocharger control solenoid valve check and test 6 Turbocharger**.

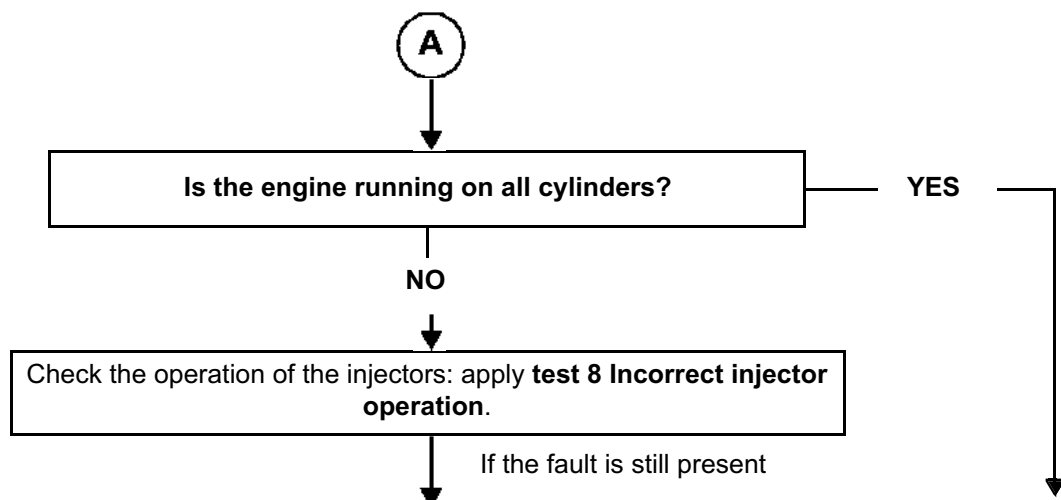
check that the turbocharging pressure follows the increase in engine speed and that the loop difference with the turbocharging pressure is low.

Otherwise, replace the turbocharger.

AFTER REPAIR

carry out a road test followed by a complete check with the diagnostic tool.

ALP4 CONTINUED



Check the conformity of the accelerator pedal position sensor, the brake pedal sensor, the atmospheric pressure sensor, the exhaust gas recirculation valve and the damper valve.

– Check the consistency of the signal: of the air flowmeter, of the engine coolant temperature sensor, of the fuel temperature sensor and of the engine speed.

Check the connections, continuity and absence of interference resistance on the air flow sensor (apply **DF056 Air flow sensor circuit, 2.def**), the engine coolant temperature sensor (apply **DF001 Coolant circuit, 1.def**), and the engine speed (apply **DF195 Camshaft sensor/engine speed consistency, 2.def**).

Check:

- That the diesel filter is not clogged (for the test, see **DF053 Rail pressure regulation function 2.def**).
- That there are no leaks on the high and low pressure diesel circuits: apply **test 3 Turbocharged air inlet circuit check**.
- That the oil vapour rebreathing system is connected.
- The flow regulator (blocked/seized, apply the interpretation for command: **AC011 Rail pressure regulator**).

– Check the timing setting (and the position of the high pressure pump sprocket) (see **MR 364 (MEGANE II) or 370 (SCENIC II), Mechanical, 11A, Top and front of engine**).

– Check the cylinder compressions (balance of the cylinder compressions with the **Compression test function** on the **CLIP Technic diagnostic tool**).

– Measure the engine compressions using the special tool.

If the fault is still present, contact the Techline.

AFTER REPAIR

carry out a road test followed by a complete check with the diagnostic tool.

ALP5	Irregular engine operation
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NOTES	<p>Before dealing with this customer complaint, check that there are no faults, and the conformity (or otherwise) of the parameters and statuses using the diagnostic tool.</p> <p>If the customer complaint is not ironed out, perform the following checks:</p>
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If the engine races during gear changes, check, if there is a floor carpet, that this is not blocking the accelerator pedal, the brake pedal or the clutch pedal, then check the conformity of the clutch switch and the conformity of the accelerator pedal sensor when the pedal is released.

Measure the **resistance** of the engine speed sensor between **terminals A and B** of its black connector.

If the **winding resistance** is not between **510 Ω and 850 Ω** at an engine temperature of **20°C**, replace the engine speed sensor.

Check the **continuity** of the following connections:

–engine management computer, **connector B track B1** —————→ **track A** of the engine speed sensor

–engine computer, **connector B track C1** —————→ **track B** of the engine speed sensor

Check the conformity of the engine earths (oxidation, tightness, etc.).

Check the mounting, the air gap (check that the engine speed sensor - flywheel gap is **0.5 to 1.8 mm**) and the condition of the sensor (heating).

Replace if necessary.

Check the low pressure circuit.

– Check the pressure regulation solenoid valve by applying **section B** of the **Rough idle** fault finding chart.
~ **1600 bar** with full load on the accelerator.

– Apply the procedure for checking the air flow; see conformity check.

– Check the turbocharger: apply **test 9 Air line at the turbocharger**, then **test 5 Turbocharger control solenoid valve check** and **test 6 Turbocharger**.

– Apply the procedure for checking the hydraulic circuit see conformity check.

If the fault is still present:

– Check the balance of the cylinders using the CLIP Technic function, **Compression test** physical measurements icon.

– Check the cylinder compressions if necessary using the special tool.

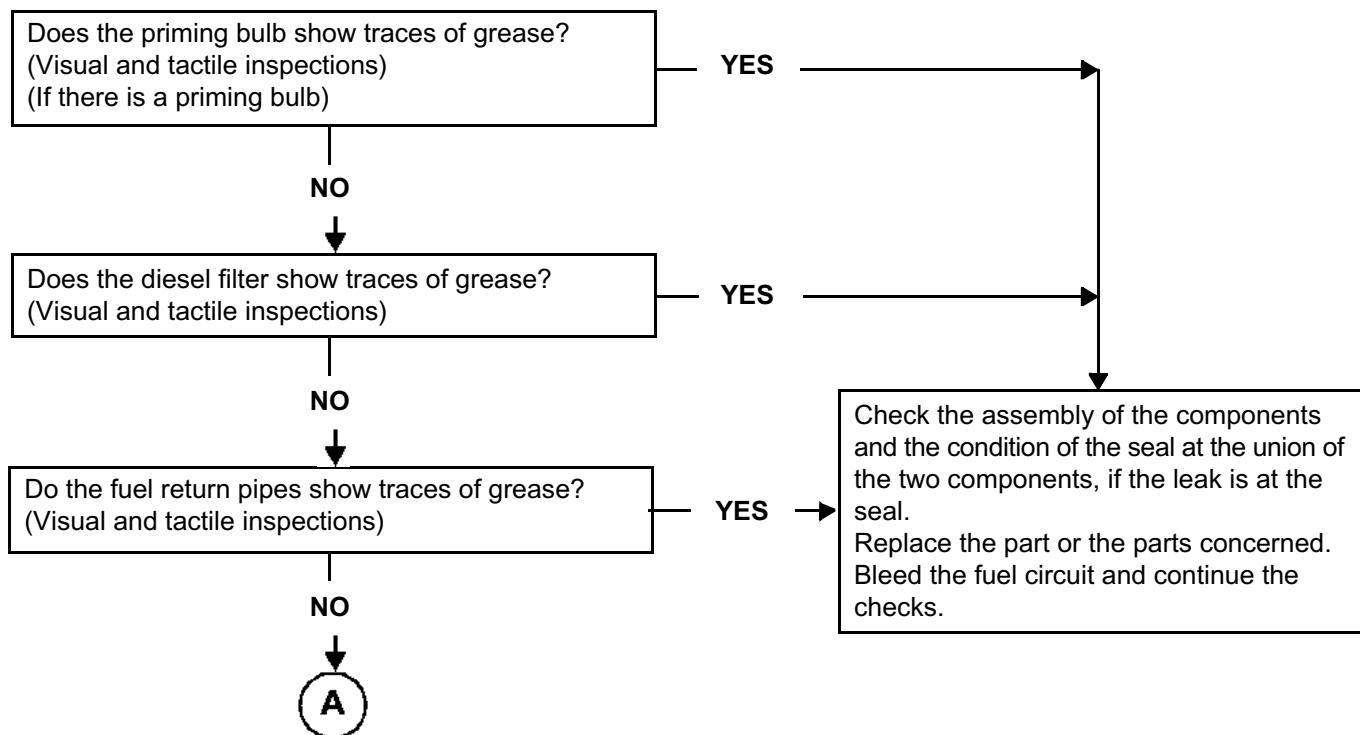
AFTER REPAIR	carry out a road test followed by a complete check with the diagnostic tool.
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ALP6	External leaks from the fuel circuit
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NOTES	<p>Before analysing this customer complaint, check that there are no faults, and the conformity (or otherwise) of the parameters and statuses, using the diagnostic tool.</p> <p>If the customer complaint is not ironed out, perform the following checks:</p> <p>IMPORTANT</p> <p>Please observe the cleanliness guidelines and safety advice.</p>
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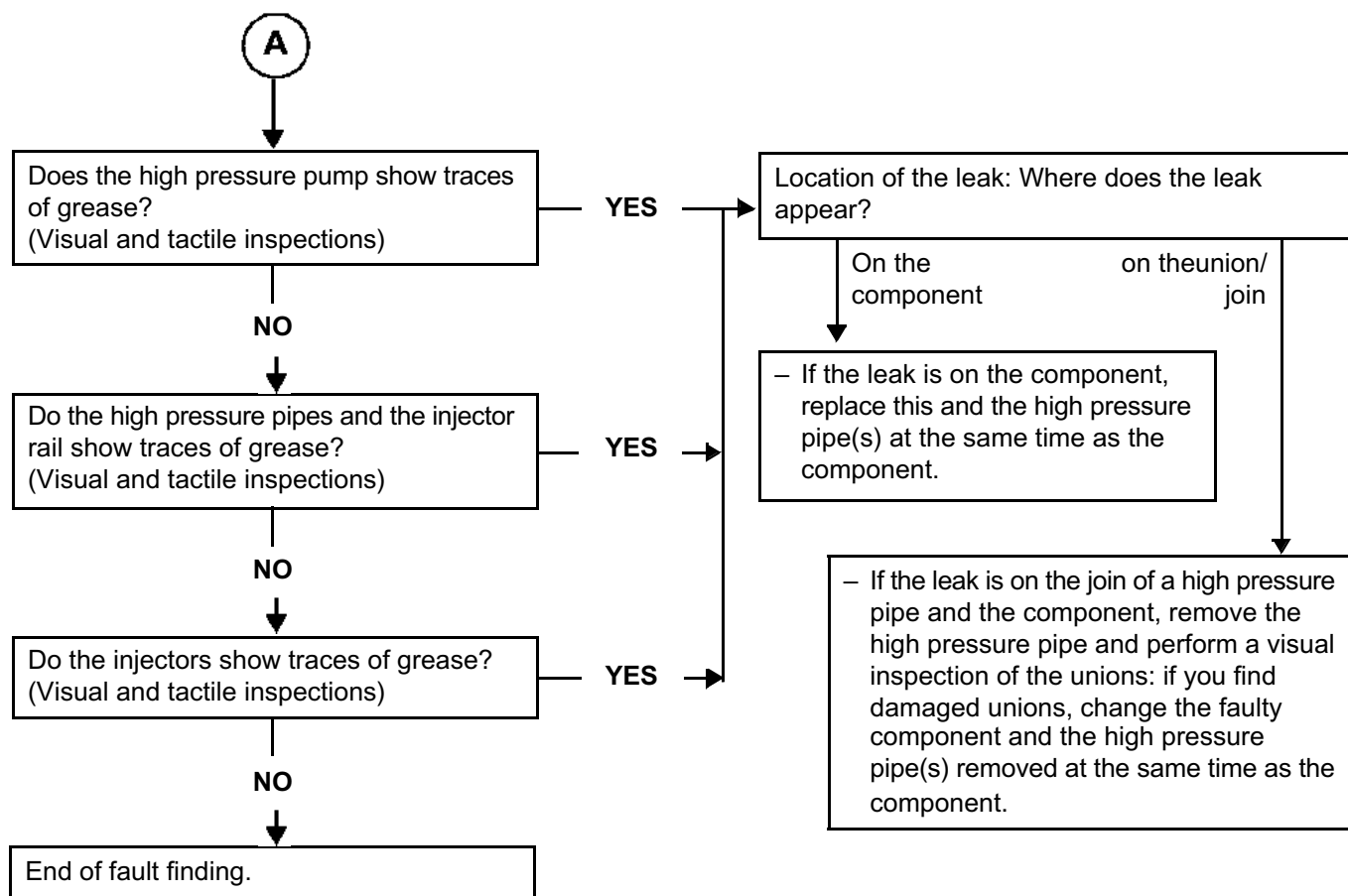
Procedure for checking for an external leak on the fuel circuit:

Clean away traces of grease with clean thinner and wipe the part or parts concerned with cleaning cloths.
Start the engine and raise the engine coolant temperature until the diesel fuel reaches **80°C**.
Stop the engine and check for traces of grease on the part or parts concerned.
If this is the case, replace the part or parts concerned.
Bleed the fuel circuit and continue the checks.



AFTER REPAIR	carry out a road test followed by a complete check with the diagnostic tool.
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**ALP6
CONTINUED**



Reminder:
do not replace the rail, pump or injector unless the union is found to be damaged during the visual inspections.
Bleed the fuel circuit and continue the checks.

AFTER REPAIR

carry out a road test followed by a complete check with the diagnostic tool.

ALP7

Rough idle

NOTES

Before dealing with this customer complaint, check that there are no faults, and the conformity (or otherwise) of the parameters and statuses using the diagnostic tool.
If the customer complaint is not eliminated, perform the following checks.

Check the sealing and condition of the inlet circuit: apply **test 3 Turbocharged air circuit check**.



Check the low pressure circuit: apply **test 2 Low pressure circuit check**.



check the engine parameters:

- check the update of the engine management computer calibration (last calibration).
- Check the conformity of the **IMA** codes (using the **Identification screen on the Clip diagnostic tool**).
- Check the charging circuit (see **Technical Note 6014A Checking the charging circuit**)
- To ensure the conformity of the engine speed signal, check:
 - The wiring.
 - The flywheel position and the condition of the flywheel teeth.
 - The position and tightness of the engine speed sensor.
- Check the fuel flow correction from station to station: apply **Test 8 Incorrect injector operation**.



A

AFTER REPAIR

carry out a road test followed by a complete check with the diagnostic tool.

**ALP7
CONTINUED**

A

Check the connections and wiring of the injectors.
Check the connections and wiring of the engine management computer to the injectors.
Repair if necessary.

Check the high pressure circuit (external leaks) (see the end of **ALP6 Fuel circuit external leaks**)

Check the timing setting (and the position of the high pressure pump pinion)

Check the lower engine:
– Check the compressions using the **Compression Test** on the **CLIP diagnostic tool** or the special tool.
– Only check the engine stand if there is noise or excessive vibration when idling.
If the checks are correct, contact the Techline.

AFTER REPAIR

carry out a road test followed by a complete check with the diagnostic tool.

ALP8	Oil leaks from the turbocharger
-------------	--

NOTES	<p>Before dealing with this customer complaint, check that there are no faults, and the conformity (or otherwise) of the parameters and statuses using the diagnostic tool.</p> <p>If the customer complaint is not ironed out, perform the following checks:</p>
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Check the area around the turbocharger

Note:

An oil leak does not correspond always to a turbocharger fault, the oil leak can arise from the area around the turbocharger.

According to the vehicle type, maximum visual access will either be from above or from below.

- 1 Do not start the engine.
Check the area around the turbocharger and identify the origin of the leaks.
Clean the oil traces on the turbocharger.
- 2 start the engine and let it warm up for several minutes.

IMPORTANT

If the air filter was removed previously, refit it before starting the engine (risks foreign matter entering the air inlet circuit).

Accelerate with no load several times, progressively increasing the duration before releasing the accelerator pedal. Visually inspect the exterior condition of the fuel supply pipes and the turbocharger oil return and the area around it. Identify the origin of the leaks.

Is an oil leak present at the air compressor inlet or outlet?

YES



NO



Check the air compressor inlet or outlet

Check for a loose interface (inlet or outlet) that is the cause of the air leak.

Note:

it is normal to find traces of oil inside the pipes at the turbocharger inlet or outlet as the air passing into the compressor is laden with oil from the engine rebreathing circuit.

Is the suspected interface properly tightened?

YES



Replace the pipe concerned (see **MR 364 (Mégane II) or 370 (Scénic II), Mechanical systems, 12B, turbocharging**).

NO

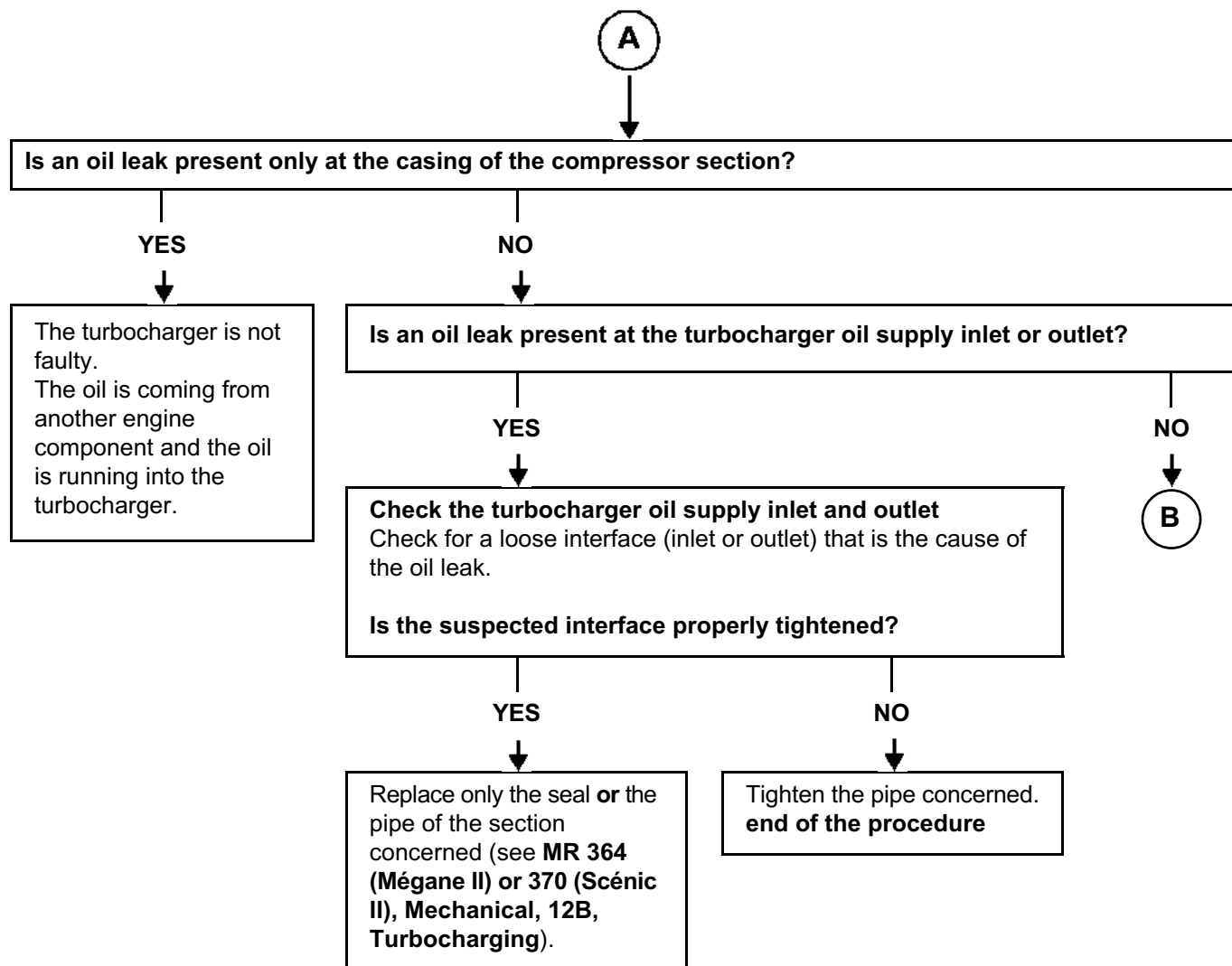


Tighten the interface or the concerned pipe.
End of procedure.

AFTER REPAIR

Carry out a road test followed by a complete check with the **diagnostic tool**.

**ALP8
CONTINUED 1**



AFTER REPAIR

Carry out a road test followed by a complete check with the **diagnostic tool**.

ALP8
CONTINUED 2

B

Is there an oil leak around the interfaces of the turbine housing and the exhaust pipes?

YES

NO

The turbocharger is not faulty. There is probably another fault in the engine.
Mark the component that is the source of the leak and refer to the repair manual (see **MR 364 (Mégane II)** or **370 (Scénic II)**, **10A Engine and peripherals**).

End of procedure.

AFTER REPAIR

Carry out a road test followed by a complete check with the **diagnostic tool**.

ALP9

Noise from the turbocharger

Apply Technical Note 5164A, Noise fault finding procedure.

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.).

AFTER REPAIR

Carry out a road test followed by a complete check with the **diagnostic tool**.

ALP10

Exhaust fumes

Run **test 9 Air line at the turbocharger**.
Run **test 5: Turbocharger control solenoid valve check**.

Is the vehicle equipped with a particle filter?

NO

YES

Start the engine and warm it up at idle speed for **10 min**.

IMPORTANT

If the air filter was removed previously, refit it before starting the engine (risks foreign matter entering the air inlet circuit).

Perform several rapid and brief accelerations under no load.

Note:

The presence of smoke is often normal.

The quantity, density, colour and persistence of the smoke are the important factors.

Is the exhaust outlet producing abnormal smoke?

YES

NO

Refer to **test 6 Turbocharger**.

The turbocharger is not faulty. There is probably another fault in the engine. **Refer to the corresponding TEST or fault finding chart**

Perform the fault finding of the "particle filter" function, refer to the **TESTS or corresponding ALP**

AFTER REPAIR

Carry out a road test followed by a complete check with the **diagnostic tool**.

EXHAUST SYSTEM CHECK	→	TEST1
LOW PRESSURE CIRCUIT TEST	→	TEST2
TURBOCHARGED AIR INLET CIRCUIT CHECK	→	TEST3
AIR FLOW SENSOR	→	TEST4
TURBOCHARGER CONTROL SOLENOID VALVE CHECK	→	TEST5
TURBOCHARGER	→	TEST6
POOR INJECTOR OPERATION	→	TEST8
AIR LINE AT THE TURBOCHARGER	→	TEST9
DIESEL FUEL CONFORMITY CHECK	→	TEST10
INCORRECT OPERATION OF THE OVERPRESSURE VALVE	→	TEST11

TEST1

Exhaust system check

Engine stopped: Check that the silencer outlet is not blocked. Repair or replace the silencer, if necessary.

Check the seal of the exhaust manifold on the contact surface between the turbocharger and the exhaust manifold.
Is the seal in order?

NO

Repair or replace the faulty part.

YES

Loosen the catalytic pre-converter on the turbocharger side. Place a wooden block between the two parts.
Start the vehicle and check if the engine runs better.
Is the engine running normally?

NO

The exhaust pipe is not the cause of the fault. Continue with the engine fault finding (see ALP5).

YES



**TEST1
CONTINUED**

A

Retighten the catalytic pre-converter.
Loosen the catalytic converter on the catalytic pre-converter side. Place a wooden block between the two parts.
Start the vehicle and check if the engine runs better.
Is the engine running normally?

NO → Replace the catalytic pre-converter.

YES

Retighten the catalytic converter.
Loosen or disconnect the intermediate chamber on the catalytic converter side. Place a wooden block between the two parts, if necessary.
Start the vehicle and check if the engine runs better.
Is the engine running normally?

NO → Replace the catalytic converter.

YES

Retighten the intermediate chamber.
Loosen or disconnect the silencer on the intermediate chamber side. Place a wooden block between the two parts, if necessary.
Start the vehicle and check if the engine runs better.
Is the engine running normally?

NO → Replace the intermediate chamber.

YES

Replace the silencer.
END OF TEST1.

TEST2

Low pressure circuit check

Check the fuel filter:

- Conformity of the fuel filter (correct part number and RENAULT filter).
- Positioning and amount of clogging in the filter element.
- Positioning and condition of the seals.
- **If there is metal swarf in the filter:**
Replace the fuel filter, bleed the circuit and **continue the fault finding procedure.**

Supplying the injection system with fuel from an additional tank.

This operation aims to detect possible faults in the low pressure supply system of a vehicle by replacing it entirely with an additional tank.

Mode:

- Disconnect the diesel fuel supply pipe at the fuel filter inlet and seal it with a plug.
- Connect a pipe to the fuel filter inlet and insert the other end into a **clean** container which is approximately 5 litres in volume.
- Disconnect the diesel fuel return pipe at the pump return and injector leak-off junction and seal it with a plug.
- Fill the container with **clean** diesel fuel.
- Start the engine and let the system drain itself of its air (there must not be any air bubbles in the return pipe).

Is the customer complaint still present?

YES

If the low pressure circuit is in order, reconnect the various pipes making up the low pressure circuit and repeat the fault finding procedure in the fault finding chart or for the fault that referred you to this test.

NO

Are the low pressure circuit connections in order and in good condition?

YES

A

NO

Carry out the necessary repairs.

**TEST2
CONTINUED**

A

Check the condition of the priming bulb, and that it is working properly.
Perform repairs if necessary and continue the test.

If the fault is still present with a low fuel level, check the consistency of the actual fuel level and that indicated on the instrument panel.
– The transfer pump is supplied via a venturi valve located beneath it.
Check that the opening of the venturi (6 to 8 mm in diameter) is not blocked by dirt contained in the fuel tank.
Check the priming of the low pressure diesel circuit.

Check the conformity of the fuel used by applying **test 10 Diesel fuel conformity check**.

If the diesel fuel is not correct:

- Replace the diesel fuel.
- Change the diesel filter.
- Bleed the low and high pressure diesel circuit.

Low pressure circuit correct.
END OF TEST2.

TEST3

Checking the turbocharged air inlet circuit

Engine stopped: Check the low and high pressure air circuit **sealing** (air leaks in or out, upstream or downstream of the turbocharger).

Check the parts that are abnormally greasy of the circuit and reveal a lack of tightness.

Check:

- the condition and fitting of the ducts (foreign bodies, clogged, disconnected, pinched, broken, holed, cut, tightness of the mounting bolts, etc.).
- the presence, condition and fitting of the seals.
- the present and tightening of the clamps.
- The fitting of the turbocharging pressure sensor.

Carry out the necessary repairs.

Checking the air filter.

Check:

- That the air filter unit inlet and outlet are not blocked.
- The condition and fitting of the air filter unit (disconnected, broken, perforated, etc.).
- The cleanliness, conformity and the absence of deformation of the filter element.
- The air flow sensor: apply **test 4**.

Carry out the necessary repairs.

If the engine is equipped accordingly, check:

- that the damper valve is open (**AC012 Damper valve**, step B).

- the condition of the damper valve:
 - the tightness of the mounting bolts,
 - cracks in the damper valve.

Carry out the necessary repairs.

Replace the valve if necessary.

Check that there is no leak at the exhaust manifold, in particular at the exhaust manifold/turbocharger connection.

Check the exhaust system: apply **test 1**.

Carry out the necessary repairs.

Check the condition of the intercooler:

- clogging,
- leaks (vehicle stationary, stabilise the engine speed between 3500 rpm and 4000 rpm and check that there are no leaks).

Replace the intercooler if necessary.

END OF TEST3.

TEST4

Air flowmeter

POLLUTION OF THE GRILLES:

Visual inspection: remove the flowmeter. There should be no foreign bodies in the grilles (see illustration on the next page).

Do not clean the grilles using compressed air or any other procedure: this damages the sensors and creates variations from the values displayed on the CLIP tool.

Check the sealing of the air circuit upstream of the air flowmeter:

disconnected or pierced pipes and air filter unit, seals present.

Replace the air flowmeter if necessary and clean upstream of this, if necessary.



ELECTRICAL COMPONENT BREAKAGE:

Visual inspection:

remove the flow sensor: the components must not be broken (see picture on following page).

Replace the air flowmeter if necessary.



OXIDATION OF THE ELECTRICAL COMPONENTS:

Visual inspection:

dismantle the air flowmeter, there should not be any green deposits on the electrical components.

Replace the air flowmeter if necessary.



CLOGGING OF THE AIR FLOWMETER:

Test:

– Check the values for conformity:

* During the first 5 seconds after starting:

- Coolant temperature: 80°C,
- Engine speed: idle speed (800 ± 50 rpm);
- Measure the air flow: 47 kg/h ± 10.
- OCR* EGR valve: between - 10% and 0%.

* After the starting phase:

- Coolant temperature: 80°C,
- Engine speed: idle speed (800 ± 50 rpm);
- Air flow measurement: 30 kg/h ± 5%;
- EGR valve OCR*: between 10% and 40%.

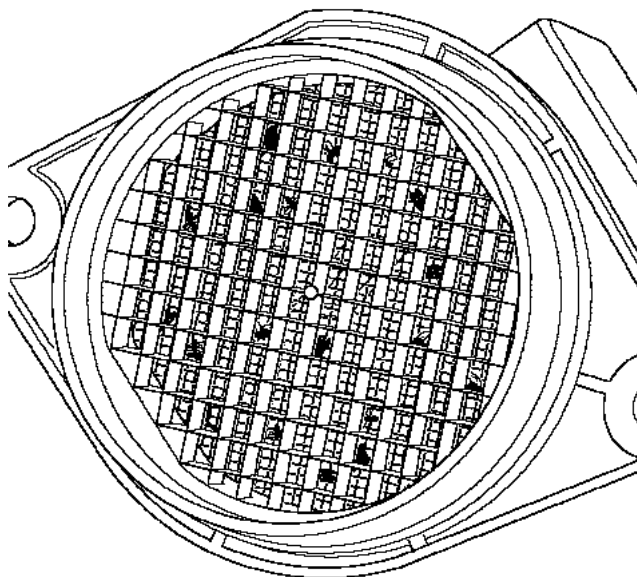
– Refer to **DF056 Air flow sensor circuit 2.def**, for the air flow sensor checks.

Replace the air flowmeter if necessary.

* OCR = Opening Cycle Ratio.

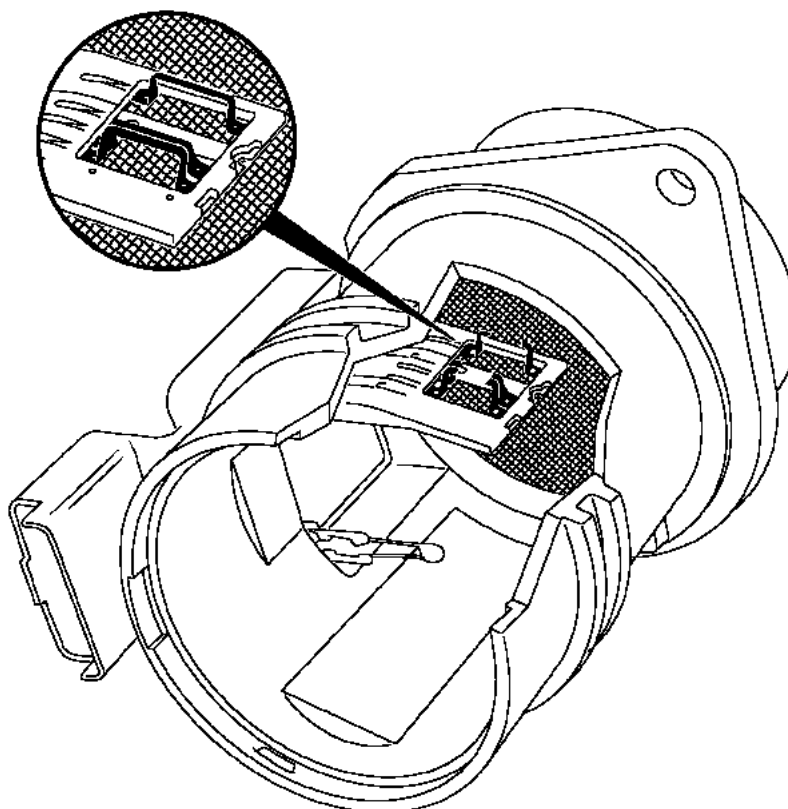
**TEST4
CONTINUED**

Contamination of the grille



110734

Damage to the electrical sensors



110736

END OF TEST4.

TEST5

Turbocharger control solenoid valve test

Start the engine and let it run at idle speed for **1 min.**
Check the battery voltage.
If the value of **PR071 Computer power supply voltage** is **greater than 13 V**, continue the test.
If not, check the charging circuit, then carry out a road test to confirm that the fault has disappeared.



Checking the vacuum at the pressure regulator inlet

Let the engine idle.

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 from the pressure regulator end piece.
Connect a vacuum pressure gauge **to the end of the disconnected pipe** and put it in the **vacuum measurement** position.

Accelerate rapidly by fully depressing the accelerator pedal and releasing it immediately.
The total duration of pressing and holding in the full load position must not exceed **1 second**.
During this acceleration, the engine speed must reach a value between **3000 and 4000 rpm**.

Repeat the operation three times.

Read the maximum vacuum displayed by the pressure gauge during the increase in speed, the decrease in speed and after returning to idle speed.

Tolerance intervals to be respected for the vacuum value:

-1 bar < CORRECT vacuum value < - 0.6 bar
-0.6 bar < INCORRECT vacuum value < 0 bar

Does the vacuum at the turbocharger pressure regulator inlet, displayed by the pressure gauge, respect the tolerance interval?

NO



YES



The solenoid valve is correct.
If the customer complaint is **Smoke from the exhaust**, apply **ALP11 Smoke from the exhaust**.
Otherwise, apply **test 6 Turbocharger**.

**TEST5
CONTINUED 1**

A

Reconnect the vacuum pipe to the turbocharging pressure regulator

Check the vacuum at the solenoid valve outlet

Let the engine idle.

Disconnect the vacuum pipe from the solenoid valve outlet end piece.
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.

Accelerate rapidly by fully depressing the accelerator pedal and releasing it immediately.
The total duration of pressing and holding in the full load position must not exceed **1 second**.
During this acceleration, the engine speed must reach a value between **3000 and 4000 rpm**.

Repeat the operation three times.

Read the maximum vacuum displayed by the pressure gauge during the increase in speed, the decrease in speed and after returning to idle speed.

Tolerance intervals to be respected for the vacuum value:

-1 bar < CORRECT vacuum value < - 0.6 bar

-0.6 bar < INCORRECT vacuum value < 0 bar

Does the vacuum displayed at the solenoid valve outlet, by the pressure gauge respect the tolerance interval?

NO



Reconnect the vacuum pipe to the turbocharging pressure regulator

B

YES



Replace the vacuum pipe between the solenoid valve and the turbocharger pressure regulator (see **MR 364 (Mégane II)** or **370 (Scénic II)**, **Mechanical, 12B, Turbocharging**).

TEST5
CONTINUED 2

B

Visual inspection of the solenoid valve electrical connector

Switch off the engine.

Note:

The requested checks are entirely visual.

- 1- Check that the connector is correctly connected and locked.
 - 2- Check that the electric wires are not damaged where they leave the insulation.
- Disconnect the connector to continue the checks.
- 3- Check that there is no heat damage to the unit and mechanical damage to the lock.
 - 4- Check that the contacts (clips and tabs) are not deformed.
 - 5- Check the sealing of the connector.

Do the visual inspections highlight any damage?

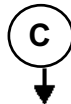
NO

C

YES

If 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, restart the test from the beginning.

TEST5
CONTINUED 3



Check the vacuum at the solenoid valve inlet

Let the engine idle.

Disconnect the vacuum pipe from the solenoid valve inlet end piece.

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 displayed by the pressure gauge.

Tolerance intervals to be respected for the vacuum value:

-1 bar < CORRECT vacuum value **< -0.85 bar**

-0.85 bar < INCORRECT vacuum value **< 0 bar**

Does the vacuum displayed at the solenoid valve inlet by the pressure gauge respect the tolerance interval?

NO

YES

Replace the solenoid valve (see **MR 364 (Mégane II) or 370 (Scénic II), Mechanical, 12B, Turbocharging**).

Carry out the following operations.

- reconnect the vacuum pipe to the turbocharger solenoid valve.
 - Check the vacuum pipe or pipes are connected correctly.
 - visually inspect the condition of the vacuum pipes from the vacuum pump to the various components supplied.
- Refer to the repair manual (see **MR 364 (Mégane II) or 370 (Scénic II), Mechanical, 12B Turbocharging**).

TEST6

Turbocharger

IMPORTANT

Perform these checks without removing the turbocharger and with the vehicle ignition switched off.

Check the turbocharger shaft

WARNING

Respect the following safety precautions:

- wear heat resistant gloves when the engine is hot,
- do not wear loose or baggy clothing and do not wear loose hanging jewellery,
- be aware that the cooling fan assembly may be triggered and pay attention to the operation of the accessories belt or belts.

Note:

The turbocharger shaft is the shaft connecting the compressor wheel and the turbine wheel.
According to the vehicle type, maximum visual access will either be 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.

Is there a point of resistance when the shaft is rotated?

Does the compressor wheel touch the turbocharger housing?

If for these 2 questions the response is **NO**



If **YES** for one of these 2 questions

Replace the turbocharger (see **MR 364 (Mégane II) or 370 (Scénic II), Mechanical, 12B, Turbocharging, Turbocharger: Removal - Refitting and Technical Note 3938A, Broken turbocharger: Replacement instructions**).

TEST6
CONTINUED 1

A

Check the condition of the turbocharger vanes

Note:

Use a mirror and light to facilitate this check.

According to the vehicle type, maximum visual access will either be from above or from below.

Visually check that the compressor vanes are in good condition.

Are the vanes damaged or twisted?

NO

YES

Replace the turbocharger (see **MR 364 (Mégane II)**
or **370 (Scénic II)**, **Mechanical, 12B**,
Turbocharging, Turbocharger: Removal -
Refitting and Technical Note 3938A, **Broken**
turbocharger: Replacement instructions).

What is the type of turbocharger?

Variable geometry
turbocharger

Turbocharger with
fixed geometry

B

C

TEST6
CONTINUED 2

B

Checking the turbocharging pressure regulator for a turbocharger with variable geometry

Note:

The rod of the pressure regulator on a turbocharger with variable geometry is perpendicular to the turbocharger shaft.

Turbochargers with variable geometry are controlled by a solenoid valve.

According to the vehicle type, maximum visual access will either be 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 sealed.
- 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 seconds**.
- 4- Release the pressure and check that the control rod returns to its initial position without jerking.

Repeat the entire sequence three times.

Is the pressure regulator sealing and rod movement correct?

YES

The turbocharger is correct.
End of procedure.

NO

Replace the turbocharger (see **MR 364 (Mégane II)** or **370 (Scénic II)**, **Mechanical, 12B, Turbocharging, Turbocharger: Removal - Refitting and Technical Note 3938A, Broken turbocharger: Replacement instructions**).

TEST6
CONTINUED 3



Checking the turbocharging pressure regulator for a turbocharger with fixed geometry

Note:

The pressure regulator rod for a turbocharger with fixed geometry is line with the turbocharger shaft.
Turbochargers with fixed, regulated geometry are controlled by a solenoid valve.
According to the vehicle type, maximum visual access will either be 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 correctly sealed.
- 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 over 10 seconds**.
- 4- Release the pressure and check that the control rod returns to its initial position without jerking.

Repeat the entire sequence three times.

Is the pressure regulator sealing and rod movement correct?

YES



The turbocharger is correct.
End of procedure.

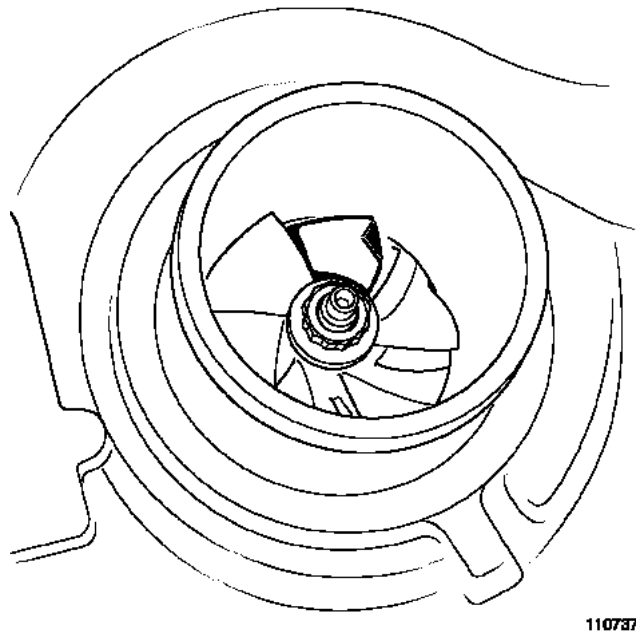
NO



Replace the turbocharger (see **MR 364 (Mégane II)** or **370 (Scénic II)**, **Mechanical, 12B, Turbocharging, Turbocharger: Removal - Refitting and Technical Note 3938A, Broken turbocharger: Replacement instructions**).

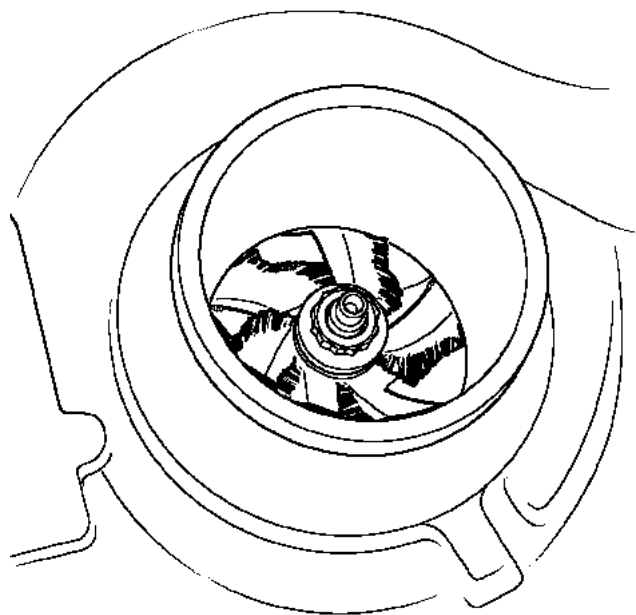
**TEST6
CONTINUED 4**

Deformed, twisted blade (“soft” foreign body)



110737

Broken blades (“hard” foreign body)



110738

TEST8

Incorrect injector operation

Section A: Fuel regulation balance check for each injector (individual correction):

- In the **CLIP diagnostic tool**, choose the **Fuel circuit** subfunction.
- With the engine idling and the fuel temperature **> 50°C**, display the flow correction values of each injector (individual correction), i.e.:
 - **PR364 Cylinder no. 1 fuel flow correction.**
 - **PR405 Cylinder no. 2 fuel flow correction.**
 - **PR406 Cylinder no. 3 fuel flow correction.**
 - **PR365 Cylinder no. 4 fuel flow correction.**

A flow correction value **greater than or equal to 5 mg/st** absolute value can indicate an injector fault or cylinder sealing fault.

- If this has not already been carried out, check the injector connections and wiring.
- Check the connections and wiring of the engine management computer to the injectors.
- Repair if necessary.
- Check the **IMA** injector codes, comparing the **IMA** codes on the injectors (the **IMA** codes must be read from left to right) and the **IMA** codes read in **the CLIP diagnostic tool**.
- If the **IMA** codes are correct, continue the fault finding procedure,
- If not, change the incorrect **IMA** codes using command **SC002 Enter injector codes** (see **Interpretation of commands**).

To confirm the repair, consult **part B of this test**.

CASE No. 1: If at least one of the values is greater than or equal to + 5 mg/st

- Check the valve clearance.
- Check the condition of the engine and the compressions (using the **Clip diagnostic tool** or a compression gauge).
- If the compression test reveals a cylinder fault, carry out the necessary repairs.
- If the compression is correct, check the fitting conformity of the injector (see **MR 364 (Mégane II) or 370 (Scénic II), 13B, Diesel injection, Diesel injector: Removal - Refitting**)

In particular, check that each injector has one compression washer.

Check the fuel regulation again for each injector (individual correction).

- If not, replace the injector and check for the sealing washer. Modify the **IMA** code using command **SC002 Enter injector codes** (see **Interpretation of commands**).
- Apply **Part B** of this test to confirm the fault finding.

CASE No. 2: If at least one of the values is less than or equal to - 5 mg/st

- Check the valve clearance.
- Check the level and condition of the engine oil.
- Remove the injector with the largest correction.
- If there is diesel fuel contamination, check the condition of the cylinder concerned (cylinder, piston, valves). Use an endoscope if possible.
- Only replace the removed injector, and modify the **IMA** code using command **SC002 Enter injector codes** (see **Interpretation of commands**).
- Apply **Part B** of this test to confirm the fault finding.

TEST8
CONTINUED 1

CASE No. 3: If at least one of these values does not stabilise (20 seconds after starting)

- Check the low pressure circuit with **test 2 Low pressure circuit check**.
- Check the conformity of the fuel used, apply **test 10 Diesel fuel conformity check**.
- Apply **Part B** of this test to confirm the fault finding procedure

CASE No. 4: If the fuel flow correction values are all correct (between - 5 mg/st and + 5 mg/st)
Apply **Part C** of this test (**Fuel return flow measurement**).

TEST8
CONTINUED 2

IMPORTANT

When removing and refitting an injector, follow the cleanliness guidelines and safety advice (see **MR 364 (Mégane II) or 370 (Scénic II), Mechanical systems 13B, Diesel injector: Removal - Refitting**).

Section B: Confirmation of flow correction fault finding for each injector (individual correction):

Clear the faults and perform a test with the **engine idling** for at least **5 minutes**, fuel temperature **> 50°C**.

Check that no fault appears on the **CLIP diagnostic tool** and that the corrective values do not reach **± 5 mg/stroke** to confirm the repair.

If the customer complaint is still present and the fuel flow correction values are all between **- 5 mg/stroke and + 5 mg/stroke**, apply **Part A Fuel regulation balance check for each injector (individual)** of this test (**CASE no. 4**).

If one or more cylinders has injector flow correction values in excess of **± 5 mg/stroke**, apply **Part A Fuel regulation balance check for each injector (individual)**, as one or more additional injectors may be defective.

Part C: Measuring fuel return flow

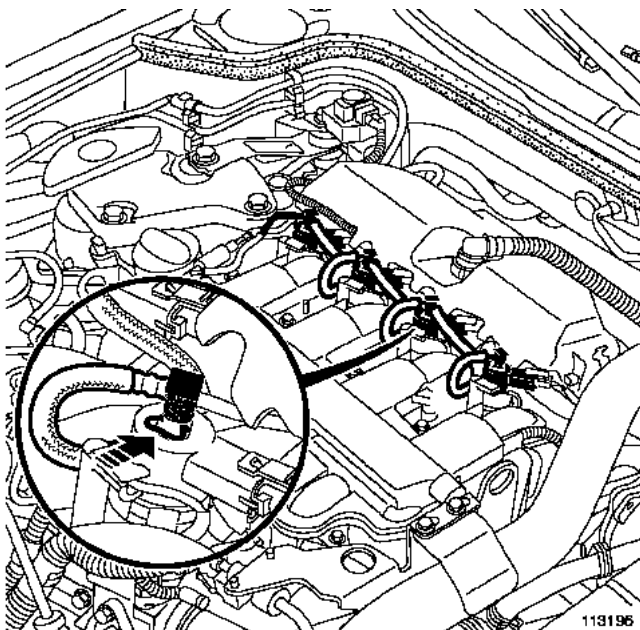
1 - Fitting the tool:

Only carry out this part if PR063 Fuel temperature is greater than 50°C (see step 2 of Part C of this test).

Remove the engine undertray

Disconnect the entire fuel return pipe in accordance with the following procedure (do not remove the clips):

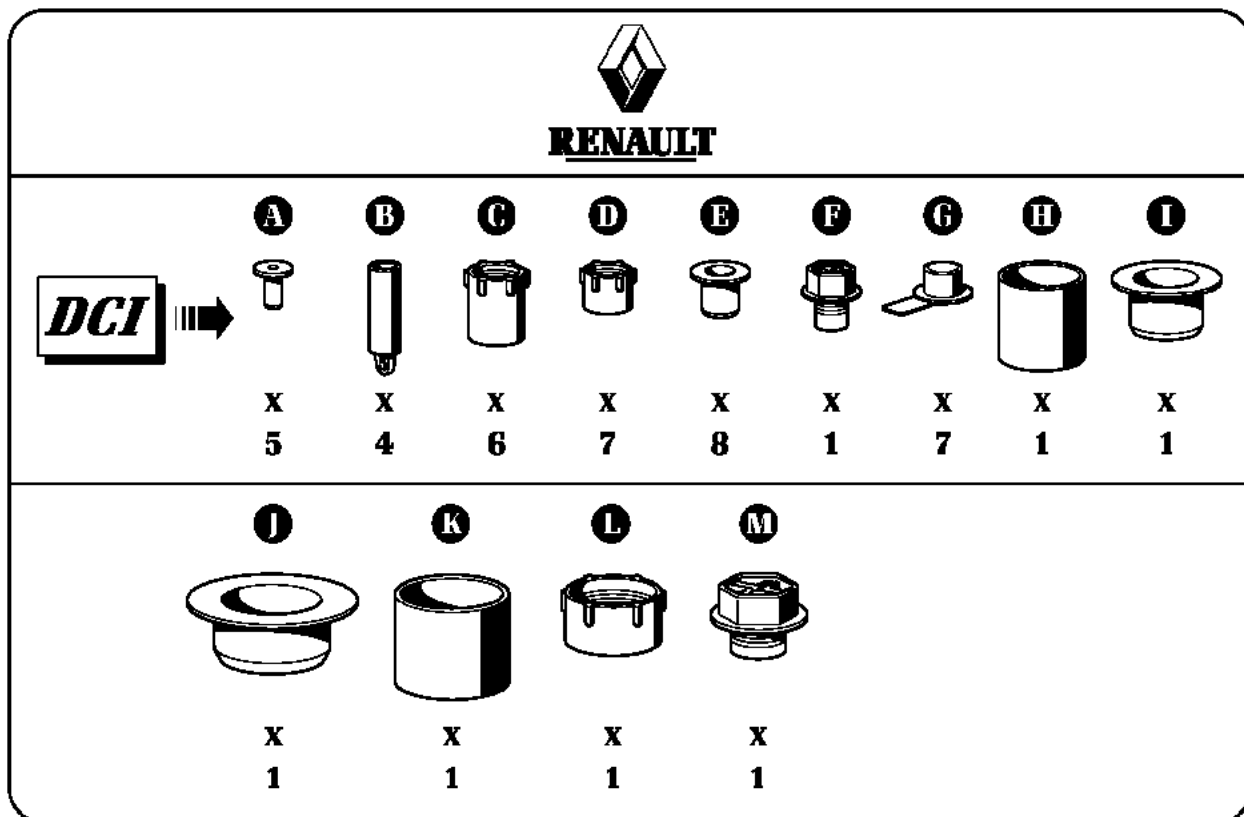
- press the clip,
- pull vertically on the end piece (see arrow in illustration below) of the fuel return pipe.



IMPORTANT

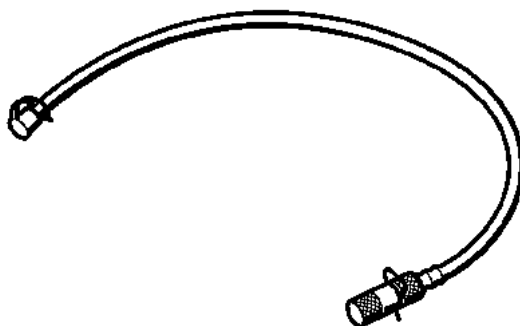
The end piece is fragile. Be careful not to break it by pulling it too hard. Replace all removed clips

TEST8 CONTINUED 3



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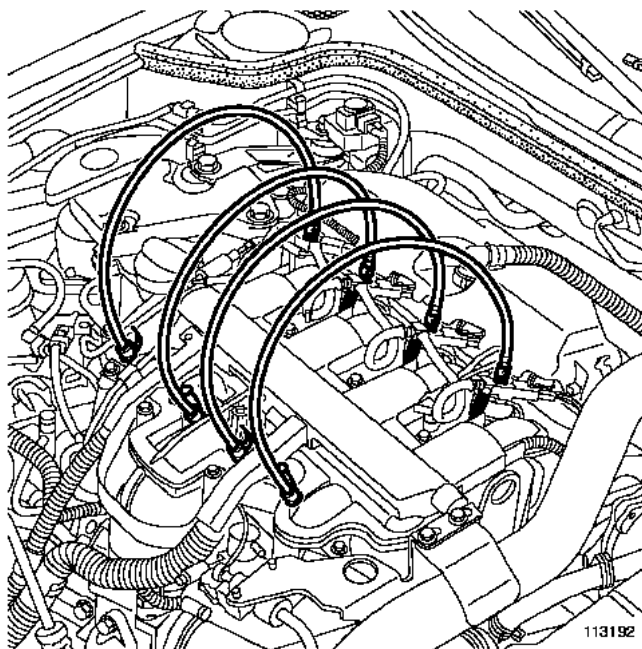
Fit the blanking plugs (**B**), from the kit (**part number 77 01 208 229**), on the end pieces of the fuel return pipe.
If **Mot. 1760** is not fitted on the injectors immediately, place blanking plugs (**A**) on the injector fuel return openings.



113195

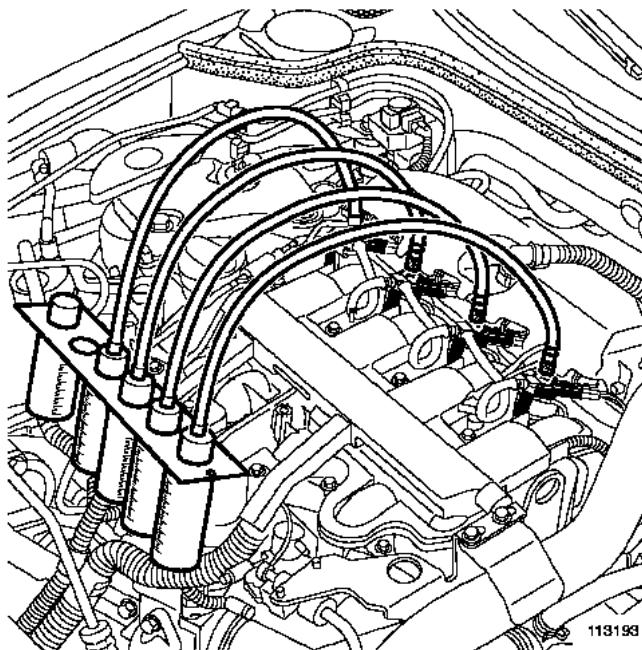
On the pipes of **Mot.1760** (see illustration 113195 above), remove the clips and the plugs from the end pieces (on the right in the diagram) and leave the plugs (on the left in the diagram) in place.

TEST8
CONTINUED 4



Connect the pipes from the **Mot.1760** tool to the injectors (without removing the clips on the injectors):

- press on the injector clip,
- insert the end piece into the injector fuel return opening.
- remember to fit the end piece plugs to the injector fuel return openings with the clips provided.
- Remove the plugs left on the **Mot.1760**



Insert the ends of the pipes into the measuring cylinders of tool **Mot.1760**. The measuring cylinders are taken from tool **Mot. 1711**.

TEST8 CONTINUED 5

2 - Checking the balance of the injector return flows:

Does the engine start?

NO

- Fit **Mot. 1760** as shown in the tool fitting procedure.
- Start the vehicle or perform a **15 second** starting sequence (with ignition key).
- Measure the length travelled by the diesel fuel in the pipes of the **Mot. 1760**.
- Replace the injector if the length travelled by the fuel is more than **10 cm** compared with the average of the other three injectors.

YES



- The injector return pipes must be fitted to the injectors.
- Start the engine.
- Display the **Fuel circuit** sub-function in the **CLIP diagnostic tool**.
- Raise the temperature of the engine.
- Read the diesel fuel temperature with **PR063 Fuel temperature** until a diesel fuel temperature greater than **50°C** is reached
- Switch off the engine.
- Fit **Mot. 1760** as shown in the installation procedure (see step 1).
- Check the value of the **PR038 Rail pressure**.
- Ask another Cotech to monitor the rise in fuel in the cans during engine turnover, as one of the cans will fill up quickly if one of the injectors is leaking.
- Start the engine.
- Accelerate the engine until the pressure in the rail is **550 bar**:
 - if the engine speed is **less than 3,000 rpm**, maintain this pressure.
 - if the engine speed is **greater than 3000 rpm**, reduce the engine speed until the rail pressure is **500 bar** and maintain this pressure.
- Maintain these conditions for one minute.
- Release the accelerator pedal and maintain the idle speed for **10 seconds**.
- Switch off the engine.
- Measure the quantity of fuel contained in each measuring cylinder.
- Replace the injector if the quantity of fuel is more than **50 ml**.
- Remove **Mot. 1760** as shown in the tool removal procedure (see step 3).

3 - Removing the tool:

IMPORTANT:

Use a cleaning cloth (part number **77 11 211 707**) to absorb fuel run-off.

Disconnect the pipe from an injector:

- press on the injector clip,
- pull vertically on the end piece of the pipe of tool **Mot.1760**, placing a wipe on the end piece to prevent run-off.

Lift the end piece vertically so that the fuel contained in the pipes flows into the measuring cylinders of tool **Mot.1760**.

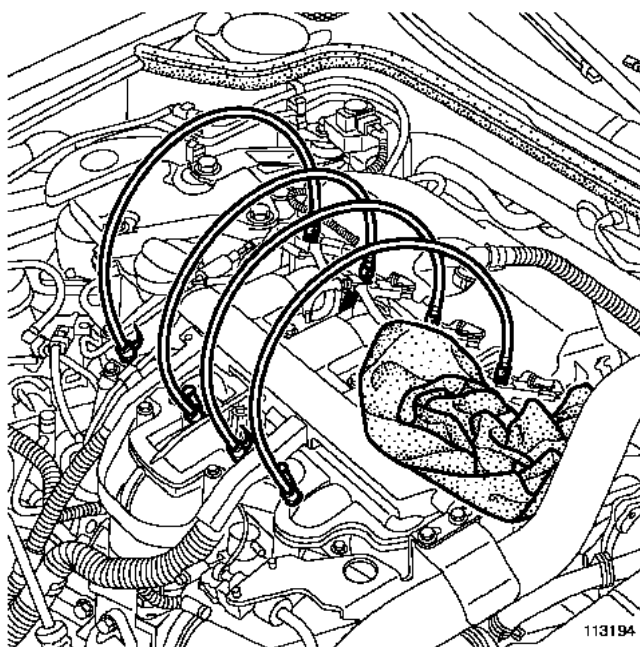
Remove the other 3 pipes using the same procedure.

TEST8
CONTINUED 6

Remove the plug welds from the fuel return pipe end pieces.

Connect the complete fuel return pipe to the injectors.

Wipe up any fuel run-off with a cleaning cloth (part number **77 11 211 707**).



End of test8.

TEST9

Air path around the turbocharger

Check for the air filter
Check the replacement frequency for the air filter in the Maintenance Booklet.
Compare the part numbers of the air filter fitted to the vehicle and that of the air filter recommended by the manufacturer.
Check the air filter direction of fitting.

Is the air filter fitted to the vehicle correct?

YES

NO

Check the condition of the air filter
Visually inspect the condition of the filter section of the air filter.
Is either the air filter or its seal damaged?
Is the air filter clogged (does it contain a lot of impurities)?

YES

Replace the air filter (see **MR 364 (Mégane II) or 370 (Scénic II), Mechanical, 12A, Fuel mixture, Air filter, Removal - Refitting**).

NO

Low pressure circuit check
Note:
According to the vehicle type, maximum visual access will either be from above or from below.

Visually inspect the condition of the following components:
– fresh air inlet scoop on the front end panel of the vehicle,
– air filter air inlet pipe,
– filter air pipe up to the compressor inlet,
– air flowmeter mountings.

Is one of these components incorrect (disconnected, cut, bent, pierced or kinked pipes)?

YES

Replace the defective parts (see **MR 364 (Mégane II) or 370 (Scénic II), Mechanical, 12B, Turbocharging**).

A

**TEST9
CONTINUED**



High pressure circuit check

Note:

According to the vehicle type, maximum visual access will either be from above or from below.

Visually inspect the condition of the following components:

- outlet pipe of the compressor to the turbocharging air cooler,
- turbocharging air cooler outlet pipe at inlet manifold,
- inlet manifold,
- temperature and pressure sensors.

Is one of these components incorrect (disconnected, cut, bent, pierced or kinked pipes)?

YES

Replace the defective parts (see **MR 364 (Mégane II) or 370 (Scénic II), Mechanical, 12B, Turbocharging**).

NO

Exhaust system check

Visually inspect the condition of the following engine parts:

- the exhaust manifold circuit to the turbocharger turbine,
- the turbine outlet pipe to the end of the exhaust pipe,
- the inlet manifold to the EGR valve
- check that the temperature and pressure sensors are connected.

Do some of these components have black or white marks on them?

YES

NO

Run **test 5 Turbocharger control solenoid valve check**.

TEST10

Diesel 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,
- 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.

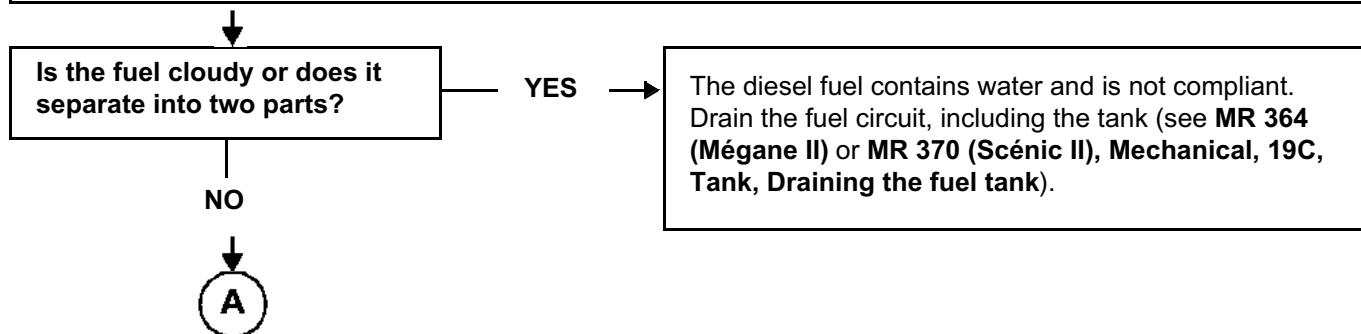
Preparations:

Weigh an empty **1300 ml plastic cup (part no. 77 11 171 413)** with its cover (**part no. 77 11 171 416**) using electronic scales such as those used in body paint workshops (example: **PANDA part no. 77 11 224 995**). Record the weight of the empty plastic cup.

This type of plastic cup is used to prepare paint.

Remove **1 litre** of fuel **at the diesel filter outlet** (see **MR 364 (Mégane II)** or **MR 370 (Scénic II), Mechanical, 19C, Tank, Draining the fuel tank**), 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 let it settle for approximately **2 minutes**.



TEST10
CONTINUED 1

A

Weigh the diesel fuel and note the fuel weight after subtracting the weight of the empty plastic cup and its cover. Does the fuel weight fall between the minimum and maximum weights given in 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 immersing a thermometer in the plastic cup.

YES



End of test.

NO



The fuel is not correct.

If the fuel weight is less than the minimum value then there is petrol in the diesel fuel.
If the fuel weight is greater than the maximum value then there is oil in the diesel fuel.
Drain the fuel circuit, including the tank (see **MR 364 (Mégane II)** or **MR 370 (Scénic II)**, **Mechanical, 19C, Tank, Draining the fuel tank**).

TEST10
CONTINUED 2

Note:

If the weight measured reaches the limit values, the measurement can be performed with a **2230 ml plastic cup (part no.77 11 171 414)** and its cover (**part no.77 11 171 417**):

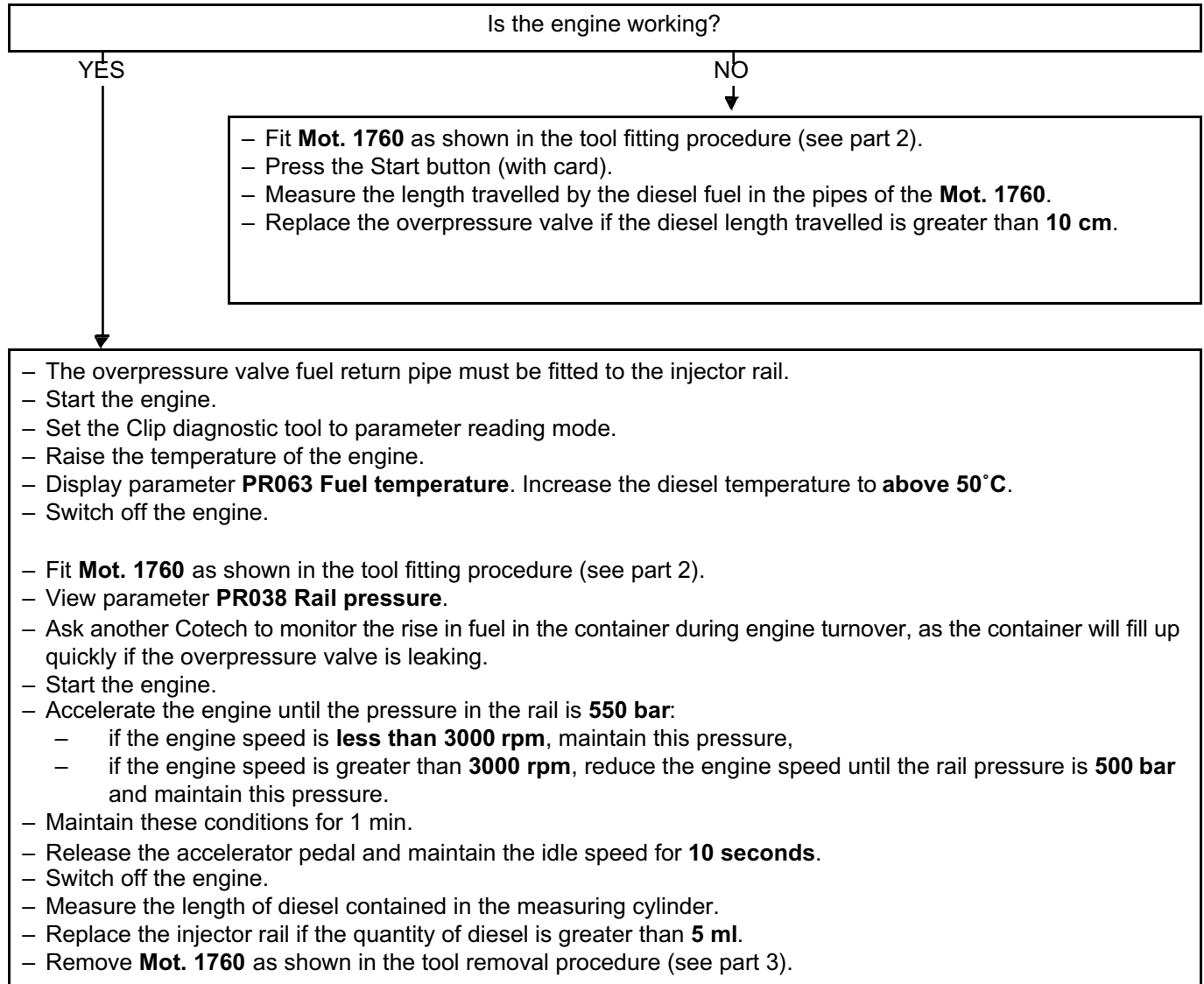
- Carry out a quick test drive in order to mix the fuel, then remove **2 l** of fuel.
- Perform the test again and check the results by multiplying the limit values by 2.

Contact the Techline if you have doubts or problems with the customer.

TEST11

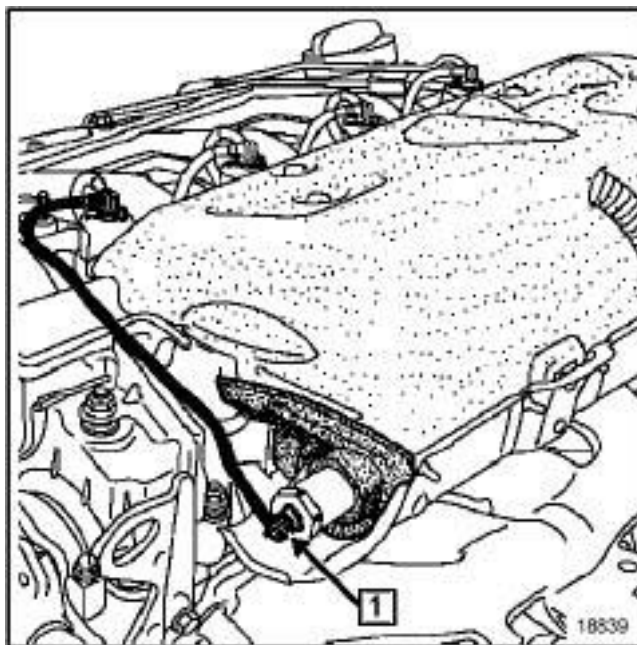
Incorrect operation of the overpressure valve

Part 1. Overpressure valve return flow test:



TEST11
CONTINUED 1

Part 2: Fitting the tool:



Remove the engine undertray.

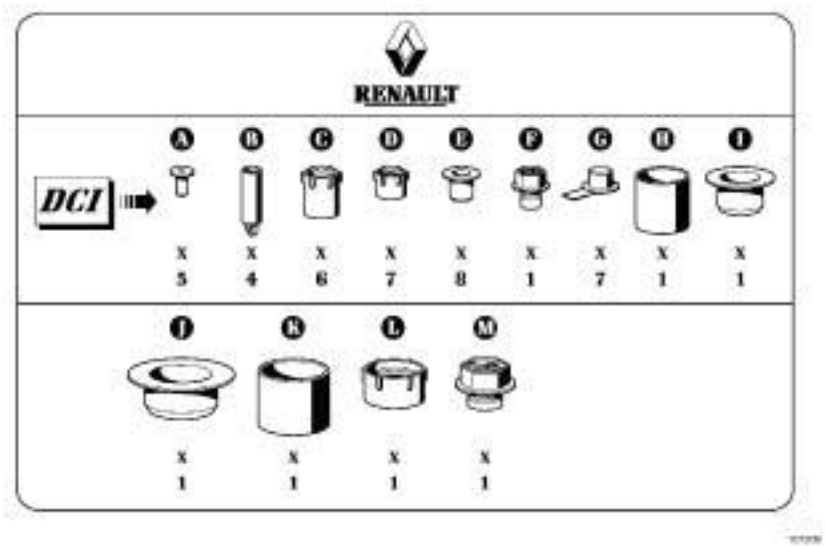
Disconnect the overpressure valve fuel return pipe according to the following procedure (**do not remove the clips**):

- press the clip,
- pull vertically on the end piece (1) of the fuel return pipe.

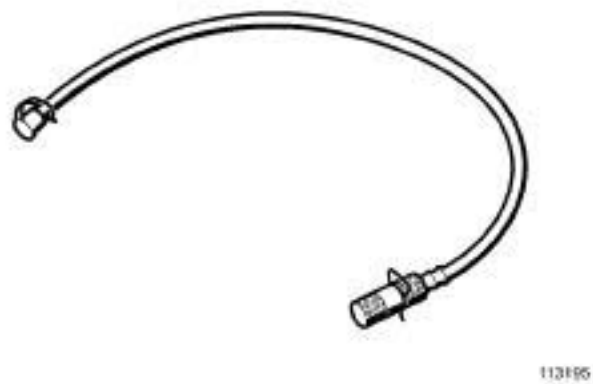
IMPORTANT

The end piece is fragile. Be careful not to break it by pulling it too hard. Replace

TEST11 CONTINUED 2	
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Fit blanking plugs (**B**), from the kit (part number **77 01 208 209**), on the end pieces of the fuel return pipe. If **Mot. 1760** is not fitted immediately on the overpressure valve, place a blanking plug (**A**) on the overpressure valve fuel return opening.



Shown above is the pipe (**Mot. 1760**) with the end piece (**2**) on the right and the plug (**4**) on the left.
Remove the clip and the plug from the end piece (**2**) of the pipe of **Mot. 1760**, leave the plug (**4**) in place.

TEST11
CONTINUED 3

Connect the pipe of **Mot. 1760** to the rail overpressure valve (without removing the clip on the overpressure valve):

- press down on the clip (1) of the overpressure valve,
- insert the end piece (2) in the overpressure valve fuel return opening.
- do not forget to fit the end piece plug (2) to the overpressure valve fuel return opening using the clip supplied.

Remove the plug (4).

Insert the end of the pipe in the measuring cylinder of **Mot. 1760**, the measuring cylinder is taken from **Mot. 1711**.

Measure the return flow (see the procedure in **part 1** of this test).

Part 3: Removing the tool:

IMPORTANT

Use a cleaning cloth (part number **77 11 211 707**) to absorb fuel run-off.

Disconnect the pipe of **Mot. 1760** on the overpressure valve:

- press down on the clip (1) of the overpressure valve,
- pull horizontally on the end piece (2) of the pipe of **Mot. 1760** while putting a cloth on the end piece (2) to avoid the drips.

Lift the end piece (2) vertically so that the fuel contained in the pipes flows into the measuring cylinder of **Mot. 1760**.

Remove the plug from the fuel return pipe end piece (2).

Connect the complete fuel return pipe to the overpressure valve.

Wipe up any diesel run-off with a cleaning cloth (part number **77 11 211 707**).

Injection computer	112-track (BOSCH) Connectors: black A 32-track, brown B 48-track, grey C 32-track
Atmospheric pressure sensor	Integrated into the computer (BOSCH)
Injector	0.23 Ω at + 20°C/2 Ω max (BOSCH) 1600 bar
Flow regulator (high pressure pump)	R = 3 Ω at + 20°C (BOSCH, CP3.2+ pump type)
Rail pressure sensor	Pressure limiter on the rail: opening around 1800 bar (BOSCH, bolted to the rail)
Engine speed sensor	R = 680 \pm 170 Ω at +20°C (MGI)
Camshaft sensor	Hall effect sensor (ELECTRICFIL) R = 10250 \pm 500 Ω at + 20°C (measurement between tracks 2 and 3 of the sensor)
Turbocharger control solenoid valve	15.4 \pm 0.7 Ω at + 20°C (PIERBURG)
Electric EGR valve	Track 1: + 12 V electric motor Track 2: + 5 V potentiometer Track 3: Not used Track 4: potentiometer earth Track 5: engine earth Track 6: potentiometer signal DIRECT CURRENT MOTOR: R between tracks 1 and 5 = between 1 Ω and 400 Ω at + 20°C POTENTIOMETER: R between tracks 2 and 4: 6.5 \pm 2.4 k Ω at + 20°C (SIEMENS)
Electrical damper valve	MOTOR (VDO)
Air flowmeter	Track 1: air temperature signal Track 2: flow sensor earth Track 3: + 5 V flowmeter Track 4: + 12 V battery Track 5: air flow signal Track 6: battery earth (SIEMENS)
Air temperature sensor	R = 3714 $\Omega \pm$ 161 at + 10°C/2448 $\Omega \pm$ 96 at + 20°C/1671 $\Omega \pm$ 59 at + 30°C
Coolant temperature sensor	R = 2252 $\Omega \pm$ 112 at 25°C/811 $\Omega \pm$ 39 at 50°C/283 $\Omega \pm$ 8 at 80°C
Accelerator pedal sensor	R gang 1 = 1700 \pm 900 Ω ; R gang 2 = 2850 \pm 2050 Ω
Heater plug	R = 0.6 Ω at + 20°C/2 Ω max Maximum current drawn: 28 A at 0 seconds/12 A at 10 seconds/9 A after 30 seconds
Water in diesel fuel sensor	According to application (ZERTAN)

(R = Resistance, EGR = Exhaust gas recirculation, FAP = Particle filter)