MEGANE

1 Engine and peripherals

17B PETROL INJECTION

S3000 Injection
Program No.: AD
Vdiag No.: 4C / 54

V5 **Edition Anglaise**

1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle(s): **MEGANE II phase 2**
SCENIC II phase 2
Engines: **K4J 740 - K4M 766/812/813 - K4M 788 LPG**
F4R 770/771 - F4R-T 776
F4R-T 774 (MEGANE II phase 2 RENAULT SPORT)
Function concerned: **Petrol injection**

Name of computer: **Sagem S3000**
Program no.: **AD**
Vdiag No.: **4C, 54**
Special feature (**Vdiag 54** only):
– **DF363** Camshaft dephaser.
– **TEST3** Camshaft dephaser solenoid valve

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.

Type of diagnostic tools

– CLIP + multiplex line sensor

Special tooling required

Special tooling required	
	Multimeter
Elé. 1481	Bornier
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).

Proceed as follows:
– vehicle card in reader,
– press and hold start button (longer than **5 seconds**) with start-up conditions not fulfilled,
– connect the diagnostic tool and perform the required operations.

To **cut off + after ignition**, proceed as follows:
– disconnect the diagnostic tool,
– 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 displayed as present or stored (they appeared in a certain context and have since disappeared, or they are still present but cannot be diagnosed in the current context).

The **present** or **stored** status of faults should be taken into consideration when the diagnostic tool is used following the + after ignition supply being switched on (without acting on the system components).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the **notes** section.

If the fault is **confirmed** when the instructions 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:
– perform fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.
– check that the system is operating correctly and that there is no risk of a fault recurring after repair.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

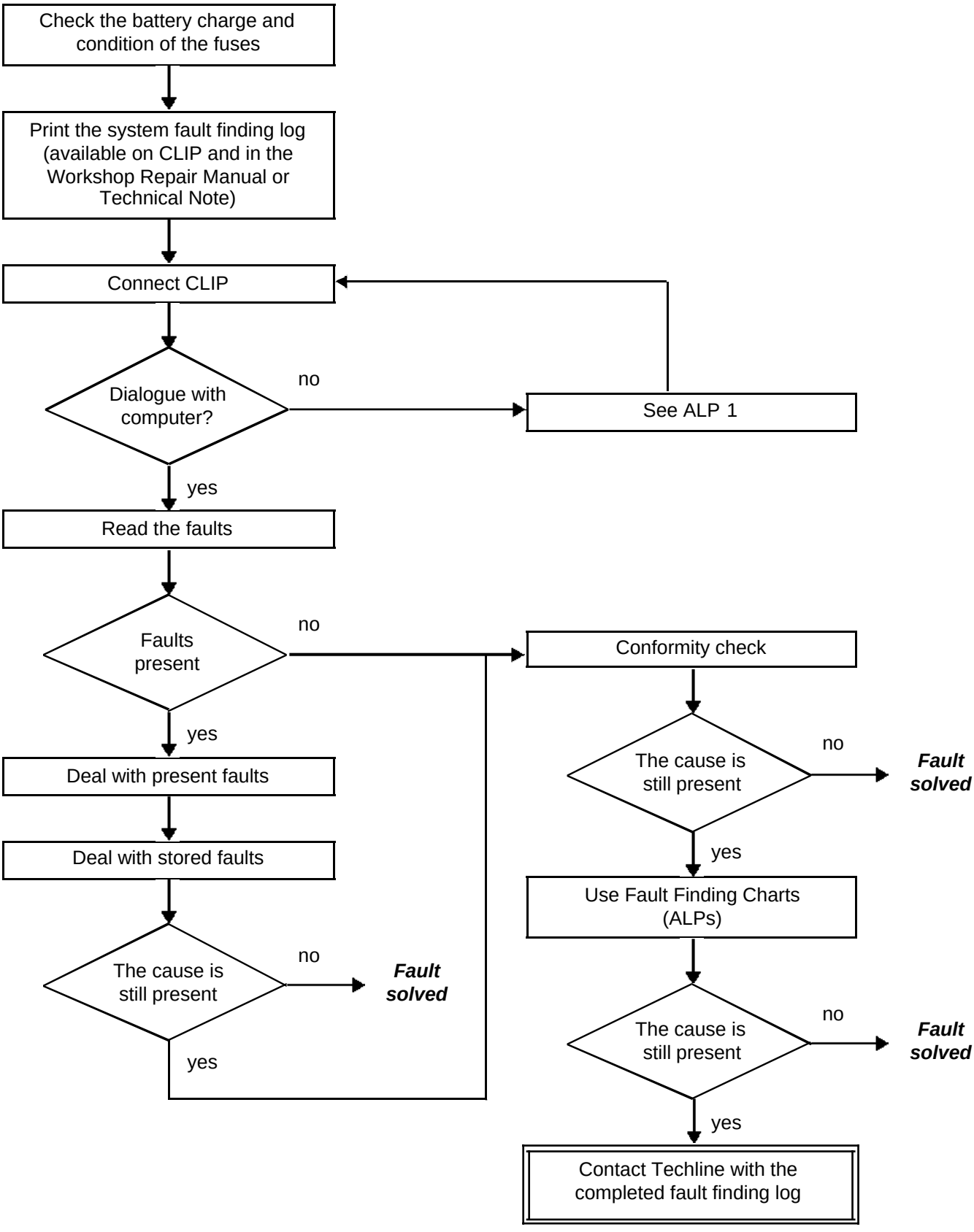
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

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 complaint**.

A summary of the overall procedure to follow is provided on the following page in the form of a flow chart

4. FAULT FINDING PROCEDURE



4. 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 the 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, insulation and wiring 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.
Check that the connectors are correctly tightened, apply light pressure to the connectors, twist the wiring harness.
If there is a change in status, try to locate the source of the fault.

Inspection of each component:
Disconnect the connectors and check the appearance of the clips and tabs, as well as their crimping (no crimping on the insulating section).
Make sure that the clips and tabs are properly locked in the sockets.
Make sure 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

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Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the fault finding procedure, ensures a record is kept of the procedure carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG EACH TIME FAULT FINDING IS CARRIED OUT.

You will always be asked for this log:
– when requesting technical assistance from Techline,
– for approval requests when replacing parts with mandatory approval, and to be enclosed when returning monitored parts on request. 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:
– check the battery voltage to avoid incorrect operation of computer functions,
– Use the proper tools.

7. FAULT FINDING

Stored faults are managed the same way for all sensors and actuators.
A stored fault is cleared after 128 recurrence-free starts.

1. SYSTEM OPERATION

Composition

The injection system consists of the:
– accelerator potentiometer,
– clutch pedal switch,
– TDC sensor,
– atmospheric pressure sensor,
– air temperature sensor,
– coolant temperature sensor,
– upstream oxygen sensor,
– downstream oxygen sensor,
– cruise control switch,
– steering column switch,
– cruise control on/off switch,
– fuel vapour absorber,
– injection computer,
– motorised throttle valve,
– 4 injectors,
– 4 pencil coils,
– pinking sensor,
– camshaft dephaser solenoid valve (non-LPG K4M only),
– camshaft position sensor (non-LPG K4M only),
– turbocharging pressure sensor (F4R turbo only)
– electric coolant pump (F4R turbo only),
– wastegate solenoid valve (only on F4R Turbo),
– turbocharging solenoid valve (only on F4R-Turbo)

Computer

128 track **SAGEM** type **S3000 FLASH EEPROM** computer controlling injection and ignition.

Multipoint injection in sequential mode.

Connections to the other computers:
– air conditioning,
– UCH,
– protection and switching unit (UPC)
– Automatic Gearbox Electronic Control Unit (AUTO).
– airbag,
– ABS/ESP,
– instrument panel.

2. Role of components, operating strategy

Engine immobiliser

The Verlog 4 type immobiliser function is managed by the UCH computer and the engine management computer. Before any starting request, the engine management computer is protected.
When a starting request is made, the injection computer and the UCH exchange authentication data via the multiplex network; this determines whether the engine start is authorised.

After more than 5 consecutive failed authentication attempts, the engine management computer goes into protection (antiscanning) mode and no longer tries to authenticate the UCH computer. It only exits this mode when the following sequence of operations occurs:
– the ignition is left on for at least **20 seconds**,
– the message is switched off,
– the injection computer self-supply cuts out when it should (the time varies according to engine temperature).

After this, only one authentication attempt is allowed. If this fails again, repeat the sequence of operations described above.
If the engine management computer still fails to unlock, contact the Techline.

Impact detected

If an impact has been stored by the injection computer, switch off the ignition for **10 seconds**, then switch it back on so that the engine can be started. Clear the faults.

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

Torque management

The torque structure is the system for managing engine torque. It is necessary for some functions such as the electronic stability program (ESP) and the automatic gearbox.

Each inter-system (ESP and automatic gearbox) sends a request for torque via the multiplex network to the injection computer. It arbitrates between the inter-system torque requests and the driver's request (pedal or cruise control/ speed limiter). The result of the arbitration gives the torque setpoint. The torque structure uses the torque setpoint to calculate the throttle position setpoint, the advance and, if there is turbocharging, the turbocharger valve setpoint (wastegate) for engines fitted with a turbocharger.

Camshaft dephaser

Its role is to modify the valve timing.
The camshaft dephaser is continuously variable in operation.

In applications without a camshaft sensor, the engine phasing is controlled by software. This is the case on engines that do not have a camshaft dephaser.
This information can be displayed by reading configuration **LC008 Camshaft dephaser**.

A first strategy called "Memo phasing" is applied to phase the engine management on starting according to the data recorded when the engine last stalled. Wait for the end of auto-feed (power latch and therefore this data being saved) before disconnecting the computer.
Then, a second program confirms the first decision. It is based on torque analysis.

The injection computer actuates a camshaft dephaser that varies according to the engine:

- **K4M engine**
  Continuous variable inlet camshaft dephaser between **0 and 43°** of the crankshaft, controlled by a solenoid valve supplied by an opening cycle ratio circuit through the injection computer.

- **F4R and F4R-T engines**
  Inlet camshaft dephaser controlled by a solenoid valve with an all or nothing supply from the injection computer.

Camshaft position sensor (non-LPG K4M only)

The role of the camshaft sensor is:
– to locate the computer cylinders so that the computer correctly synchronises the sequential injection,
– checks the position of the inlet camshaft.

Motorised throttle valve

The throttle valve carries out idling speed regulation and engine air intake modulation functions. It comprises an electric motor and two throttle position potentiometers.
When the engine is idling, the throttle position is regulated according to the idling speed setpoint. This setpoint takes into account the major power consumers (air conditioning) and operating conditions (air temperature and coolant temperature).

Fuel supply management

Fuel is supplied by the fuel pump. It is controlled each time the ignition is switched on, for 1 second, to provide a certain pressure level in the circuit, and thereby achieve a correct start, particularly if the vehicle has been unused for a long time.
When the engine is running, the fuel pump relay is always controlled.

Control of the petrol pump relay can be viewed through status **ET047 Petrol pump control circuit**.

The petrol tank is vented by way of a canister filled with activated charcoal that traps the vapour from the petrol tank. This canister is bled via the engine vacuum pipe. It enters the inlet plenum via a hose, whose section is controlled by a bleed valve. It is controlled by the injection computer via the opening cycle ratio. For reasons of engine instability or canister bleed solenoid valve operating noise emitted by the vehicle, there are two possible frequencies for controlling the canister bleed solenoid valve:

- a low frequency **8 Hz**,
- a high frequency **20 Hz**.

The frequency of the control opening cycle ratio depends on the engine speed.
Bleed the canister to drain it as it fills, to limit vapour release into the air if a canister is saturated for example.

Air supply management

The idling speed regulator performs all the calculations required for physical control of the idling speed actuator: the motorised throttle. The functional component of the regulator is adaptive (variation programming and ageing).

If the idling speed regulation conditions are observed, **ET054 Idle speed regulation** is **ACTIVE**, the idling speed regulator continuously positions the motorised throttle to maintain the engine speed at its idling setpoint. The motorised throttle opening ratio necessary to comply with the speed setpoint is then given by parameter **PR091 Idling speed regulation theoretical OCR**.

Note on parameter **PR091**:

This parameter uses only 2 parameters accessible in fault finding frame: **PR444 Idle speed integral correction** and **PR090 Idle speed regulation programming value** which is the integral adaptive action.

– **PR090 Idling speed regulation programming value** is a stored parameter designed to program dispersion and engine ageing for the idling speed regulator. The programming is carried out only when the engine is idling and warm, and no electrical consumer (air conditioning, fan assembly, power assisted steering) is operating. Therefore it adjusts slowly.
– **PR444 Idling speed regulation integral correction** is continuously calculated to take into account the air required by consumers.

Adaptive idling speed correction:

Under normal warm operating conditions, the idling speed opening cycle ratio value **PR091 Idling speed regulation theoretical OCR** varies between a high value and a low value to obtain the nominal idling speed.
After operating dispersion (running in, engine fouling, etc.), the opening cycle ratio value may be close to the high or low values.

The adaptive correction **PR090 Idling speed regulation programming value** on the idling speed opening cycle ratio compensates for the gradual variations in the engine's air requirement, by bringing the idling speed opening cycle ratio back to an average nominal value.
This adjustment only takes effect if the coolant temperature is above **75 °C**, **1 minute** after starting the engine and during the idle speed regulation phase.

Idling speed setpoint calculation:
The idling speed setpoint is given by parameter **PR010 Idle speed regulation valve setpoint**.
The idling speed regulation setpoint depends on the coolant temperature, the depollution programming, the climate control requirements, the position of the gearbox selector, any power assisted steering action, the passenger compartment heating resistors, the oil temperature (engine protection) and the electricity balance calculated by the injection software (the engine speed is increased by **160 rpm** maximum if the battery voltage remains below **12.7 V**).

Richness management

For optimal operation of the catalytic converter, the richness must be maintained around 1.

Richness regulation is controlled by the upstream sensor. The sensor gives voltage according to the difference between the partial oxygen pressures contained in the exhaust and a cavity filled with a reference mixture (atmosphere).

As the partial oxygen pressure in the exhaust is representative of the richness, the voltage supplied to the computer represents a Rich - Lean signal.

Adaptive richness correction:
In loop mode, the richness regulation corrects the injection duration in order to obtain a mixture which is as close as possible to a richness of 1. The richness correction value **PR138 Richness correction** is close to **50 %**, with limits of **0** and **100 %**.
The richness adaptive corrections **PR143 Self-adapting richness gain** and **PR144 Self-adapting richness offset** are used to offset the injection mapping to centre richness regulation on **50 %**.
Adaptive corrections take **50 %** as an average value after computer initialisation (clearing the programming) and have the following limit values:

A vehicle is fitted with an upstream sensor if the configuration reading **LC003 Upstream oxygen sensor** is **WITH**.

For the upstream sensor to be operational very rapidly, it is heated. Sensor heating **ET052 Upstream O_2** sensor heating is only **ACTIVE** when the engine is running. It is disabled above **84 mph (140 km/h)** or with the engine under load.

The downstream sensor is also used for richness regulation via the double loop program. The way it works is to characterise the condition of the upstream sensor and to compensate for any upstream sensor dynamic richness drift.

The vehicle is fitted with a downstream sensor if the configuration reading **LC004 Downstream oxygen sensor** is **WITH**.

For the double loop **ET056 Double richness loop** to be **ACTIVE**, the vehicle must be driven with the engine warm for approximately **1 minute 30 seconds** in the absence of no load conditions.

The downstream sensor is also heated. The command is not immediate when the engine is started.
ET053 Downstream O_2 sensor heating is **ACTIVE** after a time that depends on the latest coolant temperature with the engine running and in the absence of no load conditions. The heating of the downstream sensor is deactivated under **84 mph (140 km/h)** or when the engine is under load.

There are several types of control depending on the sensor type:

- **BOSCH LSH25/NTK 6L (6 Ω)/DELPHI AFS128 (3 wires):** Continuous control,
- **BOSCH LSF 4.7 (known as PLANAR):** Each time the engine is started, control is first executed by means of an OCR (opening cycle ratio) type signal of **20 Hz** in frequency for approximately **20 seconds** then it becomes continuous,
- **BOSCH NTK 6L (3.3 Ω)**: each time the engine is started, the control is continuous first for **15 seconds** then executed by an OCR (Opening Cycle Ratio) type signal with a **20 Hz** frequency.

Management of turbocharging pressure (F4R Turbo only)

The turbocharging pressure is adjusted via the position of the pressure regulation valve (wastegate).

Principle

This pressure regulation valve, connected via a rod to the wastegate diaphragm, is operated by the injection computer via a solenoid valve. This solenoid valve is normally open and is fitted to the inlet pipe between the air filter and turbocharger inlet.

At rest (open position), this solenoid valve connects the turbocharger outlet (turbocharging pressure) and the pressure regulation valve control diaphragm.
The turbocharging pressure affects the diaphragm directly, the pressure regulation valve (wastegate) opens and the maximum possible pressure is approximately **1,350 mbar - 1,400 mbar**, irrespective of the engine speed (minimum turbocharging for the engine).

When the solenoid valve is controlled, the turbocharging pressure signal (taken at the turbocharger outlet) is diverted to the compressor inlet. As a result, the diaphragm is not subject to turbocharging pressure, the pressure regulation valve (wastegate) closes back to a position imposed by the regulation system.

In addition to turbocharging pressure management, the computer controls the engine for full load constant torque operation.

This means that, irrespective of the engine conditions (air temperature, atmospheric pressure etc.), the maximum torque will always be **275 Nm** and the power **125 kW**. So, for an air temperature of **20 °C**, the turbocharging pressure at full load will be less than at **50 °C**. Despite controlled torque management, the turbocharging pressure can never exceed **1800 mbar**.

Ignition management

The advance is calculated for each cylinder. This may have a negative value, and is limited to between **- 23.625°** and **+ 72°** and includes any corrections due to pinking.

The slow loop anti-pinking correction is the maximum advance value that is deducted from the advance of one of the cylinders. If none of the cylinders is pinking, this correction is zero.

Injectors

The injectors are controlled according to several modes. In particular, the engine is started in semi-full group mode (injectors 1 and 4, then injectors 2 and 3 simultaneously), then it enters sequential mode, to ensure a correct start whether or not it is correctly phased.

In fact in rare cases it is possible for the engine to run incorrectly phased if the Memo phasing program failed during the last engine stop. So, since the system did not enter sequential injection mode and the cylinder 1 detection program did not run, the injections are offset by 2 cylinders: therefore injecting in the order 4-2-1-3 rather than the expected 1-3-4-2.

The injection time is constantly calculated and may be zero, in the event of cut-off during deceleration or overspeed for example.

3. OBD management

Managed OBD programming is as follows:
- catalytic converter operational fault finding,
- upstream oxygen sensor operational fault finding,
- misfiring fault finding with two levels of detection: pollutant misfiring and catalytic converter breakage misfiring,
- fuel supply system fault finding.

The misfiring and fuel supply system fault finding is performed continuously.

The operational fault finding for the upstream sensor and the catalytic converter can be only be carried out once per journey, and can never occur at the same time.

OBD fault manager:

The OBD faults manager does not replace or modify conventional electrical fault management. Perform to comply with OBD standard.

The requirements are:
- storing OBD faults,
- illuminate the OBD warning light for all faults where the OBD emission thresholds are exceeded,
- flash the OBD warning light for misfire faults damaging the catalytic converter.

Operating principle.

If a fault is detected and confirmed during **3** consecutive journeys then:
- an OBD stored fault is raised,
- the OBD fault warning light receives a request to be lit continuously. This request is only recognised if the fault in question is authorised to activate the OBD warning light.

To deactivate the warning light, no OBD faults should be detected for **3 consecutive** journeys.

The electrical fault finding checks taken into consideration by the OBD faults manager are as follows:

- pressure,
- turbocharging pressure,
- coolant temperature,
- air temperature
- upstream sensor,
- downstream sensor,
- upstream sensor heating,
- downstream sensor heating,
- injector 1,
- injector 2,
- injector 3,
- injector 4,
- ignition coil 1,
- ignition coil 2,
- ignition coil 3,
- ignition coil 4,
- petrol pump,
- wastegate,
- canister bleed,
- air line system,
- turbocharging system
- pinking sensor,
- camshaft dephaser.

Catalytic converter:

Purpose

Catalytic converter fault finding should detect a malfunction which would cause hydrocarbon pollutant emissions to exceed the EOBD (European On Board Diagnostic) limit.

Principle

The ability of the catalytic converter to store oxygen indicates the condition of the catalytic converter. As the catalytic converter ages, its ability to store oxygen reduces along with its ability to treat pollutants. The principle lies in using the correlation between the oxygen storage capacity and the HC emissions.
When the conditions for starting fault finding are confirmed, richness excitation peaks are applied, which has the effect of sending bursts of oxygen into the catalytic converter.
If the catalytic converter is in good condition it will absorb the oxygen sent to it and the downstream sensor voltage will remain at its average value.
If it is damaged, it rejects the oxygen that it cannot store and the downstream sensor starts knocking. The more the catalytic converter is damaged, the more the downstream oxygen sensor will oscillate.

Sensors:

Purpose

Sensor fault finding should detect a malfunction which would cause pollutant emissions to exceed the EOBD (European On Board Diagnostic) limit.

There are 2 kinds of oxygen sensor damage:

- mechanical damage to the component (breakage, cut in wire) which leads to an electrical fault,
- chemical or thermal damage to the component leading to a slower response time of the sensor and to the increase in the average reaction time.

Description of programming

When the conditions for starting fault finding are confirmed, the upstream sensor signal periods are read and the glitches (interference phenomena) removed, then the average taken, and compared with an EOBD (European On Board Diagnostic) limit average period.
The fault finding check may be staggered, i.e. divided over several consecutive engine stability phases, and its duration will vary according to the condition of the sensor.

4. Engine coolant temperature management

Engine cooling is provided by 1 or 2 fan assemblies (depending on the vehicle layout). The injection computer requests the UPC to actuate them via the multiplex network.

To provide cooling:

Engine running, GMV1 is requested when the coolant temperature exceeds **99 °C** and stops when the coolant temperature falls below **96 °C**. GMV2 is requested when the coolant temperature exceeds **102 °C** and stops when the coolant temperature falls below **99 °C**.

With the engine off, only fan assembly 1 may be activated to provide the anti-percolation function (if engine is stopped when very hot). The anti-percolation function is active with the ignition off for a determined period. During this period, fan assembly 1 is requested if the coolant temperature exceeds approximately **100 °C** and is shut down if the coolant temperature drops below around **95 °C**.

If a fault is detected on the coolant temperature sensor circuit, then fan assembly 1 is requested to operate continuously.

If the engine coolant temperature goes beyond the warning threshold of **118 °C**, the injection computer requests the instrument panel computer via the multiplex network to illuminate on the coolant temperature warning light until the coolant temperature falls back below **115 °C**.

In addition to the engine requirements, the injection computer centralises the cooling requirements for the Air conditioning and BVA/BVR functions.

5. Air conditioning function

The S3000 computer manages a cold loop air conditioning system.

- air conditioning request via multiplex connection,
- acquisition of air conditioning circuit pressure,
- vehicle speed
- air conditioning compressor control,
- fan assembly control request by Protection and Switching Unit.

The injection computer recovers the power absorbed by the air conditioning compressor and the fast idling speed request using the pressure acquired in the air conditioning circuit.
These signals are necessary for adapting the engine management (idling speed regulation, air flow correction, etc.), for several reasons:

- air conditioning compressor efficiency,
- sturdier engine to torque bucking caused by compressor activation,
- helping the alternator.

Requests for fan assembly 1 and/or fan assembly 2 are recovered based on the air conditioning circuit pressure and the vehicle speed. In short, the lower the speed and the higher the pressure, the greater the fan assembly requests.

6. Defect modes

Motorised throttle valve
In defect mode, the motorised throttle valve can have 6 different statuses.

Type 1 The throttle opening is less than the Safe mode position. The throttle is no longer activated and is automatically in Safe mode. The ESP, distance control and cruise control/speed limiter systems are disabled. The automatic transmission is in "Safe mode".

Type 2 The throttle opening is no longer actuated. The engine speed is limited by injection cut-off.

Type 3 Defect mode is associated with restructuring of the pedal setpoints (constant pedal setpoint for each gear).

Type 4 The associated defect mode restricts the throttle opening. The maximum throttle valve opening threshold results in a speed of below 54 mph (90 km/h).

Type 5 The computer no longer processes torque changes requested by the ESP, distance control, cruise control/speed limiter and automatic gearbox systems. This defect mode results from a computer malfunction, or a fault with the manifold or turbocharging pressure sensor. The system then only uses the accelerator pedal signal. The ESP, distance control and cruise control/speed limiter systems are disabled. The automatic transmission is in "Safe mode".

Type 6 The turbocharging valve no longer works.

Any entry into type 1 to 5 defect mode always leads to the application of type 6.

Table of defect modes:

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
DF004 Turbocharging pressure sensor circuit	-	-	-	**2.DEF**	**1.DEF** **2.DEF**	**1.DEF** **2.DEF**
DF011 Sensor feed voltage no. 1	**1.DEF**	**1.DEF**	-	**1.DEF**	-	-
DF012 Sensor feed voltage no. 2	-	-	-	**1.DEF**	**1.DEF**	-
DF038 Computer	**1.DEF**	**1.DEF**	-	-	**1.DEF**	-
DF046 Battery voltage	**1.DEF**	**1.DEF**	-	-	-	-
DF054 Turbocharging solenoid valve control circuit	-	-	-	-	-	**CO//** **CC.0.DEF** **CC.1**
DF078 Motorised throttle control circuit	**1.DEF**	**1.DEF**	-	-	-	-
DF079 Motorised throttle valve automatic control	**6.DEF/CO**	**6.DEF/CO**	-	**2.DEF** **3.DEF** **4.DEF**	-	-
DF089 Inlet manifold pressure sensor circuit	-	-	-	-	**1.DEF** **2.DEF**	-
DF095 Throttle potentiometer circuit gang 1	**CO.0/** **CC.1**	**CO.0/** **CC.1**	-	**CO.0/** **CC.1**	-	-
DF096 Throttle potentiometer circuit gang 2	**CO.0/** **CC.1**	**CO.0/** **CC.1**	-	**CO.0/** **CC.1**	-	-
DF196 Pedal potentiometer circuit gang 1	-	-	**1.DEF**	**CO//** **CC.0.DEF** **CC.1** **1.DEF**	-	-
DF198 Pedal potentiometer circuit gang 2	-	-	**CO//** **CC.0.DEF** **CC.1**	**CO//** **CC.0.DEF** **CC.1**	-	-
DF650 Accelerator pedal position signal	-	-	**1.DEF**	**1.DEF**	-	-

Camshaft dephaser:

The camshaft dephaser **ET083 Camshaft dephaser in defect mode** may assume two different statuses.

- **Status 1**
  This defect mode covers all faults that affect the dephaser position measurement. The dephaser is set to the minimum stop and the camshaft angle measurement is forced to 0.
  Tooth signal fault.
  Tooth/camshaft signal consistency diagnostic.

- **Status 2**
  This defect mode covers all faults affecting the dephaser (pulley and solenoid valve). The dephaser is set to the minimum stop.
  Electrical fault finding on the solenoid valve.
  Dephaser position fault finding procedure.

7. Operational safety

Warning lights illumination

The S3000 injection system manages the illumination of three warning lights and the display of warning messages according to the severity of the faults detected, with the aim of informing the customer and guiding fault finding.
The injection computer manages the illumination of warning lights and warning messages displayed on the instrument panel. These warning lights illuminate during the starting phase and in the event of an injection fault or engine overheating.
The warning light illumination signals reach the instrument panel via the multiplex network.

Warning light illumination principle

During the starting phase (START button pressed) the **OBD** (On Board Diagnostic) warning light comes on for approximately **3 seconds** then goes out.

If there is an injection fault **(level 1**), the message **CHECK INJECTION** is lit, followed by the **SERVICE** warning light. It indicates a reduced level of operation and a limited safety level.
The driver should carry out repairs as soon as possible.
Components involved:
– motorised throttle valve,
– accelerator pedal potentiometer,
– inlet manifold pressure sensor,
– computer,
– actuator feed,
– computer feed.

If there is a serious injection fault (**level 2**), the red engine symbol and the word **STOP** (display with information display only), appears with the message **ENGINE OVERHEATING** followed by the **STOP** warning light and a buzzer. If this happens, the vehicle must be stopped immediately.
When a fault causing excessive pollution in the exhaust gases is detected, **the orange OBD warning light** engine symbol is lit:
– **flashing** in the event of a fault which might cause destruction of the catalytic converter (destructive misfires). If this happens, the vehicle must be stopped immediately.
– **constantly** in the case of non-compliance with the anti-pollution standards (polluting misfires, catalytic converter fault, oxygen sensor faults, inconsistency between the oxygen sensors and canister fault).

8. Mileage travelled with fault

These two parameters **PR105 Distance travelled with OBD fault warning light on** and **PR106 Distance travelled with fault warning light on** are used to count the distance travelled with one of the injection fault warning lights lit: **level 1 fault warning light** (amber) as well as the **OBD warning light**.
These counters can be reset to 0 using the diagnostic tool (clear faults command).

9. Inter-system engine functions

The inter-system connections concerning the particular requirements of engine management are as follows:

- **OBD warning light** illumination request by the instrument panel computer to prevent a pollution fault,
- **level 1 warning light** illumination request to warn of an operating safety fault relating to the injection system,
- **level 2 warning light** illumination request to warn of an operating safety fault or provide an engine overheating alert,
- request for fan assembly activation for engine cooling, but also for the air conditioning and automatic gearbox,
- air conditioning compressor shut-down request for engine programming requirements such as pulling away, performance, anti-stalling, overspeed, etc.
- passenger compartment heating resistor shut-down or fixing request for engine programming requirements such as pulling away, performance, anti-stall, overspeed, etc.

Connector (A), 32 tracks:

Track	Description
A1	Not used
A2	Cruise control on/off button logical input
A3	CAN L1 passenger compartment multiplex connection
A4	CAN H1 passenger compartment multiplex connection
B1	Not used
B2	Not used
B3	Not used
B4	OBD diagnostic line K
C1	Not used
C2	Not used
C3	Speed limiter on/off button logical input
C4	+ Clutch switch signal
D1	+ after ignition feed via UPC
D2	Cruise control signal analogue input
D3	Cruise control signal earth
D4	Not used
E1	Not used
E2	Not used
E3	Not used
E4	Brake pedal normally closed switch no. 1 signal
F1	Not used
F2	+ 5 V supply, accelerator pedal potentiometer gang 2
F3	Accelerator pedal potentiometer signal, gang 2
F4	Accelerator pedal potentiometer earth, gang 2
G1	Not used
G2	+ 5 V supply, accelerator pedal potentiometer gang 1
G3	Not used
G4	Not used
H1	Not used
H2	Accelerator pedal potentiometer signal, gang 1
H3	Accelerator pedal potentiometer earth, gang 1
H4	Not used

Connector (B), 48 tracks:

Track	Description
A1	Injector 1 - control
A2	Injector 2 - control
A3	Injector 3 - control
A4	Injector 4 - control
B1	Not used
B2	Pinking sensor screening earth
B3	Pinking sensor + signal
B4	Pinking sensor - signal
C1	Not used
C2	Not used
C3	Engine speed (LPG) TDC - signal
C4	Not used
D1	Not used
D2	Not used
D3	Motorised throttle valve potentiometer gang 2 signal
D4	+ Power latch relay feed output
E1	Turbocharging pressure sensor earth (F4RT 774 and 776 only)
E2	Air temperature sensor signal
E3	Air temperature sensor earth
E4	Position and engine speed sensor - signal (tooth signal)
F1	Turbocharging pressure sensor + signal (F4RT 774 and 776 only)
F2	Coolant temperature sensor + signal
F3	Engine speed and position sensor + signal (tooth signal)
F4	Coolant temperature sensor earth
G1	+ 5 V turbocharging pressure sensor (F4RT 774 and 776 only)
G2	Motorised throttle potentiometer + 5 V feed
G3	Motorised throttle valve potentiometer gang 1 signal
G4	Motorised throttle valve potentiometers common earth
H1	Not used
H2	Manifold pressure sensor + 5 V feed
H3	Manifold pressure sensor + signal
H4	Manifold pressure sensor earth

Connector (B), 48 tracks (continued):

Track	Description
J1	Not used
J2	Refrigerant pressure + 5 V feed
J3	Refrigerant pressure + signal
J4	Not used
K1	Not used
K2	Refrigerant pressure sensor earth
K3	Multiplex line L2 engine connection (F4R 771 AUTO, K4M 813 AUTO and K4M 788 LPG only)
K4	Multiplex line H2 engine connection (F4R 771 AUTO, K4M 813 AUTO and K4M 788 LPG only)
L1	Power earth 1
L2	Not used
L3	Inlet camshaft dephaser control (non-LPG K4M only)
L4	Electric coolant pump control (F4RT 774 and 776 only)
M1	Power earth 2
M2	+ Battery supply
M3	Motorised throttle valve + signal
M4	Motorised throttle valve - signal

Connector (C), 48 tracks:

Track	Description
A1	Not used
A2	Downstream oxygen sensor + signal
A3	Not used
A4	Not used
B1	Upstream oxygen sensor + signal
B2	Downstream oxygen sensor - signal
B3	Not used
B4	Not used
C1	Upstream oxygen sensor - signal
C2	Not used
C3	Not used
C4	Not used
D1	Ignition coils and petrol pump relay control
D2	Not used
D3	Not used
D4	Not used
E1	Canister bleed solenoid valve control
E2	Camshaft position sensor earth (non-LPG K4M only)
E3	Not used
E4	Not used
F1	Inlet camshaft input frequency sensor (non-LPG K4M only)
F2	Not used
F3	Not used
F4	Not used
G1	Not used
G2	Not used
G3	Not used
G4	Turbocharging solenoid valve control (F4RT 774, 776 only)
H1	Not used
H2	Not used
H3	Not used
H4	Not used

Connector (C), 48 tracks (continued):

Track	Description
J1	Not used
J2	Coolant thermostat control output
J3	Not used
J4	Not used
K1	Not used
K2	Not used
K3	Not used
K4	Not used
L1	Power earth 3
L2	Upstream oxygen sensor heating - control
L3	Downstream oxygen sensor heating - control
L4	Not used
M1	Power earth 4
M2	Not used
M3	Ignition coil 2 - 3 - control
M4	Ignition coil 1 - 4 - control

1. PROGRAMMING, REPROGRAMMING OR REPLACING THE COMPUTER

The system can be programmed and reprogrammed via the diagnostic socket using the RENAULT CLIP diagnostic tool (**Consult Technical Note 3585A or follow the instructions provided by the diagnostic tool**).

IMPORTANT
- **Switch on the diagnostic tool (mains or cigarette lighter feed).**
- **Connect a battery charger (during the entire computer (re)programming procedure, the engine fan assemblies are triggered automatically).**
- **Observe the engine temperature setpoints given on the diagnostic tool before (re)programming.**
- **Cut off all the electrical consumers (interior lighting, air conditioning, radio, etc.).**

Operations to be carried out before the injection computer is reprogrammed:

Before reprogramming the injection computer, move the main Cruise control/Speed limiter 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.
- Position the main switch in rest position (the computer then detects the rest position).
- Position the switch in Cruise control position to activate the Cruise control function.
- Position the switch in Speed limiter position to activate the Speed limiter function.

Whenever the computer has been programmed, reprogrammed or replaced:
- **Switch off the ignition.**
- **Start and then stop the engine (to initialise the computer) and wait 30 seconds.**
- **Turn on the ignition and use the diagnostic tool to carry out the following steps:**

- use command **VP020 Enter VIN**.
- deal with any faults declared by the diagnostic tool. Clear the computer memory.
- program the flywheel sensor target and throttle stops,
- carry out a road test followed by another check with the diagnostic tool.

IMPORTANT
It is not possible to try an injection computer coming from the Parts Department because it will no longer be possible to use it on another vehicle.

2. REPLACING OR REMOVING THE TDC SENSOR

When replacing or removing the TDC sensor, program the flywheel target (see **17B, Petrol injection, Configuration and programming**).

IMPORTANT
– The injection computer retains the immobiliser code for life,
– the system has no security code,
– it is forbidden to perform tests with computers borrowed from the Parts Department or from another vehicle which must then be returned. These computers are hard-coded.

3. REPLACING THE MOTORISED THROTTLE VALVE

When replacing the throttle valve, the throttle stops are automatically programmed.
– **PR058 Air temperature** between **0 °C** and **105 °C**,
– wait for the end of power latch for the programming to be stored in the computer memory.

Check the programming using status **ET051 Throttle stop programming is DONE**.

IMPORTANT
Never drive the vehicle without having programmed the throttle stops.

1. CONFIGURATION

Computer configuration by automatic detection

LC001	Vehicle speed connection type
	→ Multiplex
	→ Wire
LC003	Upstream oxygen sensor
	→ WITH
	→ NONE
LC004	Downstream oxygen sensor
	→ WITH
	→ NONE
LC005	Gearbox type
	→ Automatic gearbox connection
	→ Sequential gearbox
	→ Manual gearbox
LC007	Cylinder 1 recognition
	→ WITH
	→ NONE
LC008	Camshaft dephaser
	→ WITH
	→ NONE
LC009	Air conditioning
	→ WITH
	→ NONE
LC010	Electronic stability program
	→ not connected
	→ connected
LC024	OBD warning light management
	→ WITH
	→ NONE
LC096	Closed brake switch
	→ YES
	→ NO

LC158	Air conditioning heating resistor management
	→ WITH
	→ NONE
LC162	Controlled coolant thermostat
	→ WITH
	→ NONE
LC170	Electric coolant pump
	→ WITH
	→ NONE

2. PROGRAMMING

Programming the flywheel target

– Decelerate a first time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **3500** and **3000 rpm**, in 3rd gear for a manual gearbox and 2nd for automatic transmission, for at least 5 seconds.
– Decelerate a second time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **2400** and **2000 rpm for K4 engines** and **between 1800** and **1400 rpm for R4R engines**, in 3rd gear for a manual gearbox and 2nd for automatic gearbox, for at least 5 seconds.

Check the programming using **ET089 Flywheel target programming.**

Programming the throttle end stops

When replacing the computer or the motorised throttle valve, with the ignition on, wait **30 seconds** so that the computer may program the MAX and MIN limits, then switch off the ignition and wait **30 seconds** for the end of the Power Latch, so that the computer may **store** the programmed limits.

Check the programming using **ET051 Throttle stop programming**.

* This is the moment when, during deceleration with no load, the engine drops to idling speed and recovers torque.

Tool fault	Asso-ciated DTC code	Description	Level 2 fault warning light (Red brake warning light)	Level 1 fault warning light (Orange injection warning light)	No warning light on	OBD warning light
DF001	0115	Coolant temperature sensor circuit				1.DEF 2.DEF 3.DEF
DF002	0110	Air temperature sensor circuit				1.DEF 2.DEF
DF004	0235	Turbocharging pressure sensor circuit			1.DEF 2.DEF 3.DEF	
DF011	0641	Sensor supply voltage no. 1		1.DEF		
DF012	0651	Sensor supply voltage no. 2		1.DEF		
DF026	0201	Cylinder 1 injector control circuit				CO/CC.0 CC.1/1.DEF
DF027	0202	Cylinder 2 injector control circuit				CO/CC.0 CC.1/1.DEF
DF028	0203	Cylinder 3 injector control circuit				CO/CC.0 CC.1/1.DEF
DF029	0204	Cylinder 4 injector control circuit				CO/CC.0 CC.1/1.DEF
DF038	0606	Computer		1.DEF		
DF046	0560	Battery voltage		1.DEF		
DF054	0243	Turbocharging solenoid valve control circuit				CO/ CC.0 CC.1
DF059	0301	Misfiring on cylinder 1				1.DEF/2.DEF/ 3.DEF
DF060	0302	Misfiring on cylinder 2				1.DEF/2.DEF/ 3.DEF
DF061	0303	Misfiring on cylinder 3				1.DEF/2.DEF/ 3.DEF
DF062	0304	Misfiring on cylinder 4				1.DEF/2.DEF/ 3.DEF
DF078	2101	Motorised throttle control circuit		1.DEF		

Tool fault	Asso-ciated DTC code	Description	Level 2 fault warning light (Red brake warning light)	Level 1 fault warning light (Orange injection warning light)	No warning light on	OBD warning light
DF079	0638	Motorised throttle valve automatic control		2.DEF/3.DEF/ 4.DEF/CO/ 6.DEF	1.DEF/5.DEF/ 7.DEF/8.DEF	
DF080	0010	Camshaft dephaser circuit			CO/CC.0/ CC.1/1.DEF/ 2.DEF/3.DEF/ 4.DEF/5.DEF	
DF081	0443	Canister bleed solenoid valve circuit			CC.O/1.DEF	CO/CC.1
DF084	0685	Actuator relay control circuit			CO/CC.0 CC.1	
DF085	0627	Fuel pump relay control circuit			CO/CC.0 CC.1/1.DEF	
DF088	0325	Pinking sensor circuit			1.DEF/2.DEF	
DF089	0105	Inlet manifold pressure sensor circuit		1.DEF 2.DEF 3.DEF		1.DEF 2.DEF 3.DEF
DF091	0500	Vehicle speed signal			1.DEF/2.DEF	
DF092	0130	Upstream oxygen sensor circuit				CO.0 CC.1/ 1.DEF2.DEF
DF093	0136	Downstream oxygen sensor circuit				CO.0 CC.1/1.DEF
DF095	0120	Throttle potentiometer circuit gang 1		CO.0/CC.1 1.DEF/2.DEF		
DF096	0220	Throttle potentiometer circuit gang 2		CO.0/CC.1		
DF099	C101	Automatic gearbox or sequential gearbox connection via the multiplex network			1.DEF/2.DEF/ 3.DEF/4.DEF	
DF101	C122	ESP multiplex connection			1.DEF	

Tool fault	Asso-ciated DTC code	Description	Level 2 fault warning light (Red brake warning light)	Level 1 fault warning light (Orange injection warning light)	No warning light on	OBD warning light
DF102	2502	Available alternator power signal			1.DEF	
DF105	0585	Cruise control/speed limiter on/off circuit			1.DEF	
DF106	0575	CC/SL selector switches on steering wheel			1.DEF	
DF109	0313	Low fuel level misfiring				1.DEF/ 2.DEF/ 3.DEF
DF119	0340	Camshaft sensor signal			1.DEF/2.DEF/ 3.DEF/4.DEF	
DF126	1604	Passenger compartment heating resistor (RCH)			1.DEF	
DF138	0830	Clutch pedal switch			1.DEF	
DF154	0335	Flywheel signal sensor circuit			1.DEF/2.DEF/ 3.DEF	
DF196	0225	Pedal sensor circuit gang 1	1.DEF CO// CC.0.DEFCC.1	CO// CC.0.DEFCC. 1 2.DEF		
DF198	2120	Pedal sensor circuit gang 2	CO/ CC.0CC.1	CO/ CC.0CC.1		
DF228	0504	Brake signal			1.DEF/2.DEF	
DF232	0530	Refrigerant pressure sensor circuit			1.DEF	
DF361	0351	Ignition coil control - cylinders 1 - 4		CO.0/CC.1 1.DEF		CO.0/CC.1 1.DEF
DF362	0352	Ignition coil control - cylinders 2 - 3		CO.0/CC.1 1.DEF		CO.0/CC.1 1.DEF
DF363	0010	Camshaft dephaser			CO/CC.O/ CC.1/1.DEF 2.DEF/3.DEF	
DF377	C115	Petrol ↔ LPG connection			1.DEF/2.DEF	
DF394	0420	Catalytic converter operating fault				1.DEF/ 2.DEF

Tool fault	Asso-ciated DTC code	Description	Level 2 fault warning light (Red brake warning light)	Level 1 fault warning light (Orange injection warning light)	No warning light on	OBD warning light
DF398	0170	Fuel circuit operating fault				CO/1.DEF
DF404	C302	Automatic gearbox or sequential gearbox CAN connection			1.DEF/2.DEF/ 3.DEF	
DF410	C155	Instrument panel connection			1.DEF	
DF436	0300	Detection of engine misfiring				1.DEF/2.DEF 3.DEF
DF455	0460	Low fuel level signal			1.DEF/2.DEF	
DF457	0315	Flywheel target				1.DEF/2.DEF
DF570	2600	COOLANT PUMP RELAY				CO/CC.0 CC.1
DF601	0135	Upstream O2 sensor heating power circuit				CO.0/CC.1 1.DEF
DF602	0141	Downstream O2 sensor heating power circuit				CO.0/CC.1 1.DEF
DF623	C315	Closing brake signal			1.DEF	
DF624	C111	UPC multiplex connection			1.DEF 2.DEF	
DF635	1301	LPG cylinder 1 combustion misfire				1.DEF 2.DEF
DF636	1302	LPG cylinder 2 combustion misfire				1.DEF 2.DEF
DF637	1303	LPG cylinder 3 combustion misfire				1.DEF 2.DEF
DF638	1304	LPG cylinder 4 combustion misfire				1.DEF 2.DEF
DF639	1300	Combustion misfire in LPG mode				1.DEF 2.DEF 3.DEF
DF650	2299	Accelerator pedal position signal	1.DEF			
DF1070	0534	Air conditioning compressor sticking				

DF001 PRESENT	COOLANT TEMPERATURE SENSOR CIRCUIT 1.DEF : Signal incoherence 2.DEF : Abnormal voltage 3.DEF : Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Deal with fault **DF011 Sensor supply voltage no. 1** first if it is present or stored. **Special note:** – **OBD warning light** illuminated, – low-speed fan is operating continuously. – Refer to parameter **PR064 Coolant temperature**: if **PR064 = 120 °C**, short circuit to + 12 V, if **PR064 = - 40 °C**, short circuit to earth.

Check **the cleanliness** and **condition** of the coolant temperature sensor and its connections.
Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Repair if necessary.

Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer connector **B, track F2** → **track B2** of the coolant temperature sensor

Injection computer, connector **B, track F4** → **track B1** of the coolant temperature sensor

Repair if necessary.

Measure the **resistance** of the coolant temperature sensor between **tracks 2 and 3**.
Replace the coolant temperature sensor if the **resistance** is not:

12.6 kΩ ± 1.1 kΩ at - 10 °C of the coolant temperature
2200 Ω ± 112 Ω at 25 °C of the coolant temperature
810 Ω ± 39 Ω at a coolant temperature of 50 °C
283 Ω ± 8 Ω at a coolant temperature of 80 °C
1156 Ω ± 3 Ω at a coolant temperature of 110 °C
88 Ω ± 2 Ω at a coolant temperature of 120 °C

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF002 PRESENT	AIR TEMPERATURE SENSOR CIRCUIT 1.DEF : Abnormal voltage 2.DEF : Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Deal with fault **DF012 Sensor feed no. 2 voltage** first, if it is present or stored.
	Special note: – **OBD warning light** comes on. – Refer to parameter **PR058 Air temperature**: if **PR058 = 120 °C**, short circuit to + 12 V, if **PR058 = - 40 °C**, short circuit to earth.

Check the **cleanliness** and **condition** of the air temperature sensor and its connections.
Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Repair if necessary.

Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **B, track E3** → **track 2** of the air temperature sensor

Injection computer, connector **B, track E2** → **track 1** of the air temperature sensor

Repair if necessary.

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

9.6 kΩ± 1 kΩ at - 10 °C of the air temperature
2000 Ω ± 120 Ω at 25 °C of the air temperature
810 Ω ± 47 Ω at an air temperature of 50 °C
309 Ω ± 17 Ω at an air temperature of 80 °C

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF004 PRESENT OR STORED	TURBOCHARGING PRESSURE SENSOR CIRCUIT 1.DEF: Abnormal voltage 2.DEF: Data inconsistency 3.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Deal with fault **DF012 Sensor feed no. 2 voltage** first, if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine has been running or started at an engine speed above **600 rpm**.
	Special note: – For **F4R Turbo engines** only, – throttle valve defect mode **types 4, 5 and 6**.

Check the **cleanliness**, **condition** and the **assembly** of the turbocharging pressure sensor.
Repair if necessary.

If the fault is still present, manipulate the harness so that the status changes (present ↔ stored).
Look for any damage to the wiring harness, and check **the condition and connection** of the injection computer and turbocharging pressure sensor connectors.
Repair if necessary.

If the fault is still present, check for **+ 5 V** on **track G1** and that the **earth is present** on **track E1** of connector **B** of the injection computer.
Contact the Techline if it is not correct.

If the fault is still present, disconnect the battery and the injection computer.
Check **the insulation, continuity and the absence of interference resistance** on the following connections:

Injection computer, connector **B, track E1** → **track 2** turbocharger pressure sensor

Injection computer, connector **B, track F1** → **Track 3** of the turbocharger pressure sensor

Injection computer, connector **B, track G1** → **Track 1** of the turbocharger pressure sensor

Repair if necessary.

If the fault is still present, deal with the other faults, then proceed to the conformity check.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF011 PRESENT OR STORED	SENSOR FEED NO. 1 VOLTAGE 1.DEF: Open circuit or short circuit

NOTES	**Priority when dealing with a number of faults:** Deal firstly with fault **DF084 Actuator relay control circuit** or **DF046 Battery voltage** if they are present or stored.
	Special note: – **level 1 fault warning light** illuminated. – throttle valve defect mode **types 1, 2** or **4**.

Check **the cleanliness** and **condition** of the throttle valve connections.
Check the **cleanliness** and **condition** of the pedal potentiometer connections.
Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Repair if necessary.

Sensor feed No. 1 is reserved for the following components:
– inlet manifold pressure sensor
– turbocharger pressure sensor (F4RT 774 and 776 only)
– pedal potentiometer gang 2,
– coolant pressure sensor,
– Cruise control/Speed limiter buttons,
– upstream and downstream O_2 sensors.

To locate any internal fault on one of the sensors with a **5 V** supply (short circuit), disconnect each of the sensors on the list above in turn, checking after each disconnection whether the fault changes status from present to stored.
If the faulty sensor is located, check its connections and that it is in order.
Replace the faulty sensor if necessary.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF011 **CONTINUED**	

Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **A, track F2**	→	**track 2** of the pedal potentiometer gang 2
Injection computer, connector **C, track A2**	→	**track C** of the downstream oxygen sensor
Injection computer, connector **C, track B1**	→	**track C** of the upstream oxygen sensor
Injection computer, connector **B, track J2**	→	**track B** of the refrigerant sensor
Injection computer, connector **A, track C3**	→	**track B1** of the cruise control or speed limiter on/ off switch
Injection computer, connector **B, track H2**	→	**track C** of the manifold pressure sensor
Injection computer, connector **B, track G1**	→	**track 1** of the turbocharger pressure sensor (F4RT 774 and 776 only)

Repair if necessary.

If the fault is still present: computer fault present, contact the Techline.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF012 PRESENT OR STORED	SENSOR FEED VOLTAGE NO. 2 1.DEF: Open circuit or short circuit

NOTES	**Special note:** – **level 1 fault warning light** illuminated. – throttle valve defect mode **types 4 and 5**: vehicle and engine speed restriction, ESP and the Cruise control/Speed limiter are deactivated.

Check **the cleanliness** and **condition** of the throttle valve connections.
Check the **cleanliness** and **condition** of the pedal potentiometer connections.
Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Repair if necessary.

Sensor feed No. 2 is reserved for the following components:
– pedal potentiometer gang 1,
– motorised throttle potentiometer gangs 1 and 2.

To locate any internal fault on one of the sensors with a **5 V** supply (short circuit), disconnect each of the sensors on the list above in turn, checking after each disconnection whether the fault changes status from present to stored.
If the faulty sensor is located, check its connections and that it is in order.
Replace the faulty sensor if necessary.

Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **A, track G2** → **track 3** of the pedal potentiometer gang 1

Injection computer, connector **B, track G2** → **track 2** of the motorised throttle valve (K4M 766/812 and 813, F4R 770 and 771)

Injection computer, connector **B, track G2** → **track 5** of the motorised throttle valve (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Repair if necessary.

If the fault is still present**, contact the Techline**.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF026 PRESENT OR STORED	CYLINDER 1 INJECTOR CONTROL CIRCUIT CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Deal with faults **DF084 Actuator relay control circuit or DF046 Battery voltage** first if they are present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault appears after the engine has been running for a timed period of **10 seconds**.
	Special note: – **OBD warning light** comes on.

CO ***CC.1***	***NOTES***	**Special note:** No injection on cylinder 1, severe deterioration in performance.
CC.0		**Special note:** The injector is always open: risk of stalling and damage to the engine on starting, severe deterioration in performance.

Check the **cleanliness** and **condition** of the cylinder 1 injector and its connections.
Repair if necessary.

With the ignition on, check for a **+ 12 V feed** on **track 1** of the cylinder 1 injector connector.
If there is no **+ 12 V** feed, using the universal bornier, check the **continuity** of the following connections:

Injection computer, connector **B, track M2** → **track 1** of the cylinder 1 injector

Protection and Switching Unit, **connector CN, track 6** →

Repair if necessary.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF026 **CONTINUED**	

Disconnect the battery and the injection computer. Check the **cleanliness** and **condition** of the connections. Repair if necessary.
Using the universal bornier, check for **insulation and continuity** on the following connection: Injection computer connector **B, track A1** ⟶ **track 2** of the cylinder 1 injector Repair if necessary.
Measure the **resistance** of cylinder 1 injector between **tracks 1** and **2**. Replace the cylinder 1 injector if the **resistance** is not **14.5 Ω ± 0.7 Ω at 20 °C (except F4RT 774 RS)** **12 Ω ± 0.6 Ω at 20 °C (F4RT 774 RS only)**
If the fault is still present, replace the cylinder 1 injector. **If the fault is still present, deal with the other faults then proceed with the conformity check.**

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF027 PRESENT OR STORED	CYLINDER 2 INJECTOR CONTROL CIRCUIT CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Deal with faults **DF084 Actuator relay control circuit or DF046 Battery voltage** first if they are present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault appears after the engine has been running for a timed period of **10 seconds**.
	Special note: – **OBD warning light** comes on.

CO ***CC.1***	***NOTES***	**Special note:** No injection on cylinder 2, severe deterioration in performance.
CC.0		**Special note:** The injector is always open: risk of stalling and damage to the engine on starting, severe deterioration in performance.

Check the **cleanliness** and **condition** of the cylinder 2 injector and its connections.
Repair if necessary.

With the ignition on, check for **+ 12 V feed** on **track 1** of the cylinder 2 injector connector.
If there is no **+ 12 V** feed, using the universal bornier, check the **continuity** of the following connections:

Injection computer, connector **B, track M2** → **track 1** of the cylinder 2 injector

Protection and Switching Unit, **connector CN, track 6** → **track 1** of the cylinder 2 injector

Repair if necessary.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF027 **CONTINUED**	

Disconnect the battery and the injection computer. Check the **cleanliness** and **condition** of the connections. Repair if necessary.
Using the universal bornier, check for **insulation and continuity** on the following connection: Injection computer, connector **B, track A2** ⟶ **track 2** of the cylinder 2 injector Repair if necessary.
Measure the **resistance** of the cylinder 2 injector between **tracks 1** and **2**. Replace the cylinder 2 injector if the **resistance** is not **14.5 Ω ± 0.7 Ω at 20 °C (except F4RT 774 RS)** **12 Ω ± 0.6 Ω at 20 °C (F4RT 774 RS only)**
If the fault is still present, replace the cylinder 2 injector. **If the fault is still present, deal with the other faults then proceed with the conformity check.**

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF028 PRESENT OR STORED	INJECTOR CYLINDER 3 CONTROL CIRCUIT CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Order of priority in the event of more than one fault:** Deal with faults **DF084 Actuator relay control circuit or DF046 Battery voltage** first if they are present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault appears after the engine has been running for a timed period of **10 seconds**.
	Special note: – **OBD warning light** comes on.

CO ***CC.1***	***NOTES***	**Special note:** No injection on cylinder 3, severe deterioration in performance.
CC.0		**Special note:** The injector is always open: risk of stalling and damage to the engine on starting, severe deterioration in performance.

Check the **cleanliness and condition** of the cylinder 3 injector and its connections.
Repair if necessary.

With the ignition on, check for **+ 12 V feed** on **track 1** of the cylinder 3 injector connector.
If there is no **+ 12 V** feed, using the universal bornier, check the **continuity** of the following connections:

Injection computer, connector **B, track M2** → **track 1** of cylinder 3 injector

Protection and Switching Unit, **connector CN, track 6** → **track 1** of cylinder 3 injector

Repair if necessary.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF028 **CONTINUED**	

Disconnect the battery and the injection computer. Check the **cleanliness** and **condition** of the connections. Repair if necessary.
Using the universal bornier, check for **insulation and continuity** on the following connection: Injection computer, connector **B, track A3** ⟶ **track 2** of the cylinder 3 injector Repair if necessary.
Measure the **resistance** of the cylinder 3 injector between **tracks 1** and **2**. Replace the cylinder 3 injector if the **resistance** is not **14.5 Ω ± 0.7 Ω at 20 °C (except F4RT 774 RS)** **12 Ω ± 0.6 Ω at 20 °C (F4RT 774 RS only)**
If the fault is still present, replace the cylinder 3 injector. **If the fault is still present, deal with the other faults then proceed with the conformity check.**

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF029 PRESENT OR STORED	INJECTOR CYLINDER 4 CONTROL CIRCUIT CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Order of priority in the event of more than one fault:** Deal with faults **DF084 Actuator relay control circuit or DF046 Battery voltage** first if they are present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault appears after the engine has been running for a timed period of **10 seconds**.
	Special note: – **OBD warning light** comes on.

CO ***CC.1***	***NOTES***	**Special note:** No injection on cylinder 4, severe deterioration in performance.
CC.0		**Special note:** The injector is always open: risk of stalling and damage to the engine on starting, severe deterioration in performance.

Check the **cleanliness** and **condition** of the cylinder 4 injector and its connections.
Repair if necessary.

With the ignition on, check for a **+ 12 V feed** on **track 1** of the cylinder 4 injector connector.
If there is no **+ 12 V** feed, using the universal bornier, check the **continuity** of the following connections:

Injection computer, connector **B, track M2** → **track 1** of the cylinder 4 injector

Protection and Switching Unit, **connector CN, track 6** → **track 1** of the cylinder 4 injector

Repair if necessary.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF029 **CONTINUED**	

Disconnect the battery and the injection computer. Check the **cleanliness** and **condition** of the connections. Repair if necessary.
Using the universal bornier, check for **insulation and continuity** on the following connection: Injection computer, connector **B, track A4** ⟶ **track 2** of the cylinder 3 injector Repair if necessary.
Measure the **resistance** of the cylinder 4 injector between **tracks 1** and **2**. Replace the cylinder 4 injector if the **resistance** is not **14.5 Ω ± 0.7 Ω at 20 °C (except F4RT 774 RS)** **12 Ω ± 0.6 Ω at 20 °C (F4RT 774 RS only)**
If the fault is still present, replace the cylinder 4 injector. **If the fault is still present, deal with the other faults then proceed with the conformity check.**

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF038 **PRESENT**	COMPUTER 1.DEF: Internal electronic fault

NOTES	**Priority when dealing with a number of faults:** Deal with the other faults first.
	Special note: – **OBD warning light** illuminated, – throttle valve defect mode **types 1, 2 or 5** present or stored.

Make sure there is a supply to the injection computer:
– disconnect the battery and the injection computer,
– check the cleanliness and condition of the connections,
– reconnect the battery.
Using the universal bornier, check for **+ 12 V** on the following computer tracks:
– track D1, connector A,
– track M2, connector B.
Repair if necessary.

Make sure there is an earth on the injection computer:
– disconnect the battery and the injection computer,
– check the cleanliness and condition of the connections,
– reconnect the battery.
Using the Universal bornier, check for **earths** on the following computer tracks:
– track L1, connector B,
– track M1, connector B,
– track L1, connector C,
– track M1, connector C.
Repair if necessary.

If all the supplies and earths are correct, contact the Techline.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF046 **PRESENT**	BATTERY VOLTAGE 1.DEF : Abnormal voltage

NOTES	**Priority when dealing with a number of faults:** Apply the procedure for dealing with fault **DF084 Actuators relay control circuit** first if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault appears when the engine is running.
	Special note: – **level 1 fault warning light** illuminated. – throttle valve defect mode **types 1 and 2** in the event of undervoltage: vehicle and engine speed restriction, the ESP and cruise control/speed limiter are deactivated.

Disconnect the battery and the injection computer.
Check **the cleanliness** and **condition** of the computer connections.
Repair if necessary.

Disconnect the **CN and MN connector** of the Protection and Switching Unit.
Check **the cleanliness** and **condition** of its connections.
Using the Universal bornier, check the **continuity** of the following connections:

Injection computer, connector **B, track M2** → Protection and Switching Unit, **connector CN, track 6**

Injection computer, connector **B, track D4** → Protection and Switching Unit, **connector MN, track 5**

Repair if necessary.

– clean the battery terminals and all connections to **+** and the **Earth**,
– check the battery voltage,
– check the charging circuit (see **Technical Note 6014A Checking the charging circuit**).

Repair or replace the faulty components, if necessary.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF054 PRESENT OR STORED	TURBOCHARGING SOLENOID VALVE CONTROL CIRCUIT CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present after the engine has been running or started at an engine speed above **600 rpm**.
	Special note: – for **F4R-Turbo engine** only, – **OBD warning light** illuminated. – Throttle valve defect mode **type 6**.

Check the **cleanliness** the **condition** and the **assembly** of the turbocharging pressure sensor.
Repair if necessary.

If the fault is still present, manipulate the harness so that the status changes (present ↔ stored).
Look for possible damage to the harness, check the **condition and connection** of the injection computer and turbocharging solenoid valve connectors.
Repair if necessary.

If the fault is still present, check (with the ignition on) for **+ 12 V** on **track 2** of the turbocharging solenoid valve.
If there is not **+ 12 V**, check the **insulation, continuity and the absence of interference resistance** on the following connections:

Injection computer, connector **B, track M2** → **track 2** of the turbocharging solenoid valve
Main relay →

Repair if necessary.

If the fault is still present, disconnect the battery and the injection computer.
Check the **insulation, continuity and the absence of interference resistance** on the following connections:

Injection computer, connector **C, track G4** → **track 1** of the turbocharging solenoid valve

Repair if necessary.

If the fault is still present, measure the **resistance** of the turbocharging solenoid valve between **tracks 1** and **2**.
Replace the turbocharging solenoid valve if the **resistance** is not **30 Ω ± 2 Ω at 23 °C**.

If the fault is still present, deal with the other faults, then proceed to the conformity check.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF059 PRESENT OR STORED	COMBUSTION MISFIRES ON CYLINDER 1 1.DEF: Destructive misfiring 2.DEF: Polluting misfiring 3.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** – ignition: **DF361 Ignition coil circuit cylinders 1-4** **DF362 Ignition coil circuit cylinders 2-3** – fuel supply circuit: **DF026 Injector control circuit cylinder 1,** **DF027 Injector control circuit cylinder 2,** **DF028 Injector control circuit cylinder 3,** **DF029 Injector control circuit cylinder 4,** **DF085 Fuel pump relay control circuit.** – flywheel signal: **DF154 Flywheel signal sensor circuit** **DF457 Flywheel target** Check whether there are other cylinders with a combustion misfire fault detected by the tool before starting the following fault finding procedure.
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – programming must be carried out. – warm engine (coolant temperature 75 ˚C minimum), – engine running at idling speed with all electrical consumers on for approximately 15 minutes.
	Special note: – **OBD warning light** comes on.

1.DEF	***NOTES***	**Special note:** – As soon as the fault is detected, the injection is cut off on the faulty cylinder(s) to limit the temperature increase in the catalytic converter, – if a fault is present, the **OBD warning light flashes**.
2.DEF		**Special note:** – the **OBD warning light** remains **continuously lit**.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF059 **CONTINUED**	

Misfiring on cylinder 1 only	The fault is probably due to a component that can only affect this cylinder: – check the cylinder 1 pencil coil, – check the condition and conformity of the spark plugs, – check the cylinder 1 injector If everything is in order, check the same components on cylinder 4 (to cover a possible cylinder recognition error).
Combustion misfires in cylinders 1 and 4 (see DF059 Combustion misfires in cylinder 1 and DF062 Combustion misfires in cylinder 4)	The fault is probably due to a component that affects a pair of cylinders: – check the ignition coil circuit concerned (apply the interpretation of fault **DF361 Ignition coil control 1-4**), – check the condition and conformity of the spark plugs.
Combustion misfires on all four cylinders (see DF060, DF061 and DF062)	The fault is probably due to a component affecting all the cylinders: – check that the correct fuel is being used, – check the condition and conformity of the spark plugs.

If the fault is still present, carry out the following checks:
– check the flywheel sensor,
– check the condition and cleanliness of the flywheel,
– check the flywheel sensor mounting,
– check the sensor/flywheel air gap,
– check the cylinder compressions,
– check the complete fuel system (see **MR 364 or 370 Mechanics, 13A, Fuel supply, Petrol supply system**),
– check the complete ignition system (see **MR 364 or 370 Mechanics, 17A, Ignition, Spark plugs**),
– check the hydraulic tappets if there is camshaft noise (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**).

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF060 PRESENT OR STORED	COMBUSTION MISFIRES ON CYLINDER 2 1.DEF: Destructive misfiring 2.DEF: Polluting misfiring 3.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** – ignition: **DF361 Ignition coil circuit cylinders 1-4** **DF362 Ignition coil circuit cylinders 2-3** – fuel supply circuit: **DF026 Injector control circuit cylinder 1,** **DF027 Injector control circuit cylinder 2,** **DF028 Injector control circuit cylinder 3,** **DF029 Injector control circuit cylinder 4,** **DF085 Fuel pump relay control circuit.** – flywheel signal: **DF154 Flywheel signal sensor circuit** **DF457 Flywheel target** Check whether there are other cylinders with a combustion misfire fault detected by the tool before starting the following fault finding procedure.
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – programming must be carried out. – warm engine (coolant temperature 75 ˚C minimum), – engine running at idling speed with all electrical consumers on for approximately 15 minutes.
	Special note: – **OBD warning light** comes on.

1.DEF	***NOTES***	**Special note:** – As soon as the fault is detected, the injection is cut off on the faulty cylinder(s) to limit the temperature increase in the catalytic converter, – if a fault is present, the **OBD warning light flashes**.
2.DEF		**Special note:** – the **OBD warning light** remains **continuously lit**.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF060 **CONTINUED**	

Misfiring on cylinder 2 only	The fault is probably due to a component that can only affect this cylinder: – check the cylinder 2 pencil coil, – check the condition and conformity of the spark plugs, – check the cylinder 2 injector. If everything is in order, check the same components on cylinder 3 (to cover a possible cylinder recognition error).
Misfires in cylinders 2 and 3 (see DF060 Misfires in cylinder 2 and DF061 Misfires in cylinder 3)	The fault is probably due to a component that affects a pair of cylinders: – check the ignition coil circuit concerned (apply the interpretation of fault **DF362 Ignition coil control 2-3**), – check the condition and conformity of the spark plugs.
Combustion misfires on all four cylinders (see DF059, DF060 DF061 and DF062)	The fault is probably due to a component affecting all the cylinders: – check that the correct fuel is being used, – check the condition and conformity of the spark plugs.

If the fault is still present, carry out the following checks:
– check the flywheel sensor,
– check the condition and cleanliness of the flywheel,
– check the flywheel sensor mounting,
– check the sensor/flywheel air gap,
– check the cylinder compressions,
– check the complete fuel system (see **MR 364 or 370 Mechanics, 13A, Fuel supply, Petrol supply system**),
– check the complete ignition system (see **MR 364 or 370 Mechanics, 17A, Ignition, Spark plugs**),
– check the hydraulic tappets if there is camshaft noise (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**).

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF061 PRESENT OR STORED	COMBUSTION MISFIRES ON CYLINDER 3 1.DEF: Destructive misfiring 2.DEF: Polluting misfiring 3.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** – ignition: **DF361 Ignition coil circuit cylinders 1-4** **DF362 Ignition coil circuit cylinders 2-3** – fuel supply circuit: **DF026 Injector control circuit cylinder 1,** **DF027 Injector control circuit cylinder 2,** **DF028 Injector control circuit cylinder 3,** **DF029 Injector control circuit cylinder 4,** **DF085 Fuel pump relay control circuit.** – flywheel signal: **DF154 Flywheel signal sensor circuit** **DF457 Flywheel target** Check whether there are other cylinders with a combustion misfire fault detected by the tool before starting the following fault finding procedure.
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – programming must be carried out. – warm engine (coolant temperature 75 ˚C minimum), – engine running at idling speed with all electrical consumers on for approximately 15 minutes.
	Special note: – **OBD warning light** comes on.

1.DEF	***NOTES***	**Special note:** – As soon as the fault is detected, the injection is cut off on the faulty cylinder(s) to limit the temperature increase in the catalytic converter, – if a fault is present, the **OBD warning light flashes**.
2.DEF		**Special note:** – the **OBD warning light** remains **continuously lit**.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF061 **CONTINUED**	

Misfiring on cylinder 3 only	The fault is probably due to a component that can only affect this cylinder: – check the cylinder 3 pencil coil, – check the condition and conformity of the spark plugs, – check the cylinder 3 injector. If everything is in order, check the same components on cylinder 2 (to cover a possible cylinder recognition error).
Misfires in cylinders 2 and 3 (see DF060 Misfires in cylinder 2 and DF061 Misfires in cylinder 3)	The fault is probably due to a component that affects a pair of cylinders: – check the ignition coil circuit concerned (apply the interpretation of fault **DF362 Ignition coil control 2-3**), – check the condition and conformity of the spark plugs.
Combustion misfires on all four cylinders (see DF059, DF060 DF061 and DF062)	The fault is probably due to a component affecting all the cylinders: – check that the correct fuel is being used, – check the condition and conformity of the spark plugs.

If the fault is still present, carry out the following checks:
– check the flywheel sensor,
– check the condition and cleanliness of the flywheel,
– check the mounting of the flywheel sensor,
– check the flywheel/sensor air gap,
– check the cylinder compressions,
– check the complete fuel system (see **MR 364 or 370 Mechanics, 13A, Fuel supply, Petrol supply system**),
– check the complete ignition system (see **MR 364 or 370 Mechanics, 17A, Ignition, Spark plugs**),
– check the hydraulic tappets if there is camshaft noise (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**).

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF062 PRESENT OR STORED	COMBUSTION MISFIRES ON CYLINDER 4 1.DEF: Destructive misfiring 2.DEF: Polluting misfiring 3.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** – ignition: **DF361 Ignition coil circuit cylinders 1-4** **DF362 Ignition coil circuit cylinders 2-3** – fuel supply circuit: **DF026 Injector control circuit cylinder 1,** **DF027 Injector control circuit cylinder 2,** **DF028 Injector control circuit cylinder 3,** **DF029 Injector control circuit cylinder 4,** **DF085 Fuel pump relay control circuit.** – flywheel signal: **DF154 Flywheel signal sensor circuit** **DF457 Flywheel target** Check whether there are other cylinders with a combustion misfire fault detected by the tool before starting the following fault finding procedure.
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – programming must be carried out. – warm engine (coolant temperature 75 ˚C minimum), – engine running at idling speed with all electrical consumers on for approximately 15 minutes.
	Special note: – **OBD warning light** comes on.

1.DEF	***NOTES***	**Special note:** – As soon as the fault is detected, the injection is cut off on the faulty cylinder(s) to limit the temperature increase in the catalytic converter, – if a fault is present, the **OBD warning light flashes**.
2.DEF		**Special note:** – the **OBD warning light** remains **continuously lit**.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF062 **CONTINUED**	

Misfiring on cylinder 4 only	The fault is probably due to a component that can only affect this cylinder: – check the pencil coil of cylinder 4, – check the condition and conformity of the spark plugs, – check the cylinder 4 injector If everything is in order, check the same components on cylinder 1 (to cover a possible cylinder recognition error).
Combustion misfires in cylinders 1 and 4 (see DF059 Combustion misfires in cylinder 1 and DF062 Combustion misfires in cylinder 4)	The fault is probably due to a component that affects a pair of cylinders: – check the ignition coil circuit concerned (apply the interpretation of fault **DF361 Ignition coil control 1-4**), – check the condition and conformity of the spark plugs.
Combustion misfires on all four cylinders (see DF059, DF060 DF061 and DF062)	The fault is probably due to a component affecting all the cylinders: – check that the correct fuel is being used, – check the condition and conformity of the spark plugs.

If the fault is still present, carry out the following checks:
– check the flywheel sensor,
– check the condition and cleanliness of the flywheel,
– check the flywheel sensor mounting,
– check the flywheel/sensor air gap,
– check the cylinder compressions,
– check the complete fuel system (see **MR 364 or 370 Mechanics, 13A, Fuel supply, Petrol supply system**),
– check the complete ignition system (see **MR 364 or 370 Mechanics, 17A, Ignition, Spark plugs**),
– check the hydraulic tappets if there is camshaft noise (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**).

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF078 PRESENT OR STORED	MOTORISED THROTTLE CONTROL CIRCUIT 1.DEF: Component in bad condition

WARNING
Never drive the vehicle without having confirmed that no faults involving the throttle valve are present.

NOTES	**Priority when dealing with a number of faults:** If faults **DF095 Throttle potentiometer circuit gang 1** or **DF096 Throttle potentiometer circuit gang 2** are present, deal with these first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared as present if: – the engine speed varies, – the **AC027 Motorised throttle** command is activated, – the engine air temperature should be between **5 °C** and **105 °C**.
	Special note: – **level 1 fault warning light** illuminated. – throttle valve defect mode **types 1 and 2**: vehicle and engine speed restriction, ESP and the cruise control/speed limiter are deactivated.

Check **the cleanliness and condition** of the throttle valve and its connections.

Manually check that the throttle **rotates properly**.

Disconnect the battery and the injection computer.
Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation and continuity** of the following connections:

Injection computer, connector **B, track M3** → **track 3** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771)
→ **track 4** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Injection computer, connector **B track M4** → **track 5** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771)
→ **track 3** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF078 **CONTINUED**	

If the fault is still present, measure the **resistance** of the throttle between:
– tracks **3** and **5** for (K4M 766/812 and 813, F4R 770 and 771)
– tracks **3** and **4** for (K4J 740, K4M 788 LPG, F4RT 774 and 776)
Replace the throttle valve if the **resistance** is not:
– **2.2 Ω ± 0.2 Ω at 23 °C** for (K4M 766/812 and 813, F4R 770 and 771)
– **1.6 Ω ± 0.2 Ω at 23 °C** for (K4J 740, K4M 788 LPG, F4RT 774 and 776)

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF079 PRESENT OR STORED	MOTORISED THROTTLE VALVE SERVO CO : Open circuit 1.DEF: Micro-breaks 2.DEF: Motorised throttle limit search fault 3.DEF: Faulty flap return spring 4.DEF: Safe mode 5.DEF: Motorised throttle valve flap vibrating 6.DEF: Motorised throttle control fault 7.DEF: Intake supply circuit 8.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** If the following faults: **DF011 Sensor supply voltage no. 1,** **DF078 Motorised throttle control circuit,** **DF095 Throttle potentiometer circuit gang 1,** **DF096 Throttle potentiometer circuit gang 2,** are present or stored, deal with these first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared as present if: – the engine speed varies, – the air temperature is between **5 °C** and **105 °C** inclusive.

CO 6.DEF	***NOTES***	**Special note:** – **level 1 fault warning light** illuminated. – defect mode **type 1 and 2**: vehicle and engine speed restriction, ESP and the cruise control/speed limiter are deactivated.
2.DEF 3.DEF 4.DEF		**Special note:** – **level 1 fault warning light** illuminated. – throttle valve defect mode **type 4**: speed limiter at 54 mph (90 km/h) and loss of power during acceleration.

Check the **cleanliness**, **condition** and **fitting** of the throttle valve. Repair if necessary.
If the fault is still present, manually check that the throttle valve **rotates correctly**. Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF079 **CONTINUED 1**	

If the fault is still present, manipulate the harness so that the status changes (present ↔ stored).
Look for possible damage to the harness, check the **condition** and the **connection** of the injection computer and motorised throttle valve connectors.
Repair if necessary.

If the fault is still present, disconnect the battery and the injection computer.
Check the **insulation, continuity** and the **absence of interference resistance** of the following connections:

Injection computer, **connector B, track M3** → **track 3** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771) / **track 4** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Injection computer, connector **B track M4** → **track 5** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771) / **track 3** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Injection computer, **connector B, track G4** → **track 6** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771) / **track 1** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Injection computer, **connector B, track G3** → **track 1** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771) / **track 2** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Injection computer, **connector B, track G2** → **track 2** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771) / **track 5** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Injection computer, **connector B, Track D3** → **track 4** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771) / **track 6** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

If the fault is still present, measure the **resistance** of the throttle between
– tracks **3** and **5** for (K4M 766/812 and 813, F4R 770 and 771),
– tracks **3** and **4** for (K4J 740, K4M 788 LPG, F4RT 774 and 776).
Replace the throttle valve if the **resistance** is not
– **2.2 Ω ± 0.2 Ω at 23 °C** for (K4M 766/812 and 813, F4R 770 and 771),
– **1.6 Ω ± 0.2 Ω at 23 °C** for (K4J 740, K4M 788 LPG, F4RT 774 and 776).
If the fault is still present, disconnect the battery and the injection computer.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF079 **CONTINUED 2**	

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

Injection computer, **connector A, track G2** → **track 3** of the pedal potentiometer

Injection computer, **connector A, track H2** → **track 4** of the pedal potentiometer

Injection computer, **connector A, track H3** → **track 5** of the pedal potentiometer

Injection computer, **connector A, track F2** → **track 2** of the pedal potentiometer

Injection computer, **connector A, track F3** → **track 1** of the pedal potentiometer

Injection computer, **connector A, track F4** → **track 6** of the pedal potentiometer

Repair if necessary.

If the throttle valve has been replaced, reinitialise the programming by running command RZ005: Programming.

If the fault is still present, deal with the other faults, then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

VDiag 4C only

DF080 PRESENT OR STORED	CAMSHAFT DEPHASER CIRCUIT CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Camshaft dephaser position error 2.DEF: Programming deviation 3.DEF: Programming inconsistency 4.DEF: Dephaser operation outside the permitted range of values 5.DEF: Non-compliance with emission control standards

NOTES	**Special note:** **K4M (non-LPG) engines only. Only in Vdiag 4C.**
	Priority when dealing with a number of faults: Apply the procedure for dealing with faults **DF084 Actuator relay control circuit** or **DF046 Battery voltage** first if they are present or stored. If faults **DF154 Engine speed sensor circuit, DF119 Camshaft sensor signal** and **DF080** are all present, ignore **DF080** and deal with the other 2 faults first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.

CO/CC.O/CC.1/ 1.DEF	***NOTES***	None

Check the cleanliness and condition of the camshaft dephaser connections.
Check the cleanliness and condition of the camshaft dephaser.
Repair if necessary.

If the fault is still present, check with ignition on for **+ 12 V** on **track 1** of the camshaft dephaser.
Check the **insulation, continuity and the absence of interference resistance** between the following connections:

Injection computer, connector **B, track M2** → **track 1** of the camshaft **dephaser**

Protection and Switching Unit, connector **CN, track 6** →

Repair if necessary.

Using the universal bornier, check for **insulation and continuity** on the following connection:

Injection computer, connector **B, track L3** → **track 2** of the camshaft **dephaser**

Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF080 **CONTINUED 1**	

2.DEF/3.DEF/ 4.DEF/5.DEF	***NOTES***	**Special note:** If the dephaser remains locked on maximum offset, there is a risk of rough idle, or stalling. Only in Vdiag 4C.

Check the cleanliness and condition of the camshaft sensor connectors.
Check the cleanliness and condition of the camshaft sensor.
Repair if necessary.

Check for the **+ 12 V feed** on **track 3** of the camshaft sensor connector with the ignition on.
Repair if necessary.

Disconnect the battery.
Disconnect the computer. Check the cleanliness and condition of the connections.
Using the universal bornier, check the **insulation and continuity** on the following connections:

Injection computer, connector **C, track E2**	→	**track 1** of the camshaft sensor
Injection computer, connector **C, track F1**	→	**track 2** of the camshaft sensor
Injection computer, connector **B, track M2**	→	**track 3** of the camshaft sensor
Protection and Switching Unit, connector **CN, track 6**	→	

Repair if necessary.

If the fault is still present, there is a fault on the camshaft sensor target (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF080 **CONTINUED 2**	

Check the cleanliness and condition of the camshaft sensor connectors.
Check the cleanliness and condition of the camshaft sensor.
Repair if necessary.

Check for the **+ 12 V feed** on **track 3** of the camshaft sensor connector with the ignition on.
Repair if necessary.

Disconnect the battery.
Disconnect the computer. Check the cleanliness and condition of the connections.
Using the universal bornier, check the **insulation and continuity** on the following connections:

Injection computer, connector **C, track E2**	→	**track 1** of the camshaft sensor
Injection computer, connector **C, track F1**	→	**track 2** of the camshaft sensor
Injection computer, connector **B, track M2**	→	**track 3** of the camshaft sensor
Protection and Switching Unit, connector **CN, track 6**		

Repair if necessary.

If the fault is still present, there is a fault on the camshaft sensor target (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF081 PRESENT OR STORED	CANISTER BLEED SOLENOID VALVE CIRCUIT CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Apply the procedure for dealing with faults **DF046 Battery voltage** or **DF084 Actuators relay control circuit** first if they are present or stored.

CO ***CC.1***	***NOTES***	**Special note:** – the valve remains **locked shut**; there is a smell of petrol,' – the **OBD warning light** is on.
CO.1		**Special note:** The valve remains **locked open**: bucking when driving, risk of stalling and restarting difficulty.

Check that **the** fuse **F8 (10A)** is in good condition and is working correctly.
Repair if necessary.

Check **the cleanliness** and **condition** of the fuel vapour absorber bleed solenoid valve connections.
Repair if necessary.

Measure the **resistance** of the petrol vapour absorber bleed solenoid valve.
Replace the bleed solenoid valve for the fuel vapour absorber if the **resistance** is not **26 Ω ± 4 Ω at 23 °C**.

Check for **+ 12 V feed** on **track 1** of the fuel vapour absorber bleed solenoid valve connector, with the ignition on.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Computer, connector **B, track M2** → **track 1** of the fuel vapour absorber bleed solenoid valve

Protection and Switching Unit, connector **CN, track 6** → **track 1** of the fuel vapour absorber bleed solenoid valve

Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF081 **CONTINUED**	

Disconnect the battery.
Disconnect the computer. Check the **cleanliness** and **condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connection:

Computer, connector **C, track E1** ⟶ **track 2** of the petrol vapour absorber bleed solenoid valve

Repair if necessary.

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF084 PRESENT OR STORED	ACTUATOR RELAY CONTROL CIRCUIT CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault appears when the engine is running. **Special note:** This relay supplies the following actuators: – the injectors – the petrol fuel vapour absorber, – the injection computer supply voltage on **track M2**, – the low-speed and high-speed fan assembly relays. **CO/CC.1:** Actuators no longer supplied: the vehicle stalls and restart impossible. **CC.0:** The actuators are supplied all the time: high electrical consumption when stationary. **Intermittent CO:** Intermittent relay cut-off: jerking while driving.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the injection computer connections.
Check the **cleanliness** and **condition** of the UCH computer connections.
Repair if necessary.

Disconnect **connector MN** of the Protection and Switching Unit.
Check **the cleanliness** and **condition** of its connections.
Using the Universal bornier, check the **insulation** and **continuity** on the following connection:

Injection computer, connector **B, track D4** ⟶ Protection and Switching Unit, **connector MN, track 5**

Repair if necessary.

If the fault is still present, carry out fault finding on the Protection and Switching Unit system (See **87G, Engine compartment connection unit**).

Contact the Techline.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF085 PRESENT OR STORED	FUEL PUMP RELAY CONTROL CIRCUIT CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present after the ignition is switched on or command **AC079 Actuator static test** is activated.
	Special note: – **OBD warning light** comes on. **CO/CC.1:** The vehicle stalls and restart impossible **CC.0:** Risk of fire in the event of an accident: petrol leak. **Intermittent CO:** Intermittent relay cut-off: risk of draining the battery.

If the relay does not click:

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the injection computer connections.
Check **the cleanliness** and **condition** of the petrol pump relay connector and its connections.
Repair if necessary.

Disconnect **connector MT1** of the Protection and Switching Unit.
Check **the cleanliness** and **condition** of its connections.
Using the Universal bornier, check the **insulation** and **continuity** on the following connection:

Computer, connector **C, track D1** ⟶ Protection and Switching Unit, **connector MT1, track 5**

Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF085 **CONTINUED**	

IF THE PUMP DOES NOT OPERATE

Disconnect **connector CN** of the Protection and Switching Unit.
Check **the cleanliness** and **condition** of its connections.
Using command **AC079 Actuator static test**, check for **+ 12 V** on **track 3** of the fuel pump.
If there is not **+ 12 V**, check (using the universal bornier) **the insulation** and the **continuity** on the following connection:

Protection and Switching Unit, **connector CN, track 1** → **Track 3 fuel pump**

Repair if necessary.

If the fault is still present, **carry out fault finding on the Protection and Switching Unit system** (see **87G, Engine compartment connection unit**).

If the fault is still present, contact the Techline.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF088 PRESENT OR STORED	PINKING SENSOR CIRCUIT 1.DEF : Abnormal voltage 2.DEF : Non-compliance with emission control standards

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present in a warm engine road test at an engine speed of above **1500 rpm**.
	Special note: The wiring harness connecting the injection computer to the pinking sensor is "shielded", from this a short circuit to **+ 12 V** is improbable.

Check the **cleanliness and condition** of the pinking sensor and its connections.
Check the pinking sensor **tightness**.

Disconnect the battery and the injection computer.
Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation and continuity** of the following connections:

Computer, connector **B, track B3** → **track 2** of the pinking sensor

Computer, connector **B, track B4** → **track 1** of the pinking sensor

Computer, connector **B, track B2** → Pinking sensor **shielding**

Repair if necessary.

Check that the **correct** fuel is in the tank.
Check the **conformity** of the spark plugs.

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF089 PRESENT OR STORED	INLET MANIFOLD PRESSURE SENSOR CIRCUIT 1.DEF: Signal incoherence 2.DEF: Abnormal voltage 3.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Deal with fault **DF011 Sensor feed voltage No. 1** as a priority if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault appears after: – the ignition is switched off and back on again, then wait **10 seconds** with the engine running at idling speed.
	Special note: – **OBD fault warning light** and **level 1 fault warning light** illuminated, – **type 5** defect mode: ESP and the cruise control/speed limiter are deactivated and the vehicle stalls at idle speed.

Check the **cleanliness and condition** of the manifold pressure sensor and its connections.
Repair if necessary.

If the fault is still present, check for **+ 5 V** on **track H2** and for **earth** on **track H4** of connector **B** of the injection computer.
Contact the Techline if it is not correct.

Disconnect the battery and the injection computer.
Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation and continuity** of the following connections:

Injection computer, connector **B, track H2** → **track C** inlet manifold pressure sensor

Injection computer, connector **B, track H3** → **track B** inlet manifold pressure sensor

Injection computer, connector **B, track H4** → **track A** inlet manifold pressure sensor

Repair if necessary.

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF091 PRESENT OR STORED	VEHICLE SPEED SIGNAL 1.DEF: Multiplex network 2.DEF: Non-compliance with emission control standards

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault appears when the engine is running. **Special note:** – **OBD warning light** comes on.

Run a multiplex network test (see **88B, Multiplex**).
Disconnect the battery and the injection computer. Check the **cleanliness** and **condition** of the battery and the injection computer connections. Repair if necessary.
If the fault is still present, carry out fault finding on the **ABS - ESP** system (see **38C, Anti-lock braking system**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF092 PRESENT OR STORED	UPSTREAM OXYGEN SENSOR CIRCUIT CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Component in bad condition 2.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** If the following faults: **DF011 Sensor supply voltage no. 1,** **DF046 Battery voltage,** **DF084 Actuator relay control circuit,** are present or stored, deal with these first.
	Conditions for applying the fault finding procedure to stored faults: If the fault is declared as present after the engine has been running for at least **5 minutes**.
	Special note: – **OBD warning light** comes on.

Check **the cleanliness** and **condition** of the upstream oxygen sensor connections.
Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **C, track C1** → **track D** of the upstream oxygen sensor

Injection computer, connector **C, track B1** → **track C** of the upstream oxygen sensor

Repair if necessary.

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF093 PRESENT OR STORED	DOWNSTREAM OXYGEN SENSOR CIRCUIT CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** If the following faults: **DF011 Sensor supply voltage no. 1,** **DF046 Battery voltage,** **DF601 Upstream oxygen sensor heating power circuit,** **DF084 Actuator relay control circuit,** are present or stored, deal with these first.
	Conditions for applying the fault finding procedure to stored faults: The fault appears after: – a road test driving smoothly after the fan assembly has been running, and **ET056 Double richness loop** is **ACTIVE**, – a smooth driving road test after the fan assembly has been in operation, immediately followed by a road test on a slope at no load (injection cut-off in the deceleration phase).
	Special note: – **OBD warning light** comes on.

Check **the cleanliness** and **condition** of the downstream oxygen sensor connections.
Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Using the universal bornier, check the **insulation** and **continuity** on the following connections:

Computer, **connector C, track B2** → **track D** of the downstream oxygen sensor

Computer, **connector C, track A2** → **track C** of the downstream oxygen sensor

Repair if necessary.

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF095 PRESENT OR STORED	THROTTLE POTENTIOMETER CIRCUIT GANG 1 CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Component in bad condition 2.DEF: Signal incoherence

WARNING
Never drive the vehicle without having confirmed that no faults involving the throttle valve are present.

NOTES	**Priority when dealing with a number of faults:** Deal with fault **DF012 Sensor feed voltage No. 2** as a priority if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault appears after a change in the engine speed.
	Special note: – **level 1 fault warning light** illuminated. – throttle valve defect mode **types 1, 2 and 4**.

Check the **cleanliness** of the throttle valve and the **correct rotation** of the throttle (no resistance point).
Check **the cleanliness** and **condition** of the throttle valve connections.
Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, **connector B, track G4** →
- **track 6** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771)
- **track 1** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Injection computer, **connector B, track G3** →
- **track 1** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771)
- **track 2** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Injection computer, **connector B, track G2** →
- **track 2** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771)
- **track 5** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Repair if necessary.

If the throttle valve has been replaced, reinitialise the programming by running command RZ005: Programming.

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF096 PRESENT OR STORED	THROTTLE POTENTIOMETER CIRCUIT GANG 2 CO.1 : Open circuit or short circuit to + 12 V CC.0 : Short circuit to earth

WARNING
Never drive the vehicle without having confirmed that no faults involving the throttle valve are present.

NOTES	**Priority when dealing with a number of faults:** Deal with fault **DF012 Sensor feed voltage No. 2** as a priority if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault appears after a change in the engine speed.
	Special note: – **level 1 fault warning light** illuminated. – throttle valve defect mode **types 1, 2 and 4**.

Check the **cleanliness** of the throttle valve and the **correct rotation** of the throttle (no resistance point).
Check **the cleanliness** and **condition** of the throttle valve connections.
Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, **connector B, Track D3** →
- **track 4** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771)
- **track 6** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Injection computer, **connector B, track G2** →
- **track 2** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771)
- **track 5** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Injection computer, **connector B, track G4** →
- **track 6** of the motorised throttle (K4M 766/812 and 813, F4R 770 and 771)
- **track 1** of the motorised throttle (K4J 740, K4M 788 LPG, F4RT 774 and 776)

Repair if necessary.

If the throttle valve has been replaced, reinitialise the programming by running command RZ005: Programming.

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF099 PRESENT OR STORED	AUTOMATIC TRANSMISSION OR SEQUENTIAL GEARBOX CONNECTION VIA THE MULTIPLEX NETWORK 1.DEF: Signal incoherence 2.DEF: Multiplex line connection fault 3.DEF: Automatic gearbox fault detected 4.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Apply the procedure for dealing with faults **DF046 Battery voltage** or **DF084 Actuators relay control circuit** first if they are present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault appears when the engine is running.

Run a multiplex network test (See **88B, Multiplex**).
If the fault is still present, run fault finding on the **Automatic gearbox** system (see **23A, Automatic gearbox**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF101 PRESENT OR STORED	MULTIPLEX ELECTRONIC STABILITY PROGRAM LINK 1.DEF: Multiplex line connection fault

NOTES	None

Run a multiplex network test (see **88B, Multiplex**).
If the fault is still present, carry out fault finding on the **ABS - ESP** system (see **38C, Anti-lock braking system**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF102 PRESENT OR STORED	ALTERNATOR POWER SIGNAL AVAILABLE 1.DEF: Multiplex network

NOTES	**Special note:** – Absent signal or invalid value.

Run a multiplex network test (see **88B, Multiplex**).

Disconnect **connector CT1** of the Protection and Switching Unit.
Check **the cleanliness** and **condition** of its connections.
If the fault is still present, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **A, track D1**	→	connector **CT1, track 4**, of the Protection and Switching Unit
Protection and Switching Unit connector **MT1 track 8**	→	**track 1** of the Alternator

Repair if necessary.

If the fault is still present, contact the Techline.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF105 PRESENT OR STORED	CRUISE CONTROL/SPEED LIMITER ON/OFF CIRCUIT 1.DEF: Cruise control/Speed limiter ON/OFF button inconsistency

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present after a road test using the cruise control then the speed limiter function.

Check the **cleanliness and condition** of the cruise control/speed limiter On/Off switch and its connections.
Repair if necessary.

Check for the **+ 12 V feed** on **track A2** of the cruise control or speed limiter selector switch connector with the ignition on.
Repair if necessary.

Disconnect the battery. Disconnect the computer. Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation and continuity** of the following connections:

Injection computer, connector **A, track A2** → **track A3** of the cruise control or speed limiter on/off switch

Injection computer, connector **A, track C3** → **track B1** of the cruise control or speed limiter on/off switch

Repair if necessary.

If the fault is still present, deal with the other faults, then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF106 PRESENT OR STORED	CRUISE CONTROL/SPEED LIMITER SELECTOR SWITCH ON STEERING WHEEL 1.DEF: No signal

IMPORTANT
To remove or check the cruise control/speed limiter control switches you need to remove the airbag (See **MR 364 or 370 Mechanics, 88C, Airbag and pretensioners**).

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present after a road test using the cruise control then the speed limiter function.

Check **the cleanliness and condition** of the incrementing switches at the steering wheel and their connections.
Repair if necessary.

Disconnect the battery.
Disconnect the computer. Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation and continuity** of the following connections:

Injection computer, connector **A, track D2** → **track 2** of the steering wheel control switch

Injection computer, connector **A, track D3** → **track 1** of the steering wheel control switch

Repair if necessary.

If the fault is still present, deal with the other faults, then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF109 PRESENT OR STORED	LOW FUEL LEVEL MISFIRING 1.DEF: Destructive misfiring 2.DEF: Polluting misfiring 3.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** – fuel supply circuit: **DF085 Fuel pump relay control circuit,** **DF026 Injector control circuit cylinder 1,** **DF027 Injector control circuit cylinder 2,** **DF028 Injector control circuit cylinder 3,** **DF029 Injector control circuit cylinder 4** – combustion misfiring: **DF059 Combustion misfire in cylinder 1,** **DF060 Combustion misfire in cylinder 2,** **DF061 Combustion misfire in cylinder 3,** **DF062 Combustion misfire in cylinder 4.**
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after starting the engine and under the following conditions: – there must be no further electrical faults, – programming must be carried out. – warm engine (coolant temperature **75 ˚C** minimum), – engine running with electrical consumers on for **15 minutes**.
	Special note: – **OBD warning light** comes on.

Check the presence and conformity of fuel in the tank.
If there is no present or stored combustion misfire fault, the misfire was caused by the low fuel level. Clear fault **DF109**.

AFTER REPAIR	Ensure that all the faults have been dealt with. Do not clear the programming. To check that the system has been repaired correctly: – there must be no further electrical faults, – programming has been carried out, – warm engine (minimum 75 ˚C), – running at idle speed with all electrical consumers drawing power for 15 minutes. If the fault reappears, continue the fault finding procedure.

DF119 PRESENT OR STORED	CAMSHAFT SENSOR SIGNAL 1.DEF : Camshaft tooth event 2.DEF : Measurement of the offset outside permitted range of values 3.DEF : Tooth lost 4.DEF : Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Apply the procedure for dealing with faults **DF046 Battery voltage** or **DF084 Actuators relay control circuit** first if they are present or stored. If faults **DF119, DF154 Flywheel signal sensor circuit** and **DF080 Camshaft dephaser circuit** are present, ignore **DF080** and deal with the other 2 faults first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.
	Special note: **– K4M only.** – possibility of a slight lowering in performance

Check the **cleanliness and condition** of the camshaft sensor connectors.
Check the **cleanliness and condition** of the camshaft sensor.
Repair if necessary.

If the fault is still present, check with the ignition on for **+ 12 V** on **track 3** of the camshaft sensor.
Check the **insulation, continuity and the absence of interference resistance** between the following connections:

Injection computer, connector **B, track M2** → **track 3** of the camshaft sensor

Protection and Switching Unit, connector **CN, track 2** →

Repair if necessary.

Disconnect the battery.
Disconnect the computer. Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation and continuity** of the following connections:

Computer, connector **C, track E2** → **track 1** of the camshaft sensor

Computer, connector **C, track F1** → **track 2** of the camshaft sensor

Repair if necessary.

If the fault is still present, there is a fault with the camshaft sensor target.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF126 PRESENT OR STORED	PASSENGER COMPARTMENT HEATING RESISTOR 1.DEF: Multiplex network

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present when the ignition is switched on.

Run a multiplex network test (see **88B, Multiplex**).
If the fault is still present, carry out fault finding on the UCH (see **87B, Passenger compartment connection unit**).

AFTER REPAIR	Deal with any faults detected by the diagnostic tool. Clear the computer memory. Carry out a road test followed by another check with the diagnostic tool.

DF138 PRESENT OR STORED	CLUTCH PEDAL CIRCUIT 1.DEF: Component in bad condition

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present with the engine running and following a check on the number of times the clutch pedal is depressed in relation to the number of gear changes calculated by the computer.
	Special note: – engine speed surges when changing gear, – the acquisition is made if the vehicle is not fitted with an automatic transmission, – in the event of a fault, before replacing any component, check using the **diagnostic tool** that the clutch contact is operational and that the recommended clutch pedal clearance is still valid. – In the event of an **open circuit** or **short circuit** to **+ 12 V**, the clutch pedal is depressed all the time which makes it impossible to select a cruising speed in cruise control mode. The speed limiter remains operational in defect mode (inaccurate speed restriction), – If **short circuit** to **earth**, status **ET405 Clutch pedal switch** remains **INACTIVE**.

Check **the cleanliness, condition and fitting** of the clutch pedal switch.
Repair if necessary.

If the fault is still present, disconnect the switch. Check that when the clutch pedal is depressed, the switch is closed, and when the clutch pedal is released, the switch is open.
Replace the switch if necessary.

If the fault is still present, manipulate the harness to see if the status changes.
Look for any damage to the wiring harness, and check the **condition** and **connection** of the injection computer and clutch pedal switch connectors.
Repair if necessary.

If the fault is still present, check the **earth** on **track 2** of the switch.
If the **earth** is not present on **track 2**, check **for insulation, continuity and the absence of interference resistance** on the following connection:

earth ⟶ **track 1** Clutch pedal switch

Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF138 **CONTINUED**	

If the fault is still present, check **for insulation, continuity and the absence of interference resistance** between the following connection:

Injection computer connector **A, track C4** ⟶ **track 2** Clutch pedal switch

Repair if necessary.

If the fault is still present, deal with the other faults, then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF154 PRESENT OR STORED	FLYWHEEL SIGNAL SENSOR CIRCUIT 1.DEF: Abnormal voltage 2.DEF: Tooth lost 3.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** If faults **DF154, DF119 Camshaft sensor circuit** and **DF080 Camshaft dephaser circuit** are present, ignore **DF080** and deal with the other 2 faults first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the starter motor has been running for **10 seconds** or at an engine speed above **600 rpm**.
	Special note: – **OBD warning light** illuminated, – In the event of flywheel signal loss, the injection and ignition are cut off: the vehicle stalls and cannot be restarted.

1.DEF	***NOTES***	None

Check the **cleanliness, condition and fitting** of the flywheel.
Repair if necessary.

If the flywheel has been replaced or removed, the flywheel target has to be reinitialised, then reprogrammed.

Programming reinitialisation:
Use command **RZ005: Programming**.
Carrying out the flywheel target programming:
– Decelerate a first time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **3500** and **3000 rpm**, in 3rd gear for a manual gearbox and 2nd for automatic transmission, for at least 5 seconds.
– Decelerate a second time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **2400** and **2000 rpm** for K4 engines and between **1800 and 1400 rpm** for F4R engines, in 3rd gear for a manual gearbox and 2nd for automatic transmission, for at least 5 seconds.
When the work is completed, check that status **ET089 Flywheel target programming** is **COMPLETED**.
(*This is the moment when, during deceleration with no load, the engine drops to idling speed and recovers torque).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF154 **CONTINUED**	

2.DEF	***NOTES***	None

Check that the engine speed sensor is correctly **fitted** and **positioned** (see **MR 364 or 370 Mechanics, 17B, Petrol injection, engine speed and position sensor**).

Check **the cleanliness and condition** of the engine speed sensor.
Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness and condition** of the connections.
Using the universal bornier, check the **insulation and continuity** on the following connections:

Computer, **connector B, track E4** → **track 2 or B** of the engine speed sensor

Computer, **connector B, track F3** → **track 1 or A** of the engine speed sensor

Repair if necessary.

Check the **resistance** of the engine speed sensor between **tracks 1** and **2**:
Replace the engine speed sensor if the **resistance** is not between **235 ± 60 Ω at 20 °C**.

If the engine speed sensor has been replaced, the flywheel target has to be reinitialised, then reprogrammed.

Programming reinitialisation:
Use command **RZ005: Programming**.
Carrying out the flywheel target programming:
– Decelerate a first time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **3500** and **3000 rpm**, in 3rd gear for a manual gearbox and 2nd for automatic transmission, for at least 5 seconds.
– Decelerate a second time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **2400** and **2000 rpm** for K4 engines and between **1800 and 1400 rpm** for F4R engines, in 3rd gear for a manual gearbox and 2nd for automatic transmission, for at least 5 seconds.
When the work is completed, check that status **ET089 Flywheel target programming** is **COMPLETED**.
(*This is the moment when, during deceleration with no load, the engine drops to idling speed and recovers torque).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF196 PRESENT OR STORED	PEDAL SENSOR CIRCUIT GANG 1 CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Inconsistency 2.DEF: Component in bad condition

NOTES	**Priority when dealing with a number of faults:** Deal with fault **DF012 Sensor feed no. 2 voltage** first, if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault appears after the accelerator pedal goes from no load to full load.
	Special note: – **severity 1 fault warning light** illuminated. **C0/CO.0/CC.1:** defect mode **type 4**: speed limiter at **54 mph (90 km/h)** and loss of power during acceleration (pedal feels soft). **1.DEF:** defect mode **types 3 and 4**: regulation of pedal's engine or vehicle speed setpoint, speed limiter at **54 mph (90 km/h)** and loss of power during acceleration (pedal feels soft).

Check that the pedal mechanism has not seized.

Check the **cleanliness** and **condition** of the pedal potentiometer connections.
Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Repair if necessary.

Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **A, track H3** → **track 5** of the pedal potentiometer gang 1

Injection computer, connector **A, track G2** → **track 3** of the pedal potentiometer gang 1

Injection computer, connector **A, track H2** → **track 4** of the pedal potentiometer gang 1

Repair if necessary.

Measure the pedal sensor **resistance** track 1 between **tracks 4** and **2**.
Replace the accelerator potentiometer if the **resistance** is not **1.7 kΩ ± 0.9 kΩ**.
If necessary replace the sensor.

If the fault is still present, contact the Techline.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF198 PRESENT OR STORED	PEDAL SENSOR CIRCUIT GANG 2 CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V

NOTES	**Priority when dealing with a number of faults:** Deal with fault **DF011 Sensor supply voltage no. 1** first if it is present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the accelerator pedal goes from no load to full load.
	Special note: – **level 1 or 2 fault warning light** lit, – defect mode **types 3 and 4**: regulation of pedal's engine or vehicle speed setpoint, speed limiter at **54 mph (90 km/h)** and loss of power during acceleration (pedal feels soft).

Check that the pedal mechanism has not seized.

Check the **cleanliness** and **condition** of the pedal potentiometer connections.
Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Repair if necessary.

Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **A, track F4** → **track 6** of the pedal potentiometer gang 2

Injection computer, connector **A, track F2** → **track 2** of the pedal potentiometer gang 2

Injection computer, **connector A, track F3** → **track 1** of the pedal potentiometer gang 2

Repair if necessary.

Measure the pedal sensor **resistance** gang 2 between **tracks 6** and **1**.
Replace the accelerator potentiometer if the **resistance** is not approximately **2.8 kΩ ± 2.05 kΩ**.
If necessary replace the sensor.

If the fault is still present, contact the Techline.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF228 PRESENT OR STORED	BRAKE SIGNALS 1.DEF: Component in bad condition 2.DEF: Non-compliance with emission control standards

NOTES	**Special note:** – cruise control and speed limiter deactivated.

Check:
– the consistency of statuses **ET704 Brake switch no. 1 and ET705 Brake switch no. 2** in changing to **ACTIVE/ INACTIVE**,
– **the condition and cleanliness** of the brake lights switch.
Disconnect the battery and the injection computer, check **the condition and cleanliness** of the connections.
Check **the continuity and insulation** of the following connection:

Injection computer connector **A, track E4** ⟶ **track 3** of the brake light switch

Repair if necessary.

Run a multiplex network test (see **88B, Multiplex**).

If the fault is still present, carry out fault finding on the **ABS - ESP** system (see **38C, Anti-lock braking system**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF232 PRESENT OR STORED	REFRIGERANT PRESSURE SENSOR CIRCUIT 1.DEF: Voltage outside tolerances

NOTES	**Priority when dealing with a number of faults:** Deal with **DF012 Sensor feed voltage No. 2** as a priority if it is present or stored.

Check **cleanliness** and **condition** of the refrigerant pressure sensor and its connections.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Using the universal bornier, check the **insulation** and **continuity** on the following connections:

Injection computer, connector **B, track J2** → **track B** of the refrigerant pressure sensor

Injection computer, connector **B, track J3** → **track C** of the refrigerant pressure sensor

Injection computer, connector **B, track K2** → **track A** of the Refrigerant pressure sensor

Repair if necessary.

If the fault is still present, deal with the other faults, then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF361 PRESENT OR STORED	CYLINDER 1 - 4 IGNITION COIL CIRCUIT CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Deal with faults **DF046 Battery voltage, DF084 Actuator relay control circuit** or **DF085 Fuel pump relay control circuit** first whether they are present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running for **4 seconds** at **600 rpm** or **0.4 seconds** at **6000 rpm**.
	Special note: – **OBD warning light** illuminated, – **level 1 fault warning light** on. **CC.0:** The coil is continuously supplied, risk of destruction **CC.1:** The coil is not supplied, injection cut-off on cylinders 1 and 4, destruction of the catalytic converter possible and prevention of On board diagnostics.

Disconnect the connector from the pencil coil of cylinders 1 and 4.
Check the cleanliness and condition of the pencil coils and their connections.
Repair if necessary.

Measure the **primary** and **secondary** resistance of the cylinder 1 pencil coil.
Replace the cylinder 1 coil if the primary resistance is not **540 mΩ ± 30 m Ω** or the secondary resistance is not **10.7 kΩ ± 1.6. kΩ (K4 engines)**.
Replace the cylinder 1 coil if the primary resistance is not **520 mΩ ± 50 m Ω** or the secondary resistance is not **6.7 kΩ ± 0.67. kΩ (F4 engines)**.

Switch off the ignition and disconnect the injection computer.
Check the cleanliness and condition of the connections.
Repair if necessary.

Using the universal bornier, check the **insulation and continuity** on the following connections:

Injection computer, connector **C, track M4** → **track 2** of coil 1

Coil 4 **track 2** → **track 1** of coil 1

If the fault is still present, replace the faulty pencil coil.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF361 **CONTINUED**	

Check for the **+ 12 V feed** on **track 1** of the cylinder 4 pencil coil connector with the ignition on.
If **+ 12 V** is not present:
Switch off the ignition,
– disconnect the connector **MN** in the Protection and Switching Unit,
– check the cleanliness and condition of the connections,
– using the Universal bornier, check the **continuity** on the following connection:

Protection and Switching Unit **connector MN, track 9** → **track 1** of the pencil coil for cylinder 4

Reconnect the Protection and Switching Unit connector.
With the ignition on, if the **+ 12 V** feed is still not present on the cylinder 4 coil connector, there is a fault with the Protection and Switching Unit.
Contact the Techline.

Check the operation of the fuel pump relay using command **AC079 Actuator static test**.
Deal with fault **DF085 Fuel pump relay control circuit** if it is present or stored after the command is activated.

If the fault is still present, replace the faulty pencil coil.
If the fault is still present, deal with the other faults then go to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF362 PRESENT OR STORED	CYLINDER 2 - 3 IGNITION COIL CIRCUIT CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Deal with faults **DF046 Battery voltage, DF084 Actuator relay control circuit** or **DF085 Fuel pump relay control circuit** first whether they are present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running for **4 seconds** at **600 rpm** or **0.4 seconds** at **6000 rpm**.
	Special note: – **OBD warning light** illuminated, – **level 1 fault warning light** illuminated. **CC.0:** The coil is continuously supplied, risk of destruction. **CC.1:** The coil is not supplied, injection cut-off on cylinders 2 and 3, destruction of the catalytic converter possible and prevention of On board diagnostics.

Disconnect the connector from the pencil coil of cylinders 2 and 3.
Check the cleanliness and condition of the pencil coils and their connections.
Repair if necessary.

Measure the **primary** and **secondary** resistance of the cylinder 2 pencil coil.
Replace the cylinder 2 coil if the primary resistance is not **540 mΩ ± 30 m Ω** or the secondary resistance is not **10.7 kΩ ± 1.6. kΩ (K4 engines)**.
Replace the cylinder 2 coil if the primary resistance is not **520 mΩ ± 50 m Ω** or the secondary resistance is not **6.7 kΩ ± 0.67. kΩ (F4 engines)**.

Switch off the ignition and disconnect the injection computer.
Check the cleanliness and condition of the connections.
Repair if necessary.

Using the universal bornier, check the **insulation and continuity** on the following connections:

Computer, connector **C, track M3** → **track 2** of coil 2

Coil 3 **track 2** → **track 1** of coil 2

If the fault is still present, replace the faulty pencil coil.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF362 **CONTINUED**	

Check for the **+ 12 V feed** on **track 1** of the cylinder 3 pencil coil connector with the ignition on.
If **+ 12 V** is not present:
Switch off the ignition,
– disconnect the **MN connector** in the Protection and Switching Unit,
– check the cleanliness and condition of the connections,
– using the universal bornier, check for **continuity** on the following connection:

Protection and Switching Unit **connector MN, track 9** → **track 1** of the cylinder 3 pencil coil

Reconnect the Protection and Switching Unit connector.
With the ignition on, if the **+ 12 V** is still not present on the cylinder 3 coil connector, there is a fault with the Protection and Switching Unit.
Contact the Techline.

Check the operation of the fuel pump relay using command **AC079 Actuator static test**.
Deal with fault **DF085 Fuel pump relay control circuit** if it is present or stored after the command is activated.

If the fault is still present, replace the faulty pencil coil.
If the fault is still present, deal with the other faults then go to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF363 PRESENT OR STORED	CAMSHAFT DEPHASER C0 : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF : Dephaser mechanically jammed 2.DEF : Dephaser operation outside the permitted range of values 3.DEF : Non-compliance with emission control standards

NOTES	**Special feature: Vdiag 54 only.**
	Priority when dealing with a number of faults: Deal first with faults **DF084 Actuator relay control circuit** or **DF046 Battery voltage** if they are present or stored. If faults **DF154 Flywheel signal sensor circuit, DF119 Camshaft sensor signal** and **DF363** are all present, disregard **DF363** and deal first with the other 2 faults.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test.

C0/CC.0/CC.1	***NOTES***	**Special note:** If the dephaser jams in the maximum dephasing position, there is a risk of rough idling, or even stalling.

Check the cleanliness and condition of the camshaft dephaser connections.
Repair if necessary.

If the fault is still present, check with ignition on for **+ 12 V** on **track 1** of the camshaft dephaser.
Check the **insulation, continuity and the absence of interference resistance** between the following connections:

Injection computer, connector **B**, brown, **track M2** → **track 1** of the camshaft dephaser.

Repair if necessary.

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

Injection computer, connector **B**, brown, **track L3** → **track 2** of the camshaft dephaser.

Repair if necessary.

If the fault is still present, check the cleanliness and condition of the camshaft dephaser.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF363 CONTINUED	

1.DEF/2.DEF	***NOTES***	**Special note:** If the dephaser jams in the maximum dephasing position, there is a risk of rough idling, or even stalling.

Check the cleanliness and condition of the camshaft dephaser connections. Repair if necessary.
If the fault is still present, check with ignition on for **+ 12 V** on **track 1** of the camshaft dephaser. Check the **insulation, continuity and the absence of interference resistance** between the following connections:
Injection computer, connector **B**, brown, **track M2** ⟶ **track 1** of the camshaft dephaser.
Repair if necessary.
Check **the continuity and insulation** of the following connection:
Injection computer, connector **B**, brown, **track L3** ⟶ **track 2** of the camshaft dephaser. Repair if necessary.
If the fault is still present, apply **TEST 3 Camshaft dephaser solenoid valve.**

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF377 PRESENT OR STORED	PETROL CONNECTION ↔ LPG 1.DEF: Multiplex line connection fault 2.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** If fault **DF046 Battery voltage** is present or stored, deal with this first.
	Conditions for applying the fault finding procedure to stored faults: The fault appears when the engine is running.

Run a multiplex network test (See **88B, Multiplex**).
If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF394 PRESENT OR STORED	CATALYTIC CONVERTER OPERATING FAULT 1.DEF: Component in bad condition 2.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Deal with the other faults first. There must be no other injection system faults, either present or stored. – combustion misfiring: **DF059 Combustion misfire in cylinder 1,** **DF060 Combustion misfire in cylinder 2,** **DF061 Combustion misfire in cylinder 3,** **DF062 Combustion misfire in cylinder 4** (**1.DEF** or **2.DEF**).
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – programming done, – warm engine (coolant temperature **75 °C** minimum), – engine running at idle speed with all electrical consumers on for approximately **15 minutes**.
	Special note: – **OBD warning light** comes on.

Check **the appearance and condition** of the catalytic converter.
Check that there is no air leaking in, heat shock, misfires, consumption of coolant or oil.

If the fault is still present, contact the Techline.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF398 PRESENT OR STORED	FUEL CIRCUIT OPERATING FAULT CO : Open circuit 1.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** If faults **DF085 Fuel pump relay control circuit, DF549 Canister bleed circuit** and injector faults **DF026 Cylinder 1 injector control circuit,** **DF027 Cylinder 2 injector control circuit;** **DF028 Cylinder 3 injector control circuit,** **DF029 Injector control circuit cylinder 4**, are present or stored, deal with these first.
	Special note: – **OBD warning light** illuminated, – a fuel supply system fault can lead to starting difficulties, and loss of comfort and power.

Check **the cleanliness, condition and fitting** of the petrol vapour absorber.
Check the **connections and operation** of the petrol pump.
Check the **cleanliness, condition and fitting** of the injectors and their sealing.
Repair if necessary.

Check:
– that the fuel is present and correct,
– the tank vent,
– that there are no leaks on the petrol circuit (from the tank to the injectors),
– that there are no kinked hoses (especially after dismantling),
– the fuel flow rate and pressure.

Repair the faulty component(s) if necessary (see **MR 364 or 370 Mechanics, 13A, Fuel supply**).

If the fault is still present, deal with the other faults then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF404 PRESENT OR STORED	AUTOMATIC TRANSMISSION OR SEQUENTIAL GEARBOX CAN CONNECTION 1.DEF : Incorrect gear 2.DEF : Incorrect torque signal from automatic gearbox computer 3.DEF : No multiplex frames or invalid values (fault on computer transmitting signal or CAN connection)

NOTES	**Priority when dealing with a number of faults:** If fault **DF046 Battery voltage** is present or stored, deal with this first.
	Conditions for applying the fault finding procedure to stored faults: The fault appears when the engine is running.

Run a multiplex network test (See **88B, Multiplex**).
If the fault is still present, run fault finding on the **Automatic gearbox** system (see **23A, Automatic gearbox**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF410 PRESENT OR STORED	INSTRUMENT PANEL CONNECTION 1.DEF: Multiplex line connection fault

NOTES	**Special note:** – Cruise control/Speed limiter deactivated. – **OBD warning light** not illuminated when ignition switched on.

Run a multiplex network test (see **88B, Multiplex**).

If the fault is still present, carry out fault finding on the **Instrument panel** system (see **83A, Instrument panel**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF436 PRESENT OR STORED	DETECTION OF ENGINE MISFIRING 1.DEF: Destructive misfiring 2.DEF: Pollutant misfiring 3.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** – ignition: **DF361 Ignition coil circuit cylinders 1-4,** **DF362 Ignition coil circuit cylinders 2-3.** – fuel supply circuit: **DF026 Cylinder 1 injector control circuit,** **DF027 Cylinder 2 injector control circuit;** **DF028 Cylinder 3 injector control circuit,** **DF029 Cylinder 4 injector control circuit,** **DF085 Fuel pump relay control circuit.** – flywheel signal: **DF154 Flywheel signal sensor circuit,** **DF457 Engine flywheel target** – cylinder combustion misfires: **DF059 Combustion misfire in cylinder 1,** **DF060 Combustion misfire in cylinder 2,** **DF061 Combustion misfire in cylinder 3,** **DF062 Combustion misfire in cylinder 4.**
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – programming must be carried out. – warm engine (minimum 75 °C), – engine running at idle speed with all electrical consumers on for approximately 15 minutes.
	Special note: – catalytic converter misfire: **OBD warning light** flashes when the fault is present then is continuously lit, – pollutant combustion misfire: **OBD warning light** lit continuously. – engine unstable, loss of power and vibrations.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF436 **CONTINUED**	

Check the injectors.
Check the condition and conformity of the spark plugs.
Check the ignition pencil coils.
Check that the fuel is correct.

If the fault is still present, carry out the following checks:

- check the flywheel sensor,
- check the condition and cleanliness of the flywheel,
- check the flywheel sensor mounting,
- check the sensor/flywheel air gap,
- check the cylinder compressions,
- check the complete fuel supply system (see **Workshop Repair Manual 364 or 370 Mechanics, 13A, Fuel supply**),
- check the complete ignition system (see **MR 364 or 370 Mechanics, 17A, Ignition**),
- check the hydraulic tappets if there is camshaft noise (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**).

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF455 PRESENT OR STORED	LOW FUEL LEVEL SIGNAL 1.DEF: Multiplex network 2.DEF: Non-compliance with emission control standards

NOTES	None

Run a multiplex network test (see **88B, Multiplex**).
If the fault is still present, carry out fault finding on the **Instrument panel** system (see **83A, Instrument panel**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF457 PRESENT OR STORED	FLYWHEEL TARGET 1.DEF: Component in bad condition 2.DEF: Non-compliance with emission control standards

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault appears when the engine is running. **Special note:** – **OBD warning light** comes on.

Check **the cleanliness** and **condition** of the flywheel.
Repair or replace the engine flywheel if necessary.

If the flywheel has been replaced or removed, the flywheel ring has to be reinitialised, then reprogrammed.

Reinitialise programming:
Use command **RZ005: Programming**.
Carrying out the flywheel target programming:
– Decelerate a first time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **3500** and **3000 rpm**, in 3rd gear for a manual gearbox and 2nd for automatic transmission, for at least 5 seconds.
– Decelerate a second time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **2400** and **2000 rpm** for K4 engines and between **1800 and 1400 rpm** for F4R engines**,** in 3rd gear for a manual gearbox and 2nd for automatic gearbox for at least 5 seconds.
When the work is completed, check that status **ET089 Flywheel target programming** is **COMPLETED**.
(*This is the moment when, during deceleration with no load, the engine drops to idling speed and recovers torque).

If the fault is still present, contact the Techline.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF570 PRESENT OR STORED	COOLANT PUMP RELAY CO : Open circuit CO.0 : Short circuit to earth CC.1 : Short circuit to + 12 V

NOTES	**Conditions for applying the fault finding procedure to stored faults:** The fault is declared present when the engine is running or on command **AC195 Electric coolant pump**.

Check the **cleanliness**, **condition** and **fitting** of the coolant pump.
Top up the coolant if necessary.

If the fault is still present, manipulate the harness to see if the status changes.
Look for any harness damage, and check **the condition and connection points** of the injection computer and the coolant pump connectors.
Repair if necessary.

If the fault is still present, check for **+ 12 V** on **track 2** of the coolant pump.
If **+ 12 V** is not present on **track 2** of the coolant pump, check the following connection for **insulation, continuity and the absence of interference resistance**:

Coolant pump **track 2** ⟶ **track 6, connector CN**, of the Protection and Switching Unit

Repair if necessary.

If the fault is still present, check the **insulation, continuity and the absence of interference resistance** on the following connection:

Computer, connector **B, track L4** ⟶ **track 1** of the coolant pump

Repair if necessary.

If the fault is still present, check that the **resistance** between **tracks 1 and 2** of the coolant pump is **neither zero nor infinite**.
Replace the coolant pump if necessary.

If the fault is still present, deal with the other faults, then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF601 PRESENT OR STORED	UPSTREAM O2 SENSOR HEATING POWER CIRCUIT CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Apply the procedure for dealing with faults **DF046 Battery voltage or DF084 Actuators relay control circuit** first if they are present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a delay of **10 seconds** with the engine running or when command **AC018 Upstream O2 sensor heating** is activated.
	Special note: – **OBD warning light** comes on. **CO/CC.1:** Upstream O_2 heating sensor no longer working. **CO.1:** Upstream O_2 sensor heating on all the time from switching on the ignition: sensor liable to be destroyed.

Check **the cleanliness** and **condition** of the upstream oxygen sensor connections.
Repair if necessary.

Check for **+ 12 V feed** on **track A** of the upstream oxygen sensor connector, with the ignition on.
Using the Universal bornier, check the **insulation** and **continuity** on the following connection:

Computer, connector **B, track M2** ⟶ **track A** of the upstream oxygen sensor

Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** on the following connection:

Computer, connector **C, track L2** ⟶ **track B** of the upstream oxygen sensor

Repair if necessary.

Measure the heating **resistance** between **tracks A** and **B** of the upstream oxygen sensor.
Replace the upstream oxygen sensor if the resistance is not approximately **9 Ω ± 0.5 Ω at 20 °C**.

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF602 PRESENT OR STORED	DOWNSTREAM O2 SENSOR HEATING POWER CIRCUIT CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to + 12 V 1.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** Apply the procedure for dealing with faults **DF046 Battery voltage or DF084 Actuators relay control circuit** first if they are present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a delay of **10 seconds** with the engine running or when command **AC019 Downstream O2 sensor heating** is activated.
	Special note: – **OBD warning light** comes on. **CO/CC.1:** Downstream O_2 heating sensor no longer working. **CO.1:** Downstream O_2 sensor heating on all the time from switching on the ignition: sensor liable to be destroyed.

Check **the cleanliness** and **condition** of the downstream oxygen sensor connections.
Repair if necessary.

Check for the **+ 12 V feed** on **track A** of the downstream oxygen sensor connector with the ignition on.
Using the Universal bornier, check for **insulation and continuity** of the following connection:

Computer, connector **B, track M2** ⟶ **track A** of the downstream oxygen sensor

Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Using the Universal bornier, check for **insulation and continuity** of the following connection:

Computer, connector **C, track L3** ⟶ **track B** of the downstream oxygen sensor

Repair if necessary.

Measure the heating **resistance** between **tracks A** and **B** of the downstream oxygen sensor.
Replace the downstream oxygen sensor if the **resistance** is not **9 Ω ± 0.5 Ω at 20 °C**.

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF623 PRESENT OR STORED	CLOSING BRAKE SIGNAL 1.DEF: Multiplex line connection fault

NOTES	**Special note:** – cruise control and speed limiter deactivated.

Check **the condition and cleanliness** of the pedals. Check **the cleanliness and condition** of the dual-contact brake and its connections. Repair if necessary.
With the ignition on, check **for + 12 V** on **tracks B1 and A1**, of the brake pedal switch connector. Repair if necessary.
Disconnect the battery and the injection computer. Check the **cleanliness** and **condition** of the connections. Using the Universal bornier, check the **insulation** and **continuity** on the following connection: Injection computer, **connector A, track E3** ⟶ **Track B3** of the brake pedal Repair if necessary.
Run a multiplex network test (see **88B, Multiplex**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF624 PRESENT OR STORED	UPC MULTIPLEX CONNECTION 1.DEF: Multiplex line connection fault 2.DEF: Non-compliance with emission control standards

NOTES	**Special notes:** If this fault appears during the engine starting phase, followed by a high idle speed (warm engine), check the conformity of the alternator and its configuration in the UPC according to the procedure below: – Check that the part number of the alternator fitted on the vehicle conforms with the part number in the World Vehicle Database. – Using the CLIP tool, in the UPC field, check that the alternator's configuration **CF001 Alternator type** corresponds with the alternator fitted on the vehicle (and the World Vehicle Database). This last stage is only possible on first generation UPCs (in Vdiag 44). Second generation UPCs (Vdiag 48 and higher) are self-configured.

Run a multiplex network test (see **88B, Multiplex**).

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Repair if necessary.

Using the universal bornier, check the **insulation and continuity** on the following connections:

Computer, connector **A, track A3** → Protection and Switching Unit, **connector CT1, track 7**

Computer, connector **A, track A4** → Protection and Switching Unit, **connector CT1, track 9**

Repair if necessary.

If the fault is still present, carry out fault finding on the **Protection and Switching Unit** system (See **87G, Engine interconnection unit**).

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF635 PRESENT OR STORED	LPG CYLINDER 1 COMBUSTION MISFIRE 1.DEF: Destructive misfiring 2.DEF: Polluting misfiring

NOTES	**Priority when dealing with a number of faults:** – LPG fuel system: **see 17C, LPG injection**, – ignition: **DF361 Ignition coil circuit cylinders 1-4,** **DF362 Ignition coil circuit cylinders 2-3.** – flywheel signal: **DF154 Flywheel signal sensor circuit,** **DF457 Flywheel target.** Check whether there are other cylinders with an LPG combustion misfire fault detected by the tool before starting the following fault finding procedure.
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – the programming must have been done, particularly the flywheel target, – warm engine (minimum 75 ˚C), – run the engine at idle speed with all electrical consumers switched on for approximately 15 minutes.
	Special note: – catalytic converter misfire: **OBD warning light** flashes when the fault is present then is continuously lit, – pollutant combustion misfire: **OBD warning light** lit continuously. – **engine unstable, loss of power and vibrations**.

Misfiring on cylinder 1 only	The fault is probably due to a component that can only affect this cylinder: – check the cylinder 1 pencil coil, – check the condition and conformity of the spark plugs, – check the cylinder 1 LPG injector If everything is in order, check the same components on cylinder 4 (to cover a possible cylinder recognition error).
Combustion misfires on cylinders 1 and 4	The fault is probably due to a component that affects a pair of cylinders: – check the ignition coil circuit concerned (apply the interpretation of fault **DF361 Ignition coil control 1-4** or **DF362 Ignition coil control 2-3**), – check the condition and conformity of the spark plugs.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF636 PRESENT OR STORED	LPG CYLINDER 2 COMBUSTION MISFIRE 1.DEF: Destructive misfiring 2.DEF: Polluting misfiring

NOTES	**Priority when dealing with a number of faults:** – LPG fuel system: **see 17C, LPG injection**, – ignition: **DF361 Ignition coil circuit cylinders 1-4,** **DF362 Ignition coil circuit cylinders 2-3.** – flywheel signal: **DF154 Flywheel signal sensor circuit,** **DF457 Flywheel target.** Check whether there are other cylinders with an LPG combustion misfire fault detected by the tool before starting the following fault finding procedure.
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – the programming must have been done, particularly the flywheel target, – warm engine (minimum 75 ˚C), – run the engine at idle speed with all electrical consumers switched on for approximately 15 minutes.
	Special note: – catalytic converter misfire: **OBD warning light** flashes when the fault is present then is continuously lit, – pollutant combustion misfire: **OBD warning light** lit continuously. – **engine unstable, loss of power and vibrations**.

Misfiring on cylinder 2 only	The fault is probably due to a component that can only affect this cylinder: – check the cylinder 2 pencil coil, – check the condition and conformity of the spark plugs, – check the cylinder 2 LPG injector If everything is in order, check the same components on cylinder 3 (to cover a possible cylinder recognition error).
Combustion misfires in cylinders 2 and 3	The fault is probably due to a component that affects a pair of cylinders: – check the ignition coil circuit concerned (apply the interpretation of fault **DF361 Ignition coil control 1-4** or **DF362 Ignition coil control 2-3**), – check the condition and conformity of the spark plugs.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF637 PRESENT OR STORED	LPG CYLINDER 3 COMBUSTION MISFIRE 1.DEF: Destructive misfiring 2.DEF: Polluting misfiring

NOTES	**Priority when dealing with a number of faults:** – LPG fuel system: **see 17C, LPG injection**, – ignition: **DF361 Ignition coil circuit cylinders 1-4,** **DF362 Ignition coil circuit cylinders 2-3.** – flywheel signal: **DF154 Flywheel signal sensor circuit,** **DF457 Flywheel target.** Check whether there are other cylinders with an LPG combustion misfire fault detected by the tool before starting the following fault finding procedure.
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – the programming must have been done, particularly the flywheel target, – warm engine (minimum 75 ˚C), – run the engine at idle speed with all electrical consumers switched on for approximately 15 minutes.
	Special note: – catalytic converter misfire: **OBD warning light** flashes when the fault is present then is continuously lit, – pollutant combustion misfire: **OBD warning light** lit continuously. – **engine unstable, loss of power and vibrations**.

Misfiring on cylinder 3 only	The fault is probably due to a component that can only affect this cylinder: – check the cylinder 3 pencil coil, – check the condition and conformity of the spark plugs, – check the cylinder 3 LPG injector If everything is in order, check the same components on cylinder 2 (to cover a possible cylinder recognition error).
Combustion misfires in cylinders 2 and 3	The fault is probably due to a component that affects a pair of cylinders: – check the ignition coil circuit concerned (apply the interpretation of fault **DF361 Ignition coil control 1-4** or **DF362 Ignition coil control 2-3**), – check the condition and conformity of the spark plugs.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF638 PRESENT OR STORED	LPG CYLINDER 4 COMBUSTION MISFIRE 1.DEF: Destructive misfiring 2.DEF: Polluting misfiring

NOTES	**Priority when dealing with a number of faults:** – LPG fuel system: **see 17C, LPG injection**, – ignition: **DF361 Ignition coil circuit cylinders 1-4,** **DF362 Ignition coil circuit cylinders 2-3.** – flywheel signal: **DF154 Flywheel signal sensor circuit,** **DF457 Flywheel target.** Check whether there are other cylinders with an LPG combustion misfire fault detected by the tool before starting the following fault finding procedure.
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – the programming must have been done, particularly the flywheel target, – warm engine (minimum 75 °C), – run the engine at idle speed with all electrical consumers switched on for approximately 15 minutes.
	Special note: – catalytic converter misfire: **OBD warning light** flashes when the fault is present then is continuously lit, – pollutant combustion misfire: **OBD warning light** lit continuously. – **engine unstable, loss of power and vibrations**.

Misfiring on cylinder 4 only	The fault is probably due to a component that can only affect this cylinder: – check the pencil coil of cylinder 4, – check the condition and conformity of the spark plugs, – check the cylinder 4 LPG injector If everything is in order, check the same components on cylinder 1 (to cover a possible cylinder recognition error).
Combustion misfires on cylinders 1 and 4	The fault is probably due to a component that affects a pair of cylinders: – check the ignition coil circuit concerned (apply the interpretation of fault **DF361 Ignition coil control 1-4** or **DF362 Ignition coil control 2-3**), – check the condition and conformity of the spark plugs.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF639 PRESENT OR STORED	COMBUSTION MISFIRE IN LPG MODE 1.DEF: Destructive misfiring 2.DEF: Pollutant misfiring 3.DEF: Non-compliance with emission control standards

NOTES	**Priority when dealing with a number of faults:** – LPG fuel system: **see 17C, LPG injection**, – ignition: **DF361 Ignition coil circuit cylinders 1-4,** **DF362 Ignition coil circuit cylinders 2-3.** – flywheel signal: **DF154 Flywheel signal sensor circuit,** **DF457 Flywheel target.** – cylinder combustion misfires: **DF059 Combustion misfire in cylinder 1,** **DF060 Combustion misfire in cylinder 2,** **DF061 Combustion misfire in cylinder 3,** **DF062 Combustion misfire in cylinder 4.**
	Conditions for applying the fault finding procedure to stored faults: The fault appears under the following conditions: – there must be no further electrical faults, – the programming must have been done, particularly the flywheel target, – warm engine (minimum 75 °C), – run the engine at idle speed with all electrical consumers switched on for approximately 15 minutes.
	Special note: – catalytic converter misfire: **OBD warning light** flashes when the fault is present then is continuously lit, – pollutant combustion misfire: **OBD warning light** lit continuously. – engine unstable, loss of power and vibrations.

Check the LPG injectors.
Check the condition and conformity of the spark plugs.
Check the ignition pencil coils.

If the fault is still present, carry out the following checks:
– check the flywheel sensor,
– check the condition and cleanliness of the flywheel,
– check the flywheel sensor mounting,
– check the sensor/flywheel air gap,
– check the cylinder compressions,
– check the LPG fuel system,
– check the complete ignition system (see **MR 364 or 370 Mechanics, 17A, Ignition**),
– check the hydraulic tappets if there is camshaft noise (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**).

If the fault is still present, deal with the other faults then proceed with the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF650 PRESENT OR STORED	ACCELERATOR PEDAL POSITION SIGNAL 1.DEF: Accelerator pedal sensor locked

NOTES	**Priority when dealing with a number of faults:** Apply the procedure for dealing with faults **DF012 Sensor supply voltage no. 2, DF012 Sensor supply voltage no. 2, DF197 Pedal sensor circuit gang 1, DF198 Pedal sensor circuit gang 2** if these are present or stored.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when brake and accelerator pedals are depressed simultaneously for **30 seconds**.
	Special note: – **Level 2 fault warning light** illuminated, – defect mode **types 3 and 4**.

1.DEF	***NOTES***	**Special note:** – defect mode **types 2 and 3**: vehicle and engine speed restriction, ESP and the cruise control/speed limiter are deactivated.

Check that the accelerator pedal is not jammed and that nothing is impairing its operation (floor carpet, etc.).
Check the connection and condition of the **6-track connector** for the accelerator pedal potentiometer. Repair if necessary.
Check the connection and condition of computer **connector A**. Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF650 **CONTINUED**	

Disconnect the battery and the injection computer.
Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Computer, connector **A, track G2**	→	**track 3** of the pedal potentiometer gang 1
Computer, connector **A, track H2**	→	**track 4** of the pedal potentiometer gang 1
Computer, connector **A, track H3**	→	**track 5** of the potentiometer gang 1
Computer, connector **A, track F2**	→	**track 2** of the potentiometer, gang 2
Computer, connector **A, track F3**	→	**track 1** of the potentiometer gang 2
Computer, connector **A, track F4**	→	**track 6** of the potentiometer gang 2

Repair if necessary.

If the fault is still present, contact the Techline.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.

DF1070 **PRESENT**	AIR CONDITIONING COMPRESSOR STICKING

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault is declared present when the ignition is switched on or with the engine running.

If the fault is present or stored, the heating and air conditioning system is inhibited. There is no heating and air conditioning: the compressor is stuck.
Replace the air conditioning compressor (see **MR 364 or MR 370 Mechanical, 62A, Air conditioning, Compressor: Removal - Refitting**).

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait 1 minute and carry out a road test followed by another check with the **diagnostic tool**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application condition:** engine **stopped, ignition on**.

MAIN COMPUTER STATUSES AND PARAMETERS

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Battery voltage**	**ET001:**	Computer + after ignition feed	**Present**	If there is a fault, apply the interpretation of **DF046 Battery voltage**.
2		**PR074:**	Battery voltage	**11 V < PR074 < 15 V**	
3	**Vehicle speed**	**PR089:**	Vehicle speed	**Gives the vehicle speed in mph (km/h). This parameter is sent to the injection by the ABS computer via the multiplex network.** **PR089 = 0 mph**	In the event of a fault apply the interpretation of **DF091 Vehicle speed signal**.
4	**Faults**	**ET064:**	Level 1 injection fault	**YES** **NO**	**NONE**
5		**ET065:**	Level 2 Injection fault	**YES** **NO**	
6		**PR105:**	OBD fault warning light lit mileage counter	**Indicates the mileage covered with the OBD warning light lit.**	
7		**PR106:**	Mileage counter fault warning light lit	**Shows the distance covered with the warning light lit.**	

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB FUNCTION: SUB-FUNCTION (TURBOCHARGING/INLET):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Air circuit pressure**	**PR035:**	Atmospheric pressure	**PR035 = 1000 mb ± 100 mb**	If not consistent, check **PR035 = PR312 = local atmospheric pressure, with the engine stopped and ignition on.**
2		**PR312:**	Inlet manifold vacuum	**PR312 = 1000 mb ± 100 mb**	In the event of a fault apply the interpretation of **PR312 Inlet manifold vacuum**.
3	**Engine speed**	**PR055:**	Engine speed	**Gives the engine's rotational speed in rpm. PR055 = 0 rpm**	In the event of a fault apply the interpretation of **DF154 Flywheel signal sensor circuit**.
4	**Idle speed**	**ET054:**	Idle speed regulation	**INACTIVE**	**None**
5		**PR010:**	Idle speed regulation setting	**700 < X < 750 rpm** **Indicates the speed of rotation setpoint before last engine stop in rpm.**	**None**
6	**Air temperature**	**PR058:**	Air temperature	**- 40 °C < PR058 < 120 °C Default value: - 120 °C**	In the event of a fault, apply the interpretation of **DF002 Air temperature sensor circuit**.
7	**Coolant temperature**	**PR064:**	Coolant temperature	**- 40°C < PR064 < 120°C Default value: - 39°C**	If there is a fault use the interpretation of **DF001 Coolant temperature sensor circuit**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB FUNCTION: (TURBO/INLET) (continued):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
8	**Air flow**	**PR018:**	Estimated air flow	**Indicates the air flow value estimated by the motorised throttle valve.** **PR018 = 0 kg/h**	If there is a fault, apply the interpretation of faults **DF095 Throttle potentiometer circuit gang 1** and **DF096 Throttle potentiometer circuit gang 2**.
9	**Camshaft dephaser (Only on K4M engines)**	**ET083:**	Camshaft dephaser in defect mode	**STATUS 1:** this defect mode covers all faults that affect determining position of the dephaser. The dephaser is controlled at the low stop and the camshaft angle measurement is forced to 0. Tooth signal fault **STATUS 2:** this defect mode covers all faults that affect the dephaser (pulley and solenoid valve). The dephaser is set to the low stop. **NO**	For **STATUS 1**, carry out a camshaft signal/tooth consistency diagnostic. For **STATUS 2**, carry out fault finding on the camshaft dephaser position.
10		**PR094:**	Camshaft dephaser OCR setpoint	Shows required camshaft offset value (in %). **PR094 = 0 %**	**NONE**
11		**ET086:**	Camshaft dephaser control	**ACTIVE** **INACTIVE**	
12	**Electric coolant pump**	**AC195:**	Electric coolant pump	**The pump should be heard operating**	In the event of a fault, apply interpretation of **DF570 Coolant pump relay**.

OCR: Opening Cycle Ratio

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

FUEL CIRCUIT SUB FUNCTION:

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	**Engine speed**	**PR055:** Engine speed	**Gives the engine's rotational speed in rpm. PR055 = 0 rpm**	In the event of a fault apply the interpretation of **DF154 Flywheel signal sensor circuit**.
2	**Idle speed**	**PR014:** Idle speed correction	**Indicates the correction of the engine's rotational speed in rpm. 0 rpm**	**None**
3		**ET054:** Idle speed regulation	**INACTIVE**	**None**
		PR010: Idle speed regulation setting	**700 < X < 750 rpm Indicates the rotation speed setpoint before the last engine stop in rpm.**	**None**

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB-FUNCTION: FUEL CIRCUIT (continued 1):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
4	**Motorised throttle**	**PR090:**	Idling speed regulation programming value	**- 12 % < PR090 < 12 % PR090, an adaptive integral feature, is a stored parameter designed to program dispersion and engine ageing for the idle speed regulator. These are programmed only when the engine is idling and warm, and no electrical consumers (electrical windscreen, air conditioning, fan assembly, power steering) have been selected. Therefore it adjusts slowly.**	**NONE**
5	**Motorised throttle**	**PR091:**	Theoretical idle speed regulation OCR	**0 % < PR091 < 60 % If the regulation conditions are satisfied, the idle speed regulator positions the motorised throttle from moment to moment to maintain the engine speed at its idle speed setpoint The motorised throttle opening ratio required to maintain the engine speed setting is then given by parameter PR091.**	

OCR: Opening Cycle Ratio

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB-FUNCTION: FUEL CIRCUIT (continued 2):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
6	**Richness**	**PR138:**	Richness correction	**In loop mode, the richness correction corrects the injection duration to obtain a fuel mixture as close as possible to a richness of 1. The richness correction value varies around 50 between 0 and 100. 0 < PR138 < 100 %**	**NONE**
7		**ET300:**	Richness regulation	**INACTIVE**	**NONE**
8		**ET056:**	Richness double loop	**INACTIVE**	In the event of a fault apply the interpretation of **ET056 Double richness loop**.
9	**Oxygen sensor**	**PR144:**	Self-adapting richness offset	**0 < PR624 < 255 This parameter allows you to detect the injection system's tendency towards an increase or a decrease in richness.**	**NONE**
10		**PR143:**	Self-adapting richness gain	**0 < PR625 < 255 This parameter allows you to detect the injection system's tendency towards an increase or a decrease in richness.**	
11	**Injection**	**PR101:**	Duration of injection	**0 µs**	
12	**Fuel consumption.**	**PR103:**	Instantaneous fuel consumption	**PR103 = 0 l/h**	

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB-FUNCTION: FUEL CIRCUIT (continued 3):

Order	Function	Parameter or Status checked or Action		Display and Notes		Fault finding
13	**Fuel pump**	**ET047:**	**Fuel pump control** circuit	**ACTIVE for 1 second when the ignition is switched on then INACTIVE**		If **ACTIVE**, apply the interpretation of **DF085 Fuel pump relay control circuit (when the + after ignition feed is turned on, the pump control circuit is ACTIVE for 1 second then becomes INACTIVE)**.
14	**IN LPG ACTIVATED MODE**	**ET561:**	Operating mode	**Petrol Ignition on**		In the event of a fault, (**see 17C, 3000 LPG injection**).
15		**ET067:**	LPG ready	**With LPG YES**	**Without LPG NO by default**	
16		**ET073:**	Conditions for switching to LPG mode	**With LPG AUTHORISED**	**Without LPG INHIBITED by default**	
17		**ET068:**	LPG tank empty	**With LPG "NO"**	**Without LPG NO by default**	
18		**ET066:**	LPG fault	**With LPG "NO"**	**Without LPG NO by default**	
19		**ET071:**	Transition from petrol mode to LPG mode	**With LPG COMPLETE**	**Without LPG COMPLETE by default**	
20		**ET072:**	Transition from LPG mode to petrol mode	**With LPG IN PROGRESS**	**Without LPG COMPLETE by default**	

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

EMISSION CONTROL/OBD SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Oxygen sensor**	**PR098:**	Upstream oxygen sensor voltage	**50 mV < PR098 < 800 mV**	If there is a fault, use interpretation of **PR098 Upstream oxygen sensor voltage**.
2		**PR099:**	Downstream oxygen sensor voltage	**50 mV < PR099 < 800 mV**	If there is a fault, apply the interpretation of **PR099 Downstream oxygen sensor voltage**.
3	**Canister**	**ET050:**	Canister bleed control	**INACTIVE**	In the event of a fault, apply interpretation of **DF549 Canister bleed circuit**.
4		**PR102:**	Canister bleed solenoid valve OCR	**0 % < PR102 < 100 %**	
5	**Oxygen sensor**	**AC018:**	Upstream O_2 sensor heating	**The upstream oxygen sensor should heat up**	In the event of a fault, apply interpretation of **DF601 Oxygen sensor heating power circuit**.
6		**AC019:**	Downstream O_2 sensor heating	**The downstream oxygen sensor should heat up**	In the event of a fault, apply interpretation of **DF602 Downstream oxygen sensor heating power circuit**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

EMISSION CONTROL / OBD SUBFUNCTION (cont.):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
7	**Oxygen sensor**	**ET052:**	Upstream O_2 sensor heating	**INACTIVE**	In the event of a fault, apply interpretation of **DF601 Upstream oxygen sensor heating power circuit**.
8		**ET053:**	Downstream O_2 sensor heating	**INACTIVE**	In the event of a fault, apply interpretation of **DF602 Downstream oxygen sensor heating power circuit**.
9	**Canister**	**AC017:**	Canister bleed solenoid valve	**The canister bleed solenoid valve should be heard running.**	In the event of a fault, apply interpretation of **DF549 Canister bleed circuit**.
10	**Fault finding**	**ET617:**	Upstream oxygen sensor OBD fault finding	**INACTIVE**	**None**
11		**ET619:**	Fuel circuit OBD fault finding	**INACTIVE**	**None**
12		**ET581:**	Petrol combustion misfire fault finding	**INACTIVE**	**None**
13	**Fault finding**	**ET340:**	Request by automatic transmission to light up the OBD warning light	**INACTIVE**	If **ACTIVE**, apply the interpretation of fault **DF099 Automatic gearbox or sequential gearbox connection via the multiplex network**.
14	**Richness**	**ET300:**	Richness regulation	**ACTIVE** **INACTIVE**	**NONE**
15		**ET056:**	Richness double loop	**ACTIVE** **INACTIVE**	In the event of a fault apply the interpretation of **ET056 Double richness loop**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

DRIVER PARAMETERS SUB FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	Motorised throttle	**ET051:**	Throttle stop programming	**DONE**	**Run command RZ005 Programming. If the parameters or statuses are still not correct, contact the Techline.**
2		**ET082:**	Motorised throttle position	**PL: no load PF: full load INTERMEDIATE**	
3		**PR116:**	Motorised throttle corrected position setpoint	**PR116 ≈ 2 %**	
4		**PR111:**	Motorised throttle position corrected value	**No load < 15 % Full load > 30 %**	
5		**PR097:**	Motorised throttle lower stop programmed value.	**5.96 % < PR097 < 13.96 %**	
6		**PR096:**	Motorised throttle upper stop programmed value	**80 % < PR096 < 100 %**	
7		**PR429:**	Measured throttle position	**5 % < PR429 < 25 %**	
8		**PR118:**	Measured throttle position gang 1	**No load = 4 % Full load = 99 % Safe value: 0 %**	If there is a fault, use the interpretation of **DF095 Throttle potentiometer circuit gang 1**.
9		**PR119:**	Measured throttle position gang 2	**No load = 4 % Full load = 100 % Safe value: 100 %**	If there is a fault, use the interpretation of **DF096 Throttle potentiometer circuit gang 2**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB-FUNCTION: DRIVER PARAMETERS (continued 1):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
10	**Accelerator pedal and motorised throttle**	**ET075:**	Pedal released and throttle closed	**YES**	If **NO**, apply the interpretation of **PR030 Accelerator pedal position** followed by the interpretation of fault **DF079 Motorised throttle valve servo control**.
11	**Motorised throttle**	**PR597:**	Motorised throttle in safe mode	**15 % < PR597 < 25 %**	**Run command RZ005 Programming. If the parameters or statuses are still not correct, contact the Techline.**
12		**PR593:**	Motorised throttle in safe mode gang 1	**PR593 ≈ 1V**	
13		**PR594:**	Motorised throttle in safe mode gang 2	**PR594 ≈ 1V**	
14	**Accelerator pedal**	**ET081:**	Accelerator pedal position	**PL: no load** **PF: full load** **INTERMEDIATE**	In the event of a fault apply the interpretation of **PR030 Accelerator pedal position**
15	**Accelerator pedal**	**PR030:**	Accelerator pedal position	**No load = < 16 %** **Full load ≥ 85 %**	In the event of a fault, apply interpretation of **DF196** and **DF198 Pedal sensor circuit gangs 1 and 2**, then **DF011** and **DF012 Sensor supply voltage 1 and 2**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB-FUNCTION: DRIVER PARAMETERS (continued 2):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
16	**Accelerator pedal** **(continued)**	**PR568:**	Pedal position gang 1	**0.2 V < PR568 < 5 V** **Safe value: 5 V**	In the event of a fault, apply the interpretation of fault **DF196 Pedal sensor circuit gang 1**.
17		**PR569:**	Pedal position gang 2	**0.2 V < PR569 < 5 V** **Safe value: 0 V**	In the event of a fault, apply the interpretation of fault **DF198 Pedal sensor circuit gang 2**.
18		**PR147:**	Pedal potentiometer voltage gang 1	**PR147 ≈ 15 V**	In the event of a fault, apply the interpretation of fault **DF196 Pedal sensor circuit gang 1**.
19		**PR148:**	Pedal potentiometer voltage gang 2	**PR148 ≈ 7.5 V**	In the event of a fault, apply the interpretation of fault **DF198 Pedal sensor circuit gang 2**.
20		**PR424:**	Programming the no-load position value	**PR424 ≈ 15%**	**Run command RZ005 Programming. If the parameters are still not correct, contact the Techline.**

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB-FUNCTION: DRIVER PARAMETERS (CONTINUED 3):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
21	**Motorised throttle**	**AC027:**	Motorised throttle	**The motorised throttle should be heard operating**	In the event of a fault apply the interpretation of **AC027 Motorised throttle**.
22		**PR539:**	Measured throttle voltage, gang circuit 1	**PR539 ≈ 1 V**	In the event of a fault, apply interpretation of **DF095 Throttle potentiometer circuit gang 1 and DF096 Throttle potentiometer circuit gang 2**.
23		**PR538:**	Measured throttle voltage, gang circuit 2	**PR538 ≈ 0.4 V**	
24		**PR587:**	Motorised throttle lower stop gang 1	**PR587 ≈ 0.5 V**	
25		**PR588:**	Motorised throttle lower stop gang 2	**PR588 ≈ 0.5 V**	
26		**PR589:**	Motorised throttle upper stop gang 1	**PR589 ≈ 4.40 V**	
27		**PR590:**	Motorised throttle upper stop gang 2	**PR590 ≈ 4.40 V**	In the event of a fault, apply interpretation of **DF095 Throttle potentiometer circuit gang 1 and DF096 Throttle potentiometer circuit gang 2**.
28		**PR113:**	Lower throttle stop after applying offset	**PR113 ≈ 10 %**	
29		**ET0564:**	Type 1 defect mode	**NO**	**NONE**
30		**ET0565:**	Type 2 defect mode	**NO**	
31		**ET0566:**	Type 3 defect mode	**NO**	
32		**ET0567:**	Type 4 defect mode	**NO**	
33		**ET0568:**	Type 5 defect mode	**NO**	
34		**ET0569:**	Type 6 defect mode	**NO**	

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

PRE-HEATING/IGNITION SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Cylinder recognition**	**ET061:**	Cylinder 1 recognition	**NOT COMPLETE** **COMPLETE**	In the event of a fault, apply the interpretation of status **ET061 Cylinder 1 recognition**.
2	**Engine speed**	**PR055:**	Engine speed	**Gives the engine's rotational speed in rpm.** **PR055 = 0 rpm**	In the event of a fault apply the interpretation of **DF154 Flywheel signal sensor circuit**.
3	**Flywheel target**	**ET089:**	Flywheel target programming	**NOT COMPLETE** **COMPLETE** **STATUS 1**	**STATUS 1:** Flywheel target fault. **NONE**
4	**Flywheel signal**	**ET062:**	Flywheel signal	**NOT DETECTED**	In the event of a fault, apply the interpretation of status **ET062 Flywheel signal**.
5	**Ignition**	**PR448:**	Ignition advance	**PR448 = 0 °V**	**NONE**
6		**PR095:**	Anti-pinking correction	**PR095 = 0 °V**	
7		**PR126:**	advance after anti-pinking correction	**- 23.6 °V < PR126 < 72 °V**	
8		**PR427:**	Average pinking signal	**0**	In the event of a fault, apply the interpretation of **DF088 Pinking sensor circuit**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB-FUNCTION: IGNITION/PREHEATING (continued 1):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
9		**ET581:**	Petrol combustion misfire fault finding	**INACTIVE**	In the event of a fault, apply interpretation of faults **DF059 Combustion misfire in cylinder 1, DF060 Combustion misfire in cylinder 2, DF061 Combustion misfire in cylinder 3, DF062 Combustion misfire in cylinder 4**.
10	**Combustion misfiring**	**ET057:**	Misfiring on cylinder 1	**NO**	
11		**ET058:**	Misfiring on cylinder 2	**NO**	
12		**ET059:**	Misfiring on cylinder 3	**NO**	
13		**ET060:**	Misfiring on cylinder 4	**NO**	
14	**Actuators**	**AC079:**	Actuator static test	**All the actuators must be operated (fuel pump relay, electric coolant pump on F4RT, downstream and upstream sensor heating, motorised throttle)**	In the event of a fault, apply interpretation of **fault associated with the actuators concerned**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB-FUNCTION: IGNITION/PREHEATING (continued 2):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
15	**LPG combustion misfire**	**ET582:**	LPG combustion misfire fault finding	**INACTIVE**	In the event of a fault, apply interpretation of faults **DF635 Combustion misfire in LPG cylinder 1, DF636 Combustion misfire in LPG cylinder 2, DF637 Combustion misfire in LPG cylinder 3, DF638 Combustion misfire in LPG cylinder 4**.
16		**ET583:**	LPG cylinder 1 combustion misfire	**NO**	
17		**ET584:**	LPG cylinder 2 combustion misfire	**NO**	
18		**ET585:**	LPG cylinder 3 combustion misfire	**NO**	
19		**ET586:**	LPG cylinder 4 combustion misfire	**NO**	
20	**Actuators**	**AC079:**	Actuator static test	**All the actuators must be operated (fuel pump relay, electric coolant pump on F4RT, downstream and upstream sensor heating, motorised throttle)**	In the event of a fault, apply interpretation of **fault associated with the actuators concerned**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

COLD LOOP SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	**Air conditioning**	**ET079:** Air conditioning present	**Shows whether or not the vehicle is equipped with air conditioning.** **YES:** Air conditioning is detected by the injection computer. **NO:** Air conditioning is not detected by the injection computer.	**If inconsistent with the vehicle equipment, carry out a multiplex network test and apply the relevant procedure.**
2		**ET088:** Compressor actuation request	**The injection requests the UCH (via the multiplex network) to start the compressor.** **ACTIVE:** The multiplex network must not be faulty on the Automatic transmission or UCH systems. The UCH must send a compressor starting request to the injection. The coolant pressure sensor must not be defective. Satisfactory engine operating conditions (coolant temperature, engine load, etc.). **INACTIVE:** One of the above conditions has not been met.	**NONE**
3		**ET004:** Air conditioning authorisation	**YES** **NO**	

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB-FUNCTION: COLD LOOP (continued 1):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
4	**Idle speed**	**ET023:**	Fast idle speed request	**UCH requests the injection system to increase the idle speed.** **INACTIVE:** The UCH has not formulated a request. **ACTIVE:** The UCH has formulated a request	**If ET023 is inconsistent, run a multiplex network test using the diagnostic tool; then if the test is in order, consult the UCH.**
5	**Engine speed**	**PR055:**	Engine speed	**Shows the speed of rotation in rpm.** **PR055 = 0 rpm**	In the event of a fault apply the interpretation of **DF154 Flywheel signal sensor circuit**.
6	**Air conditioning**	**PR037:**	Refrigerant pressure	**2 bar < PR037 < 27 bar** **Default value: 0 bar**	If **1.DEF**, apply interpretation of **PR037 Coolant pressure**.
7		**ET674:**	Refrigerant pressure status	**CORRECT** **TOO LOW**	
8		**PR125:**	Power absorbed by the air conditioning compressor	**PR125 = 300 W**	**NONE**
9	**Coolant temperature**	**PR064:**	Coolant temperature	**- 40 °C < PR064 < 120 °C** **Default value: - 39 °C**	If there is a fault use the interpretation of **DF001 Coolant temperature sensor circuit**.
10	**Vehicle speed**	**PR089:**	Vehicle speed	**Gives the vehicle speed in mph (km/h). This parameter is sent to the injection by the ABS computer via the multiplex network.**	If there is a fault use the interpretation of **DF091 Vehicle speed signal**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

SUB-FUNCTION: COLD LOOP (continued 2):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
11	**Motor-driven fan assembly**	**ET022:**	Low speed fan assembly request	If the coolant temperature reaches **98 °C** the low speed fan assembly is activated and cuts out at **96 °C**. **ACTIVE** **INACTIVE**	**In the event of a fault, run a multiplex network test using the diagnostic tool then, if the test is in order, consult the Protection and Switching Unit.**
12		**ET021:**	High speed fan assembly request	If the coolant temperature reaches **102 °C** the low speed fan assembly is activated and cuts out at **99 °C**. **ACTIVE** **INACTIVE**	

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

HEATING SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Coolant temperature**	**PR064:**	Coolant temperature	**- 40 ˚C < PR064 < 120 ˚C** **Default value: - 39 ˚C**	If there is a fault use the interpretation of **DF001 Coolant temperature sensor circuit**.
2	**Passenger compartment heating resistor**	**ET111:**	RCH number set	**YES** **NO**	**In the event of a fault, run a multiplex network test using the diagnostic tool; then if the test is in order consult the Protection and Switching Unit.**
3		**ET112:**	RCH cut-off	**YES** **NO**	

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

CRUISE CONTROL/SPEED LIMITER SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Cruise control/ Speed limiter**	**ET042:**	Cruise control/ Speed limiter	**NOT DETECTED** **INACTIVE** **CRUISE CONTROL** **SPEED LIMITER**	In the event of a fault, apply the interpretation of **ET042 Cruise control/speed limiter.**
2		**ET415:**	Deactivation of cruise control/ speed limiter	**NONE** **STATUS 1**: Traction control request **STATUS 2**: Brake pedal depressed **STATUS 3**: Clutch pedal depressed **STATUS 4**: Suspend button pressed **STATUS 5**: Cruise control or speed limiter monitoring **STATUS 6**: Gear lever in neutral position (manual gearbox) or N position (automatic transmission) **STATUS 7**: Inconsistency between request and 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, apply the interpretation of **ET415 Cruise control/Speed limiter deactivation**.
3		**ET703:**	Cruise control/ speed limiter buttons	**INACTIVE** **MINUS** **PLUS** **SUSPEND** **RESUME**	In the event of a fault, apply the interpretation of status **ET703 Cruise control/speed limiter buttons**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

CRUISE CONTROL/SPEED LIMITER SUB-FUNCTION (continued):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
4	**Vehicle speed**	**PR089:**	Vehicle speed	**Gives the vehicle speed in mph (km/h). This parameter is sent to the injection by the ABS computer via the multiplex network.**	If there is a fault, apply the interpretation of **DF091 Vehicle speed signal**
5	**Brake pedal switch**	**ET704:**	Brake switch no. 1	**ACTIVE** **INACTIVE**	In the event of a fault, apply the interpretation of statuses **ET704 Brake switch no.1 and ET705 Brake switch no. 2**.
		ET705:	Brake switch no. 2		
6	**Clutch pedal switch**	**ET405:**	Clutch pedal switch	**INACTIVE:** Clutch pedal released. **ACTIVE:** Clutch pedal depressed. If the vehicle is fitted with an automatic transmission, **ET405** should be **ACTIVE.**	In the event of a fault, apply the interpretation of **ET405 Clutch pedal switch**.

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

STARTING SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Starting**	**ET076:**	Starting	**AUTHORISED**	**Authorisation to start is given once the petrol pump is pressurised and if the motorised throttle has emerged from the stop and limp-home position programming phase.**
2	**Actuator relay control**	**ET048:**	Actuator relay control	**ACTIVE**	If **INACTIVE** apply the interpretation of **DF084 Actuator relay control circuit**.
3	**Battery voltage**	**PR074:**	Battery voltage	**11 V < PR074 < 15 V**	If there is a fault, apply the interpretation of **DF046 Battery voltage**.
4	**Impact signal**	**ET077:**	Impact detected	**NO**	**In the event of a fault, run a multiplex network test using the diagnostic tool; then, if the test is OK, carry out fault finding on the airbag computer.**

NOTES	Only check the conformity after a **complete check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **off, ignition on**.

PROTECTION SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Code programmed**	**ET006:**	Code programmed	**Indicates whether or not the immobiliser code has been programmed by the computer.** **PROGRAMMED:** Code programmed **NOT PROGRAMMED:** Code not programmed by the injection computer.	**If NOT PROGRAMMED, contact the Techline**
2	**Engine immobiliser**	**ET003:**	Engine immobiliser	**Indicates the status of the immobiliser system.** **INACTIVE**	**If ET003 is inconsistent, run a multiplex network test using the diagnostic tool; then if the test is in order, carry out fault finding on the UCH.**
3	**Starting**	**ET076:**	Starting	**AUTHORISED**	**Authorisation to start is given once the petrol pump is pressurised and if the motorised throttle has emerged from the stop and limp-home position programming phase.**

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

MAIN COMPUTER STATUSES AND PARAMETERS

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Battery voltage**	**ET001:**	Computer + after ignition feed	**Present**	If there is a fault, apply the interpretation of **DF046 Battery voltage**.
2		**PR074:**	Battery voltage	**11 V < PR074 < 15 V**	
3	**Vehicle speed**	**PR089:**	Vehicle speed	**Gives the vehicle speed in mph (km/h). This parameter is sent to the injection by the ABS computer via the multiplex network.**	If there is a fault use the interpretation of **DF091 Vehicle speed signal**.
4	**Faults**	**ET064:**	Level 1 injection fault	**YES NO**	**NONE**
5		**ET065:**	Level 2 Injection fault	**YES NO**	
6		**PR105:**	OBD fault warning light lit mileage counter	**Indicates the mileage covered with the OBD warning light lit.**	
7		**PR106:**	Mileage counter fault warning light lit	**Shows the distance covered with the warning light lit.**	

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB FUNCTION: SUB-FUNCTION (TURBOCHARGING/INLET):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Air circuit pressure**	**PR035:**	Atmospheric pressure	**200 mb < PR035 < 1047 mb**	If not consistent, check **PR035 = PR312 = local atmospheric pressure, with the engine stopped and ignition on.** In the event of a fault apply the interpretation of **PR312 Inlet manifold vacuum**.
2		**PR312:**	Inlet manifold vacuum	**For K4M:** **240 mb < PR312 < 410 mb** **For K4J:** **330 mb < PR312 < 400 mb** **For > F4Rt:** **270 mb < PR312 < 400 mb** **For F4R:** **270 mb < PR312 < 410 mb**	
3	**Engine speed**	**PR055:**	Engine speed	**Indicates the engine's speed of rotation in rpm.** **PR055 = 0 rpm**	In the event of a fault apply the interpretation of **DF154 Flywheel signal sensor circuit**.
4	**Idle speed**	**ET054:**	Idle speed regulation	**INACTIVE**	**None**
5		**PR010:**	Idle speed regulation setting	**700 < X < 750 rpm** **Indicates the speed of rotation setpoint before last engine stop in rpm.**	**None**
6	**Air temperature**	**PR058:**	Air temperature	**- 40 ˚C < PR058 < 120 ˚C** **Default value: - 120 ˚C**	In the event of a fault, apply the interpretation of **DF002 Air temperature sensor circuit**.
7	**Coolant temperature**	**PR064:**	Coolant temperature	**- 40 ˚C < PR064 < 120 ˚C** **Safe value: 120 ˚C**	If there is a fault use the interpretation of **DF001 Coolant temperature sensor circuit**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB FUNCTION: (TURBO/INLET) (continued):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
8	**Air flow**	**PR018:**	Estimated air flow	**Indicates the air flow value estimated by the motorised throttle valve.**	If there is a fault, apply the interpretation of faults **DF095 Throttle potentiometer circuit gang 1** and **DF096 Throttle potentiometer circuit gang 2**.
9	**Camshaft dephaser (Only on K4M engines)**	**ET083:**	Camshaft dephaser in defect mode	**STATUS 1:** this defect mode covers all faults that affect determining position of the dephaser. The dephaser is controlled at the low stop and the camshaft angle measurement is forced to 0. Tooth signal fault **STATUS 2:** this defect mode covers all faults that affect the dephaser (pulley and solenoid valve). The dephaser is set to the low stop. **NO**	For **STATUS 1**, carry out a camshaft signal/tooth consistency diagnostic. For **STATUS 2**, carry out fault finding on the camshaft dephaser position.
10		**PR094:**	Camshaft dephaser OCR setpoint	Shows required camshaft offset value (in %).	**NONE**
11		**ET086:**	Camshaft dephaser control	**ACTIVE** **INACTIVE**	
12	**Electric coolant pump**	**AC195:**	Electric coolant pump	**The pump should be heard operating**	In the event of a fault, apply interpretation of **DF570 Coolant pump relay**.

OCR: Opening Cycle Ratio

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

FUEL CIRCUIT SUB FUNCTION:

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	**Engine speed**	**PR055:** Engine speed	**Gives the engine's rotational speed in rpm. 700 rpm < PR055 < 800 rpm**	In the event of a fault apply the interpretation of **DF154 Flywheel signal sensor circuit**.
2		**PR014:** Idle speed correction	**Indicates the correction of the engine's rotational speed in rpm. 0 rpm**	In the event of a fault apply the interpretation of **DF154 Flywheel signal sensor circuit**.
3	**Idle speed**	**ET054:** Idle speed regulation	**ACTIVE**	**None**
4		**PR010:** Idle speed regulation setting	**700 < X < 750 rpm Indicates the rotation speed setpoint before the last engine stop in rpm.**	**None**

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB-FUNCTION: FUEL CIRCUIT (continued 1):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
5	**Motorised throttle**	**PR090:**	Idling speed regulation programming value	**PR090 ≈ 0 %** **PR090, an adaptive integral feature, is a stored parameter designed to program variations and engine ageing for the idle speed regulator. These are programmed only when the engine is idling and warm, and no electrical consumers (electrical windscreen, air conditioning, fan assembly, power steering) have been selected. Therefore it adjusts slowly.**	**NONE**
6		**PR091:**	Theoretical idle speed regulation OCR	**5 % < PR091 < 50 %** **If the idle speed regulation conditions are satisfied, the idle speed regulator positions the motorised throttle from moment to moment to maintain the engine speed at its idling setpoint. The motorised throttle opening ratio required to maintain the engine speed setting is then given by parameter PR091.**	

OCR: Opening Cycle Ratio

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB-FUNCTION: FUEL CIRCUIT (continued 2):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
7	**Richness**	**PR138:**	Richness correction	**In loop mode, the richness correction corrects the injection duration to obtain a fuel mixture as close as possible to a richness of 1. The richness correction value varies around 50 between 0 and 100. 0 < PR138 < 100 %**	**NONE**
8		**ET300:**	Richness regulation	**ACTIVE INACTIVE**	**NONE**
9		**ET056:**	Richness double loop	**ACTIVE**	In the event of a fault apply the interpretation of **ET056 Double richness loop**.
10	**Richness**	**PR144:**	Self-adapting richness offset	**PR624 ≈ 128 This parameter allows you to detect the injection system's tendency towards an increase or a decrease in richness.**	**NONE**
11		**PR143:**	Self-adapting richness gain	**PR625 ≈ 128 This parameter allows you to detect the injection system's tendency towards an increase or a decrease in richness.**	
12	**Injection**	**PR101:**	Duration of injection	**At idle speed 2.4 µs < PR101 < 4.3 µs**	
13	**Fuel consumption.**	**PR103:**	Instantaneous fuel consumption	**0 l/h < PR103 < 50 l/h**	

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB-FUNCTION: FUEL CIRCUIT (continued 3):

Order	Function	Parameter or Status checked or Action		Display and Notes		Fault finding
14	**Fuel pump**	**ET047:**	**Fuel pump control** circuit	**ACTIVE**		If **INACTIVE**, apply the interpretation of **DF085 Fuel pump relay control circuit**.
15	**IN LPG ACTIVATED MODE**	**ET561:**	Operating mode	**Petrol Then LPG**		In the event of a fault, (**see 17C, 3000 LPG injection**).
16		**ET067:**	LPG ready	**With LPG YES**	**Without LPG NO by default**	
17		**ET073:**	Conditions for switching to LPG mode	**With LPG AUTHORISED**	**Without LPG INHIBITED by default**	
18		**ET068:**	LPG tank empty	**With LPG "NO"**	**Without LPG NO by default**	
19		**ET066:**	LPG fault	**With LPG "NO"**	**Without LPG NO by default**	
20		**ET071:**	Transition from petrol mode to LPG mode	**With LPG IN PROGRESS then COMPLETE**	**Without LPG COMPLETE by default**	
21		**ET072:**	Transition from LPG mode to petrol mode	**With LPG IN PROGRESS**	**Without LPG COMPLETE by default**	

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

EMISSION CONTROL/OBD SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Oxygen sensor**	**PR098:**	Upstream oxygen sensor voltage	**50 mV < PR098 < 800 mV**	If there is a fault, use interpretation of **PR098 Upstream oxygen sensor voltage**.
2		**PR099:**	Downstream oxygen sensor voltage	**PR099 ≈ 480 mV**	If there is a fault, apply the interpretation of **PR099 Downstream oxygen sensor voltage**.
3	**Canister**	**ET050:**	Canister bleed control	**INACTIVE**	In the event of a fault, apply interpretation of **DF549 Canister bleed circuit**.
4		**PR102:**	Canister bleed solenoid valve OCR	**0 % < PR102 < 100 %**	
5	**Oxygen sensor**	**AC018:**	Upstream O_2 sensor heating	**The upstream oxygen sensor should heat up**	In the event of a fault, apply interpretation of **DF601 Upstream oxygen sensor heating power circuit**.
6		**AC019:**	Downstream O_2 sensor heating	**The downstream oxygen sensor should heat up**	In the event of a fault, apply interpretation of **DF602 Downstream oxygen sensor heating power circuit**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

EMISSION CONTROL / OBD SUBFUNCTION (cont.):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
7	**Oxygen sensor (continued)**	**ET052:**	**Upstream** Upstream O_2 sensor heating	**INACTIVE**	In the event of a fault, apply interpretation of **DF601 Upstream oxygen sensor heating power circuit**.
8		**ET053:**	**Upstream** Downstream O_2 sensor heating	**INACTIVE**	In the event of a fault, apply interpretation of **DF602 Downstream oxygen sensor heating power circuit**.
9	**Canister**	**AC017:**	Canister bleed solenoid valve	**The canister bleed solenoid valve should be heard running.**	In the event of a fault, apply interpretation of **DF549 Canister bleed circuit**.
10	**Fault finding**	**ET617:**	Upstream oxygen sensor OBD fault finding	**INACTIVE**	**None**
11		**ET619:**	Fuel circuit OBD fault finding	**INACTIVE**	**None**
12		**ET581:**	Petrol combustion misfire fault finding	**INACTIVE**	**None**
13	**Fault finding**	**ET340:**	Request by automatic transmission to light up the OBD warning light	**INACTIVE**	If **ACTIVE**, apply the interpretation of fault **DF099 Automatic gearbox or sequential gearbox connection via the multiplex network**.
14	**Richness**	**ET300:**	Richness regulation	**ACTIVE** **INACTIVE**	**NONE**
15		**ET056:**	Richness double loop	**ACTIVE**	In the event of a fault apply the interpretation of **ET056 Double richness loop**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

DRIVER PARAMETERS SUB FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	Motorised throttle	**ET051:**	Throttle stop programming	**DONE**	**Run command RZ005 Programming. If the parameters or statuses are still not correct, contact the Techline.**
2		**ET082:**	Motorised throttle position	**PL: no load PF: full load INTERMEDIATE**	
3		**PR116:**	Motorised throttle corrected position setpoint	**PR116 ≈ 2 %**	
4		**PR111:**	Motorised throttle position corrected value	**No load < 15 % Full load > 30 %**	
5		**PR097:**	Motorised throttle lower stop programmed value.	**5.96 % < PR097 < 13.96 %**	
6		**PR096:**	Motorised throttle upper stop programmed value	**80 % < PR096 < 100 %**	
7		**PR429:**	Measured throttle position	**5 % < PR096 < 25 %**	
8		**PR118:**	Measured throttle position gang 1	**PR118 ≈ 12 %**	If there is a fault, use the interpretation of **DF095 Throttle potentiometer circuit gang 1**.
9		**PR119:**	Measured throttle position gang 2	**PR119 ≈ 12 %**	If there is a fault, use the interpretation of **DF096 Throttle potentiometer circuit gang 2**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB-FUNCTION: DRIVER PARAMETERS (continued 1):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
10	**Accelerator pedal and motorised throttle**	**ET075:**	Pedal released and throttle closed	**YES**	If **NO**, apply the interpretation of **PR030 Accelerator pedal position** followed by the interpretation of fault **ET082 Motorised throttle valve servo control**.
11	**Motorised throttle**	**PR597:**	Motorised throttle in safe mode	**15 % < PR597 < 25 %**	**Run command RZ005 Programming. If the parameters or statuses are still not correct, contact the Techline.**
12		**PR593:**	Motorised throttle in safe mode gang 1	**PR593 ≈ 1 V**	
13		**PR594:**	Motorised throttle in safe mode gang 2	**PR594 ≈ 1 V**	
14	**Accelerator pedal**	**ET081:**	Accelerator pedal position	**PL: no load** **PF: full load** **NOT DETECTED**	In the event of a fault apply the interpretation of **PR030 Accelerator pedal position**
15		**PR030:**	Accelerator pedal position	**No load = 0 %** **Full load = 100 %**	In the event of a fault, apply interpretation of **DF008** and **DF009 Pedal potentiometer circuit track 1 and track 2**, then **DF011 and DF012 Sensor supply voltage 1 and 2**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB-FUNCTION: DRIVER PARAMETERS (continued 2):

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
16	**Accelerator pedal** **(continued)**	**PR568:** Pedal position gang 1	**0.2 V < PR568 < 5 V** **Safe value: 5 V**	In the event of a fault, apply the interpretation of fault **DF196 Pedal sensor circuit gang 1**.
17		**PR569:** Pedal position gang 2	**0.2 V < PR569 < 5 V** **Safe value: 0 V**	In the event of a fault, apply the interpretation of fault **DF198 Pedal sensor circuit gang 2**.
18		**PR147:** Pedal potentiometer voltage gang 1	**PR147 ≈ 15 V**	In the event of a fault, apply the interpretation of fault **DF196 Pedal sensor circuit gang 1**.
19		**PR148:** Pedal potentiometer voltage gang 2	**PR148 ≈ 7.5 V**	In the event of a fault, apply the interpretation of fault **DF198 Pedal sensor circuit gang 2**.
20		**PR424:** Programming the no-load position value	**PR424 ≈ 15%**	**Run command RZ005 Programming. If the parameters are still not correct, contact the Techline.**

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB-FUNCTION: DRIVER PARAMETERS (CONTINUED 3):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
21	**Motorised throttle**	**AC027:**	Motorised throttle	**The motorised throttle should be heard operating**	In the event of a fault apply the interpretation of **AC027 Motorised throttle**.
22		**PR539:**	Measured throttle voltage, gang circuit 1	**PR539 ≈ 2.2 V**	In the event of a fault, apply interpretation of **DF095 Throttle potentiometer circuit gang 1 and DF096 Throttle potentiometer circuit gang 2**.
23		**PR538:**	Measured throttle voltage, gang circuit 2	**PR538 ≈ 2.2 V**	
24		**PR587:**	Motorised throttle lower stop gang 1	**PR587 ≈ 0.5 V**	
25		**PR588:**	Motorised throttle lower stop gang 2	**PR588 ≈ 0.5 V**	
26		**PR589:**	Motorised throttle upper stop gang 1	**PR589 ≈ 4.40 V**	
27		**PR590:**	Motorised throttle upper stop gang 2	**4.40 V**	In the event of a fault, apply interpretation of **DF095 Throttle potentiometer circuit gang 1 and DF096 Throttle potentiometer circuit gang 2**.
28		**PR113:**	Lower throttle stop after applying offset	**10 %**	
29	**Motorised throttle**	**ET0565:**	Type 2 defect mode	**NO**	**NONE**
30		**ET0566:**	Type 3 defect mode	**NO**	
31		**ET0567:**	Type 4 defect mode	**NO**	
32		**ET0568:**	Type 5 defect mode	**NO**	
33		**ET0569:**	Type 6 defect mode	**NO**	

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

PRE-HEATING/IGNITION SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Cylinder recognition**	**ET061:**	Cylinder 1 recognition	**NOT COMPLETE COMPLETE**	In the event of a fault, apply the interpretation of status **ET061 Cylinder 1 recognition**.
2	**Engine speed**	**PR055:**	Engine speed	**Gives the engine's rotational speed in rpm. 700 rpm < PR055 < 800 rpm**	In the event of a fault apply the interpretation of **DF154 Flywheel signal sensor circuit**.
3	**Flywheel target**	**ET089:**	Flywheel target programming	**NOT COMPLETE COMPLETE STATUS 1**	**STATUS 1:** Flywheel target fault. **NONE**
4	**Flywheel**	**ET062:**	Flywheel signal	**DETECTED**	In the event of a fault, apply the interpretation of status **ET062 Flywheel signal**.
5	**Ignition**	**PR448:**	Ignition advance	**- 23.6 °V < PR448 < 72 °V**	**NONE**
6		**PR095:**	Anti-pinking correction	**0 °V < PR095 < 8 °V**	
7		**PR126:**	advance after anti-pinking correction	**- 23.6 °V < PR126 < 72 °V**	
8		**PR427:**	Average pinking signal	**10.000 < PR427 < 20.000**	In the event of a fault, apply the interpretation of **DF088 Pinking sensor circuit**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB-FUNCTION: IGNITION/PREHEATING (continued 1):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
9	**Combustion misfiring**	**ET581:**	Petrol combustion misfire fault finding	**INACTIVE**	In the event of a fault, apply interpretation of faults **DF059 Combustion misfire in cylinder 1, DF060 Combustion misfire in cylinder 2, DF061 Combustion misfire in cylinder 3, DF062 Combustion misfire in cylinder 4**.
10		**ET057:**	Misfiring on cylinder 1	**NO**	
11		**ET058:**	Misfiring on cylinder 2	**NO**	
12		**ET059:**	Misfiring on cylinder 3	**NO**	
13		**ET060:**	Misfiring on cylinder 4	**NO**	
14	**Actuators**	**AC079:**	Actuator static test	**All the actuators must be operated (fuel pump relay, electric coolant pump on F4RT, downstream and upstream sensor heating, motorised throttle)**	In the event of a fault, apply interpretation of **fault associated with the actuators concerned**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB-FUNCTION: IGNITION/PREHEATING (continued 2):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
15	**LPG combustion misfire**	**ET582:**	LPG combustion misfire fault finding	**INACTIVE**	In the event of a fault, apply interpretation of faults **DF635 Combustion misfire in LPG cylinder 1, DF636 Combustion misfire in LPG cylinder 2, DF637 Combustion misfire in LPG cylinder 3, DF638 Combustion misfire in LPG cylinder 4**.
16		**ET583:**	LPG cylinder 1 combustion misfire	**NO**	
17		**ET584:**	LPG cylinder 2 combustion misfire	**NO**	
18		**ET585:**	LPG cylinder 3 combustion misfire	**NO**	
19		**ET586:**	LPG cylinder 4 combustion misfire	**NO**	
20	**Actuators**	**AC079:**	Actuator static test	**All the actuators must be operated (fuel pump relay, electric coolant pump on F4RT, downstream and upstream sensor heating, motorised throttle)**	In the event of a fault, apply interpretation of **fault associated with the actuators concerned**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

COLD LOOP SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	**Air conditioning**	**ET079:** Air conditioning present	**Shows whether or not the vehicle is equipped with air conditioning.** **YES:** Air conditioning is detected by the injection computer. **NO:** Air conditioning is not detected by the injection computer.	**If inconsistent with the vehicle equipment, carry out a multiplex network test and apply the relevant procedure.**
2		**ET088:** Compressor actuation request	**The injection requests the UCH (via the multiplex network) to start the compressor.** **ACTIVE:** The multiplex network must not be faulty on the BVA, relay/fuse box or UCH systems. The UCH must send a compressor starting request to the injection. The coolant pressure sensor must not be defective. Satisfactory engine operating conditions (coolant temperature, engine load, etc.). **INACTIVE:** One of the above conditions has not been met.	**NONE**
3		**ET004:** Air conditioning authorisation	**YES** **NO**	

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB-FUNCTION: COLD LOOP (continued 1):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
4		**ET023:**	Fast idle speed request	**UCH requests the injection system to increase the idle speed.** **INACTIVE:** The UCH has not formulated a request. **ACTIVE:** The UCH has formulated a request	**If ET023 is inconsistent, run a multiplex network test using the diagnostic tool; then if the test is in order, consult the UCH.**
5	**Engine speed**	**PR055:**	Engine speed	**Shows the speed of rotation in rpm.** **700 rpm < PR055 < 800 rpm**	In the event of a fault apply the interpretation of **DF154 Flywheel signal sensor circuit**.
6	**Air conditioning**	**PR037:**	Refrigerant pressure	**2 bar < PR037 < 27 bar** **Default value: 0 bar**	If **1.DEF**, apply interpretation of **PR037 Coolant pressure**.
7		**ET674:**	Refrigerant pressure status	**CORRECT** **TOO LOW**	
8		**PR125:**	Power absorbed by the air conditioning compressor	**0 < PR125 < 300 W**	**NONE**
9	**Coolant temperature**	**PR064:**	Coolant temperature	**- 40 °C < PR064 < 120 °C** **Default value: - 39 °C**	If there is a fault use the interpretation of **DF001 Coolant temperature sensor circuit**.
10	**Vehicle speed**	**PR089:**	Vehicle speed	**Gives the vehicle speed in mph (km/h). This parameter is sent to the injection by the ABS computer via the multiplex network.**	If there is a fault use the interpretation of **DF091 Vehicle speed signal**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

SUB-FUNCTION: COLD LOOP (continued 2):

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
11	**Motor-driven fan assembly**	**ET022:**	Low speed fan assembly request	If the coolant temperature reaches **98 °C** the low speed fan assembly is activated and cuts out at **96 °C**. **ACTIVE** **INACTIVE**	**In the event of a fault, run a multiplex network test using the diagnostic tool then, if the test is in order, consult the Protection and Switching Unit.**
12		**ET021:**	High speed fan assembly request	If the coolant temperature reaches **102 °C** the low speed fan assembly is activated and cuts out at **99 °C**. **ACTIVE** **INACTIVE**	

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

HEATING SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Coolant temperature**	**PR064:**	Coolant temperature	**- 40 °C < PR064 < 120 °C** **Default value: - 39 °C**	If there is a fault use the interpretation of **DF001 Coolant temperature sensor circuit**.
2	**Passenger compartment heating resistor**	**ET111:**	RCH number set	**YES** **NO**	**In the event of a fault, run a multiplex network test using the diagnostic tool then, if the test is in order, consult the Protection and Switching Unit.**
3		**ET112:**	RCH cut-off	**YES** **NO**	

OCR: Opening Cycle Ratio

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

CRUISE CONTROL/SPEED LIMITER SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Cruise control/ Speed limiter**	**ET042:**	Cruise control/ Speed limiter	**NOT DETECTED** **INACTIVE** **CRUISE CONTROL** **SPEED LIMITER**	In the event of a fault, apply the interpretation of **ET042 Cruise control/speed limiter.**
2		**ET415:**	Deactivation of cruise control/ speed limiter	**NONE** **STATUS 1**: Traction control request **STATUS 2**: Brake pedal depressed **STATUS 3**: Clutch pedal depressed **STATUS 4**: Suspend button pressed **STATUS 5**: Cruise control or speed limiter monitoring **STATUS 6**: Gear lever in neutral position (manual gearbox) or N position (automatic transmission) **STATUS 7**: Inconsistency between request and 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, apply the interpretation of **ET415 Cruise control/Speed limiter deactivation**.
3		**ET703:**	Cruise control/ speed limiter buttons	**INACTIVE** **MINUS** **PLUS** **SUSPEND** **RESUME**	In the event of a fault, apply the interpretation of status **ET703 Cruise control/speed limiter buttons**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

CRUISE CONTROL/SPEED LIMITER SUB-FUNCTION (continued):

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
4	**Vehicle speed**	**PR089:** Vehicle speed	**Gives the vehicle speed in mph (km/h). This parameter is sent to the injection by the ABS computer via the multiplex network.**	If there is a fault, apply the interpretation of **DF091 Vehicle speed signal**
5	**Brake pedal**	**ET704:** Brake switch no. 1 **ET705:** Brake switch no. 2	**ACTIVE** **INACTIVE**	In the event of a fault, apply the interpretation of statuses **ET704 Brake switch no.1 and ET705 Brake switch no. 2**.
6	**Clutch pedal switch**	**ET405:** Clutch pedal switch	**INACTIVE:** Clutch pedal released. **ACTIVE:** Clutch pedal depressed. If the vehicle is fitted with an automatic transmission, **ET405** should be **ACTIVE.**	In the event of a fault, apply the interpretation of **ET405 Clutch pedal switch**.

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

STARTING SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Starting**	**ET076:**	Starting	**AUTHORISED**	**Authorisation to start is given once the petrol pump is pressurised and if the motorised throttle has emerged from the stop and limp-home position programming phase.**
2	**Actuator relay control**	**ET048:**	Actuator relay control	**ACTIVE**	If **INACTIVE** apply the interpretation of **DF084 Actuator relay control circuit**.
3	**Battery voltage**	**PR074:**	Battery voltage	**11 V < PR074 < 15 V**	If there is a fault, apply the interpretation of **DF046 Battery voltage**.
4	**Impact signal**	**ET077:**	Impact detected	**NO**	**In the event of a fault, run a multiplex network test using the diagnostic tool; then, if the test is OK, carry out fault finding on the airbag computer.**

NOTES	Only perform this conformity check after a **thorough check** with the diagnostic tool. The values shown in this conformity check are given as a guide. **Application conditions:** Engine **warm, idling**.

PROTECTION SUB-FUNCTION:

Order	Function	Parameter or Status checked or Action		Display and Notes	Fault finding
1	**Code programmed**	**ET006:**	Code programmed	**Indicates whether or not the immobiliser code has been programmed by the computer.** **PROGRAMMED:** Code programmed **NOT PROGRAMMED:** Code not programmed by the injection computer.	**If NOT PROGRAMMED, contact the Techline**
2	**Engine immobiliser**	**ET003:**	Engine immobiliser	**Indicates the status of the immobiliser system.** **INACTIVE**	**If ET003 is inconsistent, run a multiplex network test using the diagnostic tool; then if the test is in order, carry out fault finding on the UCH.**
3	**Starting**	**ET076:**	Starting	**AUTHORISED**	**Authorisation to start is given once the petrol pump is pressurised and if the motorised throttle has emerged from the stop and limp-home position programming phase.**

Tool status	Diagnostic tool title
ET001	+ After ignition computer feed
ET003	Engine immobiliser
ET004	Air conditioning authorisation
ET006	Code programmed
ET021	High speed fan assembly request
ET022	Low speed fan assembly request
ET023	Fast idle speed request
ET042	Cruise control/speed limiter
ET047	Fuel pump control circuit
ET048	Actuator relay control
ET050	Canister bleed control
ET051	Throttle stop programming
ET052	Upstream O_2 sensor heating
ET053	Downstream O_2 sensor heating
ET054	Idle speed regulation
ET056	Richness double loop
ET057	Misfiring on cylinder 1
ET058	Misfiring on cylinder 2
ET059	Misfiring on cylinder 3
ET060	Misfiring on cylinder 4
ET061	Cylinder 1 recognition
ET062	Flywheel signal
ET063	Park/Neutral position
ET064	Level 1 injection fault
ET065	Level 2 Injection fault
ET066	LPG fault
ET067	LPG ready
ET068	LPG tank empty
ET071	Transition from petrol mode to LPG mode
ET072	Transition from LPG mode to petrol mode
ET073	Conditions for switching to LPG mode
ET075	Pedal released and throttle closed

Tool status	Diagnostic tool title
ET076	Starting
ET077	Impact detected
ET079	Air conditioning present
ET081	Accelerator pedal position
ET082	Motorised throttle position
ET083	Camshaft dephaser in defect mode
ET086	Camshaft dephaser control
ET088	Compressor actuation request
ET089	Flywheel target programming
ET111	RCH number set
ET112	RCH cut-off
ET300	Richness regulation
ET340	Request by automatic transmission to light up the OBD warning light
ET405	Clutch pedal switch
ET415	Deactivation of cruise control/speed limiter
ET561	Operating mode
ET564	Type 1 defect mode
ET565	Type 2 defect mode
ET566	Type 3 defect mode
ET567	Type 4 defect mode
ET568	Type 5 defect mode
ET569	Type 6 defect mode
ET581	Petrol combustion misfiring fault finding
ET582	LPG combustion misfire fault finding
ET583	LPG cylinder 1 combustion misfire
ET584	LPG cylinder 2 combustion misfire
ET585	LPG cylinder 3 combustion misfire
ET586	LPG cylinder 4 combustion misfire
ET617	Upstream oxygen sensor OBD fault finding
ET619	Fuel circuit OBD fault finding
ET674	Refrigerant pressure
ET703	Cruise control/speed limiter buttons
ET704	Brake switch no. 1
ET705	Brake switch no. 2

ET042	CRUISE CONTROL/SPEED LIMITER

NOTES	**Special notes:** Only perform the tests if the statuses do not correspond with the system programming functions.

NOT DETECTED	If the vehicle does not have buttons for the cruise control or speed limiter functions, status **ET042** is permanently **NOT DETECTED**. Confirmation of the absence of the cruise control or speed limiter function on the vehicle. 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 been programmed or reprogrammed, 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 on testing the multiplex network with the CLIP application. 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 **ET042** is **NOT DETECTED**, check that the owner of the vehicle has not at some point in the past, asked for the cruise control/speed limiter to be disabled. Contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

ET042 (CONTINUED 1)	

INACTIVE	When the main switch is in the rest (or neutral) position, status **ET042** is **INACTIVE**. 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. Check for **+ 12 V** APC on the main switch connector. Disconnect the main switch and with it in the rest position, check the **insulation** between: Injection computer A black, ● 32-track **track A2** ⟶ Cruise control On/Off button, 6-track connector **track A3** ● 32-track **track C3** ⟶ Speed limiter On/Off button, 6-track connector **track B1** – Check the continuity between **track C3** (injection computer, connector A, black) and the speed limiter On/Off button 6-track connector **track B1** in the speed limiter position. – Check the continuity between **track A2** (injection computer, connector A, black) and the cruise control On/Off button 6-track connector **track A3** in the cruise control position. If these checks are not in order, replace the switch. Check the **continuity, insulation and the absence of interference resistance** on the following connections: Injection computer connector A, black, ● 32-track **track A2** ⟶ Cruise control On/Off button, 6-track connector **track A3** ● 32-track **track C3** ⟶ Speed limiter On/Off button, 6-track connector **track B1** Repair if necessary. Check the engine management computer connections.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

ET042 (CONTINUED 2)	

SPEED LIMITER	When the driver presses the main speed limiter switch, status **ET042** becomes "**SPEED LIMITER**". If **CRUISE CONTROL** or **INACTIVE** appears although the switch was pressed in the speed limiter position, carry out the following operations: Check the connections of the cruise control/speed limiter main switch. Check for **+ 12 V** APC on the main switch connector. Disconnect the main switch and with it in the rest position, check the insulation between: Injection computer A black, ● 32-track **track A2** ⟶ Cruise control On/Off button, 6-track connector **track A3** ● 32-track **track C3** ⟶ Speed limiter On/Off button, 6-track connector **track B1** – Check the continuity between **track C3** (injection computer, connector A, black) and the speed limiter On/Off button 6-track connector **track B1** in the speed limiter position. – Check the continuity between **track A2** (injection computer, connector A, black) and the cruise control On/Off button 6-track connector **track A3** in the cruise control position. If these checks show incorrect values, replace the main switch. Check the **continuity, insulation and the absence of interference resistance** on the following connections: Injection computer connector A, black, ● 32-track **track A2** ⟶ Cruise control On/Off button, 6-track connector **track A3** ● 32-track **track C3** ⟶ Speed limiter On/Off button, 6-track connector **track B1** Check the engine management computer connections.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

ET042 (CONTINUED 3)	

CRUISE CONTROL	When the driver presses the main cruise control button, status **ET042** becomes **CRUISE CONTROL**. If **SPEED LIMITER** or **INACTIVE** appears although the driver pressed the switch in the cruise control position, carry out the following operations: Check the connections of the cruise control/speed limiter main switch. Check for **+ 12 V** APC on the main switch connector. Disconnect the switch and when it is in the rest position, check the insulation between: Injection computer A black, ● 32-track **track A2** ⟶ Cruise control On/Off button, 6-track connector **track A3** ● 32-track **track C3** ⟶ Speed limiter On/Off button, 6-track connector **track B1** – Check the continuity between **track C3** (injection computer, connector A, black) and the speed limiter On/Off button 6-track connector **track B1** in the speed limiter position. – Check the continuity between **track A2** (injection computer, connector A, black) and the cruise control On/Off button 6-track connector **track A3** in the cruise control position. If these checks show incorrect values, replace the main switch. Check the **continuity, insulation and the absence of interference resistance** on the following connections: Injection computer connector A, black, 32-track **track A2** ⟶ Cruise control On/Off button, 6-track connector **track A3** 32-track **track C3** ⟶ Speed limiter On/Off button, 6-track connector **track B1** Check the engine management computer connections.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**

ET054	IDLE SPEED REGULATION ACTIVE INACTIVE

NOTES	There must be no present or stored faults. **Check parameters: PR030 Accelerator pedal position,** **PR035 Atmospheric pressure,** **PR058 Air temperature,** **PR064 Coolant temperature,** **PR118 Measured throttle position gang 1,** **PR119 Measured throttle position gang 2.** Check that all these parameters are completely correct.

IDLE SPEED TOO HIGH

Check:
– the engine oil level (too high ⇒ oil combustion),
– that the restrictions are present in the oil vapour rebreathing circuit,
– the sealing between the throttle valve and inlet manifold,
– the manifold pressure sensor sealing,
– the fuel vapour absorber bleed, which must not be jammed open,
– the fuel vapour absorber bleed system sealing,
– the brake servo system sealing,
– the sealing between the inlet manifold and cylinder head,
– the oil vapour recovery circuit sealing between the inlet manifold and cylinder head,
– the fuel pressure and flow (see **MR 364 or 370 Mechanics, 17B, Petrol injection**),
– the condition and cleanliness of the injectors,
– the cylinder compressions,
– the timing adjustment,
– the hydraulic tappets if there is camshaft noise (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**).
Repair the defective component if necessary.

AFTER REPAIR	Repeat the conformity check from the start.

ET056	DOUBLE RICHNESS LOOP ACTIVE INACTIVE

NOTES	There must be no present or stored faults.

Check the **cleanliness** and **condition** of the upstream oxygen sensor connections.
Repair if necessary.

Check for the **+ 12 V feed** on **track A** of the upstream oxygen sensor connector with the ignition on.
If **+ 12 V** is not present:
– disconnect the battery,
– check the **cleanliness** and **condition** of the connections.
Using the universal bornier, check the **continuity** on the following connection:

Injection computer, connector **B, track M2** → **track A** of the upstream oxygen sensor

Protection and Communication Unit, **connector CT1, track 4** →

Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer connector **C, track C1** → **track D** of the upstream oxygen sensor

Injection computer, connector **C, track B1** → **track C** of the upstream oxygen sensor

Injection computer, connector **C, track L2** → **track B** of the upstream oxygen sensor

Repair if necessary.

Measure the heating **resistance** of the upstream oxygen sensor between **tracks A** and **B**.
Replace the sensor if the **resistance** is not approximately **9 Ω at 20 °C**.

Check **the condition** and **secure fitting** of the upstream oxygen sensor.
If the vehicle is driven frequently in town, **carry out a decoking procedure**.

AFTER REPAIR	Repeat the conformity check from the start.

ET056 **CONTINUED 1**	

Check the **cleanliness** and **condition** of the downstream oxygen sensor connections.
Repair if necessary.

Check for the **+ 12 V feed** on track A of the downstream oxygen sensor connector with the ignition on.
If **+ 12 V** is not present:
– disconnect the battery,
– check the **cleanliness** and **condition** of the connections.
Using the universal bornier, check the **continuity** on the following connection:

Injection computer, connector **B, track M2** → **track A** of the downstream oxygen sensor

Protection and Communication Unit, **connector CT1, track 4**

Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **C, track B2** → **track D** of the downstream oxygen sensor

Injection computer, connector **C, track A2** → **track C** of the downstream oxygen sensor

Injection computer, connector **C, track L3** → **track B** of the downstream oxygen sensor

Repair if necessary.

Measure the heating **resistance** of the downstream oxygen sensor between **tracks A** and **B**.
Replace the sensor if the **resistance** is not approximately **9 Ω at 20 °C**.

Check **the condition** and for **secure fitting** of the downstream oxygen sensor.
If the vehicle is normally driven in urban conditions, there is a risk of contamination of the oxygen sensor.

AFTER REPAIR	Repeat the conformity check from the start.

ET056 **CONTINUED 2**	

Check:
– the condition of the air filter,
– that the air inlet circuit is not blocked,
– the condition and conformity of the spark plugs,
– the sealing between the throttle valve and inlet manifold,
– the manifold pressure sensor sealing,
– the fuel vapour absorber bleed, which must not be jammed open,
– the fuel vapour absorber bleed system sealing,
– the brake servo system sealing,
– the cylinder head oil vapour recovery system sealing,
– the sealing between the inlet manifold and cylinder head,
– the exhaust pipe sealing between the cylinder head and catalytic converter.
– the fuel flow rate and pressure.

If the idle speed is not stable, check:
– the timing adjustment,
– the hydraulic tappets if there is camshaft noise (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**),
– the cylinder compressions.

Drive the vehicle to check the repair.
Repair the defective components.

AFTER REPAIR	Repeat the conformity check from the start.

ET061	CYLINDER 1 RECOGNITION COMPLETE NOT COMPLETE

NOTES	There must be no present or stored faults.

Check **the cleanliness** and **condition** of the camshaft sensor connectors.
Repair if necessary.

Check **the cleanliness** and **condition** of the camshaft sensor.
Repair if necessary.

Check for the **+ 12 V feed** on **track 3** of the camshaft sensor connector with the ignition on.
If **+ 12 V** is not present:
– Switch off the ignition,
– disconnect the **CN connector** in the Protection and Switching Unit,
– check the **cleanliness** and **condition** of the connections,
– using the Universal bornier, check the **continuity** on the following connection:

Injection computer, connector **B, track M2** → **track 3** of the camshaft sensor.

Protection and Communication Unit, **connector CN, track 6**

Reconnect the **Protection and Switching Unit connector**.
If the **+ 12 V feed** is still not present on **track 3** of the camshaft sensor connector with the ignition on, there is a fault with the Protection and Switching Unit.
Contact the Techline.

Switch off the ignition.
Disconnect the computer. Check the **cleanliness** and **condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **C, track E2** → **track 1** of the camshaft sensor

Injection computer, connector **C, track F1** → **track 2** of the camshaft sensor

Repair if necessary.

AFTER REPAIR	Repeat the conformity check from the start.

ET062	FLYWHEEL SIGNAL DETECTED NOT DETECTED

NOTES	There must be no present or stored faults.
	Information: if the flywheel has been replaced or disassembled, reinitialise the flywheel target programming using command **RZ005 Programming**.

Check **the mounting** and **positioning** of the TDC sensor (see **MR 364 or 370 Mechanical, 11A, top and front of engine**).
Repair if necessary.

Check the **cleanliness** and **condition** of the TDC sensor and its connections.
Check the condition of the wire.
Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **B, track E4** → **track 2** of the engine speed sensor

Injection computer, connector **B, track F3** → **track 1** of the engine speed sensor

Repair if necessary.

Measure the **resistance** of the TDC sensor between **tracks 1** and **2**.
Replace the TDC sensor if the **resistance** is not between **200 and 270 Ω at 23 °C**.

If the sensor has been replaced, reset the flywheel signal programming.
Carrying out the flywheel target programming:
– Decelerate a first time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **3500** and **3000 rpm**, in 3rd gear for a manual gearbox and 2nd for automatic transmission, for at least 5 seconds.
– Decelerate a second time with injection cut-off (i.e. feet off the brake, accelerator pedal and clutch pedals) between **2400** and **2000 rpm** for K4 engines and between **1800 and 1400 rpm** for F4R engines, in 3rd gear for a manual gearbox and 2nd for automatic transmission, for at least 5 seconds.
When the work is completed, check that status **ET089 Flywheel target programming** is **COMPLETED**.
(*This is the moment when, during deceleration with no load, the engine drops to idling speed and recovers torque).

AFTER REPAIR	Repeat the conformity check from the start.

ET067	LPG READY YES NO

IMPORTANT
Before working on an LPG supply circuit component, always refer to the appropriate section of the Workshop Repair Manual (see **17C, LPG Injection, Introduction, Safety advice for all operations**).

NOTES	There must be no present or stored faults. Ignition on, engine stopped.

Check:
- the LPG tank solenoid valve (see **DF013 Tank solenoid valve circuit**),
- the general relay (see **DF007 Main relay circuit**),
- the LPG expansion valve solenoid valve (see **DF103 LPG expansion valve solenoid valve**),
- the LPG pressure sensor (see **DF092 Expansion valve downstream pressure sensor circuit**),
- the LPG pressure in the tank (see **DF031 LPG pressure downstream of expansion valve**).

These faults are detected by the LPG injection computer.
Repair or replace the faulty components, if necessary.

Check:
- the LPG filling hoses,
- the supply hoses upstream of the expansion valve,
- the expansion valve,
- the hoses downstream of the expansion valve.

Repair or replace the faulty components, if necessary.

If the status is still not correct, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start.

ET068	LPG TANK EMPTY YES NO

IMPORTANT
Before working on an LPG supply circuit component, always refer to the appropriate section of the Workshop Repair Manual (see **17C, LPG Injection, Introduction, Safety advice for all operations**).

NOTES	There must be no present or stored faults. Ignition on, engine stopped.
	Special Note Check that there is LPG in the tank. Check that there is no fault on the petrol injection computer. Test the LPG injection computer (see **17C, LPG injection**).

Using parameters **PR001 Manifold pressure** and **PR112 LPG pressure downstream of the expansion valve**, check that **PR112 - PR001 = 800 mbar**.
If **PR112 - PR001 < 800 mbar**, check:
- the LPG tank solenoid valve (see **DF013 Tank solenoid valve circuit**),
- the expansion valve,
- the LPG pressure downstream of the expansion valve (see **PR112 LPG pressure downstream of expansion valve**).

This fault is detected by the LPG injection computer.
Repair or replace the faulty components, if necessary.

If the status is still not correct, check:
- that the injectors are functioning correctly, using commands **AC018 Cylinder 4 injector, AC019 Cylinder 3 injector, AC020 Cylinder 2 injector** and **AC021 Cylinder 1 injector**.
- the condition of the hoses between the expansion valve and the injectors.

Repair the faulty components if necessary.

If the status is still not correct, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start.

ET071	TRANSITION FROM PETROL MODE TO LPG MODE IN PROGRESS COMPLETE

IMPORTANT
Before working on an LPG supply circuit component, always refer to the appropriate section of the Workshop Repair Manual (see **17C, LPG Injection, Introduction, Safety advice for all operations**).

NOTES	There must be no present or stored faults. Ignition on, engine stopped.
	Special note: The duration of the transition varies according to the outside temperature.

Check that the LPG tank solenoid valve clicks when LPG mode is entered.
If the LPG tank solenoid valve does not click, **check**:
- the LPG **10A fuse F15**,
- the general relay (see **DF007 Main relay circuit**),
- the LPG tank solenoid valve wiring (see **DF013 Solenoid valve tank circuit**).

These faults are detected by the LPG injection computer.
Repair or replace the faulty components, if necessary.

If the status is still not correct, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start.

ET072	TRANSITION FROM LPG MODE TO PETROL MODE IN PROGRESS COMPLETE

NOTES	There must be no present or stored faults. Ignition on, engine stopped.

Check that the fuel pump starts when petrol mode is entered.
Check status **ET025 Fuel pump** changes to **ACTIVE**.
If the fuel pump does not start, **check**:
- the fuel pump cut-off relay (see **DF024 Fuel pump cut-off relay circuit**),
- the petrol computer (see **17B, Petrol injection**).

This fault is detected by the LPG injection computer.
Repair or replace the faulty components, if necessary.

If the status is still not correct, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start.

ET073	CONDITIONS FOR SWITCHING TO LPG MODE AUTHORISED INHIBITED

IMPORTANT
Before working on an LPG supply circuit component, always refer to the appropriate section of the Workshop Repair Manual (see **17C, LPG Injection, Introduction, Safety advice for all operations**).

NOTES	There must be no present or stored faults. Ignition on, engine stopped.

Variable duration depending on:
- **ET100 LPG system ready,**
- **PR002 Coolant temperature,**
- **PR103 Air temperature,**
- **PR113 LPG temperature.**

Apply the interpretation of faults **DF103 LPG expansion valve solenoid valve** and **DF007 Main relay circuit**.
These faults are detected by the LPG injection computer.

Manipulate the wiring harness between the LPG computer and the petrol computer until a change in status is noted.
Check the **insulation, continuity and ensure the absence of interference resistance** on the connections between:

Petrol computer connector **B, track K3** → **track A1** of the LPG computer

Petrol computer connector **B, track K4** → **track A2** of the LPG computer

Repair if necessary.

If the status is still not correct, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start.

ET405	CLUTCH PEDAL SWITCH

NOTES	**Special note:** Only perform the tests if the statuses do not correspond with the system programming functions.

ACTIVE	Check the condition and fitting of the clutch pedal switch. Remove the clutch pedal switch then check the **insulation** between **tracks 1** and **2**, with the switch in the rest position. Repeat this operation with the switch pressed and check the **continuity** between **tracks 1** and **2**. If these two checks are not in order, replace the switch.
INACTIVE	Check the condition and fitting of the clutch pedal switch. Remove the clutch pedal switch then check the **insulation** between **tracks 1** and **2**, with the switch in the rest position. Repeat this operation with the switch pressed and check the **continuity** between **tracks 1** and **2**. If these two checks are not in order, replace the switch. Then check the **continuity and make sure there is no interference resistance** on the following connection: Injection computer connector A, black, 32-track, **track C4** ⟶ **Track 1** clutch connector Check for **earth** on **track 2** of the clutch switch connector. If there is a repair method (see **Technical Note 6015A, Electrical wiring repair, Wiring: Repair precautions**), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

ET415	CRUISE CONTROL/SPEED LIMITER DEACTIVATION

NOTES	**Special notes:** Only perform the tests if the statuses do not correspond with the system programming functions.

Note:
Cruise control can be activated when the vehicle speed exceeds **18 mph (30 km/h)**.
Status **ET415** displays the various reasons for deactivation of the cruise control/speed limiter function, which are due to driver demand or the exterior environment.

IMPORTANT
Clear the fault memory by running command **RZ001 "Fault memory", to reset this status to "NONE"**.

NONE	This status is present on the diagnostic tool when: The computer has been reinitialised. The computer has been reprogrammed

STATUS 1	**Traction control request** 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. Status **ET415** becomes **STATUS 1** when driving with the cruise control active **(ET042 Cruise control/Speed limiter: CRUISE CONTROL**) and traction control is requested. This deactivates cruise control. **Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".** If status **ET415** becomes **STATUS 1** with no traction control request (see **38C, Anti-lock Braking System**).

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**

ET415 1(CONTINUED)	

STATUS 2	**Brake pedal depressed** The cruise control function is deactivated when the brake pedal is depressed. 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. **Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".** If status **ET415** becomes **STATUS 2** without depressing the brake pedal, consult the interpretation of statuses **ET704 Brake switch no. 1** and **ET705 Brake switch no. 2**.

STATUS 3	**Clutch pedal depressed** **Manual gearbox ONLY** The cruise control function is deactivated when the gearbox is not coupled to the engine (clutch pedal depressed). 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. **Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".** If status **ET415** becomes **STATUS 3** without the clutch pedal being depressed, consult the interpretation of status **ET405 Clutch pedal switch**. 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**)

STATUS 4	**Cancel button pressed** The cruise control/speed limiter function is deactivated whenever the suspend button is pressed. Status **ET415** becomes **STATUS 4** while driving when: - Either the cruise control is active. - Or the speed limiter is active, - and the driver presses the **0** button. This action deactivates the Cruise control/Speed limiter. **Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".** If status **ET415** becomes **STATUS 4** without pressing the **0** button, consult the interpretation of status **ET703 Cruise control/speed limiter buttons** and run fault finding on the **R/0** control button located on the right-hand side of the steering wheel.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**

ET415 (CONTINUED 2)	

STATUS 5	**Cruise control or speed limiter monitoring**
	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. If status **ET415** is **STATUS 5**, refer to the interpretation of: - status **ET042 Cruise control/Speed limiter**, - status **ET703 Cruise control/speed limiter buttons**, - status **ET704 Brake switch no. 1**, - and status **ET705 Brake switch No 2**, to test the cruise control/speed limiter system components and find the defective component. In addition, check the operation of the accelerator pedal, and use the **diagnostic tool** to check for a fault on it. Deal with them if necessary. **Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".** If status **ET415** changes to **STATUS 5**, deal with present faults or those stored in the injection computer. If the fault is still present, contact Techline.

STATUS 6	**Gear lever in neutral (manual gearbox) or the neutral position (automatic gearbox)**
	Status **ET415** becomes **STATUS 6**, when driving with cruise control active (**ET042: Cruise control/speed limiter: CRUISE CONTROL**) and: - 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. This deactivates cruise control. **Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".** 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.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

ET415 (CONTINUED 3)	

STATUS 7	**Inconsistency between the request and the vehicle speed**
	Status **ET415** becomes **STATUS 7** if the computer detects too great a difference between the speed requested by the driver and the vehicle speed. **STATUS 7** may occur when driving with the cruise control active (**ET042 Cruise control/ speed limiter: CRUISE CONTROL**) and when there is significant difference. This inconsistency deactivates cruise control. **Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".** If status **ET415** changes to **STATUS 7** where there is no significant difference in the levels, contact the Techline.

STATUS 8	**Automatic transmission in defect mode.**
	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. This signal is conveyed on the multiplex line and deactivates the cruise control. Carry out a multiplex network test, then run fault finding on the automatic transmission computer. Deal with any present or stored faults (see **23A, Automatic transmission, interpretation of faults**). Clear the automatic transmission computer memory by running command **RZ001 Fault memory**. **Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".** If **status 8** continues, contact the Techline.

STATUS 9	**Vehicle speed monitoring**
	Status **ET415** changes to **STATUS 9** if the vehicle speed received by the computer is invalid or absent. This signal is conveyed on the multiplex line and deactivates the cruise control. Carry out a multiplex network test, then run fault finding on the **ABS** computer. Deal with present or stored faults (see **38C, Anti-lock braking system, Interpretation of faults**). **Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".** If **STATUS 9** is still present, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

ET415 (CONTINUED 4)	

	Monitoring by injection computer
STATUS 10	Status **ET415** becomes **STATUS 10** when driving with cruise control active (**ET042 Cruise control/speed limiter: CRUISE CONTROL**) and if the injection computer detects a fault anywhere in the engine management system, or an engine speed that is too high or too low. This signal is conveyed on the multiplex line and deactivates the cruise control. Carry out a multiplex network test, then run fault finding on the injection computer. Deal with any present or stored faults (see **Interpretation of faults**). **Reinitialise status ET415 on the injection computer by running command RZ001 "Fault memory".** If **status 10** continues, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

ET507	OBD UPSTREAM OXYGEN SENSOR HEATING CIRCUIT

NOTES	There must be no present or stored faults.

Check the **cleanliness** and **condition** of the upstream oxygen sensor and its connections.
Repair if necessary.

With the ignition on, check for **+ 12 V** on **track A** of the upstream oxygen sensor connector.
If **+ 12 V** is not present:
– disconnect the battery,
– disconnect the **CN connector** in the Protection and Switching Unit,
– check the **cleanliness** and **condition** of the connections,
– using the universal bornier, check for **continuity** on the following connection:

Protection and Switching Unit, **connector CN, track 6** ⟶ **track A** of the upstream oxygen sensor

Reconnect the **Protection and Switching Unit** connector and reconnect the battery.
With the ignition on, if there is still no **+ 12 V** at the upstream oxygen sensor connector, there is a fault in the **Protection and Switching Unit**.
Contact the Techline.

Disconnect the battery and the injection computer.
Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** on the following connection:

Injection computer, connector **C, track L2** ⟶ **track B** of the upstream oxygen sensor

Repair if necessary.

Measure the heating **resistance** between **tracks A** and **B** of the upstream oxygen sensor.
Replace the upstream oxygen sensor if the **resistance** is not approximately **9 Ω at 20 °C**.

If the fault is still present, replace the upstream oxygen sensor.

AFTER REPAIR	Repeat the conformity check from the start.

ET509	OBD DOWNSTREAM OXYGEN SENSOR HEATING CIRCUIT

NOTES	There must be no present or stored faults.

Check **the cleanliness** and **condition** of the downstream oxygen sensor and its connections.
Repair if necessary.

With the ignition on, check for **+ 12 V feed** on **track A** of the downstream oxygen sensor connector.
If **+ 12 V** is not present:
– disconnect the battery,
– disconnect the **CN connector** in the Protection and Switching Unit,
– check the **cleanliness** and **condition** of the connections,
– using the Universal bornier, check the **continuity** on the following connection:

Protection and Switching Unit, **connector CN, track 6** ⟶ **track A** of the downstream oxygen sensor

Reconnect the **Protection and Switching Unit** connector and reconnect the battery.
With the ignition on, if the **+ 12 V** is still not present on the downstream oxygen sensor connector, there is a fault in the **Protection and Switching Unit**.
Contact the Techline.

Disconnect the battery and the injection computer.
Check the **cleanliness and condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** on the following connection:

Injection computer, connector **C, track L3** ⟶ **track B** of the downstream oxygen sensor

Repair if necessary.

Measure the heating **resistance** between **tracks A** and **B** of the downstream oxygen sensor.
Replace the downstream oxygen sensor if the **resistance** is not approximately **9 Ω at 20 °C**.

If the fault is still present, replace the downstream oxygen sensor.

AFTER REPAIR	Repeat the conformity check from the start.

ET564	DEFECT MODE TYPE 1

NOTES	There must be no present or stored faults.

This status covers faults that disable control of the motorised throttle valve.
This defect mode cuts off the throttle control (mechanical Limp Home position).

AFTER REPAIR	Repeat the conformity check from the start.

ET565	TYPE 2 DEFECT MODE

NOTES	There must be no present or stored faults.

This status covers faults where the system has lost control of the air flow modulation. The associated defect mode limits the engine speed through injection cut-off.

AFTER REPAIR	Repeat the conformity check from the start.

ET566	TYPE 3 DEFECT MODE

NOTES	There must be no present or stored faults.

This status groups the faults for deducing that the system no longer responds to engine or vehicle speed regulation, but still controls the air flow modulation (throttle servo system operational). It uses the pedal mode reconstructed by calibration.

AFTER REPAIR	Repeat the conformity check from the start.

ET567	TYPE 4 DEFECT MODE

NOTES	There must be no present or stored faults.

This status covers faults affecting the monitoring system, or for which there is an emergency operating mode viable for the system (scenario of falling back on the second gang of a pedal or throttle potentiometer if there is a fault on the main gang).
Its effect is to restrict the throttle (limited performance).

AFTER REPAIR	Repeat the conformity check from the start.

ET568	TYPE 5 DEFECT MODE

NOTES	There must be no present or stored faults.

This status covers faults affecting the control of the throttle by the torque structure. Its effect is to use the pedal feedback mode, instead of the permanent torque structure.

AFTER REPAIR	Repeat the conformity check from the start.

ET703	CRUISE CONTROL/SPEED LIMITER BUTTONS

NOTES	**Special notes:** Only perform the tests if the statuses do not correspond with the system programming functions.

INACTIVE	Status **ET703** becomes "**INACTIVE**" when none of the cruise control/speed limiter buttons is pressed. These buttons are located on the steering wheel. If status **ET703** does not display "**INACTIVE**", ● 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.

INCREASE	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. 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. To carry out these checks and measurements in complete safety, observe the recommendations for removing the driver's front airbag **(see MR 364 Mechanical, 88C, Airbag and seat belt pretensioners, Driver's front airbag, Removal - Refitting)** Measure **the resistance on the following connection with the "+" button pressed:** Injection computer, connector A, black, 32-track **track D2** ⟶ **"+/-" button track 2.** connector A, black, 32-track **track D3** ⟶ **"+/-" button track 1.** If the resistance is not approximately **300 Ω**, check the continuity of the connection when the button is not pressed. If there is continuity, replace the **+/-** control button. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

ET703 **CONTINUED 1**	

DECREASE	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. 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. To carry out these checks and measurements in complete safety, observe the recommendations for removing the driver's front airbag **(see MR 364 Mechanical, 88C, Airbag and pretensioners, Driver's front airbag, Removal - Refitting).** **Measure the resistance on the following connection with the "-" button pressed:** Injection computer, connector A, black, 32-track **track D2** ⟶ **"+/-" button track 2.** connector A, black, 32-track **track D3** ⟶ **"+/-" button track 1.** If the resistance is not approximately **100Ω**, check the continuity of the connection when the button is not pressed. If there is continuity, replace the "**+/-**" control button. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

RESUME	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. If status **ET703** does not change to **RESUME**, check the condition of the cruise control/ speed limiter **R/0** button, and the condition of its connector. Repair if necessary. To carry out these checks and measurements in complete safety, observe the recommendations for removing the driver's front airbag **(see MR 364 Mechanical, 88C, Airbag and pretensioners, Driver's front airbag, Removal - Refitting)** Measure **the resistance of the following connection with the "R" button pressed:** Injection computer, connector A, black, 32-track **track D2** ⟶ **"+/-" button track 2.** connector A, black, 32-track **track D3** ⟶ **"+/-" button track 1.** If the resistance is not approximately **900 Ω**, check the continuity of the connection when the button is not pressed. If there is continuity, replace the "**R/0**" control button. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

ET703 **CONTINUED 2**	

SUSPEND	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. 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. To carry out these checks and measurements in complete safety, observe the recommendations for removing the driver's front airbag **(see MR 364 Mechanical, 88C, Airbag and pretensioners, Driver's front airbag, Removal - Refitting)** Measure **the resistance of the following connection with the "0" button pressed:** Injection computer, connector A, black, 32-track **track D2** ⟶ **"+/-" button track 2.** connector A, black, 32-track **track D3** ⟶ **"+/-" button track 1.** If the resistance is not approximately 0 Ω, replace the **R/0** control button. If there is continuity, replace the "**R/0**" control button. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

ET704 **ET705**	BRAKE SWITCH NO. 1 BRAKE SWITCH NO. 2

NOTES	**Special notes:** Only perform the tests if the statuses do not correspond with the system programming functions.

Note:
Statuses **ET704 and ET705** should change status at the same time. If they are inconsistent, consult the interpretation of fault **DF228 Brake signal**.

ACTIVE

or

INACTIVE

If the brake lights are working, check the continuity and the absence of interference resistance between the following connections:

Brake light switch, **track 3** ⟶ Injection computer, connector A, black, 32-track **track E4**

If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
If the brake lights are not operational, check:
– the condition and fitting of the brake switch,
– the condition and conformity of the brake light fuse,
– the conformity of the values in the following table:

	Continuity between tracks	**Insulation between tracks**
Switch pressed (Brake pedal released)	**3 and 4**	**1 and 2**
Switch released (brake pedal pressed)	**1 and 2**	**3 and 4**

Replace the switch if the values obtained are not correct.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the **diagnostic tool**.

Tool parameter	Diagnostic tool title
PR010	Idling speed regulation setpoint
PR014	Idling speed correction
PR018	Estimated air flow
PR030	Accelerator pedal position
PR035	Atmospheric pressure
PR037	Refrigerant pressure
PR055	Engine speed
PR058	Air temperature
PR064	Coolant temperature
PR074	Battery voltage
PR089	Vehicle speed
PR090	Idling speed regulation programming value
PR091	OCR* Theoretical idle speed regulation
PR093	Camshaft dephaser measured position
PR095	Anti-pinking correction
PR096	Motorised throttle upper stop programmed value
PR097	Motorised throttle lower stop programmed value
PR098	Upstream oxygen sensor voltage
PR099	Downstream oxygen sensor voltage
PR101	Duration of injection
PR102	Canister bleed solenoid valve OCR*
PR103	Instantaneous fuel consumption
PR105	OBD fault warning light lit mileage counter
PR106	Mileage counter fault warning light lit
PR111	Motorised throttle position corrected value
PR113	Throttle lower stop after offset appli.*
PR116	Motorised throttle corrected position setpoint

* OCR: Opening Cycle Ratio
* appli. : application

Tool parameter	Diagnostic tool title
PR118	Measured throttle position gang 1
PR119	Measured throttle position gang 2
PR125	Power absorbed by the air conditioning compressor
PR126	Advance after anti-pinking correction
PR138	Richness correction
PR143	Self-adapting richness gain
PR144	Self-adapting richness offset
PR147	Pedal potentiometer voltage gang 1
PR148	Pedal potentiometer voltage gang 2
PR312	Inlet manifold vacuum
PR424	Programming the no-load position value
PR427	Average pinking signal
PR429	Measured throttle position
PR448	Ignition advance
PR499	Pedal no load programming
PR538	Measured throttle voltage, gang 2
PR539	Measured throttle voltage, gang 1
PR568	Pedal position gang 1
PR569	Pedal position gang 2
PR588	Motorised throttle lower stop gang 2
PR589	Motorised throttle upper stop gang 1
PR590	Motorised throttle upper stop gang 2
PR593	Motorised throttle in safe mode gang 1
PR594	Motorised throttle in safe mode gang 2
PR597	Motorised throttle in safe mode
PR745	Camshaft dephaser position setpoint
PR846	Turbocharging SV* OCR*
PR876	Camshaft dephaser solenoid valve control OCR*

* OCR: Opening Cycle Ratio
* SV: Solenoid valve

PR030	ACCELERATOR PEDAL POSITION

NOTES	There must be no present or stored faults.

Check that the pedal mechanism has not seized.
Check the **cleanliness** and **condition** of the pedal potentiometer connections.
Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **A, track H3** → **track 5** of the pedal potentiometer

Injection computer, connector **A, track G2** → **track 3** of the pedal potentiometer

Injection computer, connector **A, track H2** → **track 4** of the pedal potentiometer

Injection computer, connector **A, track F4** → **track 6** of the pedal potentiometer

Injection computer, connector **A, track F2** → **track 2** of the pedal potentiometer

Injection computer, **connector A, track F3** → **track 1** of the pedal potentiometer

Repair if necessary.

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

AFTER REPAIR	Repeat the conformity check from the start.

PR037	REFRIGERANT PRESSURE

NOTES	There must be no present or stored faults.

Check the **cleanliness** and **condition** of the refrigerant pressure sensor and its connections.
Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Using the universal bornier in place of the computer, check **for insulation** and **continuity** on the following connections:

Computer, connector **B, track J2** → **track B** of the refrigerant sensor

Computer, connector **B, track J3** → **Track C** of the refrigerant sensor

Computer, connector **B, track K2** → **track A** of the refrigerant sensor

Repair if necessary.

If the fault is still present, replace the refrigerant fluid sensor.
If the fault is still present, check the air conditioning circuit (see **MR 366 or 370 Mechanics, 62A, Air conditioning**).

AFTER REPAIR	Repeat the conformity check from the start.

PR074	BATTERY VOLTAGE

NOTES	There must be no present or stored faults. **Without electrical consumers (radio, air conditioning, fan assemblies, headlights, etc.).**

Ignition on Then at idle speed	**If the voltage is at minimum:** Check the battery and the charging circuit (see **Technical Note 6014A Checking the charging circuit**). **If the voltage is at maximum:** Check that the charging voltage is correct with and without electrical consumer (see **Technical Note 6014A Checking the charging circuit**).

AFTER REPAIR	Repeat the conformity check from the start.

PR095	ANTI-PINKING CORRECTION

NOTES	There must be no present or stored faults.

The pinking sensor must not supply a zero signal, proving that it is recording the mechanical vibrations of the engine.
Check that there is the **correct** fuel in the fuel tank. Repair if necessary.
Check the **condition** and **conformity** of the spark plugs. Repair if necessary.
Check the pinking sensor **tightness**. Repair if necessary.
Check the **cleanliness** and **condition** of the pinking sensor connectors. Repair if necessary.
Disconnect the battery and the injection computer. Check the **cleanliness** and **condition** of the connections. Using the Universal bornier, check the **insulation** and **continuity** of the following connections: Injection computer, connector **B, track B3** → **track 2** of the pinking sensor Injection computer, connector **B, track B4** → **track 1** of the pinking sensor Injection computer, connector **B, track B2** → **Pinking sensor screening** Repair if necessary.
If the fault is still present, replace the pinking sensor.

AFTER REPAIR	Repeat the conformity check from the start.

PR098	UPSTREAM OXYGEN SENSOR VOLTAGE

NOTES	There must be no present or stored faults.

Check the **cleanliness** and **condition** of the upstream oxygen sensor connections. Repair if necessary.
Disconnect the battery and the injection computer. Check the **cleanliness** and **condition** of the connections. Using the Universal bornier, check the **insulation** and **continuity** of the following connections: Injection computer, connector **C, track C1** → **track D** of the upstream oxygen sensor Injection computer, connector **C, track B1** → **track C** of the upstream oxygen sensor Repair if necessary.
Check **the tightness** of the upstream oxygen sensor. Repair if necessary.
If the vehicle is driven frequently in town, **carry out a decoking procedure**.
Check that **there are no leaks** in the exhaust system, from the manifold to the catalytic converter. Repair if necessary.

AFTER REPAIR	Repeat the conformity check from the start.

PR098 **CONTINUED**	

If the fault is still present, replace the upstream oxygen sensor.
If the fault has still not been cured, continue with the checks.
Check:
– the condition of the air filter,
– that the air inlet circuit is not blocked,
– the condition and conformity of the spark plugs,
– that the catalytic converter is not clogged,
– the sealing between the throttle valve and inlet manifold,
– the manifold pressure sensor sealing,
– the fuel vapour absorber bleed, which must not be jammed open,'
– the fuel vapour absorber bleed system sealing,
– the brake servo system sealing,
– the cylinder head oil vapour recovery system sealing,
– the sealing between the inlet manifold and cylinder head,
– the exhaust pipe sealing between the cylinder head and catalytic converter.
– the fuel flow rate and pressure.

If the idle speed is not stable, check:
– the timing adjustment,
– the hydraulic tappets if there is camshaft noise (see **MR 364 or 370 Mechanics, 11A, Top and front of engine**),
– the cylinder compressions.
Drive the vehicle to check the repair.

AFTER REPAIR	Repeat the conformity check from the start.

PR099	DOWNSTREAM OXYGEN SENSOR VOLTAGE

NOTES	There must be no present or stored faults.

Check the **cleanliness** and **condition** of the downstream oxygen sensor connections.
Repair if necessary.

Disconnect the battery and the injection computer.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **C, track A2** → **track C** of the downstream oxygen sensor

Injection computer, connector **C, track B2** → **track D** of the downstream oxygen sensor

Repair if necessary.

Check **the tightness** of the downstream oxygen sensor.
Repair if necessary.

If the vehicle is driven frequently in town, **carry out the unclogging procedure** (oxygen sensors and catalytic converter clogging).

Check that the exhaust pipe is completely **leak free**.
Repair if necessary.

AFTER REPAIR	Repeat the conformity check from the start.

PR099 **CONTINUED**	

Replace the downstream oxygen sensor.
If the fault is still present, the catalytic converter is certainly damaged.
If the catalytic converter is defective, determine the cause of the destruction, otherwise the new catalytic converter may be damaged in turn.
Remove the catalytic converter.
Various things may destroy a catalytic converter: – **deformation** (impact), – **thermal shock** (cold water splashed onto a hot catalytic converter can damage it), – **defective injector or ignition:** the catalytic converter is damaged by contact with fuel (coil fault, coil control fault, injector jammed open), – **injector leak,** – **abnormal oil or coolant consumption** (defective cylinder head gasket), – **use of a fuel additive** or other equivalent product (obtain information from the customer because this type of product can contaminate the catalytic converter and render it useless sooner or later).
Look up the service history of the vehicle or, if this is not possible, ask the customer if the vehicle has had injection or ignition faults.
If the cause of the catalytic converter damage has been found and the fault has disappeared, replace the catalytic converter.

AFTER REPAIR	Repeat the conformity check from the start.

PR312	MANIFOLD PRESSURE

NOTES	There must be no present or stored faults.

Check the **cleanliness** and **condition** of the manifold pressure sensor and its connections.
Repair if necessary.

Disconnect the battery and the injection computer.
Check the **cleanliness** and **condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connections:

Injection computer, connector **B, track H2** → **track C** of the manifold pressure sensor

Injection computer, connector **B, track H3** → **track B** of the manifold pressure sensor

Injection computer, connector **B, track H4** → **track A** of the manifold pressure sensor

Repair if necessary.

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

If the fault is still present, carry out the following checks:
The inlet line must be perfectly sealed, from the throttle valve to the cylinder head.
Check:
– the condition of the air filter,
– that the air inlet circuit is not blocked,
– the sealing between the throttle valve and inlet manifold,
– the manifold pressure sensor sealing,
– the fuel vapour absorber bleed, which must not be jammed open,
– the fuel vapour absorber bleed system sealing,
– the brake servo system sealing,
– the cylinder head oil vapour recovery system sealing,
– the sealing between the inlet manifold and cylinder head,
– the exhaust pipe sealing between the cylinder head and catalytic converter.
Repair if necessary.

AFTER REPAIR	Repeat the conformity check from the start.

Tool command	Diagnostic tool title
RZ001	Fault memory
RZ005	Programming
AC017	Canister bleed solenoid valve
AC018	Upstream O_2 sensor heating
AC019	Downstream O_2 sensor heating
AC027	Motorised throttle
AC079	Actuator static test
AC195	Electric coolant pump
VP020	Enter VIN

AC017	CANISTER BLEED SOLENOID VALVE

NOTES	There must be no present or stored faults.

Check the **cleanliness** and **condition** of the fuel vapour absorber bleed solenoid valve connections.
Repair if necessary.

Measure the **resistance** of the petrol vapour absorber bleed solenoid valve.
Replace the bleed solenoid valve for the fuel vapour absorber if the **resistance** is not **26 Ω ± 4 Ω at 23 °C**.

Check for **+ 12 V feed** on **track 1** of the fuel vapour absorber bleed solenoid valve with the ignition on.
If **+ 12 V** is not present:
– using the Universal bornier, check for **continuity** on the following connections:

Fuel computer, connector **B, track M2** → **track 1** of the petrol vapour absorber bleed solenoid valve

Main relay → **track 1** of the petrol vapour absorber bleed solenoid valve

Repair if necessary.

Disconnect the battery.
Disconnect the computer. Check the **cleanliness** and **condition** of the connections.
Using the Universal bornier, check the **insulation** and **continuity** of the following connection:

Petrol computer, connector **C, track E1** → **track 2** of the fuel vapour absorber bleed solenoid valve

Repair if necessary.

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

AFTER REPAIR	Repeat the conformity check from the start.

AC027	MOTORISED THROTTLE

WARNING
Never drive the vehicle without checking first that there are no throttle valve faults.

NOTES	There must be no present or stored faults.

Switch on the ignition and run command **AC027 Motorised throttle**.
If the motorised throttle does not work, apply the interpretation for **DF079 Motorised throttle valve automatic control**.

AFTER REPAIR	Repeat the conformity check from the start.

AC079	ACTUATOR STATIC TEST

NOTES	There must be no present or stored faults.

Switch the ignition on and run command **AC079 Actuator static test**.
If the following actuators are not working, apply the interpretation of the associated fault:
– Fuel pump relay, apply the interpretation of **DF085 Fuel pump relay circuit**.
– The motorised throttle, apply the interpretation of **DF079 Motorised throttle valve servo control**.
– The electric coolant pump, apply the interpretation of **DF570 Coolant pump relay**.
– Upstream O_2 sensor heating, apply the interpretation of **DF601 Upstream O_2** sensor heating power circuit.
– Downstream O_2 sensor heating, apply the interpretation of **DF602 Downstream O_2** sensor heating power circuit.

AFTER REPAIR	Repeat the conformity check from the start.

AC195	ELECTRIC COOLANT PUMP

NOTES	There must be no present or stored faults.

Switch on the ignition and run command AC027 Motorised throttle.
If the coolant pump is not working.
Check the cleanliness, condition and fitting of the coolant pump.
Top up the coolant if necessary.

If the fault is still present, manipulate the harness to see if the status changes.
Look for any harness damage, and check **the condition and connection points** of the injection computer and the coolant pump connectors.
Repair if necessary.

If the fault is still present, check for **+ 12 V** on **track 2** of the coolant pump.
If **+ 12 V** is not present on **track 2** of the coolant pump, check the following connection for **insulation, continuity and the absence of interference resistance**:

Coolant pump **track 2** → **track 6, connector CN**, of the Protection and Switching Unit

Repair if necessary.

If the fault is still present, check the **insulation, continuity and the absence of interference resistance** on the following connection:

Computer, connector **B, track L4** → **track 1** of the coolant pump

Repair if necessary.

If the fault is still present, check that the **resistance** between **tracks 1 and 2** of the coolant pump is **neither zero nor infinite**.
Replace the coolant pump if necessary.

If the fault is still present, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start.

NOTES	Only refer to these tests when dealing with a fault finding chart (ALP) following a customer complaint, or during the interpretation of one or more faults.

TEST 2: Camshaft dephaser solenoid valve. (Vdiag 4C)

TEST 3: Camshaft dephaser solenoid valve. (Vdiag 54)

TEST 2	Camshaft dephaser solenoid valve

Special Note	To apply this procedure, special tool Elé. 1793 must be used which is available from the Parts Department catalogue. **Vdiag 4C only**

– Disconnect the solenoid valve connector.
– Measure the electrical resistance between the terminals of the solenoid valve at 20 °C.

↓

Is the electrical resistance of the solenoid valve between 6.7 Ω and 7.7 Ω.

NO → – The solenoid valve is faulty.
– Replace the solenoid valve with a new one.

YES

↓

Use Elé. 1793 according to the procedure below:
– connect the tool to the solenoid valve and to the vehicle battery,
– start the engine and maintain idle speed,
– actuate the solenoid valve with the tool (by pressing on the button).

↓

Does the engine stall and/or is the idle speed very unstable?

YES → – The pulley-dephaser and the solenoid valve operate.
– Check the injection computer, camshaft sensor, TDC sensor and their wiring and respective connections.

NO

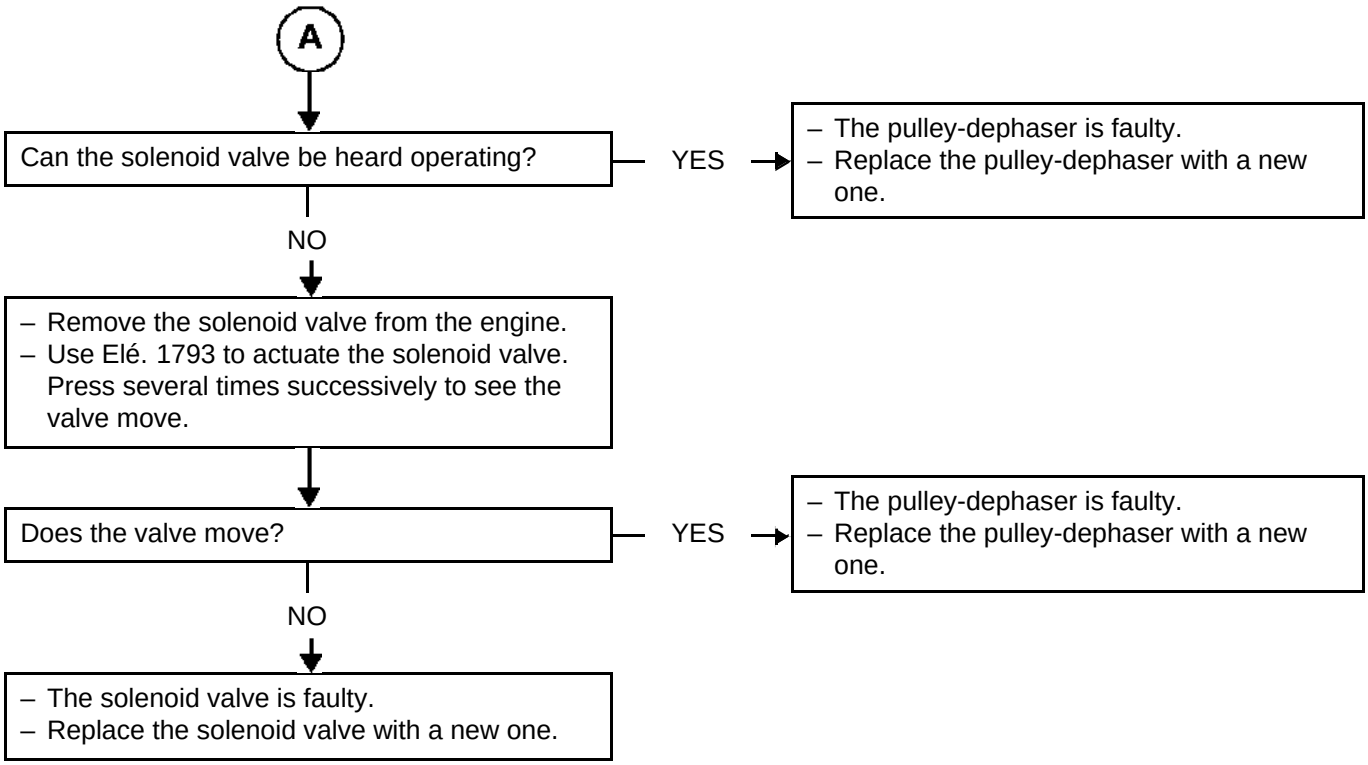
↓

– Switch off the engine.
– Use Elé. 1793 to actuate the solenoid valve. Press several times successively to hear the solenoid valve.

↓

(A)

TEST 2
CONTINUED



TEST 3	Camshaft dephaser solenoid valve

NOTES	**Vdiag 54 only**

Disconnect the solenoid valve connector.
Measure the electrical resistance between the terminals of the solenoid valve at **20 °C**.

Is the solenoid valve resistance between **6.7 Ω and 7.7 Ω ?**

NO → The solenoid valve is faulty.
Replace the solenoid valve.

YES

Start the engine and set it to idle speed.
Run command **AC125 Camshaft dephaser 1** (engine oil temperature between **10 °C** and **70 °C).**

Does the engine stall and/or is the idle speed unstable?

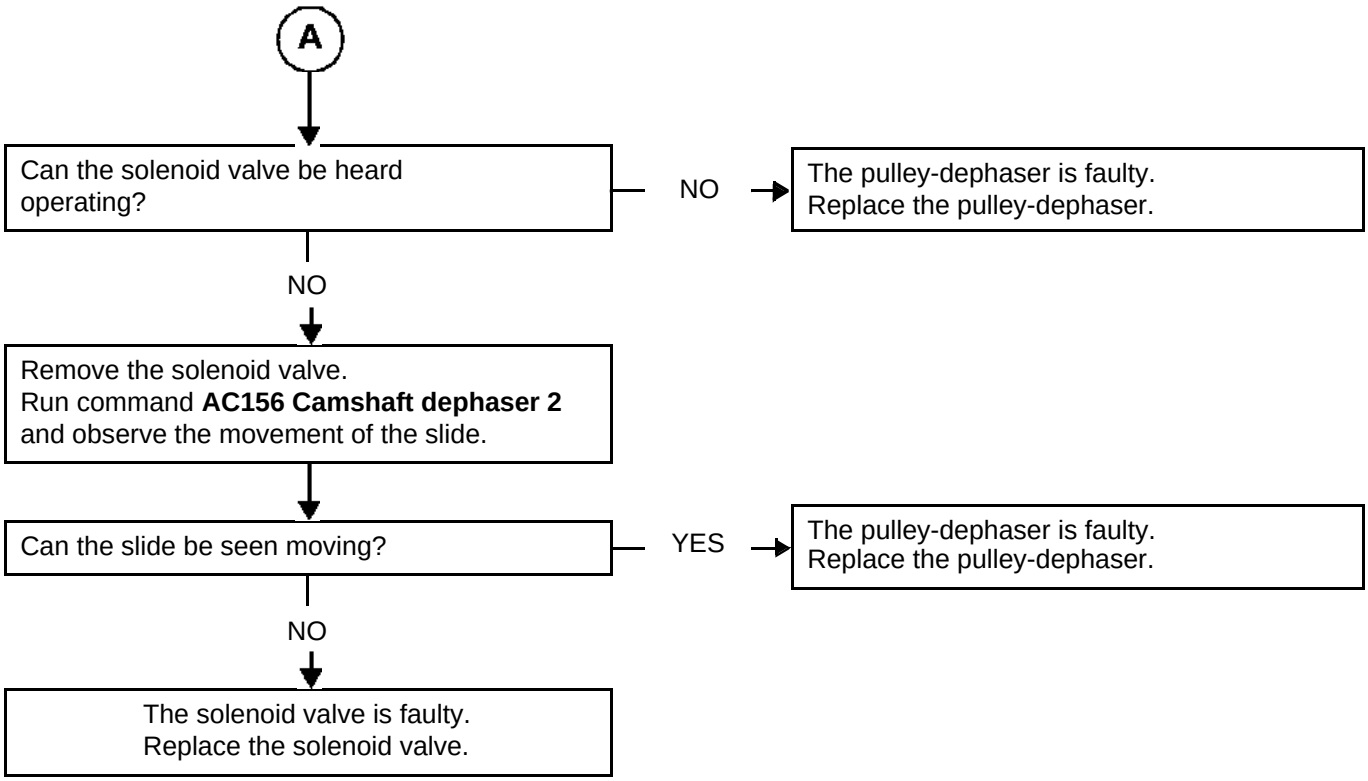
YES → The pulley-dephaser and the solenoid valve are working.
Check the injection computer, the camshaft sensor, the TDC sensor and their respective wiring and connections.

NO

Switch off the engine.
Run command **AC156 Camshaft dephaser 2**

A

TEST 3 CONTINUED	Camshaft dephaser solenoid valve



PETROL INJECTION
Fault finding - Customer complaints

NOTES	**Only refer to the customer complaints after performing a complete check using the diagnostic tool.** **WARNING** **Never drive the vehicle without checking first that there are no throttle valve faults.**

NO DIALOGUE WITH THE COMPUTER	**ALP 1**
THE ENGINE WILL NOT START	**ALP 2**
IDLING SPEED FAULTS	**ALP 3**
FAULTS WHILE DRIVING	**ALP 4**

ALP 1	No dialogue with the computer

NOTES	None

Test the diagnostic tool on another vehicle in perfect working order.
Check that the sensor's green indicator light comes on.
If you cannot establish dialogue with the second vehicle, refer to **CLIP diagnostic tool check**.
If there is no dialogue with the second vehicle, follow the instructions in the **Vehicle check** section.

CLIP DIAGNOSTIC TOOL CHECK	Check the **cleanliness** and **condition** of the diagnostic socket contacts which connect to the vehicle. Check the **condition** of the cable from the diagnostic socket to the sensor, and the cleanliness and condition of the connections. Check the sensor connections. Check the **condition** of the cable from the sensor to the CLIP tool, and the cleanliness and condition of the connections. Check the **cleanliness** and **condition** of the CLIP socket. If the fault is still present, contact Techline.
VEHICLE CHECK	Check the **electrical voltage** of the battery. Check the **cleanliness** and **condition** of the battery terminals. Check the **condition** and **tightness** of the cable going from the battery + terminal to the Protection and Switching Unit. Check the **condition** of the battery earth cable and ensure that there is a **good electrical connection** with the bodywork.
	Check the injection computer earth terminal for **cleanliness** and make sure it is **properly connected** to the bodywork.
	Check the injection computer after ignition feed **5A fuse F18** as well as the **condition** and **cleanliness** of the contacts.

AFTER REPAIR	Repeat the conformity check from the start.

ALP 1 CONTINUED 1	

VEHICLE CHECK CONTINUED 1

Using the Universal bornier, check the following tracks on the **vehicle's diagnostic socket**:

Track 1 → **+ After ignition feed**

Track 16 → **+ battery feed**

Tracks 4 and 5 → **Earth**

Repair if necessary.

Disconnect the battery and the petrol computer.
Check the **cleanliness** and **condition** of the computer connections.
Using the Universal bornier, check the **continuity** of the **multiplex line** communication lines:

Computer, connector **A, track A4** → **track 6** Vehicle diagnostic socket

Computer, connector **A, track A3** → **track 14** Vehicle diagnostic socket

If the fault is still present, check **the condition** of intermediate connector **R262**.
Repair if necessary.

Check the **continuity** of the **K** communication line:

Computer, connector **A, track B4** → **track 7** of the vehicle diagnostic socket

If the fault is still present, check **the condition** of the intermediate connector (**R262**).
Repair if necessary.

Disconnect the computer **earth** terminal connection from the negative battery terminal.
Check the **continuity** and **insulation** of the following tracks:

Petrol computer, connector **C, track L1** → **Earth terminal**

Fuel computer, connector **C, track M1** → **Earth terminal**

Fuel computer, connector **B, track M1** → **Earth terminal**

Fuel computer, connector **B, track L1** → **Earth terminal**

Repair if necessary.

AFTER REPAIR	Repeat the conformity check from the start.

ALP 1 CONTINUED 2	

VEHICLE CHECK CONTINUED 2	
	Using the universal bornier, check for **insulation** and **continuity** on the following connection: Computer, connector **B, track D4** ⟶ **track 2** of the main relay Repair if necessary.
	Using the Universal bornier, check for **continuity** on the following connection: Computer, connector **B, track M2** ⟶ **track 5** of the main relay Repair if necessary.
	Check the condition and operation of fuse **F6 (10A)**. Using the Universal bornier, check for **continuity** on the following connection: Computer, connector **A, track D1** ⟶ **track 8** of the fuse box Fuse box **track 8** ⟶ **track 1** of the petrol pump relay Repair if necessary.
	If the fault is still present, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start.

ALP 2	The engine will not start

NOTES	**Follow ALP 2 after a complete check with the diagnostic tool.**
	WARNING **Never drive the vehicle without checking first that there are no throttle valve faults.**

If the starter motor does not engage, there may be an engine immobiliser fault. Carry out fault finding on the UCH (see **87B, Passenger Compartment Connection Unit**).
Check the condition of the battery. Check the cleanliness, condition and tightness of the battery terminals. Check that the battery is correctly earthed to the vehicle bodywork. Check that the + battery leads are correctly connected.
Check that the starter motor is properly connected. Check the starter is working properly (see **Technical Note 6014A Checking the charging circuit**).
Check the condition and conformity of the spark plugs. Check the mounting, cleanliness and condition of the flywheel signal sensor. Check the flywheel signal sensor air gap. Check the condition of the flywheel.
Check that the air filter is not clogged. Check that the air inlet circuit is not blocked.
Check that there is fuel in the tank (fuel sender fault). Check that the tank vent is not blocked. Check that the fuel is of the correct type. Check that there are no leaks in the fuel system, from the tank to the injectors. Check that there are no kinked hoses (especially after a removal operation). Check the fuel flow rate and pressure. Check the sealing of the injectors, and that they are working properly.
Check that the exhaust system is not blocked and the catalytic converter not clogged.
Check the timing setting.
Check the cylinder compressions.
Check the hydraulic tappets if there is camshaft noise.

AFTER REPAIR	Repeat the conformity check from the start.

ALP 3	Idling speed faults

NOTES	**Fill in ALP 3 after a complete check using the diagnostic tool.**
	WARNING **Never drive the vehicle without checking first that there are no throttle valve faults.**

Check that the oil level is not too high.
Check the inlet system sealing, from the throttle to the cylinder head. Check that the fuel vapour absorber bleed is not disconnected or jammed open. Check that there are no leaks in the fuel vapour absorber bleed system. Check that there are no leaks in the braking assistance system. Check that there are no leaks in the oil vapour recovery system (manifold/cylinder head). Check that there are no leaks around the manifold pressure sensor. Check that there are no leaks around the air temperature sensor.
Check that the air filter is not clogged. Check that the air inlet circuit is not blocked. Check that throttle valve is not clogged.
Check the condition of the pencil coils and the cleanliness of their connections. Check the electrical resistance of the pencil coil secondary circuits. Check the condition and conformity of the spark plugs. Check the mounting, cleanliness and condition of the flywheel signal sensor. Check the flywheel signal sensor air gap. Check the condition and cleanliness of the flywheel.
Check that the tank vent is not blocked. Check that the fuel is of the correct type. Check that there are no leaks in the fuel system, from the tank to the injectors. Check that there are no kinked hoses (especially after a removal operation). Check the fuel flow rate and pressure. Check that the injectors are working properly.
Check that the exhaust system is not blocked and the catalytic converter not clogged.
Check the timing setting.
Check the cylinder compressions.
Check the hydraulic tappets if there is camshaft noise.

AFTER REPAIR	Repeat the conformity check from the start.

ALP 4	Faults occurring while driving

NOTES	**Fill in ALP 4 after a complete check using the diagnostic tool.** *(Use the relevant section in the Workshop Repair Manual to carry out certain operations).*
	WARNING **Never drive the vehicle without checking first that there are no throttle valve faults.**

Check that the oil level is not too high.
Check the condition of the pencil coils and the cleanliness of their connections. Check the electrical resistance of the pencil coil secondary circuits. Check the condition and conformity of the spark plugs. Check the mounting, cleanliness and condition of the flywheel signal sensor. Check the flywheel signal sensor air gap. Check the condition and cleanliness of the flywheel.
Check that the air filter is not clogged. Check that the air inlet circuit is not blocked. Check that throttle valve is not clogged. Check the inlet system sealing, from the throttle to the cylinder head.
Check that the fuel vapour absorber bleed is not disconnected or jammed open. Check that there are no leaks in the fuel vapour absorber bleed system. Check that there are no leaks in the braking assistance system. Check that there are no leaks in the oil vapour recovery system (manifold/cylinder head). Check that there are no leaks around the manifold pressure sensor. Check that there are no leaks around the air temperature sensor.
Check that the tank vent is not blocked. Check that the fuel is of the correct type. Check that there are no leaks in the fuel system, from the tank to the injectors. Check that there are no kinked hoses (especially after a removal operation). Check the fuel flow rate and pressure. Check that the injectors are working properly.
Check that the exhaust system is not blocked and the catalytic converter not clogged.
Check the timing setting.
Check the cylinder compressions.
Check the hydraulic tappets if there is camshaft noise.

AFTER REPAIR	Repeat the conformity check from the start.