

RENAULT

Technical Note 3873A

<i>Vehicle</i>	<i>Type</i>	<i>Engine</i>
CLIO	XB1K	D7F766
CLIO II phase 3 RENAULT SPORT	CB20 / CB21 / CB22 / CB2P	F4R738
KANGOO	XC1A / XC1H XC0L / XC0P / XC0S / XC1N XC0L / XC0P / XC0S / XC1N XC0L / XC0S / XC1N XC0S / XC1N	D7F766 K4M750 K4M752 K4M753 K4M754
TWINGO	X06G X06M	D7F708 D7F708

Sub-section concerned: 17B

FAULT FINDING - INJECTION

EMS 31-34

Program N°.: E5B0
Vdiag N°: 0D

Contents

	Page
17B PETROL INJECTION	
Introduction	17B-1
Fault finding log	17B-6
System operation	17B-8
Allocation of computer tracks	17B-15
Fault summary table	17B-18
Interpretation of faults	17B-20
Conformity check	17B-77
Status summary table	17B-107
Interpretation of statuses	17B-110
Parameter summary table	17B-126
Interpretation of parameters	17B-128
Command summary table	17B-129
Interpretation of commands	17B-130
Customer complaints	17B-135
Fault finding chart	17B-136

1. SCOPE OF THIS DOCUMENT

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

Vehicle(s): **Twingo / Clio / Kangoo**

Function concerned: **Petrol injection**

Engine: **Twingo: D7F 708**
Kangoo: K4M 750 752 753
Clio: D7F 766 LPG
K4M 746 754 CNG
F4R 738 (CLIO II phase 3
RENAULT SPORT)

Computer name: **EMS 3134**

Program N°: **E5B0**

VDIAG N°: **0D**

2. PRE-REQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this document and the Technical Notes on injection installed in the vehicle):

– Assisted fault finding (integrated into the diagnostic tool), Dialogys.

Wiring Diagrams:

– Visu-Schéma (CD-ROM), paper version.

Type of diagnostic tools

– **CLIP**

Special tooling required

Special tooling required	
	Multimeter
Elé. 1497	Bornier
Elé. 1681	Universal bornier

If the information obtained by the diagnostic tool requires the electrical continuity to be checked, connect bornier **Elé. 1497** or universal bornier **Elé. 1681**.

WARNING

- All checks using bornier **Elé. 1497** or **Elé. 1681**, must be carried out with the battery disconnected.
- The terminal is only designed to be used with a multimeter. Never apply 12 V to the checkpoints.

3. Faults

Faults are declared present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but are not diagnosed within the current context).

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

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

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

If the fault is **confirmed** when the instructions are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:

- the electrical lines which correspond to the fault,
- the connectors for these lines (for oxidation, bent pins, etc.),
- the resistance of the component detected as faulty,
- the condition of the wires (melted or split insulation, wear).

Conformity check

The aim of the conformity check is to check data that does not produce a fault on the diagnostic tool because the data is inconsistent. Therefore, this stage is used to:

- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

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

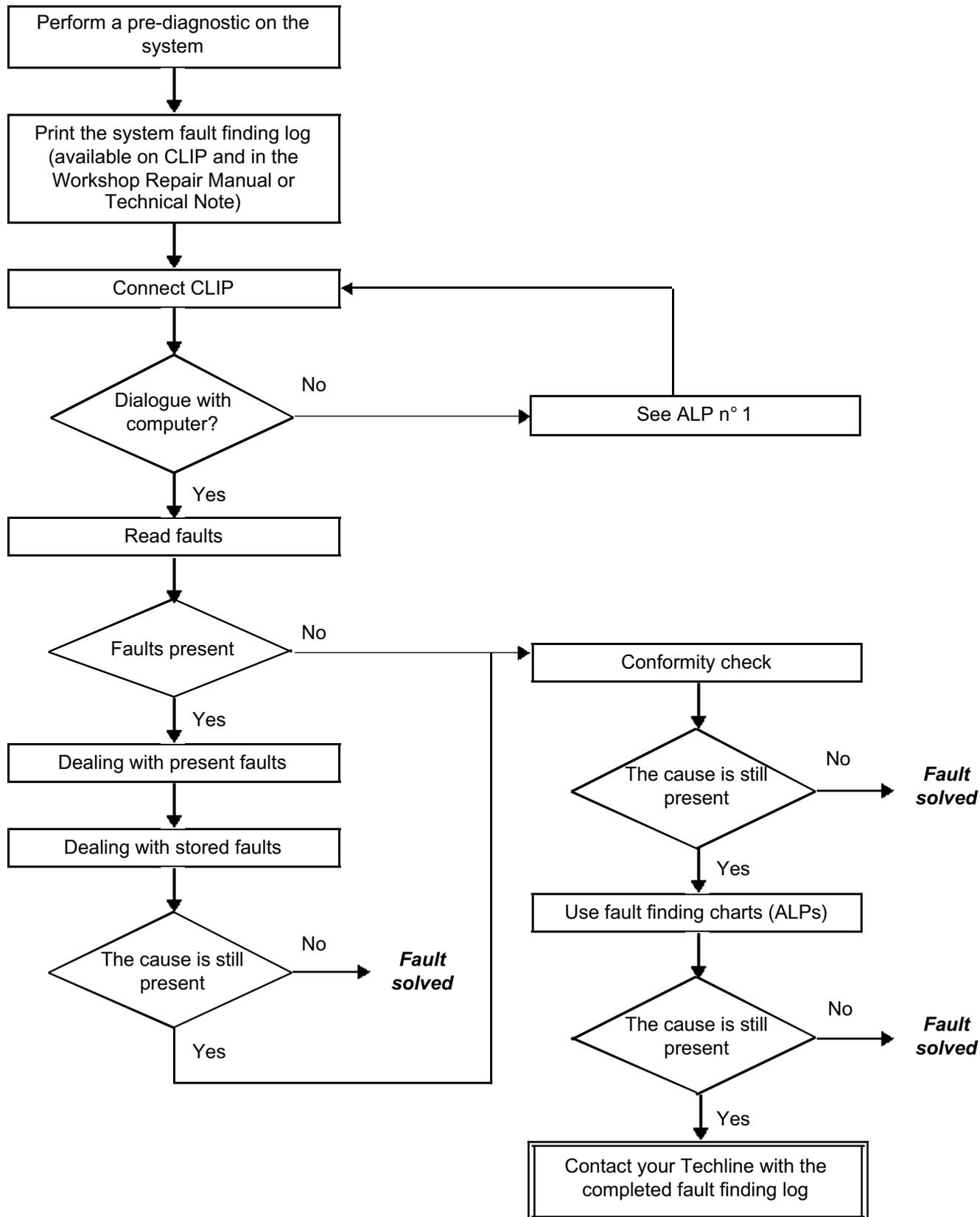
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart

If the test with the diagnostic tool is OK but the customer complaint is still present, the fault should be processed by **Customer complaints**.

A 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 handling the wiring harness may temporarily remove, the cause of a fault. Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

Visual inspection

Look for damage under the bonnet and in the passenger compartment.
Carefully check the fuses, insulators and wiring harness routing.
Look for signs of oxidation.

Tactile inspection

While manipulating the wiring harness, use the diagnostic tool to note any change in fault status from stored to present.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Twist the wiring harness.
If there is a change in status, try to locate the source of the fault.

Inspection of each component

Disconnect the connectors and check the appearance of the clips and tabs, as well as the crimping (no crimping on the insulating section).
Make sure that the clips and tabs are properly locked in the sockets.
Check that no clips or tabs have been dislodged during connection.
Check the clip contact pressure using an appropriate model of tab.

Resistance check

Check the continuity of entire lines, then section by section.
Look for a short circuit to earth, to + 12 V or to another wire.

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

5. FAULT FINDING LOG



IMPORTANT!

WARNING

All problems involving a complex system call for thorough diagnostics with the appropriate tools. The FAULT FINDING LOG, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential item when discussing the fault with 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 for which approval is mandatory,
- which must be attached to monitored parts for which reimbursement is requested. It is therefore used to decide whether a reimbursement will be made under warranty and leads to improved analysis of the removed parts.

6. SAFETY INSTRUCTIONS

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

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

FAULT FINDING LOG

System: Injection

List of monitored parts: Computer

● Administrative identification

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● Customer complaint

579	Does not start - fault	570	Stalling - cold starting faults	571	Stalling - warm starting faults
586	Injection/preheating warning light on	572	Idling - unstable engine speed	574	Hesitation/flat spots
573	Loss of power	520	Abnormal noise, vibrations	576	Smoke - exhaust odours
569	Starting faults				

Other Your comments:

● Conditions under which the customer complaint occurs

001	When cold	005	While driving	008	When decelerating
002	When warm	006	When changing gear	009	Sudden fault
003	When stationary	007	When accelerating	010	Gradual deterioration
004	Intermittently				

Other Your comments:

● Documentation used in fault finding

Fault finding procedure used	
Type of diagnostic manual:	Repair Manual <input type="checkbox"/> Technical Note <input type="checkbox"/> Assisted fault finding <input type="checkbox"/>
Fault Finding Manual N°:	
Wiring diagram used	
Wiring Diagram Technical Note N°:	
Other documentation	
Title and/or part number:	



RENAULT

FAULT FINDING LOG

System: Injection

Page 2/2

● **Computer identification and parts exchanged for the system**

Part 1 part no.	
Part 2 part no.	
Part 3 part no.	
Part 4 part no.	
Part 5 part no.	

To be read with the diagnostic tool (Identification screen):

Computer part no.	
Supplier no.	
Program no.	
Software version	
Calibration n°	
VDIAG	

● **Faults found with the diagnostic tool**

Fault N°	Present	Stored	Fault name	Specification

● **Conditions under which fault occurs**

Status or Parameter N°	Parameter name	Value	Unit

● **System-specific information**

Description:

● **Additional information**

What factors led you to replace the computer?
 What other parts were replaced?
 Other defective functions?
 Your comments:



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**FD 01
Fault finding log**

1. SYSTEM OPERATION

Composition

The injection system consists of the:

- accelerator potentiometer,
- TDC sensor,
- atmospheric pressure sensor,
- air temperature sensor,
- coolant temperature sensor,
- refrigerant pressure sensor,
- upstream oxygen sensor,
- downstream oxygen sensor,
- cruise control switch (fitted according to the vehicle equipment level),
- cruise control on/off switch (fitted according to the vehicle equipment level),
- brake light switch,
- clutch pedal switch,
- fuel vapour absorber,
- injection computer,
- motorised throttle valve,
- four injectors,
- pinking sensor,
- 4 injectors,
- ignition coil,
- pinking sensor,
- camshaft dephaser,
- camshaft position sensor.

Computer

SIEMENS 112-track EMS 31-34 type computer controlling the injection and ignition. Multipoint injection working in sequential mode.

Connections with the other computers, known as "Intersystem connections":

- ESP (fitted according to the vehicle equipment level).
- Passenger Compartment Control Unit (UCH).
- Gearbox Computer: sequential gearbox or automatic gearbox (if fitted to the vehicle),
- Instrument panel.
- Radio navigation (if fitted to the vehicle).
- Airbag.
- ABS (if fitted to the vehicle),
- Air conditioning.

Engine immobiliser

The EMS 31-34 computer controls an Immobiliser program:

- The EMS 31-34 computer accommodates 2 types of immobiliser: a wire type (Verlog 2) and a multiplex lock on the CAN network (Verlog 3). Both of these types are controlled by the UCH and the engine management computer. Before any customer request, the engine management computer and UCH exchange authentication frames via the multiplex network to determine whether or not to start the engine.

After more than five consecutive failed authentication attempts, the engine management computer goes into protection (antiscanning) mode and no longer tries to authenticate the UCH. It only leaves this mode when the following sequence of operations is carried out:

- the ignition is left on for at least 60 seconds,
- the ignition is switched off,
- the injection computer self-feed deactivates when it should (the time varies according to engine coolant 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 (**ET265 Impact detected by the injection computer**), switch off the ignition for 10 seconds, then switch on the ignition again to start the engine. Clear the faults using command **RZ007 Fault memory**.

Fuel supply

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 not been used for a long time. When the engine is running, the fuel pump relay is always controlled.

Injection

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), to ensure a correct start whether or not it is correctly phased, then it enters sequential mode.

It can sometimes, though rarely, happen that the engine starts when incorrectly phased. Then, after it has gone into sequential injection mode and whilst the recognition program of cylinder 1 has not taken place, the injectors are offset by two cylinders: injection occurs in order 4-2-1-3 instead of the expected 1-3-4-2.

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

Engine phasing

The EMS 31-34 injection is equipped with a delayed variable continuous inlet camshaft dephaser. The injection receives the position of the camshaft dephaser given by the camshaft sensor signal. This position does not recognise whether the camshaft dephaser is in defect mode or not.

There are two types of defect mode associated with the various camshaft dephaser faults:

ET026 Camshaft dephaser control

A first program called Memo phasing is applied to phase the engine management on starting according to the data recorded at the last setting. It is therefore necessary to wait for powerlatch to end (computer self-supply phase to save data in the computer which lasts approximately **30 seconds**) before any operations.

Then, a second program confirms the first decision. It is based on torque analysis.

When this programming is completed, the engine is correctly phased. This program also works in LPG or CNG mode.

Air supply

The idle 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 idle speed regulation conditions are complied with, status **ET039 Idle speed regulation** is **Active**, and the idle speed regulator continually positions the motorised throttle to maintain the engine speed at its idle setpoint. The motorised throttle opening ratio necessary for observing the speed setpoint is then given by parameter **PR012 Idle speed regulation valve opening**.

Idle speed

The idle speed setpoint is dependent on:

- coolant temperature,
- the emission control programs,
- air conditioning requirements,
- the position of the gear lever,
- any power-assisted steering operation,
- the passenger compartment heating resistors,
- the oil temperature (engine protection),
- and the electrical power balance (the speed is increased by a maximum of 160 rpm if the battery voltage remains below 12.7 V).

Ignition

The advance is calculated for each cylinder, and is limited to between **- 23°C** and **+ 72°C**, and includes possible corrections due to pinking.

Anti-pinking correction is the maximum advance value taken from the advance of one of the cylinders. If none of the cylinders is pinking, this correction is zero.

Richness

For the catalytic converter to work properly, the engine management computer must make adjustments around richness 1.

The richness regulation controlled by the upstream sensor ensures richness 1

The upstream sensor supplies a voltage according to the image of the average engine richness: the voltage supplied to the computer represents a Rich-Lean signal.

For the upstream sensor to be operational very rapidly, it is heated. The heating works only when the engine is running. It is deactivated at a speed above **84 mph (140 km/h)** or when the engine is under load.

The downstream sensor is also heated. The command does not activate immediately after starting the engine. It is activated when the engine is running and has reached its operating temperature. The downstream sensor heating is inhibited above **84 mph (140 km/h)** or when the engine is under load.

Torque management

The torque structure is the system for managing engine torque. It is required for certain functions such as the electronic stability program (ESP), automatic transmission (BVA) or sequential gearbox (BVR).

Each computer (ESP, sequential gearbox, automatic transmission) sends a request for torque via the multiplex network to the injection computer. This arbitrates between the torque requests received and the driver's request (made via the pedal or the cruise control function). The result of this intervention is the torque setpoint to be applied. From the torque setpoint, the structure calculates the throttle position setpoint.

Engine coolant temperature management

The engine cooling system is ensured by one or two GMV (depending on the vehicle equipment) controlled by the injection computer.

To ensure cooling, **with the engine running**, GMV1 is activated when the coolant temperature exceeds **113°C** and stops when it drops below **102°C**.

GMV2 is activated when the coolant temperature exceeds **115°C** and stops when it drops below **113°C**.

With the engine off, only GMV1 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 time, GMV1 is activated if the coolant temperature exceeds **113°C** and stops when it drops below **95°C**.

If a fault on the **coolant temperature sensor circuit (DF004)** is detected, GMV1 is activated and remains on all the time.

If the engine coolant temperature exceeds the warning threshold of **118°C**, the injection computer directly commands the coolant temperature warning light to come on or requests it from the instrument panel computer via the multiplex network, until the coolant temperature drops back below **115°C**.

As well as managing the engine, the injection computer centralises cooling requests for the air conditioning, automatic transmission and sequential gearbox functions.

Air conditioning function

The EMS 31-34 computer controls a cold loop type air conditioning system:

- request for air conditioning by logical link,
- acquisition of pressure in the air conditioning circuit,
- vehicle speed
- air conditioning compressor control,
- GMV control for the requirements of this function.

The injection computer reconstitutes the power absorbed by the air conditioning compressor and fast idle speed requests by using the pressure acquired in the air conditioning circuit.

These signals are necessary for adapting the engine management (idle speed regulation, air flow correction, etc.), for several reasons:

- air conditioning compressor efficiency,
- more engine ruggedness due to torque hesitation caused by the compressor clutching and declutching,
- helping the alternator.

GMV 1 and/or 2 requests are reconstituted according to the pressure in the air conditioning circuit and the vehicle speed. In summary, there are more GMV requests when the speed is low and the pressure is high.

OBD

The OBD programs are as follows:

- diagnostics of the catalytic converter,
- upstream sensor operational fault finding,
- misfire fault finding,
- 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 faults manager

The European On Board Diagnostics (EOBD) fault manager does not replace or modify conventional electrical fault management systems. It is an additional extra to satisfy the EOBD standard. The requirements are:

- storage of EOBD faults,
- storage of the engine context when the EOBD stored fault is detected,
- lighting up the OBD warning light for all faults leading to the EOBD emission thresholds being exceeded,
- making the OBD warning light flash for all misfire faults that damage the catalytic converter.

2. OPERATING SAFETY

Activation of the warning lights

The EMS 31-34 injection system manages the activation of three warning lights according to the severity of the faults detected, with the aim of informing the customer and directing fault finding.

The injection computer manages the activation of the warning lights 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 activation commands are sent to the instrument panel.

Warning light illumination principle

When the ignition is switched on, the **OBD** (On Board Diagnostic) warning light comes on for approximately **3 seconds** and then goes out.

When there is a (level 1) injection fault, the **SERVICE** warning light comes on.

It indicates a reduced level of operation and a limited safety level.

The user must carry out repairs as soon as possible:

- motorised throttle valve,
- accelerator pedal potentiometer,
- inlet pressure sensor,
- computer,
- actuator feed,
- computer feed.

For faults requiring the engine to be stopped rapidly by the driver, the **level 2 warning light** comes on.

When a fault causing excessive pollution in the exhaust gases is detected, the **orange OBD warning light**, denoted by an engine symbol, comes on:

- **flashing** in the event of a fault which might cause irreparable destruction of the catalytic converter (destructive misfiring). If this happens, the vehicle will stop immediately.
- **continuously** in the case of non-compliance with emission control standards (pollutant misfiring, catalytic converter fault, oxygen sensor fault, inconsistency between the oxygen sensors and fuel vapour absorber fault).

Faulty odometer

Parameter **PR204 Mileage counter fault warning light lit**, is for viewing the mileage travelled with one of the injection warning lights lit: fault level 1 warning lights (amber) and 2 (red).

This counter is reset with the diagnostic tool via command **RZ007 Fault memory**.

Defect modes:

If the motorised throttle system fails, various defect modes take effect and are displayed by status ET118
Motorised throttle in defect mode:

NO: NORMAL MODE

STATUS 1: MOTORISED THROTTLE IN LIMP-HOME MODE:

This defect mode maintains the engine at a constant speed irrespective of gear changes or the accelerator pedal position.

It is generally associated with: **DF002 Throttle potentiometer circuit, DF226 Throttle stop programming, DF254 Motorised throttle valve control or DF255 Throttle/pedal operation safety.**
If no fault is present, check the fault finding procedure for **PR275 Oscillation detection counter.**

STATUS 2: INJECTION CUT-OFF:

Do not use this defect mode on **EMS 31 34** injection computers.

STATUS 3: PEDAL FAULT (loss of driver control):

When this defect mode is in use, there is a loss of pedal power, fast idle speed and the engine slows to idle speed if the brake pedal is depressed.

It is generally associated with: **DF125 Pedal potentiometer circuit gang 1 + DF129 Pedal potentiometer circuit or DF125 Pedal potentiometer circuit gang 1 + DF126 Pedal potentiometer circuit gang 2.**

If no fault is present, check the fault finding procedure for **PR275 Oscillation detection counter.**

STATUS 4: REDUCTION IN ENGINE PERFORMANCE (limited performance):

This defect mode is indicated by: Limitation of the vehicle speed, limitation of the control section of the throttle, limitation of the vehicle acceleration (slow increase in the control section of the throttle).

It is generally associated with: **DF002 Throttle potentiometer circuit, DF125 Pedal potentiometer circuit gang 1, DF126 Pedal potentiometer circuit gang 2, DF129 Pedal potentiometer circuit or DF258 First sensor reference voltage.**

If no fault is present, check the fault finding procedure for **PR275 Oscillation detection counter.**

3. ENGINE INTERSYSTEM FUNCTIONS

The intersystem connections relating to the particular requirements of the injection are as follows:

- Request by the Instrument Panel computer for the OBD warning light to come on to warn of an emission control fault.
- Request for Level 1 warning light to come on to warn of an operational safety fault connected to the injection system.
- Request for Level 2 warning light to come on to warn of an operational safety fault or engine overheating.
- Request for GMV activation for engine cooling, but also for the air conditioning and Automatic transmission/ Sequential gearbox functions,
- Request for air conditioning compressor switch-off for engine programming requirements such as starting, performance, anti-stall, overspeed, etc.
- Passenger Compartment Heating Resistor shutdown or fixing request for engine programming requirements such as starting, performance, anti-stall, overspeed, etc.

Track	Description
1	Ignition coil 2 - 3 - control
2	Not used
3	Electrical earth
4	N° 2 thermoplungers (Only for very cold countries)
5	Not used
6	+ potentiometer load 1
7	+ motorised throttle potentiometer
8	Canister bleed solenoid valve control
9	Fuel pump relay coil - control
10	Power latch relay coil - control
11	Low speed fan - control
12	Pinking sensor + signal
13	Motorised throttle potentiometer 2 signal
14	Potentiometer load 1 + signal
15	Manifold pressure sensor earth
16	Atmospheric pressure sensor signal
17	Motorised throttle potentiometer 1 signal
18	Air temperature sensor + signal
19	Pinking sensor shielding earth
20	Injection air conditioning control (except TWINGO)
21	Not used
22	Not used
23	Cruise control switch control (only on CLIO phase 2 and 3)
24	Engine speed signal (TDC sensor)
25	Multiplex line L signal
26	Multiplex line H signal
27	Instrument panel CAN H signal
28	Electrical earth
29	+ after ignition feed
30	+ fuse protected battery

Track	Description
31	Not used
32	Ignition coil 1 - 4 - control
33	Electrical earth
34	N ₂ 1 thermoplungers (Only for very cold countries)
35	Not used
36	Not used
37	Not used
38	coolant overheating warning light signal (only on TWINGO)
39	Air conditioning cut-off control
40	Not used
41	LPG computer engine speed signal
42	Not used
43	Potentiometer load 2 + signal
44	Downstream oxygen sensor signal
45	Upstream oxygen sensor signal
46	Coolant temperature sensor + signal
47	Refrigerant pressure sensor signal
48	Not used
49	Speed limiter switch control (only on CLIO phase 2 and 3)
50	Not used
51	Not used
52	Brake pedal switch + signal
53	Brake lights + control
54	Engine speed + signal (TDC sensor)
55	Not used
56	Fault finding signal K
57	Instrument panel CAN L signal
58	Steering column cruise/speed limiter controls (only on CLIO phase 2 and 3)
59	Injector 1 - control
60	Injector 3 - control

Track	Description
61	Throttle motor + control
62	Throttle motor - control
63	Not used
64	OBD warning light signal (only on TWINGO)
65	Upstream oxygen sensor heating - control
66	+ injectors
67	Electrical earth
68	Downstream oxygen sensor heating - control
69	High speed fan assembly - control
70	Injection fault warning light signal (only on TWINGO)
71	+ potentiometer load 2
72	- pinking sensor
73	- coolant temperature
74	Not used
75	- potentiometer load 1
76	Downstream oxygen sensor earth
77	Steering column cruise/speed limiter controls earth (only on CLIO phase 2 and 3)
78	- unit 4 sensor
79	refrigerant pressure - sensor
80	Upstream oxygen sensor earth
81	Not used
82	- motorised throttle potentiometer sensor
83	refrigerant pressure + sensor
84	air temperature - sensor
85	Electrical earth
86	Not used
87	- potentiometer load 2
88	Not used
89	Injector 4 command
90	Injector 2 command

PETROL INJECTION

Fault finding - Fault summary table

Tool fault	Diagnostic tool title
DF002	Throttle potentiometer circuit
DF003	Air temperature sensor circuit
DF004	Coolant temperature sensor circuit
DF006	Pinking sensor circuit
DF008	Petrol pump relay control circuit
DF009	Actuator relay control circuit
DF010	Low speed GMV circuit
DF011	Fault warning light circuit
DF012	Injection > AC connection
DF014	Canister bleed solenoid valve circuit
DF018	Upstream oxygen sensor heating circuit
DF022	Computer
DF024	Vehicle speed sensor circuit
DF025	Flywheel signal sensor circuit
DF030	High speed fan assembly circuit
DF031	Malfunction indicator light circuit
DF032	Coolant overheating warning light circuit
DF038	Downstream oxygen sensor heating circuit
DF044	Immobiliser circuit
DF045	Manifold pressure sensor circuit
DF052	Cylinder 1 injector circuit
DF053	Cylinder 2 injector circuit
DF054	Cylinder 3 injector circuit
DF055	Cylinder 4 injector circuit
DF057	Upstream oxygen sensor circuit
DF058	Downstream oxygen sensor circuit
DF061	Ignition coil 1-4 circuit
DF062	Ignition coil 2-3 circuit

PETROL INJECTION

Fault finding - Fault summary table

Tool fault	Diagnostic tool title
DF063	Camshaft dephaser
DF082	Petrol ↔ LPG connection
DF102	Oxygen sensor operating fault
DF106	Catalytic converter operating fault
DF109	Pollutant combustion misfires
DF110	Destructive combustion misfires
DF118	Refrigerant fluid pressure sensor circuit
DF125	Pedal potentiometer gang 1 circuit
DF126	Pedal potentiometer gang 2 circuit
DF129	Pedal potentiometer circuit
DF135	Brake pedal sensor circuit
DF138	Thermoplunger n° 1 relay control
DF139	Thermoplunger n° 2 relay control
DF152	Second sensor reference voltage
DF170	ATX > injection connection
DF189	Flywheel target
DF226	Programming throttle stops
DF228	Air conditioning compressor control
DF235	Cruise control/speed limiter
DF236	+ After relay supply
DF251	+After ignition supply
DF253	Engine earth
DF254	Motorised throttle valve control
DF255	Throttle/pedal operation safety
DF258	First sensor reference voltage
DF308	Dual-mode air intake solenoid valve

DF002 PRESENT OR STORED	<u>THROTTLE POTENTIOMETER CIRCUIT</u> 1.DEF : throttle potentiometer circuit gang 1 2.DEF: throttle potentiometer circuit gang 2 3.DEF: inconsistency between throttle gang 1 and gang 2
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NOTES	Priorities in dealing with a number of faults: Fault DF152 Sensor second reference voltage should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure whether the fault is present or stored.

1.DEF	<p>Check the connection and condition of the throttle potentiometer connector. Replace the connector if necessary.</p> <p>Use the borrier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <p style="text-align: center;">Computer Track 7 —————▶ Track 5 Throttle potentiometer Computer Track 82 —————▶ Track 1 Throttle potentiometer Computer Track 17 —————▶ Track 2 Throttle potentiometer</p> <p>If this fault appears, carefully check the fuses, insulation and routing of the engine wiring (see Introduction, Wiring test). Repair if necessary.</p> <p>Measure the resistance of the throttle potentiometer gang 1 (the resistance is zero or equal to infinity in the event of a straight failure). Replace the throttle potentiometer if the resistance is not approximately 1 kΩ.</p>
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AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF003 PRESENT OR STORED	<u>AIR TEMPERATURE SENSOR CIRCUIT</u>
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NOTES	Special notes: Parameter PR003 Air temperature indicates the value read by the injection computer.
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Check the connection and condition of the air temperature sensor connector. Replace the connector if necessary.
Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between: <div style="text-align: center; margin: 10px 0;"> <p>Computer track 84 \longrightarrow Track 1 Air temperature sensor</p> <p>Computer track 18 \longrightarrow Track 2 Air temperature sensor</p> </div> Repair if necessary.
Check that the resistance of the air temperature sensor is not null or equal to infinity (unequivocal failure of the sensor). Measure the sensor resistance at various temperatures . Replace the air temperature sensor, if necessary.

Temperature	Resistance \pm 20%
-10°C	9.5 k Ω
25°C	2 k Ω
50°C	810 Ω
80°C	309 Ω

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF004 PRESENT OR STORED	<u>COOLANT TEMPERATURE SENSOR CIRCUIT</u>
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NOTES	<p>Special notes: Parameter PR002 Coolant temperature indicates the value read by the injection computer.</p>
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<p>Check the connection and condition of the coolant temperature sensor connector. Replace the connector if necessary.</p>
<p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <p style="text-align: center;"> Computer track 73 \longrightarrow Track B1 Coolant temperature sensor Computer track 46 \longrightarrow Track B2 Coolant temperature sensor </p> <p>Repair if necessary.</p>
<p>Check that the resistance of the coolant temperature sensor is not zero or equal to infinity (straight failure of the sensor). Measure the sensor resistance at various temperatures. Replace the coolant temperature sensor, if necessary.</p>

Temperature	Resistance \pm 20%
-10°C	12.5 k Ω
25°C	2 k Ω
50°C	810 Ω
80°C	282 Ω
100°C	114 Ω
120°C	87 Ω

AFTER REPAIR	<p>Deal with any other faults. Clear the stored faults.</p>
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DF006 PRESENT OR STORED	<u>PINKING SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present if the engine is sufficiently warm, the engine speed is above idling speed and the manifold pressure is sufficiently high.
	Special notes: Parameter PR013 Average pinking sensor signal indicates the value read by the injection computer.

Check the connection and condition of the pinking sensor connector. Replace the connector if necessary.
Check the tightness of the pinking sensor on the engine block. Retighten if necessary.
Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between: Computer track 12 —————> Track 1 Pinking sensor Computer track 72 —————> Track 2 Pinking sensor Computer track 19 —————> Pinking sensor shielding Repair if necessary.
If the fault is still present, replace the pinking sensor.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF008 PRESENT OR STORED	<u>FUEL PUMP RELAY CONTROL CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC010 Fuel pump relay .
	Special notes: Status ET020 Fuel pump relay control can help with the treatment of this fault.

Check the connection and condition of the fuel pump relay connector . Replace the connector if necessary.
Disconnect the relay. With the ignition on, check that there is + 12 V on track 1 of the fuel pump relay . Repair if necessary.
Check the insulation and continuity of the connection between: <p style="text-align: center;">Injection computer track 9 \longrightarrow Track 2 Fuel pump relay</p> Repair if necessary.
Measure the resistance of the fuel pump relay coil . Replace the fuel pump relay if necessary.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF009 PRESENT OR STORED	<u>ACTUATOR RELAY CONTROL CIRCUIT</u> CO : open circuit CC.1 : short circuit to + 12 volts CC.0 : short circuit to earth
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NOTES	Special notes: Status ET025 Actuator relay control can help with the treatment of this fault.
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Check the connection and condition of the actuator relay connector . Replace the connector if necessary.
Disconnect the relay. With the ignition on, check for + 12 V on track 1 of the actuator relay . Repair if necessary.
Check the insulation and continuity of the connection between: Injection computer track 10  Track 2 Actuator relay Repair if necessary.
Measure the resistance of the actuator relay coil . Replace the actuator relay, if necessary.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF010 PRESENT OR STORED	<u>LOW SPEED GMV CIRCUIT</u> CO : open circuit CC.1 : short circuit to + 12 volts CC.0 : short circuit to earth
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NOTES	Priorities in dealing with a number of faults: Faults DF004 coolant temperature sensor circuit and DF009 actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after using command AC626 Low speed GMV relay .
	Special notes: Status ET035 Low speed GMV can help with the treatment of this fault.

Check the connection and condition of the low speed fan assembly relay connector . Replace the connector if necessary.
Disconnect the relay. With the ignition on, check for + 12 V on track 1 of the low speed fan assembly relay . Repair if necessary.
Check the insulation and continuity of the connection between: <p style="text-align: center;">Injection computer Track 11 \longrightarrow Track 2 Low speed fan assembly relay</p> Repair if necessary.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF011 PRESENT OR STORED	<u>FAULT WARNING LIGHT CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC211 Fault warning light .
	Special notes: Status ET006 Fault warning light can help with the treatment of this fault.

VDIAG 0D	With the ignition on, check that 12 V is reaching the warning light. Repair the line if necessary.
	Use the bornier to check the insulation, continuity and the absence of interference resistance of the connection between: Computer track 70 \longrightarrow Warning-light fault on instrument panel
	Repair if necessary.
	Check the condition of the warning light if it does not light up. Replace it if necessary.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF012 PRESENT OR STORED	<u>INJECTION > AIR CONDITIONING CONNECTION</u>
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NOTES	Special notes: Status ET016 Air conditioning > injection connection can help with the treatment of this fault.
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Use the bornier to check the insulation, continuity and the absence of interference resistance of the connection between:	
Injection computer track 81	→ air conditioning control unit (connection code 38GT)
Repair if necessary.	

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF014 PRESENT OR STORED	<u>CANISTER BLEED SOLENOID VALVE CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF 009 "actuator relay circuit" should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC016 Canister bleed solenoid valve .
	Special notes: Status ET032 Canister bleed solenoid valve can help when dealing with this fault.

Check the connection and condition of the fuel vapour absorber solenoid valve connector . Replace the connector if necessary.
With the ignition on, check for 12 V on the fuel vapour absorber solenoid valve . Repair if necessary.
Use the bornier to check the insulation, continuity and the absence of interference resistance on the connection between: Injection computer track 8 \longrightarrow Track 2 fuel vapour absorber solenoid valve Repair if necessary.
Measure the resistance of the fuel vapour absorber solenoid valve . Replace the solenoid valve if the resistance is not approximately 26 Ω \pm 4 at 23°C .

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF018 PRESENT OR STORED	<u>UPSTREAM OXYGEN SENSOR HEATER CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF 009 "actuator relay circuit" should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running after using command AC261 Upstream sensor heating .
	Special notes: Status ET030 Upstream O₂ sensor heating can help when dealing with this fault.

Check the connection and condition of the oxygen sensor connector . Replace the connector if necessary.
With the ignition on, check for 12 V on the oxygen sensor . Rectify the electrical line to the actuator relay.
Use the bornier to check the insulation, continuity and the absence of interference resistance on the connection between: <p style="text-align: center;"> Computer track 65 \longrightarrow Track B oxygen sensor </p> Repair if necessary.
Measure the resistance of the oxygen sensor heating circuit. Replace the oxygen sensor if its resistance is not approximately 3.4 Ω at 20°C .

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF022 PRESENT	<u>COMPUTER</u> 1.DEF: Computer defective or not to specification
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Check that **the computer is the correct one for the vehicle.**

NOTES	Priorities in dealing with a number of faults: If there are a number of faults, deal with the other system faults first.
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Check the connection and condition of the computer connectors.
Repair if necessary.

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

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF024 PRESENT	<u>VEHICLE SPEED SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is reported present after a speed > 9 mph (15 km/h) for more than 30 seconds .
	Special notes: Two types of connection are used: wire-frame and multiplex. Check what type is used by reading configuration LC038 Vehicle speed connection through the CAN . Status ET069 Speed sensor connection and parameter PR018 Vehicle speed can help when dealing with this fault.

Wire connection	Use the bornier to check the insulation, continuity and the absence of interference resistance of the connection between: Computer track 1 \longrightarrow ABS computer Repair if necessary.
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CAN connection	Switch on the ignition. Test the multiplex network.
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AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF025 PRESENT OR STORED	<u>FLYWHEEL SIGNAL SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine has been started or running for at least 10 seconds .
	Special notes: Parameter PR006 Engine speed can help when dealing with this fault.

Check the connection and condition of the engine speed sensor connector. Replace the connector if necessary.
Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between: Computer track 54 \longrightarrow Track A engine speed sensor Computer track 24 \longrightarrow Track B engine speed sensor Repair if necessary.
Measure the resistance of the engine speed sensor. Replace the engine speed sensor if its resistance is not between 200 and 270 Ω .

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF030 PRESENT OR STORED	<u>HIGH SPEED FAN ASSEMBLY CIRCUIT</u> CO : open circuit CC.1 : short circuit to + 12 volts CC.0 : short circuit to earth
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NOTES	Special notes: Overlook this fault if the vehicle is not equipped with the High speed GMV function (i.e. vehicle not fitted with air conditioning).
	Priorities in dealing with a number of faults: Fault DF009 Actuator relay control circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after using command AC625 High speed GMV relay .

Check the connection and condition of the high speed fan assembly relay connector . Replace the connector if necessary.
Disconnect the relay. With the ignition on, check for + 12 V on track 1 of the high speed fan assembly relay. Repair if necessary.
Check the insulation and continuity of the connection between: <p style="text-align: center;">Injection computer track 69 \longrightarrow track 2, High speed GMV relay</p> Repair if necessary.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF031 PRESENT OR STORED	<u>MALFUNCTION INDICATOR LIGHT CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Conditions for detecting the fault: Engine running, battery voltage > 6 V.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC213 OBD warning light .

VDIAG 0D	<p>With the ignition on, check that 12 V is reaching the warning light. Repair the line if necessary. Use the bornier to check the insulation, continuity and the absence of interference resistance of the connection between:</p> <p style="text-align: center;">Computer track 40 \longrightarrow OBD warning light on the instrument panel</p> <p>Repair if necessary.</p> <p>Check the condition of the warning light if it does not light up. Replace it if necessary.</p>
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AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF032 PRESENT OR STORED	<u>COOLANT TEMPERATURE OVERHEATING WARNING LIGHT CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Conditions for detecting the fault: The fault is declared present after the engine has been running at a speed > 3000 rpm.
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VDIAG 0D	<p>With the ignition on, check that 12 V is reaching the warning light. Repair the line if necessary. Use the bornier to check the insulation, continuity and the absence of interference resistance of the connection between:</p> <p style="text-align: center;">Computer track 38  Coolant temperature overheat warning light on instrument panel</p> <p>Repair if necessary.</p> <p>Check the condition of the warning light if it does not light up. Replace it if necessary.</p>
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AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF038 PRESENT OR STORED	<u>DOWNSTREAM OXYGEN SENSOR HEATER CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	<p>Priorities in dealing with a number of faults: Fault DF 009 "actuator relay circuit" should be dealt with first.</p> <p>Conditions for applying the fault finding procedure to stored faults: The fault is reported present with the engine running, hot, and not idling, or after running command AC262 Downstream O₂ sensor heating.</p> <p>Special notes: Status ET031 Downstream O₂ sensor heating can help when dealing with this fault.</p>
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Check the connection and condition of the oxygen sensor connector . Replace the connector if necessary.
With the ignition on, check for 12 V on track A of the oxygen sensor . Repair the electrical line to the actuator relay.
Use the bornier to check the insulation, continuity and the absence of interference resistance of the connection between: Computer track 68 \longrightarrow Oxygen sensor track B Repair if necessary.
Measure the resistance of the oxygen sensor heating circuit. Replace the oxygen sensor if its resistance is not approximately 3.4 Ω at 20°C .

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF044 PRESENT OR STORED	<u>IMMOBILISER CIRCUIT</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF 009 "actuator relay circuit" should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present following: absence or delay of the encoded signal > 2 seconds. ,
	Special notes: Two types of connection are used: wire-frame and multiplex. Statuses ET002 Engine immobiliser and ET099 Immobiliser code programmed can help when dealing with this fault.

Wire connection	Use the bornier to check the insulation, continuity, and the absence of interference resistance of the connection between: Computer track 58 \longrightarrow engine immobiliser Repair if necessary.
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CAN connection	Switch on the ignition. Test the multiplex network.
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AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF045 PRESENT OR STORED	<u>MANIFOLD PRESSURE SENSOR CIRCUIT</u> DEF : pressure sensor fault 1.DEF: inconsistency between the calculated pressure and the true pressure
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NOTES	Priorities in dealing with a number of faults: Fault DF258 Sensor first reference voltage should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine starts.
	Special notes: Parameter PR016 Atmospheric pressure can help when dealing with this fault.

Check the connection and condition of the pressure sensor connector. Replace the connector if necessary.
Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between: Computer track 15 \longrightarrow pressure sensor track A Computer track 78 \longrightarrow pressure sensor track C Computer track 16 \longrightarrow pressure sensor track B Repair if necessary.
With the engine running, the computer performs a test to check the consistency between the measured manifold pressure and the calculated pressure from the throttle position and the engine speed.
If the fault is still present, replace the manifold pressure sensor.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF052 PRESENT OR STORED	<u>CYLINDER 1 INJECTOR CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay control circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running. If the fault becomes present with CO, CC.0 or CC.1, carry out this fault finding strategy.

Check the connection and condition of the connector of injector 1. Replace the connector if necessary.
With the ignition on check for + 12 V on track 1 of the injector 1 connector.
Check the insulation, the continuity and absence of unwanted resistance on the connection between: <p style="text-align: center;">Injection computer track 59 \longrightarrow Track 2 injector 1</p> Repair if necessary.
Measure the resistance of injector 1. Replace the injector if the resistance is not approximately 14.5 Ω at 20°C.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF053 PRESENT OR STORED	<u>CYLINDER 2 INJECTOR CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay control circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.

Check the connection and condition of the connector of injector 2. Replace the connector if necessary.
With the ignition on, check for + 12 V on track 1 of the injector 2 connector.
Check the insulation, the continuity and absence of unwanted resistance on the connection between: <p style="text-align: center;">Injection computer track 90 \longrightarrow Track 2 injector 2</p> Repair if necessary.
Measure the resistance of injector 2. Replace the injector if the resistance is not approximately 14.5 Ω at 20°C.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF054 PRESENT OR STORED	<u>CYLINDER 3 INJECTOR CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay control circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.

Check the connection and condition of the connector of injector 3. Replace the connector if necessary.
Check, with the ignition on, for + 12 V on track 1 of the injector 3 connector.
Check the insulation, the continuity and absence of unwanted resistance on the connection between: <p style="text-align: center;">Injection computer track 60 \longrightarrow Track 2 injector 3</p> Repair if necessary.
Measure the resistance of injector 3. Replace the injector if the resistance is not approximately 14.5 Ω at 20°C.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF055 PRESENT OR STORED	<u>CYLINDER 4 INJECTOR CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay control circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.

Check the connection and condition of the connector of injector 4. Replace the connector if necessary.
Check, with the ignition on, for + 12 V on track 1 of the injector 4 connector
Check the insulation, the continuity and absence of unwanted resistance on the connection between: <p style="text-align: center;">Injection computer track 89 \longrightarrow Track 2, injector 4</p> Repair if necessary.
Measure the resistance of injector 4 . Replace the injector if the resistance is not approximately 14.5 Ω at 20°C .

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF057 PRESENT OR STORED	<u>UPSTREAM OXYGEN SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine has been running for at least 5 minutes (ET037 richness regulation: ACTIVE).
	Note: The fault is only stored if the computer took into account the richness correction default value during this fault: PR035 Richness correction value set at 128.
	Special notes: Two assemblies are possible: 3-wire or 1-wire sensor.

3-wire sensor	Check the connection and condition of the oxygen sensor connector. Replace the connector if necessary.
	Use the bornier to check the insulation, continuity and the absence of interference resistance of the connection between:
	Computer track 80 —————▶ Oxygen sensor track D Computer track 45 —————▶ Oxygen sensor track C
	Repair if necessary.
	If the fault is still present, replace the oxygen sensor.

1-wire sensor	Check the connection and condition of the oxygen sensor connector. Replace the connector if necessary.
	Use the bornier to check the insulation, continuity and the absence of interference resistance of the connection between:
	Computer track 45 —————▶ Oxygen sensor track C
	Repair if necessary.
	If the fault is still present, replace the oxygen sensor.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF058 PRESENT OR STORED	<u>DOWNSTREAM OXYGEN SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared as present after the engine has been running for at least 5 minutes.
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Check the connection and condition of the oxygen sensor connector . Replace the connector if necessary.
Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between: Computer track 76  Oxygen sensor track D Computer track 44  Oxygen sensor track C Repair if necessary.
If the fault is still present, replace the oxygen sensor.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF061 PRESENT OR STORED	<u>IGNITION COIL 1 - 4 CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF008 Fuel pump relay control circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.

Check the connection and condition of the connectors of coils 1 and 4. Replace the connectors if necessary.
With the ignition on check for + 12 V on track 1 of the coil 1 connector.
Check the insulation, continuity and absence of interference resistance on the following connections: <p style="text-align: center;">coil 1 track 2 \longrightarrow Track 1 coil 4</p> Repair if necessary.
Check the insulation, continuity and the absence of interference resistance on the connections between: <p style="text-align: center;">injection computer track 32 \longrightarrow Track 2 coil 4 fuel pump relay track 5 \longrightarrow Track 1 coil 1</p> Repair if necessary.
Check the resistance of coils 1 and 4. Replace the coil(s) if their primary circuit resistance is not approximately 0.5 Ω and their secondary circuit resistance is not approximately 10.7 kΩ .

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF062 PRESENT OR STORED	<u>IGNITION COIL 2 - 3 CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF008 Fuel pump relay control circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.

Check the connection and condition of the connectors of coils 2 and 3. Replace the connectors if necessary.
With the ignition on check for + 12 V on track 1 of the coil 2 connector.
Check the insulation, continuity and absence of interference resistance on the following connections: <p style="text-align: center;">coil 2 track 2 —————> Track 1 coil 3</p> Repair if necessary.
Check the insulation, continuity and the absence of interference resistance on the connections between: <p style="text-align: center;">Injection computer track 1 —————> Track 2 coil 3 fuel pump relay track 5 —————> Track 1 coil 2</p> Repair if necessary.
Measure the resistance of coils 2 and 3 . Replace the coil(s) if their primary circuit resistance is not approximately 0.5 Ω and their secondary circuit resistance is not approximately 10.7 kΩ .

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF063 PRESENT OR STORED	<u>CAMSHAFT DEPHASER</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay control circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running depending on certain special conditions (coolant temperature, pressure, speed) or when actuator command AC491 Camshaft dephaser is run.
	Special notes: Status ET026 Camshaft dephaser control can help with the treatment of this fault.

See Technical Note 6506A, Injection fault finding, Camshaft dephaser.

If the fault is still present, contact Techline.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF082 PRESENT OR STORED	<u>PETROL ↔ LPG CONNECTION</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the fault has been detected for longer than 2 seconds with the engine running.
	Special notes: Status ET200 Injection ↔ LPG connection can help when dealing with this fault. When this fault is present the vehicle operates in forced petrol mode .

Switch on the ignition. Test the multiplex network (see 88B, Multiplexing).
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AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF102 PRESENT OR STORED	<p><u>OXYGEN SENSOR OPERATING FAULT</u></p> <p>OBD : OBD fault (On Board Diagnostic)</p> <p>1.OBD : OBD fault present</p> <p>2.OBD : OBD fault detected while driving</p>
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NOTES	<p>Conditions for applying the fault finding procedure to stored faults:</p> <p>The fault is declared present after a test to detect a malfunction causing the hydrocarbon pollutant emissions to exceed the EOBD threshold. This test can only be performed once during a road test under the following conditions: vehicle speed between 38 mph (63 km/h) and 78 mph (130 km/h) and engine speed between 1800 and 4000 rpm.</p>
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	<p>Check that there are no air leaks on the exhaust system.</p>									
	<p>If the vehicle is mainly used for urban driving, clean the exhaust system.</p>									
	<p>Check the connection and condition of the upstream oxygen sensor connector. Replace the connector if necessary.</p>									
	<p>With the ignition on, check for + 12 V on track A of the upstream oxygen sensor. Repair if necessary.</p>									
	<p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <table style="margin-left: auto; margin-right: auto; border: none;"> <tr> <td style="text-align: center;">Computer track 65</td> <td style="text-align: center;">→</td> <td style="text-align: center;">Upstream oxygen sensor track B</td> </tr> <tr> <td style="text-align: center;">Computer track 45</td> <td style="text-align: center;">→</td> <td style="text-align: center;">Upstream oxygen sensor track C</td> </tr> <tr> <td style="text-align: center;">Computer track 80</td> <td style="text-align: center;">→</td> <td style="text-align: center;">Upstream oxygen sensor track D</td> </tr> </table> <p>Repair if necessary.</p>	Computer track 65	→	Upstream oxygen sensor track B	Computer track 45	→	Upstream oxygen sensor track C	Computer track 80	→	Upstream oxygen sensor track D
Computer track 65	→	Upstream oxygen sensor track B								
Computer track 45	→	Upstream oxygen sensor track C								
Computer track 80	→	Upstream oxygen sensor track D								
	<p>Measure the heating resistance of the upstream oxygen sensor: 9 Ω at 20°C. Replace the oxygen sensor if necessary.</p>									

AFTER REPAIR	<p>Check that all faults have been dealt with. Clear the stored faults. It is not necessary to clear the programming. To check that the system has been repaired correctly:</p> <ul style="list-style-type: none"> - There must be no remaining electrical faults. - A road test should be performed, but the conditions required for the test may be difficult to recreate in an After-Sales environment.
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DF106 PRESENT OR STORED	<u>CATALYTIC CONVERTER OPERATING FAULT</u> OBD : OBD fault 1.OBD : OBD fault present 2.OBD : OBD fault detected while driving
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a test to detect a malfunction causing the hydrocarbon pollutant emissions to exceed the EOBD threshold . Conduct this test at a vehicle speed between 38 mph (63 km/h) and 78 mph (130 km/h) and engine speed between 1800 and 4000 rpm .
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Check that there are no air leaks on the exhaust system. Repair if necessary.
Visually check the condition of the catalytic converter. A deformity may be causing it to malfunction.
Check for visual signs of thermal shock. A splash of cold water on the hot catalytic converter or driving through water can damage it.
Make sure there has been no excessive oil or coolant consumption. Ask the customer if he has used an additive or other products of this kind. Such products can contaminate the catalytic converter and damage its performance sooner or later.
Check if the engine has been misfiring. This could damage the catalytic converter.
If the cause of the damage has been determined, replace the catalytic converter. If the cause of the damage has not been determined, the new catalytic converter could quickly become damaged.

AFTER REPAIR	Check that all faults have been dealt with. Clear the stored faults. It is not necessary to clear the programming. To check that the system has been repaired correctly: – There must be no remaining electrical faults. - A road test should be performed, but the conditions required for the test may be difficult to recreate in an After-Sales environment.
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DF109 PRESENT OR STORED	<u>POLLUTANT MISFIRES</u> OBD : OBD fault 1.OBD: OBD fault present 2.OBD: OBD fault detected while driving
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running and coolant temperature greater than 75°C.
	Note: ET093 Combustion misfires on cylinder 1 ET094 Combustion misfires on cylinder 2 ET095 Combustion misfires on cylinder 3 ET096 Combustion misfires on cylinder 4 Give information on the nature and location of the fault.

One cylinder is declared faulty ET093 or ET094 or ET095 or ET096	For this reason, the problem is probably due to an item associated with this cylinder only: <ul style="list-style-type: none"> - injector problem, - spark plug problem and/or damage, - problem with the coil, - oil seeping in through the valve stem joints, - Engine compression problem.
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Cylinders 1 and 4 or cylinders 2 and 3 declared faulty ET093 and ET096 or ET094 and ET095	The problem is probably due to a factor that can only affect this pair of cylinders: <ul style="list-style-type: none"> - problem with the high-voltage-side coil, - problem on the control side of the coil. - engine compression problem, - oil seeping in through the valve stem joints.
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Four 2 cylinders declared faulty ET093 and ET094 and ET095 and ET096	The problem is probably due to a factor that can only affect all the cylinders. <ul style="list-style-type: none"> - fuel filter problem, - fuel pump problem, - problem with type of petrol, - engine compression problem, - oil seeping in through the valve stem joints.
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AFTER REPAIR	Check that all faults have been dealt with. Clear the stored faults. It is not necessary to clear the programming. To check that the system has been repaired correctly: <ul style="list-style-type: none"> - there should be no further electrical faults, - the engine should be warm, - run at idling speed with all electrical consumers drawing power for 15 minutes. If the fault reappears, continue the fault finding procedure.
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DF110 PRESENT OR STORED	<p><u>DESTRUCTIVE MISFIRE</u></p> <p>OBD : OBD fault (On Board Diagnostic)</p> <p>1.OBD: OBD fault present</p> <p>2.OBD: OBD fault detected while driving</p>
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NOTES	<p>Conditions for applying the fault finding procedure to stored faults:</p> <p>The fault is declared present with the engine running and coolant temperature greater than 75°C.</p>
	<p>Note:</p> <p>ET093 Combustion misfires on cylinder 1</p> <p>ET094 Combustion misfires on cylinder 2</p> <p>ET095 Combustion misfires on cylinder 3</p> <p>ET096 Combustion misfires on cylinder 4</p> <p>Give information on the nature and location of the fault.</p>

<p>One cylinder is declared faulty ET093 or ET094 or ET095 or ET096</p>	<p>The problem is probably due to a component that can only affect this cylinder:</p> <ul style="list-style-type: none"> - injector problem, - spark plug problem and/or damage, - problem with the coil, - oil seeping in through the valve stem joints.
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<p>Cylinders 1 and 4 or cylinders 2 and 3 declared faulty ET093 and ET096 or ET094 and ET095</p>	<p>The problem is probably due to a factor that can only affect this pair of cylinders:</p> <ul style="list-style-type: none"> - problem with the high-voltage-side coil, - problem on the control side of the coil. - oil seeping in through the valve stem joints.
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<p>Four cylinders declared faulty - ET093 and ET094 and ET095 and ET096</p>	<p>The fault is probably due to a component associated with all the cylinders: fuel filter fault</p> <ul style="list-style-type: none"> - fuel pump problem, - problem with type of fuel or pollution (presence of water, diesel, etc.), - oil seeping in through the valve stem joints.
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AFTER REPAIR	<p>Check that all faults have been dealt with.</p> <p>Clear the stored faults. It is not necessary to clear the programming.</p> <p>To check that the system has been repaired correctly:</p> <ul style="list-style-type: none"> - there should be no further electrical faults, - the engine should be warm, - run at idling speed with all electrical consumers drawing power for 15 minutes. <p>If the fault reappears, continue the fault finding procedure.</p>
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DF118 PRESENT OR STORED	<u>REFRIGERANT PRESSURE SENSOR CIRCUIT</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF258 Sensor first reference voltage should be dealt with first.
	Special notes: Parameter PR027 Coolant pressure can help with the treatment of this fault.

Check the connection and condition of the air conditioning sensor connector . Replace the connector if necessary.									
Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between: <table><tr><td>Injection computer track 79</td><td>—————▶</td><td>Refrigerant pressure sensor track A</td></tr><tr><td>Injection computer track 83</td><td>—————▶</td><td>Refrigerant pressure sensor track B</td></tr><tr><td>Injection computer track 47</td><td>—————▶</td><td>Refrigerant pressure sensor track C</td></tr></table> If this fault appears, meticulously inspect the protective devices, insulation and path of the engine wiring (see Preliminaries, Wiring test). Repair if necessary.	Injection computer track 79	—————▶	Refrigerant pressure sensor track A	Injection computer track 83	—————▶	Refrigerant pressure sensor track B	Injection computer track 47	—————▶	Refrigerant pressure sensor track C
Injection computer track 79	—————▶	Refrigerant pressure sensor track A							
Injection computer track 83	—————▶	Refrigerant pressure sensor track B							
Injection computer track 47	—————▶	Refrigerant pressure sensor track C							

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF125 PRESENT OR STORED	<u>PEDAL POTENTIOMETER CIRCUIT GANG 1</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF152 Sensor second reference voltage should be dealt with first.
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<p>Check the connection and condition of the pedal potentiometer connector. Replace the connector if necessary.</p>
<p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <p style="text-align: center;">Computer track 14 \longrightarrow Pedal potentiometer gang 1 track 2 Computer track 6 \longrightarrow Pedal potentiometer gang 1 track 6 Computer track 75 \longrightarrow Pedal potentiometer gang 1 track 4</p> <p>If this fault appears, meticulously inspect the protective devices, insulation and path of the engine wiring (see Preliminaries, Wiring test). Repair if necessary.</p>
<p>Measure the resistance of the pedal potentiometer gang 1 (the resistance is zero or equal to infinity in the event of a straight failure). The total resistance is 1200 Ω \pm 40%. Measure the resistance of the potentiometer in various positions. Replace the pedal potentiometer if necessary.</p>

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF126 PRESENT OR STORED	<u>PEDAL POTENTIOMETER CIRCUIT GANG 2</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF258 Sensor first reference voltage should be dealt with first.
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<p>Check the connection and condition of the pedal potentiometer connector. Replace the connector if necessary.</p>
<p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the following connections:</p> <p style="text-align: center;">3LV between components 921 and 120, 3LM between components 921 and 120, 3LU between components 921 and 120.</p> <p>If this fault appears, meticulously inspect the protective devices, insulation and path of the engine wiring (see Preliminaries, Wiring test). If the connection or connections are faulty and if a repair method exists (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the wiring, otherwise replace it</p>
<p>Measure the resistance of the pedal potentiometer gang 2 (the resistance is zero or equal to infinity in the event of a straight failure). The total resistance is 1700 Ω ± 40%. Measure the resistance of the potentiometer in various positions. Replace the pedal potentiometer if necessary.</p>

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF129 PRESENT OR STORED	<u>PEDAL POTENTIOMETER CIRCUIT</u> 1.DEF: inconsistency between pedal gangs 1 and 2 2.DEF: pedal potentiometer fault
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NOTES	Priorities in dealing with a number of faults: Faults DF152 Sensor second reference voltage and DF258 Sensor first reference voltage should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during smooth transition of the pedal potentiometer from no load to full load.

<p>Check the connection and condition of the pedal potentiometer connector. Replace the connector if necessary.</p>																		
<p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <table style="margin-left: auto; margin-right: auto;"><tr><td>Computer track 14</td><td>—————▶</td><td>Pedal potentiometer track 2</td></tr><tr><td>Computer track 6</td><td>—————▶</td><td>Pedal potentiometer track 6</td></tr><tr><td>Computer track 75</td><td>—————▶</td><td>Pedal potentiometer track 4</td></tr><tr><td>Computer track 43</td><td>—————▶</td><td>Pedal potentiometer track 1</td></tr><tr><td>Computer track 71</td><td>—————▶</td><td>Pedal potentiometer track 3</td></tr><tr><td>Computer track 87</td><td>—————▶</td><td>Pedal potentiometer track 5</td></tr></table> <p>If this fault appears, meticulously inspect the protective devices, insulation and path of the engine wiring (see Preliminaries, Wiring test). Repair if necessary.</p>	Computer track 14	—————▶	Pedal potentiometer track 2	Computer track 6	—————▶	Pedal potentiometer track 6	Computer track 75	—————▶	Pedal potentiometer track 4	Computer track 43	—————▶	Pedal potentiometer track 1	Computer track 71	—————▶	Pedal potentiometer track 3	Computer track 87	—————▶	Pedal potentiometer track 5
Computer track 14	—————▶	Pedal potentiometer track 2																
Computer track 6	—————▶	Pedal potentiometer track 6																
Computer track 75	—————▶	Pedal potentiometer track 4																
Computer track 43	—————▶	Pedal potentiometer track 1																
Computer track 71	—————▶	Pedal potentiometer track 3																
Computer track 87	—————▶	Pedal potentiometer track 5																
<p>Measure the resistance of the pedal potentiometer (the resistance is zero or equal to infinity in the event of a straight failure). Check that the potentiometer resistance follows the proper curve, by pressing the pedal from no-load to full load. Check parameter PR202 Pedal voltage difference gang 1 and gang 2: the difference in voltage between gang 1 and gang 2 should be less than 0.52 V. Check that the pedal is operating the potentiometers correctly. Replace the accelerator pedal potentiometer if necessary.</p>																		

AFTER REPAIR	For a present fault, press the accelerator pedal from no load to full load to confirm repair. Deal with any other faults. Clear the stored faults.
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DF135 PRESENT OR STORED	<u>BRAKE PEDAL SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on for > 20 seconds.
	Special notes: Status ET132 Brake pedal depressed can help when dealing with this fault.

Check the connection and condition of the brake pedal sensor connector. Replace the connector if necessary.
Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between: <p style="text-align: center;">Computer track 53 \longrightarrow Brake pedal switch track B1 Computer track 52 \longrightarrow Brake pedal switch track B3</p>
Repair if necessary.
If the fault is still present, replace the brake pedal switch.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF138 PRESENT OR STORED	<u>THERMOPLUNGER N°1 RELAY CONTROL</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Faults DF009 Actuator relay control circuit , DF003 Air temperature sensor circuit , DF004 Coolant temperature sensor circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC002 Thermoplunger n°1 relay .

Check the connection and condition of the thermoplunger n°1 relay connector. Replace the connector if necessary.
Check for + 12 V after ignition on track 1 of the thermoplunger n°1 relay. Repair the wiring up to the fuse if necessary.
Check the insulation and continuity of the connection between: <p style="text-align: center;">Injection computer track 34 \longrightarrow Thermoplunger n°1 relay</p>
Check the coil of the thermoplunger n°1 relay. Replace the relay if necessary.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF139 PRESENT OR STORED	<u>THERMOPLUNGER N°2 RELAY CONTROL</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Faults DF009 Actuator relay control circuit, DF003 Air temperature sensor circuit, DF004 Coolant temperature sensor circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is reported present after running command AC620 Thermoplunger n°2 relay .

Check for + 12 V after ignition on track 1 of the thermoplunger n°2 relay. Repair the wiring up to the fuse if necessary.
Check the insulation and continuity of the connection between: <p style="text-align: center;">Injection computer track 4 \longrightarrow Thermoplunger n°2 relay</p>
Check the connection and condition of the thermoplunger n°2 relay connector. Replace the connector if necessary.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF152 PRESENT OR STORED	<u>SECOND SENSOR REFERENCE VOLTAGE</u> 1.DEF: supply fault to gangs 1 and 2 on the throttle potentiometer and to gang 1 on the pedal potentiometer
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NOTES	Priorities in dealing with a number of faults: If faults DF152 sensor second reference voltage , DF002 Throttle potentiometer circuit and DF125 Pedal potentiometer circuit gang 1 are present or stored, first do the following diagnostics.
	Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure whether the fault is present or stored.

Check the **connection and condition of the connectors** on the pedal potentiometer and throttle potentiometer. Replace the connectors if necessary.

With the ignition switched on, check for the presence of + 5 V on the following tracks:

Track 6 Pedal potentiometer gang 1

Track 5 Throttle potentiometer

Use the bornier to check the **insulation, continuity and the absence of interference resistance** on the connections between:

Computer **track 6** \longrightarrow **Track 6** Pedal potentiometer gang 1

Computer **track 7** \longrightarrow **Track 5** Throttle potentiometer

If faults **DF152**, **DF002** and **DF125** are all reported, meticulously inspect the protective devices, insulation and path of the engine wiring: see the "Wire testing" segment of the "Preliminaries" section. Repair if necessary.

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

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF170 PRESENT OR STORED	<u>ATX > INJECTION CONNECTION</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF003 Air temperature sensor circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine has been running for > 3 seconds.

Switch on the ignition. Test the multiplex network (see 88B, Multiplexing).
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AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF189 PRESENT OR STORED	<u>FLYWHEEL TARGET</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running at more than > 600 rpm for at least 10 seconds .
	Special notes: Parameter PR006 Engine speed and status ET148 Tooth signal in progress can help with the treatment of this fault.

This fault indicates that the computer is not receiving the tooth signal.
This fault finding strategy is based on checking the consistency between the successive engine strokes, allowing you to detect whether or not the engine has actually stopped. To do this, watch the manifold pressure develop . If the engine has actually stopped, the manifold pressure is stable ; if not, fault DF189 flywheel target is detected.
Check the connection and condition of the engine speed sensor connector. Replace the connector if necessary.
Measure the resistance of the engine speed sensor. Replace the engine speed sensor if its resistance is not between 200 and 270 Ω .
If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
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DF226 PRESENT	<u>THROTTLE END STOP PROGRAMMING</u>
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NOTES	Priorities in dealing with a number of faults: Faults DF003 Air temperature sensor circuit and DF004 Coolant temperature sensor circuit should be dealt with first.
	Special notes: It is possible to start the engine when this fault is present, but driving the vehicle is forbidden as there is a high risk of stalling and/or unstable engine speeds.

This fault indicates that the computer has not stored **the minimum and maximum throttle stop programming values** in its memory.

This fault appears after **replacement of the motorised throttle valve, computer reprogramming or replacement, or an open circuit in one of the two throttle motor power wires.**

Use the bornier to check the **insulation, continuity and the absence of interference resistance** on the connections between:

Computer **track 62** —————> Throttle potentiometer **track 3**

Computer **track 61** —————> Throttle potentiometer **track 4**

Check the condition and fit of the clips and of the motorised throttle valve and injection computer connectors.

Repair if necessary.

Switch on the ignition for at least **5 seconds** without starting the engine: **the throttle stops will be programmed automatically.**

If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF228 PRESENT OR STORED	<u>AIR CONDITIONING COMPRESSOR CONTROL</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present: after running command AC003 "air-conditioning compressor" .
	Special notes: Status ET070 "Climate control compressor" can help with the treatment of this fault.

Check the connection and condition of the air conditioning compressor connector . Replace the connector if necessary.
Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between: <p style="text-align: center;">Injection computer track 39 \longrightarrow Air conditioning compressor track D2</p> Repair if necessary.
If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF235 PRESENT OR STORED	<u>CRUISE CONTROL/SPEED LIMITER</u> 1.DEF: fault on one of the two brake pedal contacts 2.DEF: fault on both brake pedal contacts 3.DEF: controls at the steering wheel 4.DEF: on/off switch 5.DEF: electronic stability program
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present following a road test using the cruise control and the speed limiter functions.
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1.DEF 2.DEF	Check the connection and condition of the brake pedal sensor connector. Replace the connector if necessary. Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between: <table style="margin-left: auto; margin-right: auto;"><tr><td style="text-align: center;">Computer track 53</td><td style="text-align: center;">—————▶</td><td style="text-align: center;">Brake pedal switch track B1</td></tr><tr><td style="text-align: center;">Computer track 52</td><td style="text-align: center;">—————▶</td><td style="text-align: center;">Brake pedal switch track B3</td></tr></table> Repair if necessary. If the fault is still present, replace the brake pedal switch.	Computer track 53	—————▶	Brake pedal switch track B1	Computer track 52	—————▶	Brake pedal switch track B3
Computer track 53	—————▶	Brake pedal switch track B1					
Computer track 52	—————▶	Brake pedal switch track B3					

3.DEF	Check the connection and condition of the cruise control/speed limiter switches on the steering wheel controls. Replace the connector if necessary. Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between: <table style="margin-left: auto; margin-right: auto;"><tr><td style="text-align: center;">Injection computer track 58</td><td style="text-align: center;">—————▶</td><td style="text-align: center;">Steering wheel control track A1</td></tr><tr><td style="text-align: center;">Injection computer track 77</td><td style="text-align: center;">—————▶</td><td style="text-align: center;">Steering wheel control track A2</td></tr></table> Repair if necessary. Check that the steering wheel controls are working properly using ET192 Cruise control/speed limiter function . Replace the switch(es) if necessary.	Injection computer track 58	—————▶	Steering wheel control track A1	Injection computer track 77	—————▶	Steering wheel control track A2
Injection computer track 58	—————▶	Steering wheel control track A1					
Injection computer track 77	—————▶	Steering wheel control track A2					

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF235
CONTINUED

4.DEF

Check **the connection and condition** of the cruise control/speed limiter switches on the steering wheel controls.
Replace the connector if necessary.

Use the borrier to check the **insulation, continuity and the absence of interference resistance** on the connections between:

Injection computer track 23 —————> **Cruise control/speed limiter On/Off switch track 5**

Injection computer track 49 —————> **Cruise control/speed limiter On/Off switch track 4**

Repair if necessary.

Check that the Cruise control/speed limiter On/Off switch is working properly for **ET192 Cruise control/speed limiter function**.

Replace the switch if necessary.

5.DEF

With the engine running and engine speed > 800 rpm.:
Test the multiplex network if the vehicle is fitted with this option.

AFTER REPAIR

Deal with any other faults.
Clear the stored faults.

DF236 STORED	<u>+ AFTER RELAY FEED</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay control circuit should be dealt with first.
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Check the condition of the battery and the vehicle earths. Repair if necessary.
Check the connection and condition of the actuator relay connector. Replace the connector if necessary.
Disconnect the relay and check for 12 V on track 3 of the relay support Repair if necessary.
Check the insulation, continuity and the absence of interference resistance on the connection between: Injection computer track 66 —————> Actuator relay track 5 Repair the line if necessary.
Connect the relay and, with the ignition on, check for 12 volts on track C5 of the actuator relay holder. Replace the relay if necessary.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF251 STORED	<u>+ AFTER IGNITION FEED</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: This fault can only be declared stored, because communication is lost with the diagnostic tool if it is present.
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Check the condition of the battery and the vehicle earths. Repair if necessary.
Check the insulation to earth on track 29 of the injection computer connector. Repair the line if necessary.
With the ignition on: Check for the presence of 12 V on track 29 of the injection computer. Repair the line if necessary.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF253 PRESENT OR STORED	<u>ENGINE EARTH</u>
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NOTES	None.
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In the event of **the 1-wire upstream sensor** being without earth return, track 44 is used to receive the engine earth signal.
If this occurs, **the computer cannot control the downstream sensor.**

Use the bornier to check the **insulation, continuity and the absence of interference resistance** on the connection between:

Computer **track 44**  Vehicle earth

Repair if necessary.

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF254 PRESENT OR STORED	<p><u>MOTORISED THROTTLE VALVE CONTROL</u></p> <p>1.DEF: internal fault on the throttle valve unit or the computer: faulty microprocessor: 2.DEF: motorised throttle servo fault</p>
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NOTES	<p>Priorities in dealing with a number of faults: Faults DF009 Actuator relay control circuit and DF236 + after relay supply should be dealt with first.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure whether the fault is present or stored.</p>
	<p>Special notes: It is possible to start the engine when this fault is present, but driving the vehicle is forbidden as engine speed is constant irrespective of the accelerator pedal position.</p>

1.DEF	If the fault appears and is characterised 1.DEF, contact the Techline.
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2.DEF	<p>Check the connection and condition of the throttle valve unit connector. Replace the connector if necessary.</p> <p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <div style="text-align: center; margin: 10px 0;"> <p>Computer track 62 \longrightarrow Throttle potentiometer track 3</p> <p>Computer track 61 \longrightarrow Throttle potentiometer track 4</p> </div> <p>If this fault occurs, carefully check the fuses, insulation and routing of the engine wiring; if possible, move it manually while the engine is running to make sure the wiring is not being damaged (see Wire testing in the Introduction section). Repair if necessary.</p> <p>If the fault persists, replace the motorised throttle valve unit. Then program the throttle stops: switch on the ignition and wait at least 5 seconds without starting the engine: the throttle valve will be programmed automatically. If the programming is not carried out, it is possible to start the engine, but driving the vehicle is forbidden as there is a high risk of stalling and/or unstable engine speeds.</p>
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AFTER REPAIR	<p>Deal with any other faults. Clear the stored faults.</p>
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DF255 PRESENT OR STORED	<p><u>THROTTLE/PEDAL OPERATION SAFETY</u></p> <p>1.DEF: Consistency between the pedal position and the position of the motorised throttle</p>
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NOTES	<p>Priorities in dealing with a number of faults: Fault DF152 Sensor second reference voltage should be dealt with first.</p> <hr/> <p>Conditions for applying the fault finding procedure to stored faults: This fault only becomes present when the longest gear is selected and two acceleration/deceleration sequences have been carried out. But this test is not carried out when: There is a torque request originating from the automatic transmission or the ESP (electronic stability program). – The power limitation strategy is active. – There is a fault detected on the motorised throttle system (DF002 Throttle potentiometer circuit, DF226 Programming the throttle stops, DF254 Motorised throttle control). – The cruise control or speed limiter is active.</p> <hr/> <p>Special notes: The only way of clearing the stored is to use service RZ008 "programming reinitialisation".</p>
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<p>Check the connection and condition of the pedal potentiometer connector. Replace the connector if necessary.</p>																			
<p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p>	<table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right;">Computer track 14</td> <td style="text-align: center;">—></td> <td>Pedal potentiometer track 2</td> </tr> <tr> <td style="text-align: right;">Computer track 6</td> <td style="text-align: center;">—></td> <td>Pedal potentiometer track 6</td> </tr> <tr> <td style="text-align: right;">Computer track 75</td> <td style="text-align: center;">—></td> <td>Pedal potentiometer track 4</td> </tr> <tr> <td style="text-align: right;">Computer track 43</td> <td style="text-align: center;">—></td> <td>Pedal potentiometer track 1</td> </tr> <tr> <td style="text-align: right;">Computer track 71</td> <td style="text-align: center;">—></td> <td>Pedal potentiometer track 3</td> </tr> <tr> <td style="text-align: right;">Computer track 87</td> <td style="text-align: center;">—></td> <td>Pedal potentiometer track 5</td> </tr> </table>	Computer track 14	—>	Pedal potentiometer track 2	Computer track 6	—>	Pedal potentiometer track 6	Computer track 75	—>	Pedal potentiometer track 4	Computer track 43	—>	Pedal potentiometer track 1	Computer track 71	—>	Pedal potentiometer track 3	Computer track 87	—>	Pedal potentiometer track 5
Computer track 14	—>	Pedal potentiometer track 2																	
Computer track 6	—>	Pedal potentiometer track 6																	
Computer track 75	—>	Pedal potentiometer track 4																	
Computer track 43	—>	Pedal potentiometer track 1																	
Computer track 71	—>	Pedal potentiometer track 3																	
Computer track 87	—>	Pedal potentiometer track 5																	
<p>Repair if necessary.</p>																			

AFTER REPAIR	<p>Apply the procedures to confirm that the repair is successful. Deal with any other faults. Clear the stored faults.</p>
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DF255
CONTINUED

Check the **resistance of pedal potentiometer** tracks 1 and 2 (the resistance is **zero or equal to infinity** in the event of a straight failure).

The total resistance **of the pedal potentiometer** is **1200 $\Omega \pm 40\%$** for gang 1 and **1700 $\Omega \pm 40\%$** for gang 2.

Measure the **resistance of the potentiometer in various positions**.

Replace the pedal potentiometer if necessary.

Check the **connection and condition** of the throttle potentiometer connector.

Replace the connector if necessary.

Use the bornier to check the **insulation, continuity and the absence of interference resistance** on the connections between:

Computer track 7	—————▶	Track 5 Throttle potentiometer
Computer track 82	—————▶	Track 1 Throttle potentiometer
Computer track 13	—————▶	Track 6 Throttle potentiometer
Computer track 17	—————▶	Track 2 Throttle potentiometer

Repair if necessary.

Measure the **resistance of the throttle potentiometer** track 2 (the resistance is **zero or equal to infinity** in the event of a straight failure).

Replace the throttle potentiometer if the resistance is not approximately **1 k $\Omega \pm 25\%$** .

If the fault is still present, contact the Techline.

AFTER REPAIR

Apply the procedures to confirm that the repair is successful.
Deal with any other faults.
Clear the stored faults.

DF258 PRESENT OR STORED	<u>FIRST SENSOR REFERENCE VOLTAGE</u> 1.DEF: sensor supply fault: inlet manifold vacuum, gang 2 pedal, freon pressure
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NOTES	Priorities in dealing with a number of faults: If faults DF258 Sensor first reference voltage , DF126 Pedal potentiometer gang 2 circuit , DF045 Manifold pressure sensor circuit and DF118 Refrigerant pressure sensor circuit (if the vehicle is equipped with refrigerant sensor) are present or stored, first perform the following fault finding procedure.
	Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure whether the fault is present or stored.

<p>Check the connection and condition of the connectors on the pedal potentiometer, manifold pressure sensor and coolant pressure sensor (if fitted). Replace the connectors if necessary.</p>									
<p>With the ignition switched on, check for the presence of + 5 V on the following tracks:</p> <ul style="list-style-type: none">- Track 3 Pedal potentiometer gang 2- Track C Manifold pressure sensor- Track B Refrigerant pressure sensor <p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <table style="margin-left: auto; margin-right: auto;"><tr><td>Computer track 71</td><td>—————▶</td><td>Track 3 Pedal potentiometer gang 2</td></tr><tr><td>Computer track 78</td><td>—————▶</td><td>Track C Manifold pressure sensor</td></tr><tr><td>Computer track 83</td><td>—————▶</td><td>Track B Refrigerant pressure sensor</td></tr></table>	Computer track 71	—————▶	Track 3 Pedal potentiometer gang 2	Computer track 78	—————▶	Track C Manifold pressure sensor	Computer track 83	—————▶	Track B Refrigerant pressure sensor
Computer track 71	—————▶	Track 3 Pedal potentiometer gang 2							
Computer track 78	—————▶	Track C Manifold pressure sensor							
Computer track 83	—————▶	Track B Refrigerant pressure sensor							
<p>If faults DF258, DF126, DF118 and DF045 (if the vehicle has a refrigerant sensor) all occur, meticulously inspect the protective devices, insulation and path of the engine wiring: see the "Wiring test" segment in the "Preliminaries" section. Repair if necessary. If the fault is still present, contact the Techline.</p>									

AFTER REPAIR	Deal with any other faults. Clear the stored faults.
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DF308 PRESENT OR STORED	<u>DUAL-MODE INTAKE SOLENOID VALVE</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to + 12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF 009 "actuator relay circuit" should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the ignition is switched on and the battery voltage exceeds 10 V.
	Special notes: The command is active if the vehicle is in 2 nd gear at a speed < 4800 rpm or in 3 rd gear at a speed < 3260 rpm, if the vehicle speed is less than 72 mph (120 km/h), and if no fault in the vehicle speed is detected. If the fault is present with CC.1 (short circuit to 12 V) it is not detected if the dual-mode stop valve is activated (valve closed). If the fault is present with CC.0 and C.0 (short circuit to earth and open circuit) it is detected even if the dual-mode stop valve is not activated (valve open).

Check the connection and condition of the dual-mode stop valve connector. Replace the connector if necessary.
Check, with the ignition on, for + 12 V on track 2 of the dual-mode stop valve connector.
Check the insulation, continuity and the absence of interference resistance on the connections between: <p style="text-align: center;">Injection computer track 63 \longrightarrow Track 1 dual-mode stop valve</p> Repair if necessary.
Check the electrical resistance of the dual-mode stop valve. Replace the dual-mode stop valve if its resistance is not approximately 45 Ω .

AFTER REPAIR	Apply the procedures to confirm that the repair is successful. Deal with any other faults. Clear the stored faults.
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NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: IGNITION ADVANCE

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Ignition advance	PR051: Ignition advance	- 23.6°V < PR051 < 72°V	This parameter indicates the variations in the time the inlet valves open.
2		PR015: Anti-pinking correction	PR015 < 5°V	In the event of a fault, apply the interpretation for DF006 Pinking sensor circuit .
3		ET026: Camshaft dephaser control	INACTIVE	In the event of a fault, apply the interpretation of DF063 Camshaft dephaser circuit .
4		ET093: Misfiring on cylinder 1	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
5		ET094: Misfiring on cylinder 2	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
6		ET095: Misfiring on cylinder 3	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: IGNITION ADVANCE (CONTINUED)

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
7	Ignition advance	ET096: Misfiring on cylinder 4	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
8		ET378: LPG cylinder 1 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
9		ET379: LPG cylinder 2 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
10		ET380: LPG cylinder 3 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
11		ET381: LPG cylinder 4 combustion misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: PEDAL POTENTIOMETER CIRCUIT

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Pedal potentiometer circuit	PR120: Pedal no load programming	PR120 = 37%	In the event of a fault, apply the interpretation of DF125 Pedal potentiometer circuit gang 1, DF126 Pedal potentiometer circuit gang 2 and DF129 Pedal potentiometer circuit.
2		PR202: Pedal gang 1 and 2 voltage difference	PR202 < 3 V	
3		ET129: Accelerator pedal position: no load	ACTIVE	
4		ET128: Accelerator pedal position: full load	INACTIVE	

NOTES	<p>Only check conformity after a full check with the diagnostic tool. The values shown in this conformity check are given as examples. Application condition: engine off, ignition on.</p>
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FUNCTION: O2 SENSOR CHECK

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	O2 sensor check	ET030: Upstream O2 sensor heating	INACTIVE	In the event of a fault, apply the fault finding procedure for faults DF018 and DF057 Upstream oxygen sensor heating circuit and Upstream oxygen sensor circuit.
2		ET031: Downstream O2 sensor heating	INACTIVE	In the event of a fault, use the fault finding procedure for faults DF038 and DF058 Downstream sensor heating circuit and Downstream oxygen sensor circuit.

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: MOTORISED THROTTLE VALVE

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Motorised throttle	ET118: Motorised throttle valve in defect mode	NO	In the event of a fault, refer to the fault finding procedure ET118 Motorised throttle in defect mode .
2		ET111: Programming throttle stops	PERFORMED	If status ET111 is NOT PERFORMED , apply interpretation of fault DF226 Throttle stop programming .
3		PR275: Oscillation detection counter	X = 0	In the event of a fault, consult the fault finding procedure for parameter PR275 Oscillation detection counter .
4		ET003: Throttle position: no load	ACTIVE	In the event of a fault, apply the fault finding procedure for faults DF002 and DF226 Throttle potentiometer circuit and Throttle stop programming .
5		ET005: Throttle position full load	INACTIVE	
6		PR110: Measured throttle position gang 1	X < 20%	In the event of a fault, apply the interpretation of DF226 Throttle stop programming and DF002 Throttle potentiometer circuit .
7		PR111: Measured throttle position gang 2	X < 90%	
8		PR197: Throttle valve gangs 1 and 2 difference	X < 20%	

NOTES	<p>Only check conformity after a full check with the diagnostic tool. The values shown in this conformity check are given as examples.</p> <p>Application condition: engine off, ignition on.</p>
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FUNCTION: ENGINE FUNCTION PHASE STATUS

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Engine function phase status	ET001: Computer + after ignition feed	PRESENT	In the event of a fault, check the charging circuit.
2		ET148: Meshing in process signal	INACTIVE	In the event of a fault, apply interpretation of DF189 Flywheel target .
3		ET025: Actuator control relay	ACTIVE	In the event of a fault apply the interpretation of DF009 Actuator relay control circuit
4		ET020: Petrol pump relay control	INACTIVE	In the event of a fault apply the interpretation of DF008, Fuel pump relay control circuit
5		PR016: Atmospheric pressure	This parameter indicates the atmospheric pressure.	In the event of a fault, apply fault finding procedure for fault DF045 Manifold sensor circuit .
6		PR051: Ignition advance	PR051 = approximately 2°V	NONE
7		PR050: Duration of injection	0 ms	NONE

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: AIR CONDITIONING

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Engine function phase status	PR027: Refrigerant pressure	0 < PR027 < 32 bar	In the event of a fault, apply interpretation of DF118 Refrigerant sensor circuit.
2		PR044: Power used by the AC compressor	PR044 = 300 W	In the event of a fault, apply interpretation of DF228 Air conditioning compressor control.
3		PR096: Number of active thermoplungers	PR096 = 0 In extremely cold countries PR096 = 2	In the event of a fault, apply the interpretation of faults DF138 Thermoplunger n°1 relay control and DF139 Thermoplunger n°2 relay control.
4		ET009: Air conditioning request	NO	In the event of a fault, apply interpretation of DF012 Injection/AC connection
5		ET038: Fast idle speed	INACTIVE	In the event of a fault, apply interpretation of DF012 Injection/AC connection
6		ET070: Air conditioning compressor	INACTIVE	In the event of a fault, apply the interpretation of DF012 Injection/AC connection and DF228 Air conditioning compressor control.

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: AIR CONDITIONING (CONTINUED)

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
7	Engine function phase status	ET016: Injection ↔ Air conditioning connection	YES	In the event of a fault, apply the interpretation of DF012 Injection/AC connection and DF228 Air conditioning compressor control .
8		ET013: Heated windscreen	INACTIVE	In the event of a fault, apply the interpretation of status ET013 Electric windscreen .
9		ET115: Thermoplunger n°1 relay	INACTIVE ACTIVE in extremely cold countries	In the event of a fault, apply the interpretation of fault DF138 Thermoplunger n° 1 relay control .
10		ET116: Thermoplunger n°2 relay	INACTIVE ACTIVE in extremely cold countries	In the event of a fault, apply the interpretation of fault DF139 Thermoplunger n° 2 relay control .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine **off**, ignition **on**.

FUNCTION: ENGINE OVERHEATING

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Engine overheating	ET035: Low speed fan assembly	INACTIVE	In the event of a fault, apply interpretation of fault DF010 Low speed GMV circuit.
2		ET036: High speed fan assembly	INACTIVE	In the event of a fault, apply interpretation of fault DF030 High speed GMV circuit.
3		ET007: Overheating indicator light	OFF The overheating warning light COMES ON when the engine coolant temperature exceeds 102°C.	In the event of a fault, check the cooling circuit sealing and the coolant level. If the fault is still present, apply the interpretation of DF004 Coolant temperature sensor circuit, DF010 Low speed GMV circuit and DF030 High speed GMV circuit.

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: SUPPLY SYSTEM

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Supply system	ET020: Petrol pump relay control	ACTIVE	In the event of a fault apply the interpretation of DF008, Fuel pump relay control circuit
2		ET039: Idle speed regulation	INACTIVE	NONE
3		ET037: Richness regulation	INACTIVE	In the event of a fault, apply interpretation of DF057 Upstream oxygen sensor circuit and DF058 Downstream oxygen sensor circuit.
4		ET027: Richness double loop	INACTIVE	
5		PR042: Integral idle speed regulation correction	4.7% < PR042 < 32%	NONE
6		PR124: Self-adapting richness gain	0 < PR124 < 255	In the event of a fault, apply interpretation of DF057 Upstream oxygen sensor circuit and DF058 Downstream oxygen sensor circuit.
7		PR050: Duration of injection	0 ms	NONE
8		PR029: Fuel consumption	PR029 = 0 l/h	NONE

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: LPG

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	LPG	ET234: Condition for switching to LPG mode	OK NOT OK	In the event of a fault, apply the interpretation of ET234 Conditions for switching to LPG mode .
2		ET113: Operating in LPG mode	NO	In the event of a fault, apply the interpretation of status ET113 Operation in LPG mode .
3		ET114: Operating in petrol mode	YES	If NO , apply the interpretation of status ET114 Operation in Petrol mode .
4		ET134: Transition from petrol mode to LPG mode	INACTIVE	In the event of a fault, apply the interpretation of status ET134 Transition from Petrol mode to LPG mode .
5		ET133: Transition from LPG mode to petrol mode	INACTIVE	In the event of a fault, apply the interpretation of status ET133 Transition from LPG mode to Petrol mode .
6		ET236: LPG mode request	YES NO	In the event of a fault, apply the interpretation of status ET236 LPG mode request .
7		ET200: injection/LPG connection	YES (on K4M LPG) NO (petrol engine)	If NO , apply the interpretation of status ET200 Injection/LPG connection .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine **off**, ignition **on**.

FUNCTION: LPG (CONTINUED)

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
8	LPG	ET257: LPG ready	NO	In the event of a fault, apply the interpretation of status ET257 LPG ready .
9		ET258: LPG fault	NO	In the event of a fault, apply the interpretation of status ET258 LPG fault .
10		ET237: LPG tank empty	NO	If YES , apply the interpretation of status ET237 LPG tank empty .
11		ET378: LPG cylinder 1 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
12		ET379: LPG cylinder 2 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
13		ET380: LPG cylinder 3 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
14		ET381: LPG cylinder 4 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: CONFIGURATION

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Configuration	ET067: Power-assisted steering pressure switch connection	NO If YES , the vehicle is fitted with power-assisted steering.	NONE
2		ET069: Vehicle speed sensor connection	NO If YES , the vehicle has a speed sensor.	In the event of a fault, apply the interpretation for DF025 Flywheel signal sensor circuit .
3		ET112: Injection ↔ electronic stability program connection	NO If YES the vehicle has an electronic stability program.	NONE
4		ET016: Injection → Air conditioning connection	NO If YES the vehicle is fitted with air conditioning.	In the event of a fault, apply interpretation of DF012 Injection/AC connection
5		ET200: Injection/LPG connection	NO If YES the vehicle is fitted with LPG or CNG	If NO , apply the interpretation of status ET200 Injection/LPG connection .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: CRUISE CONTROL/SPEED LIMITER

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Cruise control/ Speed limiter	ET192: Cruise control/ speed limiter function	INACTIVE	In the event of a fault, refer to the interpretation of this status.
2		ET364: Driver deactivation of the cruise control/speed limiter	INACTIVE STATUS 1: Brake pedal depressed STATUS 2: Traction control request STATUS 3: Suspend button pressed STATUS 4: clutch pedal depressed STATUS 5: Gear lever in neutral position STATUS 6: Inconsistency between request and vehicle speed	NONE
3		PR018: Vehicle speed	Indicates the vehicle speed in mph, transmitted by wire and via the multiplex network.	In the event of a fault, refer to the interpretation of DF024 Vehicle speed sensor circuit.

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application condition: engine off, ignition on.

FUNCTION: CRUISE CONTROL/SPEED LIMITER (CONTINUED)

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
4	Cruise control/ Speed limiter	ET132: Brake pedal depressed	NO	Non-conformity of the brake signals and or the clutch switch signals can cause engine racing during gear changes.
5		ET143: Redundant brake pedal	RELEASED	
6		ET182: Clutch pedal switch	DEPRESSED RELEASED (DEPRESSED by default for an automatic transmission)	Non-conformity of the brake signals and or the clutch switch signals can cause engine racing during gear changes.
7		ET004: Park/Neutral position	Automatic gearbox only. YES: automatic transmission in park/neutral position. NO: automatic gearbox not in park/neutral position	In the event of a fault, carry out a multiplex network test, then if the test is correct, look at the automatic gearbox.

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at idle speed.

FUNCTION: IGNITION ADVANCE

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Ignition advance	PR051: Ignition advance	- 23.6°V < PR051 < 72°V	This parameter indicates the variations in the time the inlet valves open.
2		PR015: Anti-pinking correction	PR015 < 5°V	In the event of a fault, apply the interpretation for DF006 Pinking sensor circuit .
3		ET026: Camshaft dephaser control	ACTIVE/INACTIVE Indicates whether or not the camshaft dephaser is functioning.	In the event of a fault, apply the interpretation of DF063 Camshaft dephaser .
4		ET093: Misfiring on cylinder 1	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
5		ET094: Misfiring on cylinder 2	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
6		ET095: Misfiring on cylinder 3	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at **idle speed**.

FUNCTION: IGNITION ADVANCE (CONTINUED)

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
7	Ignition advance	ET096: Misfiring on cylinder 4	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
8		ET378: LPG cylinder 1 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
9		ET379: LPG cylinder 2 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
10		ET380: LPG cylinder 3 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
11		ET381: LPG cylinder 4 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at **idle speed**.

FUNCTION: PEDAL POTENTIOMETER CIRCUIT

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Pedal potentiometer circuit	PR120: Pedal no load programming	PR120 = 37%	In the event of a fault, apply the interpretation of DF125 Pedal potentiometer circuit gang 1, DF126 Pedal potentiometer circuit gang 2 and DF129 Pedal potentiometer circuit.
2		PR202: Pedal gang 1 and 2 voltage difference	PR202 < 3 V	
3		ET129: Accelerator pedal position: no load	ACTIVE	
4		ET128: Accelerator pedal position: full load	INACTIVE	

NOTES	<p>Only check conformity after a full check with the diagnostic tool. The values shown in this conformity check are given as examples. Application conditions: Engine warm at idle speed.</p>
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FUNCTION: O2 SENSOR CHECK

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	O2 sensor check	ET030: Upstream O2 sensor heating	ACTIVE INACTIVE The value of status ET030 varies between ACTIVE and INACTIVE	In the event of a fault, apply interpretation of DF018 Upstream oxygen sensor heating circuit.
2		ET031: Downstream O2 sensor heating	INACTIVE Status ET031 becomes ACTIVE after a period of driving.	In the event of a fault, apply interpretation of DF038 Downstream oxygen sensor heating circuit.

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at idle speed.

FUNCTION: MOTORISED THROTTLE VALVE

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Motorised throttle	ET118: Motorised throttle valve in defect mode	NO	In the event of a fault, refer to the fault finding procedure ET118 Motorised throttle in defect mode .
2		ET111: Programming throttle stops	PERFORMED	If status ET111 is NOT PERFORMED , apply interpretation of fault DF226 Throttle stop programming .
3		PR275: Oscillation detection counter	PR275 = 0	In the event of a fault, apply interpretation of parameter PR275 Oscillation detection counter .
4		ET003: Throttle position: no load	ACTIVE	In the event of a fault, apply the interpretation of DF226 Throttle stop programming and DF002 Throttle potentiometer circuit .
5		ET005: Throttle position full load	INACTIVE	
6		PR110: Measured throttle position gang 1	PR110 < 20%	In the event of a fault, apply the interpretation of DF226 Throttle stop programming and DF002 Throttle potentiometer circuit .
7		PR111: Measured throttle position track 2	PR111 < 90%	
8		PR197: Throttle valve gangs 1 and 2 difference	PR197 < 3%	

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at idle speed.

FUNCTION: ENGINE FUNCTION PHASE STATUS

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Engine function phase status	ET001: Computer + after ignition feed	PRESENT	In the event of a fault, apply the interpretation of DF251 + After ignition supply.
2		ET148: Meshing in process signal	ACTIVE	In the event of a fault, apply interpretation of DF189 Flywheel target.
3		ET025: Actuator control relay	ACTIVE	In the event of a fault apply the interpretation of DF009 Actuator relay control circuit
4		ET020: Petrol pump relay control	ACTIVE	In the event of a fault apply the interpretation of DF008 , Fuel pump relay control circuit
5		PR016: Atmospheric pressure	700 mb < PR016 < 1047 mb	In the event of a fault, apply interpretation of DF045 Manifold sensor circuit.
6		PR051: Ignition advance	- 23.6°V < PR051 < 72°V	NONE
7		PR050: Duration of injection	PR050 ≈ 3.6 ms	

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at idle speed.

FUNCTION: AIR CONDITIONING

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Engine function phase status	PR027: Refrigerant pressure	0 < PR027 < 32 bar	In the event of a fault, apply interpretation of DF118 Refrigerant sensor circuit .
2		PR044: Power used by the AC compressor	PR044 = 300 W If status ET009 is YES, then PR027 > 300 W.	In the event of a fault, apply interpretation of DF228 Air conditioning compressor control .
3		PR096: Number of active thermoplungers	PR096 = 0 In extremely cold countries PR096 = 2	In the event of a fault, apply the interpretation of faults DF138 Thermoplunger n°1 relay control and DF139 Thermoplunger n°2 relay control .
4		ET009: Air conditioning request	YES NO	In the event of a fault, apply interpretation of DF012 Injection/AC connection
5		ET038: Fast idle speed	If status ET009 is YES, then status ET038 is ACTIVE	
6		ET070: Air conditioning compressor	If status ET009 is YES, then status ET070 is ACTIVE	In the event of a fault, apply the interpretation of DF012 Injection/AC connection and DF228 Air conditioning compressor control .
7		ET016: Injection ↔ Air conditioning connection	YES	

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at **idle speed**.

FUNCTION: AIR CONDITIONING (CONTINUED)

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
8	Engine function phase status	ET013: Heated windscreen	ACTIVE INACTIVE	In the event of a fault, apply the interpretation of status ET013 Electric windscreen .
9		ET115: Thermoplunger n°1 relay	INACTIVE ACTIVE in extremely cold countries	In the event of a fault, apply the interpretation of fault DF138 Thermoplunger n°1 relay control .
10		ET116: Thermoplunger n°2 relay	INACTIVE ACTIVE in extremely cold countries	In the event of a fault, apply the interpretation of fault DF139 Thermoplunger n°2 relay control .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at **idle speed**.

FUNCTION: ENGINE OVERHEATING

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Engine overheating	ET035: Low speed fan assembly	INACTIVE	In the event of a fault, apply interpretation of fault DF010 Low speed GMV circuit .
2		ET036: High speed fan assembly	INACTIVE	In the event of a fault, apply interpretation of fault DF030 High speed GMV circuit .
3		ET007: Overheating indicator light	OFF The overheating warning light COMES ON when the engine coolant temperature exceeds 102°C.	In the event of a fault, check the cooling circuit sealing and the coolant level. If the fault is still present, apply the interpretation of DF004 Coolant temperature sensor circuit, DF010 Low speed GMV circuit and DF030 High speed GMV circuit .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at idle speed.

FUNCTION: SUPPLY SYSTEM

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Supply system	ET020: Petrol pump relay control	ACTIVE	In the event of a fault apply the interpretation of DF008, Fuel pump relay control circuit
2		ET039: Idle speed regulation	ACTIVE	NONE
3		ET037: Richness regulation	ACTIVE	In the event of a fault, apply interpretation of DF057 Upstream oxygen sensor circuit and DF058 Downstream oxygen sensor circuit .
4		ET027: Richness double loop	INACTIVE To change status ET027 to ACTIVE run the engine for approximately 1 minute 30 seconds.	
5		PR042: Integral idle speed regulation correction	4.7% < PR042 < 32%	NONE
6		PR124: Self-adapting richness gain	0 < PR124 < 255	In the event of a fault, apply interpretation of DF057 Upstream oxygen sensor circuit and DF058 Downstream oxygen sensor circuit .
7		PR050: Duration of injection	Approx. 3.6 ms	NONE
8		PR029: Fuel consumption	0 l/h < PR029 < 10 l/h	

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at idle speed.

FUNCTION: LPG

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	LPG	ET234: Condition for switching to LPG mode	OK NOT OK	In the event of a fault, apply the interpretation of ET234 Conditions for switching to LPG mode .
2		ET113: Operating in LPG mode	YES NO	In the event of a fault, apply the interpretation of status ET113 Operation in LPG mode .
3		ET114: Operating in petrol mode	YES NO	In the event of a fault, apply the interpretation of status ET114 Operation in LPG mode .
4		ET134: Transition from petrol mode to LPG mode	ACTIVE INACTIVE	In the event of a fault, apply the interpretation of status ET134 Transition from Petrol mode to LPG mode .
5		ET133: Transition from LPG mode to petrol mode	ACTIVE INACTIVE	In the event of a fault, apply the interpretation of status ET133 Transition from LPG mode to Petrol mode .
6		ET236: LPG mode request	YES NO If status ET113 is YES, then status ET236 is YES.	In the event of a fault, apply the interpretation of status ET236 LPG mode request .
7		ET200: injection/LPG connection	YES	If NO , apply the interpretation of status ET200 Injection/LPG connection .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at idle speed.

FUNCTION: LPG (CONTINUED)

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
8	LPG	ET257: LPG ready	YES NO If status ET113 is YES, then status ET257 is YES.	If NO, apply the interpretation of status ET257 LPG ready.
9		ET258: LPG fault	YES NO	If YES, apply the interpretation of status ET258 LPG faulty.
10		ET237: LPG tank empty	YES NO	If YES, apply the interpretation of status ET237 LPG tank empty.
11		ET378: LPG cylinder 1 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
12		ET379: LPG cylinder 2 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
13		ET380: LPG cylinder 3 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
14		ET381: LPG cylinder 4 misfire	NO	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at **idle speed**.

FUNCTION: CONFIGURATION

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Configuration	ET067: Power-assisted steering pressure switch connection	NO If YES , the vehicle is fitted with power-assisted steering.	NONE
2		ET069: Vehicle speed sensor connection	NO If YES , the vehicle has a speed sensor.	In the event of a fault, apply the interpretation for DF025 Flywheel signal sensor circuit .
3		ET112: Injection ↔ electronic stability program connection	NO If YES the vehicle has an electronic stability program.	NONE
4		ET016: Injection ↔ Air conditioning connection	NO If YES the vehicle is fitted with air conditioning.	In the event of a fault, apply interpretation of DF012 Injection/AC connection
5		ET200: Injection/LPG connection	NO If YES the vehicle is fitted with LPG or CNG	If NO , apply the interpretation of status ET200 Injection/LPG connection .

NOTES

Only check conformity after a **full check** with the diagnostic tool. The values shown in this conformity check are given as examples.
Application conditions: Engine warm at **idle speed**.

FUNCTION: CRUISE CONTROL/SPEED LIMITER

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Cruise control/ Speed limiter	ET192: Cruise control/ speed limiter function	INACTIVE	In the event of a fault, refer to the interpretation of this status.
2		ET364: Driver deactivation of the cruise control/speed limiter	INACTIVE STATUS 1: Brake pedal depressed STATUS 2: Traction control request STATUS 3: Suspend button pressed STATUS 4: clutch pedal depressed STATUS 5: Gear lever in neutral position STATUS 6: Inconsistency between request and vehicle speed	NONE
3		PR018: Vehicle speed	Indicates the vehicle speed in mph, transmitted by wire and via the multiplex network.	If there is a fault, refer to the interpretation of this parameter
4		ET132: Brake pedal depressed	NO	Non-conformity of the brake signals and or the clutch switch signals can cause engine racing during gear changes.

NOTES	<p>Only check conformity after a full check with the diagnostic tool. The values shown in this conformity check are given as examples. Application conditions: Engine warm at idle speed.</p>
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FUNCTION: CRUISE CONTROL/SPEED LIMITER (CONTINUED)

Order	Sub-function	Parameter or Status Check or Action	Display and Notes	Fault finding
5	Cruise control/ Speed limiter	ET143: Redundant brake pedal	RELEASED	Non-conformity of the brake signals and or the clutch switch signals can cause engine racing during gear changes.
6		ET182: Clutch pedal switch	DEPRESSED RELEASED (DEPRESSED by default for an automatic transmission)	
7		ET004: Park/Neutral position	Automatic gearbox only. YES: automatic transmission in park/neutral position. NO: automatic gearbox not in park/neutral position	In the event of a fault, carry out a multiplex network test, then if the test is correct, look at the automatic gearbox.

PETROL INJECTION

Fault finding - Status summary table

Tool status	Diagnostic tool title
ET001	+ After ignition computer feed
ET002	Engine immobiliser
ET003	Throttle position: no load
ET004	Park/Neutral position
ET005	Throttle position: full load
ET006	Fault warning light
ET007	Overheating indicator light
ET009	Air conditioning request
ET013	Heated windscreen
ET014	Cylinder 1 recognition
ET016	Automatic transmission
ET020	Petrol pump relay control
ET025	Actuator control relay
ET026	Camshaft dephaser control
ET027	Richness double loop
ET030	Upstream O ₂ sensor heating
ET031	Downstream O ₂ sensor heating
ET032	Canister bleed
ET034	Power assisted steering pressure switch
ET035	Low speed fan assembly
ET036	High speed fan assembly
ET037	Richness regulation
ET038	Fast idle speed
ET039	Idle speed regulation
ET067	Power-assisted steering pressure switch connection

PETROL INJECTION

Fault finding - Status summary table

Tool status	Diagnostic tool title
ET069	Vehicle speed sensor connection
ET070	Air conditioning compressor
ET090	Reverse gear signal
ET092	Gear change indicator light.
ET093	Misfiring on cylinder 1
ET094	Misfiring on cylinder 2
ET095	Misfiring on cylinder 3
ET096	Misfiring on cylinder 4
ET099	Immobiliser code programmed
ET102	Sensor fault finding included
ET103	Catalytic converter fault finding in progress
ET106	Sensor fault finding complete
ET107	Catalytic converter fault finding complete
ET111	Throttle stop programming
ET112	Injection → electronic stability program connection
ET113	Operating in LPG mode
ET114	Operating in petrol mode
ET115	Thermoplunger n°1 relay
ET116	Thermoplunger n°2 relay
ET118	Motorised throttle valve in defect mode
ET128	Accelerator pedal position: full load
ET129	Accelerator pedal position: no load
ET132	Brake pedal depressed
ET133	Transition from LPG mode to petrol mode

PETROL INJECTION

Fault finding - Status summary table

Tool status	Diagnostic tool title
ET134	Transition from petrol mode to LPG mode
ET143	Redundant brake pedal
ET148	Meshing signal in progress
ET173	OBD catalytic converter fault finding request
ET175	Combustion misfire fault finding request
ET182	Clutch pedal switch
ET192	Cruise control/speed limiter function
ET200	injection/LPG connection
ET201	Sensor fault finding request
ET202	Combustion misfire fault finding in progress
ET234	Condition for switching to LPG mode
ET236	LPG mode request
ET237	LPG tank empty
ET243	Dual-mode air intake solenoid valve
ET257	LPG ready
ET258	LPG fault
ET265	Impact detected by the injection computer
ET364	Driver deactivation of the cruise control/speed limiter
ET365	Cruise control/speed limiter deactivation by function
ET378	LPG cylinder 1 misfire
ET379	LPG cylinder 2 misfire
ET380	LPG cylinder 3 misfire
ET381	LPG cylinder 4 combustion misfire

ET113	<u>OPERATION IN LPG MODE</u> YES NO
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NOTES	There must be no present or stored faults. Status ET237 Tank empty should be NO. Status ET258 LPG faulty should be NO. Status ET257 LPG ready should be YES. Status ET234 Conditions for switching to LPG mode should be GOOD.
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When all the conditions for switching are met, the system moves to **ET134 Transition from petrol mode to LPG mode** active.

Then on decelerating, or after a delay, when both fuels have been recovered, status **ET113 Operation in LPG mode** becomes active.

Consult the LPG fault finding strategy if the fault persists.

AFTER REPAIR	Repeat the conformity check from the start.
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ET114	<u>OPERATION IN PETROL MODE</u> YES NO
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NOTES	<p>There must be no present or stored faults. This condition applies only to vehicle XA0B engine K4M 712 (LPG). Status ET237 "tank empty" should be NO. Status ET258 "LPG fault" should be NO. Status ET257 LPG ready should be YES. Status ET234 Conditions for switching to LPG mode should be GOOD.</p>
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<p>Starting the engine is always done in petrol mode ET114 YES. The status will be ET114 Forced petrol mode operation is still YES if: – status ET237 Tank empty is YES – status ET258 LPG fault is YES – status ET234 conditions for switching to LPG mode is NOT OK When all the conditions for switching are met, the system moves to ET134 Transition from petrol to LPG mode ACTIVE then ET113 Operation in LPG mode YES, and then ET114 Operation in petrol mode NO.</p>
<p>Consult the LPG fault finding strategy if the fault persists.</p>

AFTER REPAIR	Repeat the conformity check from the start.
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ET118	<u>MOTORISED THROTTLE BODY IN DEFECT MODE</u>
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NOTES	If any of the defect modes: Status 1, Status 3 or Status 4 occur, carefully check the fuses, insulation and routing of the engine wiring (see wiring check section in the Introduction).
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NO	NORMAL MODE
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STATUS 1	<p>MOTORISED THROTTLE IN SAFE MODE: This defect mode maintains the engine at a constant speed irrespective of gear changes or the accelerator pedal position. It is usually associated with DF002 Throttle potentiometer circuit, DF226 Throttle stop programming, DF254 Motorised throttle control or DF255 Throttle/pedal operating safety. If no fault is present, check the fault finding procedure for PR275 Oscillation detection counter. If this defect mode occurs, carefully check the fuses, insulation and routing of the engine wiring; if possible, move it manually while the engine is running to make sure the wiring is not being damaged.</p>
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STATUS 2	<p>INJECTION CUT-OFF: This defect mode is not used on EMS 31 34 injection computers.</p>
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AFTER REPAIR	Repeat the conformity check from the start.
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ET118 CONTINUED	
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STATUS 3	<p>ERROR: When this defect mode is in use, there is a loss of pedal power, fast idle speed and the engine slows to idle speed if the brake pedal is depressed. It is generally associated with DF125 Pedal potentiometer circuit gang 1 + DF129 Pedal potentiometer circuit or DF125 Pedal potentiometer circuit gang 1 + DF126 Pedal potentiometer circuit gang 2. If no fault is present, check the fault finding procedure for PR275 Oscillation detection counter. If this defect mode occurs, carefully check the protective devices, insulation and routing of the engine wiring; if possible, move it manually while the engine is running to make sure the wiring is not being damaged.</p>
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STATUS 4	<p>REDUCTION IN ENGINE PERFORMANCE: This defect mode is indicated by: Limitation of the vehicle speed, limitation of the control section of the throttle, limitation of the vehicle acceleration (slow increase in the control section of the throttle). It is usually associated with DF002 throttle potentiometer circuit, DF125 pedal potentiometer circuit gang 1, DF126 pedal potentiometer circuit gang 2, DF129 pedal potentiometer circuit or DF258 sensor first reference voltage. If no fault is present, check the fault finding procedure for PR275 Oscillation detection counter. If this defect mode occurs, carefully check the protective devices, insulation and routing of the engine wiring; if possible, move it manually while the engine is running to make sure the wiring is not being damaged.</p>
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AFTER REPAIR	Repeat the conformity check from the start.
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ET133	<u>TRANSITION FROM LPG MODE TO PETROL MODE</u>
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NOTES	There must be no present or stored faults. This condition applies only to vehicle XA0B engine K4M 712 (LPG).
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After operating in LPG mode, status ET113 is YES , if ET236 LPG mode operation request becomes NO , status ET133 Transition from LPG mode to petrol mode becomes ACTIVE . Then status ET114 Operation in petrol mode becomes YES .
Consult the LPG fault finding strategy if the fault persists.

AFTER REPAIR	Repeat the conformity check from the start.
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ET134	<u>TRANSITION FROM PETROL MODE TO LPG MODE</u>
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NOTES	<p>There must be no present or stored faults. Status ET237 "tank empty" should be NO. Status ET258 "LPG fault" should be NO. Status ET257 LPG ready should be YES. Status ET234 Conditions for switching to LPG mode should be GOOD.</p>
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After **ET236 Request for LPG mode operation YES**, if all the conditions for switching are met, the status changes to **ET134 Transition from petrol to LPG mode ACTIVE**.
Then to **ET113 Operation in LPG mode YES**.

Consult the LPG fault finding strategy if the fault persists.

AFTER REPAIR	Repeat the conformity check from the start.
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ET182	<u>CLUTCH PEDAL SWITCH</u>
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NOTES	There must be no present or stored faults.
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Vehicle not equipped with the cruise control/speed limiter function

There is no clutch pedal switch on vehicles not equipped with the cruise control/speed limiter function.
Status ET182 Clutch pedal switch still shows **DEPRESSED**.

Vehicle equipped with the cruise control/speed limiter function

There is a clutch pedal switch on vehicles equipped with the cruise control/speed limiter function.
Status **ET182 Clutch pedal switch** shows **DEPRESSED** when the clutch pedal is depressed.
Status ET182 Clutch pedal switch shows **RELEASED** if the clutch pedal is released.
Even though there is no fault finding procedure on this signal, there is a strategy to detect racing of the engine speed in the case of a problem with the clutch pedal switch. If it is used, the cruise control is automatically disconnected.

Check the connection and condition of the clutch pedal switch connector. Replace the connector if necessary.
Check for + 12 V on track A1 of the clutch pedal switch connector. Repair if necessary using the relevant wiring diagram.
Check the insulation and continuity of the connection between: Injection computer track 48  Track A2 clutch pedal switch Repair if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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ET192	<u>CRUISE CONTROL/SPEED LIMITER</u>
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NOTES	There must be no present or stored faults.
	WARNING It is necessary to remove the airbag in order to remove or check the Cruise control/speed limiter control switches. Refer to the Airbag section in the Workshop Repair Manual.

STATUS 1 STATUS 2	Check the cleanliness, connection and condition of the cruise control/speed limiter start switch and the connection and condition of its connector. Replace as necessary.						
	Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Use the bornier to check the insulation, continuity and the absence of interference resistance on the following connections: <table style="margin-left: auto; margin-right: auto;"><tr><td style="text-align: center;">Computer track 49</td><td style="text-align: center;">—▶</td><td style="text-align: center;">connector A On/Off switch track B1</td></tr><tr><td style="text-align: center;">Computer track 23</td><td style="text-align: center;">—▶</td><td style="text-align: center;">connector A On/Off switch track A3</td></tr></table> (See the connector track numbers on the corresponding wiring diagram). Repair if necessary.	Computer track 49	—▶	connector A On/Off switch track B1	Computer track 23	—▶	connector A On/Off switch track A3
	Computer track 49	—▶	connector A On/Off switch track B1				
Computer track 23	—▶	connector A On/Off switch track A3					
If the fault persists, replace the switch.							

AFTER REPAIR	Repeat the conformity check from the start.
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ET192 CONTINUED	
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STATUS 3 STATUS 4 STATUS 5 STATUS 6	<p>Check the cleanliness, connection and condition of the increase switches on the steering wheel and their connectors. Replace as necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Use the bornier to check the insulation, continuity and the absence of interference resistance on the following connections:</p> <p>Computer track 58 \longrightarrow steering wheel control track 2</p> <p>Computer track 77 \longrightarrow steering wheel control track 1</p> <p>(See the connector track numbers on the corresponding wiring diagram). Repair if necessary.</p> <p>If the fault persists, replace the faulty switch.</p>
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AFTER REPAIR	Repeat the conformity check from the start.
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ET200	<u>LPG INJECTION CONNECTION</u>
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NOTES	There must be no present or stored faults.
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The computer recognises that it is connected to an LPG computer when the ignition is switched on, and stores this information for life.
The information is transmitted by the multiplex network.

Switch on the ignition.
Test the multiplex network (see **88B, Multiplexing**).

AFTER REPAIR	Repeat the conformity check from the start.
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ET234	<u>CONDITIONS FOR SWITCHING TO LPG MODE</u>
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NOTES	There must be no present or stored faults.
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<p>The ET234 "conditions for switching to LPG mode" signal is sent by the fuel injection computer to indicate whether or not it will allow operation in LPG mode. The injection computer authorises operation in LPG mode if the following conditions are met:</p> <ul style="list-style-type: none">– If it has received signal ET257 LPG ready: YES (this signal comes from the LPG computer and is sent to the fuel injection computer through the multiplex network).– If the air temperature is sufficiently high (to prevent any risks of the LPG injectors icing up).– Following a delay according to the coolant temperature when starting the engine.
Switch on the ignition. Test the multiplex network.
Consult the LPG fault finding strategy if the fault persists.

AFTER REPAIR	Repeat the conformity check from the start.
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ET236	<u>LPG MODE REQUEST</u>
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NOTES	There must be no present or stored faults.
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Status **ET236 "LPG mode request"** indicates attainment of the petrol/LPG switch position requested by the driver. This signal comes from the LPG computer and is sent to the fuel injection computer through the multiplex network.

Switch on the ignition.
Test the multiplex network.

Consult the LPG fault finding strategy if the fault persists.

AFTER REPAIR	Repeat the conformity check from the start.
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ET237	<u>LPG TANK EMPTY</u>
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NOTES	There must be no present or stored faults.
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<p>The fuel injection computer calculates that the LPG tank is empty on the basis of these criteria:</p> <ul style="list-style-type: none">– the signal from the upstream sensor and richness regulation (indicating abnormally poor operation).– detection of successive engine stalls when switching into LPG mode.– it takes an LPG pressure reading downstream from the pressure relief valve (this information is issued by the LPG computer and transmitted to the fuel injection computer via the multiplex network). <p>This fault finding is carried out in the fuel injection computer, to enable the system to automatically return to petrol mode operation when the LPG tank is empty: Status ET237 LPG tank empty is YES.</p>	
Switch on the ignition. Test the multiplex network.	
Consult the LPG fault finding strategy if the fault persists.	

AFTER REPAIR	Repeat the conformity check from the start.
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ET257	<u>LPG READY</u>
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NOTES	There must be no present or stored faults.
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The ET257 "LPG ready" signal is sent by the LPG computer to indicate that the LPG system is ready to operate. The information is transmitted by the multiplex network.
Switch on the ignition. Test the multiplex network.
Consult the LPG fault finding strategy if the fault persists.

AFTER REPAIR	Repeat the conformity check from the start.
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ET258	<u>LPG FAULT</u>
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NOTES	There must be no present or stored faults.
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<p>The ET258 "LPG fault" signal is sent by the LPG computer to indicate that the LPG system has detected an electrical or operational fault in one of these components and can no longer ensure proper engine operation. The information is transmitted by the multiplex network.</p>
<p>Switch on the ignition. Test the multiplex network.</p>
<p>Consult the LPG fault finding strategy if the fault persists.</p>

AFTER REPAIR	Repeat the conformity check from the start.
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ET265	<u>IMPACT DETECTED BY THE INJECTION COMPUTER</u>
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NOTES	There must be no present or stored faults.
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On receiving an impact detection signal emitted by the AIRBAG computer on the multiplex network, the injection computer will do the following, having received the signal (after a maximum of 10 milliseconds): stop the fuel pump supply, the ignition and the petrol or LPG injection.

Status **ET265 Impact detected by injection computer becomes STATUS 1.**

To restart, switch off the ignition for at least 10 seconds.

Use command **RZ007 Fault memory** to clear status **ET265**.

AFTER REPAIR	Repeat the conformity check from the start.
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Fault finding - Parameter summary table

Tool parameter	Diagnostic tool title
PR001	Manifold pressure
PR002	Coolant temperature
PR003	Air temperature
PR004	Computer feed voltage
PR006	Engine speed
PR009	Upstream oxygen sensor voltage
PR010	Downstream oxygen sensor voltage
PR012	Opening of idle speed regulation valve
PR013	Medium pinking signal
PR015	Anti-pinking correction
PR016	Atmospheric pressure
PR017	Measured throttle valve position
PR018	Vehicle speed
PR023	Canister bleed solenoid valve OCR
PR027	Refrigerant pressure
PR029	Fuel consumption
PR035	Richness correction value
PR041	Idle speed setpoint
PR042	Integral idle speed regulation correction
PR044	Power used by the AC compressor
PR050	Duration of injection
PR051	Ignition advance

PETROL INJECTION

Fault finding - Parameter summary table

Tool parameter	Diagnostic tool title
PR096	Number of active thermoplungers
PR108	Engine torque
PR110	Measured throttle position gang 1
PR111	Measured throttle position gang 2
PR113	Reference position of the motorised throttle valve
PR120	Pedal no load programming
PR124	Self-adapting richness gain
PR125	Self-adapting richness offset
PR163	Idling regulation valve setpoint
PR197	Throttle valve gangs 1 and 2 difference
PR198	Minimum stop position programmed gang 1
PR199	Maximum stop position programmed gang 1
PR200	Minimum stop position programmed gang 2
PR201	Maximum stop position programmed gang 2
PR202	Pedal gang 1 and 2 voltage difference
PR203	Pedal travel
PR204	Mileage counter fault warning light lit
PR206	Pedal position gang 1
PR207	Pedal position gang 2
PR208	Steering wheel cruise control/speed limiter control voltage
PR275	Oscillation detection counter
PR276	Cylinder 1 reduced torque detection

Fault finding - Interpretation of parameters

PR275	<u>OSCILLATION DETECTION COUNTER</u>
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NOTES	None.
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Parameter **PR275 Oscillation detection counter** makes it possible to count abnormal throttle vibrations caused either by engine vibrations, or by micro-breaks in the power supply to the motorised throttle valve. The counter increases from 0 to 255.

A micro-break in the motorised throttle valve's power supply is sufficient to trigger defect-mode engine operation. Status **ET118 Throttle in defect mode** then indicates **STATUS 1, 3 or 4**. The injection fault warning light does not always light up and the diagnostic tool finds no fault. After turning the ignition off and on, the defect mode disappears.

When this counter indicates a value higher than 0:
Check the condition and fit of the clips and of the motorised throttle valve and injection computer connectors.
Repair.

To reset the counter to 0: Clear the computer memory using command **RZ007 Clear fault memory**.

If the fault is still present, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start.
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PETROL INJECTION

Fault finding - Command summary table

Tool command	Diagnostic tool title
AC002	Thermoplunger relay n° 1
AC003	Air conditioning compressor
AC010	Fuel pump relay
AC016	Canister bleed solenoid valve
AC024	Dual mode solenoid inlet valve control
AC211	Fault warning light
AC212	Coolant temperature warning light
AC213	OBD warning light
AC261	Upstream O ₂ sensor heating
AC262	Downstream O ₂ sensor heating
AC491	Camshaft dephaser
AC620	Thermoplunger relay n° 2
AC621	Motorised throttle valve
AC625	High speed fan assembly
AC626	Low speed fan assembly
RZ007	Fault memory
RZ008	Reinitialise programming
VP001	Enter VIN

AC002	<u>THERMOPLUNGER N°1 RELAY</u>
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NOTES	No faults should be present or stored in the diagnostic tool.
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Check the connection and condition of the thermoplunger n°1 relay connector. Replace the connector if necessary.
Disconnect the relay. Check for + 12 V on track 3 of the thermoplunger n°1 relay connector. Repair if necessary using the relevant wiring diagram.
Check the insulation and continuity of the connection between: Thermoplunger n°1 relay track 5 \longrightarrow Thermoplunger n°1 Thermoplunger n°1 \longrightarrow Vehicle earth Repair if necessary.
Reconnect the relay. Check for + 12 V on track 5 of the thermoplunger N°1 relay connector when running command AC002 Thermoplunger N°1 relay. Measure the resistance of the thermoplunger n°1 relay coil. Replace the relay if the resistance is not 65 Ω \pm 0.7 Ω.
Check the resistance of thermoplunger n°1. Replace thermoplunger n°1 if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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AC010	<u>FUEL PUMP CONTROL RELAY</u>
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NOTES	No faults should be present or stored in the diagnostic tool.
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<p>Check the connection and condition of the fuel pump relay connector. Replace the connector if necessary.</p>
<p>Disconnect the relay. Check for + 12 V on track 3 of the fuel pump relay connector. Repair if necessary using the relevant wiring diagram.</p>
<p>Check the insulation and continuity of the connection between:</p> <p style="text-align: center;">Fuel pump relay track 5 \longrightarrow Track 1 of the inertia impact sensor</p> <p>Repair if necessary.</p>
<p>Check the absence of resistance between:</p> <p style="text-align: center;">Inertia impact sensor track 1 \longrightarrow Track 3 of the inertia impact sensor</p> <p>Replace the inertia impact sensor if necessary.</p>
<p>Check the insulation and continuity of the connection between:</p> <p style="text-align: center;">Inertia impact sensor track 3 \longrightarrow Track C1 of the fuel pump</p> <p style="text-align: center;">Fuel pump track C2 \longrightarrow Vehicle earth</p> <p>Repair if necessary.</p>
<p>Reconnect the relay. Check for + 12 V on track 5 of the fuel pump relay connector, using command AC010 Fuel pump relay. Measure the resistance of the thermoplunger n°1 relay coil. Replace the relay if the resistance is not 65 Ω \pm 0.7 Ω. Replace the relay if necessary.</p>
<p>Vehicle earth. If the fault persists, change the petrol pump.</p>

AFTER REPAIR	Repeat the conformity check from the start.
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AC620	<u>THERMOPLUNGER N°2 RELAY</u>
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NOTES	No faults should be present or stored in the diagnostic tool.
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Check the connection and condition of the thermoplunger n°2 relay connector. Replace the connector if necessary.
Disconnect the relay. Check for + 12 V on track 3 of the thermoplunger n°2 relay connector. Repair if necessary using the relevant wiring diagram.
Check the insulation and continuity of the connection between: Thermoplunger n°2 relay track 5 \longrightarrow Thermoplungers n°2 and 3 Thermoplungers n°2 and 3 \longrightarrow Vehicle earth Repair if necessary.
Reconnect the relay. Check for + 12 V on track 5 of the thermoplunger N°2 relay connector when running command AC620 Thermoplunger N°2 relay . Replace the relay if necessary.
Check the resistance of thermoplungers n°2 and 3. Replace thermoplunger n°1 and/or 3 if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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AC625	<u>HIGH-SPEED FAN ASSEMBLY</u>
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NOTES	No faults should be present or stored in the diagnostic tool.
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Check the connection and condition of the high-speed fan assembly relay connector. Replace the connector if necessary.
Disconnect the relay. Check for + 12 V on track 3 of the high speed fan assembly relay connector. Repair if necessary using the relevant wiring diagram.
Check the insulation and continuity of the connection between: High speed GMV relay track A5 \longrightarrow Engine cooling fan 2 track 1 Engine cooling fan 2 track 2 \longrightarrow Vehicle earth Computer track 69 \longrightarrow High speed GMV relay track A2 Repair if necessary.
Reconnect the relay. Check for + 12 V on track A5 of the high speed fan assembly relay connector when command AC625 High speed fan assembly is run. Replace the relay if necessary.
Check that engine cooling fan n°2 is not seized and that the blades turn easily. Replace engine cooling fan n°2 if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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AC626	<u>LOW-SPEED FAN ASSEMBLY</u>
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NOTES	No faults should be present or stored in the diagnostic tool.
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Check the connection and condition of the low speed fan assembly relay connector. Replace the connector if necessary.
Disconnect the relay. Check for + 12 V on track E1 of the low speed fan assembly relay connector. Repair if necessary using the relevant wiring diagram.
Check the insulation and continuity of the connection between: Low speed GMV relay, track E5 \longrightarrow Engine cooling fan 1 track 1 Engine cooling fan 1 track 2 \longrightarrow Vehicle earth Computer track 11 \longrightarrow Low speed GMV relay, track E2
Repair if necessary.
Reconnect the relay. Check for + 12 V on track E5 of the low speed fan assembly relay connector, using command AC626 Low speed fan assembly . Replace the relay if necessary.
Check that engine cooling fan n°1 is not seized and that the blades turn easily. Replace engine cooling fan n°1 if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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NOTES

Only consult the customer complaints after performing a complete check with the diagnostic tool.

NO DIALOGUE WITH THE COMPUTER

ALP 1

STARTING FAULTS

ALP 2

IDLING SPEED FAULTS

ALP 3

FAULTS WHILE DRIVING

ALP 4

NO AIR CONDITIONING

ALP 5

NO OPERATION IN LPG MODE

ALP 6

NOISE WHEN COLD (K4M)

**Technical
Note
6506A
ALP 1**

**SUSPECTED NOISE WITH NO FAULT ON THE DEPHASER
SYSTEM (F4R)**

**Technical
Note
6506A
ALP 2**

OIL LEAKING FROM THE CAMSHAFT DEPHASER

**Technical
Note
6506A
ALP 3**

**OIL LEAKING FROM THE CAMSHAFT DEPHASER SOLENOID
VALVE**

**Technical
Note
6506A
ALP 4**

ALP 1	No dialogue with the computer
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NOTES	None.
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<p>Try the diagnostic tool on another vehicle.</p>															
<p>Check:</p> <ul style="list-style-type: none"> - the connection between the diagnostic tool and the diagnostic socket (lead in good condition), - the injection, engine and passenger compartment fuses. - Try to communicate with another computer on the same vehicle. <p>Repair if necessary.</p>															
<p>Check for + 12 V on track 16 of the diagnostic socket. Repair if necessary.</p>															
<p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <table style="margin-left: 100px;"> <tr> <td>Diagnostic socket track 5</td> <td style="text-align: center;">→</td> <td>vehicle earth</td> </tr> <tr> <td>Diagnostic socket track 4</td> <td style="text-align: center;">→</td> <td>vehicle earth</td> </tr> </table> <p>Repair if necessary.</p>	Diagnostic socket track 5	→	vehicle earth	Diagnostic socket track 4	→	vehicle earth									
Diagnostic socket track 5	→	vehicle earth													
Diagnostic socket track 4	→	vehicle earth													
<p>Ensure the presence of + 12 V on:</p> <ul style="list-style-type: none"> - Injection computer track 30. - Injection computer track 29 (ignition on). <p>Repair if necessary.</p>															
<p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <table style="margin-left: 100px;"> <tr> <td>Injection computer track 3</td> <td style="text-align: center;">→</td> <td>vehicle earth</td> </tr> <tr> <td>Injection computer track 28</td> <td style="text-align: center;">→</td> <td>vehicle earth</td> </tr> <tr> <td>Injection computer track 33</td> <td style="text-align: center;">→</td> <td>vehicle earth</td> </tr> <tr> <td>Injection computer track 67</td> <td style="text-align: center;">→</td> <td>vehicle earth</td> </tr> <tr> <td>Injection computer track 56</td> <td style="text-align: center;">→</td> <td>Track 7 diagnostic socket</td> </tr> </table> <p>Repair if necessary.</p>	Injection computer track 3	→	vehicle earth	Injection computer track 28	→	vehicle earth	Injection computer track 33	→	vehicle earth	Injection computer track 67	→	vehicle earth	Injection computer track 56	→	Track 7 diagnostic socket
Injection computer track 3	→	vehicle earth													
Injection computer track 28	→	vehicle earth													
Injection computer track 33	→	vehicle earth													
Injection computer track 67	→	vehicle earth													
Injection computer track 56	→	Track 7 diagnostic socket													

AFTER REPAIR	Carry out a check using the diagnostic tool.
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ALP 2	Starting fault
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NOTES	This customer complaint should only be investigated after a complete check has been run using the diagnostic tool.
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<ul style="list-style-type: none">● Check the condition of the battery.● Check the tightness and oxydisation of the terminals.● Check that the wiring on the battery/starter motor and battery/vehicle earth is in good condition.● Check that the starter motor rotates properly.
<ul style="list-style-type: none">● Check that there is fuel present (fuel gauge faulty).● Check that the fuel is of the proper type.● Check that no hoses are pinched (especially after a removal operation).● Check the condition of the petrol filter.● Check that the tank vent is not blocked.● Make sure that the fuel pump is running correctly and that petrol is reaching the injector rail.● Make sure that the petrol pressure regulator is in good condition by checking the pressure.
<ul style="list-style-type: none">● Make sure that the air filter is in good condition; replace it if necessary.● Check the condition of the intake ducts (no air leaks, pinching of the air intake pipe etc.).● Disconnect the hose connecting the fuel vapour canister solenoid valve to the inlet manifold and block the hose to prevent air intake: if there is no more disturbance, the fuel vapour canister solenoid valve is the problem.
<ul style="list-style-type: none">● Check that the spark plugs are in good condition and that they correspond to the engine type; change them if necessary.● Remove the engine speed sensor and make sure it has not been rubbing on its target (increase in the air gap). If it has, check the condition of the engine flywheel.● Make sure that the ignition coils are in good condition.
<ul style="list-style-type: none">● Check that the exhaust system is not blocked nor the catalytic converter clogged.
<ul style="list-style-type: none">● Make sure that the engine can turn freely.● Check the engine compression.● Check the timing.

AFTER REPAIR	Carry out a check using the diagnostic tool.
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ALP 3	Idle speed fault
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NOTES	This customer complaint should only be investigated after a complete check has been run using the diagnostic tool.
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<ul style="list-style-type: none">● Check that there is petrol present (the petrol gauge may be faulty).● Check that the petrol is of the proper type.● Check that no hoses are pinched (especially after a removal operation).● Check the condition of the petrol filter.● Check that the tank vent is not blocked.● Make sure the breather canister is not blocked and that the fuel vapour absorber is not clogged.● Make sure that the petrol pressure regulator is in good condition by checking the pressure.
<ul style="list-style-type: none">● Make sure that the air filter is in good condition; replace it if necessary.● Check the condition of the intake ducts (no air leaks, pinching of the air intake pipe etc.).● Disconnect the hose connecting the fuel vapour canister solenoid valve to the inlet manifold and block the hose to prevent air intake: if there is no more disturbance, the fuel vapour canister solenoid valve is the problem.
<ul style="list-style-type: none">● Check that the spark plugs are in good condition and that they correspond to the engine type; change them if necessary.● Make sure the spark plugs have resistance by checking for the letter R in the supplier's part number. If in doubt, check their resistance, which must be between 3000 and 8000 Ω.● Make sure that the ignition coils are in good condition.
<ul style="list-style-type: none">● Check that the exhaust system is not blocked nor the catalytic converter clogged.
<ul style="list-style-type: none">● Check with the dipstick that the oil level is not too high.● Check the engine compression.● Check the timing.

AFTER REPAIR	Carry out a check using the diagnostic tool.
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ALP 4	Starting fault
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NOTES	This customer complaint should only be investigated after a complete check has been run using the diagnostic tool.
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<ul style="list-style-type: none">● Check that there is petrol present (the petrol gauge may be faulty).● Check that the petrol is of the proper type.● Check that no hoses are pinched (especially after a removal operation).● Check the condition of the petrol filter.● Check that the tank vent is not blocked.● Make sure the breather canister is not blocked and that the fuel vapour absorber is not clogged.● Make sure that the petrol pressure regulator is in good condition by checking the pressure.
<ul style="list-style-type: none">● Make sure that the air filter is in good condition; replace it if necessary.● Check the condition of the intake ducts (no air leaks, pinching of the air intake pipe etc.).● Disconnect the hose connecting the fuel vapour canister solenoid valve to the inlet manifold and block the hose to prevent air intake: if there is no more disturbance, the fuel vapour canister is the problem.
<ul style="list-style-type: none">● Check that the spark plugs are in good condition and that they correspond to the engine type; change them if necessary.● Make sure the spark plugs have resistance by checking for the letter R in the supplier's part number. If in doubt, check their resistance, which must be between 3000 and 8000 Ω.● Make sure that the ignition coils are in good condition.
<ul style="list-style-type: none">● Check that the exhaust system is not blocked nor the catalytic converter clogged.
<ul style="list-style-type: none">● Check that the engine cooling system is working correctly.● Check with the dipstick that the oil level is not too high.● Check the engine compression.● Check the timing.
<ul style="list-style-type: none">● Check that the wheels turn freely (calipers, drums and bearings not seized).● Check the condition of the tyre pressures.

AFTER REPAIR	Carry out a check using the diagnostic tool.
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ALP 5	NO AIR CONDITIONING
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NOTES	This customer complaint should only be investigated after a complete check has been run using the diagnostic tool.
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Does parameter PR027 Refrigerant pressure have a value of zero?

YES	<p>Test the air conditioning charge. Repair if necessary.</p> <p>Check the connection and condition of the air conditioning pressure sensor connector. Replace the connector if necessary.</p> <p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <table style="margin-left: 40px;"> <tr> <td>Injection computer track 79</td> <td style="text-align: center;">→</td> <td>Refrigerant pressure sensor track A</td> </tr> <tr> <td>Injection computer track 83</td> <td style="text-align: center;">→</td> <td>Refrigerant pressure sensor track B</td> </tr> <tr> <td>Injection computer track 47</td> <td style="text-align: center;">→</td> <td>Refrigerant pressure sensor track C</td> </tr> </table> <p>Repair if necessary.</p> <p>Measure the resistance of the air conditioning pressure sensor. If necessary replace the sensor.</p>	Injection computer track 79	→	Refrigerant pressure sensor track A	Injection computer track 83	→	Refrigerant pressure sensor track B	Injection computer track 47	→	Refrigerant pressure sensor track C
Injection computer track 79	→	Refrigerant pressure sensor track A								
Injection computer track 83	→	Refrigerant pressure sensor track B								
Injection computer track 47	→	Refrigerant pressure sensor track C								

NO	<p>Check the connection and condition of the air conditioning compressor connector. Replace the connector if necessary.</p> <p>Use the bornier to check the insulation, continuity and the absence of interference resistance on the connections between:</p> <table style="margin-left: 40px;"> <tr> <td>Injection computer track 39</td> <td style="text-align: center;">→</td> <td>Air conditioning compressor relay track D2</td> </tr> </table> <p>Repair if necessary.</p> <p>Check that the air conditioning compressor clutch is engaging properly with diagnostic tool command AC003 Air conditioning compressor. Repair if necessary.</p>	Injection computer track 39	→	Air conditioning compressor relay track D2
Injection computer track 39	→	Air conditioning compressor relay track D2		

Consult the fault finding strategy for the heating and ventilation if the incident persists.

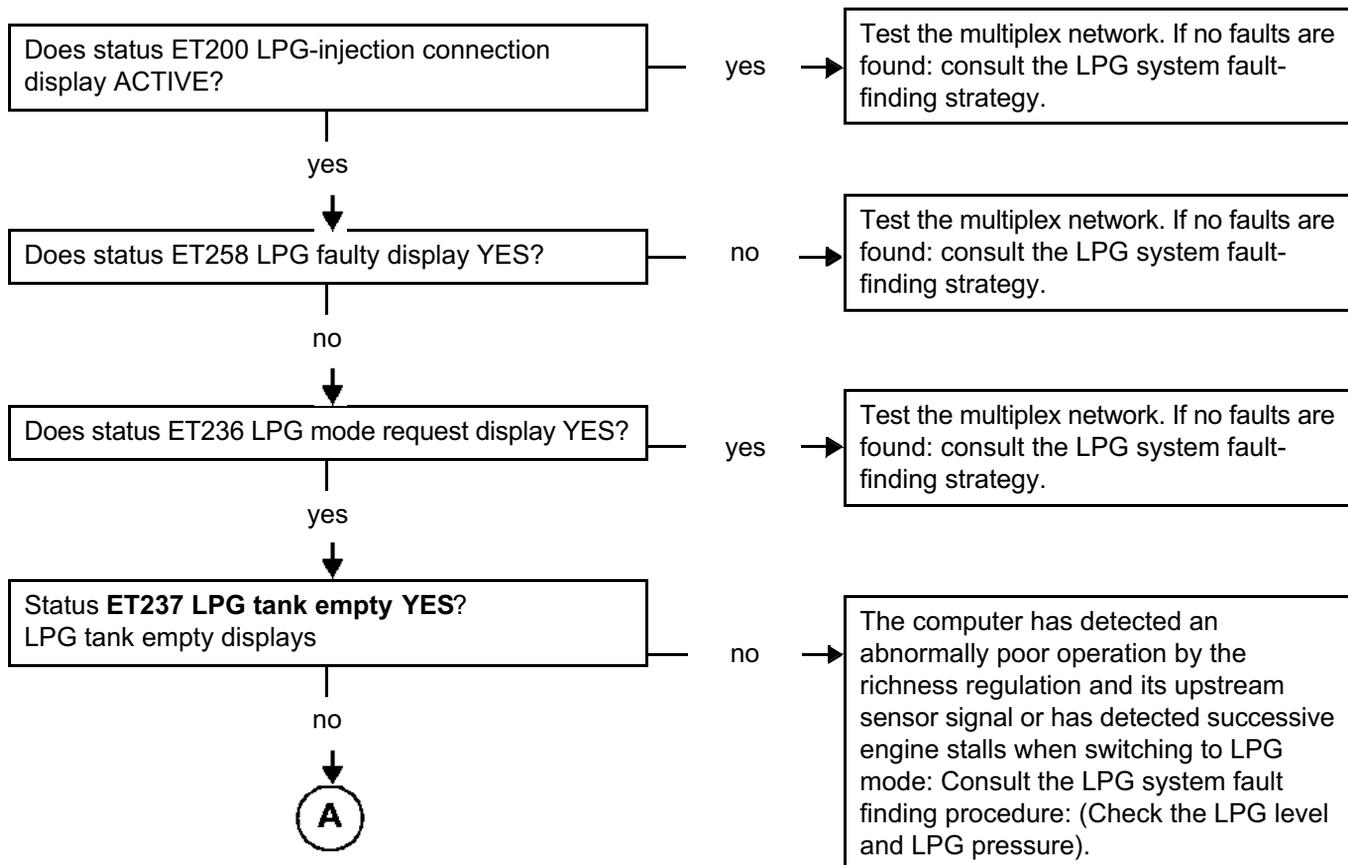
AFTER REPAIR	Carry out a check using the diagnostic tool.
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ALP 6

NO OPERATION IN LPG MODE

NOTES

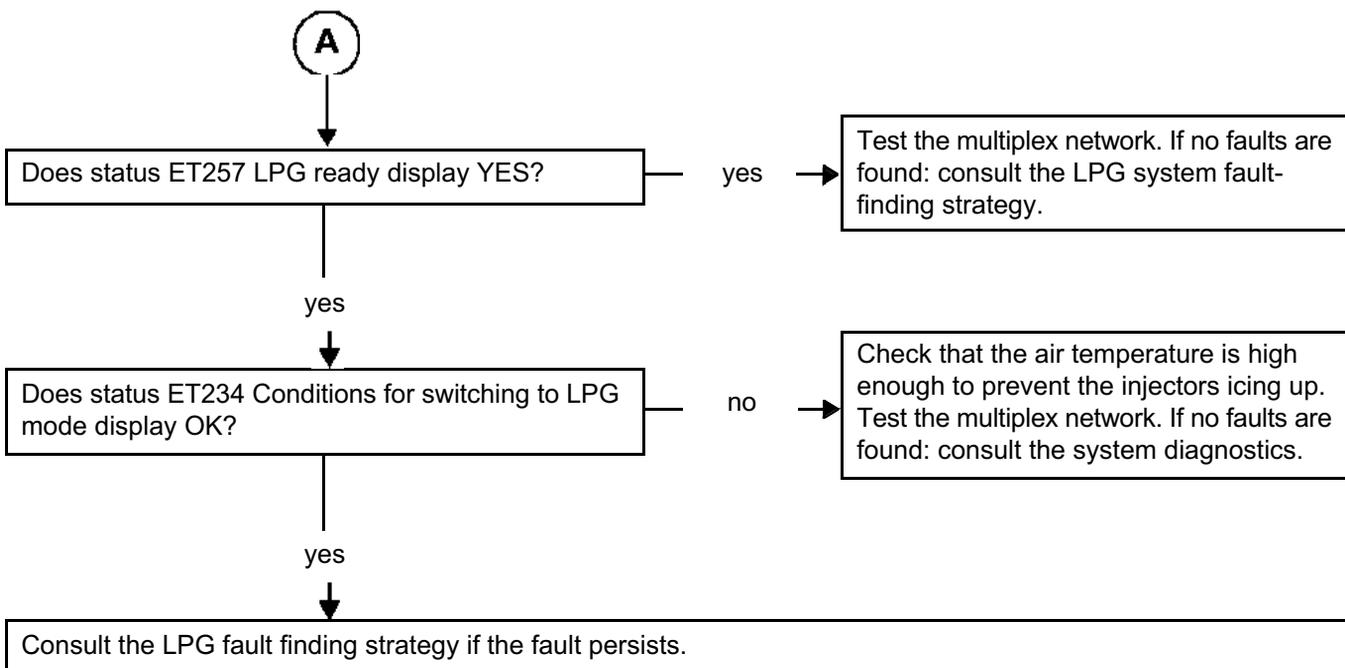
Only consult this customer complaint after a complete check with the diagnostic tool. There must be no faults present or stored in the LPG system.



AFTER REPAIR

Carry out a check using the diagnostic tool.

ALP 6 CONTINUED	
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AFTER REPAIR	Carry out a check using the diagnostic tool.
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