

RENAULT

Technical Note 3834A

<i>Vehicle</i>	<i>Type</i>	<i>Engine</i>
TWINGO	X06X	D7F 708
CLIO	X65X	D7F 766 K4M 732
KANGOO	X76X	K4M 746 D7F 766 K4M 732 K4M 754

Sub-section concerned: 17B

FAULT FINDING

INJECTION

SIRIUS 34-E932-Vdiag 08

77 11 329 040

March 2010

EDITION ANGLAISE

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

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

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Engine and peripherals

Contents

Page

17B PETROL INJECTION

Sirius 34 injection

Program N°: E9 - Vdiag N°: 08

Introduction	17B-1
Fault finding log	17B-7
System operation	17B-9
Allocation of computer tracks	17B-15
Replacement of components	17B-17
Configurations and programming	17B-18
Fault summary table	17B-20
Interpretation of faults	17B-24
Conformity check	17B-88
Status summary table	17B-122
Interpretation of statuses	17B-125
Parameter summary table	17B-139
Interpretation of parameters	17B-141
Command summary table	17B-142
Interpretation of commands	17B-143
Customer complaints	17B-148
Fault finding chart	17B-149

1. SCOPE OF THIS DOCUMENT

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

Vehicle(s): **TWINGO / CLIO ph2 and 3 / KANGOO**
Engines: **D7F 708, 766 / K4M 732, 746, 754**

Name of computer: **SIRIUS 34**
Program N°: **E9**
VDIAG N°: **08**

2. PRE-REQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):

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

Wiring diagrams:

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

Type of diagnostic tools

- CLIP

Special tooling required

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

If the information obtained by the fault-finding tool requires checking electrical continuity, connect terminal **Elé. 1497** or universal terminal **Elé. 1681**.

WARNING

- All tests with bornier **Ele. 1497** or **Ele. 1681** must be conducted with the battery disconnected.
- The terminal is only designed to be used with a multimeter. Never apply **12 V** to the checkpoints.

3. REMINDERS

Procedure

To run fault finding on the vehicle computers, switch on the ignition.

Connect the diagnostic tool and perform the required operations.

Faults

Faults are declared to be either 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 switched on after the + after ignition feed (without any system components being active).

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

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

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

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

- the electrical lines which correspond to the fault,
- the connectors on these lines (corrosion, bent pins, etc.),
- the resistance of the 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:

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

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

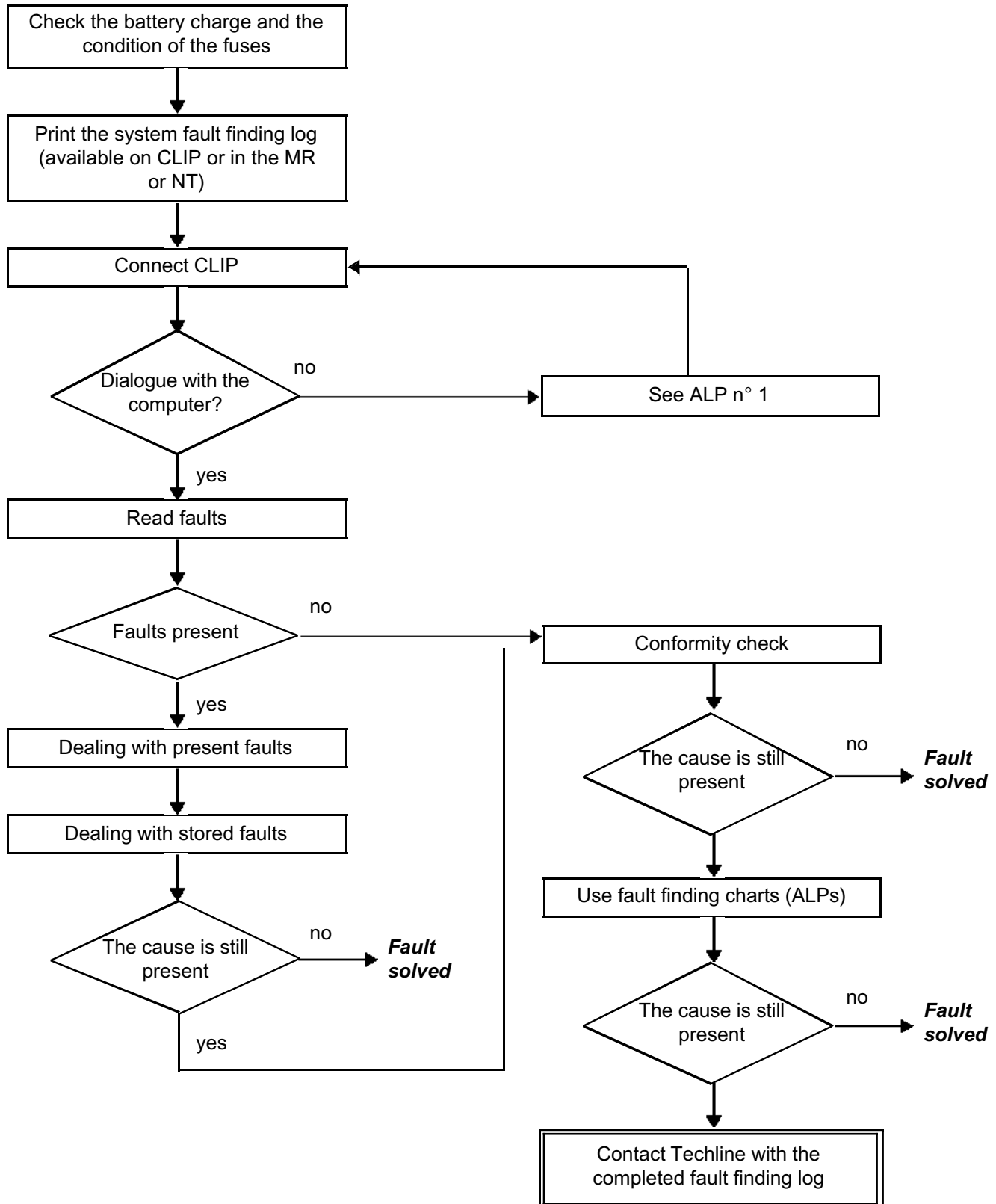
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart

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

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

4. FAULT FINDING PROCEDURE



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 their crimping (no crimping on the insulating section).

Make sure that the clips and tabs are properly locked in the sockets.

Check that no clips or tabs have been dislodged during connection.

Check the clip contact pressure using an appropriate model of tab.

Resistance check

Check the continuity of entire lines, then section by section.

Look for a short circuit to earth, on the **+ 12 V feed** or with 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 fault finding procedure, ensures a record is kept of the procedure 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.

7. FAULT FINDING

Stored faults are managed the same way for all sensors and actuators.

A stored fault is cleared after 128 recurrence-free starts.

Advice to be followed before any operation

Use fresh cleaning agent for each operation (used cleaning agent is contaminated). Pour it into an uncontaminated container.

For each operation, use a clean brush in good condition (the brush must not shed its bristles).

Use a brush and cleaning agent to clean the unions to be opened.

Blow compressed air over the cleaned parts (tools, cleaned the same way as the parts, connections and injection system zone). Check that no bristles remain.

Wash your hands before and during the operation if necessary.

When wearing leather protective gloves cover them with latex gloves to prevent contamination.

Instructions to be followed during the operation

As soon as the circuit is open, all openings must be plugged to prevent impurities from entering the system. The caps to be used are available from the Parts Department. The plugs must not be reused under any circumstances.

Seal the pouch shut, even if it has to be opened shortly afterwards. The ambient atmosphere carries impurities.

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

Using a brush, cleaning agent, air gun, sponge or normal cloth is strictly prohibited once the circuit has been opened. These items could allow contamination to enter the system.

A new component replacing an old one must not be removed from its packaging until it is to be fitted to the vehicle.

FAULT FINDING LOG

System: Injection

Page 1/2

List of monitored parts: **Computer**

● Administrative identification

Date	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	2	0	<input type="text"/>	<input type="text"/>
Log completed by	<input type="text"/>							
VIN	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Engine	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Diagnostic tool	<input type="text"/>	CLIP						
Update version	<input type="text"/>	<input type="text"/>	<input type="text"/>					

● Customer complaint

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

Other

Your comments:

● Conditions under which the customer complaint occurs

<input type="text"/>	001	When cold	<input type="text"/>	005	While driving	<input type="text"/>	008	When decelerating
<input type="text"/>	002	When warm	<input type="text"/>	006	When changing gear	<input type="text"/>	009	Sudden fault
<input type="text"/>	003	When stationary	<input type="text"/>	007	When accelerating	<input type="text"/>	010	Gradual deterioration
<input type="text"/>	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°:	<input type="text"/>
Wiring diagram used	
Wiring Diagram Technical Note N°:	<input type="text"/>
Other documentation	
Title and/or part number:	<input type="text"/>



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FD 01
Fault finding log

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 composition

The system is fitted with a **SIEMENS SIRIUS 34** injection computer.

The injection system consists of the:

- accelerator potentiometer,
- accelerator pedal switch,
- TDC sensor,
- atmospheric pressure sensor,
- air temperature sensor,
- coolant temperature sensor,
- refrigerant pressure sensor,
- pinking sensor,
- upstream oxygen sensor,
- downstream oxygen sensor,
- cruise control switch,
- steering column switch,
- cruise control on/off switch,
- brake lights switch,
- fuel vapour absorber,
- injection computer,
- camshaft dephaser sensor,
- camshaft dephaser,
- fuel gauge,
- fuel pump,
- petrol pump relay,
- impact sensor,
- fan unit (low and high speed),
- air conditioning compressor,
- motorised throttle valve,
- power assisted steering,
- 4 injectors,
- 4 pencil coils.

2. Role of components, operating strategy

● Engine immobiliser

The immobiliser function is controlled by the UCH and engine management computer.

Before any driver request (with key), the engine management and UCH computers exchange authentication CAN frames via the multiplex network to determine whether or not to start the engine.

After more than 5 consecutive failed authentication attempts, the engine management computer goes into protection (anti-scanning) mode and no longer tries to authenticate the UCH computer. It only leaves this mode when the following sequence of operations is carried out:

- the ignition is left on for at least **60 seconds**,
- the message is switched off,
- the injection computer self-supply cuts out when it should (the time varies according to engine temperature).

After this, only one authentication attempt is allowed. If this fails again, repeat the sequence of operations described above.

If the engine management computer still fails to unlock, contact Techline.

● Impact detected

If an impact has been stored by the injection computer (Impact detected), switch off the ignition for **10 seconds**, then switch it back on to start the engine. Then clear any faults.

● Catalytic converter

Purpose

The purpose of catalytic converter fault finding is to detect a malfunction which would cause hydrocarbon pollutant emissions to exceed the On Board Diagnostic limit.

Principle

The ability of the catalytic converter to store oxygen indicates the condition of the catalytic converter.

As the catalytic converter ages, its ability to store oxygen reduces along with its ability to treat pollutants. The principle lies in using the correlation between the oxygen storage capacity and the HC emissions.

Description of programming

When the conditions for starting fault finding are confirmed, richness excitation peaks are applied, which has the effect of sending bursts of oxygen into the catalytic converter.

If the catalytic converter is in good condition it will absorb the oxygen sent to it and the downstream sensor voltage will remain at its average value.

If it is degraded, it rejects the oxygen that it cannot store and the downstream sensor starts knocking. The more the catalytic converter is degraded, the more the downstream oxygen sensor will oscillate.

● Oxygen sensors

Purpose

The purpose of sensor converter operational fault finding is to detect a malfunction causing pollutant HC emissions to exceed the OBD threshold.

There are 2 kinds of oxygen sensor damage:

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

Description of programming

When the conditions for starting fault finding are confirmed, the upstream sensor signal periods are read by removing the glitches, then the average is taken to be compared with an OBD limit average period.

The fault finding procedure may be staggered, i.e. divided over several consecutive engine stability phases, and its duration will vary according to the condition of the sensor.

● Combustion misfiring

Purpose

Detection must fulfil 2 normative objectives:

- to signal when OBD pollution limits are exceeded,
- prevent destruction of the catalytic converter.

The diagnostic can detect:

- clogging or flooding of spark plugs,
- clogging or a change in the dynamic flow of the injectors,
- a fault in the supply system (pressure regulator, fuel pump, etc.),
- a faulty connection in the petrol or injection circuits (coil secondary, other faults detected by electrical fault finding).

This fault finding procedure is authorised in both petrol and LPG modes, but it is inhibited during transitions. The fault finding results are differentiated according to the carburetion mode, as it is possible to have combustion misfires in petrol mode and not in LPG mode, and vice versa.

● Motorised throttle body

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

● Air supply management

The idle speed regulator performs all the calculations required for physical control of the idling speed actuator: the motorised throttle. This regulator has a built-in adaptive component (dispersion and ageing programming).

If the idling speed regulation conditions are observed, **ET039 Idling speed regulation** is **ACTIVE**, the idling speed regulator positions the motorised throttle from moment to moment to maintain the engine speed at its idling setpoint. The motorised throttle opening ratio necessary for observing the speed setpoint is then given by parameter **PR012 Idling speed regulation valve opening**.

Note on parameter PR012:

This parameter uses two parameters in particular that can be accessed via the diagnostic signal: **PR042 Idling speed regulation integral correction**, and **PR163 Idling speed regulation setpoint**, which is the adaptive integral action.

- **PR163 Idling speed regulation valve setpoint** depends on the coolant temperature, emission control strategies, air conditioning needs, gearbox selector position, possibly action on the power assisted steering, RCH, oil temperature (engine protection) and finally the electrical balance calculated by the injection software.
- **PR042 Idling speed regulation integral correction** is constantly calculated to take into account the air required by consumers.

Adaptive idling speed correction:

Under normal hot engine operating conditions, the idling speed opening cyclic ratio value **PR012 Idling speed regulation valve opening** varies between a high value and a low value to obtain the nominal idling speed.

It is possible that during variations in the operation of the vehicle (running in, engine fouling, etc.), the Opening Cyclic Ratio could become close to the highest or lowest values.

Calculation for setting the idling speed:

The idling speed setpoint is given by parameter **PR041 Idling speed regulation setpoint**.

The idling speed regulation setpoint depends on the coolant temperature, the emission control programming, air conditioning requirements, the position of the gearbox selector, possibly on power assisted steering action, RCH, oil temperature (engine protection) and the electrical balance calculated by the injection software (the engine speed is increased by **160 rpm** maximum if the battery voltage remains below **12.7 V**).

● Adaptive richness correction:

In loop mode, the richness regulation corrects the injection duration in order to obtain a mixture which is as close as possible to a richness of 1. The richness correction value **PR035 Richness correction value** is close to **50%**, with limits of **0** and **100%**.

The richness adaptive corrections **PR124 Self-adapting richness gain** and **PR125 Self-adapting richness offset** are used to offset the injection mapping to centre richness regulation on **50 %**.

Adaptive corrections take **50%** as an average value after reinitialising the computer (clearing the memory) and have limit values.

3. Controlled functions/Intersystem connections:

Connections to the other computers:

- Protection and Switching Unit (UPC),
- Passenger Compartment Control Unit (UCH),
- LPG computer
- cruise control and speed limiter,
- instrument panel,
- air conditioning computer.

4. Warning light illumination strategy:

Activation of the warning lights

The S3000 injection system manages the illumination of three warning lights and the issuing of warning messages according to the severity of the faults detected, to inform the customer and to direct fault finding. The injection computer manages the illumination of warning lights and warning messages displayed on the instrument panel. These warning lights are lit during the starting phase, in the event of an injection fault or engine overheating.

The warning light illumination requests are sent to the instrument panel via the multiplex network.

Warning light illumination principle

During the starting phase (START button depressed) the **OBD** (On-Board Diagnostic) warning light lights up for approximately **3 seconds** then goes out.

If there is an injection fault (**level 1**), the written message **CHECK INJECTION** is displayed, and then the **SERVICE** warning light comes on. It signals reduced performance and a limited safety level.

The driver should carry out repairs as soon as possible.

Components involved:

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

If there is a serious injection fault (**severity 2**), the red symbol indicated by an engine and the word **STOP** appear (display with information display only), with the **ENGINE OVERHEATING** written message followed by the **STOP** warning light and a buzzer. If this happens, the vehicle will stop immediately.

When a fault causing excessive pollution is detected, the **orange OBD warning light**, an engine symbol, lights up:

- **flashing** in the event of a fault which might irreparably damaged the catalytic converter (destructive misfiring). If this happens you must stop the vehicle immediately,
- **continuously** in the case of non-compliance with the pollution control standards (combustion misfiring, catalytic converter fault, oxygen sensor fault, inconsistency between the oxygen sensors and fuel vapour absorber fault).

5. 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 is indicated by a constant engine speed for every gear ratio, whatever the position of the accelerator pedal.

If no fault is present, check diagnostic **PR275 Oscillation detection counter**.

STATUS 2: INJECTION CUT-OFF:

This defect mode is not used on the **SIRIUS 34** injection computer.

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

This defect mode is indicated by: no pedal effect, fast idling and if the brake pedal is depressed the engine speed changes to idle speed.

If no fault is present, check diagnostic **PR275 Oscillation detection counter**.

STATUS 4: REDUCTION OF 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).

If no fault is present, refer to **PR275 Oscillation detection counter**.

	Status 1	Status 2	Status 3	Status 4
DF002 Throttle potentiometer circuit	1.DEF/2.DEF 3.DEF			1.DEF/2.DEF 3.DEF
DF125 Pedal potentiometer circuit gang 1			X	X
DF126 Pedal potentiometer circuit gang 2			X	X
DF129 Pedal potentiometer circuit			X	X
DF226 Programming the throttle stops	X			X
DF254 Motorised throttle control	1.DEF/2.DEF			
DF255 Safety of throttle / pedal operation	1.DEF			
DF258 First sensor reference voltage				1.DEF

Black 90-track connector:

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	- motorised throttle potentiometer sensor
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
31	Not used
32	Ignition coil 1 - 4 - control
33	Electrical earth
34	N° 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

Track	Description
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
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

1. COMPUTER REPLACEMENT, PROGRAMMING OR REPROGRAMMING OPERATIONS

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

WARNING

- switch on the diagnostic tool (mains or cigarette lighter supply),
- connect a battery charger (during the entire computer (re)programming procedure, the engine fan assemblies are triggered automatically),
- observe the engine temperature instructions of the diagnostic tool before (re)programming.

After programming, reprogramming or replacing the computer:

- switch off the ignition;
 - start and then stop the engine (to initialise the computer) and wait for 30 seconds,
 - switch on the ignition again and use the diagnostic tool to carry out the following steps:
- run command **VP010 Enter VIN**,
 - deal with any faults declared by the diagnostic tool. Clear the computer memory.
 - program the flywheel sensor target and throttle stops,
 - carry out a road test followed by another check with the diagnostic tool.

WARNING

It is not possible to test an injection computer from the Parts Department because it can no longer be fitted on any other vehicle.

2. REPLACING THE MOTORISED THROTTLE VALVE

When replacing the throttle valve, program the throttle stops.

WARNING

Never drive the vehicle without having programmed the throttle stops.

3. STARTING THE VEHICLE AFTER AN IMPACT:

Upon receiving a signal through the multiplex network that the airbag computer has detected an impact, the injection computer (maximum 10 milliseconds):

- Cuts off power to the fuel pump, ignition and petrol or LPG injection,
- status ET265 "Impact detected by injection computer" changes to "STATUS 1",
- the only way to restart is to switch off the ignition for at least 10 seconds,
- the only to change status ET265 from "STATUS 1" to "NO" is to clear the stored faults.

1. CONFIGURATION

Computer configuration by automatic detection

The computer can automatically configure itself based on the sensors or vehicle options available.

LC012	Read O2 sensor option
	→ 1 wire
	→ 3-wire
LC018	OBD warning light
	→ WITH
	→ WITHOUT
LC019	Upstream oxygen sensor
	→ WITH
	→ WITHOUT
LC020	Downstream oxygen sensor
	→ WITH
	→ WITHOUT
LC021	Camshaft dephaser
	→ WITH
	→ WITHOUT
LC036	Reduced flow petrol pump
	→ WITH
	→ WITHOUT
LC037	AC/injection connection through CAN
	→ Wire
	→ WITH
LC038	Vehicle speed connection through CAN
	→ WITH
	→ WITHOUT
LC042	Camshaft cold loop mode in injection
	→ WITH
	→ WITHOUT

LC044	Thermoplunger management
	→ WITH
	→ WITHOUT
LC054	Gearbox type
	→ BVM
	→ Automatic
LC093	Type A air temperature sensor
	→ WITH
	→ WITHOUT
LC096	Fixed capacity compressor
	→ WITH
	→ WITHOUT
LC098	Pencil type ignition coil
	→ WITH
	→ WITHOUT

2. PROGRAMMING

Program the throttle stops

Switch on the ignition and wait at least **5 seconds**, without starting the engine; the throttle stops 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.

Run programming command RZ008 Programming reinitialisation.

Conduct a road test so that the computer reprograms these adaptive variables (torquemeter and richness); this prevents any possible driving discomfort when the customer reclaims the vehicle.

Programming conditions for engine adaptive variables:

- steady speed between **2500 rpm** and **3000 rpm** for at least **30 seconds**, then acceleration in 2nd gear to **4000 rpm** followed by deceleration to idle.

Programming the throttle stops following replacement

Following replacement of the computer or motorised throttle valve, after turning on the ignition, wait **30 seconds** for the computer to memorise the MAXIMUM and MINIMUM stops.

Check the programming using **ET111 "Throttle stop programming"**.

Fault	DTC code in hexadecimal	Description	Level 1 Fault warning light (Orange preheating warning light)	Level 2 fault warning light (Red heater plugs "on" indicator light)	No warning light on	OBD warning light
DF002		Throttle potentiometer circuit	1.DEF/2.DEF 3.DEF			1.DEF/ 2.DEF 3.DEF
DF003	1002	Air temperature sensor circuit				X
DF004	1001	Coolant temperature sensor circuit		X		X
DF006	1012	Pinking sensor circuit				X
DF008	105D	Petrol pump relay control circuit				CO/CC.0 CC.1
DF009	1066	Actuator relay control circuit			CO/CC.0 CC.1	
DF010	1017	Low speed GMV circuit		CO/CC.0 CC.1		
DF011	101F	Fault warning light circuit			CO/CC.0 CC.1	
DF012	103D	Injection/AC connection			X	
DF014	1053	Canister bleed solenoid valve circuit				CO/CC.0 CC.1
DF018	1054	Upstream oxygen sensor heating circuit				CO/CC.0 CC.1
DF022	103F	Computer			1.DEF	
DF024	1011	Vehicle speed sensor circuit				X
DF025		Flywheel signal sensor circuit				X
DF030	1018	High speed fan assembly circuit		CO/CC.0 CC.1		
DF031	101D	OBD warning light circuit			CO/CC.0 CC.1	
DF032		Coolant temperature overheating warning light		CO/CC.0 CC.1		

Fault	DTC code in hexadecimal	Description	Level 1 Fault warning light (Orange preheating warning light)	Level 2 fault warning light (Red heater plugs "on" indicator light)	No warning light on	OBD warning light
DF038	1056	Downstream oxygen sensor heating circuit				CO/CC.0 CC.1
DF044		Immobiliser circuit			X	
DF045	1004	Manifold pressure sensor circuit			DEF/1.DEF	
DF052	102E	Cylinder 1 injector circuit				CO/CC.0 CC.1
DF053	102F	Cylinder 2 injector circuit				CO/CC.0 CC.1
DF054	1030	Cylinder 3 injector circuit				CO/CC.0 CC.1
DF055	1031	Cylinder 4 injector circuit				CO/CC.0 CC.1
DF057	1044	Upstream oxygen sensor circuit				X
DF058	1046	Downstream oxygen sensor circuit				X
DF061		Ignition coil 1 - 4 circuit				CO/CC.0 CC.1
DF062		Ignition coil 2 - 3 circuit				CO/CC.0 CC.1
DF082		Petrol/LPG connection			X	
DF098		Pollutant combustion misfire in LPG mode				OBD/ 1.OBD/ 2.OBD
DF099		Destructive combustion misfire in LPG mode				OBD/ 1.OBD/ 2.OBD
DF102	105B	Oxygen sensor operating fault				OBD/ 1.OBD/ 2.OBD
DF106	105C	Catalytic converter operating fault				OBD/ 1.OBD/ 2.OBD

Fault	DTC code in hexadecimal	Description	Level 1 Fault warning light (Orange preheating warning light)	Level 2 fault warning light (Red heater plugs "on" indicator light)	No warning light on	OBD warning light
DF109		Pollutant combustion misfires				OBD/ 1.OBD/ 2.OBD
DF110		Destructive combustion misfires				OBD/ 1.OBD/ 2.OBD
DF116	105A	Fuel circuit operating fault				OBD/ 1.OBD/ 2.OBD
DF118	106B	Refrigerant fluid pressure sensor circuit			X	
DF125	100A	Pedal potentiometer circuit gang 1	X			
DF126	100B	Pedal potentiometer circuit gang 2	X			
DF129		Pedal potentiometer circuit	1.DEF/2.DEF			
DF135		Brake pedal sensor circuit			X	
DF138	1034	Thermoplunger n° 1 relay control			CO/CC.0 CC.1	
DF139	1035	Thermoplunger n° 2 relay control			CO/CC.0 CC.1	
DF152	1010	Second sensor reference voltage			1.DEF	
DF170		Automatic gearbox/ Injection connection				X
DF189	1067	Engine flywheel target				X
DF211		LPG fuel circuit operating fault				OBD/ 1.OBD/ 2.OBD
DF226	107E	Programming throttle stops	X			
DF228		Air conditioning compressor control			CO/CC.0 CC.1	
DF235	102C 102D	Cruise control/Speed limiter			1.DEF/2.DEF 3.DEF/4.DEF 5.DEF	

Fault	DTC code in hexadecimal	Description	Level 1 Fault warning light (Orange preheating warning light)	Level 2 fault warning light (Red heater plugs "on" indicator light)	No warning light on	OBD warning light
DF236		+ After relay feed			X	
DF251		+ After ignition supply			X	
DF253		Engine earth			X	
DF254	106C	Motorised throttle valve control	1.DEF/2.DEF			
DF255		Safety of throttle / pedal operation	1.DEF	1.DEF		
DF258	100F	First sensor reference voltages	1.DEF			

<div>DF002 PRESENT</div>	<div><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</div>
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<div>NOTES</div>	<div>Priorities in dealing with a number of faults: If the fault DF152 Second sensor reference voltage is present or stored, deal with it first.</div>
	<div>Special note: – OBD fault warning light and severity 1 fault warning light lit, – defect mode statuses 1 and 4 of motorised throttle valve.</div>

<div>1.DEF</div>	<div>NOTES</div>	<div>None.</div>
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<div>Move the wiring harness between the injection computer and the throttle potentiometer in order to detect a status change (present ↔ stored). Look for any harness damage, and check the condition and connection points of the throttle potentiometer and its connections. Replace the connector if necessary.</div>
<div>Using the "universal bornier", check the insulation, continuity and the absence of interference resistance for the connections between: Injection computer track 7 ➡ track 5 of the throttle potentiometer Injection computer track 82 ➡ track 1 of the throttle potentiometer Injection computer track 17 ➡ track 2 of the throttle potentiometer If this fault appears, carefully check the protective devices, insulation and routing of the engine wiring (see Preliminaries, wiring test). Repair if necessary.</div>
<div>Measure the resistance between tracks 5 and 1 of the throttle potentiometer gang 1. Replace the throttle potentiometer if the resistance is not approximately 1 kΩ ± 25%.</div>

DF002
(CONTINUED 1)

2.DEF

NOTES

None.

Move the wiring harness between the injection computer and the throttle potentiometer in order to detect a status change (present ↔ stored).

Look for any harness damage, and check **the condition and connection points** of the throttle potentiometer and its connections.

Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and the absence of interference resistance** for the connections between:

Injection computer **track 7** —————> **Track 5** of the throttle potentiometer

Injection computer **track 82** —————> **Track 1** of the throttle potentiometer

Injection computer **track 13** —————> **Track 6** of the throttle potentiometer

If this fault appears, carefully check the protective devices, insulation and routing of the engine wiring (see Introduction, "Wiring test").

Repair if necessary

Measure the **resistance** between **tracks 6** and **1** of the throttle potentiometer gang 2.

Replace the throttle potentiometer if the **resistance** is not approximately **1 kΩ ± 25%**.

DF002 (CONTINUED 2)	
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3.DEF	NOTES	None.
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<p>Move the wiring harness between the injection computer and the throttle potentiometer in order to detect a status change (present ↔ stored). Look for any harness damage, and check the condition and connection points of the throttle potentiometer connector. Replace the connector if necessary.</p>		
<p>Using the universal bornier, measure the resistance of the throttle potentiometer gangs 1 and 2 (see 1.DEF and 2.DEF).</p> <p>Check that the resistance change of the throttle potentiometer is linear by pressing the throttle from no load to full load.</p> <p>Gang 1 tracks: Injection computer track 17 —————▶ Track 7 of the injection computer Injection computer track 17 —————▶ Track 82 of the injection computer and</p> <p>Gang 2 tracks: Injection computer track 13 —————▶ Track 7 of the injection computer Injection computer track 13 —————▶ Track 82 of the injection computer</p> <p>If this fault appears, carefully check the protective devices, insulation and routing of the engine wiring (see Introduction, "Wiring test").</p> <p>Replace the sensor if the resistance of the throttle potentiometer gang 1 is not:</p> <ul style="list-style-type: none">– no load: 1205 Ω ± 20% between tracks 17 and 7 of the injection computer 1960 Ω ± 20% between tracks 17 and 82 of the injection computer– full load: 2000 Ω ± 20% between tracks 17 and 7 of the injection computer 830 Ω ± 20% between tracks 17 and 82 of the injection computer <p>Replace the sensor if the resistance of the throttle potentiometer gang 2 is not:</p> <ul style="list-style-type: none">– no load: 1050 Ω ± 20% between tracks 13 and 7 of the injection computer 1820 Ω ± 20% between tracks 13 and 82 of the injection computer– full load: 1930 Ω ± 20% between tracks 13 and 7 of the injection computer 760 Ω ± 20% between tracks 13 and 82 of the injection computer <p>If the fault is still present, replace the throttle potentiometer.</p>		

AFTER REPAIR	<p>Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.</p>
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**DF003
PRESENT**

AIR TEMPERATURE SENSOR CIRCUIT

NOTES

Special notes:

Parameter **PR003 Air temperature** indicates the value read by the injection computer.
OBD warning light lit.

Move the wiring harness between the injection computer and the air temperature sensor in order to detect a status change (present ↔ stored).

Look for possible damage to the harness, and check **the connection and the condition** of the air temperature sensor connector.

Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and the absence of interference resistance** for the connections between:

Injection computer **track 84** —————> **Track 1** of the air temperature sensor

Injection computer **track 18** —————> **Track 2** of the air temperature sensor

Repair if necessary.

Measure the **resistance** between tracks **1** and **2** of the air temperature sensor.

Replace the air temperature sensor if the **resistance** is not: **9.5 kΩ at -10°C**

2 kΩ at 25°C

810 Ω at 50°C

309 Ω at 80°C

AFTER REPAIR

Vary the engine speed to confirm repair.

Deal with any other faults.

Clear the stored faults.

DF004
PRESENT

COOLANT TEMPERATURE SENSOR CIRCUIT

NOTES

Special notes:

Parameter **PR002 Coolant temperature** indicates the value read by the injection computer.

OBD fault warning light and **severity 2 fault warning light** lit.

Move the wiring harness between the injection computer and the coolant temperature sensor in order to detect a status change (present ↔ stored).

Look for possible damage to the harness, and check **the connection and the condition** of the coolant temperature sensor connector.

Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and the absence of interference resistance** for the connections between:

Injection computer **track 73** —————> **Track B1** of the coolant temperature sensor

Injection computer **track 46** —————> **Track B2** of the coolant temperature sensor

Repair if necessary.

Measure the **resistance** between **tracks B1** and **B2** of the coolant temperature sensor.

Replace the coolant temperature sensor if the **resistance** is not: **9.5 kΩ at -10°C**

2 kΩ at 25°C

810 Ω at 50°C

309 Ω at 80°C

114 Ω at 100°C

87 Ω at 120°C

AFTER REPAIR

Vary the engine speed to confirm repair.

Deal with any other faults.

Clear the stored faults.

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 after: <ul style="list-style-type: none">– engine coolant temperature at 80°C,– engine speed greater than 750 rpm– inlet manifold vacuum at 500 rpm.
	Special notes: Parameter PR013 Pinking sensor signal indicates the value read by the injection computer. OBD warning light lit.

Move the wiring harness between the injection computer and the pinking sensor in order to detect a status change (present ↔ stored).

Look for any harness damage, and check the **condition and connection points** of the pinking sensor and its connections.

Replace the connector if necessary.

Check **clamping of the pinking sensor** on the engine block.

Retighten if necessary.

Using the "universal bornier", check **the insulation, continuity and the absence of interference resistance** for the connections between:

Injection computer **track 12** —————> **Track 1** of the pinking sensor

Injection computer **track 72** —————> **Track 2** of the pinking sensor

Injection computer **track 19** —————> **Shielding** of the pinking sensor

Repair if necessary.

If the fault is still present, **replace** the pinking sensor.

AFTER REPAIR	Vary the engine speed 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 V
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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 control relay can help with the treatment of this fault. OBD warning light lit.

Move the wiring harness between the injection computer and the fuel pump relay in order to detect a status change (present ↔ stored). Look for possible damage to the harness, and check the connections and condition of the fuel pump relay connector. Replace the connector if necessary.
Disconnect the relay. With the ignition switched on, check for + 12 V on track B1 of the fuel pump relay connector. Repair if necessary.
Check the insulation and continuity of the connection between: Injection computer track 9 —————→ Track B2 of the fuel pump relay connector. Repair if necessary.
Measure the resistance of the coil between tracks 1 and 2 of the fuel pump relay. Replace the fuel pump relay if the resistance is not 84 Ω ± 10% at 25°C .

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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**DF009
PRESENT**

ACTUATOR RELAY CONTROL CIRCUIT

CO : Open circuit
CC.0 : Short circuit to earth
CC.1 : Short circuit to + 12 V

NOTES

Special notes:
Status **ET025 Actuator control relay** can help with the treatment of this fault.

Move the wiring harness between the injection computer and the actuator relay in order to detect a status change (present ↔ stored).
Look for any harness damage, and check the condition and connection points of the actuator relay connector.
Replace the connector if necessary.

Disconnect the relay.
With the ignition on, check for **+ 12 V** on **track J1** of the actuator relay connector.
Repair if necessary.

Check the **insulation and continuity** of the connection between:
Injection computer **Track 10** —————▶ **Track J2** of the actuator relay connector
Repair if necessary.

Measure the **resistance** of the coil between **tracks 1** and **2** of the actuator relay.
Replace the actuator relay if the **resistance** is not **65 Ω ± 10% at 20°C**.

AFTER REPAIR

Vary the engine speed to confirm repair.
Deal with any other faults.
Clear the stored faults.

DF010 PRESENT OR STORED	<u>LOW SPEED GMV CIRCUIT</u> CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V
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NOTES	Priorities in dealing with a number of faults: If faults DF004 Coolant temperature sensor circuit and DF009 Actuator relay circuit are present or stored, deal with them first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC626 "Low-speed fan unit" .
	Special notes: Status ET035 "Low-speed fan unit" can help with the treatment of this fault. Level 2 fault warning light lit.

Move the wiring harness between the injection computer and the low-speed fan assembly relay in order to detect a status change (present ↔ stored). Look for possible damage to the wiring harness, check the connection and condition of the low-speed fan unit relay and its connections. Replace the connector if necessary.
Disconnect the relay. With the ignition on, check for + 12 V on track E1 of the low-speed fan unit relay connector. Repair if necessary.
Check the insulation and continuity of the connection between: Injection computer Track 11 —————→ Track E2 of the low speed fan assembly relay connector Repair if necessary.
Measure the resistance of the coil between tracks 1 and 2 of the low-speed fan unit relay. Replace the low speed fan assembly relay if the resistance is not 65 Ω ± 10% at 20°C .

AFTER REPAIR	Vary the engine speed to confirm 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 V
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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: Two types of connection are used: wire connection (only on Twingo) and multiplex connection . Status ET006 Fault warning light can help with the treatment of this fault.

Multiplex connection	Run a multiplex network test (see 88B, Multiplex).
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Wire connection	Move the wiring harness between the injection computer and the injection fault warning light in order to detect a status change (present ↔ stored). Look for any harness damage, and check the condition and connection points of the injection fault warning light connector. Replace the connector if necessary.
	Using the universal bornier, check the insulation, continuity and the absence of interference resistance of the connection between: Injection computer track 70 —————→ track 17 , instrument panel transparent connector If the fault is still present, check the intermediate connectors (R212) and (R221) between the instrument panel and the injection computer. Repair if necessary.

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF012 PRESENT OR STORED	<u>INJECTION - AC CONNECTION</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the air conditioning is connected.
	Special notes: Only on CLIO phase 2 and 3 and KANGOO . Status ET016 Injection/AC connection can help with the treatment of this fault.

Move the wiring harness between the injection computer and the air conditioning computer in order to detect a status change (present ↔ stored).
Look for any harness damage, and check the condition and connection points of the air conditioning computer connector.
Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and the absence of interference resistance** for the connections between:

Injection computer **track 20** —————→ **track 8** of the transparent intermediate connector

Transparent intermediate connector **track 8** —————→ **track 6** of the air conditioning computer

Repair if necessary.

AFTER REPAIR	Vary the engine speed to confirm 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 V
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NOTES	Priorities in dealing with a number of faults: If fault DF009 "Actuator relay circuit" is present or stored, deal with it 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 with the treatment of this fault. OBD warning light lit.

Move the wiring harness between the injection computer and the canister bleed solenoid valve to mark a change in status (present ↔ stored). Look for possible damage to the harness, and check the connection and the condition of the canister bleed solenoid valve connector. Replace the connector if necessary.
With the ignition on, check for 12 V on track 1 of the fuel vapour absorber solenoid valve. Repair if necessary.
Using the "universal bornier", check the insulation, continuity and absence of interference resistance for the following connections: Injection computer track 8 —————> track 2 of the fuel vapour absorber solenoid valve Repair if necessary.
Measure the resistance between tracks 1 and 2 of the fuel vapour absorber solenoid valve. Replace the solenoid valve if the resistance is not approximately 26 Ω ± 4 Ω at 23°C .

AFTER REPAIR	Vary the engine speed to confirm 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 V
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NOTES	Priorities in dealing with a number of faults: If fault DF009 "Actuator relay circuit" is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running after running command AC261 "Upstream sensor heating" .
	Special notes: Status ET030 "Upstream sensor heating" can help with the treatment of this fault. OBD warning light lit.

Move the wiring harness between the injection computer and the upstream oxygen sensor in order to detect a status change (present ↔ stored). Look for possible damage to the harness, and check the connections and condition of the upstream oxygen sensor connector. Replace the connector if necessary.
With the ignition on, check for + 12 V on track A of the upstream oxygen sensor connector. Repair the electrical line to the actuator relay.
Using the "universal bornier", check the insulation, continuity and absence of interference resistance for the following connections: Injection computer track 65 —————→ track C of the upstream oxygen sensor Repair if necessary.
Measure the resistance between tracks A and C of the upstream oxygen sensor heating circuit. Replace the oxygen sensor if its resistance is not approximately 3.4 Ω at 20°C .

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF022 PRESENT	<u>COMPUTER</u> 1.DEF:Computer fault
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NOTES	None.
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Check that the computer is the correct one for the vehicle.
Reprogram the computer.
If the fault is still present, contact Techline.

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF024 PRESENT OR STORED	<u>VEHICLE SPEED SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a road test at a speed greater than 9 mph (15 km/h) for more than 30 seconds .
	Special notes: Two types of connection are used: wire frame connections and multiplex connections . Check what type is used by reading configuration LC038 "Vehicle speed connection by CAN" . Status ET069 Speed sensor connection and parameter PR018 Vehicle speed) can help with the treatment of this fault. OBD warning light lit.

Wire connection	Move the wiring harness between the injection computer and the vehicle speed sensor in order to detect a status change (present ↔ stored). Look for any harness damage, and check the condition and connection points of the vehicle speed sensor connector. Replace the connector if necessary.
	Using the "universal bornier", check the insulation, continuity and absence of interference resistance for the following connections: Injection computer track 53 → track 5 of the transparent intermediate connector Transparent intermediate connector track 5 → track 14 of the ABS computer Repair if necessary.
Multiplex connection	Using status ET069 Vehicle speed sensor connection , check that ET069 is YES . Run a multiplex network test (see 88B, Multiplex).
	If the fault is still present, contact the Techline.

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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**DF025
PRESENT
OR
STORED**

FLYWHEEL SIGNAL SENSOR CIRCUIT

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.
OBD warning light lit.

Move the wiring harness between the injection computer and the engine speed sensor in order to detect a status change (present ↔ stored).

Look for any harness damage, and check the condition and connection points of the engine speed sensor connector.

Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 54** —————> **Track A** of the engine speed sensor

Injection computer **track 24** —————> **Track B** of the engine speed sensor

Repair if necessary.

Measure the **resistance** between **tracks A** and **B** of the engine speed sensor.

Replace the engine speed sensor if its **resistance** is not between **200 Ω and 270 Ω**.

AFTER REPAIR

Vary the engine speed to confirm repair.

Deal with any other faults.

Clear the stored faults.

DF030 PRESENT OR STORED	<u>HIGH SPEED FAN ASSEMBLY CIRCUIT</u> CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V
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NOTES	Priorities in dealing with a number of faults: If fault DF009 "Actuator relay circuit" is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC625 High-speed fan unit .
	Special notes: Overlook this fault if the vehicle is not equipped with the High-speed fan unit function (i.e. vehicle not fitted with air conditioning). Level 2 fault warning light lit.

Manipulate the wiring harness between the injection computer and the high speed fan assembly relay in order to detect a status change (present ↔ stored). Look for possible damage to the wiring harness, check the connection and condition of the high-speed fan assembly relay and its connections. Replace the connector if necessary.
Disconnect the relay. With the ignition on, check for + 12 V on track 1 of the high-speed fan unit relay. Repair if necessary.
Check the insulation and continuity of the connection between: Injection computer track 69 —————→ Track A2 of the high speed fan assembly relay connector Repair if necessary.
Measure the resistance of the coil between tracks 1 and 2 of the high-speed fan unit relay. Replace the high speed fan assembly relay if the resistance is not 65 Ω ± 10% at 20°C .

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF031 PRESENT OR STORED	<u>OBD WARNING LIGHT CIRCUIT</u> CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC213 OBD warning light .
	Special note: Two types of connection are used: wire connection (only on Twingo) and multiplex connection .

Multiplex connection	Run a multiplex network test (see 88B, Multiplex).
	If the fault is still present, contact Techline.

Wire connection	Move the wiring harness between the injection computer and the OBD warning light in order to detect a status change (present ↔ stored). Look for any harness damage, and check the condition and connection points of the OBD warning light and its connections. Replace the connector if necessary.
	Using the "universal bornier", check the insulation, continuity and the absence of interference resistance for the connection between: Injection computer track 64 —————> track 20 , instrument panel transparent connector If the fault is still present, check the intermediate connectors (R212) and (R221) between the instrument panel and the injection computer. Repair if necessary.

AFTER REPAIR	Vary the engine speed to confirm 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 V
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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 a speed greater than 3000 rpm .
	Special note: Two types of connection are used: wire connection (only on Twingo) and multiplex connection . Level 2 fault warning light lit.

Multiplex connection	Run a multiplex network test (see 88B, Multiplex).
	If the fault is still present, contact Techline.

Wire connection	Move the wiring harness between the injection computer and the coolant temperature overheating warning light in order to detect a status change (present ↔ stored). Look for possible damage to the harness, and check the connection and the condition of the coolant temperature overheating warning light connector. Replace the connector if necessary.
	Using the "universal bornier", check the insulation, continuity and the absence of interference resistance for the connection between: Injection computer track 38 —————▶ track 11 , instrument panel black connector If the fault is still present, check the intermediate connectors (R212) and (R221) between the instrument panel and the injection computer. Repair if necessary.

AFTER REPAIR	Vary the engine speed to confirm 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 V
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NOTES	Priorities in dealing with a number of faults: If fault DF009 "Actuator relay circuit" is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running or after running command AC262 Downstream sensor heating .
	Special notes: Status ET031 Downstream sensor heating can help with the treatment of this fault. OBD warning light lit.

Move the wiring harness between the injection computer and the downstream oxygen sensor in order to detect a status change (present ↔ stored). Look for possible damage to the harness, and check the connections and condition of the downstream oxygen sensor and its connections. Replace the connector if necessary.
With the ignition on, check for 12 V on track A of the downstream oxygen sensor. Rectify the electrical line to the actuator relay.
Using the "universal bornier", check the insulation, continuity and absence of interference resistance for the following connections: Injection computer track 68 —————▶ track B of the downstream oxygen sensor Repair if necessary.
Measure the resistance of the heating circuit between tracks A and B of the downstream oxygen sensor. Replace the oxygen sensor if its resistance is not approximately 3.4 Ω at 20°C .

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF044 PRESENT	<u>IMMOBILISER CIRCUIT</u>
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NOTES	Priorities in dealing with a number of faults: If fault DF009 "Actuator relay circuit" is present or stored, deal with it first.
	Special notes: Two types of connection are used: wire frame connections and multiplex connections . Statuses ET002 Engine immobiliser and ET099 Immobiliser code programmed can help with the treatment of this fault. Absence of or delay to encrypted data greater than 2 seconds .

Wire connection	Move the wiring harness between the injection computer and the UCH computer in order to detect a status change (present ↔ stored). Look for any harness damage, and check the condition and connection points of the UCH computer connector. Replace the connector if necessary.
	Using the "universal bornier", check the insulation, continuity and absence of interference resistance for the following connections: Injection computer track 57 → track 19 of the UCH computer Injection computer track 27 → track 20 of the UCH computer If the fault is still present, check the intermediate connectors and (R67) and (R107) between the UCH computer and the injection computer. Repair if necessary.
	If the fault is still present, perform a test on the UCH computer.

Multiplex connection	Run a multiplex network test (see 88B, Multiplexing).
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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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DF045 PRESENT OR STORED	MANIFOLD PRESSURE SENSOR CIRCUIT 1.DEF:Inconsistency between the calculated pressure and the true pressure 2.DEF:Pressure sensor fault
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NOTES	Priorities in dealing with a number of faults: If the fault DF258 First sensor reference voltage is present or stored, deal with it 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 with the treatment of this fault. 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.

Move the wiring harness between the injection computer and the manifold pressure sensor in order to detect a status change (present ↔ stored).

Look for any harness damage, and check the condition and connection points of the manifold pressure sensor connector.

Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 15** —————▶ **track A** of the pressure sensor

Injection computer **track 78** —————▶ **track C** of the pressure sensor

Injection computer **track 16** —————▶ **track B** of the pressure sensor

Repair if necessary.

If the fault is still present, **replace** the manifold pressure sensor.

AFTER REPAIR	Vary the engine speed to confirm 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 V
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NOTES	Priorities in dealing with a number of faults: If fault DF009 "Actuator relay circuit" is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.
	Special note: OBD warning light lit.

Move the wiring harness between the injection computer and injector 1 in order to detect a status change (present → stored).
Look for any harness damage, and check the condition and connection points of the injector 1 connector.
Replace the connector if necessary.

With the ignition on check for **+ 12 V** on **track 1** of the injector 1 connector.

Check the **insulation, continuity and the absence of interference resistance** on the connection between:
Injection computer **track 59** —————→ **Track 2** of injector 1
Repair if necessary.

Measure the **resistance** between **tracks 1** and **2** of injector 1.
Replace the injector if its **resistance** is not **14.5 Ω ± 5% at 20°C**.

AFTER REPAIR	Vary the engine speed to confirm 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 V
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NOTES	Priorities in dealing with a number of faults: If fault DF009 "Actuator relay circuit" is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.
	Special note: OBD warning light lit.

Move the wiring harness between the injection computer and injector 2 in order to detect a status change (present → stored). Look for any harness damage, and check the connection and condition of the injector 2 connector. Replace the connector if necessary.
With the ignition on , check for +12 V on track 1 of the injector 2 connector.
Check the insulation, continuity and the absence of interference resistance on the connection between: Injection computer track 90 —————> Track 2 of injector 2 Repair if necessary.
Measure the resistance between tracks 1 and 2 of injector 2. Replace the injector if its resistance is not 14.5 Ω ± 5% at 20°C .

AFTER REPAIR	Vary the engine speed to confirm 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 V
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NOTES	Priorities in dealing with a number of faults: If fault DF009 "Actuator relay circuit" is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.
	Special note: OBD warning light lit.

Move the wiring harness between the injection computer and injector 3 in order to detect a status change (present → stored). Look for any harness damage, and check the connection and condition of the injector 3 connector. Replace the connector if necessary.
With the ignition on , check for +12 V on track 1 of the injector 3 connector.
Check the insulation, continuity and the absence of interference resistance on the connection between: Injection computer track 60 —————→ Track 2 of injector 3 Repair if necessary.
Measure the resistance between tracks 1 and 2 of injector 3. Replace the injector if its resistance is not 14.5 Ω ± 5% at 20°C .

AFTER REPAIR	Vary the engine speed to confirm 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 V
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NOTES	Priorities in dealing with a number of faults: If fault DF009 "Actuator relay circuit" is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.
	Special note: OBD warning light lit.

Move the wiring harness between the injection computer and injector 4 in order to detect a status change (present → stored). Look for any harness damage, and check the connection and condition of the injector 4 connector. Replace the connector if necessary.
With the ignition on , check for +12 V on track 1 of the injector 4 connector.
Check the insulation, continuity and the absence of interference resistance on the connection between: Injection computer track 89 —————→ Track 2 of injector 4 Repair if necessary.
Measure the resistance between tracks 1 and 2 of injector 4. Replace the injector if its resistance is not 14.5 Ω ± 5% at 20°C .

AFTER REPAIR	Vary the engine speed to confirm 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 with the engine running for at least 5 minutes and status ET037 Richness regulation must be ACTIVE .
	Note: The fault is stored if the computer took into account the richness correction default value during this fault: PR035 Richness correction value set at 128 .
	Special note: Two assemblies are possible: 3-wire or 1-wire sensor. OBD warning light lit.

3-wire sensor	<p>Move the wiring harness between the injection computer and the upstream oxygen sensor in order to detect a status change (present ↔ stored). Look for possible damage to the harness, and check the connections and condition of the upstream oxygen sensor connector. Replace the connector if necessary.</p> <p>Using the "universal bornier", check the insulation, continuity and the absence of interference resistance for the connections between:</p> <p>Injection computer track 80 —————→ track D of the upstream oxygen sensor Injection computer track 45 —————→ track C of the upstream oxygen sensor Repair if necessary.</p> <p>If the fault is still present, replace the oxygen sensor.</p>
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1-wire sensor	<p>Move the wiring harness between the injection computer and the upstream oxygen sensor in order to detect a status change (present ↔ stored). Look for possible damage to the harness, and check the connections and condition of the upstream oxygen sensor connector. Replace the connector if necessary.</p> <p>Using the "universal bornier", check the insulation, continuity and absence of interference resistance for the following connections:</p> <p>Injection computer track 45 —————→ track C of the upstream oxygen sensor Repair if necessary.</p> <p>If the fault is still present, replace the oxygen sensor.</p>
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AFTER REPAIR	<p>Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.</p>
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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: If the fault is declared as present after the engine has been running for at least 5 minutes .
	Special note: OBD warning light lit.

Move the wiring harness between the injection computer and the downstream oxygen sensor in order to detect a status change (present ↔ stored).
Look for possible damage to the harness, and check the connections and condition of the downstream oxygen sensor and its connections.
Replace the connector, if necessary

Using the "universal bornier", check **the insulation, continuity and the absence of interference resistance** for the connections between:

Injection computer **track 76** —————▶ **track D** of the downstream oxygen sensor

Injection computer **track 44** —————▶ **track C** of the downstream oxygen sensor

Repair if necessary.

If the fault is still present, **replace** the oxygen sensor.

AFTER REPAIR	Vary the engine speed 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 V
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NOTES	Priorities in dealing with a number of faults: If fault DF008 Fuel pump relay control circuit is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.
	Special note: OBD warning light lit.

Move the wiring harness between the injection computer and coils 1 and 4 in order to detect a status change (present ↔ stored). Look for any harness damage, and check the condition and connection points of the coils 1 and 4 connector. Replace the connector 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: coil 1 track 2 —————▶ Track 1 of coil 4 Repair if necessary.
Check the insulation, continuity and absence of interference resistance on the connections between: Injection computer track 32 —————▶ Track 2 of coil 4 Fuel pump relay track 5 —————▶ Track 1 of coil 1 Repair if necessary.
Measure the resistance of coils 1 and 4. Replace the coil(s) if the primary circuit resistance is not approximately 0.5 Ω or the secondary circuit resistance is not approximately 10.7 kΩ .

AFTER REPAIR	Vary the engine speed to confirm 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 V
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NOTES	Priorities in dealing with a number of faults: If fault DF008 Fuel pump relay control circuit is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running.
	Special note: OBD warning light lit.

Move the wiring harness between the injection computer and coils 2 and 3 in order to detect a status change (present ↔ stored).
 Look for any harness damage, and check the connection and condition of the connector of coils 2 and 3.
 Replace the connector 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:
 coil 2 track 2 —————▶ Track 1 of coil 3
 Repair if necessary.

Check the **insulation, continuity and absence of interference resistance** on the connections between:
 Injection computer track 1 —————▶ Track 2 of coil 3
 Fuel pump relay track 5 —————▶ Track 1 of coil 2
 Repair if necessary.

Measure the **resistance** of coils 2 and 3.
 Replace the coil(s) if the **primary circuit resistance** is not approximately **0.5 Ω** or the **secondary circuit resistance** is not approximately **10.7 kΩ**.

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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**DF082
PRESENT
OR
STORED**

PETROL/LPG CONNECTION

NOTES

Conditions for applying the fault finding procedure to stored faults:

The fault is declared present when the engine is running.

Special note:

Status **ET200 Injection/LPG connection** can help with the treatment of this fault.

When this fault is present the vehicle operates in **forced petrol mode**.

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

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 25** —————▶ **track A1** of the LPG computer

Injection computer **track 26** —————▶ **track A2** of the LPG computer

Repair if necessary.

If the fault is still present, contact Techline.

AFTER REPAIR

Vary the engine speed to confirm repair.

Deal with any other faults.

Clear the stored faults.

DF098 PRESENT OR STORED	<u>POLLUTANT COMBUSTION MISFIRE IN LPG MODE</u> OBD :OBD Fault 1.OBD:OBD fault present 2.OBD:OBD fault detected whilst 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 the coolant temperature greater than 75°C .
	Note: ET378 LPG cylinder 1 combustion misfire ET379 LPG cylinder 2 combustion misfire ET380 LPG cylinder 3 combustion misfire ET381 LPG cylinder 4 combustion misfire Give information on the nature and location of the fault.
	Special note: OBD warning light lit.

One cylinder is declared faulty - ET378 or ET379 or ET380 or ET381	This means that the fault is probably due to a component which can only act on this cylinder: <ul style="list-style-type: none">– fault on the LPG injector,– problem with the coil,– spark plug problem and/or damage,– 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 ET378 and ET381 or ET379 and ET380 or ET380 or ET381	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 cylinders declared faulty - ET378 and ET379 and ET380 and ET381	The problem is probably due to a factor that can only affect all the cylinders. <ul style="list-style-type: none">– fault on LPG tank solenoid valve,– fault on LPG expansion solenoid valve,– fault on LPG circuit,– engine compression problem,– oil seeping in through the valve stem joints.
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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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DF099 PRESENT OR STORED	<u>DESTRUCTIVE COMBUSTION MISFIRE IN LPG MODE</u> OBD :OBD Fault 1.OBD:OBD fault present 2.OBD:OBD fault detected whilst 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 the coolant temperature greater than 75°C .
	Note: ET378 LPG cylinder 1 combustion misfire ET379 LPG cylinder 2 combustion misfire ET380 LPG cylinder 3 combustion misfire ET381 LPG cylinder 4 combustion misfire Give information on the nature and location of the fault.
	Special note: OBD warning light lit.

One cylinder is declared faulty - ET378 or ET379 or ET380 or ET381	This means that the fault is probably due to a component which can only act on this cylinder: <ul style="list-style-type: none">– fault on the LPG injector,– problem with the coil,– spark plug problem and/or damage,– oil seeping in through the valve stem joints.
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Cylinders 1 and 4 or cylinders 2 and 3 declared faulty ET378 and ET381 or ET379 and ET380 or ET380 or ET381	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.– oil seeping in through the valve stem joints.
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Four cylinders declared faulty - ET378 and ET379 and ET380 and ET381	The fault is probably due to a factor that can only affect all the cylinders: <ul style="list-style-type: none">– fault on LPG tank solenoid valve,– fault on LPG expansion solenoid valve and filter,– fault on LPG circuit,– oil seeping in through the valve stem joints.
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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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DF102 PRESENT OR STORED	<u>OXYGEN SENSOR OPERATING FAULT</u> OBD :OBD Fault 1.OBD:OBD fault present 2.OBD:OBD fault detected whilst driving
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a test which detects a malfunction causing the HC 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 .
	Special note: OBD warning light lit.

Check that there are no air leaks on the exhaust system .
If the vehicle is mainly used for urban driving, clean the exhaust system .
Move the wiring harness between the injection computer and the upstream oxygen sensor in order to detect a status change (present ↔ stored). Look for possible damage to the harness, and check the connections and condition of the upstream oxygen sensor connector. Replace the connector if necessary.
With the ignition on check for + 12 V on track A of the upstream oxygen sensor. Repair if necessary.
Using the "universal bornier", check the insulation, continuity and the absence of interference resistance for the connections between: Injection computer track 65 —————▶ track B of the upstream oxygen sensor Injection computer track 45 —————▶ track D of the upstream oxygen sensor Injection computer track 80 —————▶ track C of the upstream oxygen sensor Repair if necessary.
Measure the resistance of the upstream oxygen sensor heater between tracks A and B . Replace the oxygen sensor if the resistance is not 3.4 Ω at 20°C .

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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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 whilst driving
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a test which detects a malfunction causing the HC 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 .
	Special note: OBD warning light lit.

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 destroy 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. Possible reasons for the destruction of 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	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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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 whilst 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 the coolant temperature greater than 75°C .
	Note: ET093 Misfire on cylinder n° 1 ET094 Misfire on cylinder n° 2 ET095 Misfire on cylinder n° 3 ET096 Misfire on cylinder n° 4 Give information on the nature and location of the fault.
	Special note: OBD warning light lit.

One cylinder is declared faulty - ET093 or ET094 or ET095 or ET096	This means that the fault is probably due to a component which can only act on this cylinder: – 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 or ET095 or ET096	The problem is probably due to a factor that can only affect this pair of cylinders: – 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 cylinders declared faulty - ET093 and ET094 and ET095 and ET096	The fault is probably due to a factor that can only affect all the cylinders: – 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	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF110 PRESENT OR STORED	<u>DESTRUCTIVE MISFIRE</u> OBD :OBD Fault 1.OBD:OBD fault present 2.OBD:OBD fault detected whilst 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 the coolant temperature greater than 75°C .
	Note: ET093 Misfire on cylinder n° 1 ET094 Misfire on cylinder n° 2 ET095 Misfire on cylinder n° 3 ET096 Misfire on cylinder n° 4 Give information on the nature and location of the fault.
	Special note: OBD warning light lit.

One cylinder is declared faulty - ET093 or ET094 or ET095 or ET096	This means that the fault is probably due to a component which can only act on this cylinder: <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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Cylinders 1 and 4 or cylinders 2 and 3 declared faulty ET093 and ET096 or ET094 and ET095 or ET095 or ET096	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.– oil seeping in through the valve stem joints.
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Four cylinders declared faulty - ET093 and ET094 and ET095 and ET096	The fault 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,– oil seeping in through the valve stem joints.
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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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DF116 PRESENT OR STORED	<u>FUEL SYSTEM OPERATING FAULT</u> OBD :OBD Fault 1.OBD:OBD fault present 2.OBD:OBD fault detected whilst driving
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NOTES	Order of priority in the event of more than one fault: If faults DF014 Bleed canister solenoid valve circuit and DF008 Fuel pump relay control circuit are present or stored, deal with them first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running in petrol mode .
	Special note: OBD warning light lit.

Check:

- the fuel filter,
- the fuel flow rate and pressure.
- the condition of the fuel pump,
- the cleanliness of the tank,
- the condition of the injectors.

Repair if necessary.

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

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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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: If the fault DF258 First sensor reference voltage is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the air conditioning is activated.
	Special notes: Parameter PR027 Coolant pressure can help with the treatment of this fault.

Move the wiring harness between the injection computer and the refrigerant pressure sensor in order to detect a status change (present ↔ stored).
Look for possible damage to the harness, and check the condition and connection points of the refrigerant pressure sensor connector.
Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 79** —————▶ **track A** of the refrigerant pressure sensor

Injection computer **track 83** —————▶ **track B** of the refrigerant pressure sensor

Injection computer **track 47** —————▶ **track C** of the refrigerant pressure sensor

If this fault appears, carefully check the protective devices, insulation and routing of the engine wiring (see **Preliminaries, wiring test**).

Repair if necessary.

Measure the **resistance** between **tracks A** and **C** of the refrigerant pressure sensor.

Replace the sensor if the **resistance** is not **330 kΩ ± 1%**.

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF125 PRESENT	<u>PEDAL POTENTIOMETER CIRCUIT GANG 1</u>
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NOTES	Priorities in dealing with a number of faults: If the fault DF152 Second sensor reference voltage is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared as present following action on the accelerator pedal.
	Special note: Level 1 fault warning light lit.
	Warning:: For KANGOO vehicles: <ul style="list-style-type: none">– Always shunt the connection of intermediate connector R181, applying the procedure specific to Kangoo from Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair (section: Connector - Repair).– Check if the fault and the problem are still present. If yes, continue the fault finding procedure.

Move the wiring harness between the injection computer and the pedal potentiometer in order to detect a status change (present ↔ stored).
Look for any harness damage, and check the condition and connection points of the pedal potentiometer connector.
Replace the connector if necessary.

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF125 CONTINUED	
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<p>Using the "universal bornier", check the insulation, continuity and absence of interference resistance for the following connections:</p> <p>Injection computer track 14 —————▶ track 3 of the pedal potentiometer gang 1</p> <p>Injection computer track 6 —————▶ track 4 of the pedal potentiometer gang 1</p> <p>Injection computer track 75 —————▶ track 2 of the pedal potentiometer gang 1</p> <p>If this fault appears, carefully check the protective devices, insulation and routing of the engine wiring (see Preliminaries, Wiring test).</p> <p>Repair if necessary.</p>	
<p>Measure the resistance of the pedal potentiometer gang 1.</p> <p>Replace the pedal potentiometer gang 1 if the resistance is not:</p> <p>– no load: 3.2 kΩ ± 20% between tracks 4 and 3. 1.9 kΩ ± 20% between tracks 2 and 3.</p> <p>– full load: 1.6 kΩ ± 20% between tracks 4 and 3. 3.1 kΩ ± 20% between tracks 2 and 3.</p>	

AFTER REPAIR	<p>Vary the engine speed to confirm repair.</p> <p>Deal with any other faults.</p> <p>Clear the stored faults.</p>
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DF126 PRESENT	<u>PEDAL POTENTIOMETER CIRCUIT GANG 2</u>
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NOTES	Priorities in dealing with a number of faults: If the fault DF258 First sensor reference voltage is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared as present following action on the accelerator pedal.
	Special note: Level 1 fault warning light lit.
	Warning:: For KANGOO vehicles: – Always shunt the connection of intermediate connector R181 , applying the procedure specific to Kangoo from Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair (section: Connector - Repair) . Check if the fault and the problem are still present. If yes, continue the fault finding procedure.

Move the wiring harness between the injection computer and the pedal potentiometer in order to detect a status change (present ↔ stored).
Look for any harness damage, and check the condition and connection points of the pedal potentiometer connector.
Replace the connector if necessary.

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF126
CONTINUED

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 43** —————▶ **track 6** of the pedal potentiometer gang 2

Injection computer **track 71** —————▶ **track 5** of the pedal potentiometer gang 2

Injection computer **track 87** —————▶ **track 1** of the pedal potentiometer gang 2

If this fault appears, carefully check the protective devices, insulation and routing of the engine wiring (see **Preliminaries, Wiring test**).

Repair if necessary.

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

Replace the pedal potentiometer gang 2 if the **resistance** is not:

– no load: **4.5 kΩ ± 20%** between **tracks 5** and **6**.

1.9 kΩ ± 20% between **tracks 6** and **1**.

– full load: **5.6 kΩ ± 20%** between **tracks 5** and **6**.

5.3 kΩ ± 20% between **tracks 6** and **1**.

AFTER REPAIR

Vary the engine speed to confirm repair.
Deal with any other faults.
Clear the stored faults.

DF129 PRESENT OR STORED	<u>PEDAL POTENTIOMETER CIRCUIT</u> 1.DEF: Inconsistency between pedal gang 1 and gang 2 2.DEF: Pedal potentiometer fault
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NOTES	Priorities in dealing with a number of faults: If faults DF152 Second sensor reference voltage and DF258 First sensor reference voltage are present or stored, deal with them 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.
	Special note: Level 1 fault warning light lit.
	Warning:: For KANGOO vehicles: – Always shunt the connection of intermediate connector R181 , applying the procedure specific to Kangoo from Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair (section: Connector - Repair) . Check if the fault and the problem are still present. If yes, continue the fault finding procedure.

Move the wiring harness between the injection computer and the pedal potentiometer in order to detect a status change (present ↔ stored).
Look for any harness damage, and check the condition and connection points of the pedal potentiometer connector.
Replace the connector if necessary.

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF129 CONTINUED	
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Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

- Injection computer **track 14** —————> **track 3** of the pedal potentiometer
- Injection computer **track 6** —————> **track 4** of the pedal potentiometer
- Injection computer **track 75** —————> **track 2** of the pedal potentiometer
- Injection computer **track 43** —————> **track 6** of the pedal potentiometer
- Injection computer **track 71** —————> **track 5** of the pedal potentiometer
- Injection computer **track 87** —————> **track 1** of the pedal potentiometer

If this fault appears, carefully check the protective devices, insulation and routing of the engine wiring (see Preliminaries, wiring test).
Repair if necessary.

Measure the **resistance of the pedal potentiometer gangs 1 and 2**.
Replace the pedal potentiometer if the **resistance of pedal potentiometer gang 1** is not:

- no load: **3.2 kΩ ± 20%** between **tracks 4** and **3**.
 1.9 kΩ ± 20% between **tracks 2** and **3**.
- full load: **1.6 kΩ ± 20%** between **tracks 4** and **3**.
 3.1 kΩ ± 20% between **tracks 2** and **3**.

Replace the pedal potentiometer if the **resistance of pedal potentiometer gang 2** is not:

- no load: **4.5 kΩ ± 20%** between **tracks 5** and **6**.
 1.9 kΩ ± 20% between **tracks 6** and **1**.
- full load: **5.6 kΩ ± 20%** between **tracks 5** and **6**.
 5.3 kΩ ± 20% between **tracks 6** and **1**.

Check parameter **PR202: the voltage difference between gangs 1 and 2** must be less than **0.52 V**.
Check that the pedal is operating the potentiometers correctly.
Replace the accelerator pedal potentiometer if necessary.

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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**DF135
PRESENT**

BRAKE PEDAL SENSOR CIRCUIT

NOTES

Conditions for applying the fault finding procedure to stored faults:

The fault is declared present when the brake pedal is depressed.

Special notes:

Status **ET132 Brake pedal depressed** can help with the treatment of this fault.

Move the wiring harness between the injection computer and the brake pedal sensor in order to detect a status change (present ↔ stored).
Look for possible damage to the harness, and check the condition and connection points of the brake pedal sensor connector.
Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 53** —————> **track B1** of the brake pedal switch

Injection computer **track 52** —————> **track B3** of the brake pedal switch

If the fault is still present check the **grey and green intermediate connectors** between the injection computer and the brake lights switch.
Repair if necessary.

If the fault is still present, **replace** the brake pedal switch.

AFTER REPAIR

Vary the engine speed to confirm repair.
Deal with any other faults.
Clear the stored faults.

DF138 PRESENT OR STORED	<u>THERMOPLUNGER N° 1 RELAY CONTROL CIRCUIT</u> CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V
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NOTES	Priorities in dealing with a number of faults: If faults DF009 Fuel pump relay control circuit , DF003 Air temperature sensor circuit and DF004 Coolant temperature sensor circuit are present or stored, deal with them first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC002 Thermoplunger n° 1 relay .
	Special note: Only for vehicles in very cold countries .

Move the wiring harness between the injection computer and the thermoplunger n° 1 relay in order to detect a status change (present ↔ stored). Look for any harness damage, and check the connection and condition of the thermoplunger n° 1 relay connector. Replace the connector if necessary.
Check for +12 V 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: Injection computer track 34 —————▶ track 1 of the thermoplunger n° 1 relay Repair if necessary.
Measure the resistance between tracks 1 and 2 of the thermoplunger n° 1 relay coil. Replace the relay if the resistance is not 65 Ω ± 10% at 20°C .

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF139 PRESENT OR STORED	<u>THERMOPLUNGER N° 2 RELAY CONTROL CIRCUIT</u> CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to + 12 V
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NOTES	Priorities in dealing with a number of faults: If faults DF009 Fuel pump relay control circuit , DF003 Air temperature sensor circuit and DF004 Coolant temperature sensor circuit are present or stored, deal with them first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC620 Thermoplunger n° 2 relay .
	Special note: Only for vehicles in very cold countries .

Move the wiring harness between the injection computer and the thermoplunger n° 2 relay in order to detect a status change (present ↔ stored). Look for any harness damage, and check the connection and condition of the thermoplunger n° 2 relay connector. Replace the connector if necessary.
Check for +12 V 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: Injection computer track 4 → track 1 of the thermoplunger n° 2 relay Repair if necessary.
Measure the resistance of the thermoplunger n° 2 relay coil. Replace the relay if the resistance is not 65 Ω ± 10% at 20°C .

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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**DF152
PRESENT**

SECOND SENSOR REFERENCE VOLTAGE

1.DEF: supply fault to gangs 1 and 2 on the throttle potentiometer and to gang 1 on the pedal potentiometer

NOTES

Priorities in dealing with a number of faults:

If faults **DF152 Second sensor reference voltage**, **DF002 Throttle potentiometer circuit** and **DF125 Pedal potentiometer circuit gang 1** are present or stored, first perform the following diagnostics.

Move the wiring harness between the injection computer and the pedal potentiometer and the throttle potentiometer in order to detect a status change (present ↔ stored).
Look for any harness damage, and check the condition and connection points of the pedal potentiometer and the throttle potentiometer connector.
Replace the connector if necessary.

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

- **track 6** Pedal potentiometer gang 1,
- **track 5** Throttle potentiometer gangs 1 and 2.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 6** —————> **Track 4** of the pedal potentiometer gang 1

Injection computer **track 7** —————> **Track 5** of the throttle potentiometer

If faults DF152, DF002 and DF125 are all reported, carefully check the protective devices, insulation and routing of the engine wiring (see Introduction "Wire testing").

Repair if necessary.

If the fault is still present, contact Techline.

AFTER REPAIR

Vary the engine speed to confirm repair.
Deal with any other faults.
Clear the stored faults.

DF170 PRESENT OR STORED	<u>AUTOMATIC GEARBOX/INJECTION CONNECTION</u>
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NOTES	Priorities in dealing with a number of faults: If fault DF003 Air temperature sensor circuit is present or stored, deal with it first.
	Conditions for applying the fault finding procedure to stored faults: If the fault is declared as present after the engine has been running for at least 3 seconds .
	Special note: OBD warning light lit.

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

AFTER REPAIR	Vary the engine speed 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	Priority when dealing with a number of faults: If fault DF025 "Flywheel sensor circuit" is present or stored, deal with it first.
	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. OBD warning light lit.

This fault indicates that the computer is not receiving the tooth signal.
<p>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.</p> <p>To do this check the evolution of the manifold pressure using parameter PR001 Manifold pressure and if the engine is actually stopped the manifold pressure is stable. If not, the fault DF189 Flywheel target is detected.</p>
<p>Move the wiring harness between the injection computer and the engine speed sensor in order to detect a status change (present ↔ stored).</p> <p>Look for any harness damage, and check the condition and connection points of the engine speed sensor connector.</p> <p>Replace the connector if necessary.</p>
<p>Measure the resistance between tracks A and B of the engine speed sensor.</p> <p>Replace the engine speed sensor if its resistance is not between 200 and 270 Ω.</p>
If the fault is still present, deal with the other faults, then proceed to the conformity check.

AFTER REPAIR	<p>Vary the engine speed to confirm repair.</p> <p>Deal with any other faults.</p> <p>Clear the stored faults.</p>
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DF211 PRESENT OR STORED	<u>LPG fuel circuit operating fault</u> OBD :OBD Fault 1.OBD:OBD fault present 2.OBD:OBD fault detected whilst 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 in LPG mode .
	Special note: OBD warning light lit.

Check that the pipes are not blocked. Repair the faulty component or components.
Check the condition of the air filter. Replace the air filter if necessary.
Check the expansion valve cooling circuit. Repair the circuit if necessary.
Check the conformity of the spark plugs. Bleed the LPG expansion valve. Check that the LPG filter on the expansion valve is clean. Replace the filter if necessary.
If the fault is still present, perform a test on the LPG injection computer.
If the fault is still present, deal with the other faults, then proceed to the conformity check.

AFTER REPAIR	Vary the engine speed 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: If faults DF003 Coolant temperature sensor circuit and DF004 Air temperature sensor circuit are present or stored, deal with them 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. Level 1 fault warning light lit.

<p>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.</p>
<p>Using the "universal bornier", check the insulation, continuity and absence of interference resistance for the following connections: Injection computer track 62 —————> track 3 of the throttle potentiometer Injection computer track 61 —————> track 4 of the throttle potentiometer Check the condition and snugness of the clips and of the motorised throttle valve and injection computer connectors. Repair if necessary.</p>
<p>Switch on the ignition for at least 5 seconds, without starting the engine: the throttle stops are programmed automatically(see Configurations and programming).</p>
<p>If the fault is still present, deal with the other faults, then proceed to the conformity check.</p>

AFTER REPAIR	<p>Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.</p>
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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 V
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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.

Move the wiring harness between the injection computer and the air conditioning compressor in order to detect a status change (present ↔ stored).
Look for any harness damage, and check the condition and connection points of the air conditioning compressor connector.
Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:
Injection computer **track 39** —————▶ **track D2** of the air conditioning compressor
Repair if necessary.

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

AFTER REPAIR	Vary the engine speed to confirm 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 switches 3.DEF: Steering wheel controls 4.DEF:On/off switch 5.DEF:Electronic stability program (ESP)
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NOTES	WARNING Check that the vehicle has the cruise control/speed limiter function.
	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.
	Special note: Only on CLIO phase 2 and 3.

1.DEF / 2.DEF	NOTES	None.
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<p>Move the wiring harness between the injection computer and the brake pedal sensor in order to detect a status change (present ↔ stored). Look for possible damage to the harness, and check the condition and connection points of the brake pedal sensor connector. Replace the connector if necessary.</p>
<p>Using the "universal bornier", check the insulation, continuity and absence of interference resistance for the following connections: Injection computer track 53 —————→ track B1 of the brake pedal switch Injection computer track 52 —————→ track B3 of the brake pedal switch If the fault is still present, check the connection and the condition of the intermediate connectors. Repair if necessary.</p>
<p>If the fault is still present, replace the brake pedal switch.</p>

DF235
(CONTINUED 1)

3.DEF

NOTES

None.

Move the harness between the injection computer and the steering wheel cruise control/speed limiter switches in order to detect a status change (present ↔ stored).
Look for any harness damage and check the condition and connection points of the steering wheel cruise control/speed limiter switches and their connections.
Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 58** —————▶ **track 2** of the steering wheel switch

Injection computer **track 77** —————▶ **track 1** of the steering wheel switch

If the fault is still present, check the **connection** and **the condition** of the intermediate connectors.
Repair if necessary.

Check that the steering wheel controls **are functioning correctly**.
Replace the switch(es) if necessary.

**DF235
(CONTINUED 2)**

4.DEF

NOTES

None.

Move the harness between the injection computer and the steering wheel cruise control/speed limiter switches in order to detect a status change (present ↔ stored).
Look for any harness damage and check the condition and connection points of the steering wheel cruise control/speed limiter switches and their connections.
Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 23** —————> **track A3** of the cruise control/speed limiter on/off switch

Injection computer **track 49** —————> **track B1** of the cruise control/speed limiter on/off switch

If the fault is still present, check the **connection** and **the condition** of the intermediate connectors.
Repair if necessary.

Check that the cruise control/speed limiter On/Off switch **is functioning correctly**.
Replace the switch if necessary.

5.DEF

NOTES

Conditions for applying the fault finding procedure to stored faults:

The fault is declared present with the engine running at a speed greater than **800 rpm**.

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

If the fault is still present, **perform a test on the ABS computer (if the vehicle has ABS)** (see **38C, Anti-lock brakes**).

AFTER REPAIR

Vary the engine speed to confirm repair.
Deal with any other faults.
Clear the stored faults.

**DF236
PRESENT**

+ AFTER RELAY FEED

NOTES

Priorities in dealing with a number of faults:
If fault **DF009 Actuator relay circuit** is present or stored, deal with it first.

Check **the condition of the battery and the vehicle earths**.
Repair if necessary.

Move the wiring harness between the injection computer and the actuator relay in order to detect a status change (present ↔ stored).
Look for any harness damage, and check the condition and connection points of the actuator relay connector.
Replace the connector if necessary.

Disconnect the relay and check for **12 V** on **track J3** of the relay holder.
Repair if necessary.

Check the following connection for **insulation, continuity and make sure there is no interference resistance**:
Injection computer **track 66** → **Track J5** of the actuator relay
Repair the line if necessary.

Connect the relay and **with the ignition on** check for **12 V** on **track J5** of the actuator relay holder.
Replace the relay if necessary.

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

AFTER REPAIR

Vary the engine speed to confirm repair.
Deal with any other faults.
Clear the stored faults.

**DF251
STORED**

+ AFTER IGNITION FEED

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.

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.

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

AFTER REPAIR

Vary the engine speed to confirm repair.
Deal with any other faults.
Clear the stored faults.

DF252
PRESENT

ENGINE EARTH

NOTES

Special note:

Fault **DF252 Engine earth** only relates to the injection system with **1-wire upstream sensor**.

Move the wiring harness between the injection computer and the engine earths in order to detect a status change (present ↔ stored).
Look for any damage to the harness and check the connection and condition of the engine earths.
Replace the connector if necessary.

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**.
Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:
Injection computer **track 44** —————> Vehicle earth
Repair if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:
Injection computer **track 3** —————> Vehicle earth
Injection computer **track 28** —————> Vehicle earth
Injection computer **track 33** —————> Vehicle earth
Injection computer **track 67** —————> Vehicle earth
Repair if necessary.

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

AFTER REPAIR

Vary the engine speed to confirm repair.
Deal with any other faults.
Clear the stored faults.

DF254 PRESENT OR STORED	<u>MOTORISED THROTTLE VALVE CONTROL</u> 1.DEF: Internal fault on the throttle valve unit or the computer: faulty microprocessor: 2.DEF: Motorised throttle control fault
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NOTES	Priorities in dealing with a number of faults: If the faults DF009 Actuator relay circuit and DF236 + After ignition relay supply are present or stored, deal with them first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after running command AC621 "Motorised throttle" .
	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. Level 1 fault warning light lit.

1.DEF	NOTES	None.
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If this fault is present in **1.DEF**, contact Techline.

2.DEF	NOTES	None.
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Move the wiring harness between the injection computer and the motorised throttle valve in order to detect a status change (present ↔ stored).
Look for any harness damage, and check the condition and connection points of the motorised throttle valve connector.
Replace the connector if necessary.

Using the universal bornier, check **the insulation, continuity and the absence of interference resistance** for the connections between:

Injection computer **track 62** —————→ **track 3** of the throttle potentiometer

Injection computer **track 61** —————→ **track 4** of the throttle potentiometer

If this fault 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 (see Preliminaries Wire testing).

Repair if necessary.

If the fault is still present, **replace** the motorised throttle valve (see **Component replacement**).

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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DF255 PRESENT OR STORED	<u>SAFETY OF THROTTLE/PEDAL OPERATION</u> 1.DEF: Consistency between the pedal position and the position of the motorised throttle
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NOTES	Priorities in dealing with a number of faults: If the fault DF152 Second sensor reference voltage is present or stored, deal with it first.
	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: <ul style="list-style-type: none">– There is a coupling request from the automatic gearbox or the ESP (electronic stability program).– the power limitation strategy is active,– A fault is detected on the motorised throttle valve system (DF002, DF226, DF254).– the cruise control or speed limiter is active.
	Special notes: The only way of clearing the stored fault is to use command RZ008 Programming reinitialisation . Severity level 1 and 2 warning lights lit.

Move the wiring harness between the injection computer and the pedal potentiometer in order to detect a status change (present ↔ stored).

Look for any harness damage, and check the condition and connection points of the pedal potentiometer connector.

Replace the connector if necessary.

Using the universal bornier, check **the insulation, continuity and the absence of interference resistance** for the connections between:

Injection computer track 14	————→	track 3 of the pedal potentiometer
Injection computer track 6	————→	track 4 of the pedal potentiometer
Injection computer track 75	————→	track 2 of the pedal potentiometer
Injection computer track 43	————→	track 6 of the pedal potentiometer
Injection computer track 71	————→	track 5 of the pedal potentiometer
Injection computer track 87	————→	track 1 of the pedal potentiometer

Repair if necessary.

<div>DF255 (Continued)</div>	
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<p>Measure the resistance of the pedal potentiometer gangs 1 and 2.</p> <p>Replace the pedal potentiometer if the resistance of pedal potentiometer gang 1 is not:</p> <ul style="list-style-type: none">– no load: 3.2 kΩ ± 20% between tracks 4 and 3. 1.9 kΩ ± 20% between tracks 2 and 3.– full load: 1.6 kΩ ± 20% between tracks 4 and 3. 3.1 kΩ ± 20% between tracks 2 and 3. <p>Replace the pedal potentiometer if the resistance of pedal potentiometer gang 2 is not:</p> <ul style="list-style-type: none">– no load: 4.5 kΩ ± 20% between tracks 5 and 6. 1.9 kΩ ± 20% between tracks 6 and 1.– full load: 5.6 kΩ ± 20% between tracks 5 and 6. 5.3 kΩ ± 20% between tracks 6 and 1. <p>Replace the pedal potentiometer if necessary.</p>												
<p>Check the connection and condition of the throttle potentiometer connector.</p> <p>Replace the connector if necessary.</p>												
<p>Using the "universal bornier", check the insulation, continuity and absence of interference resistance for the following connections:</p> <table><tr><td>Injection computer track 7</td><td>————▶</td><td>Track 5 of the throttle potentiometer</td></tr><tr><td>Injection computer track 82</td><td>————▶</td><td>Track 1 of the throttle potentiometer</td></tr><tr><td>Injection computer track 13</td><td>————▶</td><td>Track 6 of the throttle potentiometer</td></tr><tr><td>Injection computer track 17</td><td>————▶</td><td>Track 2 of the throttle potentiometer</td></tr></table> <p>Repair if necessary.</p>	Injection computer track 7	————▶	Track 5 of the throttle potentiometer	Injection computer track 82	————▶	Track 1 of the throttle potentiometer	Injection computer track 13	————▶	Track 6 of the throttle potentiometer	Injection computer track 17	————▶	Track 2 of the throttle potentiometer
Injection computer track 7	————▶	Track 5 of the throttle potentiometer										
Injection computer track 82	————▶	Track 1 of the throttle potentiometer										
Injection computer track 13	————▶	Track 6 of the throttle potentiometer										
Injection computer track 17	————▶	Track 2 of the throttle potentiometer										
<p>Measure the resistance of the throttle potentiometer gang 2.</p> <p>Replace the pedal potentiometer gang 2 if the resistance is not:</p> <ul style="list-style-type: none">– no load: 4.5 kΩ ± 20% between tracks 5 and 6. 1.9 kΩ ± 20% between tracks 6 and 1.– full load: 5.6 kΩ ± 20% between tracks 5 and 6. 5.3 kΩ ± 20% between tracks 6 and 1.												
<p>If the fault is still present, contact the Techline.</p>												

<div>AFTER REPAIR</div>	<div>Vary the engine speed to confirm repair.</div> <div>Deal with any other faults.</div> <div>Clear the stored faults.</div>
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DF258 PRESENT	FIRST SENSOR REFERENCE VOLTAGE 1.DEF: Supply fault on the manifold pressure, pedal gang 2 and Freon pressure sensors
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NOTES	Priorities in dealing with a number of faults: If faults DF258 First sensor 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 diagnostics.
	Special note: Level 1 fault warning light lit.

Move the harness between the injection computer and the pedal potentiometer, from the manifold pressure sensor and from the refrigerant pressure sensor (if fitted) in order to detect a status change (present ↔ stored).
Look for any harness damage and check the connection and condition of the pedal potentiometer, manifold pressure sensor and refrigerant pressure sensor (if fitted) connectors.
Replace the connectors if necessary.

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

- **track 3** Pedal potentiometer gang 2,
- **track C** Manifold pressure sensor,
- **track B** Refrigerant pressure sensor.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 71** —————▶ **Track 5** of the pedal potentiometer gang 2

Injection computer **track 78** —————▶ **Track C** of the manifold pressure sensor

Injection computer **track 83** —————▶ **Track B** of the refrigerant pressure sensor

If faults DF258, DF126, DF118 and DF045 (if the vehicle has a refrigerant sensor) all occur, carefully check the protective devices, insulation and routing of the engine wiring(see Preliminaries Wiring test).
Repair if necessary.

If the fault is still present, contact Techline.

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the stored faults.
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NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

IGNITION ADVANCE

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Advance	PR051 Ignition advance	PR051 = approximately 2°	NONE
2	Pinking	PR015: Anti-pinking correction	PR015 < 5°	In the event of a fault, apply the interpretation for DF006 Pinking sensor circuit .
3		PR013: Medium pinking signal	The value should not be constant	
4	Misfiring	PR069: Combustion misfiring rate	PR069 = 0 %	In the event of a fault, apply the interpretation for DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
5	Misfiring	ET093: Misfiring on cylinder 1	NO	In the event of a fault, apply the interpretation for DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
6		ET094: Misfiring on cylinder 2	NO	In the event of a fault, apply the interpretation for DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
7		ET095: Misfiring on cylinder 3	NO	In the event of a fault, apply the interpretation for DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
8		ET096: Misfiring on cylinder 4	NO	In the event of a fault, apply the interpretation for DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

PEDAL POTENTIOMETER CIRCUIT

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Pedal potentiometer	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		PR203: Pedal travel	PR203 < 20%	
3		PR202: Pedal gang 1 and 2 voltage difference	PR202 < 3 V	
4		ET129: Accelerator pedal position: no load	ACTIVE	
5		ET128: Accelerator pedal position: full load	INACTIVE	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

O₂ SENSOR CHECK

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Lambda sensor	ET030: Upstream O ₂ sensor heating	INACTIVE	In the event of a fault, apply interpretation of DF018 Upstream oxygen sensor heating circuit .
2		ET031: Downstream O ₂ sensor heating	INACTIVE	In the event of a fault, apply interpretation of DF038 Heating circuit downstream oxygen sensor .
3	Engine speed	PR006: Engine speed	0 rpm < PR006 < 255 rpm	In the event of a fault, apply the interpretation for DF025 Flywheel signal sensor circuit .
4	Lambda sensor	PR010 : Downstream oxygen sensor voltage	100 mV < PR010 < 850 mV	In the event of a fault, apply interpretation of DF058 Downstream oxygen sensor circuit .
5		PR009: Upstream oxygen sensor voltage	50 mV < PR009 < 800 mV	In the event of a fault, apply interpretation of DF057 "Upstream oxygen sensor circuit" .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

MOTORISED THROTTLE VALVE

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Motorised throttle valve	ET118: Motorised throttle valve in defect mode	NO	In the event of a fault apply the interpretation of status ET118 Motorised throttle in defect mode .
2		ET111: Programming throttle stops	PERFORMED	If status ET111 is NOT PERFORMED , apply interpretation of DF226 Motorised 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 Motorised throttle stop programming and DF002 Throttle potentiometer circuit .
5		ET005: Throttle position: full load	INACTIVE	
6	Motorised throttle valve	PR110: Measured throttle position gang 1	PR110 < 20%	In the event of a fault, apply the interpretation of DF226 Motorised throttle stop programming and DF002 Throttle potentiometer circuit .
7		PR111: Measured throttle position gang 2	PR111 < 100%	
8		PR197: Throttle valve gangs 1 and 2 difference	PR197 < 3 V	
9	Engine speed	PR006: Engine speed	0 rpm < PR006 < 255 rpm	In the event of a fault, apply the interpretation for DF025 Flywheel signal sensor circuit .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

ENGINE FUNCTION PHASE STATUS

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Power supply	ET001: + After ignition computer feed	PRESENT	In the event of a fault, apply the interpretation of DF251 + After ignition supply .
2	Speed	ET148: Meshing in process signal	INACTIVE	In the event of a fault, apply interpretation of DF189 Flywheel target .
3	Actuator	ET025: Actuator control relay	ACTIVE	In the event of a fault apply the interpretation of DF029 Actuator relay control circuit .
4	Fuel pump	ET020 : Petrol pump relay control	INACTIVE	In the event of a fault apply the interpretation of DF008 , Fuel pump relay control circuit
5	Engine speed	PR006: Engine speed	0 rpm < PR006 < 255 rpm	In the event of a fault, apply the interpretation for DF025 Flywheel signal sensor circuit .
6	Temperatures	PR003: Air temperature	-40°C < PR003 < 120°C default value: 20°C	In the event of a fault, apply the interpretation of DF003 Air temperature sensor circuit .
7		PR002: Coolant temperature	40°C < PR002 < 120°C default value: 20°C	In the event of a fault apply the interpretation of DF004 Coolant temperature sensor circuit .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

ENGINE FUNCTION PHASE STATUS (CONTINUED)

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
8	Pressure	PR001: Manifold pressure	PR001 = PR016	In the event of a fault, apply interpretation of DF045 Manifold pressure sensor circuit.
9		PR016: Atmospheric pressure	700 mb < PR016 < 1047 mb	
10	Advance	PR051 Ignition advance	PR051 = approximately 2°	NONE
11	Injection	PR050: Duration of injection	0 ms	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

AIR CONDITIONING

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Refrigerant	PR027: Refrigerant pressure	0 < PR027 < 32 bar	In the event of a fault, apply interpretation of DF118 Refrigerant sensor circuit .
2	Air conditioning	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	Thermoplungers	PR096: Number of active heating elements	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	Air conditioning	ET009: Air conditioning request	NO	In the event of a fault, apply interpretation of DF012 Injection/AC connection
5	idle speed	ET038: Fast idle speed	INACTIVE	
6	Air conditioning	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 .
7		ET016: Injection/AC connection	YES	
8	Windscreen	ET013: Heated windscreen	INACTIVE	In the event of a fault, apply the interpretation of status ET013 Electric windscreen .
9	Thermoplungers	ET115: Thermoplunger relay n° 1	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 relay n° 2	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 carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped, ignition on**.

ENGINE OVERHEATING

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Temperature	PR002: Coolant temperature	40°C < PR002 < 120°C default value: 20°C	In the event of a fault apply the interpretation of DF004 Coolant temperature sensor circuit .
2	Fan assembly	ET035 : Low speed fan assembly	INACTIVE	In the event of a fault, apply interpretation of fault DF010 Low speed fan assembly circuit .
3		ET036: High speed fan assembly	INACTIVE	In the event of a fault, apply interpretation of fault DF030 High speed fan assembly circuit .
4	Overheating warning light	ET007: Overheating warning 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 fan assembly circuit, and DF030 High speed fan assembly circuit .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped, ignition on.**

SUPPLY SYSTEM

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Fuel pump	ET020 : Petrol pump relay control	ACTIVE	In the event of a fault apply the interpretation of DF008, Fuel pump relay control circuit
2	Idle speed	ET039: Idle speed regulation	INACTIVE	NONE
3	Richness	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	Idle speed	PR012: Opening of idle speed regulation valve	PR012 = 62%	NONE
6		PR042 : Integral idle speed regulation correction	4.7% < PR042 < 32%	
7	Richness	PR035: richness correction value	PR035 = approx. 128	In the event of a fault, apply interpretation of DF057 Upstream oxygen sensor circuit and DF058 Downstream oxygen sensor circuit.
8		PR124: Self-adapting richness gain	0 < PR124 < 255	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

SUPPLY SYSTEM (CONTINUED)

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
9	Lambda sensor	PR010 : Downstream oxygen sensor voltage	100 mV < PR010 < 850 mV	In the event of a fault, apply interpretation of DF058 Downstream oxygen sensor circuit .
10		PR009: Upstream oxygen sensor voltage	50 mV < PR009 < 800 mV	In the event of a fault, apply interpretation of DF057 "Upstream oxygen sensor circuit" .
11	Injection	PR050: Duration of injection	0 ms	NONE
12	Fuel	PR029: Fuel consumption	PR029 = 0 l/h	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

LPG

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Gas	ET234: Conditions 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 Operation in LPG mode	NO	In the event of a fault, apply the interpretation of status ET113 Operation in LPG mode .
3		ET114: Operation 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 .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped, ignition on.**

LPG (CONTINUED)

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
7	Gas	ET200: Injection/LPG connection	YES	If NO , apply the interpretation of status ET200 Injection/LPG connection.
8		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	YES NO	If YES , apply the interpretation of status ET237 LPG tank empty.
11		ET375: LPG fuel circuit fault finding	IN PROGRESS	In the event of a fault, apply the interpretation of DF211 LPG fuel circuit operating fault.
12		ET377: LPG combustion misfire fault finding	IN PROGRESS	In the event of a fault, apply the interpretation of DF098 Pollutant combustion misfire in LPG mode and DF099 Destructive combustion misfire in LPG mode.

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

OBD:

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Lambda sensor	ET201: Sensor fault finding request	NO	In the event of a fault, apply the interpretation of DF102 Oxygen sensor operating fault .
2		ET102: Sensor fault finding included	YES	
3		ET106: Sensor fault finding complete	NO	
4	Catalytic converter	ET173: OBD catalytic converter fault finding request	NO	In the event of a fault, apply the interpretation of DF106 "Catalytic converter operating fault" .
5		ET103: Catalytic converter fault finding in progress	YES	
6		ET107: Catalytic converter fault finding complete	NO	
7	Misfiring	ET175: Combustion misfire fault finding request	NO	NONE
8		ET202: Combustion misfire fault finding in progress	YES	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

OBD: (CONTINUED)

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
9	Carburetion	ET374: Petrol fuel circuit fault finding	IN PROGRESS	In the event of a fault, apply the interpretation of DF106 "Catalytic converter operating fault" .
10		ET375: LPG fuel circuit fault finding	IN PROGRESS	In the event of a fault, apply the interpretation of DF106 "Catalytic converter operating fault" .
11	Misfiring	ET376: Petrol combustion misfiring fault finding	IN PROGRESS	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
12		ET377: LPG combustion misfire fault finding	IN PROGRESS	In the event of a fault, apply the interpretation of DF098 Pollutant combustion misfire in LPG mode and DF099 Destructive combustion misfire in LPG mode .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition on.

MILEAGE COUNTER WARNING LIGHT FAULT SEVERITY LEVEL 1

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Mileage counter	PR137: Mileometer severity level 1 warning light	0 miles (0 km)	In the event of a fault, apply the interpretation of DF011 Warning light fault circuit. If the fault is still present perform fault finding on the instrument panel.

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Application condition: Engine **stopped**, ignition **on**.

CONFIGURATION

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Air conditioning	ET008: Air conditioning connection	ACTIVE	In the event of a fault, apply interpretation of DF012 Injection/AC connection
2	PAS	ET067: Power-assisted steering pressure switch connection	YES	NONE
3	Vehicle speed	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 .
4	Gearbox	ET015: AUTO/injection connection	NO If YES the vehicle is fitted with an automatic gearbox.	In the event of a fault, apply interpretation of D170 AUTO/injection connection
5	ESP	ET112: Injection/electronic stability program connection	NO If YES the vehicle has an electronic stability program.	NONE
6	Air conditioning	ET016: Injection/AC connection	ACTIVE	In the event of a fault, apply interpretation of DF012 Injection/AC connection
7	Gas	ET200: Injection/LPG connection	YES	If NO , apply the interpretation of status ET200 Injection/LPG connection .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

IGNITION ADVANCE

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Advance	PR051 Ignition advance	-23.6° < PR051 < 72°	NONE
2	Pinking	PR015: Anti-pinking correction	PR015 < 5°	In the event of a fault, apply the interpretation for DF006 Pinking sensor circuit .
3		PR013: Medium pinking signal	21 < PR013 < 32	
4	Misfiring	PR069: Combustion misfiring rate	PR069 = 0 %	In the event of a fault, apply the interpretation of DF109 Pollutant combustion misfiring and DF110 Destructive combustion misfiring .
5		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 .
6		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 .
7		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 .
8		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 .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

PEDAL POTENTIOMETER CIRCUIT

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Pedal potentiometer	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		PR203: Pedal travel	PR203 < 20%	
3		PR202: Pedal gang 1 and 2 voltage difference	PR202 < 3 V	
4		ET129: Accelerator pedal position: no load	ACTIVE	
5		ET128: Accelerator pedal position: full load	INACTIVE	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

O2 SENSOR TESTING

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Lambda sensor	ET030: Upstream O2 sensor heating	ACTIVE INACTIVE 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 Heating circuit downstream oxygen sensor .
3	Engine speed	PR006: Engine speed	725 rpm < PR006 < 1050 rpm	In the event of a fault, apply the interpretation for DF025 Flywheel signal sensor circuit .
4	Lambda sensor	PR010 : Downstream oxygen sensor voltage	100 mV < PR010 < 850 mV	In the event of a fault, apply interpretation of DF058 Downstream oxygen sensor circuit .
5		PR009: Upstream oxygen sensor voltage	50 mV < PR009 < 800 mV	In the event of a fault, apply interpretation of DF057 "Upstream oxygen sensor circuit" .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

MOTORISED THROTTLE VALVE

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Motorised throttle valve	ET118: Motorised throttle valve in defect mode	NO	In the event of a fault apply the interpretation of status ET118 Motorised throttle in defect mode .
2		ET111: Programming throttle stops	PERFORMED	If status ET111 is NOT PERFORMED , apply interpretation of DF226 Motorised throttle stop programming .
3		P:R275 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 Motorised throttle stop programming and DF002 Throttle potentiometer circuit .
5		ET005: Throttle position: full load	INACTIVE	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

MOTORISED THROTTLE (CONTINUED 1)

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
6	Motorised throttle valve	PR110: Measured throttle position gang 1	PR110 < 20%	In the event of a fault, apply the interpretation of DF226 Motorised throttle stop programming and DF002 Throttle potentiometer circuit.
7		PR111: Measured throttle position gang 2	PR111 < 100%	
8		P:R197 Throttle valve gangs 1 and 2 difference	PR197 < 3 V	
9	Engine speed	PR006: Engine speed	725 rpm < PR006 < 1050 rpm	In the event of a fault, apply the interpretation for DF025 Flywheel signal sensor circuit.

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

ENGINE FUNCTION PHASE STATUS

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Power supply	ET001: + After ignition computer feed	PRESENT	In the event of a fault, apply the interpretation of DF251 + After ignition supply .
2	Speed	ET148: Meshing in process signal	ACTIVE	In the event of a fault, apply interpretation of DF189 Flywheel target .
3	Actuator	ET025: Actuator control relay	ACTIVE	In the event of a fault apply the interpretation of DF029 Actuator relay control circuit .
4	Fuel pump	ET020 : Petrol pump relay control	ACTIVE	In the event of a fault apply the interpretation of DF008 , Fuel pump relay control circuit
5	Engine speed	PR006: Engine speed	725 rpm < PR006 < 1050 rpm	In the event of a fault, apply the interpretation for DF025 Flywheel signal sensor circuit .
6	Temperatures	PR003: Air temperature	-40°C < PR003 < 120°C default value: 20°C	In the event of a fault, apply the interpretation of DF003 Air temperature sensor circuit .
7		PR002: Coolant temperature	40°C < PR002 < 120°C default value: 20°C	In the event of a fault apply the interpretation of DF004 Coolant temperature sensor circuit .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

ENGINE FUNCTION PHASE STATUS (CONTINUED)

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
8	Pressure	PR001: Manifold pressure	PR001 = 500 mbar	In the event of a fault, apply interpretation of DF045 Manifold pressure sensor circuit.
9		PR016: Atmospheric pressure	700 mb < PR016 < 1047 mb	
10	Advance	PR051 Ignition advance	-23.6° < PR051 < 72°	NONE
11	Injection	PR050: Duration of injection	PR050 = 3.6 ms	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

AIR CONDITIONING

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Refrigerant	PR027: Refrigerant pressure	0 < PR027 < 32 bar	In the event of a fault, apply interpretation of DF118 Refrigerant sensor circuit .
2	Air conditioning	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	Thermoplungers	PR096: Number of active heating elements	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	Air conditioning	ET009: Air conditioning request	YES NO	In the event of a fault, apply interpretation of DF012 Injection/AC connection
5	idle speed	ET038: Fast idle speed	If status ET009 is YES, then status ET038 is ACTIVE	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

AIR CONDITIONING (CONTINUED)

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
6	Air conditioning	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/AC connection	YES	
8	Windscreen	ET013: Heated windscreen	ACTIVE INACTIVE	In the event of a fault, apply the interpretation of status ET013 Electric windscreen .
9	Thermoplungers	ET115: Thermoplunger relay n° 1	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 relay n° 2	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 carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

ENGINE OVERHEATING

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Temperature	PR002: Coolant temperature	40°C < PR002 < 120°C default value: 20°C	In the event of a fault apply the interpretation of DF004 Coolant temperature sensor circuit .
2	Fan assembly	ET035 : Low speed fan assembly	INACTIVE	In the event of a fault, apply interpretation of fault DF010 Low speed fan assembly circuit .
3		ET036: High speed fan assembly	INACTIVE	In the event of a fault, apply interpretation of fault DF030 High speed fan assembly circuit .
4	Overheating indicator light	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 fan assembly circuit, and DF030 High speed fan assembly circuit .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

SUPPLY SYSTEM

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Fuel pump	ET020 : Petrol pump relay control	ACTIVE	In the event of a fault, apply the interpretation of DF008 Fuel pump relay control circuit .
2	Idle speed	ET039: Idle speed regulation	ACTIVE	NONE
3	Richness	ET037: Richness regulation	ACTIVE	In the event of a fault, apply the interpretation of faults 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	Idle speed	PR012: Opening of idle speed regulation valve	PR012 = 19 %	NONE
6		PR042 : Integral idle speed regulation correction	4.7% < PR042 < 32%	
7	Richness	PR035: richness correction value	PR035 = approx. 128	In the event of a fault, apply the interpretation of DF057 Upstream oxygen sensor circuit and DF058 Downstream oxygen sensor circuit .
8		PR124: Self-adapting richness gain	0 < PR124 < 255	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

SUPPLY SYSTEM (CONTINUED)

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
9	Lambda sensor	PR010 : Downstream oxygen sensor voltage	100 mV < PR010 < 850 mV	In the event of a fault, apply interpretation of DF058 Downstream oxygen sensor circuit .
11		PR009: Upstream oxygen sensor voltage	50 mV < PR010 < 800 mV	In the event of a fault, apply interpretation of DF057 "Upstream oxygen sensor circuit" .
12	Injection	PR050: Duration of injection	3.6 ms	NONE
13	Fuel	PR029: Fuel consumption	0 l/h < PR029 < 50 l/h	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

LPG

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Gas	ET234: Conditions 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 Operation in LPG mode	YES NO	In the event of a fault, apply the interpretation of status ET113 Operation in LPG mode .
3		ET114: Operation 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 .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

LPG (CONTINUED)

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
7	Gas	ET200: Injection/LPG connection	YES	If NO , apply the interpretation of status ET200 Injection/LPG connection .
8		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		ET375: LPG fuel circuit fault finding	PERFORMED IN PROGRESS	In the event of a fault, apply the interpretation of DF211 LPG fuel circuit operating fault .
12		ET377: LPG combustion misfire fault finding	PERFORMED IN PROGRESS	In the event of a fault, apply the interpretation of DF098 Pollutant combustion misfire in LPG mode and DF099 Destructive combustion misfire in LPG mode .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

OBD:

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Lambda sensor	ET201: Sensor fault finding request	YES NO	In the event of a fault, apply the interpretation of DF102 Oxygen sensor operating fault .
2		ET102: Sensor fault finding included	YES NO	
3		ET106: Sensor fault finding complete	YES NO	
4	Catalytic converter	ET173: OBD catalytic converter fault finding request	YES NO	In the event of a fault, apply the interpretation of DF106 "Catalytic converter operating fault" .
5		ET103: Catalytic converter fault finding in progress	YES NO	
6		ET107: Catalytic converter fault finding complete	YES NO	
7	Misfiring	ET175: Combustion misfire fault finding request	YES NO	NONE
8		ET202: Combustion misfire fault finding in progress	YES NO	

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

OBD: (CONTINUED)

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
9	Carburetion	ET374: Petrol fuel circuit fault finding	PERFORMED IN PROGRESS	In the event of a fault, apply the interpretation of DF106 "Catalytic converter operating fault" .
10		ET375: LPG fuel circuit fault finding	PERFORMED IN PROGRESS	In the event of a fault, apply the interpretation of DF106 "Catalytic converter operating fault" .
11	Misfiring	ET376: Petrol combustion misfiring fault finding	PERFORMED IN PROGRESS	In the event of a fault, apply the interpretation of faults DF109 Polluting misfire and DF110 Destructive misfire .
12		ET377: LPG combustion misfire fault finding	PERFORMED IN PROGRESS	In the event of a fault, apply the interpretation of DF098 Pollutant combustion misfire in LPG mode and DF099 Destructive combustion misfire in LPG mode .

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

MILEAGE COUNTER WARNING LIGHT FAULT SEVERITY LEVEL 1

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Mileage counter	PR137: Mileometer severity level 1 warning light	0 miles (0 km)	In the event of a fault, apply the interpretation of DF011 Warning light fault circuit. If the fault is still present perform fault finding on the instrument panel.

NOTES

Only carry out a conformity check after a **complete check** with the diagnostic tool.
The values shown in this conformity check are given as examples.
Condition of application: engine **warm at idling speed (80°C)**.

CONFIGURATION

Order	Function	Parameter or Status Check or Action	Display and Notes	Fault finding
1	Air conditioning	ET008: Air conditioning connection	ACTIVE	In the event of a fault, apply interpretation of DF012 Injection/AC connection
2	PAS	ET067: Power-assisted steering pressure switch connection	YES	NONE
3	Vehicle speed	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 fault .
4	Gearbox	ET015: AUTO/injection connection	NO If YES the vehicle is fitted with an automatic gearbox.	In the event of a fault, apply interpretation of D170 AUTO/injection connection
5	ESP	ET112: Injection/electronic stability program connection	NO If YES the vehicle has an electronic stability program.	NONE
6	Air conditioning	ET016: Injection/AC connection	ACTIVE	In the event of a fault, apply interpretation of DF012 Injection/AC connection
7	Gas	ET200: Injection/LPG connection	YES	If NO , apply the interpretation of status ET200 Injection/LPG connection .

Tool Status	Diagnostic tool title
ET001	Air conditioning + after ignition 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	Injection/AC connection
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
ET069	Vehicle speed sensor connection
ET070	Air conditioning compressor
ET090	Reverse gear signal

Tool Status	Diagnostic tool title
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	Programming throttle stops
ET112	Injection/electronic stability program connection
ET113	Operation in LPG mode
ET114	Operating in petrol mode
ET115	Thermoplunger relay n° 1
ET116	Thermoplunger relay n° 2
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
ET134	Transition from petrol mode to LPG mode
ET143	Brake pedal redundant
ET148	Meshing in process signal
ET173	OBD catalytic converter fault finding request
ET175	Combustion misfire fault finding request
ET182	Clutch pedal switch

Tool Status	Diagnostic tool title
ET192	Cruise control/speed limiter function
ET194	Cruise control/speed limiter deactivation
ET200	Injection/LPG connection
ET201	Sensor fault finding request
ET202	Combustion misfire fault finding in progress
ET234	Conditions 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
ET374	Petrol fuel circuit fault finding
ET375	LPG fuel circuit fault finding
ET376	Petrol combustion misfiring fault finding
ET377	LPG combustion misfire fault finding
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>
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NOTES	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 .
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When all the switching conditions are met, status **ET134 Transition from petrol mode to LPG mode** changes to **ACTIVE**.

On decelerating, or after a delay, when both fuels have been recovered, status **ET113 Operation in LPG mode** changes to **ACTIVE**.

If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

AFTER REPAIR	Repeat the conformity check from the start.
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ET114	<u>OPERATION IN PETROL MODE</u>
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NOTES	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 .
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Engine starting is still in petrol mode **ET114** should be **ACTIVE**.

The system will be: **ET114 Operation in forced petrol mode** still **ACTIVE** if:

- status **ET237 Tank empty** is **YES**,
- status **ET258 LPG fault** is **YES**,
- status **ET234 Conditions for switching to LPG mode** is **BAD**.

When all the switching conditions are met, status **ET134 Transition from petrol mode to LPG mode** changes to **ACTIVE**, status **ET113 Operation in LPG mode** changes to **ACTIVE**, and status **ET114 Operation in petrol mode** changes to **INACTIVE**.

If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

AFTER REPAIR	Repeat the conformity check from the start.
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ET118	<u>MOTORISED THROTTLE BODY IN DEFECT MODE</u>
NOTES	If any of the defect modes: Status 1, Status 3 or Status 4 occur, carefully check the protective devices, insulation and routing of the engine wiring (see Preliminaries Engine wiring).
NO	NORMAL MODE
STATUS 1	<p>MOTORISED THROTTLE IN LIMP-HOME MODE:</p> <p>This defect mode maintains the engine at a constant speed irrespective of gear changes or the accelerator pedal position.</p> <p>It is usually associated with DF002 Throttle potentiometer circuit, DF226 Throttle stop programming, DF254 Motorised throttle control or DF255 Throttle/pedal operation safety.</p> <p>If no fault is present, refer to the fault finding procedure PR275 Oscillation detection counter.</p> <p>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>
STATUS 2	<p>INJECTION CUT-OFF:</p> <p>This defect mode is not used on the SIRIUS 34 injection computers.</p>
AFTER REPAIR	Repeat the conformity check from the start.

ET118
(Continued)

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 usually 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, refer to the fault finding procedure 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.

STATUS 4

REDUCTION OF ENGINE PERFORMANCE (limitation of 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 First sensor reference voltage**.

If no fault is present, check diagnostic 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.

AFTER REPAIR

Repeat the conformity check from the start.

ET133

TRANSITION FROM LPG MODE TO PETROL MODE

NOTES

There must be no present or stored faults.

Following operation in LPG mode, status **ET113** is **ACTIVE**, if **ET236 LPG mode operation request** changes to **INACTIVE**, status **ET133 Transition from LPG mode to petrol mode** changes to **ACTIVE**.
Then status **ET114 Operation in petrol mode** changes to **ACTIVE**.

If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

AFTER REPAIR

Repeat the conformity check from the start.

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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When **ET236 LPG mode operation request** changes to **ACTIVE**, and if all the switching conditions are met, status **ET134 Transition from petrol mode to LPG mode** changes to **ACTIVE**.
Then **ET113 Operation in LPG mode** changes to **ACTIVE**.

If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

AFTER REPAIR	Repeat the conformity check from the start.
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ET182	<u>CLUTCH PEDAL SWITCH</u>
NOTES	There must be no present or stored faults.
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 is still ACTIVE .
Vehicle equipped with the cruise control/speed limiter function	<p>There is a clutch pedal switch on vehicles equipped with the cruise control/speed limiter function. Status ET182 Clutch pedal switch is ACTIVE if the clutch pedal is depressed. Status ET182 Clutch pedal switch is INACTIVE 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.</p> <p>Check the connection and condition of the clutch pedal switch connector. Replace the connector if necessary.</p> <p>Check for the presence of + 12 V on track A1 of the clutch pedal switch connector. Repair if necessary.</p> <p>Check the insulation and continuity of the connection between: Injection computer track 48 —————> track A2 of the clutch pedal switch Repair if necessary.</p>
AFTER REPAIR	Repeat the conformity check from the start.

ET200	<u>INJECTION / LPG 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.

If the fault is still present, **perform fault finding on the multiplex network** (see **88B, Multiplexing**).

If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

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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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:

- if it has received the information: **ET257 LPG ready** displays **YES** (this information is sent by the LPG computer and transmitted to the Petrol injection computer via the multiplex network),
- if the air temperature is sufficiently warm (to avoid the risk of the injectors icing up),
- following a delay depending on the coolant temperature when starting the engine.

Switch on the ignition and perform a multiplex network test (see **88B, Multiplexing**).

If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

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 customer.
This signal comes from the LPG computer and is sent to the fuel injection computer through the multiplex network.

Switch on the ignition and **perform a multiplex test** (see **88B, Multiplexing**).

If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

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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The fuel injection computer calculates that the LPG tank is empty on the basis of these criteria:

- the signal from the upstream sensor and richness regulation (indicating abnormally poor operation).
- it detects successive engine stalls when switching into LPG mode,
- it takes an LPG pressure reading downstream from the expansion valve (this information is issued by the LPG computer and transmitted to the fuel injection computer via the multiplex network).

This diagnostic is performed in the fuel injection computer to enable automatic return to petrol operation mode when the LPG tank is reported empty:

Status ET237 LPG tank empty is YES.

Switch on the ignition and perform a multiplex network test (see **88B, Multiplexing**).

If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

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 and perform a multiplex network test (see **88B, Multiplexing**).

If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

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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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.

Switch on the ignition and perform a multiplex network test (see **88B, Multiplexing**).

If the fault is still present, perform fault finding on the **LPG Injection** system (see **17D, LPG Injection**).

AFTER REPAIR	Repeat the conformity check from the start.
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ET264

COMPUTER LOCKED FOLLOWING AN IMPACT

NOTES

There must be no present or stored faults.

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 **ET264 Calculator locked following impact** changes to **STATUS 1**.

The only way of restarting is to switch off the ignition for at least **10 seconds**.

Run command **RZ007 Fault memory** to clear status **ET264**.

AFTER REPAIR

Repeat the conformity check from the start.

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
PR096	Number of active heating elements
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

Tool Parameter	Diagnostic tool title
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
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

PR275	<u>OSCILLATION DETECTION COUNTER</u>
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NOTES	There must be no present or stored faults.
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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 climbs 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 displays **STATUS 1, STATUS 3 or STATUS 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 if necessary.

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

If the fault is still present, contact the Techline.

AFTER REPAIR	Repeat the conformity check from the start.
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Tool Command	Diagnostic tool title
RZ007	Fault memory
RZ008	Reinitialise programming
AC002	Thermoplunger relay n° 1
AC003	Air conditioning compressor
AC010	Fuel pump relay
AC016	Canister bleed solenoid valve
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
AC620	Thermoplunger relay n° 2
AC621	Motorised throttle valve
AC625	High speed fan assembly
AC626	Low speed fan assembly

AC002

THERMOPLUNGER N°1 RELAY

NOTES

No faults should be present or stored in the diagnostic tool.

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.

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

Thermoplunger n° 1 relay **track 5** —————→ **track 1** of thermoplunger n° 1

Thermoplunger n° 1 **track 2** —————→ **Vehicle earth**

Repair if necessary.

Reconnect the relay.

Check for **+12 V** on **track 5** of the thermoplunger n° 1 relay connector when command **AC002 Thermoplunger n° 1** relay is run.

Replace the relay if necessary.

Measure the **resistance** of the thermoplunger n° 1 relay coil.

Replace the relay if the **resistance** is not **65 Ω ± 10% at 20°C**.

AFTER REPAIR

Repeat the conformity check from the start.

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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Check the connection and condition of the fuel pump relay connector. Replace the connector if necessary.
Disconnect the relay. Check for the presence of + 12 V on track 3 of the fuel pump relay connector. Repair if necessary.
Check the insulation and continuity of the connection between: Fuel pump relay track 5 —————> Track 1 of the inertia impact sensor Repair if necessary.
Check the absence of resistance between: Inertia impact sensor track 1 —————> Track 3 of the inertia impact sensor Replace the inertia impact sensor if necessary.
Check the insulation and continuity of the connections between: Inertia impact sensor track 3 —————> Track C1 of the fuel pump Fuel pump track C2 —————> Vehicle earth Repair if necessary.
Reconnect the relay. Check for the presence of + 12 V on track 5 of the fuel pump relay connector when command AC010 Fuel pump relay control is run. Replace the relay if necessary.
If the fault is still present, replace the fuel pump.

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.

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

Thermoplunger n° 2 relay **track 5** —————→ **track 1** of the thermoplunger n° 2

Thermoplunger n° 2 **track 2** —————→ **Vehicle earth**

Repair if necessary.

Reconnect the relay.

Check for **+12 V** on **track 5** of the thermoplunger n° 2 relay connector when command **AC620 Thermoplunger n° 2 relay** is run.
Replace the relay if necessary.

Measure the **resistance** of the thermoplunger n° 2 relay coil.
Replace the relay if the **resistance** is not **65 Ω ± 10% at 20°C**.

AFTER REPAIR	Repeat the conformity check from the start.
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AC625	<u>HIGH-SPEED FAN ASSEMBLY</u>
NOTES	Air conditioning pressure > 24 bar Air conditioning pressure > 18 bar + vehicle speed > 12 mph (20 km/h) Coolant temperature with engine running > 102°C
Check the connection and condition of the high-speed fan assembly relay connector. Repair if necessary.	
Disconnect the relay. Check for +12 V on track 3 of the high speed fan assembly relay connector. Repair if necessary.	
Check the insulation and continuity of the connections between: High speed fan assembly relay track 5 —————> track 1 of the engine cooling fan 2 Engine cooling fan 2 track 2 —————> Vehicle earth Repair if necessary.	
Reconnect the relay. Check for the presence of + 12 V on track 5 of the high-speed fan unit relay when command AC625 High-speed fan unit is run. Replace the relay if necessary.	
Measure the resistance between tracks 1 and 2 of the high-speed fan unit relay coil. Replace the high speed fan assembly relay if the resistance is not 65 Ω ± 10% at 20°C .	

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	Coolant temperature with engine off > 100°C Air conditioning requested and authorised Coolant temperature with engine running > 99°C
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Check the **connection and condition** of the low-speed fan unit relay connector.
Repair if necessary.

Disconnect the relay.

Check for **+12 V** on **track 3** of the low speed fan assembly relay connector.
Repair if necessary.

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

Low speed fan assembly relay **track 5** —————> **track 1** of engine cooling fan 1

Engine cooling fan 1 **track 2** —————> **Vehicle earth**

Repair if necessary.

Reconnect the relay.

Check for the presence of **+ 12 V** on **track 5** of the high-speed fan unit relay when command **AC626 High-speed fan unit** is run.

Replace the relay if necessary.

Measure the **resistance** between **tracks 1** and **2** of the low-speed fan unit relay coil.
Replace the low speed fan assembly relay if the **resistance** is not **65 Ω ± 10% at 20°C**.

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. WARNING Never drive the vehicle without checking first that there are no throttle valve faults.
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NO DIALOGUE WITH THE COMPUTER	ALP 1
STARTING FAULT	ALP 2
IDLING SPEED FAULTS	ALP 3
FAULTS WHILE DRIVING	ALP 4
NO AIR CONDITIONING	ALP 5
NO OPERATION IN LPG MODE	ALP 6

ALP 1

No dialogue with the computer

NOTES

None.

Test the diagnostic tool on another vehicle in perfect working order.

Check:

- the connection between the diagnostic tool and the diagnostic socket (wiring in good condition),
- injection, Engine and Passenger compartment fuses.
- try to establish dialogue with another computer on the same vehicle.

Repair if necessary.

Check for **+ 12 V** on **track 16** of the diagnostic socket.

Repair if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Diagnostic socket **track 5** —————> **vehicle earth**

Diagnostic socket **track 4** —————> **vehicle earth**

Repair if necessary.

Ensure the presence of **+ 12 V** on:

- injection computer **track 30**,
- injection computer **track 29 (ignition on)**.

Repair if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

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** of the diagnostic socket

Repair if necessary.

AFTER REPAIR

Repeat the conformity check from the start.

ALP 2

Starting fault

WARNING

Never drive the vehicle without ensuring that there are no throttle valve faults

NOTES

Follow ALP 2 after a complete check with the diagnostic tool.
(Use the relevant section in the Workshop Repair Manual to carry out certain operations).

Special note:

Make sure that status **ET006 Code programmed** is **YES**; otherwise activate command **SC0017 Program injection immobiliser code** on the UCH computer.

If the starter motor does not start, there may be a fault with the engine immobiliser.

Carry out fault finding on the UCH (see 87B, Connection Unit).

Check the condition of the battery.

Check the cleanliness, condition and tightness of the battery terminals.

Check that the battery is correctly earthed to the vehicle body.

Check that the + battery leads are correctly connected.

Check that the starter motor is properly connected.

Check that the starter is functioning correctly (see **MR 380/MR 345 and TN 2621A Repair, 16A, Starting/Charging**).

Check the condition and conformity of the plugs.

Check the mounting, cleanliness and condition of the flywheel signal sensor.

Check the flywheel signal sensor air gap.

Check the condition of the flywheel.

Check that the air filter is not clogged.

Check that the air intake system is not blocked.

Check whether there is petrol in the tank (fuel gauge fault).

Check that the tank vent is not blocked.

Check that the fuel is of the proper type.

Check that there is no leak in the fuel circuit, from the fuel tank to the injectors.

Check that no hoses are pinched (especially after a removal operation).

Check the fuel flow rate and pressure.

Check the operation of the injectors and that they do not leak.

Check that the exhaust system is not blocked nor the catalytic converter clogged.

Check the timing.

Check the engine compression.

Check the hydraulic tappets if there is camshaft noise.

AFTER REPAIR

Repeat the conformity check from the start.

ALP 3

Idle speed fault

WARNING

Never drive the vehicle without ensuring that there are no throttle valve faults

NOTES

Follow ALP 3 after a complete check with the diagnostic tool.
(Use the relevant section in the Workshop Repair Manual to carry out certain operations).

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.

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.

Check that the spark plugs are in good condition and that they correspond to the engine type; replace 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.

Check that the exhaust system is not blocked nor the catalytic converter clogged.

Check with the dipstick that the oil level is not too high.

Check the timing.

Check the engine compression.

AFTER REPAIR

Repeat the conformity check from the start.

ALP 4

Faults occurring while driving

WARNING

Never drive the vehicle without ensuring that there are no throttle valve faults

NOTES

Follow ALP4 after a complete check using the diagnostic tool.
(Use the relevant section in the Workshop Repair Manual to carry out certain operations).

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.

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.

Check that the spark plugs are in good condition and that they correspond to the engine type; replace 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.

Check that the exhaust system is not blocked nor the catalytic converter clogged.

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.

Check that the wheels turn freely (calipers, drums and bearings not seized).

Check the condition and pressure of the tyres.

AFTER REPAIR

Repeat the conformity check from the start.

ALP 5

NO AIR CONDITIONING

NOTES

Follow ALP 5 after a complete check using the diagnostic tool.
(Use the relevant section in the Workshop Repair Manual to carry out certain operations).

Does parameter **PR027 Refrigerant pressure** display a value of **zero**?

YES

Test the air conditioning charge.
Repair if necessary.

Move the wiring harness between the injection computer and the refrigerant pressure sensor in order to detect a status change (present → stored).
Look for possible damage to the harness, and check the condition and connection points of the refrigerant pressure sensor connector.
Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 79** —————→ **track A** of the refrigerant pressure sensor

Injection computer **track 83** —————→ **track B** of the refrigerant pressure sensor

Injection computer **track 47** —————→ **track C** of the refrigerant pressure sensor

Repair if necessary

Measure the **resistance** of the refrigerant pressure sensor between **tracks A** and **C**.
Replace the sensor if the **resistance** is not **330 kΩ ± 1%**.

AFTER REPAIR

Repeat the conformity check from the start.

**ALP 5
(Continued)**

NO

Move the wiring harness between the injection computer and the refrigerant pressure sensor in order to detect a status change (present → stored).
Look for possible damage to the harness, and check the condition and connection points of the refrigerant pressure sensor connector.
Replace the connector if necessary.

Using the "universal bornier", check **the insulation, continuity and absence of interference resistance** for the following connections:

Injection computer **track 39** —————▶ **track D2** of the air conditioning compressor

Repair if necessary.

Check **that the air conditioning compressor clutch is engaging properly** with diagnostic tool command **AC003 Air conditioning compressor**.
Repair if necessary.

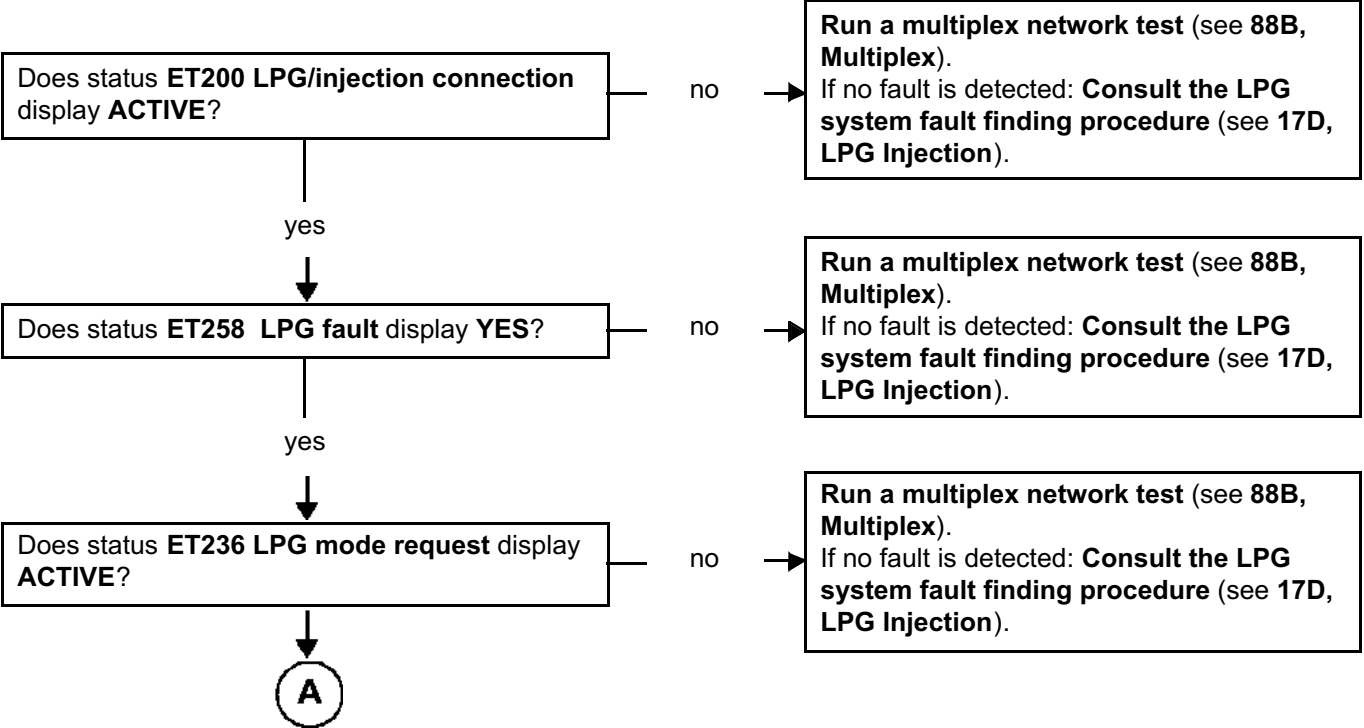
If the fault is still present, perform fault finding on the air conditioning (see 62B, Climate control).

AFTER REPAIR

Repeat the conformity check from the start.

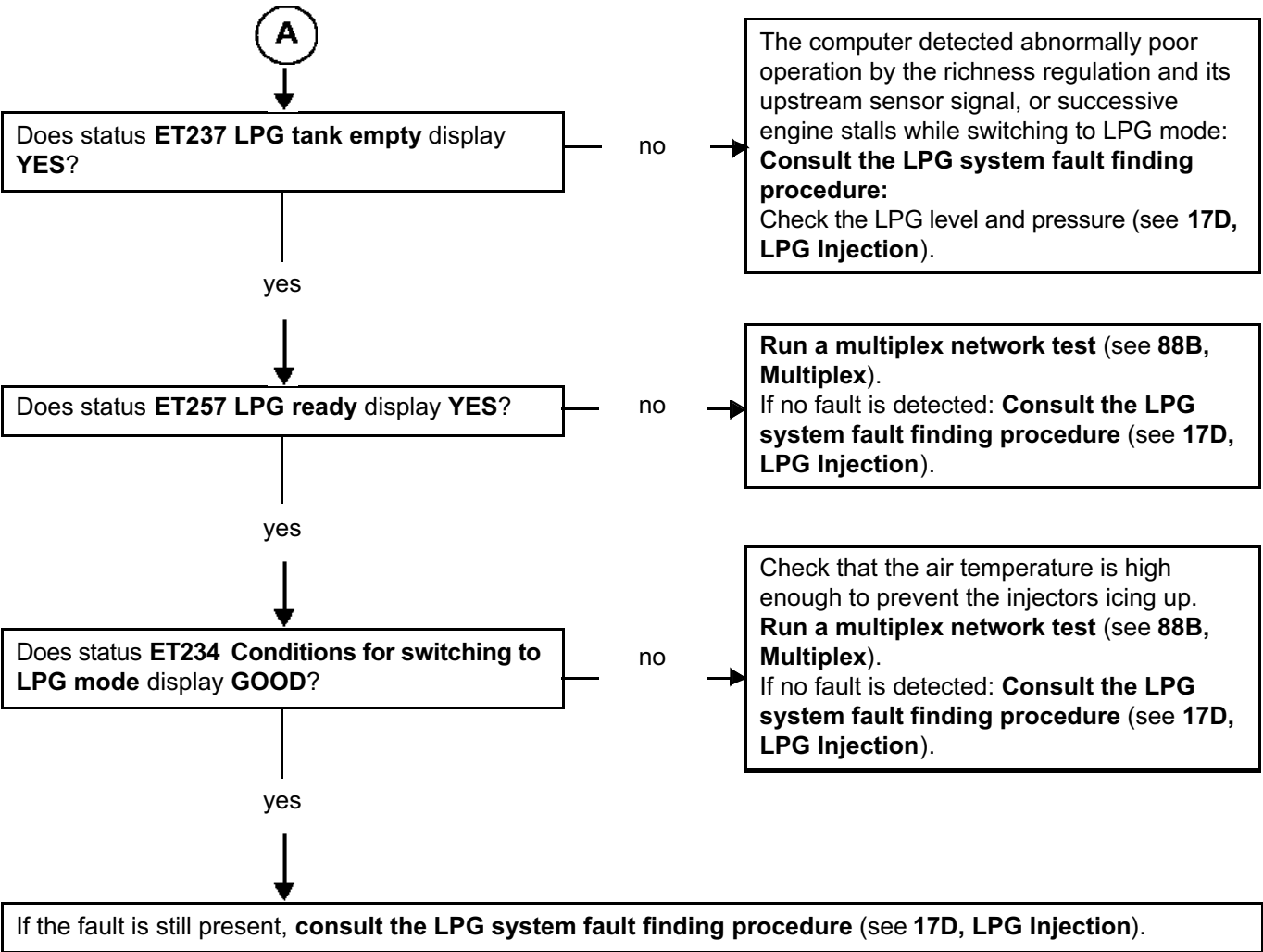
ALP 6	No operation in LPG mode
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NOTES	<p>Follow ALP 6 after a complete check using the diagnostic tool. There must be no faults present or stored in the LPG system. (Use the relevant section in the Workshop Repair Manual to carry out certain operations).</p>
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AFTER REPAIR	Repeat the conformity check from the start.
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ALP 6 (Continued)	
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AFTER REPAIR	Repeat the conformity check from the start.
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