



1 Engine and peripherals

13 DIESEL INJECTION

17 PETROL INJECTION

Engine and peripherals

Contents

	Page		Page
13		DIESEL INJECTION	
		EDC15 VM + Injection	
		Vdiag N° 04	
		Introduction	13-1
		Interpretation of faults	13-5
		Conformity check	13-51
		Interpretation of statuses	13-62
		Customer complaints	13-67
		Fault finding chart	13-68
17		PETROL INJECTION	
		Sagem 2000 Injection	
		Program N° A3 - Vdiag N° 08	
		Introduction	17-1
		Interpretation of faults	17-3
		Conformity check	17-79
		Interpretation of statuses	17-88
		Interpretation of parameters	17-101
		Interpretation of commands	17-109
		Help	17-114
		Customer complaints	17-118
		Fault finding chart	17-119
		5NR Injection	
		Program N°: from 24 - Vdiag N° 04	
		Introduction	17-123
		Interpretation of faults	17-128
		Conformity check	17-187
		Interpretation of statuses	17-193
		Customer complaints	17-199
		Fault finding chart	17-200
		Sirius 34 injection	
		Program N° E5 - Vdiag N° 04	
		Introduction	17-206
		Interpretation of faults	17-209
		Conformity check	17-266
		Interpretation of commands	17-274
		Customer complaints	17-282
		Fault finding chart	17-283

This document presents the generic fault finding procedure applicable to all EDC15VM+ diesel injection computers fitted on CLIO II F9Q782.

To carry out fault finding on this system, it is essential to have the following items:

- This section of the Workshop Repair Manual,
- The wiring diagram of the function for the vehicle concerned,
- The Clip or NXR diagnostic tool,
- The test bornier: Elé. 1621.

GENERAL APPROACH TO FAULT FINDING

- Use one of the diagnostic tools to identify the diesel injection system fitted to the vehicle (reading the computer family, program N°, Vdiag, etc.).
- Locate the Fault finding documents corresponding to the system identified.
- Take note of information contained in the introductory sections.

DESCRIPTION OF THE FAULT FINDING PHASES

1 - CHECKING THE FAULTS

It is essential to start with this stage before any work is done on the vehicle.

- Read the faults stored in the computer memory and use the Interpretation of faults section of the documents.
REMINDER: Each fault is interpreted for a given type of storage (fault present, fault stored, fault present or stored). The checks defined for dealing with each fault are therefore only to be performed if the fault declared by the diagnostic tool is interpreted in the document for its type of storage. The storage type should be considered when using the diagnostic tool after the ignition has been switched off and switched back on.
If a fault is interpreted when it is declared as stored, the conditions for applying fault finding appear in the NOTES box. If the conditions are not satisfied, use the fault finding strategy to check the circuit of the faulty part since the fault is no longer present on the vehicle. Perform the same operation when a fault is declared as stored by the diagnostic tool but is only interpreted in the documentation as a present fault.

2 - CONFORMITY CHECK

The conformity check is designed to check the statuses and parameters which do not display any faults on the diagnostic tool when they are outside the permitted tolerance values. Therefore, this stage is used to:

- Fault finding on faults which are not displayed but which may correspond to a customer complaint.
- Checking correct injection operation and ensuring that a fault will not reappear after repair.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them. If a status is not operating normally or a parameter is outside permitted tolerance values, you should consult the corresponding fault finding page.

3 - RECTIFYING THE CUSTOMER COMPLAINT

If the diagnostic tool check is correct, but the customer complaint is still present, the fault should be dealt with according to the customer complaint.

This section has fault finding charts, which suggest a series of possible causes of the fault. These lines of investigation must only be used in the following cases:

- No fault observed on diagnostic tool.
- No fault detected during conformity check.
- The vehicle is not operating correctly.

SPECIAL FEATURES OF THE COMPUTER

1 - PROGRAMMING OPERATIONS

There are no specific conditions for programming. Target programming is automatic.

2 - CONFIGURATION OPERATIONS

Three functions can be configured in the computer:

- Heating and ventilation (CF579).
- Power assisted steering pump assembly (CF580).
- Thermoplungers (CF581).

NOTE: configurations take effect after completion of the computer self-supply process. So after making the desired configurations, switch off the ignition and wait for completion of the computer auto-load process (about 30 seconds) before switching on the ignition again to verify that the configurations have taken effect.

The electronic stability program (ESP) function (Mégane only) is configured automatically, so there is no configuration service for this function. However, it is possible to read the configuration of the Electronic Stability Program function to see whether the vehicle is fitted with this function or not.

It is possible to read the configurations of the following functions:

- Heating and ventilation (LC034).
- Power assisted steering pump assembly (LC032)
- Thermoplungers (LC035).
- Electronic Stability Program (LC031).

DIESEL INJECTION

Fault finding - Introduction

FAULT WARNING LIGHT MANAGEMENT

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

FAULTS	LEVEL 1 FAULT WARNING LIGHT (preheating warning light: orange)	LEVEL 2 FAULT WARNING LIGHT (overheating warning light: red)	WARNING LIGHT DOES NOT COME ON
DF001 computer	...	1 DEF	2 DEF
DF002 coolant temperature sensor circuit	CO.0 / CC.1	...	1 DEF
DF004 vehicle speed sensor circuit	1 DEF / 2 DEF	...	...
DF005 needle lift sensor circuit	1 DEF / 2 DEF 3 DEF / 4 DEF	...	...
DF012 battery voltage	...	...	1 DEF / 2 DEF
DF014 electrical solenoid circuit	1 DEF	2 DEF	...
DF019 air flow sensor circuit	CO.0 / CC.1 / 1 DEF	...	...
DF021 fuel temperature sensor	...	...	CC.0 / CO.1 / 1 DEF
DF022 air temperature sensor	...	...	CC.0 / CO.1
DF023 flywheel signal sensor circuit	...	1 DEF	2 DEF
DF027 EGR solenoid valve circuit	CO.0 / 1 DEF	...	CC.1 / 2 DEF
DF029 power assisted steering relay control circuit	CO.0 / CC.1	...	...
DF045 preheating relay control circuit	...	...	CC.0 / CC.1 / 1.DEF
DF048 low-speed fan assembly circuit	...	...	CO.0 / CC.1
DF051 brake pedal switch circuit	...	...	1 DEF

DIESEL INJECTION

Fault finding - Introduction

FAULTS	LEVEL 1 FAULT WARNING LIGHT (preheating warning light: orange)	LEVEL 2 FAULT WARNING LIGHT (overheating warning light: red)	WARNING LIGHT DOES NOT COME ON
DF058 sensor reference voltage	1 DEF / 2 DEF	...	...
DF068 engine immobiliser line	1 DEF / 2 DEF	...	...
DF071 pedal sensor circuit gang 1	CO.0 / CC.1 1 DEF / 2 DEF	...	...
DF073 pedal sensor circuit gang 2	CO.0 / CC.1 / 1 DEF	...	...
DF085 after ignition key signal	1 DEF	...	...
DF094 thermoplunger N° 1 relay	...	...	CO.0 / CC.1
DF104 thermoplunger N° 2 relay	...	...	CO.0 / CC.1
DF111 air conditioning cold loop control circuit	...	...	CO.0 / CC.1
DF113 refrigerant pressure sensor circuit	...	2 DEF	CC.0 / 1 DEF
DF125 main relay control circuit	1 DEF	...	...
DF126 fuel flow actuator circuit	1 DEF	2 DEF	...
DF139 injection advance sensor	1 DEF / 2 DEF	...	...
DF140 advance actuator control	...	CO.0 / CC.1	...
DF149 fuel flow sensor circuit	1 DEF / 2 DEF	CC / 3 DEF	...

Fault finding - Interpretation of faults

DF001 PRESENT OR STORED	COMPUTER 1.DEF: INTERNAL ELECTRONIC FAULT 2.DEF: ATMOSPHERIC PRESSURE SENSOR FAULT. REPLACE THE COMPUTER
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NOTES	None.
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1.DEF	NOTES Conditions for applying fault finding procedures to stored faults The fault is declared present after: starting the engine, allowing it to run for 5 seconds, switching off the engine and the + after ignition feed, waiting for the end of the computer self-supply period and then switching the ignition on again.
--------------	--

Make sure that **the battery is correctly charged**. If it is not, carry out fault finding on the charging circuit.

Connect the bornier in place of the computer to check the **presence of a 12 volt supply to tracks 1, 2 and 37** of the computer. The voltage of these supplies must be the same as that measured at the battery terminals (± 0.5 volts).

If the supply voltages checked are absent or not the same as the battery terminal voltage, connect the bornier in place of the computer and check **the insulation, continuity and absence of interference resistance** on the following connections:

computer track 18	→	track 2 of the main relay (main relay control)
computer track 1	→	track 5 of the injection locking relay (self-supply)
computer track 2	→	track 5 of the injection locking relay (self-supply)
computer track 37	→	injection fuse : + after ignition feed (see vehicle diagrams)
computer track 4	→	earth
computer track 5	→	earth

Repair if necessary.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults. If a computer is replaced, reconfigure the computer.
---------------------	--

DIESEL INJECTION

Fault finding - Interpretation of faults

DF001

CONTINUED

If the connections checked are correct but **the 12 volt supply** is still not present on **tracks 1 and 2** of the computer: **replace** the injection locking relay (main relay).

If **the 12 volt supply** is still not present on **track 37** of the computer: **check** the injection fuse (see vehicle diagrams).
Replace it if necessary.

If the supplies and the earths of the computer are correct but the fault is still present, **replace** the injection computer.

2.DEF**NOTES**

Only apply this fault finding procedure if a fault is present with **2.DEF**.

Ensure that the air vent on the computer is not obstructed.
Clean if necessary.

Replace the injection computer.

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.
If a computer is replaced, reconfigure the computer.

DIESEL INJECTION

Fault finding - Interpretation of faults

DF002 PRESENT OR STORED	<u>COOLANT TEMPERATURE SENSOR CIRCUIT</u> CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH CO.1 : OPEN CIRCUIT OR SHORT CIRCUIT TO +12 V 1.DEF : SIGNAL INCONSISTENCY
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NOTES	None.
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CO.0 CO.1	NOTES	Apply this diagnostic only in the case of a fault present with CO.0 or CO.1 .
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Check the connection and condition of the coolant temperature sensor connector. Change the connector if necessary.
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer track 112 —————> track 3 of the coolant temperature sensor computer track 104 —————> track 2 of the coolant temperature sensor Repair if necessary.
Check the resistance value of the sensor by measuring between: Track 2 and track 3 of the coolant temperature sensor and replace the sensor if the resistance is not approximately: 2252 Ω ± 112 Ω at 25°C . (For more details, consult the electrical specifications of the sensor as a function of temperature in the Repair method).
Check for the presence of a 5 volt supply on track B1 of the sensor. If there is no feed, replace the injection computer.
If the fault persists, replace the coolant temperature sensor.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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DIESEL INJECTION

Fault finding - Interpretation of faults

DF002 CONTINUED	
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1.DEF	NOTES	Conditions for applying fault finding procedures to stored faults the fault is declared as present following: engine speed greater than 950 rpm.
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Check **the conformity of the engine cooling circuit**: radiator in good condition, unobstructed flow of cooling air (radiator not obstructed by leaves, etc), coolant correctly bled.

Using the diagnostic tool, monitor the temperature of the engine coolant (**PR002**). After starting (engine cold), the temperature at idling speed must rise steadily without sudden changes. If the temperature rise is not linear (temperature curve rises or falls sharply), **replace** the coolant temperature sensor.

If the fault persists, **replace** the coolant temperature sensor.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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Fault finding - Interpretation of faults

DF004 PRESENT OR STORED	<u>VEHICLE SPEED SENSOR CIRCUIT</u> 1.DEF : SIGNAL INCONSISTENCY 2.DEF : INCONSISTENT VEHICLE SPEED
NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared as present following: road test, vehicle speed greater than 12 mph (20 km/h).
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <p>computer track 20 → ABS computer</p> <p>(see vehicle diagrams). Repair if necessary.</p>	
<p>Ensure that the speedometer is operating by performing a fault finding procedure on the instrument panel (self-diagnostic by pressing the control panel button when the ignition is off then switching the ignition on whilst still pressing the button) as an instrument panel fault may affect the vehicle speed information. Repair if necessary (refer to the instrument panel fault finding technical note).</p>	
<p>If the speedometer is working and the previously checked connection is correct, perform a fault finding procedure on the ABS to ensure that none of the speed sensors are faulty and that the vehicle speed information supplied is consistent. Repair if necessary (refer to the ABS fault finding note).</p>	
AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.

Fault finding - Interpretation of faults

DF005 PRESENT OR STORED	<u>NEEDLE LIFT SENSOR CIRCUIT</u> 1.DEF : SIGNAL INCONSISTENCY 2.DEF : PERMANENT HIGH SIGNAL 3.DEF : SHORT CIRCUIT TO EARTH 4.DEF : OVERSPEED DETECTED ON THE SECONDARY ENGINE SPEED
--	---

NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.
	Priorities when dealing with a number of faults: – Deal with faults DF023 Flywheel signal sensor circuit and DF012 Battery voltage first if they are present or stored.

Check the connection and condition of the needle lift sensor connector. Repair if necessary.
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer track 101 —————> track 2 of the needle lift sensor computer track 109 —————> track 1 of the needle lift sensor Repair if necessary.
Check the resistance value of the sensor by measuring between: Track 1 and track 2 of the needle lift sensor and replace the sensor if the resistance is not approximately: 100 Ω ± 10 Ω at 25°C.
If the fault persists, replace the needle lift sensor.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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Fault finding - Interpretation of faults

DF012 PRESENT OR STORED	BATTERY VOLTAGE 1.DEF : BATTERY VOLTAGE TOO LOW 2.DEF : BATTERY VOLTAGE TOO HIGH
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NOTES	Special notes: 1.DEF appears for a voltage of about 6 volts (diagnostic tool communication cut below 9 volts) and 2.DEF appears for a voltage of about 16.5 volts.
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1.DEF	NOTES	Only apply this fault finding procedure if a fault is present with 1.DEF .
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Make sure that the cable connecting the battery to the starter motor, the battery earth cable to the chassis and the chassis earth cable to the engine and transmission assembly **are in good condition**.

Make sure that the **battery is in a good state of charge** and, if necessary, check the charging circuit.

Connect the bornier in place of the computer to ensure **correct supply to tracks 1, 2 and 37** of the computer. The voltage of these supplies must be the same as that measured at the battery terminals (± 0.5 volts).

If the supply voltages checked are absent or not the same as the battery terminal voltage, connect the bornier in place of the computer and check **the insulation, continuity and absence of interference resistance** on the following connections:

computer track 18	→	track 2 of the main relay (main relay control)
computer track 1	→	track 5 of the main relay (self-supply)
computer track 2	→	track 5 of the main relay (self-supply)
computer track 37	→	injection fuse: + after ignition feed (see vehicle diagrams)
computer track 4	→	earth
computer track 5	→	earth

Repair if necessary.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
---------------------	--

DIESEL INJECTION

Fault finding - Interpretation of faults

DF012
CONTINUED

If the supply is still not present or correct on **tracks 1 and 2** of the computer, **replace the main relay**.

2.DEF

NOTES

Conditions for applying fault finding procedures to stored faults

The fault is declared as present following a road test at a vehicle speed greater than 3 mph (5 km/h) for 10 seconds.

Make sure that the cable connecting the battery to the starter motor, the battery earth cable to the chassis and the chassis earth cable to the engine and transmission assembly **are in good condition**.

Make sure that the **battery is in a good state of charge** and, if necessary, check the charging circuit.

Connect the terminal in place of the computer and check the insulation, continuity and absence **of interference resistance** of the connections:

computer track 1	→	track 5 of the main relay (self-supply)
computer track 2	→	track 5 of the main relay (self-supply)
computer track 37	→	injection fuse: + after ignition feed (see vehicle diagrams).

Repair if necessary.

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

Fault finding - Interpretation of faults

DF014 PRESENT OR STORED	<u>ELECTRICAL SOLENOID CIRCUIT</u> 1.DEF: INCONSISTENCY 2.DEF: OPEN CIRCUIT, SHORT CIRCUIT TO EARTH OR SHORT CIRCUIT TO +12 V
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NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared as present after: starting the engine, warming it up to obtain a coolant temperature of 50°C, switching off the engine and the + after ignition feed, waiting for the end of the computer self-supply period and then switching the ignition on again.
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Check the connection and condition of the electrical solenoid terminal. Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer track 120 —————> round terminal of the electrical solenoid Repair if necessary.
Using the diagnostic tool, run command: AC035 Electrical solenoid. The tool should display: command complete and it should be possible to hear the electrical solenoid closing.
If the command was not performed correctly: Check the resistance value of the solenoid valve by measuring between: The electrical solenoid round terminal and earth and replace the electrical solenoid valve if its resistance is not approximately: 7.5 Ω ± 1 Ω at 25°C .
If the fault persists, remove the electrical solenoid valve and ensure that there is no mechanical seizure. Replace it if necessary.
If the fault persists, replace the electrical solenoid.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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Fault finding - Interpretation of faults

DF019 PRESENT OR STORED	AIR FLOW SENSOR CIRCUIT CC.1 : SHORT CIRCUIT TO +12 V CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH 1.DEF: SENSOR SUPPLY FAULT
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NOTES	Priorities when dealing with a number of faults: – Deal first with the DF058 sensor reference voltage fault if it is present or stored.
	Special notes: The supply to the air flow sensor is common to the EGR feedback potentiometer (common track) and to the pedal sensor, gang 1 (computer internal connection) and therefore an air flow sensor supply fault is often associated with a supply fault on the pedal sensor, gang 1. NOTE: disconnecting the sensors during a fault finding procedure (with the ignition on) to check the supplies causes faults to be relayed back to the diagnostic tool (e.g.: disconnecting the air flow sensor relays causes an open circuit on the air temperature sensor). These additional faults should therefore be ignored and erased after the repair.

1.DEF	NOTES	Only apply this fault finding procedure if a fault is present with 1.DEF .
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Check the connection and condition of the air flow sensor connection. Repair if necessary.
Disconnect the air flow sensor and, with the ignition on, check for the presence of a 5 volt supply on track 3 of the sensor. If there is no supply, connect the bornier in place of the computer and check (ignition off) the insulation, continuity and absence of interference resistance of the connection: computer track 30 —————> track 3 of the air flow sensor Repair if necessary.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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Fault finding - Interpretation of faults

DF019

CONTINUED 1

If the connection checked is correct but the supply is still not present on **track 3** of the air flow sensor, check that the EGR potentiometer or the accelerator pedal sensor do not cause a voltage drop, by disconnecting them one after the other. Replace the component causing a voltage drop.

If the previous tests did not restore the supply to track 3 of the air flow sensor, then connect the bornier in place of the computer and check (ignition off) **the insulation, continuity and absence of interference resistance** of the connections:

computer **track 12** —→ **track 4** of the pedal potentiometer gang 1
computer **track 30** —→ **track 2** of the EGR valve

Repair if necessary.

If these tests do not restore the 5 volt supply to the airflow sensor: **Replace the computer.**

CC.1
CO.0

NOTES

Conditions for applying fault finding procedures to stored faults

The fault is declared present after the engine has been started.

Check **the connection and condition** of the air flow sensor connection.
Repair if necessary.

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

Fault finding - Interpretation of faults

DF019

CONTINUED 2

Disconnect the air flow sensor and check for the presence of a **5 volt supply** on **track 3** of the sensor.

If there is no supply, connect the bornier in place of the computer and check **the insulation, continuity and absence of interference resistance** on the following connections:

computer track 30	————▶	track 3 of the air flow sensor
computer track 68	————▶	track 5 of the air flow sensor
computer track 49	————▶	track 2 of the air flow sensor

Repair if necessary.

If the fault persists, **replace** the air flow sensor.

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

Fault finding - Interpretation of faults

DF021 PRESENT OR STORED	<u>FUEL TEMPERATURE SENSOR CIRCUIT</u> CC.0 : SHORT CIRCUIT TO EARTH CO.1 : OPEN CIRCUIT OR SHORT CIRCUIT TO +12 V 1.DEF: SIGNAL INCONSISTENCY
--	--

NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.
	Special notes: The fuel temperature sensor is located in the injection pump.

Check the connection and condition of the black 7-track connector of the injection pump. Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer track 111 —————> track 5 of the black 7-track connector of the injection pump computer track 103 —————> track 6 of the black 7-track connector of the injection pump Repair if necessary.
Using the diagnostic tool, display parameter: PR001 Fuel temperature and ensure that the information is consistent (see conformity check).
If the temperature displayed is not consistent or if it is stuck at 45°C: Check the resistance value of the fuel temperature sensor by measuring between: Track 5 and track 6 of the black 7-track connector of the injection pump and replace the temperature sensor if its resistance is not approximately: 2200 Ω to 2600 Ω at 20°C .
If the fault is still present, replace the fuel temperature sensor.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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DIESEL INJECTION

Fault finding - Interpretation of faults

**DF022
PRESENT****AIR TEMPERATURE SENSOR CIRCUIT**

CC.0 : SHORT CIRCUIT TO EARTH

CO.1 : OPEN CIRCUIT OR SHORT CIRCUIT TO +12 V

NOTES**Priorities when dealing with a number of faults:**

- Deal with fault **DF019** Air flow sensor circuit first if it is present or stored.

Special notes:

The air temperature sensor is located in the air flowmeter.

Check **the connection and condition** of the black 6-track connector of the air flowmeter.
Repair if necessary.

Connect the terminal in place of the computer and check the insulation, continuity and absence of **interference resistance** of the connections:

computer **track 49** —→ **track 2** of the black 6-track connector of the air flowmeter
computer **track 73** —→ **track 1** of the black 6-track connector of the air flowmeter

Repair if necessary.

Using the diagnostic tool, display parameter **PR003** Air temperature and check the consistency of the information (see conformity check).

If the temperature displayed is not consistent or if it is stuck at 20°C:
Check **the resistance value** of the air temperature sensor by measuring between:
Track 1 and **track 2** of the air flowmeter black 6-track connector, replace the flowmeter if the resistance of the sensor is not approximately: **2868 Ω ± 200 Ω at 25°C**.

If the fault persists, **replace** the air flowmeter.

AFTER REPAIR

Clear the fault memory.
Deal with any other faults.

DIESEL INJECTION

Fault finding - Interpretation of faults

**DF023
PRESENT
OR
STORED**

FLYWHEEL SIGNAL SENSOR CIRCUIT

- 1.DEF : SIGNAL INCONSISTENCY
- 2.DEF : ABOVE MAXIMUM THRESHOLD.

NOTES

Conditions for applying fault finding procedures to stored faults

The fault is declared as present after the engine is started, but the fault can be changed to stored after the engine has been switched off. The fault finding procedure must therefore be applied although the fault is only stored.

Check the **connection and condition** of the flywheel signal sensor connector and replace the connector if necessary.

Connect the terminal in place of the computer and check the insulation, continuity and absence of **interference resistance** of the connections:

- computer **track 102** —→ **track A** of the engine speed sensor
- computer **track 110** —→ **track B** of the engine speed sensor

Repair if necessary.

Check the **resistance value** of the engine speed sensor by measuring between:
Track A and **track B** of the sensor, replace the sensor if the resistance is not approximately: **600 Ω to 800 Ω** at **20°C**.

Remove the sensor and ensure it has **not been rubbing** on the flywheel target (flywheel warped or cracked)
Replace the sensor if necessary.

Check the **condition of the engine flywheel** especially if it is removed (condition of teeth).
Replace the flywheel if necessary.

If the fault persists, **replace** the flywheel signal sensor.

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

Fault finding - Interpretation of faults

DF027 PRESENT OR STORED	EGR SOLENOID VALVE CIRCUIT CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V 1.DEF : POSITIVE LOOP DEVIATION 2.DEF : NEGATIVE LOOP DEVIATION
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NOTES	Priorities when dealing with a number of faults: – Deal with fault DF125 Main relay control circuit first if it is present or stored.
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CO.0 CC.1	NOTES	Apply this diagnostic only in the case of a fault present with CO.0 or CC.1 .
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Check the connection and condition of the connector of the EGR valve and replace the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer track 61 —————> track 5 of the EGR valve Repair if necessary.
With the ignition on, ensure the presence of a supply to track 1 of the valve connector. If there is no supply, connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connection: EGR valve track 1 —————> track 5 of the main relay Repair if necessary.
Check the resistance value of the EGR valve by measuring between: Track 1 and track 2 of the valve and replace the valve if its resistance is not approximately: 8 Ω ± 0.5 Ω at 20°C .
If the fault persists, replace the EGR valve.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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DIESEL INJECTION

Fault finding - Interpretation of faults

DF027 CONTINUED 1	
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1.DEF 2.DEF	NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.
		Priorities when dealing with a number of faults: – Deal with fault DF019 Air flow sensor circuit first if it is present or stored.
		Special notes: The air flow sensor is also used to check correct operation of the EGR valve. NOTE: a fault on the air flow sensor prevents the EGR valve from being controlled.

With the engine running, display parameter **PR125** EGR valve control and check that this parameter varies at various engine speeds (from 25 to 95% on average).

Check that the air circuit and EGR valve are **sealed**.
Repair if necessary.

Remove the EGR valve and ensure that it is properly **closed** (no jamming in intermediate position). Repair if necessary by cleaning the valve.

If the valve remains stuck in an intermediate position even after cleaning, **replace** the EGR valve.
If the valve has returned to the closed position, reconnect the connector and using the diagnostic tool, clear the fault then run command **AC007** EGR valve to ensure that it opens and closes correctly (no point of resistance).
Replace the valve if necessary.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
---------------------	--

DF027

CONTINUED 2

If the control was performed correctly, refit the valve and check for faults on the air flow sensor (see special notes).

Check **the connection and condition** of the air flow sensor connection.
Repair if necessary.

Connect the terminal in place of the computer and check the insulation, continuity and absence **of interference resistance** of the connections:

computer **track 30** —————> **track 3** of the air flow sensor
computer **track 68** —————> **track 5** of the air flow sensor
computer **track 49** —————> **track 2** of the air flow sensor

Repair if necessary.

If the fault persists, **replace** the air flow sensor.

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

Fault finding - Interpretation of faults

DF029 PRESENT OR STORED	<u>POWER ASSISTED STEERING RELAY CONTROL CIRCUIT</u> CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after starting the engine or running command: AC036 Power-assisted steering relay.
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Check the condition of the clips of the power assisted steering relay on the engine fuse and relay board (see diagrams of the vehicle's relay plate). Replace the clips if necessary.
With the ignition on , check the presence of +12 V on track 3 and on track 1 of the power-assisted steering relay (see vehicle diagrams). Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer track 81 —————→ track 2 of the power-assisted steering relay. Repair if necessary.
Check the resistance value of the relay by measuring between: Track 1 and track 2 of the power-assisted steering relay and replace the relay if the resistance is not approximately: 80 Ω ± 5 Ω at 25°C .
If the fault persists, replace the power assisted steering relay.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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DIESEL INJECTION

Fault finding - Interpretation of faults

DF045 PRESENT OR STORED	<u>PREHEATING RELAY CONTROL CIRCUIT</u> CC.1 : SHORT CIRCUIT TO +12 V CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH 1.DEF : SIGNAL INCONSISTENCY
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NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after preheating is started or after running command: AC010 Preheating relay.
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CO.0 CC.1	NOTES	Apply this diagnostic only in the case of a fault present with CO.0 or CC.1 .
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Check the condition of the clips of the preheating relay. Replace the clips if necessary.
Check the presence of +12 volts before ignition on track 3 of the preheating relay. Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer track 42 —————▶ track 8 of the preheating relay Repair if necessary.
Check the resistance value of the relay by measuring between: Track 8 and track 3 of the preheating relay and replace the relay if the resistance is not approximately: 1300 Ω ± 100 Ω at 25°C .
If the fault persists, replace the preheating relay.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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DIESEL INJECTION

Fault finding - Interpretation of faults

DF045 CONTINUED 1	
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1.DEF	NOTES	Only apply this fault finding procedure if a fault is present with 1.DEF
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Check **the condition of the clips** of the preheating relay.
Replace the clips if necessary.

Check the **presence of +12 volts before ignition** on track 3 of the preheating relay.
Repair if necessary.

Connect the terminal in place of the computer and check the insulation, continuity and absence **of interference resistance** of the connections:

computer **track 42** —→ **track 8** of the preheating relay
computer **track 33** —→ **track 9** of the preheating relay

Repair if necessary.

Disconnect the preheating relay and check **the insulation, continuity and absence of interference resistance** on the following connections:

preheating relay **track 6** —→ heater plug **N°1**
preheating relay **track 7** —→ heater plug **N°2**
preheating relay **track 1** —→ heater plug **N°3**
preheating relay **track 2** —→ heater plug **N°4**

Repair if necessary.

Check **the resistance value** of the relay by measuring between:
Track 8 and **track 3** of the preheating relay and replace the relay if the resistance is not approximately: **1300 Ω ± 100 Ω** at **25°C**.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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Fault finding - Interpretation of faults

DF045

CONTINUED 2

Ensure the pre-heater plugs are **working correctly** by starting the command "**AC010** preheating relay". Using an amps clamp, check that the control voltage is the same on the four plug leads or by ensuring that the plugs heat up correctly by checking visually (plugs removed), or by touching the plugs (warning: do not run the command more than once as the plugs may be damaged and burns may result if touched).

Replace the faulty plug or plugs.

If these checks do not resolve the problem, **replace** the preheating relay.

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

Fault finding - Interpretation of faults

DF048 PRESENT OR STORED	<u>LOW SPEED GMV CIRCUIT</u> CC.1 : SHORT CIRCUIT TO +12 V CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH
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NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after running command: AC011 Low-speed fan assembly relay.
	Priorities when dealing with a number of faults: – Deal with fault DF125 Main relay control circuit first if it is present or stored.

Check the condition of the clips of the low-speed fan assembly relay on the engine fuse and relay board (see relay board diagrams for the vehicle concerned). Replace the clips if necessary.
With the ignition on , check the presence of +12 V on track 3 and track 1 of the low-speed fan assembly relay (see diagrams for the vehicle concerned). Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer track 60 —————→ track 2 of the low-speed fan assembly relay Repair if necessary.
Check the resistance value of the low-speed fan assembly relay by measuring across: Track 1 and track 2 of the relay and replace the relay if its resistance is not approximately: 80 Ω ± 5 Ω at 25°C .
If the fault persists, replace the low-speed fan assembly relay.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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DIESEL INJECTION

Fault finding - Interpretation of faults

**DF051
PRESENT
OR
STORED**

BRAKE PEDAL SWITCH CIRCUIT

1.DEF: CONSISTENCY OF BRAKE SIGNAL WITH REDUNDANT SWITCH

NOTES

Conditions for applying fault finding procedures to stored faults

The fault is declared present following: ten successive depressions of the brake pedal.

Check **the connection and condition** of the brake pedal switch connector.
Repair if necessary.

Ensure **correct adjustment** of the brake pedal switch (refer to Repair methods).

With the ignition on, check for **the presence of +12 volts** on the brake pedal switch by measuring between earth and tracks: **A1** and on track **B1**.
Repair if necessary.

Connect the bornier in place of the computer and check **the insulation, continuity and absence of interference resistance** of the connections:

computer **track 46** —————> **track A3** of the brake light switch
computer **track 65** —————> **track B3** of the brake light switch

Repair if necessary.

Disconnect the connector of the brake pedal sensor and check **the condition of the contacts** using an ohmmeter.

Replace the sensor brake pedal if it does not function as follows:

Pedal at rest

insulation between tracks A1 and B3
continuity between tracks B1 and A3

Pedal depressed

continuity between tracks A1 and B3
insulation between tracks B1 and A3

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

Fault finding - Interpretation of faults

<p>DF058 PRESENT</p>	<p><u>SENSOR REFERENCE VOLTAGE</u> 1.DEF: BELOW MINIMUM THRESHOLD. 2.DEF: ABOVE MAXIMUM THRESHOLD.</p>
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<p>NOTES</p>	<p>Priorities when dealing with a number of faults: – Deal with faults DF019 Air flow sensor circuit, DF071 Pedal sensor circuit, gang 1, DF073 Pedal sensor circuit, gang 2, DF113 Refrigerant pressure sensor circuit and DF027 EGR solenoid valve circuit first if they are present or stored.</p>
	<p>Special notes: No other fault must be present.</p>

<p>Replace the diesel injection computer.</p>
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<p>AFTER REPAIR</p>	<p>Clear the fault memory. Reconfigure the computer according to the options fitted to the vehicle. Deal with any other faults.</p>
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DIESEL INJECTION

Fault finding - Interpretation of faults

**DF068
PRESENT**ENGINE IMMOBILISER LINE

- 1.DEF: NO SIGNAL
- 2.DEF: SIGNAL INCONSISTENCY

NOTES

None.

Perform a **fault finding procedure on the multiplex network** in order to ascertain if there are any faulty multiplex connections.

Repair if necessary (refer to the fault finding technical note for the multiplex network).

Using the diagnostic tool, check the UCH and ensure that its **immobiliser code has been programmed correctly**.

Reconfigure the UCH if necessary.

Carry out a starting test: if the vehicle does not start, **switch off the ignition and wait 15 seconds** (self-supply period of the computer) then try to start the engine again.

If the fault persists, repeat the operation three times.

If the vehicle still will not start, **replace the injection computer** to see whether the fault is caused by the inability to unlock the computer.

AFTER REPAIR

Clear the fault memory.
Deal with any other faults.

Fault finding - Interpretation of faults

DF071 PRESENT OR STORED	PEDAL SENSOR CIRCUIT TRACK 1 CC.1 : SHORT CIRCUIT TO +12 V CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH 1.DEF : SIGNAL INCONSISTENCY 2.DEF : SENSOR SUPPLY FAULT
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NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared as present following: action on the accelerator pedal.
	Priorities when dealing with a number of faults: – Deal first with the DF058 sensor reference voltage fault if it is present or stored.
	Special notes: The supply to the pedal sensor gang 1 is shared by the air flow sensor (computer internal connection) and the EGR feedback potentiometer (track shared by the air flow sensor) and therefore a pedal sensor gang 1 supply fault is often associated with an air flow sensor supply fault. NOTE: disconnecting the sensors during a fault finding procedure (with the ignition on) to check the supplies causes faults to be relayed back to the diagnostic tool (e.g.: disconnecting the air flow sensor relays back an open circuit on the air temperature sensor). These additional faults should therefore be ignored and erased after the repair.

2.DEF	NOTES	Only apply this fault finding procedure if a fault is present with 2.DEF .
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Check **the connection and condition** of the pedal sensor connector (on the accelerator pedal).
Change the connector if necessary.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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DIESEL INJECTION

Fault finding - Interpretation of faults

DF071 CONTINUED 2	
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CC.1 CO.0 1.DEF	NOTES	Apply this fault finding procedure only in the event of a fault present with CC.1 , CO.0 or 1.DEF .
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Check the **connection and condition** of the pedal potentiometer connector.
Change the connector if necessary.

Make sure that the accelerator pedal moves the potentiometer correctly from the minimum end stop to the maximum end stop.

Connect the terminal in place of the computer and check the insulation, continuity and absence **of interference resistance** of the connections:

computer **track 50** —————> **track 2** of the pedal potentiometer gang 1
computer **track 69** —————> **track 3** of the pedal potentiometer gang 1
computer **track 12** —————> **track 4** of the pedal potentiometer gang 1

Repair if necessary.

Check **the resistance value** of pedal potentiometer N°1 by measuring between:
Track 2 and **track 4** of the potentiometer and replace the potentiometer if its resistance is not approximately: **1.2 kΩ ± 480 Ω** at 20°C.

If the fault persists, **replace** the pedal potentiometer.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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Fault finding - Interpretation of faults

DF073 PRESENT OR STORED	<u>PEDAL SENSOR CIRCUIT GANG 2</u> CC.1 : SHORT CIRCUIT TO +12 V CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH 1.DEF : SENSOR SUPPLY FAULT
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NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared as present following: action on the accelerator pedal.
	Priorities when dealing with a number of faults: – Deal first with the DF058 sensor reference voltage fault if it is present or stored.
	Special notes: The supply to pedal sensor gang 2 is shared by the refrigerant pressure sensor (computer internal connection) and therefore a pedal sensor gang 2 supply fault is often associated with a refrigerant pressure sensor supply fault. NOTE: disconnecting the sensors during a fault finding procedure (with the ignition on) to check the supplies causes faults to be relayed back to the diagnostic tool (e.g.: disconnecting the pedal sensor causes an open circuit of the pedal sensor circuit gang 1). These additional faults should therefore be ignored and cleared after the repair.

1.DEF	NOTES	Only apply this fault finding procedure if a fault is present with 1.DEF .
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Check **the connection and condition** of the pedal sensor connector (on the accelerator pedal).
Change the connector if necessary.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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Fault finding - Interpretation of faults

DF073

CONTINUED 1

Disconnect the accelerator pedal sensor and check the presence of a **5 volt supply** on **track 5** of the sensor.

If there is no supply, connect the bornier in place of the computer and check **the insulation, continuity and absence of interference resistance** of the connection:

computer **track 31** —————▶ **track 5** of the pedal sensor gang 2

Repair if necessary.

If the supply is still not present or if the line (**track 31**) is connected to earth or to +12 volts, disconnect the refrigerant pressure sensor connector then connect the bornier in place of the computer and check **the insulation, continuity and absence of interference resistance** of the connection:

computer **track 94** —————▶ **track B** of the refrigerant pressure sensor

Repair if necessary.

If the supply is not present on **track 5** of the pedal sensor gang 2 (pedal sensor and refrigerant pressure sensor disconnected) and if the previously checked connections are correct, connect the two components in turn to find out which one causes the voltage to drop: replace the faulty component.

If these tests did not restore the 5 volt supply to the pedal sensor gang 2:
Replace the computer.

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

DIESEL INJECTION

Fault finding - Interpretation of faults

DF073 CONTINUED 2	
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CC.1 CO.0	NOTES	Apply this diagnostic procedure only in the case of a fault present with CC.1 or CO.0 .
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Check **the connection and condition** of the connector of the accelerator pedal sensor.

Change the connector if necessary.

Make sure that the accelerator pedal moves the potentiometer correctly from the minimum end stop to the maximum end stop.

Connect the terminal in place of the computer and check the insulation, continuity and absence **of interference resistance** of the connections:

computer **track 31** —→ **track 5** of the pedal potentiometer gang 2
computer **track 70** —→ **track 6** of the pedal potentiometer gang 2
computer **track 51** —→ **track 1** of the pedal potentiometer gang 2

Repair if necessary.

Check **the resistance value** of pedal potentiometer N°2 by measuring between: **Track 1** and **track 5** of the potentiometer and replace the potentiometer if its resistance is not approximately: **1.7 kΩ ± 680 Ω** at 20°C.

If the fault persists, **replace** the pedal potentiometer.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
--------------	--

DIESEL INJECTION

Fault finding - Interpretation of faults

13**DF085
PRESENT**AFTER IGNITION KEY SIGNAL
1.DEF : SIGNAL INCONSISTENCY**NOTES**

None.

Connect the terminal in place of the computer and check the insulation, continuity and absence of **interference resistance** of the connections:

computer **track 37** —————> **+ After ignition feed** (see engine fuse board diagrams)
computer **track 4** —————> **earth**
computer **track 5** —————> **earth**

Repair if necessary.

If the previously checked connections are correct but if there is no supply on **track 37** of the computer, check the condition of **fuse F5** on the engine fuse board.
Replace it if necessary.

If the supply is still not present on **track 37** of the computer, check that the 12 volt after ignition feed is reaching **fuse F5**.
Repair if necessary (see diagrams).

AFTER REPAIR

Clear the fault memory.
Deal with any other faults.

Fault finding - Interpretation of faults

DF094 PRESENT OR STORED	<u>THERMOPLUNGER N° 1 RELAY</u> CC.0 : SHORT CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after the thermoplungers have operated (engine cold) or after running command AC301 Thermoplunger N° 1 relay.
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Check the condition of the clips of the thermoplunger N° 1 relay on the engine fuse and relay board (see the engine relay board diagrams). Replace the clips if necessary.
With the ignition switched on, check the presence of +12 volts on track 3 and track 1 of the thermoplunger N° 1 relay. Repair if necessary (see wiring diagrams for the vehicle concerned).
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer track 21 —————→ track 2 of the thermoplunger N° 1 relay Repair if necessary.
Check the resistance value of the thermoplunger N° 1 relay by measuring between: Track 1 and track 2 of the relay and replace the relay if its resistance is not approximately: 80 Ω ± 5 Ω at 25°C.
If the fault persists, replace the thermoplunger N° 1 relay.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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Fault finding - Interpretation of faults

DF104 PRESENT OR STORED	<u>THERMOPLUNGER RELAY N° 2</u> CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after the thermoplungers have operated (engine cold) or after running command AC302 Thermoplunger N° 2 relay.
Check the condition of the clips of the thermoplunger N° 2 relay on the engine fuse and relay board (see the engine relay board diagrams). Replace the clips if necessary.	
With the ignition switched on, check the presence of +12 volts on track 3 and track 1 of the thermoplunger N° 2 relay. Repair if necessary (see wiring diagrams for the vehicle concerned).	
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer track 40 —————> track 2 of the thermoplunger N° 2 relay Repair if necessary.	
Check the resistance value of the thermoplunger N° 2 relay by measuring between: Track 1 and track 2 of the relay and replace the relay if its resistance is not approximately: 80 Ω ± 5 Ω at 25°C.	
If the fault persists, replace the thermoplunger N° 2 relay.	

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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Fault finding - Interpretation of faults

DF111 PRESENT OR STORED	<u>COLD LOOP AIR CONDITIONING RELAY CONTROL CIRCUIT</u> CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after starting the engine and switching on the air conditioning or running command AC599 Air conditioning compressor.
	Special notes: To run command AC599 Air conditioning compressor, the air conditioning control panel must be switched on along with the passenger compartment ventilation.

Check the condition of the clips of the air conditioning cold loop relay on the engine fuse and relay board (see the vehicle relay board diagrams). Replace the clips if necessary.
With the ignition switched on, check the presence of +12 volts on track 3 and track 1 of the air conditioning cold loop relay. Repair if necessary (see vehicle wiring diagrams).
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer track 29 —————> track 2 of the air conditioning cold loop relay Repair if necessary.
Check the resistance value of the air conditioning cold loop relay by measuring between: Track 1 and track 2 of the relay and replace the relay if its resistance is not approximately: 80 Ω ± 5 Ω at 25°C.
If the fault persists, replace the air conditioning cold loop relay.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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Fault finding - Interpretation of faults

DF113 PRESENT	REFRIGERANT PRESSURE SENSOR CIRCUIT CC.0 : SHORT CIRCUIT TO EARTH 1.DEF : PRESSURE TOO LOW 2.DEF : SENSOR SUPPLY FAULT
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NOTES	Priorities when dealing with a number of faults: – Deal first with the DF058 sensor reference voltage fault if it is present or stored.
	Special notes: The supply to the refrigerant pressure sensor is shared by the pedal sensor gang 2 (computer internal connection) and therefore a refrigerant pressure sensor supply fault is often associated with a pedal sensor gang 2 supply fault. NOTE: disconnecting the sensors (with the ignition on) during a fault finding procedure to check the supplies causes faults to be relayed back to the diagnostic tool (e.g.: disconnecting the pedal sensor causes an open circuit of the pedal sensor circuit gang 1). These additional faults should therefore be ignored and cleared after the repair.

2.DEF	NOTES	Only apply this fault finding procedure if a fault is present with 2.DEF .
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Check the connection and condition of the coolant pressure sensor connector. Change the connector if necessary.
Disconnect the refrigerant pressure sensor and check that there is a 5 volt supply on track B of the sensor. If there is no supply, connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connection: computer track 94 —————> track B of the refrigerant pressure sensor Repair if necessary.

AFTER REPAIR	Clear the fault memory. Deal with any other faults.
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Fault finding - Interpretation of faults

DF113

CONTINUED 1

If the supply is still not present or if the line (**track 94**) is earthed or at +12 volts. Disconnect the accelerator pedal sensor then connect the bornier in place of the computer and check **the insulation, continuity and absence of interference resistance** of the connection:

computer **track 31** —————▶ **track 5** of the pedal sensor gang 2

Repair if necessary.

If the supply is not present on **track B** of the refrigerant pressure sensor (refrigerant pressure sensor and pedal sensor disconnected) and if the previously checked connections are correct, connect the two components in turn to find out which one causes the voltage to drop: replace the faulty component.

If these tests did not restore the 5 volt supply to the refrigerant pressure sensor, **replace the computer**.

CC.0

NOTES

Apply this diagnostic procedure only in the case of a fault present with **CC.0**.

Check the **connection and condition** of the coolant pressure sensor connector. Change the connector if necessary.

Connect the terminal in place of the computer and check the insulation, continuity and absence **of interference resistance** of the connections:

computer **track 89** —————▶ **track A** of the refrigerant pressure sensor

computer **track 94** —————▶ **track B** of the refrigerant pressure sensor

computer **track 97** —————▶ **track C** of the refrigerant pressure sensor

Repair if necessary.

If the fault persists, **replace** the refrigerant fluid pressure sensor.

AFTER REPAIR

Clear the fault memory.
Deal with any other faults.

DIESEL INJECTION

Fault finding - Interpretation of faults

DF113 CONTINUED 2	
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1.DEF	NOTES	Only apply this fault finding procedure if a fault is present with 1.DEF.
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Check the **connection and condition** of the coolant pressure sensor connector.
Change the connector if necessary.

View parameter **PR192** Refrigerant pressure and ensure that the pressure is greater than 2 bar (compressor operation inhibited as safety function).

If the pressure is less than 2 bar, connect the bornier in place of the computer and check **the insulation, the continuity and the absence of interference resistance** on the following connections:

computer track 89	→	track A of the refrigerant pressure sensor
computer track 94	→	track B of the refrigerant pressure sensor
computer track 97	→	track C of the refrigerant pressure sensor

Repair if necessary.

If the connections are correct, ensure that the air conditioning system is **correctly filled** (see air conditioning fault finding) and that the system does not have any **refrigerant leaks**.
Repair leaks or refill the system with refrigerant fluid if necessary.

If the fault persists, **replace** the refrigerant fluid pressure sensor.

AFTER REPAIR	Clear the fault memory. Deal with any other faults.
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Fault finding - Interpretation of faults

DF125 PRESENT OR STORED	MAIN RELAY CONTROL CIRCUIT 1.DEF: RELAY CUT OUT TOO LATE
NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after: starting the engine, switching off the engine and the + after ignition feed, waiting for the end of the computer self-supply period, and then switching the ignition on again.
<p>Check the condition of the clips of the main relay on the engine fuse and relay plate (see vehicle relay plate diagrams). Replace the clips if necessary.</p>	
<p>Check for the presence of +12 volts before ignition on track 3 and track 1 of the main relay. If there is no supply, check the insulation, the continuity and the absence of interference resistance on the following connections:</p> <div><div>main relay track 1</div><div>main relay track 3</div><div>impact sensor track 1</div></div> <div><div>→</div><div>→</div><div>└→</div></div> <div><div>track 3 of the impact sensor</div><div>+ before ignition (see vehicle diagrams)</div></div>	
<p>If the connections are correct but the supply is still not present on track 1 of the main relay, ensure that the impact sensor is working correctly by checking the continuity between tracks 1 and 3 using an ohmmeter. If there is no continuity (impact sensor triggered), replace the impact sensor.</p>	
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <div>computer track 18 → track 2 of the main relay</div> <p>Repair if necessary.</p>	
<p>Check the resistance value of the main relay by measuring between: track 1 and track 2 of the relay and replace the relay if its resistance is not approximately: 80 Ω ± 5 Ω at 25°C.</p>	
<p>If the fault persists, replace the main relay.</p>	
AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.

DIESEL INJECTION

Fault finding - Interpretation of faults

DF126 PRESENT OR STORED	<u>FUEL FLOW ACTUATOR CIRCUIT</u> 1.DEF: POSITIVE LOOP DEVIATION 2.DEF: NEGATIVE LOOP DEVIATION
NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after an engine speed greater than 1200 rpm.
	Priorities when dealing with a number of faults: – Deal with faults DF145 Fuel flow controller and DF125 Main relay control circuit first if they are present or stored.
	Special note: A deviation on the positive loop will lead to a lack of power whilst a deviation on the negative loop will cause the engine to stop. Replacing the fuel flow actuator requires the pump to be adjusted internally on a diesel injection bench.
Check the connection and condition of the black 7-track connector of the injection pump. Change the connector if necessary.	
With the ignition on, check for the presence of a 12 volt supply on track 7 of the black 7-track connector of the injection pump. If there is no supply, check the insulation, continuity and absence of interference resistance on the following connection: black 7-track connector of the pump track 7 —————> track 5 of the main relay Repair if necessary.	
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer track 116 ———> track 4 of the black 7-track connector of the pump (actuator control) computer track 121 ———> Repair if necessary.	
AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.

DF126

CONTINUED

If the fault persists, connect the bornier in place of the computer and check **the insulation, continuity and absence of interference resistance** of the connections:

computer track 100	→	track 1 of the black 7-track connector of the injection pump
computer track 108	→	(flow slide valve reference)
computer track 99	→	track 2 of the black 7-track connector of the injection pump
computer track 107	→	(flow slide valve position measurement)
computer track 106	→	track 3 of the black 7-track connector of the injection pump
		(flow slide valve mid point)

Repair if necessary.

Check **the resistance value** of the flow actuator by measuring between:

Track 4 and **track 7** of the injection pump black 7-track connector and replace the fuel flow actuator (see notes above) if its resistance is not approximately: **0.4 Ω** to **1 Ω** (take the resistance of the multimeter wires into account).

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

Fault finding - Interpretation of faults

DF139 PRESENT OR STORED	<u>INJECTION ADVANCE SENSOR</u> 1.DEF: POSITIVE LOOP DEVIATION 2.DEF: NEGATIVE LOOP DEVIATION
NOTES	Priorities when dealing with a number of faults: – Deal with faults DF005 Needle lift sensor circuit and DF125 Main relay control circuit first if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after starting the engine then accelerating under no load to between 1500 and 4500 rpm.
	Special notes: The computer uses the needle lift sensor as an injection advance actuator repeat signal, the combination of the two components forms the injection advance sensor circuit.
Check the connection and condition of the black 3-track connector of the injection pump. Change the connector if necessary.	
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer track 114 —————> track 1 of the black 3-track connector of the injection pump Repair if necessary. (advance actuator control)	
With the ignition on, check the presence of a 12 volt supply on track 2 of the black 3-track connector of the injection pump. If there is no supply, check the insulation, continuity and absence of interference resistance on the following connection: track 2 of the black 3-track connector of the pump —————> track 5 of the main relay Repair if necessary.	
AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.

DIESEL INJECTION

Fault finding - Interpretation of faults

DF139

CONTINUED

Check the **resistance value** of the advance solenoid valve by measuring between:
Track 1 and **track 2** of the injection pump black 3-track connector and replace the injection advance actuator if its resistance is not approximately: **10.3 Ω to 17.3 Ω at 20°C**.

If the fault persists, check the **connection and condition** of the connector of the needle lift sensor.
Repair if necessary.

Connect the terminal in place of the computer and check the insulation, continuity and absence of **interference resistance** of the connections:

computer **track 101** \longrightarrow **track 2** of the needle lift sensor
computer **track 109** \longrightarrow **track 1** of the needle lift sensor

Repair if necessary.

Check the **resistance value** of the sensor by measuring between:
Track 1 and **track 2** of the needle lift sensor and replace the sensor if the resistance is not approximately:
100 Ω \pm 10 Ω at 25°C.

If the fault persists, **replace** the injection advance actuator.

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

DIESEL INJECTION

Fault finding - Interpretation of faults

**DF140
PRESENT****ADVANCE ACTUATOR CONTROL**

CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH
CC.1 : SHORT CIRCUIT TO +12 V

NOTES

None.

Check **the connection and condition** of the black 3-track connector of the injection pump.
Change the connector if necessary.

Connect the bornier in place of the computer and check the **insulation, continuity and absence of interference resistance** on the following connection:

computer **track 114** —————> **track 1** of the black 3-track connector of the injection pump

Repair if necessary.

(advance actuator control)

With the ignition on, check the presence of a **12 volt** supply on **track 2** of the black 3-track connector of the injection pump.

If there is no supply, check the **insulation, continuity and absence of interference resistance** on the following connection:

black 3-track connector of the pump **track 2** —————> **track 5** of the main relay

Repair if necessary.

Check **the resistance value** of the advance solenoid valve by measuring between:

Track 1 and **track 2** of the injection pump black 3-track connector and replace the injection advance actuator if its resistance is not approximately: **10.3 Ω to 17.3 Ω at 20°C**.

If the fault persists, **replace** the injection advance actuator.

AFTER REPAIR

Clear the fault memory.
Deal with any other faults.

Fault finding - Interpretation of faults

DF149 PRESENT	FUEL FLOW SENSOR CIRCUIT CC : SHORT CIRCUIT 1.DEF : PARAMETER AT MAXIMUM LIMIT. 2.DEF : PARAMETER AT MINIMUM LIMIT. 3.DEF : INTERNAL ELECTRONIC FAULT
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NOTES	Special notes: The fault finding procedure for this controller is performed at a diesel fuel temperature greater than 10°C with a battery voltage greater than 10.5 volts. Replacing the fuel flow actuator and its sensor requires the pump to be adjusted internally on a diesel injection bench.
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Check **the connection and condition** of the black 7-track connector of the injection pump.
Change the connector if necessary.

If the fault persists, connect the bornier in place of the computer and check **the insulation, continuity and absence of interference resistance** of the connections:

computer track 100	→	track 1 of the black 7-track connector of the injection pump
computer track 108	→	(flow slide valve reference)
computer track 99	→	track 2 of the black 7-track connector of the injection pump
computer track 107	→	(flow slide valve position measurement)
computer track 106	→	track 3 of the black 7-track connector of the injection pump
		(flow slide valve mid point)

Repair if necessary.

Check **the resistance values** of the flow controller by measuring across:

Track 1 and track 3 of the injection pump black 7-track connector: **4.9 Ω to 6.5 Ω**.

Track 2 and track 3 of the injection pump black 7-track connector: **4.9 Ω to 6.5 Ω**.

If the resistances of the flow actuator are not within these value ranges, replace the fuel flow actuator / sensor assembly (see notes above).

AFTER REPAIR	Clear the fault memory. Deal with any other faults.
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DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only carry out this conformity check after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test conditions: engine stopped, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
1	Computer supply	ET001: Computer + after ignition feed	ACTIVE	In the event of a fault: Apply the fault finding procedure for the charging circuit.
		PR004: computer supply voltage	11.8 < X < 13.2 v	
2	Engine immobiliser	ET003: engine immobiliser	INACTIVE	If active apply the fault finding procedure for the immobiliser system.
3	Accelerator pedal	PR092: pedal load (gang 1)	no load: X = 0% full load: X = 100%	In the event of a fault: Apply the fault finding procedure for faults on the pedal sensor circuit, gang 1 and gang 2 (DF071 and DF073).
		PR093: pedal load (gang 2)	no load: X = 0% full load: X = 100%	
		PR242: computed accelerator pedal position	no load: X = 0% full load: X = 100%	
		PR008: pedal potentiometer voltage gang 1	X = 5 volts (± 0.2 volts)	
		ET159: accelerator and brake pedal safety	INACTIVE, (ACTIVE if one pedal is depressed, then the other immediately afterwards)	For more information: refer to the fault finding procedure for status ET159 .

DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only carry out this conformity check after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test conditions: engine stopped, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
4	Fuel	ET160: fuel cut-off solenoid	ACTIVE for 30 seconds after the ignition is switched on, then INACTIVE .	In the event of a fault: Apply the fault finding procedure for the electrical solenoid circuit fault (DF014)
		PR248: advance actuator	X = 95%	In the event of a fault: Apply the fault finding procedure for the advance actuator control fault (DF140).
5	Indicator lights	ET008: Overheating warning light	ACTIVE for 3 seconds when the ignition is switched on then INACTIVE (the warning light remains active for a level 2 injection fault).	In the event of a fault: Refer to the fault finding procedure for status ET008 .
		ET125: preheating/fault warning light	ACTIVE during the preheating phase then INACTIVE (the warning light remains active for a level 1 injection fault).	In the event of a fault: refer to the fault finding procedure for status ET125 .
6	Gas recirculation	PR125: EGR solenoid valve control	X = 5%	In the event of a fault: Apply the fault finding procedure for the EGR solenoid valve circuit fault (DF027).

DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only carry out this conformity check after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test conditions: engine stopped, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
7	Switches	ET013: brake switch N°1 signal	ACTIVE when the pedal is pressed INACTIVE if not.	In the event of a fault: Apply the fault finding procedure for the brake pedal switch circuit fault (DF051).
		ET014: brake switch N°2 signal	ACTIVE when the pedal is pressed INACTIVE if not.	
8	Relays	ET037: low-speed fan assembly relay control	INACTIVE	In the event of a fault: Apply the fault finding procedure for the low- speed fan assembly circuit fault (DF048).
		ET038: high-speed fan assembly relay control	INACTIVE	In the event of a fault: Apply the fault finding procedure for status ET038 .
		ET025: power steering relay control	INACTIVE	In the event of a fault: Apply the fault finding procedure for the power assisted steering relay control circuit fault (DF029).

DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only carry out this conformity check after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test conditions: engine stopped, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
8	Relays (continued)	ET106: thermoplunger N°1 relay control	INACTIVE	In the event of a fault: Apply the fault finding procedure for the thermoplunger N°1 relay fault (DF94).
		ET107: thermoplunger N°2 relay control	INACTIVE	In the event of a fault: Apply the fault finding procedure for the thermoplunger N°2 relay fault (DF104).
		ET027: pre/postheating relay control	ACTIVE during the preheating phase, then INACTIVE	In the event of a fault: Apply the fault finding procedure for the preheating relay control circuit fault (DF104).

DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only check the conformity after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test application conditions: engine warm at idling speed, without electrical consumers.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
1	Computer supply	ET001: Computer + after ignition feed	ACTIVE	In the event of a fault: Apply the fault finding procedure for the charging circuit.
		PR004: computer supply voltage	12 < X < 14.5 V	
2	Engine immobiliser	ET003: engine immobiliser	INACTIVE	If active apply the fault finding procedure for the immobiliser system.
3	Coolant temperature sensor	PR002: Coolant temperature	X = engine temperature ± 5°C (substitution value: 105°C)	In the event of a fault: Apply the fault finding procedure for the coolant temperature sensor circuit fault (DF002).
4	Air temperature sensor	PR003: Air temperature	X = temperature under bonnet ± 5°C (substitution value: 19.66°C)	In the event of a fault: Apply the fault finding procedure for the air temperature sensor circuit fault (DF022).
5	Airflow	PR050: airflow measurement	200 < X < 520 mg/st.	In the event of a fault: Apply the fault finding procedure for the air flow sensor circuit fault (DF019).
		PR025: air flowmeter supply voltage	X = 5 volts (± 0.2 V)	
		PR016: atmospheric pressure	X = atmospheric pressure (substitution value: 1024 hPa)	If the pressure does not vary (remains stuck on its substitute value): replace the computer.

DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only check the conformity after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test application conditions: engine warm at idling speed, without electrical consumers.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
6	Accelerator pedal	PR092: pedal load (gang 1)	no load: X = 0% full load: X = 100%	In the event of a fault: Apply the fault finding procedure for faults on the pedal sensor circuit, gang 1 and gang 2 (DF071 and DF073).
		PR093: pedal load (gang 2)	no load: X = 0% full load: X = 100%	
		PR242: computed accelerator pedal position	no load: X = 0% full load: X = 100%	
		PR008: pedal potentiometer voltage gang 1	X = 5 volts ($\pm 0.2 \text{ V}$)	
		ET159: accelerator and brake pedal safety	INACTIVE (ACTIVE if one pedal is depressed, then the other immediately afterwards)	In the event of a fault: refer to the fault finding procedure for status ET159 .
7	Air conditioning	PR192: refrigerant fluid pressure	2 < X < 15 bar	In the event of a fault: Apply the fault finding procedure for the refrigerant pressure sensor circuit fault (DF113).
		PR203: refrigerant fluid sensor voltage	X = 5 volts ($\pm 0.2 \text{ V}$)	
		ET006: air conditioning request	INACTIVE	In the event of a fault: refer to the fault finding procedure for status ET006 .
		ET116: air conditioning compressor relay control	INACTIVE	In the event of a fault: Apply the fault finding procedure for the air conditioning cold loop relay control circuit (DF111).

DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only check the conformity after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test application conditions: engine warm at idling speed, without electrical consumers.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
8	Fuel	PR001: Fuel temperature	X = diesel fuel temperature $\pm 5^{\circ}\text{C}$ (substitution value: 44.96°C)	In the event of a fault: Apply the fault finding procedure for the fuel temperature sensor circuit fault (DF021).
		PR033: fuel flow	0.6 < X < 1.1 l/h	None.
		ET160: fuel cut-off solenoid	ACTIVE	In the event of a fault: Apply the fault finding procedure for the electrical solenoid circuit fault (DF014).
		PR248: advance actuator	5% < X < 95%	In the event of a fault: Apply the fault finding procedure for the advance actuator control fault (DF140).
9	Indicator lights	ET008: overheating warning light	INACTIVE (active for a level 2 injection fault)	In the event of a fault: refer to the fault finding procedure for status ET008 .
		ET125: preheating/fault warning light	INACTIVE (active for a level 1 injection fault)	In the event of a fault: refer to the fault finding procedure for status ET125 .

DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only check the conformity after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test application conditions: engine warm at idling speed, without electrical consumers.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
10	engine speed	PR006: engine speed	X = 850 rpm	In the event of a fault: Apply the fault finding procedure for the flywheel signal sensor circuit fault (DF023).
		PR062: engine idling speed reference	X = 850 rpm	None.
		PR018: vehicle speed	X = 0 mph	In the event of a fault: Apply the fault finding procedure for the vehicle speed sensor circuit fault (DF004).
11	Relays	ET106: thermoplunger N°1 relay control	INACTIVE (active if coolant temperature = $5 < X < 85^{\circ}\text{C}$ and air temperature = $2 < X < 7^{\circ}\text{C}$, operation inhibited if the coolant temperature is 0°C due to problems concerning the strength of the metal parts).	In the event of a fault: Apply the fault finding procedure for the thermoplunger N°1 relay fault (DF094).
		ET107: thermoplunger N°2 relay control		In the event of a fault: Apply the fault finding procedure for the thermoplunger N°2 relay fault (DF104).
		ET027: pre-postheating relay control		In the event of a fault: Apply the fault finding procedure for the preheating relay control circuit fault (DF104).

DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only check the conformity after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test application conditions: engine warm at idling speed, without electrical consumers.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
11	Relays (continued)	ET037: low-speed fan assembly relay control	ACTIVE for a coolant temperature above 99°C or when the air conditioning is switched on. INACTIVE for a coolant temperature below 96°C .	In the event of a fault: Apply the fault finding procedure for the low-speed fan assembly circuit fault (DF048).
		ET038: high-speed fan assembly relay control	ACTIVE for a coolant temperature above 102°C or for a freon pressure above 23 bar . INACTIVE for a coolant temperature below 99°C .	In the event of a fault: Apply the fault finding procedure for status ET038 .
		ET025: power steering relay control	ACTIVE	In the event of a fault: Apply the fault finding procedure for the power assisted steering relay control circuit fault (DF029).
12	Gas recirculation	PR125: EGR solenoid valve control	5% < X < 95%	In the event of a fault: Apply the fault finding procedure for the EGR solenoid valve circuit fault (DF027).

DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only check the conformity after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test conditions: engine warm at idling speed with air conditioning operating.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
1	Air conditioning	PR192: refrigerant fluid pressure	3 bar < X < 25 bar (not including jumps when the compressor is started).	In the event of a fault: Apply the fault finding procedure for the refrigerant pressure sensor circuit fault (DF113).
		PR203: refrigerant fluid sensor voltage	X = 5 volts (± 0.2 V)	
		ET006: air conditioning request	ACTIVE	In the event of a fault: refer to the fault finding procedure for status ET006.
		ET116: air conditioning compressor relay control	ACTIVE	In the event of a fault: Apply the fault finding procedure for the air conditioning cold loop relay control circuit (DF111).
2	Engine speed	PR006: engine speed	X = 875 rpm (900 rpm if thermoplungers active 1000 rpm if heated windscreen or heated rear screen active).	In the event of a fault: Apply the fault finding procedure for the flywheel signal sensor circuit fault (DF023).
		PR062: engine idling speed reference		None.

DIESEL INJECTION

Fault finding - Conformity check

NOTES

Only check the conformity after a **complete check** with the diagnostic tool.
(The values indicated in this conformity check are only given as examples).
Test conditions: engine warm at idling speed with air conditioning operating.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
3	Low speed fan assembly relay	ET037: low-speed fan assembly relay control	ACTIVE	In the event of a fault: Apply the fault finding procedure for the low-speed fan assembly circuit fault (DF048).
4	High-speed fan unit relay	ET038: high-speed fan assembly relay control	INACTIVE or ACTIVE if the freon pressure is above 23 bar .	In the event of a fault: Apply the fault finding procedure for status ET038 .

DIESEL INJECTION

Fault finding - Interpretation of statuses

ET006Air conditioning request**NOTES**

There must be no present or stored faults.

Connect the bornier in place of the computer and check: **the insulation**, continuity and absence of interference resistance of the connection:

computer **track 34** —————> air conditioning computer (see air conditioning diagrams for the vehicle).

Repair if necessary.

If the fault persists, **carry out a fault finding procedure on the air conditioning system.**

AFTER REPAIR

Repeat the conformity check from the start.

DIESEL INJECTION

Fault finding - Interpretation of statuses

ET008	<u>Overheating warning light</u>
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NOTES	Special note: the overheating warning light is also used as a severity level 2 injection fault warning light. When the ignition is switched on, this warning light illuminates for 3 seconds to confirm that it is operating correctly.
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When the overheating warning light comes on, you must check that parameter **PR002** Coolant temperature shows a consistent value (see conformity check). If the value exceeds 120°C, this is a genuine case of engine overheating, in which case you must check the cooling circuit and verify correct operation of the cooling fan assemblies by running commands **AC011** Low speed fan assembly relay and **AC012** High speed fan assembly relay.

Carry out any necessary repairs.

If the coolant temperature is correct and if the overheating warning light is on, then the injection has experienced a level 2 fault.

This illumination of the severity level 2 fault light fault means that the injection system has a serious fault requiring the driver or injection computer to stop the engine.

Illumination of this warning light requires an obligatory check of the diesel injection system using the diagnostic tool and correction of the faults reported.

If no faults are shown by the diagnostic tool, refer to the introduction of the **fault warning light management** section to ascertain which components are affected when the level 2 injection fault warning light comes on, in order to work out which fault finding procedure should be carried out.

AFTER REPAIR	Repeat the conformity check from the start.
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ET038	<u>High speed fan assembly relay control</u>
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NOTES	There must be no present or stored faults.
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Check the condition of the clips of the high-speed fan assembly relay on the engine fuse and relay plate (see relay plate diagrams of the vehicle in question). Replace the clips if necessary.
With the ignition switched on , check the presence of +12 volts on track 3 and on track 1 of the high speed fan assembly relay. (track 3 : + battery / track 1 : + after ignition feed coming from track 5 of the main relay). Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the following connection: computer track 62 —————▶ track 2 of the high speed fan assembly relay. Repair if necessary.
Check the resistance value of the high-speed fan assembly relay by measuring between: Track 1 and track 2 of the relay and replace the relay if its resistance is not approximately: 80 Ω ± 5 Ω at 25°C.
If the fault persists, replace the high-speed fan assembly relay.

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

Fault finding - Interpretation of statuses

ET125	<u>Preheating/fault warning light</u>
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NOTES	Special note: The engine preheating warning light is also used as a severity level 1 injection fault warning light.
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During normal operation, the preheating warning light comes on during the preheating phase then goes out.

If the warning light stays lit after the preheating phase (in the parameters screen, status **ET027** Preheating relay control changes to **INACTIVE**), it means that the injection system is affected by a severity level 1 fault. When the severity level 1 fault warning light comes on, it means that the engine is operating in defect mode and is no longer complying with pollution standards, but the customer can continue driving in order to take the vehicle to a garage.

When this warning light comes on, an obligatory check of the diesel injection system is required using the diagnostic tool and correction of the faults reported.

If no faults are shown by the diagnostic tool, refer to the information on **fault warning light management** in the introduction to ascertain which components are affected when the level 1 injection fault warning light comes on, in order to work out which fault finding procedure should be carried out.

AFTER REPAIR	Repeat the conformity check from the start.
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ET159	<u>Accelerator and brake pedal safety</u>
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NOTES	There must be no present or stored faults.
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This status switches to active when the accelerator pedal and brake pedal are depressed at the same time or when one pedal is depressed and then the other.

This status is a safety measure to prevent racing of the engine (example: jamming of the flow valve).

When status **ET159** is active, the engine speed is limited to 1300 rpm.

The injection system returns to normal operation (release of the speed limitation) if both pedals are in the no load position and the engine is at normal idling speed (850 rpm).

AFTER REPAIR	Repeat the conformity check from the start.
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NOTES

Only refer to this customer complaint after a complete check using the diagnostic tool

NO DIALOGUE WITH THE COMPUTER

ALP 1

STARTING PROBLEMS

ALP 2

IDLING SPEED FAULTS

ALP 3

FAULTS WHILE DRIVING

ALP 4

ALP 1	NO DIALOGUE WITH THE COMPUTER
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NOTES	None.
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Try the diagnostic tool on another vehicle.

Check:

- the connection between the diagnostic tool and the diagnostic socket (wiring in good condition),
- the injection, engine and passenger compartment fuses.

Check for the presence of **+ 12 volts before ignition** on **track 16**, **+ 12 volts after ignition** on **track 1** and an **earth** on **tracks 4 and 5** of the diagnostic socket.
Repair if necessary.

Connect the terminal in place of the computer and check the insulation, continuity and absence of **interference resistance** of the connections:

- | | | |
|--------------------------|-------|--|
| computer track 1 | ————→ | track 5 of the main relay (computer self-supply) |
| computer track 2 | ————→ | track 5 of the main relay (computer self-supply) |
| computer track 37 | ————→ | + after ignition (passenger compartment fuse box) |
| computer track 18 | ————→ | track 2 of the main relay (relay control) |
| computer track 4 | ————→ | earth |
| computer track 5 | ————→ | earth |
| computer track 14 | ————→ | track 15 of the diagnostic socket (line L) |
| computer track 16 | ————→ | track 7 of the diagnostic socket (line K) |

Repair if necessary.

AFTER REPAIR	Check with the diagnostic tool.
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DIESEL INJECTION

Fault finding - Fault Finding Chart

ALP 2**STARTING FAULTS**
(starting is difficult or impossible)**NOTES**

Only refer to this customer complaint after a check using the diagnostic tool.

Ensure the conformity of parameter: **PR002** Coolant temperature, as an incorrect reading from the sensor alters or cancels the control of the preheating relay and has an effect on fuel flow management.

If no fault is reported by the diagnostic tool, check that the problem is not associated with an **engine immobiliser system fault** by displaying status **ET003** Immobiliser (see the conformity check).
If necessary run fault finding on the UCH.

Ensure that the starter motor is turning correctly (approximately 250 rpm).

If this is not the case:

- Check the condition of the battery, corrosion and tightness of the terminals.
- Make sure the engine earth strap is in good condition.
- Make sure that the battery lead to the starter motor is in good condition.
- Check the battery charge level.
- Check that the starter motor is operating correctly.

Preheating check:

- Check that the preheating is operating correctly by running command **AC010** Preheating relay using the diagnostic tool. While this command is running, verify the presence of a 12 volt supply to the heater plugs (use a voltmeter or ampermetric clamp on each plug cable).
- If there is no electrical supply to one or several plugs, apply the fault finding procedure for fault: **DF045** Preheating relay control circuit.
- If the plugs are correctly supplied, with the preheating relay connector disconnected, check their resistance ($0.6 \Omega \pm 0.3 \Omega$). Replace any defective plugs.

A**AFTER REPAIR**

Check with the diagnostic tool.

DIESEL INJECTION

Fault finding - Fault Finding Chart

13

ALP 2

CONTINUED 1

A

Fuel supply check:

- Check there is fuel present (fuel gauge faulty).
- Check that the fuel is of the proper type.
- Check that no hoses are pinched (especially after a removal operation).
- Check the condition of the diesel filter and replace if necessary.
- Make sure that the fuel tank breather is not blocked.
- Ensure that there are no air leaks on the diesel supply system.
- Make sure that the impact sensor is operating correctly.

Air supply check:

- Check the condition of the intake ducts (no air leaks, pinching of the air intake pipe etc.).
- Make sure that the air filter is in good condition; replace it if necessary.
- Check that the brake servo is not leaking (air entering).

Speed sensor check:

(if the engine starts and then stalls immediately)

- Remove the engine speed sensor and make sure it has not been rubbing on its target (increase in the air gap). If it has, check the condition of the engine flywheel (buckling or cracks).

Exhaust system check:

- Make sure that the exhaust system is in good condition.
- Remove the catalytic pre-converter and check the condition of the filter element inside (clogging).
- Shake the pre-converter to see whether the filter element is broken (metallic noise), replace it if necessary.

B

AFTER REPAIR

Check with the diagnostic tool.

DIESEL INJECTION

Fault finding - Fault Finding Chart

13

ALP 2

CONTINUED 2

B

Engine condition check:

- Check on the dipstick that the oil level is not too high.
- Make sure that the engine can turn freely.
- Check the cylinder compressions.
- Check the timing.
- Check the injection pump timing (see repair methods).

EGR valve check:

- Jamming of the EGR valve in the fully open position can make it impossible to start the engine; if this occurs, remove the EGR valve and check that it has returned to the closed position.
- If the valve is jammed in the open position, try to release it using a releasing agent.
- If the valve cannot be released, replace it.

AFTER REPAIR

Check with the diagnostic tool.

DIESEL INJECTION

Fault finding - Fault Finding Chart

ALP 3**IDLING SPEED FAULTS****NOTES**

Only refer to this customer complaint after a check using the diagnostic tool.

Ensure the conformity of parameter: **PR002** Coolant temperature, (see conformity check) as an incorrect reading from the sensor has an effect on the flow and advance management of the injection pump.

**Fuel supply check:**

- Check that there is fuel present (fuel gauge faulty).
- Check that the fuel is of the proper type.
- Check that no hoses are pinched (especially after a removal operation).
- Check the condition of the diesel filter and replace if necessary.
- Make sure that the fuel tank breather is not blocked.
- Make sure that there are no air leaks on the diesel supply system.
- Make sure that the impact sensor is operating correctly.

**Air supply check:**

- Check the condition of the intake ducts (no air leaks, pinching of the air intake pipe etc.).
- Make sure that the air filter is in good condition; replace it if necessary.
- Check that the brake servo is not leaking (air entering).

**Speed sensor check:**

- Remove the engine speed sensor and make sure it has not been rubbing on its target (increase in the air gap). If it has, check the condition of the engine flywheel (buckling or cracks).

**Engine condition check:**

- Check on the dipstick that the oil level is not too high.
- Check the cylinder compressions.
- Check the timing.

AFTER REPAIR

Check with the diagnostic tool.

DIESEL INJECTION

Fault finding - Fault Finding Chart

ALP 4

FAULTS WHILE DRIVING

NOTES

Only refer to this customer complaint after a check using the diagnostic tool.

Fuel supply check:

- Check that there is sufficient fuel present (fuel gauge faulty).
- Check that no hoses are pinched (especially after a removal operation).
- Check the condition of the diesel filter and replace if necessary.
- Make sure that the fuel tank breather is not blocked.
- Ensure that there are no air leaks on the diesel supply system.
- Make sure that the impact sensor is operating correctly.



Air supply check:

- Check the condition of the intake ducts (no air leaks, pinching of the air intake pipe etc.).
- Make sure that the air filter is in good condition and not deformed; replace it if necessary.
- Check that the brake servo is not leaking (air entering).



Speed sensor check:

- Remove the engine speed sensor and make sure it has not been rubbing on its target (increase in the air gap). If it has, check the condition of the engine flywheel (buckling or cracks).



Engine condition check:

- Check on the dipstick that the oil level is not too high
- Make sure that the engine cooling system is operating correctly (so that the engine is operating under optimum conditions, neither too cold nor too hot).



A

AFTER REPAIR

Check with the diagnostic tool.

DIESEL INJECTION

Fault finding - Fault Finding Chart

13

ALP 4

CONTINUED

A

EGR valve check:

- Jamming of the EGR valve in the fully open position, or slow valve response due to sticking can cause engine hesitation or reduced performance; if this occurs, remove the EGR valve and check that it has returned to the closed position.
- If the valve is jammed in the open position, try to release it using a releasing agent.
- If the valve cannot be released, replace it.

Exhaust system check:

- Make sure that the exhaust system is in good condition.
- Remove the catalytic converter and check the condition of the filter element inside (clogging).
- Shake the pre-converter to see whether the filter element is broken (metallic noise), replace it if necessary.

Running gear check:

- Check that the wheels turn freely (calipers, drums or bearings not seizing).
- Check the tyre pressures and tread condition (bulges).

AFTER REPAIR

Check with the diagnostic tool.

GENERAL APPROACH TO FAULT FINDING

To carry out a fault finding test on the SAGEM 2000 Vdiag 08 injection system, the following elements are required:

- The wiring diagram for the function on the vehicle concerned,
- Diagnostic tools (except XR 25).
- Multimeter.
- Test bornier: Elé. 1590.

- 1 Using one of the diagnostic tools to identify the system fitted on the vehicle (reading the computer family - "SAGEM 2000 Vdiag 08").

Note: If dialogue cannot be established with the computer, go directly to the "Customer complaints" section and consult ALP 1 "No communication with the computer".

- 2 Locate the Fault finding documents corresponding to the system identified.

- 3 Read the faults stored in the computer memory and use the Interpretation of faults section of the documents.

Reminder: The way in which a fault is interpreted should be considered when using the diagnostic tool after switching the ignition off then back on again.

There are two types of fault interpretation, faults present and faults stored in memory.

- **If the fault is declared present:**

run the diagnostic directly.

- **If the fault is declared "Stored":**

follow the notes for application to a stored fault.

If the fault is not returned as "present", run the diagnostic but do not replace components.

In both cases, complete the fault finding procedure by performing the "After repair" section.

- 4 Performance of the conformity check (*appearance of possible malfunctions not yet declared by the system's self-test procedure*) and application of the relevant fault finding procedures according to results.
- 5 Validation of the repair (elimination of the sections on "Customer complaints" and "Fault finding chart").
- 6 Use of the sections on "Customer complaints" and "Fault finding chart", if the fault persists.

WARNING

Never drive the vehicle without having checked that the computer is not showing any faults relating to the throttle valve.

CHARACTERISTICS OF THE BORNIER

Bornier Elé. 1590 consists of a 112-track fixed connector attached to a printed circuit on which are arranged 112 copper plated areas numbered from 1 to 112.

Using the wiring diagrams, it is easy to identify connections or other parts needing to be checked.

WARNING

- * All checks, using bornier Elé. 1590, must be performed with the battery disconnected.
- * The bornier is designed to be used with an ohmmeter only. Under no circumstances should 12 volts be applied to the test points.

DF002 PRESENT OR STORED	<u>THROTTLE POTENTIOMETER CIRCUIT</u> DEF : Unidentified electrical fault
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NOTES	Important: Do not drive the vehicle until you have checked that the computer is clear of any fault relating to the throttle unit.
	If faults DF125 and DF126 are present, deal with these as a priority. Conditions for applying the fault finding procedure to stored faults: – The fault is declared present after a change in the engine speed.

Check the cleanliness, connection and condition of the connections on the throttle potentiometer. If necessary change the connections.
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p> Computer track G4 connector B —————> Throttle potentiometer Computer track G3 connector B —————> Throttle potentiometer Computer track G2 connector B —————> Throttle potentiometer Computer track D3 connector B —————> Throttle potentiometer </p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
<p>Check the cleanliness of the throttle valve, and that the throttle rotates correctly. Check that gangs 1 and 2 of the throttle potentiometer correctly follow their resistive curves. (See the values in the HELP section). Repair or change the throttle valve if necessary.</p>
If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	<p>If the throttle body has been replaced, all programmed values must be reinitialised ("RZ008").</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – Continue to deal with the fault if it is present. – Ignore the fault if it is stored. Deal with any other faults. <p>Clear the fault memory.</p>
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DF003 PRESENT OR STORED	<u>AIR TEMPERATURE SENSOR CIRCUIT</u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	<u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present following fan activation with the engine running.
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DEF	<p>Check the cleanliness, connection and condition of the sensor and the connector. If necessary change the connections.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p style="margin-left: 40px;"> Computer track E3 connector B —————> Air temperature sensor Computer track E2 connector B —————> Air temperature sensor </p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p> <p>Check the resistance of the air temperature sensor. (See the values in the HELP section). Replace the sensor if necessary.</p> <p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>
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AFTER REPAIR	<p>If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "DEF", continue to process the fault. – If the fault is stored and characterised as "DEF", ignore it. – If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. <p>Deal with any other faults. Clear the fault memory.</p>
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DF003 CONTINUED	
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OBD	NOTES	Make the engine run until fan operation is triggered.
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- If the fault's characterisation has become DEF after the instructions have been followed, the electrical fault has been detected. Accordingly, it should be dealt with as a present fault and characterised as DEF.
- If the fault is still characterised as "OBD" after the instructions have been followed, the electrical fault has been present several times but is no longer detected. Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.
This verification should be based on the DEF characterisation diagnostic.

AFTER REPAIR	If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none">– If the fault is present and characterised as "DEF", continue to process the fault.– If the fault is stored and characterised as "DEF", ignore it.– If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. Deal with any other faults. Clear the fault memory.

DF004 PRESENT OR STORED	<u>COOLANT TEMPERATURE SENSOR CIRCUIT</u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present following fan activation with the engine running.
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DEF	<p>Check the cleanliness, connection and condition of the sensor and the connector. If necessary change the connections.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p style="padding-left: 40px;"> Computer track F2 connector B —————→ Coolant temperature sensor Computer track F4 connector B —————→ Coolant temperature sensor </p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p> <p>Check the resistance of the air temperature sensor. (See the values in the HELP section). Replace the sensor if necessary.</p> <p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>
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AFTER REPAIR	<p>If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "DEF", continue to process the fault. – If the fault is stored and characterised as "DEF", ignore it. – If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. <p>Deal with any other faults. Clear the fault memory.</p>
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DF004 CONTINUED	
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OBD	NOTES	Make the engine run until fan operation is triggered.
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- If the fault's characterisation has become DEF after the instructions have been followed, the electrical fault has been detected. Accordingly, it should be dealt with as a fault present and characterised as DEF.
- If the fault is still characterised as "OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.

Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.

This verification should be based on the DEF characterisation diagnostic.

AFTER REPAIR	If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.
	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none">– If the fault is present and characterised as "DEF", continue to process the fault.– If the fault is stored and characterised as "DEF", ignore it.– If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF005 PRESENT OR STORED	<u>PRESSURE SENSOR CIRCUIT</u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
NOTES	<u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present after: <ul style="list-style-type: none"> – the ignition is switched off and dialogue is lost; – the ignition has been switched on again and dialogue re-established, – 10 seconds at idle speed.
DEF	<p>Check that the manifold pressure sensor is properly fitted. Check that the inlet line is tight, from the throttle to the cylinder. Verify that no seals are defective. Check that the canister bleed is not disconnected nor blocked open. Verify that the manifold air temperature sensor is properly fitted. Check that the resonator is not cracked.</p> <p>Check the cleanliness, connection and condition of the sensor and its connection. Replace any parts if necessary.</p> <p>Using a vacuum pump, check the consistency of the manifold pressure. Check the consistency with parameter PR001 in the diagnostic tool. Replace the sensor if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p style="margin-left: 40px;"> Computer track H2, connector B ————→ Pressure sensor Computer track H3, connector B ————→ Pressure sensor Computer track H4, connector B ————→ Pressure sensor </p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p> <p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>
AFTER REPAIR	<p>If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "DEF", continue to process the fault. – If the fault is stored and characterised as "DEF", ignore it. – If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF005 CONTINUED	
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OBD	NOTES	Make the engine run until fan operation is triggered.
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- If the fault's characterisation has become DEF after the instructions have been followed, the electrical fault has been detected. Accordingly, it should be dealt with as a fault present and characterised as DEF.
 - If the fault is still characterised as "OBD" after the instructions have been followed, the electrical fault has been present several times but is no longer detected. Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.
- This verification should be based on the DEF characterisation diagnostic.

AFTER REPAIR	If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "DEF", continue to process the fault. – If the fault is stored and characterised as "DEF", ignore it. – If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. Deal with any other faults. Clear the fault memory.

PETROL INJECTION

Fault finding - Interpretation of faults

DF006 PRESENT OR STORED	<u>PINKING SENSOR CIRCUIT</u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	<u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present during a road test with the engine warm and high engine speed.
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DEF	Check the conformity of the fuel in the tank.
	Check the conformity of the spark plugs.
	Check the tightness of the pinking sensor.
	Check the cleanliness, connection and condition of the sensor and the connector. Replace any parts if necessary.
	Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: Computer track A2 connector B —————> Pinking sensor Computer track B2 connector B —————> Pinking sensor Computer track C2 connector B —————> Pinking sensor shielding (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
	If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "DEF", continue to process the fault. – If the fault is stored and characterised as "DEF", ignore it. – If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. Deal with any other faults. Clear the fault memory.

DF006 CONTINUED	
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OBD	NOTES	Make the engine run until fan operation is triggered.
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- If the fault's characterisation has become DEF after the instructions have been followed, the electrical fault has been detected. Accordingly, it should be dealt with as a fault present and characterised as DEF.
- If the fault is still characterised as "OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.

Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.

This verification should be based on the DEF characterisation diagnostic.

AFTER REPAIR	If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.
	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none">– If the fault is present and characterised as "DEF", continue to process the fault.– If the fault is stored and characterised as "DEF", ignore it.– If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF008 PRESENT OR STORED	<u>FUEL PUMP RELAY CONTROL CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit on + 12 V DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	<u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present when the ignition is switched on.
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CO.0 CC.1 DEF	<p>Check the supply fuse of the fuel pump relay. Replace the fuse if necessary.</p>
	<p>Check the cleanliness, connection and condition of the petrol pump relay connector. Change the connector if necessary.</p>
	<p>Disconnect the relay. Check the condition and cleanliness of the contacts. With the ignition on, check for the presence of +12 V on track 1 on the connector side of the fuel pump relay. Repair if necessary.</p>
	<p>Check the resistance of the fuel pump relay on tracks 1 and 2. (See the value in the HELP section). Replace the fuel pump relay if necessary.</p>
	<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track D1 connector C —————> Fuel pump relay (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
	<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	<p>If the fault had been characterised as "CO.0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.</p>
	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF008 CONTINUED	
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OBD	NOTES	Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "CO.0, CC.1 or DEF", the electrical fault is detected. Accordingly, it should be dealt with as a present fault characterised as "CO.0, CC.1 or DEF"
- If the fault is still characterised as "OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.

Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.

This check should be based on the fault finding of the characterisations "CO.0, CC.1 or DEF".

AFTER REPAIR	If the fault had been characterised as "CO.0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.
	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none">– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.– If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF009 PRESENT OR STORED	<u>ACTUATOR RELAY CONTROL CIRCUIT</u> DEF : Unidentified electrical fault
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NOTES	<u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present when the ignition is switched on.
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Check the condition and cleanliness of the vehicle's battery and earth leads. Repair if necessary.
Check the two supply fuses of the actuator relay. Replace if necessary.
Check the cleanliness, connection and condition of the actuator relay connector. Change the connector if necessary.
Check the resistance of the actuator relay on tracks 1 and 2 . (See the value in the HELP section). Replace the actuator relay if necessary.
Check for 12 Volts on track 1 on the connector side of the actuator relay. Repair if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Injection computer track D4 connector B —————> Actuator relay. (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.
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DF010 PRESENT	<u>LOW SPEED GMV CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit on + 12 V DEF : Unidentified electrical fault
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NOTES	<i>Deal with fault DF004 first if it is present.</i>
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<p>Check the cleanliness, connection and condition of the low-speed fan assembly relay connector. Change the connector if necessary.</p>
<p>With the ignition on, check for +12 V on track 1 of the relay. Repair if necessary.</p>
<p>Check the resistance of the low speed fan assembly relay on tracks 1 and 2. (See the value in the HELP section). Change the low speed fan relay if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track F1 connector C —————> Low speed fan assembly relay (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	<p>Deal with any other faults. Clear the fault memory.</p>
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DF011 PRESENT OR STORED	<u>FAULT WARNING LIGHT CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts DEF : Unidentified electrical fault
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NOTES	None.
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- Test the multiplex network.
- Refer to the "Multiplex Network" and "Instrument Panel" sections of the Workshop Repair Manual.
- Perform fault finding on the "Instrument panel" system if necessary.

AFTER REPAIR	None.
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DF014 PRESENT OR STORED	CANISTER BLEED SOLENOID VALVE CIRCUIT CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	<p><i>Deal with faults DF009 or DF019 first if they are present.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u></p> <p>The fault is declared present when the ignition is switched on.</p>
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CO.0 CC.1 DEF	<p>Check the cleanliness, connection and condition of the canister drain solenoid valve connector. Change the connector if necessary.</p>
	<p>With the ignition on, check for +12 Volts on the canister bleed solenoid valve. Repair if necessary.</p>
	<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track E1 connector C —————> Canister bleed valve (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
	<p>Check the resistance of the canister bleed solenoid valve. (See the value in the HELP section). Change the solenoid valve if necessary.</p>
	<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	<p>If the fault had been characterised as "CO.0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.</p>
	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF014 CONTINUED	
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OBD	NOTES Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "CO.0, CC.1 or DEF", the electrical fault is detected. Accordingly, it should be dealt with as a present fault characterised as "CO.0, CC.1 or DEF"
- If the fault is still characterised as "OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.

Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.

This check should be based on the fault finding of the characterisations "CO.0, CC.1 or DEF".

AFTER REPAIR	If the fault had been characterised as "CO.0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD" (On Board Diagnostic), ignore it. Deal with any other faults. Clear the fault memory.

<p>DF017 PRESENT OR STORED</p>	<p><u>FLYWHEEL SIGNAL INFORMATION</u></p> <p>1.DEF : Flywheel target fault 2.DEF : No tooth signal 1.OBD : (On Board Diagnostic) OBD fault: engine flywheel target 2.OBD : OBD fault: no flywheel signal</p>
<p>NOTES</p>	<p>The pressure sensor must not be faulty when performing this fault finding test. <u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present after operating the starter motor for 10 seconds or after the engine has been running for 2 minutes.</p>
<p>1.DEF 2.DEF</p>	<p>Check the positioning of the flywheel signal sensor.</p> <p>Check the cleanliness, connection and condition of the sensor, the cable and its connector. Replace any parts if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: <div style="margin-left: 40px;"> Computer track E4 connector B  Flywheel signal sensor Computer track F3 connector B  Flywheel signal sensor </div> (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p> <p>Check the resistance of the flywheel signal sensor (see the value in the HELP section). Replace the sensor if necessary.</p> <p>Check the cleanliness and condition of the flywheel.</p> <p>Note: If the target assembly has been modified, remember to modify the programming.</p> <p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>
<p>AFTER REPAIR</p>	<p>If the fault had been characterised as "1.DEF or 2.DEF", the fault may change characterisation and become "1.OBD or 2.OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "1.DEF or 2.DEF", continue to deal with the fault. – If the fault is stored and characterised as "1.DEF or 2.DEF", ignore it. – If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF017 CONTINUED	
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1.OBD 2.OBD	NOTES	Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "1.DEF or 2.DEF", the electrical fault is detected. Accordingly, it should be dealt with as a present fault and characterised as "1.DEF or 2.DEF".
 - If the fault is still characterised as "1.OBD" or "2.OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.
- Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.
- This check should be based on the fault finding of the characterisations "1 DEF" or "2.DEF".

AFTER REPAIR	If the fault had been characterised as "1.DEF or 2.DEF", the fault may change characterisation and become "1.OBD or 2.OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "1.DEF or 2.DEF", continue to deal with the fault. – If the fault is stored and characterised as "1.DEF or 2.DEF", ignore it. – If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it. Deal with any other faults. Clear the fault memory.

<p>DF018 PRESENT OR STORED</p>	<p><u>UPSTREAM OXYGEN SENSOR HEATER CIRCUIT</u></p> <p>CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts 1.DEF: Unidentified electrical fault 2.DEF : Oxygen sensor heating power not correct 1.OBD : (On Board Diagnostic) OBD fault: upstream oxygen sensor heating 2.OBD : OBD fault: upstream oxygen sensor heating power</p>
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<p>NOTES</p>	<p><i>If faults DF009 and DF019 are present, deal with them first.</i> Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine has been running for 10 seconds.</p>
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<p>CO.0 CC.1 1.DEF 2.DEF</p>	<p>Check the cleanliness, connection and condition of the upstream oxygen sensor connector. Change the connector if necessary.</p>
	<p>With the ignition on, check for + 12 Volts on track A of the upstream oxygen sensor connector. Repair if necessary.</p>
	<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track G1 connector C —————> Upstream oxygen sensor (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
	<p>Check the heating resistance of the upstream oxygen sensor. (See the value in the HELP section). Replace the upstream oxygen sensor if necessary.</p>
	<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

<p>AFTER REPAIR</p>	<p>If the fault had been characterised as "CO.0, CC.1, 1.DEF or 2.DEF", the fault may change characterisation and become "1.OBD or 2.OBD"; this is normal.</p>
	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", ignore it. – If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF018 CONTINUED	
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1.OBD 2.OBD	NOTES	Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "CO.0, CC.1, 1.DEF or 2.DEF", the electrical fault is detected. It should therefore be dealt with as a present fault and characterised as "CO.0, CC.1, 1.DEF or 2.DEF".
- If the fault is still characterised as "1.OBD" or "2.OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.

Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.

This check should be based on the fault finding of the characterisations "CO.0, CC.1, 1.DEF or 2.DEF".

AFTER REPAIR	If the fault had been characterised as "CO.0, CC.1, 1.DEF or 2.DEF", the fault may change characterisation and become "1.OBD or 2.OBD"; this is normal.
	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none">– If the fault is present and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", continue to deal with the fault.– If the fault is stored and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", ignore it.– If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF019 PRESENT OR STORED	SUPPLY 1.DEF : +12 volts after actuator relay electrical fault
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NOTES	<p><i>Deal with fault DF009 first if it is present.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u></p> <p>The fault is declared present after:</p> <ul style="list-style-type: none"> – Switching the ignition off and loss of communication – Switching the ignition on again and re-establishing communication;
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<p>Disconnect the actuator relay.</p> <p>Check the cleanliness, connection and condition of the actuator relay connections.</p> <p>If necessary change the connections.</p>
<p>With the ignition on, check for 12 volts on track 3 of the actuator relay.</p> <p>If 12 volts is not present, check the supply fuse. (See the corresponding section in the Workshop Repair Manual).</p> <p>Check wiring insulation and continuity.</p>
<p>Check the resistance of the actuator relay between tracks 1 and 2. (See the value in the HELP section).</p> <p>Replace the relay if necessary.</p>
<p>Disconnect the battery.</p> <p>Disconnect the computer. Check the cleanliness and condition of the connections.</p> <p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <p style="text-align: center;">Computer track G2 connector C —————> Injection actuator relay</p> <p>(See the connector track numbers in the corresponding wiring diagram).</p> <p>Repair if necessary.</p>
<p>If that does not work, replace the actuator relay.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	<p>Follow the instructions to confirm repair.</p> <p>Deal with any other faults.</p> <p>Clear the fault memory.</p>
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DF021 PRESENT OR STORED	<u>ENGINE IMMOBILISER</u> DEF : Unidentified electrical fault
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NOTES	None.
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- Test the multiplex network.
- Refer to the "Multiplex Network" and "Immobiliser" sections of the Workshop Repair Manual.
- Perform fault finding on the "Immobiliser" system if necessary.

AFTER REPAIR	None.
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DF022 PRESENT OR STORED	COMPUTER 1.DEF : Computer fault 2.DEF : Computer fault: motorised throttle control 3.DEF : Backup memory area fault 4.DEF : Engine immobiliser memory area fault
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NOTES	None.
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1.DEF 2.DEF	Computer defective or not to specification. Replace the injection computer.
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3.DEF 4.DEF	Do not replace the injection computer immediately. Carry out the following procedure: <ul style="list-style-type: none">– Switch the ignition on and establish dialogue with the computer.– Clear the computer memory.– Switch the ignition off and wait for loss of dialogue with the computer.– Switch the ignition on and establish dialogue with the computer. If the computer fault is still present, carry out this procedure again. If the computer fault is still present after the fifth deletion attempt, change the injection computer.
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AFTER REPAIR	Clear the fault memory.
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DF030 PRESENT	<u>HIGH SPEED FAN ASSEMBLY CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit on + 12 V DEF : Unidentified electrical fault
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NOTES	<i>Deal with fault DF004 first if it is present.</i>
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<p>Check the cleanliness, connection and condition of the high speed fan assembly relay connector. Change the connector if necessary.</p>
<p>With the ignition on, check for +12 V on track 1 of the relay. Repair if necessary.</p>
<p>Check the resistance of the high speed fan assembly relay on tracks 1 and 2. (See the value in the HELP section). Change the high speed fan relay if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track F2 connector C —————> High speed fan assembly relay (See the connector track numbers in the corresponding wiring diagram) Repair if necessary.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	<p>Deal with any other faults. Clear the fault memory.</p>
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DF032 PRESENT OR STORED	<u>COOLANT TEMPERATURE OVERHEATING WARNING LIGHT CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts DEF : Unidentified electrical fault
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NOTES	None.
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- Test the multiplex network.
- Refer to the "Multiplex Network" and "Instrument Panel" sections of the Workshop Repair Manual.
- Perform fault finding on the "Instrument panel" system if necessary.

AFTER REPAIR	None.
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<p>DF038 PRESENT OR STORED</p>	<p><u>DOWNSTREAM OXYGEN SENSOR HEATER CIRCUIT</u></p> <p>CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts 1.DEF : Unidentified electrical fault 2.DEF : Oxygen sensor heating power not correct 1.OBD : (On Board Diagnostic) OBD fault: downstream oxygen sensor heating 2.OBD : OBD fault: downstream oxygen sensor heating power</p>
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<p>NOTES</p>	<p><i>If faults DF009 and DF019 are present, deal with them first.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u></p> <p>The fault is declared present after the engine has been running for 10 seconds.</p>
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<p>CO.0 CC.1 1.DEF 2.DEF</p>	<p>Check the cleanliness, connection and condition of the downstream oxygen sensor connector. Change the connector if necessary.</p>
	<p>With the ignition on, check for + 12 volts on track A of the downstream oxygen sensor connector. Repair if necessary.</p>
	<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track G3 connector C —————> Downstream oxygen sensor (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
	<p>Check the heating resistance of the downstream oxygen sensor. (See the value in the HELP section). Replace the upstream oxygen sensor if necessary.</p>
	<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

<p>AFTER REPAIR</p>	<p>If the fault had been characterised as "CO.0, CC.1, 1.DEF or 2.DEF", the fault may change characterisation and become "1.OBD or 2.OBD"; this is normal.</p>
	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", ignore it. – If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF038 CONTINUED	
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1.OBD 2.OBD	NOTES	Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "CO.0, CC.1, 1.DEF or 2.DEF", the electrical fault is detected. It should therefore be dealt with as a present fault and characterised as "CO.0, CC.1, 1.DEF or 2.DEF".
- If the fault is still characterised as "1.OBD" or "2.OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.

Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.

This check should be based on the fault finding of the characterisations "CO.0, CC.1, 1.DEF or 2.DEF".

AFTER REPAIR	If the fault had been characterised as "CO.0, CC.1, 1.DEF or 2.DEF", the fault may change characterisation and become "1.OBD or 2.OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", ignore it. – If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it. Deal with any other faults. Clear the fault memory.

PETROL INJECTION

Fault finding - Interpretation of faults

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 DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	<p><i>If faults DF009 and DF019 are present, deal with them first.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u></p> <p>The fault is declared present after the engine has been running for 10 seconds.</p>
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CO CC. 0 CC.1 DEF	<p>Check the cleanliness, condition and connection of the injector rail connector. Clean or replace it if necessary.</p> <p>With the ignition on, check for +12 volts on the injector rail connector. (See connector track number in the corresponding wiring diagram).</p> <p>Check the resistance of the cylinder 1 injector. (See the value in the HELP section and the connector track numbers in the corresponding wiring diagram). Replace the injector if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and the absence of interference resistance on the following connection: Injection computer track L4 connector B —————> cylinder 1 injector (See the connector track numbers in the corresponding wiring diagram) Repair if necessary.</p> <p>If this still does not work, remove the injector rail. Check the cleanliness and condition of the injector rail. Check the electrical continuities between the socket and the cylinder 1 injector. (See the connector track numbers in the corresponding wiring diagram).</p> <p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>
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AFTER REPAIR	<p>If the fault had been characterised as "CO, CC.0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present with the characterisation "CO, CC.0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored with the characterisation "CO, CC.0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>
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DF052 CONTINUED	
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OBD	NOTES Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "CO, CC.0, CC.1, or DEF", the electrical fault is detected. It should therefore be dealt with as a present fault characterised as "CO, CC.0, CC.1 or DEF".
- If the fault is still characterised as "OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.

Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.

This check should be based on the fault finding of the characterisations "CO, CC.0, CC.1 or DEF".

AFTER REPAIR	If the fault had been characterised as "CO, CC. 0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "CO, CC. 0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO, CC. 0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. Deal with any other faults. Clear the fault memory.

PETROL INJECTION

Fault finding - Interpretation of faults

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 DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	<p><i>If faults DF009 and DF019 are present, deal with them first.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u></p> <p>The fault is declared present after the engine has been running for 10 seconds.</p>
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CO CC.0 CC.1 DEF	<p>Check the cleanliness, condition and connection of the injector rail connector. Clean or replace it if necessary.</p> <p>With the ignition on, check for +12 volts on the injector rail connector. (See connector track number in the corresponding wiring diagram).</p> <p>Check the resistance of the cylinder 2 injector. (See the value in the HELP section and the connector track numbers in the corresponding wiring diagram). Replace the injector if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Injection computer track L3 connector B —————> cylinder 2 injector (See the connector track numbers in the corresponding wiring diagram) Repair if necessary.</p> <p>If this still does not work, remove the injector rail. Check the cleanliness and condition of the injector rail. Check the electrical continuities between the socket and the cylinder 2 injector. (See the connector track numbers in the corresponding wiring diagram).</p> <p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>
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AFTER REPAIR	<p>If the fault had been characterised as "CO, CC. 0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "CO, CC. 0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO, CC. 0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>
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DF053 CONTINUED	
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OBD	NOTES	Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "CO, CC. 0, CC.1, or DEF", the electrical fault is detected. Accordingly, it should be dealt with as a present fault characterised as "CO, CC. 0, CC.1 or DEF".
- If the fault is still characterised as "OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.

Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.

This check should be based on the fault finding of the characterisations "CO, CC. 0, CC.1 or DEF".

AFTER REPAIR	If the fault had been characterised as "CO, CC. 0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "CO, CC. 0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO, CC. 0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. Deal with any other faults. Clear the fault memory.

PETROL INJECTION

Fault finding - Interpretation of faults

<p>DF054 PRESENT OR STORED</p>	<p><u>CYLINDER 3 INJECTOR CIRCUIT</u></p> <p>CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to +12 V DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)</p>
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<p>NOTES</p>	<p><i>If faults DF009 and DF019 are present, deal with them first.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u></p> <p>The fault is declared present after the engine has been running for 10 seconds.</p>
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<p>CO CC.0 CC.1 DEF</p>	<p>Check the cleanliness, condition and connection of the injector rail connector. Clean or replace it if necessary.</p> <p>With the ignition on, check for +12 volts on the injector rail connector. (See connector track number in the corresponding wiring diagram).</p> <p>Check the resistance of the cylinder 3 injector. (See the value in the HELP section and the connector track numbers in the corresponding wiring diagram). Replace the injector if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Injection computer track L2 connector B —————> cylinder 3 injector (See the connector track numbers in the corresponding wiring diagram) Repair if necessary.</p> <p>If this still does not work, remove the injector rail. Check the cleanliness and condition of the injector rail. Check the electrical continuities between the socket and the cylinder 3 injector. (See the connector track numbers in the corresponding wiring diagram).</p> <p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>
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<p>AFTER REPAIR</p>	<p>If the fault had been characterised as "CO, CC. 0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "CO, CC.0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO, CC.0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>
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DF054 CONTINUED	
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OBD	NOTES Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "CO, CC.0, CC.1, or DEF", the electrical fault is detected. It should therefore be dealt with as a present fault characterised as "CO, CC.0, CC.1, or DEF".
- If the fault is still characterised as "OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.

Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.

This verification should be based on the fault finding of the characterisations "CO, CC.0, CC.1, or DEF".

AFTER REPAIR	If the fault had been characterised as "CO, CC. 0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "CO, CC. 0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO, CC. 0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. Deal with any other faults. Clear the fault memory.

PETROL INJECTION

Fault finding - Interpretation of faults

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 DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	<p><i>If faults DF009 and DF019 are present, deal with them first.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u></p> <p>The fault is declared present after the engine has been running for 10 seconds.</p>
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CO CC.0 CC.1 DEF	<p>Check the cleanliness, condition and connection of the injector rail connector. Clean or replace it if necessary.</p> <p>With the ignition on, check for +12 volts on the injector rail connector. (See connector track number in the corresponding wiring diagram).</p> <p>Check the resistance of the cylinder 4 injector. (See the value in the HELP section and the connector track numbers in the corresponding wiring diagram). Replace the injector if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Injection computer track M2 connector B —————> cylinder 4 injector (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p> <p>If this still does not work, remove the injector rail. Check the cleanliness and condition of the injector rail. Check the electrical continuities between the socket and the cylinder 4 injector. (See the connector track numbers in the corresponding wiring diagram).</p> <p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>
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AFTER REPAIR	<p>If the fault had been characterised as "CO, CC. 0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "CO, CC.0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO, CC.0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>
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DF055 CONTINUED	
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OBD	NOTES Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "CO, CC.0, CC.1, or DEF", the electrical fault is detected. It should therefore be dealt with as a present fault characterised as "CO, CC.0, CC.1 or DEF".
- If the fault is still characterised as "OBD" (On Board Diagnostic) after the instructions have been followed, the electrical fault has been present several times but is no longer detected.

Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.

This check should be based on the fault finding of the characterisations "CO, CC.0, CC.1 or DEF".

AFTER REPAIR	If the fault had been characterised as "CO, CC. 0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "CO, CC. 0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO, CC. 0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. Deal with any other faults. Clear the fault memory.

<p>DF057 PRESENT OR STORED</p>	<p><u>UPSTREAM OXYGEN SENSOR CIRCUIT</u></p> <p>DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)</p>
<p>NOTES</p>	<p><i>If other faults are present, deal with them first.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present following a 5-minute period in richness-ratio regulation (engine running).</p>
<p>DEF</p>	<p>Check that the manifold pressure sensor is properly fitted. Check that the inlet line is tight, from the throttle to the cylinder. Verify that no seals are defective. Verify the leaktightness of the canister bleed circuit. Verify that the manifold air temperature sensor is properly fitted. Check that the throttle air temperature sensor is properly fitted. Check that the resonator is not cracked.</p> <p>Check the condition and fitting of the upstream sensor. Replace the sensor if necessary.</p> <p>Check that there are no air leaks on the exhaust pipe.</p> <p>If the vehicle is driven frequently in town, decoke the engine.</p> <p>Check the cleanliness, connection and condition of the upstream oxygen sensor connections. Change the connector if necessary.</p> <p>With the ignition on, check for +12 Volts on the upstream oxygen sensor. Repair if necessary.</p>
<p>AFTER REPAIR</p>	<p>If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "DEF", continue to process the fault. – If the fault is stored and characterised as "DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF057 CONTINUED	
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Disconnect the battery.
Disconnect the computer. Check the **cleanliness and condition** of the connections.
Connect the bornier in place of the computer and check the **insulation, continuity and absence of interference resistance** on the following connections:

Computer track C1 connector C —————→ **Oxygen sensor**
Computer track B1 connector C —————→ **Oxygen sensor**

(See the connector track numbers in the corresponding wiring diagram).

Repair if necessary.

If the fault persists, replace the oxygen sensor.

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

OBD	NOTES Make the engine run until fan operation is triggered.
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- If the fault's characterisation has become DEF after the instructions have been followed, the electrical fault has been detected. Accordingly, it should be dealt with as a fault present and characterised as DEF.
 - If the fault is still characterised as "OBD" after the instructions have been followed, the electrical fault has been present several times but is no longer detected. Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.
- This verification should be based on the DEF characterisation diagnostic.

AFTER REPAIR	If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "DEF", continue to process the fault. – If the fault is stored and characterised as "DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. Deal with any other faults. Clear the fault memory.

PETROL INJECTION

Fault finding - Interpretation of faults

DF058 PRESENT OR STORED	<u>DOWNSTREAM OXYGEN SENSOR CIRCUIT</u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	<p><i>Deal with fault DF057 first if it is present.</i></p> <p><u>Conditions for applying the fault finding procedure to the stored fault.</u></p> <p>The fault is declared as present in one of the following cases:</p> <ul style="list-style-type: none"> – A road test in flexible driving after operation of the fan and with double richness-ratio loop ET027 active. – A road test in flexible driving after operation of the fan and followed immediately by a road test on a slope in no load position (deceleration phase).
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DEF	Check the condition and fitting of the downstream sensor. Replace the sensor if necessary.
	Check that there are no air leaks on the exhaust pipe.
	If the vehicle is driven frequently in town, decoke the engine .
	Check the cleanliness, connection and condition of the downstream oxygen sensor connections. Change the connector if necessary.
	With the ignition on, check for +12 volts on the downstream oxygen sensor. Repair if necessary.
	Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: Computer track A2 connector C —————> Oxygen sensor Computer track B2 connector C —————> Oxygen sensor (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
	If the fault persists, replace the oxygen sensor.
	If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "DEF", continue to process the fault. – If the fault is stored and characterised as "DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. Deal with any other faults. Clear the fault memory.

DF058 CONTINUED	
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OBD	NOTES	Make the engine run until fan operation is triggered.
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- If the fault's characterisation has become DEF after the instructions have been followed, the electrical fault has been detected. Accordingly, it should be dealt with as a fault present and characterised as DEF.
 - If the fault is still characterised as "OBD" after the instructions have been followed, the electrical fault has been present several times but is no longer detected. Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.
- This verification should be based on the DEF characterisation diagnostic.

AFTER REPAIR	If the fault had been characterised as "DEF", it may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none">– If the fault is present and characterised as "DEF", continue to process the fault.– If the fault is stored and characterised as "DEF", ignore it.– If the fault is present or stored and characterised as "OBD", ignore it. Deal with any other faults. Clear the fault memory.

<p>DF061 PRESENT OR STORED</p>	<p>IGNITION COIL 1 - 4 CIRCUIT</p> <p>CO.0 : Open circuit or short circuit to earth. CC.1 : Short circuit to +12 volts. DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)</p>
<p>NOTES</p>	<p><i>Deal with faults DF009, DF019 or DF008 first if they are present.</i> <u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present after operating the starter motor for 10 seconds or after the engine has been running for 10 seconds.</p>
<p>CO.0 CC.1 DEF</p>	<p>Disconnect the connector from the coil unit. Check the cleanliness and condition of the ignition coil unit and its connections. Clean or replace it if necessary.</p>
	<p>Check the primary and secondary resistance of the ignition coils. (See the values in the HELP section and the track numbers in the corresponding wiring diagram).</p>
	<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track H2 connector C —————> Coil 1 - 4 (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
	<p>Check the supply fuse of the fuel pump relay.</p>
	<p>Check the continuity and insulation of the line between the coil connector and the fuel pump relay. (This relay supplies the ignition coils).</p>
	<p>Check the electrical resistance of the fuel pump relay. (See the value in the HELP section). Replace the relay if necessary.</p>
<p>AFTER REPAIR</p>	<p>If the fault had been characterised as "CO.0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF061 CONTINUED	
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Check the **cleanliness and condition** of the fuel pump relay connections.
Clean or replace it if necessary.

Check **the insulation and continuity** of the line between **track 3** of the relay and supply fuse.
Repair if necessary.

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

OBD	NOTES	Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "CO.0, CC.1 or DEF", the electrical fault is detected. Accordingly, it should be dealt with as a present fault characterised as "CO.0, CC.1 or DEF"
- If the fault is still characterised as "OBD" after the instructions have been followed, the electrical fault has been present several times but is no longer detected. Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.
This check should be based on the fault finding of the characterisations "CO.0, CC.1 or DEF".

AFTER REPAIR	If the fault had been characterised as "CO.0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. Deal with any other faults. Clear the fault memory.

PETROL INJECTION

Fault finding - Interpretation of faults

<p>DF062 PRESENT OR STORED</p>	<p><u>IGNITION COIL 2-3 CIRCUIT</u></p> <p>CO.0 : Open circuit or short circuit to earth. CC.1 : Short circuit to 12 volts. DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)</p>
<p>NOTES</p>	<p><i>Deal with faults DF009, DF019 or DF008 first if they are present.</i> Conditions for applying the fault finding procedure to stored faults: The fault is declared present after operating the starter motor for 10 seconds or after the engine has been running for 10 seconds.</p>
<p>CO.0 CC.1 DEF</p>	<p>Disconnect the connector from the coil unit. Check the cleanliness and condition of the ignition coil unit and its connections. Clean or replace it if necessary.</p> <p>Check the primary and secondary resistance of the ignition coils. (See the values in the HELP section and the track numbers in the corresponding wiring diagram).</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track H3 connector C —————> Coil 2-3 (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p> <p>Check the supply fuse of the fuel pump relay.</p> <p>Check the continuity and insulation of the line between coil 3 and the fuel pump relay. (This relay supplies the ignition coils).</p> <p>Check the electrical resistance of the fuel pump relay. (See the value in the HELP section). Replace the relay if necessary.</p>
<p>AFTER REPAIR</p>	<p>If the fault had been characterised as "CO.0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> – If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. <p>Deal with any other faults. Clear the fault memory.</p>

DF062 CONTINUED	
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Check the **cleanliness and condition** of the fuel pump relay connections.
Clean or replace it if necessary.

Check **the insulation and continuity** of the line between **track 3** of the relay and supply fuse.
Repair if necessary.

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

OBD	NOTES	Make the engine run until fan operation is triggered.
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- If, after following the instructions, the characterisation has become "CO.0, CC.1 or DEF", the electrical fault is detected. Accordingly, it should be dealt with as a present fault characterised as "CO.0, CC.1 or DEF"
- If the fault is still characterised as "OBD" after the instructions have been followed, the electrical fault has been present several times but is no longer detected. Accordingly, the circuit must be checked without changing parts which are not clearly identified as at fault.
This check should be based on the fault finding of the characterisations "CO.0, CC.1 or DEF".

AFTER REPAIR	If the fault had been characterised as "CO.0, CC.1 or DEF", the fault may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: <ul style="list-style-type: none"> – If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault. – If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it. – If the fault is present or stored and characterised as "OBD", ignore it. Deal with any other faults. Clear the fault memory.

DF064 PRESENT OR STORED	<u>VEHICLE SPEED SIGNAL</u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	None.
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- Run a multiplex network test.
- Refer to the "Multiplex network", "Instrument panel", or "ABS/ESP" sections of the Workshop Repair Manual.
- Run fault finding on the "Instrument panel" or "ABS/ESP" system if necessary.

AFTER REPAIR	None.
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DF082 PRESENT OR STORED	<u>PETROL / LPG CONNECTION</u> DEF : Unidentified electrical fault
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NOTES	None.
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<ul style="list-style-type: none">– Run a multiplex network test.– Refer to the Multiplex Network section in the Workshop Repair Manual.

AFTER REPAIR	None.
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DF083 PRESENT OR STORED	<u>ABS / INJECTION CONNECTION</u> DEF : Unidentified electrical fault
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NOTES	None.
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<ul style="list-style-type: none">– Run a multiplex network test.– Refer to the Multiplex Network section in the Workshop Repair Manual.

AFTER REPAIR	None.
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DF102 PRESENT	<u>OXYGEN SENSOR OPERATING FAULT</u> OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault detected whilst driving
NOTES	<i>If faults DF009, DF019, DF018, DF038, DF057 or DF058 are present, deal with them in priority.</i>

<p>Check that the manifold pressure sensor is properly fitted. Check that the inlet line is tight, from the throttle to the cylinder. Verify that no seals are defective. Verify the leaktightness of the canister bleed circuit. Verify that the manifold air temperature sensor is properly fitted. Check that the throttle air temperature sensor is properly fitted. Check that the resonator is not cracked.</p>
<p>Check the condition and fitting of the upstream sensor. Replace the sensor if necessary.</p>
<p>Check that there are no air leaks on the exhaust pipe.</p>
<p>If the vehicle is driven frequently in town, decoke the engine.</p>
<p>Check the cleanliness, connection and condition of the upstream oxygen sensor connections. Change the connector if necessary.</p>
<p>With the ignition on, check for +12 Volts on the upstream oxygen sensor. Repair if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p>Computer track C1 connector C —————> Oxygen sensor Computer track B1 connector C —————> Oxygen sensor</p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
<p>If the fault persists, replace the oxygen sensor.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	<p>Deal with any other faults. Clear the fault memory.</p>
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DF106 PRESENT	<u>CATALYTIC CONVERTER OPERATING FAULT</u> OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault present 2.OBD : OBD fault detected whilst driving
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NOTES	<i>Deal with the other faults first.</i>
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<p>Check the sealing of the entire exhaust system. Repair if necessary.</p>
<p>If the vehicle is driven frequently in town, decoke the engine.</p>
<p>Check the condition and assembly of the downstream oxygen sensor.</p>
<p>Check the mating and condition of the downstream oxygen sensor connector and wires. Replace any parts if necessary.</p>
<ul style="list-style-type: none"> – Visually check the condition of the catalytic converter. A deformity may be causing it to malfunction. – Check for visual signs of thermal shock. A warm catalytic converter may be damaged if it comes into contact with cold water. – 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. This could damage the catalytic converter. <p>If the cause of the destruction is identified, change the catalytic converter.</p> <p><u>If you replace the catalytic converter, make absolutely sure that the problem has been solved, otherwise the new catalytic converter may be damaged.</u></p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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DF109 PRESENT	POLLUTANT MISFIRES OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault detected whilst driving
NOTES	<p><i>Deal with the other faults first.</i></p> <p>Refer to statuses ET093, ET094, ET095 and ET096 to ascertain how many cylinders are misfiring.</p>
Misfiring on one cylinder	<p>This means that the fault is probably due to a component which can only act on this cylinder:</p> <ul style="list-style-type: none"> – Injector fault. – Plug fault. (Check the conformity). – HT lead fault. – Ignition coil fault.
Misfiring on all cylinders 1 and 4 or 2 and 3	<p>This means that the fault is probably due to a component which can only act on this pair of cylinders:</p> <ul style="list-style-type: none"> – Ignition coil fault.
Misfiring on all four cylinders	<p>This means that the fault is probably due to a component which can only act on all the cylinders:</p> <ul style="list-style-type: none"> – check that the correct fuel is being used, – Check the condition and correct specification of the spark plugs.
<p>If the fault is still present, perform the following checks:</p> <ul style="list-style-type: none"> – Check the flywheel sensor. – Check the condition and cleanness of the flywheel. – Check the mounting of the flywheel sensor. – Check the sensor / flywheel air gap. – Check the cylinder compression. – Check the whole petrol supply circuit. (See workshop repair manual). – Check the whole ignition system. (See workshop repair manual). 	
AFTER REPAIR	<p>Ensure that all the faults have been dealt with. Clear the stored faults. It is not necessary to clear the programming. To prove that the system has been fully repaired:</p> <ul style="list-style-type: none"> – There must be no remaining electrical faults. – Programming should have been carried out. – The engine should be warm (minimum 75°C). – The engine should be running at idle speed with all electrical consumers switched on for 15 minutes. <p>If the fault reappears, continue the fault finding procedure.</p>

DF110 PRESENT	<u>DESTRUCTIVE MISFIRE</u> OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault present 2.OBD : OBD fault detected whilst driving
NOTES	<p><i>If faults relating to ignition or the petrol supply circuit are present, deal with them first.</i></p> <p>Refer to statuses ET093, ET094, ET095 and ET096 to ascertain how many cylinders are misfiring.</p>
Misfiring on one cylinder	<p>This means that the fault is probably due to a component which can only act on this cylinder:</p> <ul style="list-style-type: none"> – Injector fault. – Plug fault. (Check the conformity). – HT lead fault. – Ignition coil fault.
Misfiring on all cylinders 1 and 4 or 2 and 3	<p>This means that the fault is probably due to a component which can only act on this pair of cylinders:</p> <ul style="list-style-type: none"> – Ignition coil fault.
Misfiring on all four cylinders	<p>This means that the fault is probably due to a component which can only act on all the cylinders:</p> <ul style="list-style-type: none"> – check that the correct fuel is being used, – Check the condition and correct specification of the spark plugs.
<p>If the fault is still present, carry out the following checks:</p> <ul style="list-style-type: none"> – Check the flywheel sensor. – Check the condition and cleanness of the flywheel. – Check the mounting of the flywheel sensor. – Check the sensor / flywheel air gap. – Check the cylinder compression, – Check the whole petrol supply circuit. (See workshop repair manual). – Check the whole ignition system. (See workshop repair manual). 	
AFTER REPAIR	<p>Ensure that all the faults have been dealt with. Clear the stored faults. It is not necessary to clear the programming. To prove that the system has been fully repaired:</p> <ul style="list-style-type: none"> – There must be no remaining electrical faults. – Programming should have been carried out. – The engine should be warm (minimum 75°C). – The engine should be running at idle speed with all electrical consumers switched on for 15 minutes. <p>If the fault reappears, continue the fault finding procedure.</p>

**DF116
PRESENT**

FUEL SYSTEM OPERATING FAULT

OBD : OBD fault (On Board Diagnostic)
1.OBD : OBD fault detected whilst driving

NOTES

If faults relating to ignition or the petrol supply circuit are present, deal with them first.

Carry out a complete check on the petrol supply system. (Refer to the Injection section in the Workshop Repair Manual).

Check the cleanliness of the petrol fuel tank if necessary.

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

AFTER REPAIR

Deal with any other faults.
Clear the fault memory.

**DF117
PRESENT**

IMMOBILISER CODE NOT PROGRAMMED

NOTES

Deal with fault DF022 first if it is present.

- Run a multiplex network test.
- Refer to the "Multiplex Network" and "Immobiliser" sections of the Workshop Repair Manual.
- Perform fault finding on the "Immobiliser" system if necessary.

AFTER REPAIR

None.

**DF118
PRESENT
OR
STORED**

REFRIGERANT PRESSURE SENSOR CIRCUIT

DEF : Unidentified electrical fault

NOTES

Conditions for applying the fault finding procedure to stored faults:

The fault is declared present when the ignition is switched on.

Check the **cleanliness, connection and condition** of the refrigerant pressure sensor.
Clean or replace it if necessary.

Check **the electrical resistance** of the refrigerant sensor.
(See the value in the HELP section).
Replace the sensor if necessary.

Disconnect the battery.
Disconnect the computer. Check the **cleanliness and condition** of the connections.
Connect the bornier in place of the computer and check the **insulation, continuity and absence of interference resistance** on the following connections:

Computer track H2 connector B —————> Pressure sensor

Computer track J3 connector B —————> Pressure sensor

Computer track H4 connector B —————> Pressure sensor

(See the connector track numbers in the corresponding wiring diagram).

Repair if necessary.

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

AFTER REPAIR

Follow the instructions to confirm repair.
Deal with any other faults.
Clear the fault memory.

DF120 PRESENT	<u>OBD WARNING LIGHT CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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NOTES	None.
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- Run a multiplex network test.
- Refer to the "Multiplex Network" and "Instrument Panel" sections of the Workshop Repair Manual.
- Perform fault finding on the "Instrument panel" system if necessary.

AFTER REPAIR	None.
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DF123 PRESENT OR STORED	<u>THROTTLE POSITION POTENTIOMETER CIRCUIT GANG 1</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts
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NOTES	Important: Do not drive the vehicle until you have checked that the computer is clear of any fault relating to the throttle unit.
	<u>Conditions for applying the fault finding procedure to stored faults:</u> – The fault is declared present after a change in the engine speed.

<p>Check the cleanliness, connection and condition of the connections on the throttle potentiometer. Change the connector if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the borner in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p> Computer track G4 connector B —————> Throttle potentiometer gang 1 Computer track G3 connector B —————> Throttle potentiometer gang 1 Computer track G2 connector B —————> Throttle potentiometer gang 1 </p> <p>(See the connector track numbers in the corresponding wiring diagram).</p> <p>Repair if necessary.</p>
<p>Check the cleanliness of the throttle valve, and that the throttle rotates correctly. Check that gang 1 of the throttle potentiometer correctly follows its resistive curve. (See the values in the HELP section). Correct or change the throttle position potentiometer if necessary.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	<p>If the throttle valve has been changed, reinitialise the programming (RZ008). Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.</p>
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DF124 PRESENT OR STORED	<u>THROTTLE POSITION POTENTIOMETER CIRCUIT TRACK 2</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts
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NOTES	Important: Do not drive the vehicle until you have checked that the computer is clear of any fault relating to the throttle unit.
	<u>Conditions for applying the fault finding procedure to stored faults:</u> – The fault is declared present after a change in the engine speed.

<p>Check the cleanliness, connection and condition of the pedal potentiometer connections. If necessary change the connections.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the borner in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p> Computer track D3 connector B —————> Throttle potentiometer gang 2 Computer track G2 connector B —————> Throttle potentiometer gang 2 Computer track G4 connector B —————> Throttle potentiometer gang 2 </p> <p>(See the connector track numbers in the corresponding wiring diagram).</p> <p>Repair if necessary.</p>
<p>Check the cleanliness of the throttle valve, and that the throttle rotates correctly. Check that gang 2 of the throttle potentiometer correctly follows its resistive curve. (See the values in the HELP section). Correct or change the throttle position potentiometer if necessary.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	<p>If the throttle valve has been changed, reinitialise the programming (RZ008). Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.</p>
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DF125 PRESENT OR STORED	<u>PEDAL POTENTIOMETER GANG 1 CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts
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NOTES	<u>Conditions for applying the fault finding procedure to stored faults:</u> – The fault is declared present after the accelerator pedal varies from no load to full load.
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Check that the pedal is not mechanically seized.
Check the cleanliness, connection and condition of the connections on the throttle potentiometer. Change the connector if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: Computer track H3 connector A —————> Pedal potentiometer gang 1 Computer track G2 connector A —————> Pedal potentiometer gang 1 Computer track H2 connector A —————> Pedal potentiometer gang 1 (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
Check that gang 1 of the pedal potentiometer correctly follows its resistive curve . (See the values in the HELP section). Repair or replace the pedal potentiometer if necessary.
If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.
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DF126 PRESENT OR STORED	<u>PEDAL POTENTIOMETER GANG 2 CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts
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NOTES	<u>Conditions for applying the fault finding procedure to stored faults:</u> – The fault is declared present after the accelerator pedal varies from no load to full load.
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Check that the pedal is not mechanically seized.
Check the cleanliness, connection and condition of the connections on the throttle potentiometer. Change the connector if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: Computer track F4 connector A —————> Pedal potentiometer gang 2 Computer track F2 connector A —————> Pedal potentiometer gang 2 Computer track F3 connector A —————> Pedal potentiometer gang 2 (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
Check that gang 2 of the pedal potentiometer correctly follows its resistive curve . (See the values in the HELP section). Repair or replace the pedal potentiometer if necessary.
If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.
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**DF128
PRESENT
OR
STORED**

**AUTOMATIC TRANSMISSION OR SEQUENTIAL GEARBOX CAN
CONNECTION**

DEF : Unidentified electrical fault
OBD : OBD fault (On Board Diagnostic)

NOTES

None.

- Run a multiplex network test.
- Refer to the Multiplex Network sections in the Workshop Repair Manual.

AFTER REPAIR

None.

DF129 PRESENT OR STORED	<u>PEDAL POTENTIOMETER CIRCUIT</u> DEF : Consistency of pedal potentiometer tracks
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NOTES	<p><i>Deal with faults DF125 or DF126 first if they are present.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults.</u></p> <p>The fault is declared as present in one of the following cases:</p> <ul style="list-style-type: none"> – When the ignition is switched on without the accelerator pedal being depressed for the first 10 seconds. – During gradual switching of the pedal potentiometer from no load to full load condition. – When the accelerator is in the full load position for 10 seconds.
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Check that the pedal is not mechanically seized.																		
Check the cleanliness, connection and condition of the pedal potentiometer connector. Change the connector if necessary.																		
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: <table><tr><td>Computer track H3 connector A</td><td>————→</td><td>Pedal potentiometer</td></tr><tr><td>Computer track G2 connector A</td><td>————→</td><td>Pedal potentiometer</td></tr><tr><td>Computer track H2 connector A</td><td>————→</td><td>Pedal potentiometer</td></tr><tr><td>Computer track F4 connector A</td><td>————→</td><td>Pedal potentiometer</td></tr><tr><td>Computer track F2 connector A</td><td>————→</td><td>Pedal potentiometer</td></tr><tr><td>Computer track F3 connector A</td><td>————→</td><td>Pedal potentiometer</td></tr></table> (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.	Computer track H3 connector A	————→	Pedal potentiometer	Computer track G2 connector A	————→	Pedal potentiometer	Computer track H2 connector A	————→	Pedal potentiometer	Computer track F4 connector A	————→	Pedal potentiometer	Computer track F2 connector A	————→	Pedal potentiometer	Computer track F3 connector A	————→	Pedal potentiometer
Computer track H3 connector A	————→	Pedal potentiometer																
Computer track G2 connector A	————→	Pedal potentiometer																
Computer track H2 connector A	————→	Pedal potentiometer																
Computer track F4 connector A	————→	Pedal potentiometer																
Computer track F2 connector A	————→	Pedal potentiometer																
Computer track F3 connector A	————→	Pedal potentiometer																
Check that gangs 1 and 2 of the pedal potentiometer correctly follow their resistive curves. (See the values in the Help section). Change the pedal potentiometer if necessary.																		
If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.																		

AFTER REPAIR	<p>Follow the instructions to confirm repair.</p> <p>Deal with any other faults.</p> <p>Clear the fault memory.</p>
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DF130 PRESENT OR STORED	<u>TRANSMISSION RATIO</u>
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NOTES	None.
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- Run a multiplex network test.
- Refer to the "Multiplex Network" and "Automatic Transmission" sections of the Workshop Repair Manual.
- Carry out fault finding on the automatic transmission system, if necessary.

AFTER REPAIR	None.
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DF131 PRESENT OR STORED	<u>AUTOMATIC TRANSMISSION CONVERTER</u>
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NOTES	None.
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- Run a multiplex network test.
- Refer to the "Multiplex Network" and "Automatic Transmission" sections of the Workshop Repair Manual.
- Carry out fault finding on the automatic transmission system, if necessary.

AFTER REPAIR	None.
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DF132 PRESENT OR STORED	<u>HEATED WINDSCREEN</u> DEF : Unidentified electrical fault
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NOTES	None.
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- Run a multiplex network test.
- Refer to the "Multiplex Network" and "UCH" sections of the Workshop Repair Manual.
- Carry out fault finding on the UCH system, if necessary.

AFTER REPAIR	None.
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DF134 PRESENT OR STORED	<u>INSTRUMENT PANEL CONNECTION</u> DEF : Unidentified electrical fault
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NOTES	None.
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- Run a multiplex network test.
- Refer to the "Multiplex Network" and "Instrument Panel" sections of the Workshop Repair Manual.
- Perform fault finding on the "Instrument panel" system if necessary.

AFTER REPAIR	None.
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**DF135
PRESENT
OR
STORED**

BRAKE PEDAL SENSOR CIRCUIT

- 1.DEF : Fault on one of the two brake pedal contacts
- 2.DEF : Fault on both brake pedal contacts

NOTES

It is essential that the ABS is not defective when carrying out this test.

Fault finding conditions for stored fault:

The fault is declared present after the brake pedal has been depressed and held down.

Check the **cleanliness, connection and condition** of the double-contact switch and its connections.
Clean or replace it if necessary.

Disconnect the battery.

Disconnect the computer. Check the **cleanliness and condition** of the connections.

Connect the bornier in place of the computer and check the **insulation, continuity and absence of interference resistance** on the following connections:

Computer track E4 or G3 connector A	—————>	Brake pedal switch
Computer track H2 connector B	—————>	Brake pedal switch

(See the connector track numbers in the corresponding wiring diagram).

Repair if necessary.

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

AFTER REPAIR

Follow the instructions to confirm repair.
Process any other faults
Clear the fault memory.

<p>DF136 PRESENT OR STORED</p>	<p><u>ACCELERATOR PEDAL / MOTORISED THROTTLE VALVE CIRCUIT</u></p> <p>DEF : Consistency between the pedal position and the position of the motorised throttle</p> <p>1.DEF : Fault on +5 volt supply 2.DEF : Fault on potentiometer supply 1 3.DEF : Fault on potentiometer supply 2</p>
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<p>NOTES</p>	<p><u>Important:</u> Do not drive the vehicle until you have checked that the computer is clear of any fault relating to the throttle unit.</p>
	<p><i>If faults DF137, DF123, DF124, DF125, DF126, DF129 or DF002 are present, deal with them first.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present after a change in the engine speed.</p>

<p>Check the cleanliness, connection and condition of the pedal potentiometer and its connections. Clean or replace it if necessary.</p>
<p>Check the cleanliness, connection and condition of the motorised throttle valve and its connections. Clean or replace it if necessary.</p>
<p>Check the cleanliness of the throttle valve, and that the throttle rotates correctly. Check that gangs 1 and 2 of the throttle potentiometer correctly follow their resistive curves. (See the values in the HELP section). Clean or change the throttle valve if necessary.</p>
<p>Check the electrical resistance of the throttle motor. (See the value in the HELP section). Clean or change the throttle valve if necessary.</p>
<p>Check that the resistances of the pedal potentiometer, gangs 1 and 2, correctly follow their resistive curves. (See the values in the Help section). Change the pedal potentiometer if necessary.</p>

<p>AFTER REPAIR</p>	<p>If the throttle body has been replaced, all programmed values must be reinitialised ("RZ008"). Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.</p>
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DF136 CONTINUED	
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Disconnect the battery.

Disconnect the computer. Check the **cleanliness and condition** of the connections.

Connect the bornier in place of the computer and check the **insulation, continuity and absence of interference resistance** on the following connections:

Computer track H3 connector	A	————→	Pedal potentiometer
Computer track G2 connector	A	————→	Pedal potentiometer
Computer track H2 connector	A	————→	Pedal potentiometer
Computer track F4 connector	A	————→	Pedal potentiometer
Computer track F2 connector	A	————→	Pedal potentiometer
Computer track F3 connector	A	————→	Pedal potentiometer
Computer track M3 connector	B	————→	Motorised throttle valve
Computer track M4 connector	B	————→	Motorised throttle valve
Computer track G4 connector	B	————→	Motorised throttle valve potentiometer
Computer track D3 connector	B	————→	Motorised throttle valve potentiometer
Computer track G2 connector	B	————→	Motorised throttle valve potentiometer
Computer track G3 connector	B	————→	Motorised throttle valve potentiometer

(See the connector track numbers in the corresponding wiring diagram).

Repair if necessary.

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

AFTER REPAIR	<p>If the throttle valve has been changed, reinitialise the programming (RZ008). Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.</p>
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<p>DF137 PRESENT OR STORED</p>	<p>MOTORISED THROTTLE VALVE</p> <p>DEF : Unidentified electrical fault</p> <p>1.DEF : Motorised throttle valve servo control fault</p> <p>2.DEF : Motorised throttle valve limit search fault</p> <p>3.DEF : Motorised throttle valve general control fault</p>
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<p>NOTES</p>	<p>Important: Do not drive the vehicle until you have checked that the computer is clear of any fault relating to the throttle unit.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present after a change in the engine speed.</p>

<p>Check the cleanliness, connection and condition of the connections. Clean or replace it if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p>Computer track M3 connector B —————> Motorised throttle valve</p> <p>Computer track M4 connector B —————> Motorised throttle valve</p> <p>Computer track G4 connector B —————> Motorised throttle valve</p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
<p>Check the electrical resistance of the throttle motor. (See the value in the HELP section). Clean or change the throttle valve if necessary.</p>
<p>Check the cleanliness of the throttle valve, and that the throttle rotates correctly. Clean or replace it if necessary.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

<p>AFTER REPAIR</p>	<p>If the throttle valve has been changed, reinitialise the programming (RZ008). Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.</p>
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DF138 PRESENT OR STORED	<u>THERMOPLUNGER N°1 RELAY CONTROL</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts DEF : Unidentified electrical fault
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NOTES	<p><i>Deal with faults DF003, DF004, DF009 or DF019 first if they are present.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u></p> <p>The fault is declared present when the ignition is switched on.</p>
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<p>Check the cleanliness, connection and condition of the thermoplunger N°1 relay connector. Replace if necessary.</p>
<p>Check the resistance of the thermoplunger N°1 relay. (See the value in the HELP section). Replace the relay if necessary.</p>
<p>With the ignition on, check for +12 volts on track 1 of thermoplunger N°1 relay. Repair the wiring up to the fuse if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Injection computer track D2 connector C —————> Thermoplunger N°1 relay (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	<p>Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.</p>
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<p>DF139 PRESENT OR STORED</p>	<p><u>THERMOPLUNGER N°2 RELAY CONTROL</u></p> <p>CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts DEF : Unidentified electrical fault</p>
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<p>NOTES</p>	<p><i>Deal with faults DF003, DF004, DF009 or DF019 first if they are present.</i></p> <p><u>Conditions for applying the fault finding procedure to stored faults:</u></p> <p>The fault is declared present when the ignition is switched on.</p>
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<p>Check the cleanliness, connection and condition of the thermoplunger N°2 relay connector. Replace if necessary.</p>
<p>Check the resistance of the thermoplunger N°2 relay. (See the value in the HELP section). Replace the relay if necessary.</p>
<p>With the ignition on, check for +12 volts after ignition feed on track 1 of thermoplunger N°2 relay. Repair the wiring up to the fuse if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <p style="text-align: center;">Injection computer track J4 connector B —————> Thermoplunger N°2 relay</p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

<p>AFTER REPAIR</p>	<p>Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.</p>
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DF168 PRESENT OR STORED	AIR INLET CIRCUIT OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault detected whilst driving
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NOTES	Important: Do not drive the vehicle until you have checked that the computer is clear of any fault relating to the throttle unit.
	<i>If faults DF123, DF124, DF125, DF126, DF129, DF136, DF137 or DF002 are present, deal with them first.</i> <u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present after a change in the engine speed.

Check that the manifold pressure sensor is properly fitted.
Check that the inlet line is tight, from the throttle to the cylinder.
Verify that no seals are defective.
Check that the canister bleed is not disconnected nor blocked open.
Check that the manifold air temperature sensor is correctly mounted.
Check that the resonator is not cracked.

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.
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DF233 PRESENT OR STORED	<u>DIRECTIONAL STABILITY CONTROL</u>
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NOTES	None.
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- Run a multiplex network test.
- Refer to the "Multiplex Network" and "ABS/ESP" sections of the Workshop Repair Manual.
- Carry out a fault finding procedure on the ABS/ESP system, if necessary.

AFTER REPAIR	None.
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DF235 PRESENT OR STORED	<u>CRUISE CONTROL/SPEED LIMITER</u> 1.DEF : Steering wheel controls 2.DEF : Inconsistency
NOTES	<u>Conditions for applying the fault finding procedure to stored faults:</u> The fault is declared present after a road test using the cruise control then the speed limiter function.
	<u>Warning:</u> The air bag must be removed in order to remove or check the Cruise control - Speed limiter control switches. Refer to the Air bag section in the Workshop Repair Manual. <u>Observe the safety instructions.</u>
1.DEF	Check the cleanliness, connection and condition of the increase switches on the steering wheel and their connectors. Clean or replace it if necessary.
	Check for the presence of the earth on the increase switches at the steering wheel. (See connector track numbers in the corresponding wiring diagram). Repair if necessary.
	Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: Computer track D2 connector A —————> Steering wheel control Computer track D3 connector A —————> Steering wheel control (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
	Replace the switch if necessary.
	If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.
AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.

DF235

CONTINUED

2.DEF

Check **the cleanliness, connection and condition** of the increase switches on the steering wheel and their connectors.
Clean or replace it if necessary.

With the ignition on, check for **+12 volts** on the cruise control/speed limiter selector switch.
(See connector track numbers in the corresponding wiring diagram).
Repair if necessary.

Disconnect the battery.
Disconnect the computer. Check the **cleanliness and condition** of the connections.
Connect the bornier in place of the computer and check the **insulation, continuity and absence of interference resistance** on the following connections:

Computer track A2 connector A	→	Cruise control/speed limiter	ON - OFF switch
Computer track C3 connector A	→	Cruise control/speed limiter	ON - OFF switch

(See the connector track numbers in the corresponding wiring diagram).
Repair if necessary.

Replace the switch if necessary.

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

AFTER REPAIR

Follow the instructions to confirm repair.
Deal with any other faults.
Clear the fault memory.

DF249 PRESENT OR STORED	<u>AUTOMATIC GEARBOX</u> 1.DEF : Gear change too long 2.DEF : Torque set point 3.DEF : Torque limitation set point
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NOTES	None.
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<ul style="list-style-type: none">– Run a multiplex network test.– Refer to the "Multiplex Network" and "Automatic Transmission" sections of the Workshop Repair Manual.– Carry out fault finding on the automatic transmission system, if necessary.

AFTER REPAIR	None.
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DF283 PRESENT	<u>LPG SYSTEM</u>
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NOTES	None.
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- Run a multiplex network test.
- Refer to the "Multiplex Network" and "LPG" sections of the Workshop Repair Manual.
- Carry out fault finding on the LPG system, if necessary.

AFTER REPAIR	None.
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PETROL INJECTION

Fault finding - Conformity check

NOTES	Ignition on, engine stopped.
	The values shown in the conformity check are only examples. If necessary, refer to the exact function specifications in the Workshop Repair Manual.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
SUPPLY FUNCTION				
1	Battery voltage	ET001: Computer + after ignition PR004: Computer supply voltage	ACTIVE $11.8 < X < 13.2 \text{ V}$	In the event of a fault: consult the fault finding PR004
SENSOR FUNCTION				
2	Engine flywheel signal	<i>Activate the starter motor:</i> ET060: Engine running flywheel signal	ACTIVE	In the event of a fault: consult the fault finding ET060
3	Coolant temperature sensor	PR002: Coolant temperature	Engine temperature $\pm 5^{\circ}\text{C}$	In the event of a fault: consult the fault finding PR002
4	Air temperature sensor	PR003: Air temperature	Temperature under bonnet $\pm 5^{\circ}\text{C}$	In the event of a fault: consult the fault finding PR003
5	Atmospheric pressure sensor	PR016: Atmospheric pressure PR001: Manifold pressure	$1000 \text{ mb} \pm 3\%$ (atmospheric pressure) $1000 \text{ mb} \pm 3\%$ (atmospheric pressure)	In the event of a fault: consult the fault finding PR001

PETROL INJECTION

Fault finding - Conformity check

NOTES	Ignition on, engine stopped.
	The values shown in the conformity check are only examples. If necessary, refer to the exact function specifications in the Workshop Repair Manual.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
PEDAL ASSEMBLY FUNCTION				
6	Accelerator pedal	No-load accelerator pedal		
		ET129: Accelerator pedal position: No load	ACTIVE	In the event of a fault: consult the fault finding PR112
		ET128: Accelerator pedal position: Full load	INACTIVE	
		PR112: Measured pedal position	15° ± 1°	
		PR120: Pedal no load programming	15° ± 1°	
		Accelerator pedal depressed slightly		
		ET129: Accelerator pedal position: No load	INACTIVE	In the event of a fault: consult the fault finding PR112
		ET128: Accelerator pedal position: Full load	INACTIVE	
		Accelerator pedal under full load		
		ET129: Accelerator pedal position: No load	INACTIVE	In the event of a fault: consult the fault finding PR112
		ET128: Accelerator pedal position: Full load	ACTIVE	
		PR112: Measured accelerator pedal position	92° ± 4°	

PETROL INJECTION

Fault finding - Conformity check

NOTES	Ignition on, engine stopped.
	The values shown in the conformity check are only examples. If necessary, refer to the exact function specifications in the Workshop Repair Manual.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
7	Brake pedal	<i>Brake pedal released</i> ET110: Brake pedal ET143: Redundant brake pedal (confirmation signal)	INACTIVE INACTIVE	In the event of a fault: consult the fault finding ET110, ET143
		<i>Brake pedal depressed</i> ET110: Brake pedal ET143: Redundant brake pedal (confirmation signal)	ACTIVE ACTIVE	In the event of a fault: consult the fault finding ET110, ET143
8	Clutch pedal	<i>Clutch pedal released</i> ET182: Clutch pedal switch	INACTIVE	In the event of a fault: consult the fault finding ET182
		<i>Clutch pedal depressed</i> ET182: Clutch pedal switch	ACTIVE	In the event of a fault: consult the fault finding ET182

PETROL INJECTION

Fault finding - Conformity check

NOTES	Ignition on, engine stopped.
	The values shown in the conformity check are only examples. If necessary, refer to the exact function specifications in the Workshop Repair Manual.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
MOTORISED THROTTLE VALVE FUNCTION				
9	Motorised throttle valve	No-load accelerator pedal		
		ET111: Throttle stop programming	ACTIVE	In the event of a fault, switch off the ignition and wait for loss of dialogue. Switch on the ignition again.
		ET118: Motorised throttle valve in defect mode	INACTIVE	In the event of a fault: a fault is declared by the diagnostic tool
		ET130: Motorised throttle valve closed	ACTIVE	In the event of a fault: consult the fault finding PR017
		PR113: Motorised throttle valve position setting	15° ± 2°	
		PR017: Measured throttle valve position	15° ± 2°	
		PR110: Measured throttle valve position gang 1	15° ± 2°	
		PR111: Measured throttle valve position gang 2	15° ± 2°	
		PR119: Motorised throttle valve lower stop	13° ± 2°	
		Accelerator pedal under full load		
		ET118: Motorised throttle valve in defect mode	INACTIVE	In the event of a fault: a fault is declared by the diagnostic tool
		ET131: Motorised throttle valve open	ACTIVE	In the event of a fault: consult the fault finding PR017
		PR113: Motorised throttle valve position setting	91° ± 3°	
		PR017: Measured throttle valve position	91° ± 3°	
		PR110: Measured throttle valve position gang 1	91° ± 3°	
		PR111: Measured throttle valve position gang 2	91° ± 3°	
		PR118: Motorised throttle valve upper stop	94° ± 3°	

PETROL INJECTION

Fault finding - Conformity check

NOTES	Ignition on, engine stopped.
	The values shown in the conformity check are only examples. If necessary, refer to the exact function specifications in the Workshop Repair Manual.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
CRUISE CONTROL/SPEED LIMITER FUNCTION				
10	Cruise control/ speed limiter	Switch in "Speed limiter" position ET192: Cruise control/speed limiter function	STATUS1: Speed limiter function	In the event of a fault: consult the fault finding ET192
		Switch in "Cruise control" position ET192: Cruise control/speed limiter function	STATUS2: Cruise control function	In the event of a fault: consult the fault finding ET192
		Instrument panel switch on speed limiter position and steering wheel control switch pressed on + ET192: Cruise control/speed limiter function	STATUS3: Increase switch pressed	In the event of a fault: consult the fault finding ET192
		Instrument panel switch on speed limiter position and steering wheel control switch pressed on - ET192: Cruise control/speed limiter function	STATUS4: Decrease switch pressed	In the event of a fault: consult the fault finding ET192
		Instrument panel switch on speed limiter position and steering wheel control switch pressed on suspend position. ET192: Cruise control/speed limiter function	STATUS5: Suspend switch pressed	In the event of a fault: consult the fault finding ET192

PETROL INJECTION

Fault finding - Conformity check

NOTES	Ignition on, engine stopped.
	The values shown in the conformity check are only examples. If necessary, refer to the exact function specifications in the Workshop Repair Manual.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
10 (continued)	Cruise control/ speed limiter	<i>Instrument panel switch on speed limiter position and steering wheel control switch pressed on resume position.</i> ET192: Cruise control/speed limiter function	STATUS6: Resume switch pressed	In the event of a fault: consult the fault finding ET192
ACTUATOR CONTROLS				
11	Fuel supply	AC010: Fuel pump relay	The fuel pump should be heard operating	In the event of a fault: consult the fault finding AC010
12	Fan unit	AC271: Low speed fan assembly relay	You should hear the fan running at low speed	In the event of a fault: consult the fault finding AC271
		AC272: High speed fan assembly relay	You should hear the fan running at high speed	In the event of a fault: consult the fault finding AC272
13	Canister bleed	AC016: Canister bleed solenoid valve	The canister bleed solenoid valve should be heard operating	In the event of a fault: consult the fault finding AC016
14	Motorised throttle valve	AC612: Motorised throttle valve	The motorised throttle valve should be heard operating	In the event of a fault: consult the fault finding AC612

PETROL INJECTION

Fault finding - Conformity check

NOTES	Engine warm at idle speed, no electrical consumers.
	The values shown in the conformity check are only examples. If necessary, refer to the exact function specifications in the Workshop Repair Manual.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
Electrical supply function				
1	Battery voltage	ET001: Computer + after ignition PR004: Computer supply voltage	ACTIVE $13 < X < 14.5 \text{ V}$	In the event of a fault: consult the fault finding PR004
Sensor function				
2	Flywheel signal	ET060: <i>Engine running flywheel signal</i>	ACTIVE	In the event of a fault: consult the fault finding ET060
3	Atmospheric pressure sensor	PR016: Atmospheric pressure PR001: Manifold pressure	$1000 \text{ mb} \pm 3\%$ (atmospheric pressure) $280 < X < 360 \text{ mb}$	In the event of a fault: consult the fault finding PR001
4	Pinking sensors	PR013: Pinking signal PR015: Anti-pinking correction	Should not be equal to 0. Should change when engine speed changes. $X \leq 5$	In the event of a fault: consult the fault finding PR013
Fan assembly function				
5	Fan assembly	PR002: Coolant temperature ET035: Low speed fan assembly	The fan assembly should cut in when the engine coolant temperature exceeds 99°C ACTIVE	In the event of a fault: consult the fault finding ET035
		PR002: Coolant temperature ET036: High speed fan assembly	The fan should cut in when the engine coolant temperature exceeds 102°C ACTIVE	In the event of a fault: consult the fault finding ET036

PETROL INJECTION

Fault finding - Conformity check

NOTES	Engine warm at idle speed, no electrical consumers.
	The values shown in the conformity check are only examples. If necessary, refer to the exact function specifications in the Workshop Repair Manual.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
Idle speed regulation function				
6	Idle speed regulation	ET039: Idle speed regulation PR 006: Engine speed PR041: Idle speed set point PR055: After-Sales idle speed set point <i>(Possibility of reducing or increasing the idling speed by means of the commands parameterised as VP004 and VP003)</i> PR040: Idle speed variance PR022: Idle speed opening cyclic ratio PR021: Idle speed opening cyclic ratio adaptive	ACTIVE $725 < X < 775 \text{ rpm}$ $725 < X < 775 \text{ rpm}$ Between 0 and 16 rpm on request $-25 < X < +25 \text{ rpm}$ $6\% < X < 15\%$ $- 6\% < X < 6\%$	In the event of a fault: consult the fault finding ET039
Richness regulation function				
7	Richness ratio regulation	ET037: Richness regulation PR009: Upstream sensor voltage PR035: Richness correction value	ACTIVE $20 < X < 800 \text{ mV}$ $0 < X < 255$	In the event of a fault: consult the fault finding ET037
Oxygen sensor function				
8	Upstream O2 sensor	ET030: Upstream O2 sensor heating ET157: Upstream sensor status	ACTIVE ACTIVE	In the event of a fault: consult the fault finding ET030 In the event of a fault: consult the fault finding ET157
9	Downstream O2 sensor	ET158: Downstream sensor status ET031: Downstream O2 sensor heating	ACTIVE ACTIVE	In the event of a fault: consult the fault finding ET158 In the event of a fault: consult the fault finding ET031

PETROL INJECTION

Fault finding - Conformity check

NOTES	Road test
	The values shown in the conformity check are only examples. If necessary, refer to the exact function specifications in the Workshop Repair Manual.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
Sensor function				
1	Pinking sensor	Vehicle under load. PR013: Pinking signal PR015: Anti-pinking correction	Should not be equal to 0. Should change when engine speed changes. $X \leq 5$	In the event of a fault: consult the fault finding PR013
2	Atmospheric pressure sensor	PR016: Atmospheric pressure PR001: Manifold pressure	$1000 \text{ mb} \pm 3\%$ (atmospheric pressure) $280 < X < 360 \text{ mb}$	In the event of a fault: consult the fault finding PR001
Pollutant emissions				
3	Pollutant emissions	2500 rpm after driving. With the engine at idling speed, wait for stabilisation.	$\text{CO} < 0.3\%$ $\text{CO}_2 > 13.5\%$ $\text{O}_2 < 0.8\%$ $\text{HC} < 100 \text{ ppm}$ $0.97 < I < 1.03$ $\text{CO} < 0.5\%$ $\text{HC} < 100 \text{ ppm}$ $0.97 < I < 1.03$	In the event of a fault: refer to the antipollution technical note.

ET030	<u>UPSTREAM O2 SENSOR HEATING</u>
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NOTES	There must be no present or stored faults.
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Check the cleanliness, connection and condition of the upstream oxygen sensor connector. Change the connector if necessary.
Check the heating resistance of the upstream oxygen sensor. (See the value in the HELP section). Replace the upstream oxygen sensor if necessary.
With the ignition on, check for + 12 Volts on track A of the upstream oxygen sensor connector. Repair if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track G1 connector C —————> Upstream oxygen sensor (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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ET031	<u>DOWNSTREAM O2 SENSOR HEATING</u>
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NOTES	There must be no present or stored faults.
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Check the cleanliness, connection and condition of the downstream oxygen sensor connector. Change the connector if necessary.
Check the heating resistance of the downstream oxygen sensor. (See the value in the HELP section). Replace the upstream oxygen sensor if necessary.
With the ignition on, check for + 12 volts on track A of the downstream oxygen sensor connector. Repair if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track G3 connector C —————> Downstream oxygen sensor (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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ET035	<u>LOW-SPEED FAN ASSEMBLY</u>
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NOTES	There must be no present or stored faults.
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Check the cleanliness and general condition of the fan (no sticking point).
Check the cleanliness, connection and condition of the fan assembly relay connector. Change the connector if necessary.
Disconnect the low speed fan relay. Check for +12 Volts on track 3 of the connector side of the relay. With the ignition on, check for +12 V on track 1 of the connector side of the relay. Repair if necessary.
Check the resistance of the low speed fan assembly relay on tracks 1 and 2 . (See the value in the HELP section). Change the low speed fan relay if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track F1 connector C —————> Low speed fan assembly relay (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
Disconnect the low speed fan relay. Check the insulation, the continuity and the absence of interference resistance of the connection between track 5 of the relay and the fan assembly. Repair if necessary.
Check the insulation, continuity and the absence of interference resistance of the fan assembly earth connection. Repair if necessary.
If that still does not work, replace the fan.

AFTER REPAIR	Repeat the conformity check from the start.
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ET036	<u>HIGH-SPEED FAN ASSEMBLY</u>
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NOTES	There must be no present or stored faults.
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Check the cleanliness and general condition of the fan (no sticking point).
Check the cleanliness, connection and condition of the fan assembly relay connector. Change the connector if necessary.
Disconnect the high speed fan relay. Check for +12 Volts on track 3 of the connector side of the relay. With the ignition on, check for +12 V on track 1 of the connector side of the relay. Repair if necessary.
Check the resistance of the high speed fan assembly relay on tracks 1 and 2. (See the value in the HELP section). Change the high speed fan relay if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track F2 connector C —————> High speed fan assembly relay (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
Disconnect the high speed fan relay. Check the insulation, the continuity and the absence of interference resistance of the connection between track 5 of the relay and the fan assembly. Repair if necessary.
Check the insulation, continuity and the absence of interference resistance of the fan assembly earth connection. Repair if necessary.
If that still does not work, replace the fan.

AFTER REPAIR	Repeat the conformity check from the start.
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ET037	<u>RICHNESS REGULATION</u>
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NOTES	There must be no present or stored faults.
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<p>If the vehicle is driven frequently in town, decoke the engine.</p>
<p>Check the cleanliness, connection and condition of the upstream oxygen sensor connector. Change the connector if necessary.</p>
<p>Check the heating resistance of the upstream oxygen sensor. (See the value in the HELP section). Replace the upstream oxygen sensor if necessary.</p>
<p>Check the resistance of the upstream oxygen sensor signal circuit. (See the value in the HELP section). Replace the upstream oxygen sensor if necessary.</p>
<p>With the ignition on, check for +12 Volts on the upstream oxygen sensor connector. (See connector track number on the corresponding wiring diagram). Repair if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bournier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p>Computer track C1 connector C —————> Upstream oxygen sensor Computer track B1 connector C —————> Upstream oxygen sensor Computer track G1 connector C —————> Upstream oxygen sensor</p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
<ul style="list-style-type: none"> – Check the condition of the air filter. – Check the spark plugs and the entire ignition circuit. – Check the leaktightness of the canister bleed circuit. – Check that the inlet manifold and the exhaust system are completely sealed. – Check the petrol supply circuit and its filter. – Check fuel pressure. – If idling is irregular, check the valve clearances and the timing.
<p>Change the oxygen sensor if the incident persists.</p>

AFTER REPAIR	Repeat the conformity check from the start.
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ET039

IDLE SPEED REGULATION

NOTES

There must be no present or stored faults.

NOTES

Idle speed is too slow.

- Clean the air supply circuit (throttle unit, idle speed regulation stepper motor), since it may be dirty.
- Check the engine oil level (too high --> splashing).
- Check the engine compression
- Check the valve clearances and timing.
- Check ignition.
- Check the injectors

NOTES

Idle speed is too high.

- Check the engine oil level.
- Check that the pressure sensor is operating correctly.
- Check the cleanliness of the pipes on the manifold.
- Check the pneumatically-controlled solenoid valves.
- Check the manifold gaskets.
- Check the throttle unit gaskets.
- Check the brake servo sealing.
- Check that the restrictions are present in the oil vapour rebreathing circuit.
- Check the valve clearances and timing.

AFTER REPAIR

Repeat the conformity check from the start.

ET060	<u>FLYWHEEL SIGNAL WITH ENGINE RUNNING</u>
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NOTES	There must be no present or stored faults.
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Check the cleanliness, connection and condition of the target sensor, its connector and the cable. Replace any parts if necessary.
Check that the engine flywheel sensor is mounted correctly . Check the sensor/flywheel air gap .
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: Computer track E4 connector B —————> Target sensor Computer track F3 connector B —————> Target sensor (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
Check the resistance of the target sensor. (See the value in the HELP section). Replace the sensor if necessary.
If there is still a fault, check the cleanliness and condition of the engine flywheel.

AFTER REPAIR	Repeat the conformity check from the start.
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ET110	<u>BRAKE PEDAL</u>
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NOTES	There must be no present or stored faults.
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Check the condition of the pedal assembly.
Check the cleanliness, connection and condition of the double-contact brake switch and its connector. Replace any parts if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track E4 or G3 connector A —————> Brake pedal (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
If it still does not operate, replace the switch.
Refer to the ABS fault finding procedure if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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ET143	<u>REDUNDANT BRAKE PEDAL</u> (Confirmation signal)
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NOTES	None.
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- Run a multiplex network test.
- Refer to the "Multiplex Network" and "ABS/ESP" sections of the Workshop Repair Manual.
- Carry out a fault finding procedure on the ABS/ESP system, if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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ET157	<u>UPSTREAM SENSOR STATUS</u>
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NOTES	There must be no present or stored faults.
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<p>Check that the manifold pressure sensor is properly fitted. Check that the inlet line is tight, from the throttle to the cylinder. Verify that no seals are defective. Verify the canister bleed and its circuit. Verify that the manifold air temperature sensor is properly fitted. Check that the throttle air temperature sensor is properly fitted. Check that the resonator is not cracked.</p>
Check the condition and fitting of the upstream sensor.
Check that there are no air leaks on the exhaust pipe.
If the vehicle is driven frequently in town, decoke the engine .
Check the cleanliness, connection and condition of the upstream oxygen sensor connector. Change the connector if necessary.
Check the resistance of the upstream oxygen sensor circuit . (See the value in the HELP section). Replace the upstream oxygen sensor if necessary.
With the ignition on, check for +12 Volts on the upstream oxygen sensor. Repair if necessary.
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p>Computer track C1 connector B —————> Upstream oxygen sensor Computer track B1 connector B —————> Upstream oxygen sensor</p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>

AFTER REPAIR	Repeat the conformity check from the start.
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ET158	<u>DOWNSTREAM SENSOR STATUS</u>
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NOTES	There must be no present or stored faults.
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Check the condition and fitting of the downstream sensor.
If the vehicle is driven frequently in town, decoke the engine .
Check the connection and condition of the downstream oxygen sensor connector. Change the connector if necessary.
Check the resistance of the downstream oxygen sensor circuit. (See the value in the HELP section). Replace the downstream oxygen sensor if necessary.
With the ignition on, check for +12 Volts on the downstream oxygen sensor. Repair if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: Computer track B2 connector B —————> Downstream oxygen sensor Computer track A2 connector B —————> Downstream oxygen sensor (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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ET182	<u>CLUTCH PEDAL SWITCH</u>
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NOTES	There must be no present or stored faults.
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Check the condition of the pedal assembly.
Check the cleanliness, connection and condition of the clutch pedal switch and its connector. Clean or replace it if necessary.
Check for the presence of earth on the clutch pedal switch. (See connector track number on the corresponding wiring diagram). Repair if necessary.
<ul style="list-style-type: none">– Run a multiplex network test.– Refer to the "Multiplex Network" and "Instrument Panel" sections of the Workshop Repair Manual.– Perform fault finding on the "Instrument panel" system if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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ET192	<u>CRUISE CONTROL/SPEED LIMITER FUNCTION</u>
NOTES	There must be no present or stored faults.
	Warning: The airbag must be removed in order to remove or check the cruise control/speed limiter control switches. Refer to the Airbag section in the Workshop Repair Manual.
STATUS1 STATUS2	<p>Check the cleanliness, connection and condition of the start switch of the cruise control/speed limiter and the connection and condition of its connector. Replace any parts if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <p>Computer track A2 connector A —————> On/Off switch Computer track C3 connector A —————> On/Off switch</p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
STATUS3 STATUS4 STATUS5 STATUS6	<p>Check the cleanliness, connection and condition of the increase switches on the steering wheel and their connectors. Replace any parts if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p>Computer track D2 connector A —————> Steering wheel control Computer track D3 connector A —————> Steering wheel control</p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
AFTER REPAIR	Repeat the conformity check from the start.

PR001	<u>MANIFOLD PRESSURE</u>
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NOTES	There must be no present or stored faults.
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<p>Check that the manifold pressure sensor is properly fitted. Check that the inlet line is tight, from the throttle to the cylinder. Verify that no seals are defective. Check that the canister bleed is not disconnected nor blocked open. Verify that the manifold air temperature sensor is properly fitted. Check that the throttle air temperature sensor is properly fitted. Check that the resonator is not cracked.</p>
<p>Check the cleanliness, connection and condition of the sensor and its connection. Replace any parts if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p style="margin-left: 40px;"> Computer track H2 connector B —————> Pressure sensor Computer track H3 connector B —————> Pressure sensor Computer track H4 connector B —————> Pressure sensor </p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
<p>Check that the pressure sensor is properly connected pneumatically and that the pipe is in good condition.</p>
<p>Using a vacuum pump, check the consistency of the manifold pressure. Check the consistency with parameter PR001 in the diagnostic tool. Replace the sensor if necessary.</p>
<p>If PR001 > Maximum at idling speed: Check the valve clearance. Check that the purge canister is closed at idling speed. Check the cylinder compressions.</p>

AFTER REPAIR	Repeat the conformity check from the start.
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PR002

COOLANT TEMPERATURE

NOTES

There must be no present or stored faults.

Check the **cleanliness, connection and condition** of the coolant temperature sensor connector.
Change the connector if necessary.

Check the **resistance** of the coolant temperature sensor at different temperatures. (See the values in the HELP section).
Replace the coolant temperature sensor if necessary.

Disconnect the battery.
Disconnect the computer. Check the **cleanliness and condition** of the connections.
Connect the bornier in place of the computer and check the **insulation, continuity and absence of interference resistance** on the following connections:

Computer track F2 connector B —————> **Coolant temperature sensor**

Computer track F4 connector B —————> **Coolant temperature sensor**

(See the connector track numbers in the corresponding wiring diagram).

Repair if necessary.

AFTER REPAIR

Repeat the conformity check from the start.

Fault finding - Interpretation of parameters

PR003	<u>AIR TEMPERATURE</u>
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NOTES	There must be no present or stored faults.
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Check the cleanliness, connection and condition of the manifold air temperature sensor connector. Change the connector if necessary.
Check the resistance of the manifold air temperature sensor at different temperatures. (See the values in the HELP section). Replace the air temperature sensor if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: Computer track E3 connector B —————> Manifold air temperature sensor Computer track E2 connector B —————> Manifold air temperature sensor (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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Fault finding - Interpretation of parameters

PR004	<u>COMPUTER SUPPLY VOLTAGE</u>
NOTES	There must be no present or stored faults. No electrical consumers.
Ignition on	<p>If the voltage is minimum: Check the battery and the charge circuit. (See the corresponding section in the Workshop Repair Manual).</p> <p>If the voltage is maximum: Check the charge circuit with and without electrical consumers switched on. (See the corresponding section in the Workshop Repair Manual).</p>
At idle speed	<p>If the voltage is minimum: Check the battery and the charge circuit. (See the corresponding section in the Workshop Repair Manual).</p> <p>If the voltage is maximum: Check that the charging voltage is correct with and without electrical consumers. (See the corresponding section in the Workshop Repair Manual).</p>
AFTER REPAIR	Repeat the conformity check from the start.

PR013	<u>PINKING SIGNAL</u>
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NOTES	There must be no present or stored faults.
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<p>The pinking sensor should give a signal which is not zero, to prove that it is recording the mechanical vibrations of the engine.</p>
Check the conformity of the fuel in the tank.
Check the conformity of the spark plugs.
Check the tightness of the pinking sensor.
Check the cleanliness, connection and condition of the sensor and the connector. Replace any parts if necessary.
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <p> Computer track A2 connector B —————> Pinking sensor Computer track B2 connector B —————> Pinking sensor Computer track C2 connector B —————> Pinking sensor shielding </p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
If the fault persists, replace the pinking sensor.

AFTER REPAIR	Repeat the conformity check from the start.
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PR017	<u>MEASURED THROTTLE VALVE POSITION</u>
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NOTES	Important: Do not drive the vehicle until you have checked that the computer is clear of any fault relating to the throttle unit.
	There must be no present or stored faults.

Check that there are no foreign bodies in the throttle valve.
Check the cleanliness, connection and condition of the connections on the throttle potentiometer. Replace any parts if necessary.
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p>Computer track G4 connector B —————▶ Throttle potentiometer Computer track D3 connector B —————▶ Throttle potentiometer Computer track G2 connector B —————▶ Throttle potentiometer Computer track G3 connector B —————▶ Throttle potentiometer</p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
Check that the resistances of the throttle potentiometer gangs 1 and 2 correctly follow their curves by moving the throttle valve from no load to full load position. (See the values in the HELP section). Correct or change the throttle position potentiometer if necessary.

AFTER REPAIR	<p>If the throttle body has been replaced, all programmed values must be reinitialised ("RZ008"). Repeat the conformity check from the start.</p>
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PR030	<u>RICHNESS ADAPTIVE OPERATION</u>
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NOTES	<p>There must be no present or stored faults.</p> <p>If the PR030 or PR031 is near the min. stop, there is too much petrol.</p> <p>If the PR030 or PR031 is near the max. stop, there is insufficient petrol.</p>
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<ul style="list-style-type: none"> – Check the condition of the air filter. – Check the spark plugs and the entire ignition circuit. – Check the leaktightness of the canister bleed circuit. – Check the lsealing of the inlet manifold and the complete exhaust system. – Check the petrol supply circuit and its filter. – Check fuel pressure. – If idling is irregular, check the valve clearances and the timing.
If the vehicle is driven frequently in town, decoke the engine .
Check the cleanliness, connection and condition of the upstream oxygen sensor connector. Change the connector if necessary.
Check the heating resistance of the upstream oxygen sensor. (See the value in the HELP section). Replace the upstream oxygen sensor if necessary.
With the ignition on, check for + 12 Volts on track A of the upstream oxygen sensor connector. Repair if necessary.
<p>Disconnect the battery.</p> <p>Disconnect the computer. Check the cleanliness and condition of the connections.</p> <p>Connect the borrier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p>Computer track C1 connector C —————> Upstream oxygen sensor</p> <p>Computer track B1 connector C —————> Upstream oxygen sensor</p> <p>Computer track G1 connector C —————> Upstream oxygen sensor</p> <p>(See the connector track numbers in the corresponding wiring diagram).</p> <p>Repair if necessary.</p>
Change the oxygen sensor if the incident persists.

AFTER REPAIR	Repeat the conformity check from the start.
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Fault finding - Interpretation of parameters

PR112	<u>MEASURED ACCELERATOR PEDAL POSITION</u>
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NOTES	There must be no present or stored faults.
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Check that the pedal is not mechanically seized.
Check the cleanliness, connection and condition of the pedal potentiometer connector. Change the connector if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections: Computer track H3 connector A —————> Pedal potentiometer Computer track G2 connector A —————> Pedal potentiometer Computer track H2 connector A —————> Pedal potentiometer Computer track F4 connector A —————> Pedal potentiometer Computer track F2 connector A —————> Pedal potentiometer Computer track F3 connector A —————> Pedal potentiometer (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
Check that the resistances of the pedal potentiometer, gangs 1 and 2 , correctly follow their resistive curves. (See the values in the Help section). Change the pedal potentiometer if necessary.
If the incident persists, change the pedal potentiometer.

AFTER REPAIR	Repeat the conformity check from the start.
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AC010	<u>FUEL PUMP RELAY</u>
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NOTES	There must be no present or stored faults.
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Check the supply fuse of the fuel pump relay. Replace the fuse if necessary.
Check the connection and condition of the fuel pump relay connector. Change the connector if necessary.
Disconnect the relay. With the ignition on, check for +12 V on track 1 on the connector side of the fuel pump relay. Repair if necessary.
Check the resistance of the fuel pump relay on tracks 1 and 2 . (See the value in the HELP section). Replace the fuel pump relay if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track D1 connector C —————> Fuel pump relay (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
If the fault persists, change the relay.

AFTER REPAIR	Repeat the conformity check from the start.
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Fault finding - Interpretation of commands

AC016	<u>CANISTER BLEED SOLENOID VALVE</u>
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NOTES	There must be no present or stored faults.
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Check the cleanliness, connection and condition of the connector for the canister bleed solenoid valve. Change the connector if necessary.
With the ignition on, check for +12 V on the canister bleed solenoid valve . Repair if necessary.
Check the resistance of the canister bleed solenoid valve. (See the value in the HELP section). Change the solenoid valve if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track E1 connector C —————> Canister bleed solenoid valve (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
If the fault persists, change the solenoid valve.

AFTER REPAIR	Repeat the conformity check from the start.
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AC271	<u>LOW-SPEED FAN RELAY</u>
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NOTES	There must be no present or stored faults.
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Check the connection and condition of the low-speed fan assembly relay connector. Change the connector if necessary.
Disconnect the low-speed fan relay. With the ignition on, check for +12 V on track 1 of the relay. Repair if necessary.
Check the resistance of the low-speed fan assembly relay on tracks 1 and 2 . (See the value in the HELP section). Replace the low-speed fan relay if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track F1 connector C —————> Low speed fan assembly relay (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
Check the insulation, the continuity and the absence of interference resistance of the connection between track 5 of the relay and the fan assembly. Repair if necessary.
Check the insulation, the continuity and the absence of interference resistance of the earth connection of the fan unit. Repair if necessary.
Check the condition of the fan assembly. Replace the fan assembly if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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AC272	<u>HIGH SPEED FAN ASSEMBLY RELAY</u>
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NOTES	There must be no present or stored faults.
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Check the cleanliness, connection and condition of the high-speed fan assembly relay connector. Change the connector if necessary.
Disconnect the high-speed fan relay. With the ignition on, check for +12 V on track 1 of the relay. Repair if necessary.
Check the resistance of the high speed fan assembly relay on tracks 1 and 2 . (See the value in the HELP section). Replace the high-speed fan relay if necessary.
Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer track F2 connector C —————> High speed fan assembly relay (See the connector track numbers in the corresponding wiring diagram). Repair if necessary.
Check the insulation, the continuity and the absence of interference resistance of the connection between track 5 of the relay and the fan assembly. Repair if necessary.
Check the insulation, the continuity and the absence of interference resistance of the earth connection of the fan unit. Repair if necessary.
Check the condition of the fan assembly. Replace the fan assembly if necessary.

AFTER REPAIR	Repeat the conformity check from the start.
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AC612	<u>MOTORISED THROTTLE VALVE</u>
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NOTES	Important: Never drive the vehicle until you have checked that the computer is clear of any fault relating to the throttle valve.
	There must be no present or stored faults.

Check the cleanliness of the throttle valve, and that the throttle rotates correctly . Clean or replace it if necessary.
Check the cleanliness, connection and condition of the connections. Clean or replace it if necessary.
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <p>Computer track M3 connector B —————> Motorised throttle valve Computer track M4 connector B —————> Motorised throttle valve Computer track G4 connector B —————> Motorised throttle valve</p> <p>(See the connector track numbers in the corresponding wiring diagram). Repair if necessary.</p>
Check the electrical resistance of the throttle motor. (See the value in the HELP section). Clean or replace the throttle valve if necessary.

AFTER REPAIR	If the throttle valve has been changed, reinitialise the programming (RZ008). Repeat the conformity check from the start.
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ELECTRICAL RESISTANCE OF COMPONENTS

Resistance values of components at 20°C:

Injectors	→	1.8 Ohms ± 5%
Actuator relay	→	65 Ohms ± 10%
Throttle motor	→	1.5 Ohms ± 5%
Canister bleed solenoid valve	→	25 Ohms ± 10%
Primary ignition coils	→	0.5 Ohm
Secondary ignition coils	→	11 kohm ± 20%

Flywheel sensor —————→ **230 Ohms ± 20%**

Upstream oxygen sensor heating —————→ **9 Ohms ± 10%**

Downstream oxygen sensor heating —————→ **9 Ohms ± 10%**

Thermoplunger N°1 relay —————→ **65 Ohms ± 10%**

Thermoplunger N°2 relay —————→ **65 Ohms ± 10%**

Thermoplungers —————→ **1 Ohm ± 5%**

High speed fan assembly relay —————→ **65 Ohms ± 10%**

Low speed fan assembly relay —————→ **65 Ohms ± 10%**

Values for variable resistance components:

<i>Temperature in °C</i>	-10	25	50	80	110
<i>Manifold air temperature sensor, in Ohms</i>	10450 to 8585	2120 to 1880	860 to 760	-	-
<i>Coolant temperature sensor, in Ohms</i>	-	2360 to 2140	850 to 770	290 to 275	117 to 112

<i>Accelerator pedal potentiometer (20°C)</i>		
<i>No load position, gang 1</i>	Tracks G2 and H2, computer connector A 3240 Ohms ± 20%	Tracks H3 and H2, computer connector A 1950 Ohms ± 20%
<i>Full load position, gang 1</i>	Tracks G2 and H2, computer connector A 1600 Ohms ± 20%	Tracks H3 and H2, computer connector A 3100 Ohms ± 20%
<i>No load gang 2</i>	Tracks F2 and F3, computer connector A 4530 Ohms ± 20%	Tracks F3 and F4, computer connector A 1920 Ohms ± 20%
<i>Full load gang 2</i>	Tracks F2 and F3, computer connector A 5600 Ohms ± 20%	Tracks F3 and F4, computer connector A 5350 Ohms ± 20%

<i>MGI throttle potentiometer (20°C)</i>		
<i>Throttle position "Limp-home" gang 1</i> (Throttle position with engine stopped)	Tracks G3 and G2, computer connector B 1180 Ohms ± 20%	tracks G3 and G4, computer connector B 1910 Ohms ± 20%
- - - - -	- - - - -	- - - - -
<i>Throttle position fully open gang 1</i> (Keep throttle open manually)	Tracks G3 and G2, computer connector B 1940 Ohms ± 20%	tracks G3 and G4, computer connector B 740 Ohms ± 20%
<i>Throttle position "Limp-home" gang 2</i> (Throttle position with engine stopped)	Tracks D3 and G2, computer connector B 1045 Ohms ± 20%	Tracks D3 and G4, computer connector B 1770 Ohms ± 20%
- - - - -	- - - - -	- - - - -
<i>Throttle position fully open gang 2</i> (Keep throttle open manually)	Tracks D3 and G2, computer connector B 1890 Ohms ± 20%	Tracks D3 and G4, computer connector B 685 Ohms ± 20%

NOTES

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

NO DIALOGUE WITH THE COMPUTER

→ ALP 1

THE ENGINE WILL NOT START

→ ALP 2

IDLING SPEED FAULTS

→ ALP 3

FAULTS WHILE DRIVING

→ ALP 4

AFTER REPAIR

Test using the diagnostic tool.

ALP1	NO DIALOGUE WITH THE COMPUTER
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NOTES	None.
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<p>Check the condition of the battery and the vehicle earths. Repair if necessary.</p>
<p>Try the diagnostic tool on another vehicle.</p>
<ul style="list-style-type: none"> – Check the injection, engine and passenger compartment fuses. – Check, on the vehicle, the cleanliness and condition of the diagnostic socket and its connections. – Use the diagnostic socket to check the following tracks: <ul style="list-style-type: none"> Track 1 —————> + After ignition feed Track 16 —————> + Battery feed Track 4 and 5 —————> Earth <p>Repair if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the cleanliness and condition of the connections. Connect the borrier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connections:</p> <ul style="list-style-type: none"> Injection computer track H1 connector C —————> Earth Injection computer track H4 connector A —————> Earth Injection computer track G4 connector A —————> Earth Injection computer track B4 connector A —————> Diagnostic socket track 7 Injection computer track A4 connector B —————> + After ignition Injection computer track G2 connector C —————> + After ignition <p>Repair if necessary.</p>
<p>Check the connection and condition of the connector of the injection actuator relay. Change the connector if necessary.</p>
<p>Check the resistance of the injection actuator relay. (See the value in the HELP section). Change the actuator relay if necessary.</p>
<p>Check for presence of 12V on channel 1 of the injection actuator relay. Repair the wire to the fuse.</p>
<p>Check the insulation and continuity of the connection between: Injection computer track D4 connector B —————> Injection actuator relay.</p> <p>Repair if necessary.</p>

AFTER REPAIR	Test using the diagnostic tool.
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PETROL INJECTION

Diagnostic - Fault finding charts

ALP2	THE VEHICLE WILL NOT START
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NOTES	<p>Follow fault finding chart 2 after performing a complete check with the diagnostic tool.</p> <p>(Consult the Repair Manual for certain operations if necessary).</p>
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<p>If the starter motor does not engage, there may be an engine immobiliser fault. Check the immobiliser with the diagnostic tool.</p>	
<ul style="list-style-type: none"> – Check that the impact sensor is not switched on. Check that it is working. 	
<ul style="list-style-type: none"> – Check the cleanliness and condition of the battery. – Check that the battery is correctly earthed to the vehicle body. – Check + battery connections. – Check the battery charge. 	
<ul style="list-style-type: none"> – Check that the starter motor is properly connected. – Check that the starter motor is operating correctly. (See the corresponding section in the Workshop Repair Manual). 	
<ul style="list-style-type: none"> – Check that the ignition coil unit is not cracked. – Check the condition and cleanliness of the coil unit. – Check the condition and conformity of spark plugs. – Check the ignition secondary circuits. – Check the mounting, cleanliness, condition and air gap of the flywheel signal sensor. – Check the condition of the flywheel. 	
<ul style="list-style-type: none"> – Check that the air intake circuit is not clogged up. 	
<ul style="list-style-type: none"> – Check whether there is fuel 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 condition of the petrol filter. – Check that the fuel pump is operating correctly. – Check fuel pressure. – Check that the injectors are working. 	
<ul style="list-style-type: none"> – Check that the exhaust system is not blocked nor the catalytic converter clogged. 	
<ul style="list-style-type: none"> – Check the timing. 	
<ul style="list-style-type: none"> – Check the engine compression. 	

AFTER REPAIR	Test using the diagnostic tool.
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PETROL INJECTION

Diagnostic - Fault finding charts

ALP 3	IDLING SPEED FAULTS
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NOTES	<p>Follow fault finding chart 3 after performing a complete check with the diagnostic tool.</p> <p>(Consult the Repair Manual for certain operations if necessary).</p>
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<ul style="list-style-type: none"> – Check on the dipstick that the oil level is not too high
<ul style="list-style-type: none"> – Check the condition and cleanliness of the ignition coil unit. – Check the condition and conformity of spark plugs. – Check the ignition secondary circuits. – Check the mounting, cleanliness, condition and air gap of the flywheel signal sensor. – Check the condition and cleanliness of the flywheel.
<ul style="list-style-type: none"> – Check that the air intake circuit is not clogged up. – Check that the inlet line is tight, from the throttle to the cylinder. – Verify that no seals are defective. – Check that the canister bleed is not disconnected nor blocked open. – Check that there is no leak in the canister bleed circuit. – Check that there is no leak in the brake servo circuit. – Verify that the manifold air temperature sensor is properly fitted. – Check that the manifold pressure sensor is properly fitted. – Check that the resonator is not cracked. – Check that throttle body is not clogged. – Check that the throttle is rotating correctly.
<ul style="list-style-type: none"> – 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 condition of the petrol filter. – Check that the fuel pump is operating correctly. – Check fuel pressure. – Check that the injectors are working.
<ul style="list-style-type: none"> – Check that the exhaust system is not blocked nor the catalytic converter clogged.
<ul style="list-style-type: none"> – Check the timing.
<ul style="list-style-type: none"> – Check the engine compression.

AFTER REPAIR	Test using the diagnostic tool.
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PETROL INJECTION

Diagnostic - Fault finding charts

17

ALP4	FAULTS WHILE DRIVING
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NOTES	<p>Follow fault finding chart 4 after performing a complete check with the diagnostic tool.</p> <p>(Consult the Repair Manual for certain operations if necessary).</p>
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– Check on the dipstick that the oil level is not too high
– Check that the exhaust manifold is not leaking.
– Check the condition of the air filter.
<ul style="list-style-type: none"> – Check the condition and cleanliness of the ignition coil unit. – Check the condition and conformity of spark plugs. – Check the secondary ignition circuits. – Check the mounting, cleanliness, condition and air gap of the flywheel signal sensor. – Check the condition and cleanliness of the flywheel.
<ul style="list-style-type: none"> – Check that the air intake circuit is not clogged up. – Check that the inlet line is tight, from the throttle to the cylinder. – Verify that no seals are defective. – Check that the canister bleed is not disconnected nor blocked open. – Check that there is no leak in the canister bleed circuit. – Check that there is no leak in the brake servo circuit. – Verify that the manifold air temperature sensor is properly fitted. – Check that the manifold pressure sensor is properly fitted. – Check that the resonator is not cracked. – Check that throttle body is not clogged. – Check that the throttle is rotating correctly.
<ul style="list-style-type: none"> – 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 condition of the petrol filter. – Check that the fuel pump is operating correctly. – Check fuel pressure. – Check that the injectors are working.
– Check that the exhaust system is not blocked nor the catalytic converter clogged.
– Check the timing.
– Check the engine compression.

AFTER REPAIR	Test using the diagnostic tool.
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This document presents the generic fault finding applicable to all 5 NR, VDIAG 04 computers fitted on Clio II from June 2001 (Europe version).

To carry out fault finding on this system, it is essential to have the following items:

- The section of the Repair Manual,
- The wiring diagrams for the function on the vehicle concerned,
- The test bornier N° Elé 1618, a multimeter and the CLIP or NXR diagnostic tool.

GENERAL APPROACH TO FAULT FINDING

- Use one of the diagnostic tools to identify the system fitted to the vehicle (to read the computer group, the program N°, the Vdiag, etc.).

Identification is made by reading the following information:

COMPUTER PART NUMBER

5 NR

VDIAG NUMBER

04

PROGRAM NUMBER
(from:)

24

- Locate the Fault finding documents corresponding to the system identified.
- Take note of information contained in the introductory sections.

DESCRIPTION OF THE FAULT FINDING PHASES

1 - FAULT CHECKING

It is essential to start with this stage before any work is done on the vehicle.

Order of priority

Electrical faults must be dealt with before OBD (on-board diagnostics) faults (**DF111**, **DF112**, **DF113**, **DF114**, misfires in cylinders 1 to 4; **DF165** detection of misfires; **DF102** oxygen sensor operating fault; **DF106** catalytic converter operating fault; **DF116** fuel system operating fault).

Note that no electrical fault may be present or stored in the memory when dealing with OBD (on-board diagnostics) operating faults.

Other priorities are dealt with in the NOTES section of the fault finding procedure for the fault in question.

Reminder: Each fault is interpreted for a particular type of storage (fault present, fault stored in memory, fault present or stored). The checks defined for dealing with each fault are therefore only to be performed if the fault declared by the diagnostic tool is interpreted in the document for its type of storage. The storage type should be considered when using the diagnostic tool after the ignition has been switched off and switched back on.

If a fault is interpreted when it is declared as stored, the conditions for applying fault finding appear in the NOTES box. If these conditions are not satisfied, use the fault finding procedure to check the circuit of the faulty part concerned. This indicates that the fault is no longer present on the vehicle.

Perform the same operation when a fault is declared stored by the fault finding tool but is only described in the documentation for a present fault.

2 - CONFORMITY CHECK

The conformity check is designed to check the statuses and parameters which do not display any faults on the diagnostic tool when they are outside the permitted tolerance values. Therefore, this stage is used to:

- allows problems to be diagnosed without a fault being displayed (e.g. as a result of a customer complaint).
- Correct operation of the injection to be checked to ensure that after repair the parameters and statuses are correct.

This section gives the diagnostic procedures for statuses and parameters and the conditions for checking them. If a status is not operating normally or a parameter is outside permitted tolerance values, you should consult the diagnostic page corresponding to the element concerned.

N.B.: the substitution values shown in the conformity check correspond to the default values that the computer uses when the element concerned no longer sends information to the computer or the information is inconsistent.

3 - DIAGNOSTIC TOOL CHECK CORRECT

If the checks using the diagnostic tool are satisfactory, but the customer complaint is still present, the problem should be dealt with using the "Customer complaint" diagnostic.

Dealing with the customer complaint

This section has fault finding charts, which suggest a series of possible causes of the fault. These lines of investigation must only be used in the following cases:

- No fault observed on diagnostic tool.
- No fault detected during conformity check.
- The vehicle is not operating correctly.

GENERAL OBSERVATIONS

1 - FAULT WARNING LIGHT MANAGEMENT

The warning lights on the instrument panel (configuration with 3 active bulbs) light up according to the faults detected.

Level 1 safety warning light (orange injection warning light)	Level 2 safety warning light (coolant temperature red warning light)	EOBD warning light (orange pollution warning light)
<ul style="list-style-type: none">– throttle control– throttle programming– automatic throttle control– pedal sensor– throttle potentiometer– brake pedal signal– manifold pressure sensor– air component– inlet manifold– computer– sensor reference voltage– main relay– air conditioning + after relay	<ul style="list-style-type: none">– coolant temperature warning (permanent lighting of the coolant temperature warning light):– computer (coolant temperature warning light flashing):	<ul style="list-style-type: none">– engine misfiring– catalytic converter– oxygen sensors– upstream oxygen sensor heater– fuel system– canister– fuel richness autoadaptives

N.B.: if the level 2 warning light illuminates, apart from fault codes relating to engine cooling, **the computer must be replaced, after switching the ignition off and on and confirming that the latter comes on.**

2 - PROGRAMMING OPERATIONS

The programming operations below will be necessary every time one of the following items is replaced in After Sales operation: **computer, throttle body** and every time the autoadaptive systems are adjusted.

2.1 Operation for programming the throttle valve limit:

This operation is carried out the first time the ignition is switched on after the computer or the throttle body has been changed, and whenever the ignition is switched on, provided the battery voltage is correct and the coolant temperature is in excess of 6°C.

This operation is automatic (it only requires the ignition to be switched on) and lasts 3 seconds.

The programmed position is stored when the ignition is switched off.

Correct programming is shown by the absence of faults in this function and is required for satisfactory driving behaviour.

2.1.1 Programming of the backup position of the motorized throttle valve:

This programming involves the computer learning the value of the minimum stop of the throttle valve. This operation is also carried out as the system ages, if the stop stored is moved.

2.1.2 Programming the bottom stop of the throttle:

Following the programming of the emergency stop of the throttle valve, the throttle valve is set to closed and its position stored in order to utilize the full control range currently available.

GENERAL OBSERVATIONS

2.2 Minimum throttle air inlet programming operation:

This operation consists of allowing the engine to run at idle speed until the coolant temperature reaches 60°C, in order to enable the computer to carry out the torque sequence calculation (estimated time starting from a coolant temperature of 20°C: approximately 3 minutes).

This operation will be stored in the computer memory when the ignition is switched off.

2.3 Operation to program the phonic wheel (toothed ring) for detecting engine misfires:

There are two levels of programming:

- Programming limited in scope to EOBD tests. This programming is carried out at the start of the tests by acceleration under no load until the engine speed limit is reached, then return to idle speed for cutoff and renewed power take up.
- Full programming, used for fault finding which explores all levels of operation. This programming operation involves driving the vehicle in 2nd or 3rd gear, reaching the maximum engine speed at 72 mph (120 km/h) and then returning to idle speed by a long deceleration to take up the power again and the idle speed.

2.4 Operation for programming the presence of the power assisted steering sensor:

This operation consists of turning the steering to full lock twice, with the engine running at idle speed.

2.5 Operation to prime the fuel system after replacement of the computer:

This operation is performed the first time the ignition is switched on (blank computer) and consists of operating the fuel pump for 20 seconds. This operation is started, with the ignition switched on, by pressing the accelerator pedal to 3/4 of its full travel for one second. It will be performed if this operation did not take place the first time. It will not be performed again unless data is downloaded or a new computer is fitted.

2.6 No load/full load recognition operation:

This operation is not necessary with 5NR injection.

2.7 Auto-adaptive resetting operation:

This operation consists of leaving the engine running at idle speed for 15 minutes (throttle programming carried out).

2.8 Operation of automatic recognition of the options present:

This operation, carried out automatically by the 5NR system, prevents a diversity of software references by creating a single communal software for all the applications relating to the equipment present on the vehicle.

N.B.: the recognition of the heating and ventilation system configuration is carried out with the engine running on first actuation of the heating and ventilation system control, with the passenger compartment ventilation fan set to the required speed.

Warning: for the Sequential Gearbox, it has been decided to opt for specific software for the 5NR.

– DEFINITION OF THE COMPUTER SELF-SUPPLY (power latch):

This supply is timed (approximately 10 seconds) and its purpose is:

- to improve engine starting from warm
- to operate the fans for post-ventilation
- to control the computer locking function
- storing auto-adaptive systems and fault codes.

OBD (on-board diagnostics) TEST ACTIVATION PROCEDURE:

For the upstream sensor and catalytic converter test:

- First, repair non-OBD faults.
- Warm up the engine (check that the engine cooling fans perform at least two on/off cycles) until the second richness closed loop is reached
- Set the engine to run at 3000 rpm under no load.
- Start the test from the tool.
- Read the results obtained.
- Return to idle speed.

For the fuel supply test:

- First, repair non-OBD faults.
- Warm up the engine (check that the engine cooling fans perform at least two on/off cycles) until the second richness closed loop is reached
- Return to idle speed.
- Read the results obtained.
- Deal with any faults found.

For the engine misfires test:

- First, repair non-OBD faults.
- Warm up the engine (check that the engine cooling fans perform at least two on/off cycles) until the second richness closed loop is reached
- There are two possibilities:
 - a) the programming of the phonic wheel has not been erased: the test is activated as soon as the engine is started (no need to start the test from the tool)
 - b) the programming of the phonic wheel has been erased (programming erase function): start the engine misfires test by means of the diagnostic tool and program the phonic wheel at the same time (acceleration under no load until the speed limiter cuts in, then return to idle speed).
- Read the results obtained.
- Deal with any faults found.

COMPUTER CONNECTOR CORRESPONDENCES:

- **Black** 48-track computer connector: **connector A**.
- **Brown** 48-track computer connector: **connector B**.

PETROL INJECTION

Fault finding - Interpretation of faults

DF003 PRESENT	<u>AIR TEMPERATURE SENSOR CIRCUIT</u> CC.0 : SHORT-CIRCUIT TO EARTH CO.1: OPEN CIRCUIT OR SHORT CIRCUIT TO +12 V
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NOTES	Special notes: The air temperature sensor is located in the inlet manifold.
	Priorities when dealing with a number of faults: – Deal first with the "DF152 second sensor reference voltage" fault if it is present or stored.

<p>Connect the terminal in place of the computer and check the resistance value of the sensor between track D3 and track E4 of computer connector B.</p> <p>The sensor should have a resistance of approximately 2050 Ω at 25°C (refer to the repair method for the electrical specifications of the sensor according to temperature).</p> <p>Ensure the two connections are insulated from earth and from +12 volts.</p>										
<p>If the measurement gives an incorrect value or if the fault persists (bad contacts): remove the inlet manifold to gain access to the air temperature sensor.</p>										
<p>Check the connection and condition of the air temperature sensor connector.</p> <p>Change the connector if necessary.</p>										
<p>Ensure that the sensor is correctly mounted on the throttle body.</p> <p>Repair if necessary.</p>										
<p>Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections:</p> <table><tr><td>computer connector B</td><td>track D3</td><td>————→</td><td>track 1</td><td>of the air temperature sensor</td></tr><tr><td>computer connector B</td><td>track E4</td><td>————→</td><td>track 2</td><td>of the air temperature sensor</td></tr></table> <p>Repair if necessary.</p>	computer connector B	track D3	————→	track 1	of the air temperature sensor	computer connector B	track E4	————→	track 2	of the air temperature sensor
computer connector B	track D3	————→	track 1	of the air temperature sensor						
computer connector B	track E4	————→	track 2	of the air temperature sensor						
<p>Check for a 5 volt supply on track 1 of the sensor.</p> <p>If there is no feed, replace the injection computer.</p>										
<p>If the fault persists, replace the air temperature sensor.</p>										

AFTER REPAIR	<p>Clear the fault memory.</p> <p>Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF004 PRESENT OR STORED	<u>COOLANT TEMPERATURE SENSOR CIRCUIT</u> CC.0 : SHORT CIRCUIT TO EARTH CO.1 : OPEN CIRCUIT OR SHORT CIRCUIT TO +12 V 1.DEF: SIGNAL INCONSISTENCY
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NOTES	Priorities when dealing with a number of faults: – First, deal with the " DF219 Throttle potentiometer reference voltage, DF151 First sensor reference voltage and DF152 Second sensor reference voltage " faults if these are present or stored.
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CC.0 CO.1	NOTES	Only apply this fault finding procedure if a fault is present with CC.0 or CO.1 .
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Check the connection and condition of the coolant temperature sensor connector. Change the connector if necessary.		
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector B track F1 —————> track B1 of the coolant temperature sensor computer connector B track D4 —————> track B2 of the coolant temperature sensor Repair if necessary.		
Check the resistance value of the sensor by measuring between: Track B1 and track B2 of the coolant temperature sensor. Replace the sensor if the resistance is not approximately: 2360 Ω at 25°C . (For specific fault finding on the sensor, consult the electrical properties of the sensor as a function of temperature in the repair method).		
Check for the presence of a 5 volt supply on track B1 of the sensor. If there is no feed, replace the injection computer.		
If the fault persists, replace the coolant temperature sensor.		

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF004	
CONTINUED	

1.DEF	NOTES	<p>Condition for the application of the fault finding procedure on a stored fault, only in the case of signal inconsistency.</p> <p>The fault is declared present after the engine is started (cold engine) then allowed to warm up to 60°C.</p>
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<p>Check the conformity of the engine cooling circuit: radiator in good condition, unobstructed flow of cooling air (radiator not obstructed by leaves, etc.), cooling circuit correctly bled, etc.</p>
<p>Using the diagnostic tool, monitor the engine coolant temperature (PR002). After starting (engine cold), the temperature at idling speed must rise steadily without sudden changes. If the temperature rise is not linear (temperature curve rises or falls sharply), replace the coolant temperature sensor.</p>
<p>If the fault persists, replace the coolant temperature sensor.</p>

AFTER REPAIR	<p>Follow the instructions to confirm repair.</p> <p>Clear the fault memory.</p> <p>Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF006 PRESENT	<u>PINKING SENSOR CIRCUIT</u> CO : OPEN CIRCUIT CC.0 : SHORT CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	None.
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Check the connection and condition of the pinking sensor connector. Change the connector if necessary.
Check that the pinking sensor is tightened to torque (see repair methods for manufacturer's value).
Ensure that the engine does not make an abnormal noise . If there is an abnormal noise, start by eliminating the cause of the noise before checking the sensor.
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector B track C2 —————▶ track 1 of the pinking sensor computer connector B track C3 —————▶ track 2 of the pinking sensor computer connector B track D2 —————▶ shielding of the sensor Repair if necessary.
If the fault persists, replace the pinking sensor.

AFTER REPAIR	<p>Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF008 PRESENT	<u>FUEL PUMP RELAY CONTROL CIRCUIT</u> CC.1 : SHORT CIRCUIT TO +12 V CO.0 : OPEN CIRCUIT OR SHORT CIRCUIT TO EARTH
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NOTES	None.
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<p>Check the condition of the clips of the fuel pump relay on the engine fuse and relay plate (see diagrams for the vehicle and model year concerned). Replace the clips if necessary.</p>
<p>With the ignition switched on, check the presence of a +12 volt supply on track 3 and on track 1 of the fuel pump relay, with the relay in place on the plate. Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer connector A track G1 → track 2 of the fuel pump relay Repair if necessary.</p>
<p>Check the resistance value of the relay by measuring between: Track 1 and track 2 of the fuel pump relay. Replace the relay if the resistance is not approximately 84 Ω ± 2 Ω at 25°C.</p>

AFTER REPAIR	<p>Run command AC010 fuel pump relay to check that the pump is operating correctly. Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of 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 when dealing with a number of faults: – First, deal with the " DF004 coolant temperature sensor circuit and DF032 coolant temperature overheating warning light circuit" faults if these are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine is started or the AC626 fan unit, low speed command is run from the diagnostic tool.

Check the condition of the clips of the low speed fan relay (on the engine fuse and relay plate). Replace the clips if necessary.
With the ignition switched on, check the presence of +12 volts on track 3 and track 1 of the low speed fan relay. Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer connector A track C2 —————> track 2 of the low speed fan assembly relay Repair if necessary.
Check the resistance value of the relay by measuring between: Track 1 and track 2 of the low speed fan assembly relay. Replace the relay if the resistance is not approximately: 64 Ω ± 2 Ω at 25°C .
Check the supply and the earth connection of the low speed fan assembly. If this is correct, check the condition and correct operation of the low speed fan assembly.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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Fault finding - Interpretation of faults

<p>DF014 PRESENT OR STORED</p>	<p><u>CANISTER BLEED SOLENOID VALVE CIRCUIT</u></p> <p>CO : OPEN CIRCUIT CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V</p>
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<p>NOTES</p>	<p>Priorities when dealing with a number of faults: – First, deal with the DF076 main relay, DF157 battery voltage and DF236 after relay feed faults if they are present or stored.</p>
	<p>Conditions for applying fault finding procedures to stored faults The fault is declared present when the engine is warm and running at 1500 rpm or command "AC016 Canister bleed solenoid valve" is run.</p>
	<p>Special notes: The valve is normally closed when the engine is not running. Bleeding takes place with the engine running (but not at idle speed). A canister valve which is mechanically jammed will not be detected by the electrical fault finding system, but if there is an input signal fault on the upstream sensor (DF207), perform mechanical fault finding on the valve (if the valve is jammed open).</p>

<p>Check the connection and condition of the canister bleed solenoid valve connector. Change the connector if necessary.</p>
<p>With the ignition switched on, check the presence of +12 V on track 1 of the canister bleed solenoid valve.</p>
<p>If there is no supply, check the insulation, continuity and absence of interference resistance on the following connection: <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;">injection relay</div> <div style="margin-right: 10px;">track 5</div> <div style="margin-right: 10px;">————→</div> <div style="margin-right: 10px;">track 1</div> <div style="margin-right: 10px;">of the canister bleed solenoid valve</div> </div> Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;">computer connector A</div> <div style="margin-right: 10px;">track M3</div> <div style="margin-right: 10px;">————→</div> <div style="margin-right: 10px;">track 2</div> <div style="margin-right: 10px;">of the canister bleed solenoid valve</div> </div> Repair if necessary.</p>
<p>Check the resistance value of the relay by measuring between: Track 1 and track 2 of the low speed fan assembly relay. Replace the relay if the resistance is not approximately: 26 Ω ± 4 Ω at 23°C.</p>
<p>If the fault persists, replace the canister bleed solenoid valve.</p>

<p>AFTER REPAIR</p>	<p>Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF022 PRESENT	<u>COMPUTER</u> 1.DEF : COMPUTER INTERNAL ELECTRICAL FAULT
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NOTES	Priorities when dealing with a number of faults: – Deal first with fault "DF236 + after relay supply" if it is present or stored.
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Make sure that the battery is correctly charged . If it is not, carry out fault finding on the charging circuit.	
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector A track L3 → track 5 of the main relay Computer connector A track L4 → injection fuse: + battery (refer to diagrams for the vehicle and model year in question) computer connector A track M4 → injection fuse: + after ignition (refer to diagrams for the vehicle and model year in question) computer connector B track L2 → earth computer connector B track L3 → earth computer connector B track L4 → earth Repair if necessary.	
If the fault persists, change the injection computer.	

AFTER REPAIR	Program the throttle limits and the throttle air cross section (see introduction). Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF025 PRESENT OR STORED	<u>FLYWHEEL SIGNAL SENSOR CIRCUIT</u> 1.DEF : TOOTH SIGNAL ABSENT
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NOTES	Priorities when dealing with a number of faults: – First, deal with the DF157 battery voltage fault if it is present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after the starter motor has been activated for 4 seconds with no load on the pedal.

Check the connection and condition of the flywheel signal sensor connector and replace the connector if necessary.
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector B track A2 —————> track A of the engine speed sensor computer connector B track A1 —————> track B of the engine speed sensor Repair if necessary.
Check the resistance value of the engine speed sensor by measuring between: Track A and track B of the sensor. Replace the sensor if the resistance is not approximately 200 Ω to 270 Ω at 25°C .
Remove the sensor and check whether it has been rubbing on the engine flywheel target (flywheel warped). Replace the sensor if necessary.
Check the condition of the engine flywheel especially if it is removed (condition of teeth). Replace the flywheel if necessary.
If the fault persists, replace the flywheel signal sensor.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Carry out reprogramming (see introduction). Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

<p>DF032 PRESENT OR STORED</p>	<p><u>DOWNSTREAM OXYGEN SENSOR HEATER CIRCUIT</u> CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V</p>
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<p>NOTES</p>	<p>Priorities when dealing with a number of faults: – First, deal with the DF157 battery voltage and DF010 fan unit low speed faults if they are present or stored.</p>
	<p>Conditions for applying fault finding procedures to stored faults The fault is declared present after the ignition is switched on or the "AC212 coolant temperature warning light" command is run.</p>

<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connection: computer connector A track E3 —————> Instrument panel (refer to diagrams for the vehicle and year of make in question). Repair if necessary.</p>
<p>If the warning light does not illuminate, check that the +12 volt supply is reaching the warning light. Check that the bulb is in good condition. Repair if necessary.</p>
<p>If the connection, the bulb and its feed are correct, look in the context stored in the memory (relating to the appearance of the fault) to see whether there has been genuine overheating, by displaying the coolant temperature parameter (PR002).</p>

<p>AFTER REPAIR</p>	<p>Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF044 PRESENT	IMMOBILISER CIRCUIT 1.DEF: SIGNAL INCONSISTENCY
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NOTES	Special notes: Engine does not start. This fault only appears when the injection computer is unlocked. The injection computer communicates with the UCH through the bias of the multiplex network.
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Check the multiplex network using the diagnostic tool.
Using the diagnostic tool, check the UCH (or the multi-timer unit, depending on the equipment of the vehicle concerned) and make sure that its immobiliser code has been programmed correctly . Reconfigure the UCH (or the multi-timer unit) if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector A track J4 —————> UCH (refer to diagrams for the vehicle and year of make in question). computer connector A track H3 —————> UCH (refer to diagrams for the vehicle and year of make in question). Repair if necessary.
Carry out a starting test: if the vehicle does not start, switch off the ignition and wait 15 seconds (self-supply period of the computer) then try to start the engine again. If the fault persists, repeat the operation three times.
If the vehicle still will not start, replace the injection computer to see whether the problem is caused by the inability to unlock the computer.
If the fault is still present, replace the UCH .

AFTER REPAIR	Clear the fault memory. If the injection computer has been replaced, reprogram the throttle stop and the minimum air gap of the throttle (see introduction). Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF045 PRESENT OR STORED	MANIFOLD PRESSURE SENSOR 1.DEF: BELOW MINIMUM THRESHOLD 2.DEF: ABOVE MAXIMUM THRESHOLD 3.DEF: INCONSISTENCY BETWEEN THE CALCULATED PRESSURE AND THE TRUE PRESSURE
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NOTES	Priorities when dealing with a number of faults: – First, deal with the "DF157 battery voltage and DF151 primary sensor reference voltage" faults if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.

Check the connection and condition of the manifold pressure sensor connector. Change the connector if necessary.
Ensure that the sensor is correctly installed in the manifold and that there is no air leak (check the condition of the seal of the sensor).
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: <div style="display: flex; justify-content: space-between; align-items: center;"> <div> computer connector B computer connector B computer connector B </div> <div> track F2 —————> track A track F3 —————> track B track B2 —————> track C </div> <div> of the pressure sensor of the pressure sensor of the pressure sensor </div> </div> Repair if necessary.
Check for the presence of a 5 volt supply on track C of the sensor. If there is no feed, replace the injection computer.
If the fault is still present, replace the pressure sensor.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF062 PRESENT OR STORED	<u>IGNITION COIL 2 - 3 CIRCUIT</u> CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	Priorities when dealing with a number of faults: – Deal first with faults DF076 Main relay, DF157 Battery voltage and DF236 + after relay supply if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.
	Special notes: The ignition coils are fed by the fuel pump relay. This relay is timed when the ignition is switched on (without starting the engine), so the feed to the coils must be measured during this period or by running the AC010 fuel pump relay command from the diagnostic tool.

Check the connection and condition of the coil unit connector. Change the connector if necessary.
With the ignition on, check for the presence of +12 V on track B of the coil unit.
If there is no supply, check the insulation, continuity and absence of interference resistance on the following connection: fuel pump relay track 5 —————> track B of the coil unit Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connection: computer connector B track M2 —————> track A of the coil connector Repair if necessary.
Check the resistance value of the coil by measuring between: Track B and track A of the coil. Replace the coil unit if the resistance is not approximately 0.4 Ω ± 0.02 Ω at 25°C .
If the fault persists, change the coil unit.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

<p>DF064 PRESENT OR STORED</p>	<p><u>VEHICLE SPEED SIGNAL</u> 1.DEF : VEHICLE SPEED SENSOR SIGNAL ERRATIC</p>
<p>NOTES</p>	<p>Conditions for applying fault finding procedures to stored faults Carry out a test drive cycle at over 3 mph (5 km/h). When the coolant temperature is equal to or greater than 30°C, go into cut-off mode (no load deceleration) for 4 seconds while maintaining the engine speed in the range between 2000 and 5000 rpm.</p>
	<p>Special note: The computer receives the vehicle speed information through the multiplex network.</p>

Fault finding procedure for vehicles not equipped with the electronic stability program.

<p>Perform fault finding on the multiplex network using the diagnostic tool.</p>
<p>Using the parameter window of the diagnostic tool, make sure that the vehicle speed appears consistent: PR018 (vehicle speed). If the speed shown is inconsistent, refer to the fault finding procedure for the ABS system and the instrument panel; this passes on the vehicle speed information supplied by the ABS system computer.</p>

Fault finding procedure for vehicles equipped with the electronic stability program.

<p>Carry out a fault finding procedure on the multiplex network using the diagnostic tool.</p>
<p>If the diagnostic tool does not show a fault, refer to the fault finding procedure for the ABS system.</p>

<p>AFTER REPAIR</p>	<p>Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

<p>DF076 PRESENT OR STORED</p>	<p><u>MAIN RELAY</u> CO : OPEN CIRCUIT CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V</p>
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<p>NOTES</p>	<p>Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.</p>
	<p>Special notes: The main relay may be called the injection locking relay on the injection wiring diagrams.</p>

<p>Check the condition of the clips of the main relay on the engine fuse and relay plate (see relay plate diagrams for the vehicle and model year concerned). Replace the clips if necessary.</p>
<p>Verify the presence of 12 volts before ignition on track 3 and track 1 of the main relay. Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer connector A track M2 → track 2 of the main relay Repair if necessary.</p>
<p>Check the resistance value of the relay by measuring between: Track 1 and track 2 of the main relay. Replace the relay if the resistance is not approximately 84 Ω ± 1 Ω at 25°C.</p>
<p>If the fault persists, change the main relay.</p>



<p>AFTER REPAIR</p>	<p>Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF084 PRESENT OR STORED	<u>CYLINDER 1 INJECTOR CONTROL</u> CO : OPEN CIRCUIT CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	Priorities when dealing with a number of faults: – Deal first with faults DF076 Main relay, DF157 Battery voltage and DF236 + after relay supply if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.

<p>Connect the bornier in place of the computer and check the resistance value of the injector by measuring between:</p> <p>Track J1 of computer connector B and track 5 of the main relay (or track C of the grey 3-track connector on top of the computer).</p> <p>The resistance of the injector should be approximately 14.5 Ω ± 0.7 Ω at 23°C (this value does not take into account any interference resistance in the line).</p> <p>Make sure that track J1 of computer connector B is insulated from earth and from the battery voltage and that track 5 of the main relay is insulated from earth.</p>
<p>If the measurement gives an incorrect value: remove the inlet manifold to gain access to the injectors.</p>
<p>Check the connection and condition of the cylinder N°1 injector connector.</p> <p>Change the connector if necessary.</p>
<p>With the ignition switched on, check the presence of +12 volts on track 1 of the injector.</p>
<p>If there is no supply, check the insulation, continuity and absence of interference resistance on the following connection:</p> <p style="text-align: center;">main relay track 5  track 1 of injector N°1</p> <p>Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <p style="text-align: center;">computer connector B track J1  track 2 of injector N°1</p> <p>Repair if necessary.</p>
<p>If the fault persists, replace injector N°1.</p>

AFTER REPAIR	<p>Follow the instructions to confirm repair.</p> <p>Clear the fault memory.</p> <p>Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF085 PRESENT OR STORED	<u>CYLINDER 2 INJECTOR CONTROL</u> CO : OPEN CIRCUIT CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	Priorities when dealing with a number of faults: – Deal first with faults DF076 Main relay, DF157 Battery voltage and DF236 + after relay supply if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.

<p>Connect the bornier in place of the computer and check the resistance value of the injector by measuring between:</p> <p>Track K1 of computer connector B and track 5 of the main relay (or track C of the grey 3-track connector on top of the computer).</p> <p>The resistance of the injector should be approximately 14.5 Ω ± 0.7 Ω at 23°C (this value does not take into account any interference resistance in the line).</p> <p>Check that track K1 of computer connector B is insulated from earth and from the battery voltage and that track 5 of the main relay is insulated from earth.</p>
<p>If the measurement gives an incorrect value: remove the inlet manifold to gain access to the injectors.</p>
<p>Check the connection and condition of the cylinder N°2 injector connector.</p> <p>Change the connector if necessary.</p>
<p>With the ignition switched on, check the presence of +12 volts on track 1 of the injector.</p>
<p>If there is no supply, check the insulation, continuity and absence of interference resistance on the following connection:</p> <p>main relay track 5 —————→ track 1 of injector N° 2</p> <p>Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <p>computer connector B track K1 —————→ track 2 of injector N°2</p> <p>Repair if necessary.</p>
<p>If the fault persists, replace injector N°2.</p>

AFTER REPAIR	<p>Follow the instructions to confirm repair.</p> <p>Clear the fault memory.</p> <p>Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF086 PRESENT OR STORED	<u>CYLINDER 3 INJECTOR CONTROL</u> CO : OPEN CIRCUIT CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	Priorities when dealing with a number of faults: – Deal first with faults DF076 Main relay, DF157 Battery voltage and DF236 + after relay supply if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.

<p>Connect the bornier in place of the computer and check the resistance value of the injector by measuring between:</p> <p>Track K3 of computer connector B and track 5 of the main relay (or track C of the grey 3-track connector on top of the computer).</p> <p>The resistance of the injector should be approximately 14.5 Ω ± 0.7 Ω at 23°C (this value does not take into account any interference resistance in the line).</p> <p>Check that track K3 of computer connector B is insulated from earth and from +12 volts and that track 5 of the main relay is insulated from earth.</p>
<p>If the measurement gives an incorrect value: remove the inlet manifold to gain access to the injectors.</p>
<p>Check the connection and condition of the cylinder N°3 injector connector.</p> <p>Change the connector if necessary.</p>
<p>With the ignition switched on, check the presence of +12 volts on track 1 of the injector.</p>
<p>If there is no supply, check the insulation, continuity and absence of interference resistance on the following connection:</p> <p>main relay track 5 —————→ track 1 of injector N°3</p> <p>Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between:</p> <p>computer connector B track K3 —————→ track 2 of injector N°3</p> <p>Repair if necessary.</p>
<p>If the fault persists, replace injector N°3.</p>

AFTER REPAIR	<p>Follow the instructions to confirm repair.</p> <p>Clear the fault memory.</p> <p>Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF087 PRESENT OR STORED	<u>CYLINDER 4 INJECTOR CONTROL</u> CO : OPEN CIRCUIT CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	Priorities when dealing with a number of faults: – Deal first with faults DF076 Main relay, DF157 Battery voltage and DF236 + after relay supply if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.

<p>Connect the bornier in place of the computer and check the resistance value of the injector by measuring between:</p> <p>Track K4 of computer connector B and track 5 of the main relay (or track C of the grey 3-track connector on top of the computer).</p> <p>The resistance of the injector should be approximately 14.5 Ω ± 0.7 Ω at 23°C (this value does not take into account any interference resistance in the line).</p> <p>Check that track K4 of computer connector B is insulated from earth and from +12 volts and that track 5 of the main relay is insulated from earth.</p>
<p>If the measurement gives an incorrect value: remove the inlet manifold to gain access to the injectors.</p>
<p>Check the connection and condition of the cylinder N°4 injector connector.</p> <p>Change the connector if necessary.</p>
<p>With the ignition switched on, check the presence of +12 volts on track 1 of the injector.</p>
<p>If there is no supply, check the insulation, continuity and absence of interference resistance on the following connection:</p> <p>main relay track 5 —————→ track 1 of injector N° 4</p> <p>Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <p>computer connector B track K4 —————→ track 2 of injector N°4</p> <p>Repair if necessary.</p>
<p>If the fault persists, replace injector N°4.</p>

AFTER REPAIR	<p>Follow the instructions to confirm repair.</p> <p>Clear the fault memory.</p> <p>Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF102 PRESENT OR STORED	<u>OXYGEN SENSOR OPERATING FAULT</u> 1.DEF : REDUCED FREQUENCY
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NOTES	<p>Priorities when dealing with a number of faults:</p> <ul style="list-style-type: none"> – First deal with the following faults if they are present or stored: DF084, DF085, DF086, DF087, cylinders 1 to 4 injector control; DF018, DF038, DF207, DF208, heater circuit and input signal of the two oxygen sensors, DF111, DF112, DF113, DF114, DF165, detection of misfiring and DF106 catalytic converter operating fault.
	<p>Conditions for applying fault finding procedures to stored faults</p> <p>The fault is declared present after a test drive cycle or engine warm-up at idle speed which enables the richness regulation phase of the upstream sensor to start:</p> <ul style="list-style-type: none"> – The ET185 upstream sensor richness loop status should have the characterisation STATUS 2: Closed loop. <p>Make sure that the engine cooling fan cuts in at least twice.</p> <p>Set the engine speed to 3000 rpm, then start an OBD (On Board Diagnostic) test of the oxygen sensors (see fault finding introduction).</p>
	<p>Special notes:</p> <p>This fault finding procedure only concerns the upstream oxygen sensor.</p> <p>If the presence of this fault is confirmed (three journeys with this fault), the OBD (on-board diagnostics) warning light comes on.</p>

Carry out a check on the fuel pressure (check the regulator and the fuel pump).
Make sure there are no air leaks into the exhaust system. Repair if necessary.
Verify the condition of the air intake circuit and its filter element. Repair if necessary.
If there is no fault on the upstream sensor input signal, replace the upstream oxygen sensor . Otherwise, carry out the DF207 fault finding procedure.

AFTER REPAIR	<p>Carry out reprogramming (see introduction).</p> <p>Follow the instructions to confirm repair.</p> <p>Clear the fault memory.</p> <p>Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF106 PRESENT OR STORED	<u>CATALYTIC CONVERTER OPERATING FAULT</u> 1.DEF : CATALYTIC CONVERTER OPERATING FAULT
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NOTES	Priorities when dealing with a number of faults: – First deal with the following faults if they are present or stored: DF084, DF085, DF086, DF087 , cylinders 1 to 4 injector commands; DF018, DF038, DF102, DF207, DF208 , input signal and heater circuit for both oxygen sensors, and DF111, DF112, DF113, DF114, DF165 , detection of engine misfires.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after a test drive cycle or engine warm-up at idle speed which enables the richness regulation phase of the upstream sensor to start: – The ET185 upstream sensor richness loop status should have the characterisation STATUS 2: Closed loop . Make sure that the engine cooling fan cuts in at least twice. Set the engine speed to 3000 rpm , then start an OBD (On Board Diagnostic) test of the catalytic converter (see fault finding introduction).
	Special notes: If the presence of this fault is confirmed (three journeys with this fault), the OBD (on-board diagnostics) warning light comes on.

Check the tightness of the oxygen sensors.
Ensure absence of air leaks on the exhaust system. Repair if necessary.
Verify the condition of the air intake circuit and its filter element. Repair if necessary.
Remove the catalytic converter and check the condition of the filter element inside (clogging). If the filter element seems correct, shake the catalytic converter to check that there are no components broken inside (metallic noises). Replace the catalytic converter if necessary.
If the fault persists, change the catalytic converter.

AFTER REPAIR	Carry out reprogramming (see preliminary fault finding). Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF111 PRESENT OR STORED	COMBUSTION MISFIRE ON CYLINDER 1 1.DEF : NONCOMPLIANCE WITH EMISSION CONTROL STANDARDS 2.DEF : RISK OF CATALYTIC CONVERTER DAMAGE
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NOTES	Priorities when dealing with a number of faults: – First deal with the following faults if they are present or stored: DF061 Ignition coils 1 - 4 circuit, DF084 to DF087 Cylinders 1 to 4 injector control, DF025 Flywheel signal sensor circuit and DF018 , DF038 , DF102 , DF207 , DF208 , Heater circuit and input signal of the two oxygen sensors.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after an OBD (on-board diagnostics) misfires test: – If the programming of the phonic wheel has not been erased, the OBD (on-board diagnostics) misfires test is carried out automatically with the engine running at idle speed for one and a half minutes if the engine is cold or for 30 seconds if the engine is warm. – Before the OBD (on-board diagnostics) misfires test can be run from the diagnostic tool, programming must be erased and then the test run (see introduction).
	Special notes: Misfiring will be indicated when the OBD warning light comes on, which indicates that the vehicle is no longer complying with the pollution standards. Flashing of the OBD warning light indicates the risk of destruction of the catalytic converter.

Check the ignition system and the condition of the plug and the radio interference suppresser. Repair if necessary.
Check the compression ratio of cylinder 1. Repair if necessary.
Check the engine flywheel target (disc warped or cracked). Repair if necessary.
Make sure there is no leakage at the inlet manifold and that the filter element is in good condition. Repair if necessary.
If no fault is found, then there must be a fault in the fuel system . Therefore check: – the condition of the fuel filter, – the fuel flow rate and pressure. – the cleanliness of the tank, – the condition of the cylinder 1 injector, – the conformity of the fuel. Replace the faulty component.

AFTER REPAIR	Carry out reprogramming (see preliminary fault finding). Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF112 PRESENT OR STORED	<u>MISFIRING ON CYLINDER 2</u> 1.DEF : NONCOMPLIANCE WITH EMISSION CONTROL STANDARDS 2.DEF : RISK OF CATALYTIC CONVERTER DAMAGE
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NOTES	Priorities when dealing with a number of faults: – First deal with the following faults if they are present or stored: DF061 Ignition coils 2 - 3 circuit, DF084 to DF087 Cylinders 1 to 4 injector control, DF025 Flywheel signal sensor circuit and DF018 , DF038 , DF102 , DF207 , DF208 , Heater circuit and input signal of the two oxygen sensors.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after an OBD (on-board diagnostics) misfires test: – If the programming of the phonic wheel has not been erased, the OBD (on-board diagnostics) misfires test is carried out automatically with the engine running at idle speed for one and a half minutes if the engine is cold or for 30 seconds if the engine is warm. – Before the OBD (on-board diagnostics) misfires test can be run from the diagnostic tool, programming must be erased and then the test run (see preliminary fault finding).
	Special notes: Misfiring will be indicated when the OBD warning light comes on, which indicates that the vehicle is no longer complying with the pollution standards. Flashing of the OBD warning light indicates the risk of destruction of the catalytic converter.

Check the ignition system and the condition of the plug and the radio interference suppresser. Repair if necessary.
Check the compression ratio of cylinder 2. Repair if necessary.
Check the engine flywheel target (disc warped or cracked). Repair if necessary.
Make sure there is no leakage at the inlet manifold and that the filter element is in good condition. Repair if necessary.
If no fault is found, then there must be a fault in the fuel system . Therefore check: – the condition of the fuel filter, – the fuel flow rate and pressure. – the cleanliness of the tank, – the condition of the cylinder 2 injector, – the conformity of the fuel. Replace the faulty component.

AFTER REPAIR	Carry out reprogramming (see preliminary fault finding). Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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Fault finding - Interpretation of faults

DF113 PRESENT OR STORED	<u>MISFIRING ON CYLINDER 3</u> 1.DEF : NONCOMPLIANCE WITH EMISSION CONTROL STANDARDS 2.DEF : RISK OF CATALYTIC CONVERTER DAMAGE
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NOTES	Priorities when dealing with a number of faults: – First deal with the following faults if they are present or stored: DF062 Ignition coils 2 - 3 circuit, DF084 to DF087 Cylinders 1 to 4 injector control, DF025 Flywheel signal sensor circuit and DF018 , DF038 , DF102 , DF207 , DF208 , Heater circuit and input signal of the two oxygen sensors.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after an OBD (on-board diagnostics) misfires test: – If the programming of the phonic wheel has not been erased, the OBD (on-board diagnostics) misfires test is carried out automatically with the engine running at idle speed for one and a half minutes if the engine is cold or for 30 seconds if the engine is warm. – Before the OBD (on-board diagnostics) misfires test can be run from the diagnostic tool, programming must be erased and then the test run (see preliminary fault finding).
	Special notes: Misfiring will be indicated when the OBD warning light comes on, which indicates that the vehicle is no longer complying with the pollution standards. Flashing of the OBD warning light indicates the risk of destruction of the catalytic converter.

Check the ignition system and the condition of the plug and the radio interference suppresser. Repair if necessary.
Check the compression ratio of cylinder 3. Repair if necessary.
Check the engine flywheel target (disc warped or cracked). Repair if necessary.
Make sure there is no leakage at the inlet manifold and that the filter element is in good condition. Repair if necessary.
If no fault is found, then there must be a fault in the fuel system . Therefore check: – the condition of the fuel filter, – the fuel flow rate and pressure. – the cleanliness of the tank, – the condition of the injector of cylinder 3, – The conformity of the fuel. Replace the faulty component.

AFTER REPAIR	Carry out reprogramming (see preliminary fault finding). Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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Fault finding - Interpretation of faults

DF114 PRESENT OR STORED	<u>MISFIRING ON CYLINDER 4</u> 1.DEF : NONCOMPLIANCE WITH EMISSION CONTROL STANDARDS 2.DEF : RISK OF CATALYTIC CONVERTER DAMAGE
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NOTES	Priorities when dealing with a number of faults: – First deal with the following faults if they are present or stored: DF061 Ignition coils 1 - 4 circuit, DF084 to DF087 Cylinders 1 to 4 injector control, DF025 Flywheel signal sensor circuit and DF018 , DF038 , DF102 , DF207 , DF208 , Heater circuit and input signal of the two oxygen sensors.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after an OBD (on-board diagnostics) misfires test: – If the programming of the phonic wheel has not been erased, the OBD (on-board diagnostics) misfires test is carried out automatically with the engine running at idle speed for one and a half minutes if the engine is cold or for 30 seconds if the engine is warm. – Before the OBD (on-board diagnostics) misfires test can be run from the diagnostic tool, programming must be erased and then the test run (see preliminary fault finding).
	Special notes: Misfiring will be indicated when the OBD warning light comes on, which indicates that the vehicle is no longer complying with the pollution standards. Flashing of the OBD warning light indicates the risk of destruction of the catalytic converter.

Check the ignition system and the condition of the plug and the radio interference suppresser. Repair if necessary.
Check the compression ratio of cylinder 4. Repair if necessary.
Check the engine flywheel target (disc warped or cracked). Repair if necessary.
Make sure there is no leakage at the inlet manifold and that the filter element is in good condition. Repair if necessary.
If no fault is found, then there must be a fault in the fuel system . Therefore check: – the condition of the fuel filter, – the fuel flow rate and pressure. – the cleanliness of the tank, – the condition of the injector of cylinder 4, – The conformity of the fuel. Replace the faulty component.

AFTER REPAIR	Carry out reprogramming (see preliminary fault finding). Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

<p>DF116 PRESENT OR STORED</p>	<p><u>FUEL SYSTEM OPERATING FAULT</u></p> <p>1.DEF : O₂ SENSOR FAULT: LEAN MIXTURE 2.DEF : O₂ SENSOR FAULT: RICH MIXTURE 3.DEF : LEAN MIXTURE DRIFT 4.DEF : RICH MIXTURE DRIFT 5.DEF : LEAN MIXTURE GAIN 6.DEF : RICH MIXTURE GAIN</p>
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<p>NOTES</p>	<p>Priorities when dealing with a number of faults:</p> <ul style="list-style-type: none"> – First deal with faults DF084 to DF087 Cylinders 1 to 4 injector control if they are present or stored.
	<p>Conditions for applying fault finding procedures to stored faults</p> <p>The fault is declared present after a test drive cycle or engine warm-up at idle speed which enables the richness regulation phase of the upstream sensor to start:</p> <ul style="list-style-type: none"> – The ET185 upstream sensor richness loop status should have the characterisation STATUS 2: Closed loop. <p>Make sure that the engine cooling fan cuts in at least twice. Start the OBD (on-board diagnostics) fuel system test.</p>

<p>Check the fuel pressure (refer to repair methods).</p>
<p>Check the canister bleed solenoid valve circuit (refer to repair methods).</p>
<p>Make sure that there are no leaks in the fuel system. Repair if necessary.</p>

<p>AFTER REPAIR</p>	<p>Follow the instructions to confirm repair. Clear the fault memory. Carry out reprogramming. Deal with any other faults.</p>
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DF118 PRESENT OR STORED	<u>REFRIGERANT PRESSURE SENSOR CIRCUIT</u> CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	Priorities when dealing with a number of faults: – First deal with the "DF152 second pressure sensor reference voltage" and "DF010 fan low speed circuit" faults if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after the air conditioning has been switched on and the passenger compartment blower unit is operating.

Check the connection and condition of the coolant pressure sensor connector. Change the connector if necessary.
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector A track K2 —————▶ track A of the refrigerant pressure sensor computer connector A track C1 —————▶ track B of the refrigerant pressure sensor computer connector A track J1 —————▶ track C of the refrigerant pressure sensor Repair if necessary.
Check for the presence of a 5 volt supply on track B of the sensor. If there is no feed, replace the injection computer.
If the fault persists, replace the refrigerant fluid pressure sensor.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF125 PRESENT OR STORED	<u>PEDAL POTENTIOMETER GANG 1 CIRCUIT</u> CC.0 : SHORT CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V 1.DEF : DETECTION OF SIGNAL OUTSIDE UPPER OR LOWER LIMIT
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NOTES	Priorities when dealing with a number of faults: – First deal with faults DF151 First sensor reference voltage and DF152 Second sensor reference voltage if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present when the ignition is switched on and the accelerator pedal depressed
	Special notes: The accelerator pedal position sensor is located on the bulkhead below the brake servo. There is no need to program no load and full load position recognition.

Check the connection and condition of the pedal potentiometer connector. Change the connector if necessary.
Make sure that the accelerator pedal moves the potentiometer correctly (from the minimum end stop to the maximum end stop).
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> computer connector A computer connector A computer connector A </div> <div style="margin-right: 20px;"> track H1 —————→ track 3 track C4 —————→ track 2 track B1 —————→ track 4 </div> <div> of the pedal potentiometer gang 1 of the pedal potentiometer gang 1 of the pedal potentiometer gang 1 </div> </div> Repair if necessary.
Check for the presence of a 5 volt supply on track 4 of the potentiometer. If there is no feed, replace the injection computer.
Check the resistance value of the pedal potentiometer track 1 by measuring between: Track 2 and track 4 of the potentiometer, and replace the pedal sensor if the resistance is not approximately: 1200 Ω ± 480 Ω at 25°C.
If the fault persists, change the pedal sensor.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF126 PRESENT OR STORED	<u>PEDAL POTENTIOMETER GANG 2 CIRCUIT</u> CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	Priorities when dealing with a number of faults: – First deal with faults DF151 First sensor reference voltage and DF152 Second sensor reference voltage if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present when the ignition is switched on and the accelerator pedal depressed
	Special notes: The accelerator pedal position sensor is located on the bulkhead below the brake servo. There is no need to program no load and full load position recognition.

Check the connection and condition of the pedal potentiometer connector. Change the connector if necessary.
Make sure that the accelerator pedal moves the potentiometer correctly (from the minimum end stop to the maximum end stop).
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> computer connector A computer connector A computer connector A </div> <div style="margin-right: 10px;"> track K1 track F1 track B4 </div> <div style="margin-right: 10px;"> —————→ —————→ —————→ </div> <div style="margin-right: 10px;"> track 6 track 5 track 1 </div> <div> of the pedal potentiometer gang 2 of the pedal potentiometer gang 2 of the pedal potentiometer gang 2 </div> </div> Repair if necessary.
Check for the presence of a 5 volt supply on track 5 of the potentiometer. If there is no feed, replace the injection computer.
Check the resistance value of the pedal potentiometer gang 2 by measuring between: Track 5 and track 1 of the potentiometer, and replace the pedal sensor if the resistance is not approximately: 1700 Ω ± 680 Ω at 25°C.
If the fault persists, change the pedal sensor.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF135 PRESENT OR STORED	<u>BRAKE PEDAL SENSOR CIRCUIT</u> 1.DEF: SIGNAL INCONSISTENCY
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NOTES	Conditions for applying fault finding procedures to stored faults The fault is declared present after the brake pedal has been pressed for 2 seconds ten times.
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Check the connection and condition of the brake pedal switch connector. Change the connector if necessary.	
Ensure correct adjustment of the brake pedal switch (refer to Repair methods).	
With the ignition on, check for presence of a voltage U = 12 volts on track A1 and on track B1 of the brake light switch.	
Connect the terminal in place of the computer and check the: insulation, continuity and absence of interference resistance on the following connections:: <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">computer connector A</div> <div style="text-align: center;">track B3 —————→</div> <div style="text-align: center;">track A3 of the brake light switch</div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">computer connector A</div> <div style="text-align: center;">track C3 —————→</div> <div style="text-align: center;">track B3 of the brake light switch</div> </div> Repair if necessary.	
Disconnect the pedal-sensor connector and check condition of contacts using an ohmmeter. Replace the pedal sensor if it does not operate as specified below:	
Pedal not pressed continuity between tracks B1 and A3 insulation between tracks A1 and B3	Pedal pressed insulation between tracks B1 and A3 continuity between tracks A1 and B3
If the fault is still present, carry out a fault finding procedure on the multiplex network (the signal on track A3 of the sensor is supplied to the injection computer via the multiplex network).	



AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF137 PRESENT	<u>MOTORISED THROTTLE VALVE</u> CC.0 : SHORT CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V 1.DEF : ABOVE MAXIMUM THRESHOLD
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NOTES	Special notes: The motorised throttle is located in the inlet manifold.
	Priority when dealing with a number of faults: – First deal with the "DF151 first sensor reference voltage" and "DF152 second sensor reference voltage" faults if they are present or stored.

<p>Connect the bornier in place of the computer and check the resistance value of the throttle motor by measuring between:</p> <p>Track L1 and track M1 of computer connector B.</p> <p>The throttle motor should have a resistance of approximately 2 Ω ± 1 Ω at 25°C.</p> <p>Ensure the two connections are insulated from earth and from +12 volts.</p>
<p>If the measurement gives an incorrect value: remove the inlet manifold to gain access to the motorised throttle.</p>
<p>Check the connection and condition of the motorised throttle connector.</p> <p>Change the connector if necessary.</p>
<p>Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections:</p> <p>computer connector B track L1  track 3 of the motorised throttle</p> <p>computer connector B track M1  track 4 of the motorised throttle</p> <p>Repair if necessary.</p>
<p>If the fault persists, replace the motorised throttle.</p>

AFTER REPAIR	Carry out reprogramming (see preliminary fault finding). Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF145 PRESENT	<u>MULTIPLEX NETWORK</u>
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NOTES	Special note: Once communication has been established, the diagnostic tool will automatically carry out a fault finding sequence on the multiplex network.
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Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector A track J4 —————> UCH computer connector A track H3 —————> UCH (refer to diagrams for the vehicle and year of make in question). Repair if necessary.	
If the connections are correct, carry out the UCH fault finding procedure . If necessary, replace the UCH.	
If the fault persists, change the injection computer.	

AFTER REPAIR	Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

<p>DF146 PRESENT OR STORED</p>	<p>MIXTURE CONTROL</p> <p>1.DEF : PARAMETER AT MINIMUM LIMIT 2.DEF : PARAMETER AT MAXIMUM LIMIT 3.DEF : RICHNESS ADJUSTMENT AT UPPER LIMIT 4.DEF : RICHNESS ADJUSTMENT AT LOWER LIMIT</p>
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<p>NOTES</p>	<p>Priorities when dealing with a number of faults:</p> <p>– Deal first with faults: DF084, DF085, DF086 and DF087 Cylinders 1 to 4 injector control and DF018, DF102, DF207 Upstream oxygen sensor heater circuit and input signal if they are present or stored.</p>
	<p>Conditions for applying fault finding procedures to stored faults:</p> <p>The fault is declared present after a test drive cycle or engine warm-up at idle speed which enables the richness regulation phase of the upstream sensor to start:</p> <p>– The ET185 Upstream sensor richness loop status should have the characterisation STATUS 2: Closed loop. Make sure that the engine cooling fan cuts in for at least two cycles.</p>
	<p>Special notes:</p> <p>This fault only affects the D4D engine.</p>

<p>Carry out a full inspection of the fuel supply and injection system, by checking:</p> <ul style="list-style-type: none"> – The condition of the fuel filter. – The fuel flow rate and pressure. – The cleanliness of the tank. – The condition and correct operation of the injectors. – The conformity of the fuel. – Whether any air is entering the fuel supply system. <p>Check the condition and the conformity of the inlet and exhaust ducts. Replace any faulty components.</p>

<p>AFTER REPAIR</p>	<p>Reset the auto-adaptives. Program the throttle limits and the air cross section (see introduction). Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF151 PRESENT	<u>FIRST SENSOR REFERENCE VOLTAGE</u> CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	None.
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<p>Check the connection and condition of the sensor connectors: pedal potentiometer and manifold pressure sensor.</p> <p>Change the connectors if necessary.</p>								
<p>With the ignition on, check that the 5 volt supply is reaching the sensors on tracks:</p> <ul style="list-style-type: none">– track 3 of the pedal potentiometer (potentiometer no. 2)– track C of the manifold pressure sensor.								
<p>If the sensors are not receiving the 5 volt feed:</p> <p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <table><tr><td>computer connector A</td><td>track F1</td><td>————→</td><td>track 3 of the pedal potentiometer</td></tr><tr><td>computer connector B</td><td>track B2</td><td>————→</td><td>track C of the manifold pressure sensor</td></tr></table> <p>Repair if necessary.</p>	computer connector A	track F1	————→	track 3 of the pedal potentiometer	computer connector B	track B2	————→	track C of the manifold pressure sensor
computer connector A	track F1	————→	track 3 of the pedal potentiometer					
computer connector B	track B2	————→	track C of the manifold pressure sensor					
<p>Clear the fault stored, disconnect all the sensors and reconnect them one by one to check which of these sensors is responsible for the fault.</p>								
<p>If no sensor is faulty and if the connections are correct, replace the injection computer.</p>								

AFTER REPAIR	<p>Program the throttle limits and the throttle air cross section (see introduction). Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF152 PRESENT	<u>SECOND SENSOR REFERENCE VOLTAGE</u> CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V
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NOTES	None.
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Check the connection and condition of the connectors of the following sensors: pedal potentiometer, throttle potentiometer, coolant pressure sensor, air temperature sensor and coolant temperature sensor. Change the connectors if necessary.																					
With the ignition on, check that the 5 volt supply is reaching the sensors on tracks: <ul style="list-style-type: none">– track 6 of the pedal potentiometer (potentiometer no. 1)– track 5 of the motorised throttle (feed to both potentiometers)– track B of the refrigerant pressure sensor– track 1 of the air temperature sensor– track B1 of the coolant temperature sensor.																					
If the sensors are not receiving the 5 volt feed: Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: <table><tr><td>computer connector A</td><td>track B1</td><td>————→</td><td>track 6 of the pedal potentiometer</td></tr><tr><td>computer connector B</td><td>track C1</td><td>————→</td><td>track 5 of the motorised throttle</td></tr><tr><td>computer connector A</td><td>track C1</td><td>————→</td><td>track B of the refrigerant pressure sensor</td></tr><tr><td>computer connector B</td><td>track E4</td><td>————→</td><td>track 1 of the air temperature sensor</td></tr><tr><td>computer connector B</td><td>track F1</td><td>————→</td><td>track B1 of the coolant temperature sensor</td></tr></table> Repair if necessary.		computer connector A	track B1	————→	track 6 of the pedal potentiometer	computer connector B	track C1	————→	track 5 of the motorised throttle	computer connector A	track C1	————→	track B of the refrigerant pressure sensor	computer connector B	track E4	————→	track 1 of the air temperature sensor	computer connector B	track F1	————→	track B1 of the coolant temperature sensor
computer connector A	track B1	————→	track 6 of the pedal potentiometer																		
computer connector B	track C1	————→	track 5 of the motorised throttle																		
computer connector A	track C1	————→	track B of the refrigerant pressure sensor																		
computer connector B	track E4	————→	track 1 of the air temperature sensor																		
computer connector B	track F1	————→	track B1 of the coolant temperature sensor																		
Clear the fault stored, disconnect all the sensors and reconnect them one by one to check which of these sensors is responsible for the fault.																					
If no sensor is faulty and if the connections are correct, replace the injection computer.																					

AFTER REPAIR	Program the throttle limits and the throttle air cross section (see introduction). Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

<p>DF157 PRESENT OR STORED</p>	<p><u>BATTERY VOLTAGE</u> CC.0 : SHORT-CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V</p>
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<p>NOTES</p>	<p>Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine speed has been maintained at more than 900 rpm for 50 seconds.</p>
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<p>Make sure that the cable connecting the battery to the starter motor, the battery earth cable to the chassis and the chassis earth cable to the engine and transmission assembly are in good condition.</p>	
<p>Make sure that the battery is in a good state of charge and, if necessary, check the charging circuit.</p>	
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: Computer connector A track L4 —————▶ injection fuse: + battery (refer to diagrams for the vehicle and year of make in question). Repair if necessary.</p>	

<p>AFTER REPAIR</p>	<p>Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF158 PRESENT OR STORED	<u>CRUISE CONTROL FUNCTION</u>
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NOTES	Priorities when dealing with a number of faults: – First deal with the "DF135 brake pedal sensor circuit" and "DF247 cruise control or speed limiter button" faults if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after operating the cruise control/speed limiter controls.

Using the status window of the diagnostic tool and the information given in status interpretation ET194 , ensure that there is no fault or parameter impeding the operation of the cruise control.
Apply the fault finding procedure on the basis of the parameter detected as faulty by the interpretation of status ET194 . For example, if the fault relates to the brake switch or the vehicle speed signal, apply the fault finding procedures for those parts.
Using the status window of the diagnostic tool and the information given in the interpretation of status ET192 , ensure that pressing the steering wheel and instrument panel buttons sends the correct signals to the injection computer.
If the data for status ET192 are not to specification: Check the connection and condition of the connector of the steering wheel rotary switch and the condition of the connector of the cruise control (in the steering wheel). Replace the connector(s) if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer connector A track J2 —————> track 1 of the control connector (in the steering wheel) computer connector A track G2 —————> track 2 of the control connector (in the steering wheel) Repair if necessary.

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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DF158 CONTINUED	
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<p>Check the presence of a 5 volt supply by measuring between tracks 1 and 2 of the control connector (in the steering wheel).</p> <p>If the supply is not present, but the previous checks carried out are correct and the supply to the computer is correct, replace the injection computer.</p>
<p>If the fault is still present, check the connection and condition of the connector of the cruise control on the instrument panel; replace the connector if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection:</p> <p>computer connector A track F3 —————▶ track A3 of the cruise control on/off switch.</p> <p>computer connector A track G4 —————▶ track B1 of the cruise control on/off switch.</p> <p>Repair if necessary.</p>
<p>Check the presence of a 12 volt after ignition supply on track A2 of the connector of the cruise control/speed limiter on/off control.</p> <p>Repair if necessary.</p>

AFTER REPAIR	<p>Clear the fault memory.</p> <p>Follow the instructions to confirm repair.</p> <p>Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF159 PRESENT OR STORED	<u>SPEED LIMITER FUNCTION</u>
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NOTES	Priorities when dealing with a number of faults: – First deal with the "DF135 brake pedal sensor circuit" and " DF158 cruise control function" and DF247 cruise control or speed limiter button" faults if they are present or stored
	Conditions for applying fault finding procedures to stored faults The fault is declared present after operating the cruise control/speed limiter controls.

Using the status window of the diagnostic tool and the information given in status interpretation ET194 , ensure that there is no fault or parameter impeding the operation of the cruise control.
Apply the fault finding procedure on the basis of the parameter detected as faulty by the interpretation of status ET194 . For example, if the fault relates to the brake switch or the vehicle speed signal, apply the fault finding procedures for those parts.
Using the status window of the diagnostic tool and the information given in the interpretation of status ET192 , ensure that pressing the steering wheel and instrument panel buttons sends the correct signals to the injection computer.
If the data for status "ET192" are not to specification: Check the connection and condition of the connector of the steering wheel rotary switch and the condition of the connector of the speed limiter (in the steering wheel). Replace the connector(s) if necessary.
Check the presence of a 5 volt supply by measuring between tracks 1 and 2 of the control connector (in the steering wheel). If the supply is not present, but the previous checks carried out are correct and the supply to the computer is correct, replace the injection computer .

AFTER REPAIR	Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF159
CONTINUED

If the problem persists, check the **connection and condition of the connector** of the cruise control/speed limiter on the instrument panel; replace the connector if necessary.

Connect the bornier in place of the computer and check the **insulation, continuity and absence of interference resistance** on the following connection:

computer connector A **track F3** —————▶ **track A3** of the cruise control on/off switch.

computer connector A **track G4** —————▶ **track B1** of the cruise control on/off switch.

Repair if necessary.

Check the presence of a 12 volt after ignition supply on track A2 of the connector of the cruise control/speed limiter on/off control.
Repair if necessary.

AFTER REPAIR

Clear the fault memory.
Follow the instructions to confirm repair.
Deal with any other faults.

Fault finding - Interpretation of faults

DF165 PRESENT OR STORED	DETECTION OF ENGINE MISFIRING 1.DEF : NONCOMPLIANCE WITH EMISSION CONTROL STANDARDS 2.DEF : RISK OF CATALYTIC CONVERTER DAMAGE
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NOTES	Priorities when dealing with a number of faults: – First deal with the following faults if they are present or stored: DF061 Ignition coils 1 - 4 circuit, DF084 to DF087 Cylinders 1 to 4 injector control, DF025 Flywheel signal sensor circuit and DF018 , DF038 , DF102 , DF207 , DF208 , Heater circuit and input signal of the two oxygen sensors.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after an OBD (on-board diagnostics) misfires test: – If the programming of the phonic wheel has not been erased, the OBD (on-board diagnostics) misfires test is carried out automatically with the engine running at idle speed for one and a half minutes if the engine is cold or for 30 seconds if the engine is warm. – Before the OBD (on-board diagnostics) misfires test can be run from the diagnostic tool, programming must be erased and then the test run (see preliminary fault finding).
	Special notes: Misfiring will be indicated when the OBD warning light comes on, which indicates that the vehicle is no longer complying with the pollution standards. Flashing of the OBD warning light indicates the risk of destruction of the catalytic converter.

Check the ignition system and the condition of the plugs and the radio interference suppresser. Repair if necessary.
Check the compression ratio of the engine. Repair if necessary.
Check the engine flywheel target (disc warped or cracked). Repair if necessary.
Make sure there is no leakage at the inlet manifold and that the air filter is in good condition. Repair if necessary.
If no anomaly is found, then there must be a problem with the fuel system . Therefore check: – the condition of the fuel filter, – the fuel flow rate and pressure. – the cleanliness of the tank, – the condition of the injectors, – the conformity of the fuel. Replace any faulty components.

AFTER REPAIR	Carry out reprogramming (see preliminary fault finding). Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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Fault finding - Interpretation of faults

<p>DF167 PRESENT OR STORED</p>	<p><u>THROTTLE ANGLE SENSOR</u></p> <p>CC.0 : SHORT CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT TO +12 V 1.DEF : VOLTAGE OUTSIDE PERMITTED RANGE</p>
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<p>NOTES</p>	<p>Priorities when dealing with a number of faults: – First deal with the "DF151 first sensor reference voltage" and "DF152 second sensor reference voltage" faults if they are present or stored.</p>
	<p>Conditions for applying fault finding procedures to stored faults The fault is declared present when the ignition is switched on and the accelerator pedal depressed</p>
	<p>Special notes: The motorised throttle is located in the inlet manifold.</p>

Connect the bornier in place of the computer and check the resistance value of the throttle potentiometers by measuring between: track C1 and track G1 of the computer connector B. The potentiometers should have a resistance of approximately 2500 Ω ± 500 Ω .																				
If the measurements give incorrect values: remove the inlet manifold to gain access to the motorised throttle.																				
Check the connection and condition of the motorised throttle connector. Change the connector if necessary.																				
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: <table><tr><td>computer connector B</td><td>track G1</td><td>————→</td><td>track 1</td><td>of the motorised throttle</td></tr><tr><td>computer connector B</td><td>track G3</td><td>————→</td><td>track 2</td><td>of the motorised throttle</td></tr><tr><td>computer connector B</td><td>track C1</td><td>————→</td><td>track 5</td><td>of the motorised throttle</td></tr><tr><td>computer connector B</td><td>track F4</td><td>————→</td><td>track 6</td><td>of the motorised throttle</td></tr></table> Repair if necessary.	computer connector B	track G1	————→	track 1	of the motorised throttle	computer connector B	track G3	————→	track 2	of the motorised throttle	computer connector B	track C1	————→	track 5	of the motorised throttle	computer connector B	track F4	————→	track 6	of the motorised throttle
computer connector B	track G1	————→	track 1	of the motorised throttle																
computer connector B	track G3	————→	track 2	of the motorised throttle																
computer connector B	track C1	————→	track 5	of the motorised throttle																
computer connector B	track F4	————→	track 6	of the motorised throttle																
Check for the presence of a 5 volt supply on track 5 of the motorised throttle. If there is no feed, replace the injection computer.																				
If the fault persists, replace the motorised throttle.																				

<p>AFTER REPAIR</p>	<p>Carry out reprogramming (see preliminary fault finding). Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

<p>DF168 PRESENT OR STORED</p>	<p><u>AIR INLET CIRCUIT</u> 1.DEF : SIGNAL INCONSISTENCY</p>
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<p>NOTES</p>	<p>Priorities when dealing with a number of faults: – First deal with the DF045 manifold pressure sensor and DF137 motorised throttle faults if they are present or stored.</p>
	<p>Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been running at idle speed for 10 seconds.</p>

<p>Check the condition of the air filter (clogging or deformation). Replace the air filter if necessary.</p>
<p>Verify the conformity of the air intake circuit (air filter inlet pipe crushed, etc.). Repair if necessary.</p>
<p>Make sure that there are no air leaks, especially round the injection computer seal.</p>
<p>Make sure that there is no point of resistance in the movement of the motorised throttle. Repair if necessary.</p>

<p>AFTER REPAIR</p>	<p>Carry out reprogramming (see preliminary fault finding). Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF182 PRESENT OR STORED	<u>PINKING CORRECTION</u> 1.DEF : DETECTION OF SIGNAL OUTSIDE UPPER OR LOWER LIMIT
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NOTES	Priorities when dealing with a number of faults: – First deal with the following faults if they are present or stored: DF061 Ignition coils 1 - 4 circuit, DF084 to DF087 Cylinders 1 to 4 injector control, DF146 Richness regulation and DF018 , DF038 , DF102 , DF207 , DF208 , Heater circuit and input signal of the two oxygen sensors.
	Conditions for applying fault finding procedures to stored faults The fault is declared present if the engine is running at more than 2100 rpm and the coolant temperature is above 10°C .

Check the connection and condition of the pinking sensor connector. Change the connector if necessary.
Check the tightness of the pinking sensor (see repair methods for manufacturer's value).
Ensure that the engine does not make an abnormal noise . If there is an abnormal noise, the cause of the noise must be eliminated before the sensor is checked.
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector B track C2 —————> track 1 of the pinking sensor computer connector B track C3 —————> track 2 of the pinking sensor computer connector B track D2 —————> shielding of the sensor Repair if necessary.
Verify the conformity of the fuel and the spark plugs. Repair if necessary.
Carry out a conformity check to verify that the mixture adjustment is operating correctly.
If the fault persists, replace the pinking sensor.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF207 PRESENT OR STORED	<u>UPSTREAM SENSOR INPUT SIGNAL</u> CC.1 : SHORT CIRCUIT TO +12 V 1.DEF : BELOW MINIMUM THRESHOLD 2.DEF : ABOVE MAXIMUM THRESHOLD
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NOTES	Priorities when dealing with a number of faults: – First deal with faults: DF076 Main relay, DF157 Battery voltage, DF236 + after relay feed, DF111 , DF112 , DF113 , DF114 , DF165 Detection of misfires and DF146 Richness regulation if they are present or stored.
	Conditions for applying fault finding procedures to stored faults – Carry out a test drive. When the engine is warm, go into cut-off mode (no-load deceleration) for about 5 seconds. If necessary, repeat the operation three times successively.
	Special notes: Make sure that the canister valve is not mechanically jammed (even if the diagnostic tool detects no canister valve fault).

Check the connection and condition of the upstream oxygen sensor connector. Change the connector if necessary.
Verify the condition of the air intake circuit and the filter element.
Ensure absence of air leaks on the exhaust system.
If the vehicle is driven frequently in town, decoke the engine .
With the ignition switched on, check the presence of 12 volts on track A of the upstream oxygen sensor.
If there is no supply, check the insulation, continuity and absence of interference resistance on the following connection: injection locking relay track 5 —————> track A of the upstream oxygen sensor Repair if necessary.
Connect the borrier in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector B track E3 —————> track C of the upstream oxygen sensor computer connector B track D1 —————> track D of the upstream oxygen sensor Repair if necessary.
If the fault persists, change the oxygen sensor (tighten to the correct torque).
If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

<p>DF208 PRESENT OR STORED</p>	<p><u>DOWNSTREAM SENSOR INPUT SIGNAL</u></p> <p>CC.1 : SHORT CIRCUIT TO +12 V</p> <p>1.DEF : BELOW MINIMUM THRESHOLD</p> <p>2.DEF : ABOVE MAXIMUM THRESHOLD</p>
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<p>NOTES</p>	<p>Priorities when dealing with a number of faults:</p> <p>– First deal with faults: DF076 Main relay, DF157 Battery voltage, DF236 + after relay feed, DF111, DF112, DF113, DF114, DF165 Detection of misfires and DF146 Richness regulation if they are present or stored.</p>
	<p>Conditions for applying fault finding procedures to stored faults</p> <p>– Carry out a test drive. When the engine is warm, go into cut-off mode (no-load deceleration) for approximately 10 seconds.</p> <p>If necessary, repeat the operation three times successively.</p>

<p>Check the connection and condition of the downstream oxygen sensor connector.</p> <p>Change the connector if necessary.</p>
<p>Verify the condition and conformity of the exhaust manifold and the filter element.</p>
<p>Make sure that there are no air leaks into the exhaust system.</p>
<p>If the vehicle is driven frequently in town, decoke the engine.</p>
<p>With the ignition switched on, check the presence of 12 volts on track A of the downstream oxygen sensor.</p>
<p>If there is no supply, check the insulation, continuity and absence of interference resistance on the following connection:</p> <p> injection locking relay track 5 —————> track A of the downstream oxygen sensor</p> <p>Repair if necessary.</p>
<p>Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections:</p> <p> computer connector A track H2 —————> track C of the downstream oxygen sensor</p> <p> computer connector A track E1 —————> track D of the downstream oxygen sensor</p> <p>Repair if necessary.</p>
<p>If the fault persists, change the oxygen sensor (tighten to the correct torque).</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

<p>AFTER REPAIR</p>	<p>Follow the instructions to confirm repair.</p> <p>Clear the fault memory.</p> <p>Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF216 PRESENT	<u>THROTTLE BODY MOTOR CONTROL</u> 1.DEF : INCONSISTENCY BETWEEN THROTTLE POSITION AND CONTROL
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NOTES	Priorities when dealing with a number of faults: – First deal with the DF045 manifold pressure sensor and DF137 motorised throttle faults if they are present or stored.
	Special notes: The motorised throttle is located in the inlet manifold.

<p>Connect the bornier in place of the computer and check the resistance value of the throttle motor by measuring between:</p> <p>Track L1 and track M1 of computer connector B.</p> <p>The throttle motor should have a resistance of approximately 2 Ω ± 1 Ω at 25°C.</p>										
<p>If the measurement gives an incorrect value: remove the inlet manifold to gain access to the motorised throttle.</p>										
<p>Check the connection and condition of the motorised throttle connector.</p> <p>Change the connector if necessary.</p>										
<p>Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections:</p> <table><tr><td>computer connector B</td><td>track L1</td><td>————→</td><td>track 3</td><td>of the motorised throttle</td></tr><tr><td>computer connector B</td><td>track M1</td><td>————→</td><td>track 4</td><td>of the motorised throttle</td></tr></table> <p>Repair if necessary.</p>	computer connector B	track L1	————→	track 3	of the motorised throttle	computer connector B	track M1	————→	track 4	of the motorised throttle
computer connector B	track L1	————→	track 3	of the motorised throttle						
computer connector B	track M1	————→	track 4	of the motorised throttle						
<p>If the fault persists, replace the motorised throttle.</p>										
<p>If replacement of the motorised throttle does not solve the problem, change the injection computer.</p>										

AFTER REPAIR	<p>Carry out reprogramming (see preliminary fault finding).</p> <p>Clear the fault memory.</p> <p>Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF218 PRESENT OR STORED	<u>AIR COMPONENT</u> 1.DEF : INCONSISTENCY BETWEEN THE CALCULATED PRESSURE AND THE TRUE PRESSURE
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NOTES	Priorities when dealing with a number of faults: – First deal with the DF045 manifold pressure sensor and DF137 motorised throttle faults if they are present or stored.
	Conditions for applying fault finding procedures to stored faults The fault is declared present after the engine has been started.

<p>Make sure that the manifold pressure parameter (PR001) in the parameters window relating to the fault is possible. Then check it in the current parameters window (to detect any drift in the pressure sensor signal). If necessary, replace the pressure sensor and compare the two signals.</p>
<p>If the signal is correct, remove the inlet manifold and verify the correct operation and condition of the throttle body (contamination of the throttle valve, point of resistance, etc.).</p>
<p>Check the conformity of the air intake circuit (clogging, air leaks, etc.). Repair if necessary.</p>
<p>If the fault persists, replace the manifold pressure sensor.</p>
<p>If after replacing the pressure sensor the fault persists, change the motorised throttle.</p>

AFTER REPAIR	Carry out reprogramming (see preliminary fault finding). Follow the instructions to confirm repair. Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF226 PRESENT	THROTTLE LIMIT PROGRAMMING CC.0 : SHORT CIRCUIT TO EARTH 1.DEF : SIGNAL INCONSISTENCY 2.DEF : DETECTION OF SIGNAL OUTSIDE UPPER OR LOWER LIMIT
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NOTES	Priorities when dealing with a number of faults: – First deal with the following faults if they are present or stored: DF125 , DF126 pedal potentiometers track 1 and track 2, DF137 motorised throttle and DF167 throttle angle sensor.
	Special notes: The motorised throttle can only be programmed above 6°C .

Make sure that the battery is correctly charged . If it is not, carry out fault finding on the charging circuit.																														
Connect the bornier in place of the computer and check the resistance values of the throttle motor and the throttle potentiometers by measuring between: Track L1 and track M1 of computer connector B for the throttle motor. The throttle motor should have a resistance of approximately 2 Ω ± 1 Ω . And track C1 and track G1 of computer connector B for the potentiometers. The potentiometers should have a resistance of approximately 2500 Ω ± 500 Ω .																														
If the measurement gives an incorrect value: remove the inlet manifold to gain access to the motorised throttle.																														
Check the connection and condition of the motorised throttle connector. Change the connector if necessary.																														
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: <table><tr><td>computer connector B</td><td>track L1</td><td>————→</td><td>track 3</td><td>of the motorised throttle</td></tr><tr><td>computer connector B</td><td>track M1</td><td>————→</td><td>track 4</td><td>of the motorised throttle</td></tr><tr><td>computer connector B</td><td>track G1</td><td>————→</td><td>track 1</td><td>of the motorised throttle</td></tr><tr><td>computer connector B</td><td>track G3</td><td>————→</td><td>track 2</td><td>of the motorised throttle</td></tr><tr><td>computer connector B</td><td>track C1</td><td>————→</td><td>track 5</td><td>of the motorised throttle</td></tr><tr><td>computer connector B</td><td>track F4</td><td>————→</td><td>track 6</td><td>of the motorised throttle</td></tr></table> Repair if necessary.	computer connector B	track L1	————→	track 3	of the motorised throttle	computer connector B	track M1	————→	track 4	of the motorised throttle	computer connector B	track G1	————→	track 1	of the motorised throttle	computer connector B	track G3	————→	track 2	of the motorised throttle	computer connector B	track C1	————→	track 5	of the motorised throttle	computer connector B	track F4	————→	track 6	of the motorised throttle
computer connector B	track L1	————→	track 3	of the motorised throttle																										
computer connector B	track M1	————→	track 4	of the motorised throttle																										
computer connector B	track G1	————→	track 1	of the motorised throttle																										
computer connector B	track G3	————→	track 2	of the motorised throttle																										
computer connector B	track C1	————→	track 5	of the motorised throttle																										
computer connector B	track F4	————→	track 6	of the motorised throttle																										
If the fault persists, replace the motorised throttle.																														

AFTER REPAIR	Program the throttle stop and the throttle air valve (see introduction). Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF230 PRESENT	<u>COMPUTER</u> 1.DEF : COMPUTER INTERNAL ELECTRONIC FAULT
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NOTES	Priorities when dealing with a number of faults: – Deal first with fault: DF236 + after relay supply if it is present or stored.
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Make sure that the battery is correctly charged . If it is not, carry out fault finding on the charging circuit.	
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector A track L3 \longrightarrow track 5 of the main relay computer connector A track L4 \longrightarrow injection fuse: + battery (refer to diagrams for the vehicle and model year in question). computer connector A track M4 \longrightarrow injection fuse: + after ignition (refer to diagrams for the vehicle and model year in question). computer connector B track L2 \longrightarrow earth computer connector B track L3 \longrightarrow earth computer connector B track L4 \longrightarrow earth Repair if necessary.	
If the fault persists, change the injection computer.	

AFTER REPAIR	Program the throttle stop and the throttle air valve (see introduction). Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF231 PRESENT	<u>COMPUTER</u> 1.DEF : COMPUTER INTERNAL ELECTRONIC FAULT
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NOTES	Priorities when dealing with a number of faults: – Deal first with fault: DF236 + after relay supply if it is present or stored.
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Make sure that the battery is correctly charged . If it is not, carry out fault finding on the charging circuit.	
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector A track L3 \longrightarrow track 5 of the main relay computer connector A track L4 \longrightarrow injection fuse: + battery (refer to diagrams for the vehicle and model year in question). computer connector A track M4 \longrightarrow injection fuse: + after ignition (refer to diagrams for the vehicle and model year in question). computer connector B track L2 \longrightarrow earth computer connector B track L3 \longrightarrow earth computer connector B track L4 \longrightarrow earth Repair if necessary.	
If the fault persists, change the injection computer.	

AFTER REPAIR	Program the throttle stop and the throttle air valve (see introduction). Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF232 PRESENT	<u>COMPUTER</u> 1.DEF : COMPUTER INTERNAL ELECTRONIC FAULT
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NOTES	Priorities when dealing with a number of faults: – Deal first with fault: DF236 + after relay supply if it is present or stored.
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Make sure that the battery is correctly charged . If it is not, carry out fault finding on the charging circuit.	
Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector A track L3 \longrightarrow track 5 of the main relay computer connector A track L4 \longrightarrow injection fuse: + battery (refer to diagrams for the vehicle and model year in question). computer connector A track M4 \longrightarrow injection fuse: + after ignition (refer to diagrams for the vehicle and model year in question). computer connector B track L2 \longrightarrow earth computer connector B track L3 \longrightarrow earth computer connector B track L4 \longrightarrow earth Repair if necessary.	
If the fault persists, change the injection computer.	

AFTER REPAIR	Program the throttle stop and the throttle air valve (see introduction). Clear the fault memory. Deal with any other faults.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF236 PRESENT	<u>+ AFTER RELAY FEED</u> CC.0 : SHORT CIRCUIT TO EARTH CC.1 : SHORT CIRCUIT ON + 12 V
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NOTES	None.
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<p>Check the condition of the clips of the injection locking relay (main relay) on the engine fuse and relay board. Replace the clips if necessary.</p>
<p>Check for the presence of +12 volts before ignition on track 3 and track 1 of the main relay. Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the following connection: computer connector A track L3  track 5 of the actuator relay Repair if necessary.</p>
<p>Check the resistance value of the relay by measuring between: Track 1 and track 2 of the actuator relay. Replace the relay if the resistance is not approximately 84 Ω ± 1 Ω.</p>

AFTER REPAIR	<p>Clear the fault memory. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

DF247 PRESENT OR STORED	<u>CRUISE CONTROL OR SPEED LIMITER BUTTON</u>
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NOTES	<p>Conditions for applying the fault finding procedure to the stored fault:</p> <p>The fault is declared present following operation of the cruise-control/speed limiter controls.</p>
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Using the status window of the diagnostic tool and the information given in status interpretation ET194 , ensure that there is no fault or parameter impeding the operation of the cruise control.
Apply the fault finding procedure on the basis of the parameter detected as faulty by the interpretation of status ET194 . For example, if the fault relates to the brake switch or the vehicle speed signal, apply the fault finding procedures for those parts.
Using the status window of the diagnostic tool and the information given in the interpretation of status ET192 , ensure that pressing the steering wheel and instrument panel buttons sends the correct signals to the injection computer.
<p>If the data for status ET192 are not to specification:</p> <p>Check the connection and condition of the connector of the steering wheel rotary switch and the condition of the connector of the cruise control (in the steering wheel). Replace the connector(s) if necessary.</p>

AFTER REPAIR	<p>Clear the fault memory.</p> <p>Follow the instructions to confirm repair.</p> <p>Deal with any other faults.</p>
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DF247 CONTINUED	
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<p>Check the resistance values of the control switches of the cruise control as below.</p> <p>Check the resistances between track J2 and track G2 of computer connector A.</p> <ul style="list-style-type: none">– "resume" button pressed: R = 900 ohms– "suspend" button pressed: R = 0– "set/plus" button pressed: R = 300 ohms– "set/minus" button pressed: R = 100 ohms <p>Replace the switches if necessary.</p>										
<p>Disconnect the connector on the speed limiter/cruise control switch, and check the condition of the contacts using an ohmmeter.</p> <p>Change the switch if it does not operate as specified below:</p> <table><tr><td><u>switch set to cruise control function</u></td><td></td><td><u>switch set to speed limiter function</u></td></tr><tr><td>continuity between tracks A2 and A3</td><td>————→</td><td>insulation between tracks A2 and A3</td></tr><tr><td>insulation between tracks A2 and B1</td><td>————→</td><td>continuity between tracks A2 and B1</td></tr></table> <p>Repair if necessary.</p>	<u>switch set to cruise control function</u>		<u>switch set to speed limiter function</u>	continuity between tracks A2 and A3	————→	insulation between tracks A2 and A3	insulation between tracks A2 and B1	————→	continuity between tracks A2 and B1	
<u>switch set to cruise control function</u>		<u>switch set to speed limiter function</u>								
continuity between tracks A2 and A3	————→	insulation between tracks A2 and A3								
insulation between tracks A2 and B1	————→	continuity between tracks A2 and B1								

AFTER REPAIR	<p>Clear the fault memory. Follow the instructions to confirm repair. Deal with any other faults.</p>
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PETROL INJECTION

Fault finding - Conformity check

NOTES

Only carry out this conformity check after a **full check** with the diagnostic tool (the values shown in this conformity check are only given as a guide).
Conditions for applying this check: engine off, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
1	Computer supply	ET001 Computer + after ignition feed	ACTIVE	In the event of a fault: apply the charge circuit fault finding procedure.
		PR004 computer supply voltage	$11 < x < 14 \text{ V}$	
2	Engine immobiliser	ET002 engine immobiliser	INACTIVE	If active or if immobiliser code not programmed use the diagnostic procedure for the Engine immobiliser system.
		ET099 immobiliser code programmed	YES	
3	Coolant temperature sensor	PR002 Coolant temperature	$X = \text{engine temperature} \pm 5^\circ\text{C}$	In the event of a fault, apply the fault finding procedure for the coolant temperature sensor (DF004).
		PR143 coolant temperature sensor voltage.	$0 < X < 5 \text{ V}$	
4	Air temperature sensor	PR003 Air temperature	$X = \text{Temperature under bonnet} \pm 5^\circ\text{C}$	In the event of a fault, apply the fault finding procedure for the air temperature sensor (DF003).
		PR144 air temperature sensor voltage.	$0 < X < 5 \text{ V}$	
5	Manifold pressure sensor	PR001 manifold pressure	= atmospheric pressure	In the event of a fault, apply the fault finding procedure for the manifold pressure sensor (DF045).
		PR016 atmospheric pressure		
6	Engine operation	ET142 engine	STATUS1: ignition switched on and engine stopped	For more information consult the fault finding procedure for status ET142.

PETROL INJECTION

Fault finding - Conformity check

NOTES

Only carry out this conformity check after a **full check** with the diagnostic tool (the values shown in this conformity check are only given as a guide).
Conditions for applying this check: engine off, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
7	Throttle position potentiometer (in no load position).	ET003 throttle position no load	ACTIVE	If there is a problem: use the diagnostic procedure for the throttle angle sensor (DF167).
		ET005 fully open throttle position	INACTIVE	
		PR017 measured throttle position	$0 < X < 20 \text{ d}^\circ$	
		PR165 measured throttle voltage gang 2	$4.08 \text{ V} \pm 0.3 \text{ V}$	
		PR166 measured throttle voltage gang 1	$0.96 \text{ V} \pm 0.3 \text{ V}$	
8	Motorised throttle valve	ET109 motorised throttle valve	STATUS 1: opening movement STATUS 2: closing movement	In the event of a fault, apply the fault finding procedure for the motorised throttle valve (DF137).
		ET111 programming throttle valve limits	YES	If the status displays NO, re-program the motorised throttle (see preliminary diagnostics).
		PR113 motorised throttle position setting	$0 < X < 20 \text{ d}^\circ$	None.
		PR118 motorised throttle valve upper limit.	$0.78 \text{ V} \pm 0.16 \text{ V}$	In the event of a fault, apply the fault finding procedure for the throttle angle sensor (DF167).
		PR119 motorised throttle valve lower limit	$0.39 \text{ V} \pm 0.1 \text{ V}$	
9	Accelerator pedal position potentiometer	PR112 measured pedal position	$17 < X < 83 \text{ d}^\circ$	In the event of a fault, apply the fault finding procedure for the pedal potentiometer gang 1 and gang 2 circuit (DF125 and DF126).
		PR150 measured pedal angle voltage 1	$0.5 < X < 4.5 \text{ V}$	
		PR151 measured pedal angle voltage 2	$0.2 < X < 2.5 \text{ V}$	

PETROL INJECTION

Fault finding - Conformity check

NOTES

Only carry out this conformity check after a **full check** with the diagnostic tool (the values shown in this conformity check are only given as a guide).
Conditions for applying this check: engine off, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
10	Cruise control/ Speed limiter	ET192 Cruise control/ speed limiter function	INACTIVE (STATUS 2 if the vehicle is not fitted with the cruise control/speed limiter function, default value)	For vehicles fitted with the speed control function, if the status is not inactive , refer to status interpretation ET192 .
		ET194 deactivation of cruise control/speed limiter	INACTIVE (STATUS 6 if the vehicle is not fitted with the cruise control/speed limiter function, default value)	For vehicles fitted with the speed control function, if the status is not inactive , refer to status interpretation ET194 .
11	Brake pedal	ET143 redundant brake pedal	STATUS 1 (brake pedal in rest position).	If the status shows inactive , perform the fault finding procedure for the brake pedal sensor circuit (DF135).
12	Impact detected by the injection computer.	ET265 impact detected by the injection computer.	NO	If the status shows STATUS 1 , refer to the interpretation of status ET265

PETROL INJECTION

Fault finding - Conformity check

NOTES

Only carry out this conformity check after a **full check** with the diagnostic tool (the values shown in this conformity check are only given as a guide).

Conditions for applying this check: engine warm, idling, no electrical consumers.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
1	Computer supply	ET001 Computer + after ignition feed	ACTIVE	In the event of a problem: perform the charge circuit fault finding procedure.
		PR004 computer supply voltage	$11 < x < 14 \text{ V}$	
2	Engine immobiliser	ET002 engine immobiliser	INACTIVE	If active or if immobiliser code not programmed use the diagnostic procedure for the Engine immobiliser system.
		ET099 immobiliser code programmed	YES	
3	Coolant temperature sensor	PR002 Coolant temperature	X = engine temperature $\pm 5^\circ\text{C}$ (substitute value: 84°C)	In the event of a fault, apply the fault finding procedure for the coolant temperature sensor (DF004).
		PR143 coolant temperature sensor voltage.	$0 < X < 5 \text{ V}$	
4	Air temperature sensor	PR003 Air temperature	X = temperature under bonnet $\pm 5^\circ\text{C}$ (substitution value: 30°C)	In the event of a fault, apply the fault finding procedure for the air temperature sensor (DF003).
		PR144 air temperature sensor voltage	$0 < X < 5 \text{ V}$	
5	Accelerator pedal position potentiometer (no load)	PR0112 measured pedal position	$5 < X < 30 \text{ d}^\circ$	In the event of a fault, apply the fault finding procedure for the accelerator pedal potentiometer gang 1 and gang 2 circuits (DF125 and DF126).
		PR150 measured pedal angle voltage 1	$0.298 < X < 0.800 \text{ V}$	
		PR151 measured pedal angle voltage 2	$0.298 < X < 0.425 \text{ V}$	

PETROL INJECTION

Fault finding - Conformity check

NOTES

Only carry out this conformity check after a **full check** with the diagnostic tool (the values shown in this conformity check are only given as a guide).

Conditions for applying this check: engine warm, idling, no electrical consumers.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
6	Throttle position potentiometer	ET003 throttle position no load	ACTIVE	In the event of a fault, apply the fault finding procedure for the throttle angle sensor (DF167).
		ET005 fully open throttle position.	INACTIVE	
		PR017 measured throttle position	$0 < X < 20 \text{ d}^\circ$	
		PR165 measured throttle voltage gang 2	$3.5 < X < 5 \text{ V}$	
		PR166 measured throttle voltage gang 1	$0 < X < 1.5 \text{ V}$	
7	Motorised throttle valve	ET109 motorised throttle valve	STATUS 1: opening movement STATUS 2: closing movement	In the event of a fault, apply the fault finding procedure for the motorised throttle valve (DF137).
		ET111 programming throttle valve limits	YES	If the status displays NO , reprogram the motorised throttle (see fault finding introduction).
		PR113 motorised throttle position setting	$0 < X < 20 \text{ d}^\circ$	None.
		PR132 motorised throttle OCR.	$30 < X < 50\%$	
		PR118 motorised throttle valve upper limit	$0.78 \text{ V} \pm 0.16 \text{ V}$	In the event of a fault, apply the fault finding procedure for the throttle angle sensor (DF167).
		PR119 motorised throttle valve lower limit	$0.39 \text{ V} \pm 0.1 \text{ V}$	
8	Manifold pressure sensor	PR001 manifold pressure	$216 < X < 504 \text{ mb}$	In the event of a fault, apply the fault finding procedure for the manifold pressure sensor (DF045).
		PR016 atmospheric pressure	= local atmospheric pressure	

PETROL INJECTION

Fault finding - Conformity check

NOTES

Only carry out this conformity check after a **full check** with the diagnostic tool (the values shown in this conformity check are only given as a guide).

Conditions for applying this check: engine warm, idling, no electrical consumers.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
9	Air conditioning	ET009 air conditioning request	ACTIVE if requested	In the event of a problem, perform a fault finding test on fault: "DF228 compressor control".
		ET076 air conditioning authorisation	YES	
		PR027 refrigerant fluid pressure	$1 < X < 10 \text{ B.}$	In the event of a fault, apply the fault finding procedure for the refrigerant pressure sensor (DF118).
10	Adaptive richness adjustment	PR030 operating richness adaptive	$-25.5 < X < 22\%$	Since these parameters are directly managed by the injection computer, it is difficult for the After Sales network to interpret them.
		PR031 idle richness adaptive	$-50.5 < X < 50\%$	
		PR140 rapid mixture correction.	$-33 < X < 50\%$	
		PR142 average mixture correction.	$-33 < X < 50\%$	
11	Engine operation	ET142 engine	STATUS 3: engine at idle speed	For more information consult the fault finding procedure for status ET142.
		PR006 engine speed	$750 \pm 50 \text{ rpm}$	In the event of a fault, consult the fault finding chart: idle speed fault (ALP3).
		PR041 engine idling speed reference	$750 \pm 50 \text{ rpm}$	
		ET038 fast idle speed	INACTIVE	None.
		ET039 idle speed regulation	ACTIVE	
		PR051 ignition advance	$-5 < X < 15^\circ \text{ V}$	Since these parameters are directly managed by the injection computer, it is difficult for the After Sales network to interpret them.
		PR050 injection duration	$2.16 < X < 5.88 \text{ ms.}$	
		PR036 coil charging time	1180 ms	

PETROL INJECTION

Fault finding - Interpretation of statuses

ET142	<u>ENGINE</u>
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NOTES	These statuses give an indication of engine operation and can be used for the detection of faults when the conditions required for detection (whether stored or present) are special. For example: engine deceleration for a given timed period.
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List of conditions associated with status **ET142**:

STATUS1: ignition switched on and engine stopped.

STATUS2: engine cranking.

STATUS3: engine at idle speed.

STATUS4: steady engine speed.

STATUS5: engine acceleration.

STATUS6: engine deceleration.

STATUS7: petrol injection cut-out request.

STATUS8: injection cut-out return.

AFTER REPAIR	Repeat the conformity check again for the status concerned.
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PETROL INJECTION

Fault finding - Interpretation of statuses

ET192	<u>Cruise control/speed limiter function</u>
NOTES	Special notes: the conditions below appear on the fault finding tool screen by clicking on the blue icon showing ET192 .

When the injection system shows fault **DF158** cruise control function, **DF159** speed limiter function and/or **DF247** cruise control or speed limiter button, the status screen enables a fault finding to be carried out on the system by means of statuses **ET192** and **ET194**.

Status **ET192** enables you to check the correct operation of the buttons or the speed limiter.

When the vehicle is stationary with ignition on and without pressing the cruise control or speed limiter switches, status **ET192** should be inactive (see conformity check).

List of conditions associated with status **ET192**:

STATUS 1:suspend button pressed.

STATUS 2:resume button pressed.

STATUS 3:speed limiter ON/OFF button pressed.

STATUS 4:cruise control ON/OFF button pressed.

STATUS 5:increase button pressed (set +).

STATUS 6:decrease button pressed (set -).

If status **ET194** is not inactive and shows one of these conditions a check must be made with the ohmmeter of the relevant button, which should be replaced if necessary.

If status **ET194** is inactive but fault **DF158** cruise control function, **DF159** speed limiter function and/or **DF247** cruise control or speed limiter button is present, the correct operation of these buttons must be ensured using these technical specifications.

AFTER REPAIR	If necessary repeat the application of the fault finding procedure for fault DF158 , DF159 and/or DF247 or carry out a road test to confirm the correct functioning of the system.
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ET194	<u>Deactivation of cruise control/speed limiter</u>
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NOTES	Special notes: the conditions below appear on the fault finding tool screen by clicking on the blue icon showing 'ET194'.
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When the injection system shows fault **DF158** cruise control function, **DF159** speed limiter function and/or **DF247** cruise control or speed limiter button, the status screen enables a fault finding to be carried out on the system by means of statuses **ET192** and **ET194**.

Status **ET194** indicates the reasons why the cruise control or speed limiter function is interrupted.

When the vehicle is stationary with ignition on and without pressing the cruise control or speed limiter switches, status **ET194** should be inactive (see conformity check).

List of conditions associated with status **ET194**:

STATUS 1: vehicle speed invalid. STATUS 2: vehicle speed not updated.	These two conditions indicate a problem with the vehicle speed signal. This signal reaches the injection computer through the multiplex network. To solve this problem it is necessary to perform a fault finding procedure on the multiplex network .
STATUS 3: problem detected by the injection computer.	This condition indicates that an injection fault is preventing the function from starting (defect mode). It is therefore necessary to perform the fault finding procedure associated with the fault shown by the diagnostic tool.
STATUS 4: cruise control or speed limiter fault.	Perform the fault finding procedure for fault DF158 cruise control function and/or DF159 speed limiter function.

AFTER REPAIR	If necessary repeat the application of the fault finding procedure for fault DF158 , DF159 and/or DF247 or carry out a road test to confirm the correct functioning of the system.
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PETROL INJECTION

Fault finding - Interpretation of statuses

ET194	
CONTINUED 1	

STATUS 5: brake pedal depressed.	Depressing the brake pedal cuts off the cruise control or speed limiter function. If the status remains active without pressing the brake pedal, perform the fault finding procedure for fault DF135 brake pedal sensor.
STATUS 6: engine / gearbox decoupling.	This condition only affects vehicles fitted with the electronic stability program for engines with manual gearbox.
STATUS 7: gear lever in neutral position.	This condition is only active in the case of vehicles fitted with automatic transmission. If this condition is present, perform the fault finding procedure for the automatic gearbox .
STATUS 8: inconsistency between the request and the vehicle speed.	This condition indicates an incorrect request from the driver. However an inconsistency in the vehicle speed signal may cause this condition to appear. In this case perform a fault finding procedure on the multiplex network , of the ABS and the instrument panel.
STATUS 9: press on the suspend button.	Pressing the suspend button cuts off the cruise control or speed limiter function. If the status remains active without pressing the suspend button, perform the fault finding procedure for fault DF247 cruise control or speed limiter button.

AFTER REPAIR	If necessary repeat the application of the fault finding procedure for fault DF158 , DF159 and/or DF247 or carry out a road test to confirm the correct functioning of the system.
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ET194	
CONTINUED 2	

STATUS 10: traction control request.	This condition is only active in the case of vehicles fitted with the electronic stability program. A traction control request cuts off the cruise control or speed limiter function. If this condition remains active carry out fault finding on the ABS system .
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AFTER REPAIR	If necessary repeat the application of the fault finding procedure for fault DF158, DF159 and/or DF247 or carry out a road test to confirm the correct functioning of the system.
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ET265	<u>IMPACT DETECTED BY THE INJECTION COMPUTER</u>
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NOTES	Special notes: the conditions below appear on the fault finding tool screen by clicking on the blue icon showing ET265 .
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The airbag function is activated if an impact is detected by the airbag computer, which transmits the signal to the injection computer via the multiplex network, via the UCH. On receiving this signal, the computer locks the fuel pump relay and the injectors.

The unlocking of the relay will not be activated until the ignition has been off for 10 seconds.

This operation will cause the fault warning light to be come on for longer than usual when the ignition is switched on. The fault warning light will resume its normal operation after the fault has been cleared.

List of conditions associated with status **ET265**:

NO : no impact has been detected by the injection computer.	None
STATUS 1: an impact has been detected by the injection computer	To unlock the computer, switch off the ignition for 10 seconds, then clear the fault.

AFTER REPAIR	Check how long the fault warning light stays on when switching on the ignition and restart the vehicle to confirm the repair. Repeat the above procedure if necessary.
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
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NO DIALOGUE WITH THE COMPUTER	ALP 1
STARTING PROBLEMS	ALP 2
IDLING SPEED FAULTS	ALP 3
FAULTS WHILE DRIVING	ALP 4

PETROL INJECTION

Fault finding - Fault Finding Chart

ALP 1	NO DIALOGUE WITH THE COMPUTER
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NOTES	None.
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Try the diagnostic tool on another vehicle.																																																		
<p>Check:</p> <ul style="list-style-type: none">– the connection between the diagnostic tool and the diagnostic socket (lead in good condition),– injection, engine and passenger compartment fuses.																																																		
<p>Ensure the presence of a +12 volts battery supply on track 16 and earth on track 5 and track 4 of the diagnostic socket.</p> <p>Repair if necessary.</p>																																																		
<p>Connect the terminal in place of the computer and check the insulation, continuity and absence of interference resistance of the connections:</p> <table><tr><td>computer connector A</td><td>track L3</td><td>————→</td><td>track 5</td><td>of the injection locking relay</td></tr><tr><td>computer connector A</td><td>track L4</td><td>————→</td><td>+ battery</td><td>(engine fuse box)</td></tr><tr><td>computer connector A</td><td>track M4</td><td>————→</td><td>+ after ignition</td><td>(passenger compartment fuse box)</td></tr><tr><td>computer connector A</td><td>track M2</td><td>————→</td><td>track 2</td><td>of the injection locking relay</td></tr><tr><td>computer connector B</td><td>track L2</td><td>————→</td><td>earth</td><td></td></tr><tr><td>computer connector B</td><td>track L3</td><td>————→</td><td>earth</td><td></td></tr><tr><td>computer connector B</td><td>track L4</td><td>————→</td><td>earth</td><td></td></tr><tr><td>computer connector A</td><td>track H3</td><td>————→</td><td>track 14</td><td>of the diagnostic socket</td></tr><tr><td>computer connector A</td><td>track J4</td><td>————→</td><td>track 6</td><td>of the diagnostic socket</td></tr><tr><td>computer connector A</td><td>track K4</td><td>————→</td><td>track 7</td><td>of the diagnostic socket</td></tr></table> <p>Repair if necessary.</p>	computer connector A	track L3	————→	track 5	of the injection locking relay	computer connector A	track L4	————→	+ battery	(engine fuse box)	computer connector A	track M4	————→	+ after ignition	(passenger compartment fuse box)	computer connector A	track M2	————→	track 2	of the injection locking relay	computer connector B	track L2	————→	earth		computer connector B	track L3	————→	earth		computer connector B	track L4	————→	earth		computer connector A	track H3	————→	track 14	of the diagnostic socket	computer connector A	track J4	————→	track 6	of the diagnostic socket	computer connector A	track K4	————→	track 7	of the diagnostic socket
computer connector A	track L3	————→	track 5	of the injection locking relay																																														
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computer connector B	track L3	————→	earth																																															
computer connector B	track L4	————→	earth																																															
computer connector A	track H3	————→	track 14	of the diagnostic socket																																														
computer connector A	track J4	————→	track 6	of the diagnostic socket																																														
computer connector A	track K4	————→	track 7	of the diagnostic socket																																														

AFTER REPAIR	Check with the diagnostic tool.
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PETROL INJECTION

Fault finding - Fault Finding Chart

ALP 2

STARTING FAULTS

NOTES

Only refer to this customer complaint after a check using the diagnostic tool.

Ensure that the engine immobiliser is not active (the red warning light should be extinguished); if it is active, carry out the fault-finding procedure for the engine immobiliser system.



Ensure that the starter motor is turning correctly (approximately 250 rpm).

If this is not the case:

- Check the condition of the battery, corrosion and tightness of the terminals.
- Make sure the engine earth strap is in good condition.
- Make sure that the battery lead to the starter motor is in good condition.
- Check the condition of the battery.
- Check that the starter motor is operating correctly.



Fuel supply check:

- Check that there is fuel in the tank (fuel sender not faulty).
- Check that the fuel is of the proper type.
- Check that no hoses are pinched (especially after a removal operation).
- Check the condition of the fuel filter; replace it if necessary.
- Make sure that the fuel tank breather is not blocked.
- Make sure that the impact sensor is operating correctly.
- Make sure that the fuel pump is running correctly and that petrol is reaching the injector rail.
- Make sure that the fuel pressure regulator is in good condition by checking the pressure.



Air supply check:

- Check the condition of the intake ducts (no air leaks, pinching of the air intake pipe etc.).
- Make sure that the air filter is in good condition; replace it if necessary.
- Disconnect the pipe which connects the canister bleed solenoid valve to the inlet manifold and block the canister inlet from the manifold so that no air can enter. If there is no longer any disturbance, replace the canister bleed solenoid valve.



AFTER REPAIR

Check with the diagnostic tool.

PETROL INJECTION

Fault finding - Fault Finding Chart

17

ALP 2

CONTINUED

A

Ignition check:

- Check the condition of the spark plugs; replace them if necessary.
- Make sure that the spark plugs are correct for the engine type.
- Check the condition of the ignition wiring (wires hardened or cracked).
- Remove the engine speed sensor and make sure it has not been rubbing on its target (increase in the air gap). If it has, check the condition of the engine flywheel.
- Make sure that the ignition coils are in good condition.

Exhaust system check:

- Make sure that the exhaust system is in good condition.
- Remove the catalytic converter and look at the condition of the filter element inside (clogging).
- Shake the catalytic converter to see whether the filter element is broken (metallic noises)

Engine condition check:

- Make sure that the engine can turn freely.
- Check the cylinder compressions.
- Check the timing.

AFTER REPAIR

Check with the diagnostic tool.

PETROL INJECTION

Fault finding - Fault Finding Chart

ALP 3

IDLING SPEED FAULTS

NOTES

Only refer to this customer complaint after a check using the diagnostic tool.

Fuel supply check:

- Check that there is petrol present (the petrol gauge may be faulty).
- Check that the fuel is of the proper type.
- Check that no hoses are pinched (especially after a removal operation).
- Check the condition of the fuel filter; replace it if necessary.
- Make sure that the fuel tank breather is not blocked.
- Make sure that the fuel pressure regulator is in good condition by checking the pressure.



Air supply check:

- Check the condition of the intake ducts (no air leaks, pinching of the air intake pipe etc.).
- Make sure that the air filter is in good condition; replace it if necessary.
- Disconnect the pipe which connects the canister bleed solenoid valve to the inlet manifold and block the canister inlet from the manifold so that no air can enter. If the problem is no longer present, change the canister bleed solenoid valve.
- Check that the brake servo is not leaking (air leak).



Ignition check:

- Check the condition of the spark plugs; replace them if necessary.
- Make sure that the spark plugs are correct for the engine type.
- Check the condition of the ignition wiring (wires hardened or cracked).
- Make sure that the ignition coils are in good condition.



Engine condition check:

- Check on the dipstick that the oil level is not too high.
- Check the cylinder compressions.
- Check the timing.

AFTER REPAIR

Check with the diagnostic tool.

PETROL INJECTION

Fault finding - Fault Finding Chart

17

ALP 4

FAULTS WHILE DRIVING

NOTES

Only refer to this customer complaint after a check using the diagnostic tool.

Fuel supply check:

- Check that there is petrol present (the petrol gauge may be faulty).
- Check that the fuel is of the proper type.
- Check that no hoses are pinched (especially after a removal operation).
- Check the condition of the fuel filter; replace it if necessary.
- Make sure that the fuel tank breather is not blocked.
- Make sure that the fuel pressure regulator is in good condition by checking the pressure.



Air supply check:

- Check the condition of the intake ducts (no air leaks, pinching of the air intake pipe etc.).
- Make sure that the air filter is in good condition and not deformed; replace it if necessary.
- Disconnect the pipe which connects the canister bleed solenoid valve to the inlet manifold and block the canister inlet from the manifold so that no air can enter. If the problem is no longer present, change the canister bleed solenoid valve.
- Check that the brake servo is not leaking (air leak).
- Remove the air supply line of the motorised throttle body and check that the valve is not clogged.



Ignition check:

- Check the condition of the spark plugs; replace them if necessary.
- Make sure that the spark plugs are correct for the engine type.
- Check the condition of the ignition wiring (wires hardened or cracked).
- Make sure that the ignition coils are in good condition.
- Remove the engine speed sensor and make sure it has not been rubbing on its target (increase in the air gap). If it has, check the condition of the engine flywheel.



AFTER REPAIR

Check with the diagnostic tool.

PETROL INJECTION

Fault finding - Fault Finding Chart

ALP 4

CONTINUED

A

Engine condition check:

- Check on the dipstick that the oil level is not too high.
- Check the cylinder compressions.
- Check the timing.
- Check the condition of the engine speed sensor target (engine flywheel).
- Make sure that the engine cooling system is operating correctly (so that the engine is operating under optimum conditions, neither too cold nor too hot).

Exhaust system check:

- Make sure that the exhaust system is in good condition.
- Remove the catalytic converter and look at the condition of the filter element inside (clogging).
- Shake the catalytic converter to see whether the filter element is broken (metallic noises)

Running gear check:

- Check that the wheels turn freely (calipers, drums or bearings not seizing).
- Check the tyre pressures and tread condition (bulges).

AFTER REPAIR

Check with the diagnostic tool.

This document introduces the generic fault finding procedure applicable to all computers "SIRIUS 34 Vdiag 04 and 08".

ENGINES:

**K4J 710 / 711 / 714 / 715
K4M 708 / 709 / 730 / 744 / 745 / 770
F4R 736 / 742 / 743 / 746 / 747
F4P 720.**

To carry out fault finding on this system, it is essential to have the following items:

- **General Diagnostic Technical Note,**
- **The wiring diagram of the function for the vehicle concerned.**
- **the tools listed under the heading Special tooling required.**

GENERAL APPROACH TO FAULT FINDING:

- Use one of the diagnostic tools to identify the system fitted to the vehicle (to read the SIRIUS 34 Vdiag 04 and 08 computer family).
- Locate the Fault finding documents corresponding to the system identified.
- Take note of information contained in the introductory sections.
- Read the faults stored in the computer memory and use the Interpretation of faults section of the documents.
Reminder: Each fault is interpreted for a particular type of storage (fault present, fault stored, fault present or stored). The checks defined for dealing with each fault are therefore only to be performed if the fault declared by the diagnostic tool is interpreted in the document for its type of storage. The storage type should be considered when using the diagnostic tool after the ignition has been switched off and switched back on.
If a fault is interpreted when it is declared stored, the conditions for application of the diagnostic routine appear in the Notes box. If the conditions are not satisfied, use the fault finding strategy to check the circuit of the faulty part since the fault is no longer present on the vehicle. Perform the same operation when a fault is declared as stored by the diagnostic tool but is only interpreted in the documentation as a present fault.
- Carry out the conformity check (appearance of possible faults not yet identified by the system's self-diagnostic procedure) and apply the relevant fault finding procedures according to the results.
- Confirm the repair (customer complaint disappears).
- Use the fault finding strategies for the Customer complaint if the problem persists.

Essential tools for operations on the SIRIUS 34 Vdiag 04 and 08 system:

- Diagnostic tools (except XR 25).
 - Multimeter.
 - Test bornier: Elé. 1497.
-

Special notes on fault finding:

The injection computer provides a "Fault type" (CO.0, 1.DEF, etc.) for the majority of faults present. This information is always limited to "DEF" when one of these faults is stated to be stored, even if the fault is present but the conditions for handling it are not present (cannot obtain a 1.DEF or a CO.0 for a stored fault).

In this case, and if the fault is interpreted in the fault finding when it is only "stored", apply the conditions for confirmation of the actual presence of the fault, given in "NOTES" in the section "Conditions for application of the fault finding strategy to the stored fault".

If the fault is present, application of this instruction will allow the "fault type" to be displayed on the diagnostic tool and therefore the associated fault finding routine to be applied.

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

IMPORTANT:

- * All checks using bornier **Elé. 1497** must be performed with the battery disconnected.
 - * The bornier is designed to be used with a multimeter only. Under no circumstances should 12 volts be applied to the test points.
-

REPROGRAMMING THE COMPUTERS:

Reprogramming conditions:

- Ignition on
- Engine stopped
- Computer not protected

Important recommendation following reprogramming:

The computer does not transmit any information on the multiplex network during reprogramming operations (it is "mute"). Therefore all the computers connected to the multiplex network receiving information from the injection computer will detect faults.

It is therefore essential, after reprogramming the injection computer, to clear the faults on all the computers in communication with the injection computer.

Starting the vehicle after an impact:

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 264 "Computer locked following impact" changes to STATUS 1.
The only way of restarting is to switch off the ignition for at least 10 seconds.
The only way of clearing status ET264 is to clear the stored faults.

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.
It is associated with: DF002 Throttle potentiometer circuit, DF226 Throttle stop programming, DF254 Motorised throttle control or DF255 Throttle/pedal operation safety.

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 effect of pedal, fast idling and if the brake pedal is pressed the engine speed changes to idle speed.
It is 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.

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 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.

Fault finding - Interpretation of faults

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

1.DEF	<p>Check the connection and condition of the throttle potentiometer connector. Change the connector if necessary.</p>									
	<p>Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between:</p> <table><tr><td>Computer track 7</td><td>————→</td><td>Track 5 Throttle potentiometer</td></tr><tr><td>Computer track 82</td><td>————→</td><td>Track 1 Throttle potentiometer</td></tr><tr><td>Computer track 17</td><td>————→</td><td>Track 2 Throttle potentiometer</td></tr></table> <p>Repair if necessary.</p>	Computer track 7	————→	Track 5 Throttle potentiometer	Computer track 82	————→	Track 1 Throttle potentiometer	Computer track 17	————→	Track 2 Throttle potentiometer
Computer track 7	————→	Track 5 Throttle potentiometer								
Computer track 82	————→	Track 1 Throttle potentiometer								
Computer track 17	————→	Track 2 Throttle potentiometer								
	<p>Check the resistance of the throttle potentiometer gang 1 (the resistance is zero or equal to infinity in the event of a straight failure) Replace the throttle potentiometer if the resistance is not approximately 1 kohm.</p>									

2.DEF	<p>Check the connection and condition of the throttle potentiometer connector. Change the connector if necessary.</p>									
	<p>Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between:</p> <table><tr><td>Computer track 7</td><td>————→</td><td>Track 5 Throttle potentiometer</td></tr><tr><td>Computer track 82</td><td>————→</td><td>Track 1 Throttle potentiometer</td></tr><tr><td>Computer track 13</td><td>————→</td><td>Track 6 Throttle potentiometer</td></tr></table> <p>Repair if necessary.</p>	Computer track 7	————→	Track 5 Throttle potentiometer	Computer track 82	————→	Track 1 Throttle potentiometer	Computer track 13	————→	Track 6 Throttle potentiometer
Computer track 7	————→	Track 5 Throttle potentiometer								
Computer track 82	————→	Track 1 Throttle potentiometer								
Computer track 13	————→	Track 6 Throttle potentiometer								
	<p>Check the resistance of the throttle potentiometer gang 1 (the resistance is zero or equal to infinity in the event of a straight failure). Replace the throttle potentiometer if the resistance is not approximately 1 kohm.</p>									

AFTER REPAIR	Vary the engine speed to confirm repair. Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF003 PRESENT OR STORED	<u>AIR TEMPERATURE SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on.
	Special notes: Parameter PR003 Air temperature indicates the value read by the injection computer.

Check the connection and condition of the air temperature sensor connector. Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: Computer track 84 —————> Track 1 Air temperature sensor Computer track 18 —————> Track 2 Air temperature sensor Repair if necessary.
Check that the resistance of the air temperature sensor is not zero or equal to infinity (straight failure of the sensor). Measure the sensor resistance at various temperatures . Replace the air temperature sensor if necessary.

Temperature	Resistance + / - 20%
-10°C	9.5 kohms
25°C	2 kohms
50°C	810 ohms
80°C	309 ohms

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF004 PRESENT OR STORED	<u>COOLANT TEMPERATURE SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on.
	Special notes: Parameter PR002 Coolant temperature indicates the value read by the injection computer.

Check the connection and condition of the coolant temperature sensor connector. Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: Computer track 73 —————> Track B1 Coolant temperature sensor Computer track 46 —————> Track B2 Coolant temperature sensor Repair if necessary.
Check that the resistance of the coolant temperature sensor is not zero or equal to infinity (straight failure of the sensor). Measure the sensor resistance at various temperatures . Replace the coolant temperature sensor if necessary.

Temperature	Resistance + / - 20%
-10°C	9.5 kohms
25°C	2 kohms
50°C	810 ohms
80°C	309 ohms
110°C	114 ohms
120°C	87 ohms

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

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 with a sufficiently warm engine, engine above idling speed and a sufficiently high manifold pressure.
	Special notes: Parameter PR013 Pinking signal indicates the value read by the injection computer.

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

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF008 PRESENT OR STORED	<u>FUEL PUMP RELAY CONTROL CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched on or command AC010 is run. Fuel pump relay.
	Special notes: Status ET020 Fuel pump relay control can help when dealing with this fault.

Check the connection and condition of the fuel pump relay connector . Change the connector if necessary.
Disconnect the relay. With the ignition on, check for +12 volts on track 1 of the fuel pump relay . Repair if necessary.
Check the insulation and continuity of the connection between: Injection computer track 9 —————> Track 2 Fuel pump relay Repair if necessary.
Check the resistance of the fuel pump relay coil. Replace the fuel pump relay if necessary.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF009 PRESENT OR STORED	<u>ACTUATOR RELAY CONTROL CIRCUIT</u> CO : open circuit CC.1 : short circuit to +12 volts CC.0 : short circuit to earth
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NOTES	Conditions for applying the fault finding procedure to stored faults: If the fault becomes present with CO, CC.0 or CC.1, carry out this fault finding strategy.
	Special notes: Status ET025 Actuator relay control can help when dealing with this fault.

Check the connection and condition of the actuator relay connector . Change the connector if necessary.
Disconnect the relay. With the ignition on, check for +12 volts on track 1 of the actuator relay . Repair if necessary.
Check the insulation and continuity of the connection between: Injection computer track 10 —————▶ track 2 Actuator relay Repair if necessary.
Check the resistance of the actuator relay coil. Change the actuator relay if necessary.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF010 PRESENT OR STORED	<u>LOW SPEED GMV CIRCUIT</u> CO : open circuit CC.1 : short circuit to +12 volts CC.0 : short circuit to earth
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NOTES	Priorities in dealing with a number of faults: Faults DF004 Coolant temperature sensor circuit and DF009 Actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched on or command AC626 Low speed fan assembly is run.
	Special notes: Status (ET035 Low speed fan assembly) can help when dealing with this fault.

Check the connection and condition of the low speed fan assembly relay connector . Change the connector if necessary.
Disconnect the relay. With the ignition on, check for +12 volts on track 1 of the low speed fan assembly relay . Repair if necessary.
Check the insulation and continuity of the connection between: Injection computer track 11 —————▶ track 2 Low speed fan assembly relay Repair if necessary.
Check the resistance of the low speed fan assembly relay coil. Replace the low speed fan assembly relay if necessary.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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Fault finding - Interpretation of faults

DF011 PRESENT OR STORED	<u>FAULT WARNING LIGHT CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Conditions for detecting the fault: This fault cannot be diagnosed on a SIRIUS 34 VDIAG 08 computer and therefore cannot be present or stored because the "fault warning light" circuit is a connection via the multiplex network.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the ignition is switched on or command AC211 is run. Fault warning light.
	Special notes: Status ET006 Fault warning light can help when dealing with this fault.

VDIAG 04	With the ignition on, check that 12 volts is reaching the warning light. Repair the line if necessary.
	Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between: Computer track 70 —————> Instrument panel fault warning light Repair if necessary.
	Check the condition of the warning light (if it does not light up). Replace it if necessary.

VDIAG 08	<u>Switch on the ignition.</u> Test the multiplex network.
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AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

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 ignition has been switched on.
	Special notes: Status ET016 Injection - AC connection can help when dealing with this fault.

<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between: Computer track 81 → Air conditioning control unit Repair if necessary.</p>
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AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF014 PRESENT OR STORED	<u>CANISTER BLEED SOLENOID VALVE CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched on or command AC016 Canister bleed solenoid valve is run.
	Special notes: Status ET032 Canister bleed solenoid valve can help when dealing with this fault.

Check the connection and condition of the canister bleed solenoid valve connector . Change the connector if necessary.
With the ignition on, check for 12 volts on the canister bleed solenoid valve . Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and the absence of interference resistance on the connection between: Injection computer track 8 —————> Canister bleed solenoid valve Repair if necessary.
Check the resistance of the canister bleed solenoid valve . Replace the solenoid valve if its resistance is not approximately 26 ohms +/-4 at 23°C .

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF018 PRESENT OR STORED	<u>UPSTREAM OXYGEN SENSOR HEATER CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running or after running command AC261 . Upstream sensor heating.
	Special notes: Status ET030 Upstream sensor heating can help when dealing with this fault.

Check the connection and condition of the oxygen sensor connector . Change the connector if necessary.
With the ignition on, check for 12 volts on the oxygen sensor . Repair the electrical line to the actuator relay
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between: Computer track 65 —————> Oxygen sensor Repair if necessary.
Measure the resistance of the oxygen sensor heating circuit. Replace the oxygen sensor if its resistance is not approximately 3.4 ohms at 20°C .

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF022 PRESENT	<u>COMPUTER</u> 1.DEF: Computer defective or not to specification
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NOTES	None.
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Check that the computer is the correct one for the vehicle.
Reprogram the computer. Then 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.
<u>REPROGRAMMING THE COMPUTERS:</u> Reprogramming conditions: <ul style="list-style-type: none"> – Ignition on. – Engine stopped. – Computer not protected. Important recommendation following reprogramming: The computer does not transmit any information on the multiplex network during reprogramming operations (it is "mute"). Therefore all the computers connected to the multiplex network receiving information from the injection computer will detect faults. It is therefore essential, after reprogramming the injection computer, to clear the faults on all the computers in communication with the injection computer.
If the fault is still present, replace the computer.

AFTER REPAIR	Clear the computer memory. Perform a road test then a new test with the diagnostic tool.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

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: Speed > 9 mph (15 km/h) for more than 30 seconds.
	Special notes: Two types of connection are used: wire connections and multiplex connections. Check what type is used by reading configuration LC038 . Status ET069 Sensor connection and parameter PR018 Vehicle speed can help when dealing with this fault.

Wire connection	Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between: Computer track 53 → ABS Computer Repair if necessary.
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CAN connection	<u>Switch on the ignition.</u> Test the multiplex network.
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AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF025 PRESENT OR STORED	<u>FLYWHEEL SIGNAL SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine has been running or the starter motor operating for at least 10 seconds.
	Special notes: Parameter PR006 Engine speed can help when dealing with this fault.

Check the connection and condition of the engine speed sensor connector. Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connections between: Computer track 54 —————> Track A engine speed sensor Computer track 24 —————> Track B engine speed sensor Repair if necessary.
Check the resistance of the engine speed sensor. Replace the engine speed sensor if its resistance is not between 200 and 270 ohms .

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF030 PRESENT OR STORED	<u>HIGH SPEED FAN ASSEMBLY CIRCUIT</u> CO : open circuit CC.1 : short circuit to +12 volts CC.0 : short circuit to earth
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NOTES	Special notes: Overlook this fault if the vehicle is not equipped with the "High speed fan assembly" function (i.e. vehicle not fitted with air conditioning).
	Priorities in dealing with a number of faults: Fault DF009 Actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched on or command AC625 is run. High-speed fan assembly

Check the connection and condition of the high speed fan assembly relay connector . Change the connector if necessary.
Disconnect the relay. With the ignition on, check for +12 volts on track 1 of the high speed fan assembly relay . Repair if necessary.
Check the insulation and continuity of the connection between: Injection computer track 69 —————▶ track 2 High speed fan assembly relay Repair if necessary.
Check the resistance of the high speed fan assembly relay coil. Replace the high speed fan assembly relay if necessary.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF031 PRESENT OR STORED	<u>FAULT WARNING LIGHT CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Conditions for detecting the fault: This fault cannot be diagnosed on a SIRIUS 34 VDIAG 08 computer and therefore cannot be present or stored because the "fault warning light" circuit is a connection via the multiplex network.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition is switched on or command AC213 is run. OBD (MIL) warning light.

VDIAG 04	With the ignition on, check that 12 volts is reaching the warning light. Repair the line if necessary.
	Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between: Computer track 40 —————> Instrument panel OBD warning light Repair if necessary.
	Check the condition of the warning light (if it does not light up). Replace it if necessary.

VDIAG 08	<u>Switch on the ignition.</u> Test the multiplex network.
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AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

<p>DF032 PRESENT OR STORED</p>	<p><u>COOLANT TEMPERATURE OVERHEATING WARNING LIGHT CIRCUIT</u></p> <p>CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts</p>
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<p>NOTES</p>	<p>Conditions for detecting the fault: This fault cannot be diagnosed on a SIRIUS 34 VDIAG 08 computer and therefore cannot be present or stored because the "fault warning light" circuit is a connection via the multiplex network.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine has been running at a speed > 3000 rpm.</p>

<p>VDIAG 04</p>	<p>With the ignition on, check that 12 volts is reaching the warning light. Repair the line if necessary.</p>
	<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between:</p> <p>Computer track 38 —————→ Coolant temperature overheating warning light on instrument panel</p> <p>Repair if necessary.</p>
	<p>Check the condition of the warning light (if it does not light up). Replace it if necessary.</p>

<p>VDIAG 08</p>	<p><u>Switch on the ignition.</u> <u>Test the multiplex network.</u></p>
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<p>AFTER REPAIR</p>	<p>Deal with any other faults. Clear the fault memory.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF038 PRESENT OR STORED	<u>DOWNSTREAM OXYGEN SENSOR HEATER CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present with the engine running, hot, and not idling, or after running command AC262 . Downstream oxygen sensor heating.
	Special notes: Status ET031 Downstream sensor heating can help when dealing with this fault.

Check the connection and condition of the oxygen sensor connector . Change the connector if necessary.
With the ignition on, check for 12 volts on the oxygen sensor . Repair the electrical line to the actuator relay.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between: Computer track 68 —————> Oxygen sensor Repair if necessary.
Measure the resistance of the oxygen sensor heating circuit. Replace the oxygen sensor if its resistance is not approximately 3.4 ohms at 20°C .

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF044 PRESENT OR STORED	<u>IMMOBILISER CIRCUIT</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present following: absence or delay of the encoded signal > 2 seconds.
	Special notes: Two types of connection are used: wire connections and multiplex connections. Statuses ET002 Engine immobiliser and ET099 Immobiliser code programmed can help when dealing with this fault.

Wire connection	Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between: Computer track 58 —————> engine immobiliser Repair if necessary.
CAN connection	<u>Switch on the ignition.</u> Test the multiplex network.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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Fault finding - Interpretation of faults

DF045 PRESENT OR STORED	<u>MANIFOLD PRESSURE SENSOR CIRCUIT</u> DEF : pressure sensor fault 1.DEF: inconsistency between the calculated pressure and the true pressure.
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NOTES	Priorities in dealing with a number of faults: Fault DF258 First sensor reference voltage should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine has been running.
	Special notes: Parameter PR016 Atmospheric pressure can help when dealing with this fault.

Check the connection and condition of the pressure sensor connector. Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: <div style="margin-left: 40px;"> Computer track 15 —————> pressure sensor Computer track 78 —————> pressure sensor Computer track 16 —————> pressure sensor </div> Repair if necessary.
With the engine running, the computer performs a test to check the consistency between the measured manifold pressure and the calculated pressure from the throttle position and the engine speed.
If the fault persists, change the pressure sensor.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

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

Check the connection and condition of the connector of injector 1. Change the connector if necessary.
With the ignition on, check for +12 volts on track 1 of the injector 1 connector.
Check the insulation, continuity and absence of interference resistance on the connection between: Injection computer track 59 —————> Track 2 injector 1 Repair if necessary.
Check the injector 1 resistance . Replace the injector if its resistance is not approximately 14.5 ohms at 20°C .

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF052 PRESENT OR STORED	<u>CYLINDER 2 INJECTOR CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running. If the fault becomes present with CO, CC.0 or CC.1, carry out this fault finding strategy.

Check the connection and condition of the connector of injector 2. Change the connector if necessary.
With the ignition on, check for +12 volts on track 1 of the injector 2 connector.
Check the insulation, continuity and absence of interference resistance on the connection between: Injection computer track 90 —————> Track 2 injector 2 Repair if necessary.
Check the resistance of injector 2 . Replace the injector if its resistance is not approximately 14.5 ohms at 20°C .

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF054 PRESENT OR STORED	<u>CYLINDER 3 INJECTOR CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running. If the fault becomes present with CO, CC.0 or CC.1, carry out this fault finding strategy.

Check the connection and condition of the connector of injector 3. Change the connector if necessary.
With the ignition on, check for +12 volts on track 1 of the injector 3 connector.
Check the insulation, continuity and absence of interference resistance on the connection between: Injection computer track 60 —————> Track 2 injector 3 Repair if necessary.
Check the resistance of injector 3 . Replace the injector if its resistance is not approximately 14.5 ohms at 20°C .

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF055 PRESENT OR STORED	<u>CYLINDER 4 INJECTOR CIRCUIT</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running. If the fault becomes present with CO, CC0 or CC1, carry out this fault finding procedure.

Check the connection and condition of the connector of injector 4. Change the connector if necessary.
With the ignition on, check for +12 volts on track 1 of the injector 4 connector.
Check the insulation, continuity and absence of interference resistance on the connection between: Injection computer track 89 —————> Track 2 injector 4 Repair if necessary.
Check the resistance of injector 4. Replace the injector if its resistance is not approximately 14.5 ohms at 20°C.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF057 PRESENT OR STORED	<u>UPSTREAM OXYGEN SENSOR CIRCUIT</u>
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NOTES	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present after: Richness closed loop 1: Status (ET037: ACTIVE). The fault is only stored if the computer took into account the richness correction default value during the present fault: parameter PR035 set at 128.</p>
	<p>Special notes: Two assemblies are possible: three-wire sensor and one-wire sensor.</p>

Three-wire sensor	<p>Check the connection and condition of the oxygen sensor connector. Change the connector if necessary.</p>
	<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connections between:</p> <p>Computer track 80 —————> Oxygen sensor Computer track 45 —————> Oxygen sensor</p> <p>Repair if necessary.</p>
	<p>If the fault is still present, replace the oxygen sensor.</p>

One-wire sensor	<p>Check the connection and condition of the oxygen sensor connector. Change the connector if necessary.</p>
	<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between:</p> <p>Computer track 45 —————> Oxygen sensor</p> <p>Repair if necessary.</p>
	<p>If the fault is still present, replace the oxygen sensor.</p>

AFTER REPAIR	<p>Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

17

**DF056
PRESENT
OR
STORED**

DOWNSTREAM OXYGEN SENSOR CIRCUIT

NOTES

Conditions for applying the fault finding procedure to stored faults:
The fault is declared present following: double loop active.

Check the **connection and condition of the oxygen sensor connector**.
Change the connector if necessary.

Connect the bornier in place of the computer and **check the insulation, continuity and absence of interference resistance** on the connections between:

Computer **track 76** —————> Oxygen sensor

Computer **track 44** —————> Oxygen sensor

Repair if necessary.

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

AFTER REPAIR

Follow the instructions to confirm repair.
Deal with any other faults.
Clear the fault memory.

PETROL INJECTION

Fault finding - Interpretation of faults

17

DF061 PRESENT OR STORED	<u>IGNITION COIL CIRCUIT 1-4</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF008 Fuel pump relay control circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is running. If the fault becomes present with CO, CC.0 or CC.1, carry out this fault finding strategy.

Check the connection and condition of the coil 1 and 4 connectors. Replace the connector(s) if necessary.
With the ignition on check for +12 volts on track 1 of the coil 1 connector.
Check the insulation, continuity and absence of interference resistance on the connection between: coil 1 track 2 —————> Track 1 coil 4 Repair if necessary.
Check the insulation, continuity and absence of interference resistance on the connections between: injection computer track 32 —————> Track 2 coil 4 fuel pump relay track 5 —————> Track 1 coil 1 Repair if necessary.
Check the resistance of coils 1 and 4. Replace the coil(s) if their primary circuit resistance is not approximately 0.5 ohm and their secondary circuit resistance is not approximately 10.7 kohms .

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

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

Check the connection and condition of the connectors of coils 2 and 3. Replace the connector(s) if necessary.
With the ignition on , check for +12 volts on track 1 of the coil 2 connector .
Check the insulation, continuity and absence of interference resistance on the connection between: coil 2 track 2 —————> Track 1 coil 3 Repair if necessary.
Check the insulation, continuity and absence of interference resistance on the connections between: injection computer track 1 —————> Track 2 coil 3 fuel pump relay track 5 —————> Track 1 coil 2 Repair if necessary.
Check the resistance of coils 2 and 3 . Replace the coil(s) if their primary circuit resistance is not approximately 0.5 ohm and their secondary circuit resistance is not approximately 10.7 kohms .

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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Fault finding - Interpretation of faults

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

<p>Check the connection and condition of the camshaft dephaser solenoid valve connector. Change the connector if necessary.</p>
<p>With the ignition on, check for 12 volts on the camshaft dephaser solenoid valve. Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and the absence of interference resistance on the connection between: Computer track 37 —————> camshaft dephaser solenoid valve Repair if necessary.</p>
<p>Check the resistance of the camshaft dephaser solenoid valve. Replace the solenoid valve if its resistance is not approximately 7.2 ohms at 20°C.</p>

<p>AFTER REPAIR</p>	<p>Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF082 PRESENT OR STORED	<u>PETROL ↔ LPG CONNECTION</u>
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NOTES	None.
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Ignore this fault because it is not active on this vehicle.

AFTER REPAIR	None.
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Fault finding - Interpretation of faults

<p>DF102 PRESENT OR STORED</p>	<p><u>OXYGEN SENSOR OPERATING FAULT</u></p> <p>OBD : OBD fault (On Board Diagnostic)</p> <p>1.OBD : OBD fault present</p> <p>2.OBD : OBD fault detected while driving</p>
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<p>NOTES</p>	<p>Conditions for applying the fault finding procedure to stored faults:</p> <p>The fault is declared present after a test to detect a malfunction causing the hydrocarbon pollutant emissions to exceed the EOB threshold.</p> <p>This test can only be performed once during a road test under the following conditions: vehicle speed between 38 mph (63 km/h) and 78 mph (130 km/h) and engine speed between 1800 and 4000 rpm.</p>
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<p>Check that there are no air leaks on the exhaust system.</p>
<p>If the vehicle is mainly used for urban driving, clean the exhaust system.</p>
<p>Check the connection and condition of the upstream oxygen sensor connector. Change the connector if necessary.</p>
<p>With the ignition on, check for +12 volts on track A of the upstream oxygen sensor. Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between:</p> <p>Computer track 65 —————> Oxygen sensor</p> <p>Computer track 45 —————> Oxygen sensor</p> <p>Computer track 80 —————> Oxygen sensor</p> <p>Repair if necessary.</p>
<p>Check the heating resistance of the upstream oxygen sensor. Replace the oxygen sensor if necessary.</p>

<p>AFTER REPAIR</p>	<p>Ensure that all the faults have been processed.</p> <p>Clear the stored faults. It is not necessary to clear the programming.</p> <p>To prove that the system has been fully repaired:</p> <ul style="list-style-type: none"> – There must be no remaining electrical faults. – A road test should be performed, but the conditions required for the test may be difficult to recreate in an After-Sales environment.
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Fault finding - Interpretation of faults

<p>DF106 PRESENT OR STORED</p>	<p><u>CATALYTIC CONVERTER OPERATING FAULT</u></p> <p>OBD : OBD fault (On Board Diagnostic)</p> <p>1.OBD : OBD fault present</p> <p>2.OBD : OBD fault detected while driving</p>
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<p>NOTES</p>	<p>Conditions for applying the fault finding procedure to stored faults:</p> <p>The fault is declared present after a test to detect a malfunction causing the hydrocarbon pollutant emissions to exceed the EOBD threshold. Conduct this test at a vehicle speed between 38 mph (63 km/h) and 78 mph (130 km/h) and an engine speed between 1800 and 4000 rpm.</p>
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<p>Check that there are no air leaks on the exhaust system. Repair if necessary.</p>
<p>Visually check the condition of the catalytic converter. A deformity may be causing it to malfunction.</p>
<p>Check for visual signs of thermal shock. A warm catalytic converter may be damaged if it comes into contact with cold water.</p>
<p>Ensure that there is no excessive consumption of oil or coolant. 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.</p>
<p>Check if the engine has been misfiring. This could damage the catalytic converter.</p>
<p>If the cause of the damage has been found, you can change the catalytic converter. If you replace the catalytic converter without finding the cause, the new catalytic converter could be quickly destroyed.</p>

<p>AFTER REPAIR</p>	<p>Ensure that all the faults have been dealt with. Erase the stored faults. It is not necessary to erase the programming. To prove that the system has been fully repaired:</p> <ul style="list-style-type: none"> – There must be no remaining electrical faults. – A road test should be performed, but the conditions required for the test may be difficult to recreate in an After-Sales environment.
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Fault finding - Interpretation of faults

<p>DF109 PRESENT OR STORED</p>	<p><u>POLLUTANT MISFIRES</u> OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault present 2.OBD : OBD fault detected while driving</p>
<p>NOTES</p>	<p>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.</p>
<p>One cylinder is declared faulty ET093 or ET094 or ET095 or ET096</p>	<p>This means that the fault is probably due to a component which can only act on this cylinder:</p> <ul style="list-style-type: none"> – Fault with the injector. – Fault with the spark plug. – Fault with the coil. – Engine compression fault.
<p>Cylinders 1 and 4 or cylinders 2 and 3 declared faulty ET093 and ET096 or ET094 and ET095</p>	<p>This means that the fault is probably due to a component which can only act on this pair of cylinders:</p> <ul style="list-style-type: none"> – Fault on the high-voltage side of the coil. – Fault on the control side of the coil. – Engine compression fault.
<p>Four cylinders declared faulty - ET093 and ET094 and ET095 and ET096</p>	<p>For this reason, the fault is probably due to a component associated with all the cylinders.</p> <ul style="list-style-type: none"> – Fuel filter fault. – Fuel pump fault. – Fault with fuel type. – Engine compression fault.
<p>AFTER REPAIR</p>	<p>Ensure that all the faults have been dealt with. Erase the stored faults. It is not necessary to erase the programming. To prove that the system has been fully repaired:</p> <ul style="list-style-type: none"> – There must be no remaining electrical faults. – The engine must be warm. – The engine should be running at idle speed with all electrical consumers switched on for 15 minutes. <p>If the fault reappears, continue the fault finding procedure.</p>

Fault finding - Interpretation of faults

<p>DF110 PRESENT OR STORED</p>	<p><u>DESTRUCTIVE MISFIRE</u> OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault present 2.OBD : OBD fault detected while driving</p>
<p>NOTES</p>	<p>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.</p>
<p>One cylinder is declared faulty ET093 or ET094 or ET095 or ET096</p>	<p>This means that the fault is probably due to a component which can only act on this cylinder: – Problem on the injector. – Fault with the spark plug. – Fault with the coil.</p>
<p>Cylinders 1 and 4 or cylinders 2 and 3 declared faulty ET093 and ET096 or ET094 and ET095</p>	<p>This means that the fault is probably due to a component which can only act on this pair of cylinders: – Fault on the high-voltage side of the coil. – Fault on the control side of the coil.</p>
<p>Four cylinders declared faulty - ET093 and ET094 and ET095 and ET096</p>	<p>This means that the fault is probably due to a component which can only act on all the cylinders: – Fuel filter problem. – Fuel pump problem. – Petrol type problem, etc.</p>
<p>AFTER REPAIR</p>	<p>Ensure that all the faults have been dealt with. Erase the stored faults. It is not necessary to erase the programming. To prove that the system has been fully repaired: – There must be no remaining electrical faults. – The engine must be warm. – The engine should be running at idle speed with all electrical consumers switched on for 15 minutes. If the fault reappears, continue the fault finding procedure.</p>

PETROL INJECTION

Fault finding - Interpretation of faults

17

DF118 PRESENT OR STORED	<u>REFRIGERANT PRESSURE SENSOR CIRCUIT</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF258 First sensor reference voltage should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on.
	Special notes: Parameter PR027 Refrigerant pressure can help when dealing with this fault.

Check the connection and condition of the air conditioning pressure sensor connector . Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, the continuity, and absence of interference resistance on the connections between: <div style="margin-left: 40px;">Injection computer track 79 —————> Refrigerant pressure sensor Injection computer track 83 —————> Refrigerant pressure sensor Injection computer track 47 —————> Refrigerant pressure sensor</div> Repair if necessary.
Check the resistance of the air conditioning pressure sensor . Replace the sensor if necessary.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF125 PRESENT OR STORED	<u>PEDAL POTENTIOMETER GANG 1 CIRCUIT</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF152 Sensor second reference voltage should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on.

Check the connection and condition of the pedal potentiometer connector. Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: Computer track 14 —————> Pedal potentiometer gang 1 Computer track 6 —————> Pedal potentiometer gang 1 Computer track 75 —————> Pedal potentiometer gang 1 Repair if necessary.
Check the resistance of the pedal potentiometer gang 1 (the resistance is zero or equal to infinity in the event of a straight failure). Check the resistance of the potentiometer in various positions . Change the pedal potentiometer if necessary.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF126 PRESENT OR STORED	<u>PEDAL POTENTIOMETER GANG 2 CIRCUIT</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF258 First sensor reference voltage should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on.

Check the connection and condition of the pedal potentiometer connector. Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: Computer track 43 —————→ Pedal potentiometer gang 2 Computer track 71 —————→ Pedal potentiometer gang 2 Computer track 87 —————→ Pedal potentiometer gang 2 Repair if necessary.
Check the resistance of the pedal potentiometer gang 2 (the resistance is zero or equal to infinity in the event of a straight failure). Check the resistance of the potentiometer in various positions . Change the pedal potentiometer if necessary.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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Fault finding - Interpretation of faults

DF129 PRESENT	PEDAL POTENTIOMETER CIRCUIT 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: Faults DF152 Second sensor reference voltage and DF258 First sensor reference voltage should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on. OR The fault is declared present during smooth transition of the pedal potentiometer from no load to full load.

Check the connection and condition of the pedal potentiometer connector. Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: <div style="margin-left: 40px;"> Computer track 14 —————> Pedal potentiometer Computer track 6 —————> Pedal potentiometer Computer track 75 —————> Pedal potentiometer Computer track 43 —————> Pedal potentiometer Computer track 71 —————> Pedal potentiometer Computer track 87 —————> Pedal potentiometer </div> Repair if necessary.
Check the resistance of the pedal potentiometer (the resistance is zero or equal to infinity in the event of a straight failure). Check that the resistance of the potentiometers follows the proper curve, by pressing the pedal from no load to full load. Check parameter (PR202): the voltage difference between gang 1 and gang 2 must be less than 0.52 volt. Check that the pedal is operating the potentiometers correctly. Replace the accelerator pedal potentiometer if necessary.

AFTER REPAIR	For a present fault, press the accelerator pedal from no load to full load to confirm repair. Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF135 PRESENT OR STORED	<u>BRAKE PEDAL SENSOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on for > 20 seconds.
	Special notes: Status ET132 Brake pedal depressed can help when dealing with this fault.

Check the connection and condition of the brake pedal sensor connector. Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: Computer track 53 —————→ Brake pedal switch Computer track 52 —————→ Brake pedal switch Repair if necessary.
If the fault is still present, replace the brake pedal switch.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

<p>DF138 PRESENT OR STORED</p>	<p><u>THERMOPLUNGER N°1 RELAY CONTROL</u></p> <p>CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts</p>
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<p>NOTES</p>	<p>Priorities in dealing with a number of faults: Fault DF009 Fuel pump relay control circuit, fault DF003 Air temperature sensor circuit, and fault DF004 Coolant temperature sensor circuit should be dealt with first.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the ignition is switched on or command AC002 Thermoplunger n°1 relay is run.</p>

<p>Check the connection and condition of the thermoplunger n°1 relay connector. Change the connector if necessary.</p>
<p>Check for the presence of +12 volts after ignition on track 1 of the thermoplunger n°1 relay. Repair the wiring up to the fuse if necessary.</p>
<p>Check the insulation and continuity of the connection between: Injection computer track 34 —————> Thermoplunger n°1 relay</p>
<p>Check the coil of the thermoplunger n°1 relay. Replace the relay if necessary.</p>

<p>AFTER REPAIR</p>	<p>Deal with any other faults. Clear the fault memory.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF139 PRESENT OR STORED	<u>THERMOPLUNGER N°2 RELAY CONTROL</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Fuel pump relay control circuit, fault DF003 Air temperature sensor circuit, and fault DF004 Coolant temperature sensor circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the ignition is switched on or command AC620 Thermoplunger n°2 relay is run.

Check the connection and condition of the thermoplunger n°2 relay connector. Change the connector if necessary.
Check for the presence of +12 volts after ignition on track 1 of the thermoplunger n°2 relay. Repair the wiring up to the fuse if necessary.
Check the insulation and continuity of the connection between: Injection computer track 4 —————> Thermoplunger n°2 relay
Check the coil of the thermoplunger n°2 relay. Replace the relay if necessary.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

DF152 PRESENT OR STORED	<u>SECOND SENSOR REFERENCE VOLTAGE</u> 1.DEF: Supply fault to gangs 1 and 2 of the throttle potentiometer and to gang 1 of the pedal potentiometer
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the ignition is switched on. If the fault becomes present with 1.DEF, carry out this fault finding strategy.
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1.DEF	This fault indicates that the computer has an internal fault, and therefore must be replaced.
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AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

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

Switch on the ignition.
Test the multiplex network.

AFTER REPAIR	Apply the procedures to confirm that the repair is successful. Deal with any other faults. Clear the fault memory.
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Fault finding - Interpretation of faults

<p>DF189 PRESENT OR STORED</p>	<p><u>FLYWHEEL TARGET</u></p> <p>CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts</p>
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<p>NOTES</p>	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the engine has been running at > 600 rpm for at least 10 seconds.</p>
	<p>Special notes: Parameter PR006 Engine speed and status ET148 Tooth signal in progress can help when dealing with this fault.</p>

<p>This fault indicates that the computer is not receiving the tooth signal.</p>
<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. To do this, watch the manifold pressure develop. If the engine has actually stopped, the manifold pressure is stable; if not, the "flywheel target" fault is detected.</p>
<p>Check the connection and condition of the engine speed sensor connector. Change the connector if necessary.</p>
<p>Check the resistance of the engine speed sensor. Replace the engine speed sensor if its resistance is not between 200 and 270 ohms.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

<p>AFTER REPAIR</p>	<p>Follow the instructions to confirm repair. Deal with any other faults. Clear the fault memory.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

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

<p>This fault indicates that the computer has not stored the minimum and maximum throttle stop programming values in its memory. This fault is present after replacing the motorised throttle valve, reprogramming the computer, or replacing the computer.</p>
<p>Switch on the ignition for at least 5 seconds without starting the engine: the throttle stops will be automatically programmed.</p>
<p>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</p>

AFTER REPAIR	<p>Deal with any other faults. Clear the fault memory.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF228 PRESENT	<u>AIR CONDITIONING COMPRESSOR CONTROL</u> CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts
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NOTES	The fault is declared present when the ignition is switched on or command AC003 is run. Air conditioning compressor.
	Special notes: Status ET070 Air conditioning compressor can help when dealing with this fault.

Check the insulation, continuity and absence of interference resistance on the connection between: coil 1 track 2 —————> Track 1 coil 4 Repair if necessary.
Check the connection and condition of the air conditioning compressor connector . Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between : Injection computer track 39 —————> Air conditioning compressor Repair if necessary.
If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF235 PRESENT OR STORED	<u>CRUISE CONTROL/SPEED LIMITER</u> 1.DEF: fault on one of the two brake pedal contacts 2.DEF: fault on both brake pedal contacts 3.DEF: controls at the steering wheel 4.DEF: on/off switch 5.DEF: electronic stability program
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present following a road test using the cruise control and the speed limiter functions.
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1.DEF 2.DEF	<p>Check the connection and condition of the brake pedal sensor connector. Change the connector if necessary.</p> <p>Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between:</p> <p style="text-align: center;">Computer track 53 —————> Brake pedal switch Computer track 52 —————> Brake pedal switch</p> <p>Repair if necessary.</p> <p>If the fault is still present, replace the brake pedal switch.</p>
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3.DEF	<p>Check the connection and condition of the cruise control/speed limiter switches on the steering wheel controls. Change the connector if necessary.</p> <p>Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between:</p> <p style="text-align: center;">Injection computer track 58 —————> Steering wheel controls Injection computer track 77 —————> Steering wheel controls</p> <p>Repair if necessary.</p> <p>Check that the steering wheel controls are functioning correctly. Replace the switch(es) if necessary.</p>
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AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF235 PRESENT OR STORED	<u>CONTINUED</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present following a road test using the cruise control and the speed limiter functions.
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4.DEF	<p>Check the connection and condition of the cruise control/speed limiter switches on the steering wheel controls. Change the connector if necessary.</p> <p>Connect the bornier in place of the computer and check the insulation, the continuity, and absence of interference resistance on the connections between:</p> <table><tr><td>Injection computer track 23</td><td>————▶</td><td>Cruise control/speed limiter ON/OFF switch</td></tr><tr><td>Injection computer track 49</td><td>————▶</td><td>Cruise control/speed limiter ON/OFF switch</td></tr></table> <p>Repair if necessary.</p> <p>Check the correct operation of the cruise control/speed limiter ON/OFF switch. Replace the switch if necessary.</p>	Injection computer track 23	————▶	Cruise control/speed limiter ON/OFF switch	Injection computer track 49	————▶	Cruise control/speed limiter ON/OFF switch
Injection computer track 23	————▶	Cruise control/speed limiter ON/OFF switch					
Injection computer track 49	————▶	Cruise control/speed limiter ON/OFF switch					
5.DEF	<p><u>With the engine running and engine speed > 800 rpm:</u> Run a multiplex network test (for vehicles fitted with this option).</p>						

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF236 PRESENT OR STORED	<u>+ AFTER RELAY FEED</u>
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NOTES	Priorities in dealing with a number of faults: Fault DF009 Actuator relay circuit should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on.

Check the condition of the battery and the vehicle earths . Repair if necessary.
Check the connection and condition of the actuator relay connector . Change the connector if necessary.
Disconnect the relay and check for 12 V on track 3 of the relay holder. Repair if necessary.
Check the insulation, continuity and absence of interference resistance on the following connections: Injection computer track 66 —————> Track 5 Actuator relay Repair the line if necessary.
Connect the relay and, with the ignition on, check for the presence of 12 volts on track 5 of the actuator relay holder. Replace the relay if necessary.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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PETROL INJECTION

Fault finding - Interpretation of faults

17

**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 fault finding tool if it is present.

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

Check the **insulation** between:
Injection computer track 29 —————→ **vehicle earth**
Repair the line if necessary.

With the ignition on:

Check for the presence of **12 volts** on **track 29 of the injection computer**.
Repair the line if necessary.

AFTER REPAIR

Deal with any other faults.
Clear the fault memory.

PETROL INJECTION

Fault finding - Interpretation of faults

DF253 PRESENT OR STORED	<u>ENGINE EARTH</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on.
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For a **1-wire upstream sensor** "without earth return", track 44 is used to receive the engine earth signal. In this case, **the computer cannot control the downstream sensor**.

Connect the bornier in place of the computer and check the **insulation, continuity and absence of interference resistance** on the connection between:

Computer **track 44** —————> Vehicle earth

Repair if necessary.

AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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Fault finding - Interpretation of 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
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NOTES	Priorities in dealing with a number of faults: Faults DF009 Actuator relay circuit and DF236 should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present after the ignition has been switched on.
	Special notes: It is possible to start the engine when this fault is present, but driving the vehicle is forbidden as the engine speed is constant irrespective of the accelerator pedal position.

Check the connection and condition of the throttle valve unit connector. Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: Computer track 61 —————> Throttle potentiometer Computer track 62 —————> Throttle potentiometer Repair if necessary.
If the fault persists, replace the motorised throttle valve unit. Then program the throttle stops: switch on the ignition and wait at least 5 seconds without starting the engine: the throttle 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.

1.DEF	This fault indicates that the computer has an internal fault , and therefore must be replaced .
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AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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Fault finding - Interpretation of faults

DF255 PRESENT OR STORED	<u>SECURITY OF THROTTLE/PEDAL OPERATION</u> 1.DEF: Consistency between the pedal position and the throttle position
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NOTES	Priorities in dealing with a number of faults: Fault DF152 Sensor second reference voltage should be dealt with first.
	Conditions for applying the fault finding procedure to stored faults: 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 torque request originating from the automatic transmission 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 the "programming reinitialisation" service.

Check the connection and condition of the pedal potentiometer connector. Change the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: <ul style="list-style-type: none"> Computer track 14 —————> Pedal potentiometer Computer track 6 —————> Pedal potentiometer Computer track 75 —————> Pedal potentiometer Computer track 43 —————> Pedal potentiometer Computer track 71 —————> Pedal potentiometer Computer track 87 —————> Pedal potentiometer Repair if necessary.
Check the resistance of pedal potentiometer gangs 1 and 2 (the resistance is zero or equal to infinity in the event of a straight failure). Check the resistance of the potentiometer in various positions . Change the pedal potentiometer if necessary.

AFTER REPAIR	Apply the procedures to confirm that the repair is successful. Deal with any other faults. Clear the fault memory.
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<p>DF255 PRESENT OR STORED</p>	<p><u>CONTINUED</u></p>
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Check the **connection and condition** of the throttle potentiometer connector.
Change the connector if necessary.

Connect the bornier in place of the computer and check the **insulation, continuity, and absence of interference resistance** on the connections between:

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

Repair if necessary.

Check the **resistance of the throttle potentiometer** gang 2 (the resistance is **zero or equal to infinity** in the event of a straight failure).
 Replace the throttle potentiometer if the resistance is not approximately **1 kohm +/- 25%**.

If the problem is still not resolved, the computer needs to be reprogrammed.
Then 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.

REPROGRAMMING THE COMPUTERS:

Reprogramming conditions:

- Ignition on.
- Engine stopped.
- Computer not protected.

Important recommendation following reprogramming:

The computer does not transmit any information on the multiplex network during reprogramming operations (it is "mute"). Therefore all the computers connected to the multiplex network receiving information from the injection computer will detect faults.

It is therefore essential, after reprogramming the injection computer, to clear the faults on all the computers in communication with the injection computer.

<p>AFTER REPAIR</p>	<p>Apply the procedures to confirm that the repair is successful. Deal with any other faults. Clear the fault memory.</p>
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PETROL INJECTION

Fault finding - Interpretation of faults

17

DF258 PRESENT OR STORED	<u>FIRST SENSOR REFERENCE VOLTAGE</u> 1.DEF: sensor supply fault: manifold pressure, pedal gang 2, freon pressure
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the ignition is switched on. If the fault becomes present with 1.DEF, carry out this fault finding strategy.
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1.DEF	This fault indicates that the computer has an internal fault , and therefore must be replaced .
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AFTER REPAIR	Deal with any other faults. Clear the fault memory.
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Fault finding - Interpretation of faults

<p>DF308 PRESENT OR STORED</p>	<p><u>DUAL-MODE INTAKE SOLENOID VALVE</u></p> <p>CO : open circuit CC.0 : short circuit to earth CC.1 : short circuit to +12 volts</p>
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<p>NOTES</p>	<p>Priorities in dealing with a number of faults: Fault DF009 Actuator relay circuit should be dealt with first.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the ignition is switched on and the battery voltage exceeds 10 volts. If the fault becomes present with CO, CC.0 or CC.1, carry out this fault finding strategy.</p>
	<p>Special notes: This fault applies only to the F4R 736 engine (Renault Sport). The command is active if the vehicle is in 2nd gear at a speed < 4800 rpm or in 3rd gear at a speed < 3260 rpm, if the vehicle speed is less than 72 mph (120 km/h), and if no fault in the vehicle speed is detected. If the fault is present with CC.1 (short circuit to 12 volts), it is not detected unless the dual-mode stop valve is activated (valve closed). If the fault is present with CC.0 and C.0 (short circuit to earth and open circuit) it is detected even if the dual-mode stop valve is not activated (valve open).</p>

<p>Check the connection and condition of the dual-mode stop valve connector. Change the connector if necessary.</p>
<p>With the ignition on, check for +12 volts on track 2 of the dual-mode stop valve connector.</p>
<p>Check the insulation, continuity and absence of interference resistance on the connection between: Injection computer track 63 —————> Track 1 dual-mode stop valve Repair if necessary.</p>
<p>Check the resistance of the dual-mode stop valve. Replace the dual-mode stop valve if its resistance is not approximately 45 ohms.</p>

<p>AFTER REPAIR</p>	<p>Apply the procedures to confirm that the repair is successful. Deal with any other faults. Clear the fault memory.</p>
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PETROL INJECTION

Fault finding - Conformity check

NOTES

The values indicated in this conformity check are given for reference purposes only. It is therefore vital to consult the Technical Note which deals with your vehicle.
Test conditions: engine stopped, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
1	+ after ignition	ET001: Computer + after ignition feed	ACTIVE	In the event of a fault: check the charge circuit.
		PR004: computer supply voltage	$11 < X < 14$ volts	
2	Engine immobiliser	ET002: engine immobiliser	INACTIVE	In the event of a fault: Test the multiplex network.
		ET099: immobiliser code programmed	ACTIVE	
3	Computer	ET264: computer locked following an impact	NO	In the event of a fault: Consult the fault finding ET264 .
4	Pressure sensor	PR016: atmospheric pressure	$X = \text{atmospheric pressure} \pm 10\%$	In the event of a fault: Apply the fault finding procedure for fault DF045 Manifold sensor circuit.
		PR001: manifold pressure	$X = \text{atmospheric pressure} \pm 10\%$	
5	Accelerator pedal (released)	ET129: accelerator pedal no load	ACTIVE	In the event of a fault: Apply the fault finding procedures for faults: pedal potentiometer circuit gang 1, potentiometer circuit gang 2 and pedal potentiometer circuit (DF125 , DF126 and DF129).
		ET128: accelerator pedal at full load	INACTIVE	
		PR203: pedal travel	$X < 20\%$	
		P:R206 pedal position gang 1	$X < 20\%$	
		P:R207 pedal position gang 2	$X < 20\%$	
6	Throttle valve (accelerator pedal released)	ET118: motorised throttle valve in defect mode	NO	In the event of a fault: Consult the fault finding ET118 .

PETROL INJECTION

Fault finding - Conformity check

NOTES

The values indicated in this conformity check are given for reference purposes only. It is therefore vital to consult the Technical Note which deals with your vehicle.
Test conditions: engine stopped, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
6 (continued)	Throttle valve (accelerator pedal released)	ET003: throttle position no load	ACTIVE	In the event of a fault: Apply the fault finding procedures for the throttle potentiometer circuit and throttle stop programming faults (DF002 and DF226).
		ET005 : throttle position: full load	INACTIVE	
		PR017: measured throttle position	X = throttle valve position setpoint $\pm 10\%$	
		PR113: motorised throttle valve position setpoint	X < 20%	
		PR110: measured throttle position gang 1	X < 20%	
		PR111: measured throttle position gang 2	X < 3%	
		P:R198 minimum stop position programmed gang 1	X = position in % of minimum stop programmed gang 1 for an MGI throttle valve or X = value of the limp-home position for a VDO throttle valve	
		P:R199 maximum stop position programmed gang 1	X = position in % of maximum stop programmed gang 1 for an MGI throttle valve or X = value of the limp-home position for a VDO throttle valve.	

PETROL INJECTION

Fault finding - Conformity check

NOTES

The values indicated in this conformity check are given for reference purposes only. It is therefore vital to consult the Technical Note which deals with your vehicle.
Test conditions: engine stopped, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
6 (continued)	Throttle valve (accelerator pedal released)	P:R200 minimum stop position programmed gang 2	X = position in % of minimum stop programmed gang 2 for an MGI throttle valve or X = value of the limp-home position for a VDO throttle valve	In the event of a fault: Apply the fault finding procedures for the throttle potentiometer circuit and throttle stop programming faults (DF002 and DF226).
		PR201: maximum stop position programmed gang 2	X = position in % of maximum stop programmed gang 2 for an MGI throttle valve or X = value of the limp-home position for a VDO throttle valve	
7	Upstream oxygen sensor	ET030: upstream sensor heating	INACTIVE	In the event of a fault: Apply the fault finding procedures for the upstream oxygen sensor heating circuit and upstream oxygen sensor circuit faults (DF018 and DF057).
		ET037: richness regulation	INACTIVE	
		PR009: upstream oxygen sensor voltage	Set value of approximately 400 mvolts	
		PR035: richness correction value	Approximately 128	
8	Downstream oxygen sensor	ET031: downstream sensor heating	INACTIVE	In the event of a fault: Apply the fault finding procedures for the downstream sensor heating circuit and downstream oxygen sensor circuit faults (DF038 and DF058).
		PR010: downstream oxygen sensor voltage	Set value of approximately 400 mvolts	
9	Brake pedal (released)	ET032: brake pedal pressed	INACTIVE	In the event of a fault: Apply the fault finding procedure for the brake pedal circuit fault (DF135).
		ET143: redundant brake pedal	INACTIVE	

PETROL INJECTION

Fault finding - Conformity check

NOTES

The values indicated in this conformity check are given for reference purposes only. It is therefore vital to consult the Technical Note which deals with your vehicle.
Test conditions: engine stopped, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
10	Cruise control/ speed limiter	Speed limiter on/off switch pressed ET192: Cruise control/ speed limiter function	STATUS 1: Cruise control on/off switch pressed	In the event of a fault: apply the fault finding procedure for the cruise control/speed limiter (DF235) fault and consult the wiring diagram of the vehicle concerned.
		Speed limiter on/off switch pressed ET192: Cruise control/ speed limiter function	STATUS 2: Speed limiter ON/OFF switch pressed	
		Speed limiter on/off switch pressed and Suspend switch on steering-wheel control pressed ET192: Cruise control/ speed limiter function	STATUS 3: Suspend switch pressed	
		Speed limiter on/off switch pressed and Suspend switch on steering-wheel control pressed ET192: Cruise control/ speed limiter function	STATUS 4: Resume switch pressed	
		Speed limiter on/off switch pressed and + switch on steering-wheel control pressed ET192: Cruise control/ speed limiter function	STATUS 5: Incrementation switch pressed	

PETROL INJECTION

Fault finding - Conformity check

NOTES

The values indicated in this conformity check are given for reference purposes only. It is therefore vital to consult the Technical Note which deals with your vehicle.
Test conditions: engine stopped, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
10 (continued)	Cruise control/ speed limiter	Speed limiter on/off switch pressed and + switch on steering-wheel control pressed ET192: Cruise control/ speed limiter function	STATUS 6: Decrementation switch pressed	In the event of a fault: apply the fault finding procedure for the cruise control/speed limiter (DF235) fault and consult the wiring diagram of the vehicle concerned.
11	Clutch pedal	Clutch pedal released ET182: clutch pedal switch ----- Clutch pedal depressed ET182: clutch pedal switch	INACTIVE: Only on vehicles equipped with cruise control / speed limiter ----- ACTIVE: On vehicles not equipped with cruise control/speed limiter this status does not change	In the event of a fault, consult the wiring diagram for the vehicle concerned

PETROL INJECTION

Fault finding - Conformity check

NOTES

The values indicated in this conformity check are given for reference purposes only. It is therefore vital to consult the Technical Note which deals with your vehicle.
Test conditions: engine stopped, ignition on.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
Command Window				
8	Fuel pump relay	AC010: fuel pump relay	The fuel pump should be heard operating	In the event of a fault: Consult the fault finding AC010 .
9	Air conditioning compressor	AC003: air conditioning compressor	You should hear the air conditioning clutch compressor engage	In the event of a fault: Apply the fault finding procedure for fault DF228 .
10	Canister bleed solenoid valve	AC016: canister bleed solenoid valve	The canister bleed solenoid valve should work	In the event of a fault: Apply the fault finding procedure for fault DF014 Canister bleed solenoid valve circuit.
11	Camshaft dephaser	AC491: camshaft shifter	The camshaft dephaser should operate	In the event of a fault, apply the fault finding procedure for fault: DF063 Camshaft dephaser.
12	Motorised throttle valve	AC621: motorised throttle valve	The motorised throttle valve should operate	In the event of a fault: Apply the fault-finding procedure for fault: DF254 motorised throttle control.
13	Low speed fan assembly	AC626: Low speed fan assembly	You should hear the fan running at low speed	In the event of a fault: Consult the fault finding AC626 .
14	High speed fan assembly	AC625: High speed fan assembly	You should hear the fan running at high speed	In the event of a fault, consult the fault finding AC625 .
15	Thermoplunger n°1 relay	AC002: thermoplunger n°1 relay	You should hear the thermoplunger n°1 relay engage	In the event of a fault: Consult the fault finding AC002 .
16	Thermoplunger n° 2 relay	AC620: thermoplunger n°2 relay	You should hear the thermoplunger n°2 and 3 relay engage	In the event of a fault: Consult the fault finding AC620 .
17	Dual-mode intake solenoid valve	AC002: dual-mode intake solenoid valve	The dual-mode intake solenoid valve should operate	In the event of a fault: Apply the fault finding procedure for fault DF308 (dual-mode intake solenoid valve).

PETROL INJECTION

Fault finding - Conformity check

NOTES

The values indicated in this conformity check are given for reference purposes only. It is therefore vital to consult the Technical Note which deals with your vehicle.
Test conditions: engine warm at idling speed, no electrical consumers.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
1	Pressure sensor	PR016: atmospheric pressure	X = atmospheric pressure $\pm 10\%$	In the event of a fault: Apply the fault finding procedure for fault DF045 Manifold sensor circuit.
		PR001: manifold pressure	X < 500 mbar	
2	Idle speed	PR006: idle speed	X = Engine idling speed reference ± 50 rpm	None
		PR041: engine idling speed reference	730 < X < 780 rpm	
		ET039: idle speed regulation	ACTIVE	
3	Power assisted steering pressure switch	ET067: power assisted steering pressostat connection	ACTIVE	None
		ET034: power assisted steering pressostat	ACTIVE if steering wheel is moved	
4	Richness regulation	ET037: mixture control	ACTIVE	In the event of a fault: Apply the fault finding procedures for the upstream oxygen sensor circuit and downstream oxygen sensor circuit faults DF057 and DF058 .
		PR009: upstream oxygen sensor voltage	50 < X < 800 mV	
		PR010: downstream oxygen sensor voltage	The value should be as stable as possible	
		PR035: richness correction value	The value should be around 128	

PETROL INJECTION

Fault finding - Conformity check

NOTES

The values indicated in this conformity check are given for reference purposes only. It is therefore vital to consult the Technical Note which deals with your vehicle.
Test conditions: engine warm at idling speed, no electrical consumers.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
5	Air conditioning	Air conditioning requested by the driver		In the event of a fault: Apply the fault finding procedure for faults DF012, DF118, and DF228.
		ET016: Injection ↔ AC connection	ACTIVE	
		ET009: air conditioning request	ACTIVE	
		ET070: air conditioning compressor	ACTIVE	
		PR027: refrigerant fluid pressure	$0 < X < 32 \text{ bar}$	
		PR044: power used by the AC compressor	$X > 300 \text{ W}$	
		ET038: fast idle speed	ACTIVE	
6	Coolant temperature sensor	PR002: Coolant temperature	$X = \text{Engine temperature} \pm 5^\circ\text{C}$ $-40 < X < +120^\circ\text{C}$	In the event of a fault: Apply the fault finding procedure for the coolant temperature sensor circuit fault DF004.
7	Air temperature sensor	PR003: Air temperature	$X = \text{Engine temperature} \pm 5^\circ\text{C}$ $-40 < X < +120^\circ\text{C}$	In the event of a fault: Apply the fault finding procedure for the air temperature sensor circuit fault DF003.
8	Pinking sensor	PR013: average pinking signal	The value should not be constant	In the event of a fault: Apply the fault finding procedure for the pinking sensor circuit fault DF006.
		PR015: pinking signal correction	$X < 5$	

Fault finding - Interpretation of commands

AC010	<u>FUEL PUMP CONTROL RELAY</u>
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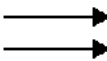
NOTES	No faults should be present or stored in the diagnostic tool.
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Check the connection and condition of the fuel pump relay connector . Change the connector if necessary.
Disconnect the relay. Check for the presence of +12 volts on track 3 of the fuel pump relay connector . Repair if necessary using the relevant wiring diagram .
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.
If the fault persists, change the petrol pump.

Fault finding - Interpretation of commands

AC626	<u>LOW-SPEED FAN ASSEMBLY</u>
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NOTES	No faults should be present or stored in the diagnostic tool.
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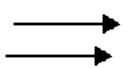
Check the connection and condition of the low speed fan assembly relay connector . Change the connector if necessary.
Disconnect the relay. Check for +12 volts on track 3 of the low speed fan assembly relay connector . Repair if necessary using the relevant wiring diagram .
Check the insulation and continuity of the connections between: <div style="display: flex; justify-content: space-around; align-items: center;"> <div> Low speed fan assembly relay track 5 Fan 1 </div> <div style="text-align: center;">  </div> <div> Fan 1 Vehicle earth </div> </div> Repair if necessary.
Check that fan n°1 is not seized and that the blades turn easily. Replace fan n°1 if necessary.

CONDITIONS	FAN 1 ACTIVE
Coolant temperature with engine off < 95°C	NO
Coolant temperature with engine off > 100°C	YES
air conditioning requested and authorised	YES
Coolant temperature with engine running > 99°C	YES
Coolant temperature with engine running < 96°C	NO

Fault finding - Interpretation of commands

AC625	<u>HIGH-SPEED FAN ASSEMBLY</u>
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NOTES	No faults should be present or stored in the diagnostic tool.
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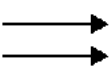
Check the connection and condition of the high-speed fan assembly relay connector . Change the connector if necessary.
Disconnect the relay. Check for +12 volts on track 3 of the high speed fan assembly relay connector . Repair if necessary using the relevant wiring diagram .
Check the insulation and continuity of the connections between: <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> High speed fan assembly relay track 5 Fan 2 </div> <div style="text-align: center;">  </div> <div style="text-align: center;"> Fan 2 Vehicle earth </div> </div> Repair if necessary.
Check that fan n°2 is not seized and that the blades turn easily. Replace fan n°2 if necessary.

CONDITIONS	FAN 2 ACTIVE
Air conditioning pressure > 24 bar	YES
Air conditioning pressure > 18 bar + vehicle speed > 12 mph (20 km/h)	YES
Coolant temperature with engine running > 102°C	YES
Coolant temperature with engine running < 95°C	NO

Fault finding - Interpretation of commands

AC002	<u>THERMOPLUNGER N°1 RELAY</u>
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NOTES	No faults should be present or stored in the diagnostic tool.
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Check the connection and condition of the thermoplunger n°1 relay connector . Change the connector if necessary.
Disconnect the relay. Check for the presence of +12 volts on track 3 of the thermoplunger n°1 relay connector . Repair if necessary using the relevant wiring diagram .
Check the insulation and continuity of the connections between: <div style="display: flex; justify-content: space-between; align-items: center;"><div style="text-align: center;">Thermoplunger n°1 relay track 5 Thermoplunger n°1</div><div style="text-align: center;"></div><div style="text-align: center;">Thermoplunger n°1 Vehicle earth</div></div> Repair if necessary.
Check the resistance of thermoplunger n°1. Replace thermoplunger n°1 if necessary.

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 . Change the connector if necessary.
Disconnect the relay. Check for the presence of +12 volts on track 3 of the thermoplunger n°2 relay connector . Repair if necessary using the relevant wiring diagram .
Check the insulation and continuity of the connections between: Thermoplunger n°2 relay track 5 —————> Thermoplungers n°2 and n°3 Thermoplungers n°2 and n°3 —————> Vehicle earth Repair if necessary.
Check the resistance of thermoplungers n°2 and n°3. Replace thermoplunger n°2 and/or n°3 if necessary.

Fault finding - Interpretation of commands

ET182	<u>CLUTCH PEDAL SWITCH</u>
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NOTES	There must be no present or stored faults.
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Vehicle not equipped with the cruise control/speed limiter function	There is no clutch pedal switch on vehicles not equipped with the cruise control/speed limiter function. Status ET182 "Clutch pedal switch" still displays ACTIVE.
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Vehicle not equipped with the cruise control/speed limiter function	<p>Vehicle equipped with the cruise control/speed limiter function There is a clutch pedal switch on vehicles equipped with the cruise control/speed limiter function. Status ET182 Clutch pedal switch shows ACTIVE if the clutch pedal is depressed. Status ET182 Clutch pedal switch shows 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>
	Check the connection and condition of the clutch pedal switch connector . Change the connector if necessary.
	Check for the presence of +12 volts on track A1 of the clutch pedal switch connector . Repair if necessary using the relevant wiring diagram .
	Check the insulation and continuity of the connection between: Injection computer track 48 —————▶ track A2 clutch pedal switch Repair if necessary.

Fault finding - Interpretation of commands

ET264	<u>COMPUTER LOCKED FOLLOWING AN IMPACT</u>
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NOTES	There must be no present or stored faults.
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On receiving an impact detection signal emitted by the AIRBAG computer on the multiplex network, the injection computer will do the following, having received the signal (after a maximum of 10 milliseconds): Stop the fuel pump supply, the ignition and the petrol or LPG injection.

Status 264 "Computer locked following impact" changes to STATUS 1.

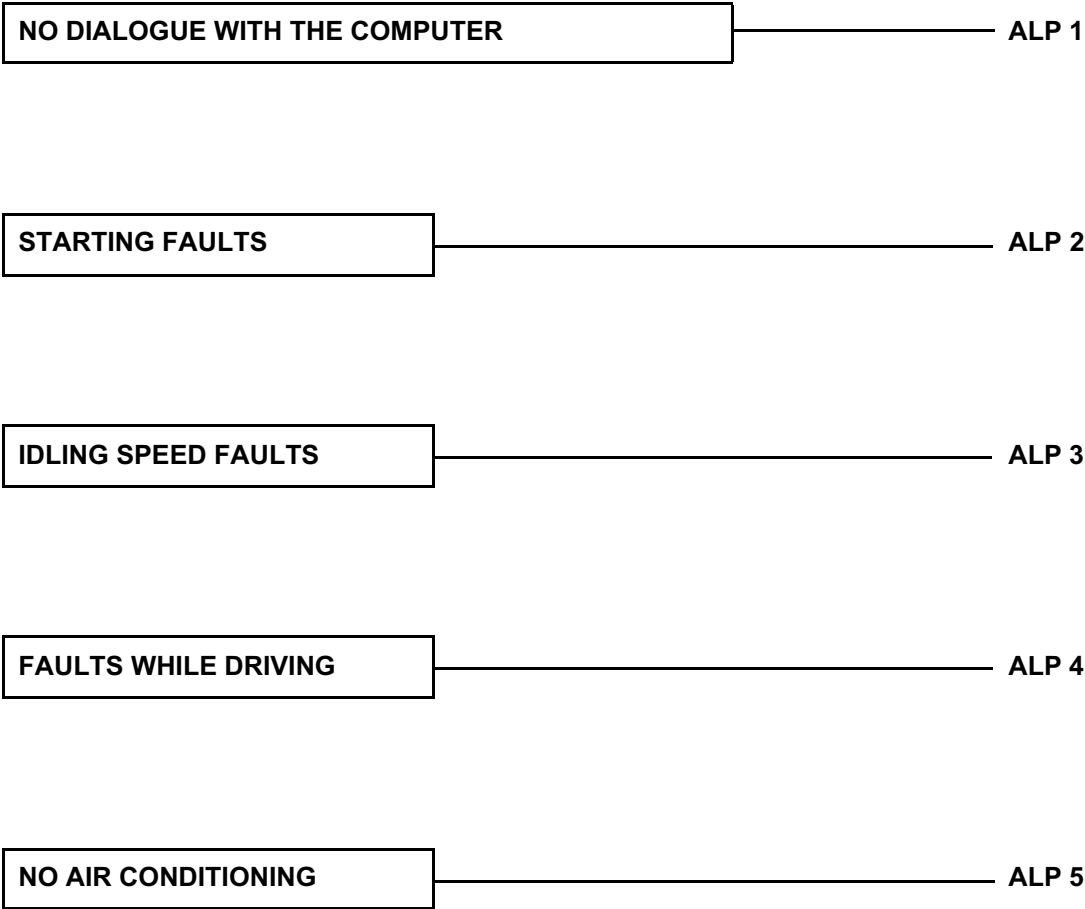
The only way of restarting is to switch off the ignition for at least 10 seconds.

The only way of clearing status ET264 is to clear the stored faults.

Fault finding - Interpretation of commands

ET118	<u>MOTORISED THROTTLE BODY IN DEFECT MODE</u>
NOTES	There must be no present or stored faults.
NO	NORMAL MODE
STATUS 1	<p>MOTORISED THROTTLE IN LIMP-HOME MODE:</p> <p>This defect mode is indicated by a constant engine speed for every gear ratio, whatever the position of the accelerator pedal.</p> <p>It is associated with: DF002 Throttle potentiometer circuit, DF226 Throttle stop programming, DF254 Motorised throttle control or DF255 Throttle/pedal operation safety.</p>
STATUS 2	<p>INJECTION CUT-OFF:</p> <p>This defect mode is not used on the SIRIUS 34 injection computer.</p>
STATUS 3	<p>PEDAL FAULT (loss of driver control):</p> <p>This defect mode is indicated by: no effect of pedal, fast idling and if the brake pedal is pressed the engine speed changes to idle speed.</p> <p>It is 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.</p>
STATUS 4	<p>REDUCTION OF ENGINE PERFORMANCE (limitation of performance):</p> <p>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).</p> <p>It is 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.</p>

NOTES	Customer Complaints should only be investigated after a complete check has been run using the diagnostic tool.
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PETROL INJECTION

Fault finding - Fault Finding Chart

17

ALP 1	NO DIALOGUE WITH THE COMPUTER
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NOTES	None.
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Try the diagnostic tool on another vehicle.
Check: <ul style="list-style-type: none"> – the connection between the diagnostic tool and the diagnostic socket (lead in good condition), – injection, engine and passenger compartment fuses. Repair if necessary.
Check for +12 volts on track 16 of the diagnostic socket. Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: <div style="margin-left: 40px;"> Diagnostic socket track 5 —————> vehicle earth Diagnostic socket track 4 —————> vehicle earth </div> Repair if necessary.
Ensure the presence of +12 volts on: <ul style="list-style-type: none"> – Injection computer track 30 – Injection computer track 29 (ignition on) Repair if necessary.
Connect the bornier in place of the computer and check the insulation, continuity, and absence of interference resistance on the connections between: <div style="margin-left: 40px;"> Injection computer track 3 —————> vehicle earth Injection computer track 28 —————> vehicle earth Injection computer track 33 —————> vehicle earth Injection computer track 67 —————> vehicle earth Injection computer track 56 —————> track 7 diagnostic socket </div> Repair if necessary.

AFTER REPAIR	Test using the diagnostic tool.
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PETROL INJECTION

Fault finding - Fault Finding Chart

17

ALP 2

STARTING FAULTS

NOTES

This customer complaint should only be investigated after a complete check has been run using the diagnostic tool.

- Check the condition of the battery.
- Check the tightness and oxidation of the terminals.
- Check that the wiring on the battery/starter motor and battery/vehicle earth is in good condition.
- Check that the starter motor rotates properly.



- Check that there is petrol present (the petrol gauge may be faulty).
- Check that the fuel is of the proper type.
- Check that no hoses are pinched (especially after a removal operation).
- Check the condition of the petrol filter.
- Check that the tank vent is not blocked.
- Make sure that the fuel pump is running correctly and that petrol is reaching the injector rail.
- Make sure that the petrol pressure regulator is in good condition by checking the pressure.



- 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 pipe connecting the canister bleed solenoid valve to the inlet manifold and block the pipe to prevent air intake: if there is no more disturbance, the canister bleed is the problem.



- Check that the spark plugs are in good condition and that they correspond to the engine type; replace them if necessary.
- Remove the engine speed sensor and make sure it has not been rubbing on the target (increase in the air gap). If it has, check the condition of the flywheel target.
- Make sure that the ignition coils are in good condition.



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



- Make sure that the engine can turn freely.
- Check the engine compression.
- Check the timing.

AFTER REPAIR

Test using the diagnostic tool.

PETROL INJECTION

Fault finding - Fault Finding Chart

17

ALP 3

IDLING SPEED FAULTS

NOTES

This customer complaint should only be investigated after a complete check has been run using the diagnostic tool.

- 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 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 pipe connecting the canister bleed solenoid valve to the inlet manifold and block the pipe to prevent air intake: if there is no more disturbance, the canister bleed 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 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 engine compression.
- Check the timing.

AFTER REPAIR

Test using the diagnostic tool.

PETROL INJECTION

Fault finding - Fault Finding Chart

17

ALP 4

FAULTS WHILE DRIVING

NOTES

This customer complaint should only be investigated after a complete check has been run using the diagnostic tool.

- 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 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 pipe connecting the canister bleed solenoid valve to the inlet manifold and block the pipe to prevent air intake: if there is no more disturbance, the canister bleed 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 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 of the tyre pressures.

AFTER REPAIR

Test using the diagnostic tool.

PETROL INJECTION

Fault finding - Fault Finding Chart

17

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

YES	<p>Test the air conditioning charge. Repair if necessary.</p>									
	<p>Check the connection and condition of the air conditioning pressure sensor connector. Change the connector if necessary.</p>									
	<p>Connect the bornier in place of the computer and check the insulation, the continuity, and absence of interference resistance on the connections between:</p> <table><tr><td>Injection computer track 79</td><td>————→</td><td>Refrigerant pressure sensor</td></tr><tr><td>Injection computer track 83</td><td>————→</td><td>Refrigerant pressure sensor</td></tr><tr><td>Injection computer track 47</td><td>————→</td><td>Refrigerant pressure sensor</td></tr></table> <p>Repair if necessary.</p>	Injection computer track 79	————→	Refrigerant pressure sensor	Injection computer track 83	————→	Refrigerant pressure sensor	Injection computer track 47	————→	Refrigerant pressure sensor
	Injection computer track 79	————→	Refrigerant pressure sensor							
Injection computer track 83	————→	Refrigerant pressure sensor								
Injection computer track 47	————→	Refrigerant pressure sensor								
<p>Check the resistance of the air conditioning pressure sensor. Replace the sensor if necessary.</p>										

NO	<p>Check the connection and condition of the air conditioning compressor connector.</p> <p>Change the connector if necessary.</p>
	<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance on the connection between:</p> <p>Injection computer track 39 —————→ Air conditioning compressor</p> <p>Repair if necessary.</p>
	<p>Check the condition of the air conditioning compressor clutch by running command AC003 (air conditioning compressor) using the diagnostic tool.</p> <p>Repair if necessary.</p>

Consult the fault finding strategy for the heating and ventilation if the incident persists.
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AFTER REPAIR	Test using the diagnostic tool.
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