

# RENAULT

## Technical Note 3516 A

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<i>Vehicle</i>	<i>After Sales type</i>	<i>Engine</i>
Twingo	X06X	D7F 707
Kangoo	XC05	D7F 722/726/744

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Sub-section concerned: 17B

# FAULT FINDING PETROL INJECTION

COMPUTER TYPE: SAGEM 2000  
PROGRAM NO.: A3  
VDIAG NO.: 04

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77 11 304 922

JANUARY 2008

EDITION ANGLAISE

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## FAULT FINDING PROCEDURE

To carry out the SAGEM 2000 Vdiag 04 diagnostic test on the injection system, the following are required:

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

- 1 **Activate one of the diagnostic tools in order to identify the system installed in the vehicle (read the SAGEM 2000 Vdiag 04 computer).**

**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 interpretation of a fault 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 diagnostic by following the "After repair" section.*

# INJECTION

## Fault finding – Introduction

17B

- 5 Carry out the conformity check (*appearance of possible faults not yet declared by the system's self-diagnosis procedure*) and apply the relevant fault finding techniques according to the results.
- 6 Validation of the repair (elimination of the sections on "Customer complaints" and "Fault finding chart").
- 7 Use the Customer complaints and Fault finding chart sections if the fault is still present.

**IMPORTANT:**

*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 connected 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 and other parts needing to be checked.

**IMPORTANT**

- \* 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.

## Fault finding – Interpretation of Faults

<b>DF002 PRESENT or STORED</b>	<b><u>THROTTLE POTENTIOMETER CIRCUIT</u></b> DEF: Unidentified electrical fault
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<b>NOTES</b>	<b><u>Important:</u></b> Never drive the vehicle without having checked that the computer is not showing any faults relating to the throttle.
	<i>If faults DF125 and DF126 are present, deal with these as a priority.</i>  <b><u>Conditions for applying the fault finding procedure to stored faults:</u></b> – The fault is declared present after a change in the engine speed.

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

<b>AFTER REPAIR</b>	<p><b>If the throttle valve has been changed, reinitialise the programming (RZ008).</b> Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> <li>– Continue to deal with the fault if it is present.</li> <li>– Ignore the fault if it is stored.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>
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## Fault finding – Interpretation of Faults

<b>DF003 PRESENT or STORED</b>	<u><b>AIR TEMPERATURE SENSOR CIRCUIT</b></u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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<b>NOTES</b>	<b><u>Conditions for applying the fault finding procedure to stored faults:</u></b> The fault is declared present following fan activation with the engine running.
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<b>DEF</b>	Check <b>the cleanliness and condition</b> of the sensor and its connections. If necessary change the connections.
	Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:  <div style="display: flex; justify-content: space-between; align-items: center;"> <div>Computer track E3 connector B</div> <div>—————▶</div> <div>Air temperature sensor</div> </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div>Computer track E2 connector B</div> <div>—————▶</div> <div>Air temperature sensor</div> </div> (See the connector track numbers on the corresponding wiring diagram). Repair if necessary.
	Check <b>the resistance</b> of the air temperature sensor. (See the values in the <b>HELP</b> section). Replace the sensor if necessary.
	<b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b>

<b>AFTER REPAIR</b>	If the fault was 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"> <li>– If the fault is present and characterised as "DEF", continue to process the fault.</li> <li>– If the fault is stored and characterised as "DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> Deal with any other possible faults. Clear the fault memory.

## Fault finding – Interpretation of Faults

<b>DF003</b> <b>CONTINUED</b>		
<b>OBD</b>	<b>NOTES</b>	Make the engine run until fan operation is triggered.

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 check should be based on the fault finding procedure for the "DEF" characterisation.

<b>AFTER REPAIR</b>	If the fault was 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"><li>– If the fault is present and characterised as "DEF", continue to process the fault.</li><li>– If the fault is stored and characterised as "DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<b>DF004 PRESENT or STORED</b>	<u>COOLANT TEMPERATURE SENSOR CIRCUIT</u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
<b>NOTES</b>	<b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared present following fan activation with the engine running.

<b>DEF</b>	Check <b>the cleanliness and condition</b> of the sensor and its connections. If necessary change the connections.
	Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:  <div style="display: flex; justify-content: space-between; align-items: center;"> <div>Computer track F2 connector B</div> <div>—————▶</div> <div>Coolant temperature sensor</div> </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div>Computer track F4 connector B</div> <div>—————▶</div> <div>Coolant temperature sensor</div> </div> (See the connector track numbers on the corresponding wiring diagram). Repair if necessary.
	Check <b>the resistance</b> of the air temperature sensor. (See the values in the <b>HELP</b> section). Replace the sensor if necessary.
	<b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b>

<b>AFTER REPAIR</b>	If the fault was 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"> <li>– If the fault is present and characterised as "DEF", continue to process the fault.</li> <li>– If the fault is stored and characterised as "DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> Deal with any other possible faults. Clear the fault memory.



## Fault finding – Interpretation of Faults

<b>DF004</b>  <b>CONTINUED</b>	
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<b>OBD</b>	<b>NOTES</b>	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 check should be based on the faultfinding procedure for the "DEF" characterisation.

<b>AFTER REPAIR</b>	If the fault was 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"><li>– If the fault is present and characterised as "DEF", continue to process the fault.</li><li>– If the fault is stored and characterised as "DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> Deal with any other possible faults. Clear the fault memory.

## Fault finding – Interpretation of Faults

<p><b>DF005 PRESENT or STORED</b></p>	<p><u><b>PRESSURE SENSOR CIRCUIT</b></u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)</p>
<p><b>NOTES</b></p>	<p><u><b>Conditions for applying the fault finding procedure to stored faults:</b></u> The fault is declared present after: – 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.</p>
<p><b>DEF</b></p>	<p>Check <b>the cleanliness and condition</b> of the sensor and its connections. Replace any parts if necessary.</p>
	<p>Using a vacuum pump, check the <b>consistency of the manifold pressure</b>. Check the <b>consistency</b> with parameter <b>PR001</b> in the diagnostic tool. Replace the sensor if necessary.</p>
	<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:</p> <p><b>Computer track H2 connector B</b> —————▶ <b>Pressure sensor</b> <b>Computer track H3 connector B</b> —————▶ <b>Pressure sensor</b> <b>Computer track H4 connector B</b> —————▶ <b>Pressure sensor</b></p> <p>(See the connector track numbers on the corresponding wiring diagram). Repair if necessary.</p>
	<p><b>The inlet line must be perfectly tight, from the body to the cylinder head.</b> Check: – the tightness of the manifold pressure sensor, – the seal between the throttle valve and the manifold, – the canister bleed, which should not be jammed open, – the tightness of the canister bleed circuit, – the tightness of the brake servo circuit, – the mounting of the manifold air temperature sensor, – the absence of leaks between the inlet manifold and the cylinder head.</p>
	<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>
<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as "DEF", it may change characterisation and become "OBD"; this is normal.</p> <p>Follow the instructions to confirm repair: – 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> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<b>DF005</b> <b>CONTINUED</b>	
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<b>OBD</b>	<b>NOTES</b>	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.

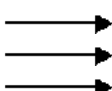
This check should be based on the fault finding procedure for the "DEF" characterisation.

<b>AFTER REPAIR</b>	If the fault was 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"><li>– If the fault is present and characterised as "DEF", continue to process the fault.</li><li>– If the fault is stored and characterised as "DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> Deal with any other possible faults. Clear the fault memory.

## Fault finding – Interpretation of Faults

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

<b>AFTER REPAIR</b>	If the fault was characterised as "DEF", it may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: – 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 possible faults. Clear the fault memory.

## Fault finding – Interpretation of Faults

<b>DF006</b>  CONTINUED		
<b>OBD</b>	<b>NOTES</b>	Make the engine run until fan operation is triggered.

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 check should be based on the fault finding procedure for the "DEF" characterisation.

<b>AFTER REPAIR</b>	If the fault was 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"><li>– If the fault is present and characterised as "DEF", continue to process the fault.</li><li>– If the fault is stored and characterised as "DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF008</b> <b>PRESENT</b> <b>or</b> <b>STORED</b></p>	<p><u><b>FUEL PUMP RELAY CONTROL CIRCUIT</b></u> CO.0 : Open circuit or 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><b>NOTES</b></p>	<p><b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared present after the ignition has been switched on.</p>
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<p><b>CO.0</b> <b>CC.1</b> <b>DEF</b></p>	<p>Check <b>the supply fuse</b> of the fuel pump relay. Replace the fuse if necessary.</p>
	<p>Check the <b>cleanliness and condition</b> of the fuel pump relay connections. Replace any parts if necessary.</p>
	<p>Disconnect the relay. Check <b>the condition and cleanliness</b> of the contacts. With the ignition on, check for <b>+12 V on track 1</b> on the connector side of the fuel pump relay. Repair if necessary.</p>
	<p>Check <b>the resistance</b> of the fuel pump relay on <b>tracks 1 and 2</b>. (See the value in the <b>HELP</b> section). Replace the fuel pump relay if necessary.</p>
	<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Computer track D1 connector C      —————&gt;      Fuel pump relay</b></p> <p>(See connector track number in the corresponding wiring diagram). Repair if necessary.</p>
	<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>

<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<b>DF008</b>  CONTINUED	
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<b>OBD</b>	<b>NOTES</b>	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".

<b>AFTER REPAIR</b>	If the fault was characterised as CO.0, CC.1 or 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"><li>– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.</li><li>– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

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

<p><b>AFTER REPAIR</b></p>	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> <li>– Continue to deal with the fault if it is present.</li> <li>– Ignore the fault if it is stored.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>
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## Fault finding – Interpretation of Faults

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

<b>AFTER REPAIR</b>	Deal with any other possible faults. Clear the fault memory.
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## Fault finding – Interpretation of Faults

<b>DF011 PRESENT or STORED</b>	<b><u>FAULT WARNING LIGHT CIRCUIT</u></b> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts DEF : Unidentified electrical fault
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<b>NOTES</b>	<b><u>Conditions for applying the fault finding procedure to stored faults:</u></b> The fault is declared present when the ignition is switched on.
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<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p><b>Computer track C2 connector C —————&gt; Warning light unit</b></p> <p>(See connector track number in the corresponding wiring diagram). Repair if necessary.</p>
<p>Check the warning light unit on the instrument panel. (Refer to the <b>Instrument panel</b> section in the Repair Manual). Check <b>the cleanliness and condition</b> of the warning light unit and its connections. Clean or replace it if necessary.</p>
<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>

<b>AFTER REPAIR</b>	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"><li>– Continue to deal with the fault if it is present.</li><li>– Ignore the fault if it is stored.</li></ul> <p>Deal with any other possible faults. Clear the fault memory.</p>
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## Fault finding – Interpretation of Faults

<p><b>DF014 PRESENT or STORED</b></p>	<p><u><b>CANISTER BLEED SOLENOID VALVE CIRCUIT</b></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>
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<p><b>NOTES</b></p>	<p><i>Deal with faults DF009 or DF019 first if they are present.</i></p> <p><u><b>Conditions for applying the fault finding procedure to stored faults:</b></u> The fault is declared present when the ignition is switched on.</p>
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<p><b>CO.0 CC.1 DEF</b></p>	<p>Check <b>the cleanliness and condition</b> of the canister bleed solenoid valve connections. Replace any parts if necessary.</p>
	<p>With the ignition on, check for <b>+12 Volts</b> on the canister bleed solenoid valve. Replace any parts if necessary.</p>
	<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Computer track E1 connector C      —————&gt;      Canister bleed valve</b></p> <p>(See connector track number in the corresponding wiring diagram). Repair if necessary.</p>
	<p>Check the <b>resistance</b> of the canister bleed solenoid valve. (See the value in the <b>HELP</b> section). Replace the solenoid valve if necessary.</p>
	<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>

<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<b>DF014</b>  <b>CONTINUED</b>	
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<b>OBD</b>	<b>NOTES</b>	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".

<b>AFTER REPAIR</b>	If the fault was characterised as CO.0, CC.1 or 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"><li>– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.</li><li>– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF017 PRESENT or STORED</b></p>	<p><u><b>FLYWHEEL SIGNAL INFORMATION</b></u></p> <p>1.DEF : Engine flywheel target fault 2.DEF : Absence of tooth signal 1.OBD : (On Board Diagnostic) OBD fault: engine flywheel target 2.OBD : OBD fault: absence of flywheel signal</p>
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<p><b>NOTES</b></p>	<p><b>The pressure sensor must not be faulty when performing this fault finding test.</b></p> <p><u><b>Conditions for applying the fault finding procedure to stored faults:</b></u> The fault is declared present after the starter-motor has been active for 10 seconds or the engine has run for 2 minutes</p>
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<p><b>1.DEF 2.DEF</b></p>	<p>Check <b>the positioning</b> of the flywheel signal sensor.</p>
	<p>Check <b>the cleanliness and condition</b> of the sensor, the cable and its connections. Replace any parts if necessary.</p>
	<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:</p> <p><b>Computer track E4 connector B</b> —————&gt; <b>Flywheel signal sensor</b> <b>Computer track F3 connector B</b> —————&gt; <b>Flywheel signal sensor</b></p> <p>(See the connector track numbers on the corresponding wiring diagram). Repair if necessary.</p>
	<p>Check the <b>resistance of the flywheel signal sensor</b>. (See the value in the <b>HELP</b> section). Replace the sensor if necessary.</p>
	<p>Check <b>the cleanliness and condition</b> of the flywheel.</p>
	<p><b>Note:</b> If the target mounting has been altered, remember to modify the programming.</p>
	<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>

<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as was characterised as "1.DEF or 2.DEF", it 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"> <li>– If the fault is present and characterised as "1.DEF or 2.DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "1.DEF or 2.DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<b>DF017</b>  <b>CONTINUED</b>	
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<b>1.OBD</b> <b>2.OBD</b>	<b>NOTES</b>	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" 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".

<b>AFTER REPAIR</b>	If the fault was characterised as was characterised as "1.DEF or 2.DEF", it 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"><li>– If the fault is present and characterised as "1.DEF or 2.DEF", continue to deal with the fault.</li><li>– If the fault is stored and characterised as "1.DEF or 2.DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it.</li></ul> Deal with any other possible faults. Clear the fault memory.

## Fault finding – Interpretation of Faults

<p><b>DF018 PRESENT or STORED</b></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 : Heating output of oxygen sensor defective  1.OBD : (On Board Diagnostic) OBD fault: upstream oxygen sensor heating output  2.OBD : OBD fault: upstream oxygen sensor heating output</p>
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<p><b>NOTES</b></p>	<p><i>If faults DF009 and DF019 are present, deal with them first.</i></p> <p><b>Conditions for applying the fault finding procedure to stored faults:</b>  The fault is declared present after the engine has been running for 10 seconds.</p>
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<p><b>CO.0 CC.1 1.DEF 2.DEF</b></p>	<p>Check <b>the cleanliness and condition</b> of the upstream oxygen sensor connections.  Replace any parts if necessary.</p>
	<p>With the ignition on, check for <b>+ 12 Volts on track A</b> of the upstream oxygen sensor connector.  Repair if necessary.</p>
	<p>Disconnect the battery.  Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections.  Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Computer track G1 connector C      —————&gt;      Upstream oxygen sensor</b></p> <p>(See connector track number in the corresponding wiring diagram).  Repair if necessary.</p>
	<p>Check <b>the heating resistance</b> of the upstream oxygen sensor. (See the value in the <b>HELP</b> section).  Replace the upstream oxygen sensor if necessary.</p>
	<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>

<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as "CO.0, CC.1, 1.DEF or 2.DEF", it 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"> <li>– If the fault is present and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it.</li> </ul> <p>Deal with any other possible faults.  Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF018</b></p> <p>CONTINUED</p>			
<p><b>1.OBD</b> <b>2.OBD</b></p>	<table> <tr> <th data-bbox="413 488 733 595"><b>NOTES</b></th><td data-bbox="733 488 1450 595">Make the engine run until fan operation is triggered.</td></tr> </table>	<b>NOTES</b>	Make the engine run until fan operation is triggered.
<b>NOTES</b>	Make the engine run until fan operation is triggered.		

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" 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".

<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as "CO.0, CC.1, 1.DEF or 2.DEF", it 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"> <li>– If the fault is present and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it.</li> </ul> <p>Deal with any other possible faults.</p> <p>Clear the fault memory.</p>



## Fault finding – Interpretation of Faults

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

<p><b>AFTER REPAIR</b></p>	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> <li>– Continue to deal with the fault if it is present.</li> <li>– Ignore the fault if it is stored.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>
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## Fault finding – Interpretation of Faults

<b>DF021 PRESENT or STORED</b>	<u>IMMOBILISER</u> DEF : Unidentified electrical fault
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<b>NOTES</b>	None.
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Test the multiplex network.

Refer to the Multiplex Network section in the Workshop Repair Manual.

Carry out the fault finding procedure on the multi-timer unit system.

Refer to the multi-timer unit section in the Workshop Repair Manual.

<b>AFTER REPAIR</b>	None.
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## Fault finding – Interpretation of Faults

<b>DF022 PRESENT</b>	<b>COMPUTER</b> 1.DEF : Computer fault 2.DEF : Computer fault: motorised throttle control 3.DEF : Backup memory area fault 4.DEF : Immobiliser memory area fault
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<b>NOTES</b>	None.
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<b>1.DEF 2.DEF</b>	Computer defective or not to specification. Replace the injection computer.
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<b>3.DEF 4.DEF</b>	<b>Do not replace the injection computer immediately.</b>  Carry out the following procedure: <ul style="list-style-type: none"><li>– Switch the ignition on and establish dialogue with the computer.</li><li>– Clear the computer memory.</li><li>– Switch the ignition off and wait for loss of dialogue with the computer.</li><li>– Switch the ignition on and establish dialogue with the computer.</li></ul> 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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<b>AFTER REPAIR</b>	None.
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## Fault finding – Interpretation of Faults

<b>DF030 PRESENT</b>	<u>HIGH SPEED FAN ASSEMBLY CIRCUIT</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 V DEF : Unidentified electrical fault
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<b>NOTES</b>	<i>Deal with fault DF004 first if it is present.</i>
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Check <b>the cleanliness and condition</b> of the high speed fan assembly relay connections. Replace any parts if necessary.
With the ignition on, check for <b>+12 V on track 1</b> of the relay. Repair if necessary.
Check <b>the resistance</b> of the high speed fan assembly relay on <b>tracks 1 and 2</b> . (See the value in the <b>HELP</b> section). Change the high speed fan relay if necessary.
Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:  <b>Computer track F2 connector C      —————▶      High speed fan assembly relay</b>  (See connector track number in the corresponding wiring diagram). Repair if necessary.
<b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b>

<b>AFTER REPAIR</b>	Deal with any other possible faults. Clear the fault memory.
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## Fault finding – Interpretation of Faults

<b>DF032 PRESENT or STORED</b>	<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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<b>NOTES</b>	<b><u>Conditions for applying the fault finding procedure to stored faults:</u></b> The fault is declared present when the ignition is switched on.
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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 connection:

**Computer track B2 connector A —————> Warning light unit**

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

Check the warning light unit on the instrument panel. (Refer to the **Instrument panel** section in the Repair Manual).  
Check **the cleanliness and condition** of the warning light unit and its connections.  
Clean or replace it if necessary.

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

<b>AFTER REPAIR</b>	Follow the instructions to confirm repair: <ul style="list-style-type: none"><li>– Continue to deal with the fault if it is present.</li><li>– Ignore the fault if it is stored.</li></ul> Deal with any other possible faults. Clear the fault memory.
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## Fault finding – Interpretation of Faults

<p><b>DF038 PRESENT or STORED</b></p>	<p><b><u>DOWNSTREAM OXYGEN SENSOR HEATER CIRCUIT</u></b></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 : Heating output of oxygen sensor defective  1.OBD : (On Board Diagnostic) OBD fault: downstream oxygen sensor heating output  2.OBD : OBD fault: downstream oxygen sensor heating output</p>
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<p><b>NOTES</b></p>	<p><i>If faults DF009 and DF019 are present, deal with them first.</i></p> <p><b><u>Conditions for applying the fault finding procedure to stored faults:</u></b>  The fault is declared present after the engine has been running for 10 seconds.</p>
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<p><b>CO.0 CC.1 1.DEF 2.DEF</b></p>	<p>Check <b>the cleanliness and condition</b> of the downstream oxygen sensor connections.  Replace any parts if necessary.</p>
	<p>With the ignition on, check for <b>+ 12 volts on track A</b> of the downstream oxygen sensor connector.  Repair if necessary.</p>
	<p>Disconnect the battery.  Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections.  Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Computer track G3 connector C      ➔      Downstream oxygen sensor</b></p> <p>(See connector track number in the corresponding wiring diagram).  Repair if necessary.</p>
	<p>Check <b>the heating resistance</b> of the downstream oxygen sensor. (See the value in the <b>HELP</b> section).  Replace the downstream oxygen sensor if necessary.</p>
	<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>

<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as "CO.0, CC.1, 1.DEF or 2.DEF", it 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"> <li>– If the fault is present and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it.</li> </ul> <p>Deal with any other possible faults.  Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF038</b></p> <p><b>CONTINUED</b></p>					
<p><b>1.OBD</b> <b>2.OBD</b></p>	<table border="1"> <thead> <tr> <th data-bbox="412 481 727 607"><b>NOTES</b></th> <th data-bbox="727 481 1451 607"></th> </tr> </thead> <tbody> <tr> <td></td> <td>Make the engine run until fan operation is triggered.</td> </tr> </tbody> </table>	<b>NOTES</b>			Make the engine run until fan operation is triggered.
<b>NOTES</b>					
	Make the engine run until fan operation is triggered.				

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" 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".

<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as "CO.0, CC.1, 1.DEF or 2.DEF", it 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"> <li>– If the fault is present and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1, 1.DEF or 2.DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "1.OBD or 2.OBD", ignore it.</li> </ul> <p>Deal with any other possible faults.</p> <p>Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF052 PRESENT or STORED</b></p>	<p><u>CYLINDER 1 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>
<p><b>NOTES</b></p>	<p><i>If faults DF009 and DF019 are present, deal with them first.</i></p> <p><b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared present after the engine has been running for 10 seconds.</p>
<p><b>CO CC.0 CC.1 DEF</b></p>	<p>Check <b>the cleanliness and condition</b> of the injector rail connections. Clean or replace it if necessary.</p> <p>With the ignition on, check for <b>+12 volts</b> on the injector rail connector. (See connector track number in the corresponding wiring diagram).</p> <p>Check the <b>resistance of the cylinder 1 injector</b>. (See the value in the <b>HELP</b> section). (see connector track numbers in the corresponding wiring diagram). Replace the injector if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Injection computer track L4 connector B —————▶ Cylinder 1 injector</b></p> <p>(See connector track number in the corresponding wiring diagram). Repair if necessary.</p> <p>If this still does not work, remove the injector rail. Check <b>the cleanliness and condition</b> of the injector rail. Check <b>the electrical continuities</b> between the socket and the <b>cylinder 1 injector</b>. (See connector track number in the corresponding wiring diagram).</p> <p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>
<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as "CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO, CC.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO, CC.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>



## Fault finding – Interpretation of Faults

<b>DF052</b>  <b>CONTINUED</b>	
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<b>OBD</b>	<b>NOTES</b> 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" 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".

<b>AFTER REPAIR</b>	If the fault was characterised as "CO.0, CC.1 or DEF", it may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: – 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 possible faults. Clear the fault memory.

## Fault finding – Interpretation of Faults

<p><b>DF053 PRESENT or STORED</b></p>	<p><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)</p>
<p><b>NOTES</b></p>	<p><i>If faults DF009 and DF019 are present, deal with them first.</i></p> <p><b>Conditions for applying the fault finding procedure to stored faults:</b>  The fault is declared present after the engine has been running for 10 seconds.</p>
<p><b>CO CC.0 CC.1 DEF</b></p>	<p>Check <b>the cleanliness and condition</b> of the injector rail connections.  Clean or replace it if necessary.</p> <p>With the ignition on, check for <b>+12 volts</b> on the injector rail connector.  (See connector track number in the corresponding wiring diagram).</p> <p>Check the <b>resistance of the cylinder 2 injector</b>. (See the value in the <b>HELP</b> section).  (See the connector track numbers on the corresponding wiring diagram).  Replace the injector if necessary.</p> <p>Disconnect the battery.  Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections.  Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Injection computer track L3 connector B —————&gt; Cylinder 2 injector</b>  (See connector track number in the corresponding wiring diagram).  Repair if necessary.</p> <p>If this still does not work, remove the injector rail.  Check <b>the cleanliness and condition</b> of the injector rail.  Check <b>the electrical continuities</b> between the socket and the <b>cylinder 2 injector</b>.  (See connector track number in the corresponding wiring diagram).</p> <p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>
<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as "CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO, CC.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO, CC.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults.  Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<b>DF053</b>  <b>CONTINUED</b>	
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<b>OBD</b>	<b>NOTES</b>	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" 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".

<b>AFTER REPAIR</b>	If the fault was characterised as "CO.0, CC.1 or 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"><li>– If the fault is present and characterised as "CO, CC.0, CC.1 or DEF", continue to deal with the fault.</li><li>– If the fault is stored and characterised as "CO, CC.0, CC.1 or DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF054 PRESENT or STORED</b></p>	<p><u>CYLINDER 3 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)</p>
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<p><b>NOTES</b></p>	<p><i>If faults DF009 and DF019 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 the engine has been running for 10 seconds.</p>
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<p><b>CO CC.0 CC.1 DEF</b></p>	<p>Check the <b>cleanliness and condition</b> of the injector rail connections. Clean or replace it if necessary.</p>
	<p>With the ignition on, check for <b>+12 volts</b> on the injector rail connector.  (See connector track number in the corresponding wiring diagram).</p>
	<p>Check the <b>resistance of the cylinder 3 injector</b>. (See the value in the <b>HELP</b> section).  (See the connector track numbers on the corresponding wiring diagram).  Replace the injector if necessary.</p>
	<p>Disconnect the battery.  Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections.  Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:    <b>Injection computer track L2 connector B —————&gt; Cylinder 3 injector</b>  (See connector track number in the corresponding wiring diagram).  Repair if necessary.</p>
	<p>If this still does not work, remove the injector rail.  Check the <b>cleanliness and condition</b> of the injector rail.  Check the <b>electrical continuities</b> between the socket and the <b>cylinder 3 injector</b>.  (See the connector track number in the appropriate wiring diagram)</p>
	<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>

<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as "CO, CC.0, CC.1 or DEF", it may change characterisation and become "OBD"; this is normal.</p>
	<p>Follow the instructions to confirm repair:  – 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 possible faults.  Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<b>DF054</b> <b>CONTINUED</b>		
<b>OBD</b>	<b>NOTES</b>	Make the engine run until fan operation is triggered.

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" 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".

<b>AFTER REPAIR</b>	If the fault was characterised as "CO.0, CC.1 or 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"><li>– If the fault is present and characterised as "CO, CC.0, CC.1 or DEF", continue to deal with the fault.</li><li>– If the fault is stored and characterised as "CO, CC.0, CC.1 or DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF055 PRESENT or STORED</b></p>	<p><u>CYLINDER 4 INJECTOR CIRCUIT</u></p> <p>DEF : Unidentified electrical fault CO : Open circuit CC.0 : Short circuit to earth CC.1 : Short circuit to +12 V OBD : OBD fault (On Board Diagnostic)</p>
<p><b>NOTES</b></p>	<p><i>If faults DF009 and DF019 are present, deal with them first.</i></p> <p><b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared present after the engine has been running for 10 seconds.</p>
<p><b>CO CC.0 CC.1 DEF</b></p>	<p>Check <b>the cleanliness and condition</b> of the injector rail connections. Clean or replace it if necessary.</p> <p>With the ignition on, check for <b>+12 volts</b> on the injector rail connector. (See connector track number in the corresponding wiring diagram).</p> <p>Check the <b>resistance of the cylinder 4 injector</b>. (See the value in the <b>HELP</b> section). (see connector track numbers in the corresponding wiring diagram). Replace the injector if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Injection computer track M2 connector B —————&gt; Cylinder 4 injector</b></p> <p>(See the connector track number in the appropriate wiring diagram) Repair if necessary.</p> <p>If this still does not work, remove the injector rail. Check <b>the cleanliness and condition</b> of the injector rail. Check <b>the electrical continuities</b> between the socket and the <b>cylinder 4 injector</b>. (See the connector track number in the appropriate wiring diagram)</p> <p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>
<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as "CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO, CC.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO, CC.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF055</b></p> <p><b>CONTINUED</b></p>			
<p><b>OBD</b></p>	<table> <tr> <td data-bbox="407 481 729 575"> <p><b>NOTES</b></p> </td><td data-bbox="729 481 1455 575"> <p>Make the engine run until fan operation is triggered.</p> </td></tr> </table>	<p><b>NOTES</b></p>	<p>Make the engine run until fan operation is triggered.</p>
<p><b>NOTES</b></p>	<p>Make the engine run until fan operation is triggered.</p>		

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" 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".

<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as "CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO, CC.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO, CC.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults.</p> <p>Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<b>DF057 PRESENT or STORED</b>	<u>UPSTREAM OXYGEN SENSOR CIRCUIT</u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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<b>NOTES</b>	<p><i>If other faults are present, deal with them first.</i></p> <p><b>Conditions for applying the fault finding procedure to stored faults:</b>  The fault is declared present following a 5-minute period in richness-ratio regulation (engine running).</p>
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<b>DEF</b>	Check <b>the condition and fitting</b> of the upstream sensor. Replace the sensor if necessary.
	Check that there are no <b>air leaks</b> on the exhaust pipe.
	If the vehicle is driven frequently in town, <b>decoke the engine</b> .
	Check <b>the cleanliness and condition</b> of the upstream oxygen sensor connections. Replace any parts if necessary.
	With the ignition on, check for <b>+12 Volts</b> on the upstream oxygen sensor. Repair if necessary.
	Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:  <b>Computer track C1, connector C —————&gt; Oxygen sensor</b> <b>Computer track B1, connector C —————&gt; Oxygen sensor</b>  (see connector track numbers in the corresponding wiring diagram). Repair if necessary.

<b>AFTER REPAIR</b>	If the fault was characterised as "DEF", it may change characterisation and become "OBD"; this is normal.
	Follow the instructions to confirm repair: – 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 possible faults. Clear the fault memory.



## Fault finding – Interpretation of Faults

<b>DF057</b>  <b>CONTINUED</b>	
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**The inlet line must be perfectly tight, from the throttle valve to the cylinder head.**

Check:

- the tightness of the manifold pressure sensor,
- the seal between the throttle valve and the manifold,
- the canister bleed, which should not be jammed open,
- the tightness of the canister bleed circuit,
- the tightness of the brake servo circuit,
- the mounting of the manifold air temperature sensor,
- the absence of leaks between the inlet manifold and the cylinder head.

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.**

<b>OBD</b>	<b>NOTES</b>	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 check should be based on the fault finding procedure for the "DEF" characterisation.

<b>AFTER REPAIR</b>	If the fault was 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"> <li>– If the fault is present and characterised as "DEF", continue to process the fault.</li> <li>– If the fault is stored and characterised as "DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF058 PRESENT or STORED</b></p>	<p><u><b>DOWNSTREAM OXYGEN SENSOR CIRCUIT</b></u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)</p>
<p><b>NOTES</b></p>	<p><i><b>Deal with fault DF057 first if it is present.</b></i></p> <p><u><b>Conditions for applying the fault finding procedure to the stored fault.</b></u> The fault is declared as present in one of the following cases:</p> <ul style="list-style-type: none"> <li>– A road test in flexible driving after operation of the fan and with double richness-ratio loop ET027 active.</li> <li>– 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).</li> </ul>
<p><b>DEF</b></p>	<p>Check <b>the condition and fitting</b> of the downstream sensor. Replace the sensor if necessary.</p>
	<p>Check that there are no <b>air leaks</b> on the exhaust pipe.</p>
	<p>If the vehicle is driven frequently in town, <b>decoke the engine</b>.</p>
	<p>Check <b>the cleanliness and condition</b> of the downstream oxygen sensor connections. Replace any parts if necessary.</p>
	<p>With the ignition on, check for <b>+12 Volts</b> on the downstream oxygen sensor. Repair if necessary.</p>
	<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:  <b>Computer track A2 connector C —————&gt; Oxygen sensor</b>  <b>Computer track B2 connector C —————&gt; Oxygen sensor</b>            (See the connector track numbers on the corresponding wiring diagram).            Repair if necessary.</p>
	<p>If the fault persists, replace the oxygen sensor.</p>
<p><b>AFTER REPAIR</b></p>	<p>If the fault was 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"> <li>– If the fault is present and characterised as "DEF", continue to process the fault.</li> <li>– If the fault is stored and characterised as "DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<b>DF058</b>  <b>CONTINUED</b>		
<b>OBD</b>	<b>NOTES</b>	Make the engine run until fan operation is triggered.

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 check should be based on the fault finding procedure for the "DEF" characterisation.

<b>AFTER REPAIR</b>	If the fault was 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"><li>– If the fault is present and characterised as "DEF", continue to process the fault.</li><li>– If the fault is stored and characterised as "DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF061 PRESENT or STORED</b></p>	<p><b><u>IGNITION COIL 1 - 4 CIRCUIT</u></b>  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><b>NOTES</b></p>	<p><b><i>Deal with faults DF009, DF019 or DF008 first if they are present.</i></b>  <b><u>Conditions for applying the fault finding procedure to stored faults:</u></b>  The fault is declared present after the starter-motor has been active for 10 seconds or  a time delay of 10 seconds with the engine running.</p>
<p><b>CO.0 CC.1 DEF</b></p>	<p>Disconnect the connector from the coil unit.  Check <b>the cleanliness and condition</b> of the ignition coil unit and its connections.  Clean or replace it if necessary.</p> <p>Check <b>the primary and secondary resistance</b> of the ignition coils.  (See the values in the <b>HELP</b> section and the track numbers in the corresponding wiring diagram).</p> <p>Disconnect the battery.  Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections.  Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Computer track H2 connector C —————&gt; Coil 1- 4</b></p> <p>(See connector track number in the corresponding wiring diagram).  Repair if necessary.</p> <p>Check the supply fuse of the fuel pump relay.</p> <p>Check <b>the continuity and insulation</b> of the line between the coil connector and the fuel pump relay. (This relay supplies the ignition coils).</p> <p>Check <b>the electrical resistance</b> of the fuel pump relay. (See the value in the <b>HELP</b> section).  Replace the relay if necessary.</p>
<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults.  Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF061</b></p> <p><b>CONTINUED</b></p>	
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<p>Check the <b>cleanliness and condition</b> of the fuel pump relay connections. Clean or replace it if necessary.</p>
<p>Check <b>the insulation and continuity</b> of the line between track 3 of the relay and the supply fuse. Repair if necessary.</p>
<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>

<b>OBD</b>	<b>NOTES</b>	Make the engine run until fan operation is triggered.
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<p>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"</p> <p>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.</p> <p>This check should be based on the fault finding of the characterisations "CO.0, CC.1 or DEF".</p>
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<b>AFTER REPAIR</b>	<p>If the fault was characterised as CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF062</b> <b>PRESENT</b> <b>or</b> <b>STORED</b></p>	<p><u><b>IGNITION COIL 2-3 CIRCUIT</b></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)</p>
<p><b>NOTES</b></p>	<p><i>Deal with faults DF009, DF019 or DF008 first if they are present.</i> <b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared present after the starter-motor has been active for 10 seconds or a time delay of 10 seconds with the engine running.</p>
<p><b>CO.0</b> <b>CC.1</b> <b>DEF</b></p>	<p>Disconnect the connector from the coil unit. Check <b>the cleanliness and condition</b> of the ignition coil unit and its connections. Clean or replace it if necessary.</p> <p>Check <b>the primary and secondary resistance</b> of the ignition coils. (See the values in the <b>HELP</b> section and the track numbers in the corresponding wiring diagram).</p> <p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Computer track H3 connector C —————&gt; Coil 2-3</b></p> <p>(See connector track number in the corresponding wiring diagram). Repair if necessary.</p> <p>Check the supply fuse of the fuel pump relay.</p> <p>Check <b>the continuity and insulation</b> of the line between coil 3 and the fuel pump relay. (This relay supplies the ignition coils).</p> <p>Check <b>the electrical resistance</b> of the fuel pump relay. (See the value in the <b>HELP</b> section). Replace the relay if necessary.</p>
<p><b>AFTER REPAIR</b></p>	<p>If the fault was characterised as CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF062</b></p> <p><b>CONTINUED</b></p>	
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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 the supply fuse.  
Repair if necessary.

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

<b>OBD</b>	<b>NOTES</b>	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".

<b>AFTER REPAIR</b>	If the fault was characterised as CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF064 PRESENT or STORED</b></p>	<p><u>VEHICLE SPEED SIGNAL</u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)</p>
<p><b>NOTES</b></p>	<p><b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared present when the ignition is switched on.</p>
<p><b>DEF</b></p>	<p>Check <b>the cleanliness and external condition</b> of the vehicle speed sensor. Check the <b>cleanliness and condition</b> of the target. Check the <b>cleanliness and condition</b> of the connections. Clean or replace it if necessary.</p> <p>Check <b>the electrical resistance</b> of the vehicle speed sensor. (See the value in the <b>HELP</b> section). Replace the sensor if necessary.</p> <p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Computer track C3 connector B —————▶ Vehicle speed sensor</b></p> <p>(See connector track number in the corresponding wiring diagram). Repair if necessary.</p> <p>If that does not work, replace the sensor.</p> <p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>
<p><b>AFTER REPAIR</b></p>	<p>If the fault was 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"> <li>– If the fault is present and characterised as "DEF", continue to process the fault.</li> <li>– If the fault is stored and characterised as "DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>



## Fault finding – Interpretation of Faults

<b>DF064</b> <b>CONTINUED</b>		
<b>OBD</b>	<b>NOTES</b>	Make the engine run until fan operation is triggered.

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 check should be based on the fault finding procedure for the "DEF" characterisation.

<b>AFTER REPAIR</b>	If the fault was 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"><li>– If the fault is present and characterised as "DEF", continue to process the fault.</li><li>– If the fault is stored and characterised as "DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

Fault finding – Interpretation of Faults

<b>DF082 PRESENT or STORED</b>	<u>PETROL &lt;--&gt; LPG CONNECTION</u> DEF : Unidentified electrical fault
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<b>NOTES</b>	None.
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Test the multiplex network (see <b>88B, Multiplexing</b> )
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<b>AFTER REPAIR</b>	None.
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## Fault finding – Interpretation of Faults

<b>DF102 PRESENT</b>	<u>OXYGEN SENSOR OPERATING FAULT</u> OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault detected when running
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<b>NOTES</b>	<i>If faults DF009, DF019, DF018, DF038, DF057 or DF058 are present, deal with them in priority.</i>
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<p>Check <b>the condition and fitting</b> of the upstream sensor. Replace the sensor if necessary.</p>
<p>Check that there are no <b>air leaks</b> on the exhaust pipe.</p>
<p>If the vehicle is driven frequently in town, <b>decoke the engine</b>.</p>
<p>Check <b>the cleanliness and condition</b> of the upstream oxygen sensor connections. Replace any parts if necessary.</p>
<p>With the ignition on, check for <b>+12 Volts</b> on the upstream oxygen sensor. Repair if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:</p> <p> <b>Computer track C1 connector C</b> —————&gt; <b>Oxygen sensor</b>  <b>Computer track B1 connector C</b> —————&gt; <b>Oxygen sensor</b> </p> <p>(See the connector track numbers on the corresponding wiring diagram). Repair if necessary.</p>
<p><b>The inlet line must be perfectly tight, from the throttle valve to the cylinder head.</b> Check:</p> <ul style="list-style-type: none"> <li>– the tightness of the manifold pressure sensor,</li> <li>– the seal between the throttle valve and the manifold,</li> <li>– the canister bleed, which should not be jammed open,</li> <li>– the tightness of the canister bleed circuit,</li> <li>– the tightness of the brake servo circuit,</li> <li>– the mounting of the manifold air temperature sensor,</li> <li>– the absence of leaks between the inlet manifold and the cylinder head.</li> </ul>
<p>If the fault persists, replace the oxygen sensor.</p>
<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>

<b>AFTER REPAIR</b>	<p>Deal with any other possible faults. Clear the fault memory.</p>
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## Fault finding – Interpretation of Faults

<b>DF106 PRESENT</b>	<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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<b>NOTES</b>	<i>Deal with the other faults first.</i>
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Check the <b>sealing</b> of the entire exhaust system. Repair if necessary.
If the vehicle is driven frequently in town, <b>decoke the engine</b> .
Check the <b>condition and assembly</b> of the downstream oxygen sensor.
Check <b>the cleanliness and condition</b> of the downstream oxygen sensor connector and wires. Clean or replace it if necessary.
<ul style="list-style-type: none"><li>– Visually check <b>the condition of the catalytic converter</b>. A deformity may be causing it to malfunction.</li><li>– Check for visual signs <b>of thermal shock</b>. A warm catalytic converter may be damaged if it comes into contact with cold water.</li><li>– Check that there has not been <b>any excessive consumption of oil or coolant</b>. 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.</li></ul> <p>If the cause of the damage has been found, you can change the catalytic converter.</p> <p><b><u>If you are replacing the catalytic converter, make absolutely sure that the fault has been resolved otherwise the new catalytic converter may be damaged.</u></b></p>
<b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b>

<b>AFTER REPAIR</b>	Deal with any other possible faults. Clear the fault memory.
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## Fault finding – Interpretation of Faults

<b>DF109 PRESENT</b>	<u>POLLUTANT MISFIRES</u> OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault detected when running
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<b>NOTES</b>	<p><i>Deal with the other faults first.</i></p> <p><b>Refer to statuses ET093, ET094, ET095 and ET096 to ascertain how many cylinders are misfiring.</b></p>
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<b>Misfiring on one cylinder</b>	<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"> <li>– Injector fault.</li> <li>– Spark plug fault (check conformity)</li> <li>– HT lead fault.</li> <li>– Ignition coil fault.</li> </ul>
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<b>Misfiring on cylinders 1 and 4 or 2 and 3</b>	<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"> <li>– Ignition coil fault.</li> </ul>
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<b>Misfiring on four cylinders</b>	<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"> <li>– check that the correct fuel is being used,</li> <li>– Check the condition and correct specification of the spark plugs.</li> </ul>
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<p><b>If the fault is still present, carry out the following checks:</b></p> <ul style="list-style-type: none"> <li>– Check the flywheel sensor.</li> <li>– Check the condition and cleanness of the flywheel.</li> <li>– Check the mounting of the flywheel sensor.</li> <li>– Check the sensor/flywheel air gap.</li> <li>– Check the cylinder compression.</li> <li>– Check the whole petrol supply circuit. (See the Workshop Repair Manual).</li> <li>– Check the whole ignition system. (See the Workshop Repair Manual).</li> </ul>	
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<b>AFTER REPAIR</b>	<p>Check that all faults have been dealt with.</p> <p>Clear the stored faults. It is not necessary to clear the programming.</p> <p>To prove that the system has been fully repaired:</p> <ul style="list-style-type: none"> <li>– There must be no remaining electrical faults.</li> <li>– Programming should have been carried out.</li> <li>– The engine should be warm (minimum 75°).</li> <li>– The engine should be running at idle speed with all electrical consumers switched on for 15 minutes.</li> </ul> <p>If the fault reappears, continue the fault finding procedure.</p>
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## Fault finding – Interpretation of Faults

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

## Fault finding – Interpretation of Faults

<b>DF116 PRESENT</b>	<u>FUEL SYSTEM OPERATING FAULT</u> OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault detected when running
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<b>NOTES</b>	<i>If faults relating to ignition or the petrol supply system are present, deal with them in priority.</i>
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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.
<b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b>

<b>AFTER REPAIR</b>	Deal with any other possible faults. Clear the fault memory.
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## Fault finding – Interpretation of Faults

<b>DF117 PRESENT</b>	<u>IMMOBILISER CODE NOT PROGRAMMED</u>
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<b>NOTES</b>	None.
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<ul style="list-style-type: none"><li>– Test the multiplex network.</li><li>– Refer to the Multiplex Network section in the Workshop Repair Manual.</li></ul>
<ul style="list-style-type: none"><li>– Carry out the fault finding procedure on the multi-timer unit.</li><li>– Refer to the multi-timer unit section in the Workshop Repair Manual.</li></ul>

<b>AFTER REPAIR</b>	None.
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## Fault finding – Interpretation of Faults

<b>DF118 PRESENT or STORED</b>	<b><u>REFRIGERANT PRESSURE SENSOR CIRCUIT</u></b> DEF : Unidentified electrical fault
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<b>NOTES</b>	<b><u>Conditions for applying the fault finding procedure to stored faults:</u></b> The fault is declared present when the ignition is switched on.
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Check **the cleanliness and condition** of the refrigerant pressure sensor and its connections.  
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 on 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.**

<b>AFTER REPAIR</b>	Follow the instructions to confirm repair: <ul style="list-style-type: none"><li>– Continue to deal with the fault if it is present.</li><li>– Ignore the fault if it is stored.</li></ul> Deal with any other possible faults. Clear the fault memory.
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## Fault finding – Interpretation of Faults

<b>DF120 PRESENT</b>	<u>O.B.D. 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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<b>NOTES</b>	<b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared present when the ignition is switched on.
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<b>DEF</b>	<p>Disconnect the battery.  Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections.  Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Computer track B3 connector A —————▶ Warning light unit</b></p> <p>(See connector track number in the corresponding wiring diagram).  Repair if necessary.</p> <p>Check the warning light unit on the instrument panel. (Refer to the <b>Instrument panel</b> section in the Repair Manual).  Check <b>the cleanliness and condition</b> of the warning light unit and its connections.  Clean or replace it if necessary.</p> <p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>
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<b>AFTER REPAIR</b>	<p>If the fault was characterised as CO.0, CC.1 or 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"> <li>– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.</li> <li>– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.</li> <li>– If the fault is present or stored and characterised as "OBD", ignore it.</li> </ul> <p>Deal with any other possible faults.  Clear the fault memory.</p>
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## Fault finding – Interpretation of Faults

<b>DF120</b> <b>CONTINUED</b>	
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<b>OBD</b>	<b>NOTES</b>	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".

<b>AFTER REPAIR</b>	If the fault was characterised as CO.0, CC.1 or 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"><li>– If the fault is present and characterised as "CO.0, CC.1 or DEF", continue to deal with the fault.</li><li>– If the fault is stored and characterised as "CO.0, CC.1 or DEF", ignore it.</li><li>– If the fault is present or stored and characterised as "OBD", ignore it.</li></ul> <p>Deal with any other possible faults. Clear the fault memory.</p>

## Fault finding – Interpretation of Faults

<p><b>DF123 PRESENT or STORED</b></p>	<p><u>THROTTLE POSITION POTENTIOMETER CIRCUIT GANG 1</u> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts</p>
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<p><b>NOTES</b></p>	<p><b>Important:</b> Never drive the vehicle without having checked that the computer is not showing any faults relating to the throttle valve.</p>
	<p><b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared present when the ignition is switched on.</p>


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

<p><b>AFTER REPAIR</b></p>	<p><b>If the throttle valve has been changed, reinitialise the programming (RZ008).</b> Follow the instructions to confirm repair: – Continue to deal with the fault if it is present. – Ignore the fault if it is stored. Deal with any other possible faults. Clear the fault memory.</p>
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## Fault finding – Interpretation of Faults

<b>DF124 PRESENT or STORED</b>	<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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<b>NOTES</b>	<b><u>Important:</u></b> Never drive the vehicle without having checked that the computer is not showing any faults relating to the throttle valve.
	<b><u>Conditions for applying the fault finding procedure to stored faults:</u></b> The fault is declared present when the ignition is switched on.

Check the <b>cleanliness and condition</b> of the connections on the throttle potentiometer. Replace any parts if necessary.
Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:  <div style="display: flex; justify-content: space-between; align-items: center;"> <div> <b>Computer track D3 connector B</b>  <b>Computer track G2 connector B</b>  <b>Computer track G4 connector B</b> </div> <div style="text-align: center;">  </div> <div> <b>Throttle potentiometer gang 2</b>  <b>Throttle potentiometer gang 2</b>  <b>Throttle potentiometer gang 2</b> </div> </div> (See the connector track numbers on the corresponding wiring diagram). Repair if necessary.
Check the <b>cleanliness</b> of the throttle valve, and that the throttle <b>rotates correctly</b> . Check that <b>gang 2</b> of the throttle potentiometer <b>correctly follows its resistive curve</b> . (See the values in the <b>HELP</b> section). Correct or change the throttle position potentiometer if necessary.
<b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b>

<b>AFTER REPAIR</b>	<b>If the throttle valve has been changed, reinitialise the programming (RZ008).</b> Follow the instructions to confirm repair: <ul style="list-style-type: none"> <li>– Continue to deal with the fault if it is present.</li> <li>– Ignore the fault if it is stored.</li> </ul> Deal with any other possible faults. Clear the fault memory.
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## Fault finding – Interpretation of Faults

<b>DF125 PRESENT or STORED</b>	<b><u>PEDAL POTENTIOMETER TRACK 1 CIRCUIT</u></b> CO.0 : Open circuit or short circuit to earth CC.1 : Short circuit to +12 volts									
<b>NOTES</b>	<b><u>Conditions for applying the fault finding procedure to stored faults:</u></b> The fault is declared present after the accelerator pedal goes from no load to full load.									
Check that the pedal is not mechanically seized.										
Check <b>the cleanliness and condition</b> of the pedal potentiometer connections. Replace any parts if necessary.										
Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:  <table><tr><td><b>Computer track H3 connector A</b></td><td><b>————→</b></td><td><b>Throttle potentiometer gang 1</b></td></tr><tr><td><b>Computer track G2 connector A</b></td><td><b>————→</b></td><td><b>Throttle potentiometer gang 1</b></td></tr><tr><td><b>Computer track H2 connector A</b></td><td><b>————→</b></td><td><b>Throttle potentiometer gang 1</b></td></tr></table> (See the connector track numbers on the corresponding wiring diagram). Repair if necessary.		<b>Computer track H3 connector A</b>	<b>————→</b>	<b>Throttle potentiometer gang 1</b>	<b>Computer track G2 connector A</b>	<b>————→</b>	<b>Throttle potentiometer gang 1</b>	<b>Computer track H2 connector A</b>	<b>————→</b>	<b>Throttle potentiometer gang 1</b>
<b>Computer track H3 connector A</b>	<b>————→</b>	<b>Throttle potentiometer gang 1</b>								
<b>Computer track G2 connector A</b>	<b>————→</b>	<b>Throttle potentiometer gang 1</b>								
<b>Computer track H2 connector A</b>	<b>————→</b>	<b>Throttle potentiometer gang 1</b>								
Check that <b>gang 1</b> of the pedal potentiometer <b>correctly follows its resistive curve</b> . (See the values in the <b>HELP</b> section). Change the pedal potentiometer if necessary.										
<b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b>										

<b>AFTER REPAIR</b>	Follow the instructions to confirm repair: <ul style="list-style-type: none"><li>– Continue to deal with the fault if it is present.</li><li>– Ignore the fault if it is stored.</li></ul> Deal with any other possible faults. Clear the fault memory.
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## Fault finding – Interpretation of Faults

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

<b>AFTER REPAIR</b>	Follow the instructions to confirm repair: <ul style="list-style-type: none"><li>– Continue to deal with the fault if it is present.</li><li>– Ignore the fault if it is stored.</li></ul> Deal with any other possible faults. Clear the fault memory.
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## Fault finding – Interpretation of Faults

<b>DF128 PRESENT or STORED</b>	<u>AUTOMATIC TRANSMISSION OR SEQUENTIAL GEARBOX CAN CONNECTION</u> DEF : Unidentified electrical fault OBD : OBD fault (On Board Diagnostic)
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<b>NOTES</b>	None.
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<b>Test the multiplex network.</b> <b>Refer to the Multiplex network section in the Workshop Repair Manual.</b>
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<b>AFTER REPAIR</b>	None.
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## Fault finding – Interpretation of Faults

DF129 PRESENT or STORED	<u>PEDAL POTENTIOMETER CIRCUIT</u> DEF : Consistency of pedal potentiometer tracks																		
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 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"><li>– When the ignition is switched on without the accelerator pedal being depressed for the first 10 seconds.</li><li>– During gradual switching of the pedal potentiometer from no load to full load condition.</li><li>– When the accelerator is in the full load position for 10 seconds.</li></ul>																		
<p>Check that the pedal is not mechanically seized.</p>																			
<p>Check <b>the cleanliness and condition</b> of the pedal potentiometer connections. Replace any parts if necessary.</p>																			
<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:</p> <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> <p>(See the connector track numbers on the corresponding wiring diagram). Repair if necessary.</p>		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																	
<p>Check that <b>gangs 1 and 2 of the pedal potentiometer</b> correctly follow their resistive curves. (See the values in the <b>HELP</b> section). Change the pedal potentiometer if necessary.</p>																			
<p><b>If the fault has still not disappeared, deal with the other faults and then proceed to the conformity check.</b></p>																			

<p><b>AFTER REPAIR</b></p>	<p>Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> <li>– Continue to deal with the fault if it is present.</li> <li>– Ignore the fault if it is stored.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>
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## Fault finding – Interpretation of Faults

<b>DF130 PRESENT or STORED</b>	<u>TRANSMISSION RATIO</u>
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<b>NOTES</b>	None.
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<ul style="list-style-type: none"><li>– Test the multiplex network.</li><li>– Refer to the Multiplex Network section in the Workshop Repair Manual.</li></ul>
<ul style="list-style-type: none"><li>– Carry out the fault finding procedure on the automatic transmission system.</li><li>– Refer to the Automatic transmission section in the Workshop Repair Manual.</li></ul>

<b>AFTER REPAIR</b>	None.
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## Fault finding – Interpretation of Faults

<p><b>DF136 PRESENT or STORED</b></p>	<p><u>ACCELERATOR PEDAL / MOTORISED THROTTLE VALVE CIRCUIT</u></p> <p>DEF : Consistency between the position of the pedal and the position of the motorised throttle valve</p> <p>1.DEF : Fault on +5 Volt supply 2.DEF : Fault on potentiometer supply 1 3DEF : Fault on potentiometer supply 2</p>
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<p><b>NOTES</b></p>	<p><b><u>Important:</u> Never drive the vehicle without having checked that the computer is not showing any faults relating to the throttle valve.</b></p>
	<p><i>If faults DF137, DF123, DF124, DF125, DF126, DF129 or DF002 are present, deal with them first.</i></p> <p><b><u>Conditions for applying the fault finding procedure to stored faults:</u></b> The fault is declared present after a change in the engine speed.</p>

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

<p><b>AFTER REPAIR</b></p>	<p><b>If the throttle valve has been changed, reinitialise the programming (RZ008).</b> Follow the instructions to confirm repair:</p> <ul style="list-style-type: none"> <li>– Continue to deal with the fault if it is present.</li> <li>– Ignore the fault if it is stored.</li> </ul> <p>Deal with any other possible faults. Clear the fault memory.</p>
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Fault finding – Interpretation of Faults

DF136

CONTINUED

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 potentiometer
Computer track D3 connector B	—————▶	Motorised throttle potentiometer
Computer track G2 connector B	—————▶	Motorised throttle potentiometer
Computer track G3 connector B	—————▶	Motorised throttle potentiometer

(See the connector track numbers on 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 throttle valve has been changed, reinitialise the programming (RZ008).**

Follow the instructions to confirm repair:

- Continue to deal with the fault if it is present.
- Ignore the fault if it is stored.

Deal with any other possible faults.

Clear the fault memory.

## Fault finding – Interpretation of Faults

<b>DF137 PRESENT or STORED</b>	<b><u>MOTORISED THROTTLE VALVE</u></b> DEF : Unidentified electrical fault 1.DEF: Motorised throttle valve servo control fault 2.DEF: Motorised throttle valve thrust stop search fault 3.DEF: General fault of the motorised throttle valve control
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<b>NOTES</b>	<b><u>Important:</u> Never drive the vehicle without having checked that the computer is not showing any faults relating to the throttle valve.</b>
	<b><u>Conditions for applying the fault finding procedure to stored faults:</u></b> The fault is declared present after a change in the engine speed.

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

<b>AFTER REPAIR</b>	<b>If the throttle valve has been changed, reinitialise the programming (RZ008).</b> Follow the instructions to confirm repair: <ul style="list-style-type: none"><li>– Continue to deal with the fault if it is present.</li><li>– Ignore the fault if it is stored.</li></ul> Deal with any other possible faults. Clear the fault memory.
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## Fault finding – Interpretation of Faults

<b>DF168 PRESENT or STORED</b>	<b>AIR INTAKE CIRCUIT</b> OBD : OBD fault (On Board Diagnostic) 1.OBD : OBD fault detected when running
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<b>NOTES</b>	<b><u>Important:</u> Never drive the vehicle without having checked that the computer is not showing any faults relating to the throttle valve.</b>
	<b><i>If faults DF123, DF124, DF125, DF126, DF129, DF136, DF137 or DF002 are present, deal with them first.</i></b> <b><u>Conditions for applying the fault finding procedure to stored faults:</u></b> The fault is declared present after a change in the engine speed.

**The inlet line must be perfectly tight, from the throttle valve to the cylinder head.**

Check:

- the tightness of the manifold pressure sensor,
- the seal between the throttle valve and the manifold,
- the canister bleed, which should not be jammed open,
- the tightness of the canister bleed circuit,
- the tightness of the brake servo circuit,
- the mounting of the manifold air temperature sensor,
- the absence of leaks between the inlet manifold and the cylinder head.

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

<b>AFTER REPAIR</b>	Follow the instructions to confirm repair: <ul style="list-style-type: none"><li>– Continue to deal with the fault if it is present.</li><li>– Ignore the fault if it is stored.</li></ul> Deal with any other possible faults. Clear the fault memory.
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Fault finding – Interpretation of Faults

DF283 PRESENT or STORED	<u>LPG SYSTEM</u>
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NOTES	None.
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Test the multiplex network (see **88B, Multiplexing**).  
Run fault finding on the LPG system if necessary (see **Technical Note 3490E, LPG injection fault finding**).

AFTER REPAIR	None.
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# INJECTION

## Fault finding – Conformity check

17B

<b>NOTES</b>	Ignition on, engine stopped.
	The values indicated in this conformity check are given as 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
<b>SUPPLY FUNCTION</b>				
1	Battery voltage	<b>ET001:</b> Computer + after ignition <b>PR004:</b> Computer feed voltage	<b>ACTIVE</b> $11.8 < X < 13.2 \text{ v}$	In the event of a fault: Refer to fault finding procedure PR004
<b>SENSOR FUNCTION</b>				
2	Engine flywheel signal	<i>Activate the starter motor:</i> <b>ET060:</b> Flywheel signal with engine running	<b>ACTIVE</b>	In the event of a fault: Refer to fault finding procedure PR060
3	Coolant temperature sensor	<b>PR002:</b> Coolant temperature	$X = \text{Engine temperature} \pm 5^{\circ}\text{C}$	In the event of a fault: Refer to fault finding procedure PR002
4	Air temperature sensor	<b>PR003:</b> Air temperature	$X = \text{Temperature under bonnet} \pm 5^{\circ}\text{C}$	In the event of a fault: Refer to fault finding procedure PR003
5	Atmospheric pressure sensor	<b>PR016:</b> Atmospheric pressure <b>PR001:</b> Manifold pressure	$X = 1020\text{mb}$ (Atmospheric pressure) $X = 1020\text{mb}$ (Atmospheric pressure)	In the event of a fault: Refer to fault finding procedure PR001



# INJECTION

## Fault finding – Conformity check

17B

<b>NOTES</b>	Ignition on, engine stopped.
	The values indicated in this conformity check are given as 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
<b>PEDAL ASSEMBLY FUNCTION</b>				
6	Accelerator pedal	<b>Accelerator pedal released</b>		
		ET129: Accelerator pedal position: No load	ACTIVE	In the event of a fault: Refer to fault finding procedure PR112
		ET128: Accelerator pedal position: Full load	INACTIVE	
		PR112 Measured pedal position	15° ± 2°	
		PR120: Pedal no load programming	15° ± 2°	
		<b>Accelerator pedal depressed slightly</b>		
		ET129: Accelerator pedal position: No load	INACTIVE	In the event of a fault: Refer to fault finding procedure PR112
		ET128: Accelerator pedal position: Full load	INACTIVE	
		<b>Accelerator pedal under full load</b>		
		ET129: Accelerator pedal position: No load	INACTIVE	In the event of a fault: Refer to fault finding procedure PR112
		ET128: Accelerator pedal position: Full load	ACTIVE	
		PR112 Measured accelerator pedal position	93° ± 4°	

# INJECTION

## Fault finding – Conformity check

**17B**

<b>NOTES</b>	Ignition on, engine stopped.
	The values indicated in this conformity check are given as 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	<b><i>Brake pedal released</i></b>  ET110: Brake pedal	<b>INACTIVE</b>	In the event of a fault: Refer to fault finding procedure ET110
		<b><i>Brake pedal depressed</i></b>  ET110: Brake pedal	<b>ACTIVE</b>	In the event of a fault: Refer to fault finding procedure ET110

# INJECTION

## Fault finding – Conformity check

17B

<b>NOTES</b>	Ignition on, engine stopped.
	The values indicated in this conformity check are given as 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
<b>MOTORISED THROTTLE VALVE FUNCTION</b>				
8	Motorised throttle valve	<b>Accelerator pedal released</b>		
		ET111: Programming throttle stops	ACTIVE	In the event of a fault: Switch off the ignition and wait for the 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: Refer to fault finding procedure PR017
		PR113: Reference position of the motorised throttle valve	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°	

# INJECTION

## Fault finding – Conformity check

17B

<b>NOTES</b>	Ignition on, engine stopped.
	The values indicated in this conformity check are given as 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
<b>MOTORISED THROTTLE VALVE FUNCTION</b>				
<b>8 (continued)</b>	<b>Motorised throttle valve</b>	<b>Accelerator pedal under full load</b>		
		<b>ET118:</b> Motorised throttle valve in defect mode	<b>INACTIVE</b>	<b>In the event of a fault: a fault is declared by the diagnostic tool</b>
		<hr/>		
		<b>ET131:</b> Motorised throttle valve open	<b>ACTIVE</b>	<b>In the event of a fault: Refer to fault finding procedure PR017</b>
		<b>PR113:</b> Reference position of the motorised throttle valve	<b>91° ± 4°</b>	
		<b>PR017:</b> Measured throttle valve position	<b>91° ± 4°</b>	
		<b>PR110:</b> Measured throttle valve position gang 1	<b>91° ± 4°</b>	
		<b>PR111:</b> Measured throttle valve position gang 2	<b>91° ± 4°</b>	
		<b>PR118:</b> Motorised throttle valve upper stop	<b>94° ± 4°</b>	

# INJECTION

## Fault finding – Conformity check

**17B**

<b>NOTES</b>	Ignition on, engine stopped.
	The values indicated in this conformity check are given as 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
<b>ACTUATOR CONTROLS</b>				
9	Fuel supply	<b>AC010:</b> Fuel pump relay	The fuel pump should be heard operating	In the event of a fault: Refer to fault finding procedure <b>AC010</b>
10	Motor-driven fan assembly	<b>AC271:</b> Low speed fan assembly relay	You should hear the fan running at low speed	In the event of a fault: Refer to fault finding procedure <b>AC271</b>
		<b>AC272:</b> High speed fan assembly relay	You should hear the fan running at high speed	In the event of a fault: Refer to fault finding procedure <b>AC272</b>
11	Canister bleed	<b>AC016:</b> Canister-bleed solenoid valve	You should hear the canister bleed solenoid running.	In the event of a fault: Refer to fault finding procedure <b>AC016</b>
12	Motorised throttle valve	<b>AC612:</b> Motorised throttle valve	The motorised throttle valve should be heard operating	In the event of a fault: Refer to fault finding procedure <b>AC612</b>

# INJECTION

## Fault finding – Conformity check

**17B**

<b>NOTES</b>	Engine warm at idle speed, no electrical consumers.
	The values indicated in this conformity check are given as 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
<b>Electrical supply function</b>				
1	Battery voltage	<b>ET001:</b> + after ignition feed <b>PR004:</b> Computer feed voltage	<b>ACTIVE</b> $13 < X < 14.5 \text{ V}$	In the event of a fault: Refer to fault finding procedure <b>PR004</b>
<b>Sensor function</b>				
2	Flywheel signal	<b>ET060:</b> Flywheel signal with engine running	<b>ACTIVE</b>	In the event of a fault: Refer to fault finding procedure <b>ET060</b>
3	Atmospheric pressure sensor	<b>PR016:</b> Atmospheric pressure <b>PR001:</b> Manifold pressure	$X = \text{Atmospheric pressure}$ $270 < X < 370 \text{ mb}$	In the event of a fault: Refer to fault finding procedure <b>PR001</b>
4	Pinking sensors	<b>PR013:</b> Pinking signal  <b>PR015:</b> Anti-pinking correction	Should not be equal to 0. Should change when engine speed changes.  $X \leq 5$	In the event of a fault: refer to fault finding procedure <b>PR013</b>

# INJECTION

## Fault finding – Conformity check

17B

<b>NOTES</b>	Engine warm at idle speed, no electrical consumers.
	The values indicated in this conformity check are given as 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
Fan function					
5	Fan assembly	PR002:	Coolant temperature	The fan assembly should cut in when the engine coolant temperature exceeds 99°C  <b>ACTIVE</b>	In the event of a fault: Refer to fault finding procedure ET035
		ET035:	Low speed fan assembly		
		PR002:	Coolant temperature	The fan assembly should cut in when the engine coolant temperature exceeds 102°C  <b>ACTIVE</b>	In the event of a fault: Refer to fault finding procedure ET036
		ET036 :	High speed fan assembly		
Idle speed regulation function					
6	Idle speed regulation	ET039:	Idle speed regulation	<b>ACTIVE</b>	In the event of a fault: Refer to fault finding procedure ET039
		PR006:	Engine speed	725 < X < 775 rpm	
		PR041:	Idle speed setpoint	725 < X < 775 rpm	
		PR055:	After Sales idle speed instruction	Between 0 and 16 rpm	
		PR040	Idle speed divergence	-25 < X < +25 rpm	
		PR022:	Idling cyclic opening ratio	5% < X < 15%	
		PR021:	Adaptive idling cyclic opening ratio	-6% < X < 6%	

# INJECTION

## Fault finding – Conformity check

**17B**

<b>NOTES</b>	Engine warm at idle speed, no electrical consumers.
	The values indicated in this conformity check are given as 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
<b>Richness regulation function</b>				
7	Richness ratio regulation	<b>ET037:</b> Richness regulation <b>PR009:</b> Upstream sensor voltage <b>PR035:</b> Richness ratio correction value	<b>ACTIVE</b> $20 < X < 800 \text{ mV}$ $0 < X < 255$	In the event of a fault: Refer to fault finding procedure <b>ET037</b>
<b>Oxygen sensor function</b>				
8	Upstream O <sub>2</sub> sensor	<b>ET030:</b> Upstream O <sub>2</sub> sensor heating  <b>ET157:</b> Upstream sensor status	<b>ACTIVE</b>  <b>ACTIVE</b>	In the event of a fault: Refer to fault finding procedure <b>ET030</b>  In the event of a fault: Refer to fault finding procedure <b>ET157</b>
9	Downstream O <sub>2</sub> sensor	<b>ET158:</b> Downstream sensor status  <b>ET031:</b> Downstream O <sub>2</sub> sensor heating	<b>ACTIVE</b>  <b>ACTIVE</b>	In the event of a fault: Refer to fault finding procedure <b>ET158</b>  In the event of a fault: Refer to fault finding procedure <b>ET031</b>



# INJECTION

## Fault finding – Conformity check

17B

<b>NOTES</b>	<b>Road test.</b>
	The values indicated in this conformity check are given as 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
<b>Sensor function</b>				
1	Pinking sensor	<b>Vehicle under load.</b>  <b>PR013:</b> Pinking signal  <b>PR015:</b> Anti-pinking correction	Should not be equal to 0. Should change when engine speed changes.  $X \leq 5$	<b>In the event of a fault:</b> <b>Refer to fault finding procedure PR013</b>
2	Atmospheric pressure sensor	<b>PR016:</b> Atmospheric pressure <b>PR001:</b> Manifold pressure	$X = \text{Atmospheric pressure}$ $270 < X < 365 \text{ mb}$	<b>In the event of a fault:</b> <b>Refer to fault finding procedure PR001</b>
<b>Pollutant emissions</b>				
3	Pollutant emissions	<b>2500 rpm after driving</b>    <b>At idle speed, wait for stabilisation</b>	$\text{CO} < 0.3\%$ $\text{CO}_2 > 13.5\%$ $\text{O}_2 < 0.8\%$ $\text{HC} < 100 \text{ ppm}$ $0.97 < 1 < 1.03$  $\text{CO} < 0.5\%$ $\text{HC} < 100 \text{ ppm}$ $0.97 < 1 < 1.03$	<b>In the event of a fault:</b> <b>Refer to the emission control technical note</b>

## Fault finding – Interpretation of statuses

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

AFTER REPAIR	Repeat the conformity check from the start.
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Fault finding – Interpretation of statuses

ET031	<u>DOWNSTREAM O2 SENSOR HEATING</u>
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NOTES	No faults should be present or stored.
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<p>Check the <b>cleanliness and condition</b> of the downstream oxygen sensor connections. Replace any parts if necessary.</p>
<p>Check the <b>heating resistance</b> of the downstream oxygen sensor. (See the value in the <b>HELP</b> section). Replace the downstream oxygen sensor if necessary.</p>
<p>With the ignition on, check for <b>+ 12 volts on track A</b> of the downstream oxygen sensor connector. Repair if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p><b>Computer track G3 connector C      —————▶      Downstream oxygen sensor</b></p> <p>(See connector track number in the corresponding wiring diagram). Repair if necessary.</p>

AFTER REPAIR	Repeat the conformity check from the start.
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Fault finding – Interpretation of statuses

ET035	<u>LOW-SPEED FAN ASSEMBLY</u>
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NOTES	No faults should be present or stored.
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Check the cleanliness and general condition of the fan (no sticking point).
Check <b>the cleanliness and condition</b> of the fan assembly relay connections. Replace any parts if necessary.
Disconnect the low speed fan relay. Check for <b>+12 Volts on track 3</b> on the connector side of the relay With the ignition on, check for <b>+12 V on track 1</b> on the connector side of the relay. Repair if necessary.
Check <b>the resistance of the low speed fan assembly relay</b> on <b>tracks 1 and 2</b> . (See the value in the <b>HELP</b> section). Change the low speed fan relay if necessary.
Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:  <b>Computer track F1 connector C —————&gt; Low speed fan assembly relay</b>  (See the connector track numbers on the corresponding wiring diagram). Repair if necessary.
Disconnect the low speed fan relay. Check <b>the insulation, continuity and the absence of interference resistance</b> of the connection between track 5 of the relay and the fan assembly. Repair if necessary.
Check <b>the insulation, continuity and the absence of interference resistance</b> 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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Fault finding – Interpretation of statuses

ET036	<u>HIGH-SPEED FAN ASSEMBLY</u>
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NOTES	No faults should be present or stored.
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Check the cleanliness and general condition of the fan (no sticking point).
Check <b>the cleanliness and condition</b> of the fan assembly relay connections. Replace any parts if necessary.
Disconnect the high speed fan relay. Check for <b>+12 Volts on track 3</b> of the connector side of the relay. With the ignition on, check for <b>+12 V on track 1</b> of the connector side of the relay. Repair if necessary.
Check <b>the resistance of the high speed fan assembly relay on tracks 1 and 2.</b> (See the value in the <b>HELP</b> section). Change the high speed fan relay if necessary.
Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:  <b>Computer track F2 connector C —————&gt; High-speed fan assembly relay</b>  (See connector track number in the corresponding wiring diagram). Repair if necessary.
Disconnect the high speed fan relay. Check <b>the insulation, continuity and the absence of interference resistance</b> of the connection between track 5 of the relay and the fan assembly. Repair if necessary.
Check <b>the insulation, continuity and the absence of interference resistance</b> 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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## Fault finding – Interpretation of statuses

<b>ET037</b>	<u><b>RICHNESS REGULATION</b></u>
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<b>NOTES</b>	No faults should be present or stored.
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<p>If the vehicle is driven frequently in towns, <b>decoke the upstream sensor and the catalytic converter.</b></p>
<p>Check that the upstream sensor is securely fixed. Check <b>the cleanliness, connection and condition of the</b> upstream oxygen sensor connector. Change the connector if necessary.</p>
<p>Check <b>the heating resistance</b> of the upstream oxygen sensor. (See the value in the <b>HELP</b> section). Replace the upstream oxygen sensor if necessary.</p>
<p>Check the <b>resistance of the upstream oxygen sensor signal circuit. (See the value in the HELP section).</b> Replace the upstream oxygen sensor if necessary.</p>
<p>With the ignition on, check for <b>+12 Volts on the</b> 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 <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:</p> <p style="margin-left: 40px;"> <b>Computer track C1 connector C</b> —————&gt; <b>Upstream oxygen sensor</b>  <b>Computer track B1 connector C</b> —————&gt; <b>Upstream oxygen sensor</b>  <b>Computer track G1 connector C</b> —————&gt; <b>Upstream oxygen sensor</b> </p> <p>(See the connector track numbers on the corresponding wiring diagram). Repair if necessary.</p>
<p>Check:</p> <ul style="list-style-type: none"> <li>– the condition of the air filter,</li> <li>– the condition and conformity of the spark plugs and ignition system,</li> <li>– the absence of leaks between the throttle valve and the inlet manifold,</li> <li>– the tightness of the air temperature sensor,</li> <li>– the tightness of the manifold pressure sensor,</li> <li>– the canister bleed, which should not be jammed open,</li> <li>– the tightness of the canister bleed circuit,</li> <li>– the tightness of the brake servo circuit,</li> <li>– the absence of leaks between the inlet manifold and the cylinder head,</li> <li>– the exhaust pipe from the cylinder head to the catalytic converter,</li> <li>– the petrol supply circuit and filter,</li> <li>– the fuel pressure,</li> <li>– the condition and cleanliness of the injectors,</li> <li>– if idling is unstable, the valve clearance and timing wires.</li> </ul>
<p>Change the oxygen sensor if the incident persists.</p>

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of statuses

<b>ET039</b>	<u>IDLE SPEED REGULATION</u>
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<b>NOTES</b>	No faults should be present or stored.
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<b>IDLE SPEED IS TOO LOW</b>	<b>Check:</b> <ul style="list-style-type: none"><li>– Check the engine oil level (too high =&gt; splashing).</li><li>– that the exhaust pipe is not blocked (catalytic converter deteriorated).</li><li>– the cleanliness and conformity of the air filter.</li><li>– that the air inlet circuit is not obstructed.</li><li>– that the throttle valve unit is not clogged.</li><li>– condition and conformity of spark plugs.</li><li>– the petrol supply circuit and filter.</li><li>– the absence of leaks in the petrol system.</li><li>– the fuel pressure.</li><li>– the condition and cleanliness of the injectors,</li><li>– the engine compression.</li><li>– the valve clearances and timing adjustments.</li></ul>
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<b>IDLE SPEED IS TOO HIGH</b>	<b>Check:</b> <ul style="list-style-type: none"><li>– the engine oil level (too high --&gt; oil combustion),</li><li>– that the restrictions are present in the oil vapour rebreathing circuit,</li><li>– the absence of leaks between the throttle valve and the inlet manifold,</li><li>– the tightness of the air temperature sensor,</li><li>– the tightness of the manifold pressure sensor,</li><li>– the canister bleed, which should not be jammed open,</li><li>– the tightness of the canister bleed circuit,</li><li>– the tightness of the brake servo circuit,</li><li>– the absence of leaks between the inlet manifold and the cylinder head,</li><li>– the petrol supply circuit and filter.</li><li>– the fuel pressure.</li><li>– the condition of the injectors (jammed open).</li><li>– the engine compression.</li><li>– the valve clearances and timing adjustments.</li></ul>
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<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of statuses

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

AFTER REPAIR	Repeat the conformity check from the start.
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## Fault finding – Interpretation of statuses

ET110	<u>BRAKE PEDAL</u>
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NOTES	No faults should be present or stored.
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Check the condition of the pedal assembly.
Check <b>the cleanliness and condition</b> of the dual-contact brake switch and its connections. Replace any parts if necessary.
Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:  <b>Computer track E4 connector A —————▶ Brake pedal</b>  (See connector track number 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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## Fault finding – Interpretation of statuses

<b>ET157</b>	<u>UPSTREAM SENSOR STATUS</u>
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<b>NOTES</b>	No faults should be present or stored.
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<p>If the vehicle is driven frequently in town, <b>decoke the upstream sensor and the catalytic converter.</b></p>
<p>Check that the upstream sensor is securely fixed. Check <b>the cleanliness, connection and condition</b> of the upstream oxygen sensor connector. Change the connector if necessary.</p>
<p>Check the <b>heating resistance of the upstream oxygen sensor. (See the value in the HELP section).</b> Replace the upstream oxygen sensor if necessary.</p>
<p>Check the <b>resistance of the upstream oxygen sensor signal circuit. (See the value in the HELP section).</b> Replace the upstream oxygen sensor if necessary.</p>
<p>With the ignition on, check for <b>+12 Volts</b> on the upstream oxygen sensor. (See connector track number in the corresponding wiring diagram). Repair if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the borner in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:</p> <p style="margin-left: 40px;"> <b>Computer track C1 connector C</b>    <b>—————▶ Upstream oxygen sensor</b>  <b>Computer track B1 connector C</b>    <b>—————▶ Upstream oxygen sensor</b>  <b>Computer track G1 connector C</b>    <b>—————▶ Upstream oxygen sensor</b> </p> <p>(See the connector track numbers on the corresponding wiring diagram). Repair if necessary.</p>
<p><b>Check:</b></p> <ul style="list-style-type: none"> <li>– the condition of the air filter,</li> <li>– the condition and conformity of the spark plugs and ignition system,</li> <li>– the absence of leaks between the throttle valve and the inlet manifold.</li> <li>– the tightness of the air temperature sensor,</li> <li>– the tightness of the manifold pressure sensor,</li> <li>– the canister bleed, which should not be jammed open,</li> <li>– the tightness of the canister bleed circuit,</li> <li>– the tightness of the brake servo circuit,</li> <li>– the absence of leaks between the inlet manifold and the cylinder head.</li> <li>– the exhaust pipe from the cylinder head to the catalytic converter,</li> <li>– the petrol supply circuit and filter</li> <li>– the fuel pressure,</li> <li>– the condition and cleanliness of the injectors,</li> <li>– if idling is unstable, the valve clearance and timing adjustment.</li> </ul>
<p>Change the oxygen sensor if the incident persists.</p>

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of statuses

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

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of parameters

<b>PR001</b>	<u>MANIFOLD PRESSURE</u>
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<b>NOTES</b>	No faults should be present or stored.
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<p>Check <b>the cleanliness, connection and condition</b> of the sensor and its connection. Replace any parts if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:</p> <p><b>Computer track H2 connector B</b>    ➔    <b>Pressure sensor</b> <b>Computer track H3 connector B</b>    ➔    <b>Pressure sensor</b> <b>Computer track H4 connector B</b>    ➔    <b>Pressure sensor</b></p> <p>(See the connector track numbers on the corresponding wiring diagram). Repair if necessary.</p>
<p>Check that the pressure sensor <b>is properly connected pneumatically</b> and that the pipe is in good condition.</p>
<p>Using a vacuum pump, check the <b>consistency of the manifold pressure</b>. Check the <b>consistency</b> with parameter <b>PR001</b> in the diagnostic tool. Replace the sensor if necessary.</p>
<p><b>If PR001 &gt; Maximum at idling speed:</b> Check the valve clearance. Check that the purge canister is closed at idling speed. Check the cylinder compressions.</p>
<p><b>The inlet line must be perfectly tight, from the throttle valve to the cylinder head.</b> Check:</p> <ul style="list-style-type: none"><li>– the tightness of the manifold pressure sensor,</li><li>– the seal between the throttle valve and the manifold,</li><li>– the mounting of the manifold air temperature sensor,</li><li>– the canister bleed, which should not be jammed open,</li><li>– the tightness of the canister bleed circuit,</li><li>– the tightness of the brake servo circuit,</li><li>– the absence of leaks between the inlet manifold and the cylinder head.</li></ul>

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of parameters

<b>PR002</b>	<u>COOLANT TEMPERATURE</u>
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<b>NOTES</b>	No faults should be present or stored.
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<p>Check the <b>cleanliness and condition</b> of the coolant temperature sensor connections. Replace any parts if necessary.</p>
<p>Check the <b>resistance</b> of the coolant temperature sensor at different temperatures. (See the values in the <b>HELP</b> section). Replace the coolant temperature sensor if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:</p> <p><b>Computer track F2 connector B</b> —————&gt; <b>Coolant temperature sensor</b> <b>Computer track F4 connector B</b> —————&gt; <b>Coolant temperature sensor</b></p> <p>(See the connector track numbers on the corresponding wiring diagram). Repair if necessary.</p>

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of parameters

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

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of parameters

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

## Fault finding – Interpretation of parameters

<b>PR013</b>	<u>PINKING SIGNAL</u>
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<b>NOTES</b>	No faults should be present or stored.
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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>
<p>Check that there is the correct fuel in the fuel tank.</p>
<p>Check the conformity of the spark plugs.</p>
<p>Check the <b>tightness</b> of the pinking sensor.</p>
<p>Check the <b>cleanliness and condition</b> of the sensor and its connections. Replace any parts if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:</p> <p> <b>Computer track A2 connector B</b> —————&gt; <b>Pinking sensor</b>  <b>Computer track B2 connector B</b> —————&gt; <b>Pinking sensor</b>  <b>Computer track C2 connector B</b> —————&gt; <b>Pinking sensor shielding</b> </p> <p>(See the connector track numbers on the corresponding wiring diagram). Repair if necessary.</p>
<p>If the fault is still present, replace the pinking sensor.</p>













<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of parameters

<b>PR017</b>	<u>MEASURED THROTTLE VALVE POSITION</u>
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<b>NOTES</b>	<b><u>Important:</u> Never drive the vehicle without having checked that the computer is not showing any faults relating to the throttle valve.</b>
	No faults should be present or stored.

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

<b>AFTER REPAIR</b>	<p>If the throttle valve has been changed, reinitialise the programming (RZ008).</p> <p>Repeat the conformity check from the start.</p>
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## Fault finding – Interpretation of parameters

<b>PR030</b>	<u><b>RICHNESS ADAPTIVE OPERATION</b></u>
<b>NOTES</b>	<p>No faults should be present or stored.</p> <p>If <b>PR030</b> or <b>PR031</b> is close to its minimum stop, the mixture is too rich.</p> <p>If <b>PR030</b> or <b>PR031</b> is close to its maximum stop, the mixture is too lean.</p>
<p>If the vehicle is driven frequently in town, <b>decoke the upstream sensor and the catalytic converter.</b></p>	
<p>Check that the upstream sensor is securely fixed.</p> <p>Check <b>the cleanliness, connection and condition of the</b> upstream oxygen sensor connector.</p> <p>Change the connector if necessary.</p>	
<p>Check <b>the heating resistance</b> of the upstream oxygen sensor. (See the value in the <b>HELP</b> section).</p> <p>Replace the upstream oxygen sensor if necessary.</p>	
<p>Check the <b>resistance of the upstream oxygen sensor signal circuit.</b> (See the value in the <b>HELP</b> section).</p> <p>Replace the upstream oxygen sensor if necessary.</p>	
<p>With the ignition on, check for <b>+ 12 Volts on track A</b> of the upstream oxygen sensor connector.</p> <p>(See connector track number in the corresponding wiring diagram).</p> <p>Repair if necessary.</p>	
<p>Disconnect the battery.</p> <p>Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections.</p> <p>Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connections:</p> <p><b>Computer track C1 connector C</b> —————&gt; <b>Upstream oxygen sensor</b></p> <p><b>Computer track B1 connector C</b> —————&gt; <b>Upstream oxygen sensor</b></p> <p><b>Computer track G1 connector C</b> —————&gt; <b>Upstream oxygen sensor</b></p> <p>(See the connector track numbers on the corresponding wiring diagram).</p> <p>Repair if necessary.</p>	
<p><b>Check:</b></p> <ul style="list-style-type: none"> <li>– the condition of the air filter,</li> <li>– the condition and conformity of the spark plugs and ignition system,</li> <li>– the absence of leaks between the throttle valve and the inlet manifold.</li> <li>– the tightness of the air temperature sensor,</li> <li>– the tightness of the manifold pressure sensor,</li> <li>– the canister bleed, which should not be jammed open,</li> <li>– the tightness of the canister bleed circuit,</li> <li>– the tightness of the brake servo circuit,</li> <li>– the absence of leaks between the inlet manifold and the cylinder head.</li> <li>– the exhaust pipe from the cylinder head to the catalytic converter,</li> <li>– the petrol supply circuit and filter</li> <li>– the fuel pressure,</li> <li>– the condition and cleanliness of the injectors,</li> <li>– if idling is unstable, the valve clearance and timing adjustment.</li> </ul>	
<p>Change the oxygen sensor if the incident persists.</p>	
<b>AFTER REPAIR</b>	Repeat the conformity check from the start.

## Fault finding – Interpretation of parameters

<b>PR112</b>	<u>MEASURED ACCELERATOR PEDAL POSITION</u>
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<b>NOTES</b>	No faults should be present or stored.
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Check that the pedal is not mechanically seized.																		
Check <b>the cleanliness and condition</b> of the pedal potentiometer connections. Replace any parts if necessary.																		
Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> 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 on 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 <b>the resistances of the pedal potentiometer, gangs 1 and 2</b> , correctly follow their resistive curves. (See the values in the <b>HELP</b> section). Change the pedal potentiometer if necessary.																		
Replace the potentiometer pedal if the fault persists.																		

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of commands

<b>AC010</b>	<u>FUEL PUMP RELAY</u>
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<b>NOTES</b>	No faults should be present or stored.
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Check <b>the supply fuse</b> of the fuel pump relay. Replace the fuse if necessary.
Check the <b>cleanliness and condition</b> of the fuel pump relay connections. Replace any parts if necessary.
Disconnect the relay. With the ignition on, check for <b>+12 V on track 1</b> on the connector side of the fuel pump relay. Repair if necessary.
Check <b>the resistance</b> of the fuel pump relay on <b>tracks 1 and 2</b> . (See the value in the <b>HELP</b> section). Replace the fuel pump relay if necessary.
Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:  <b>Computer track D1 connector C    —————&gt;    Fuel pump relay</b>  (See connector track number in the corresponding wiring diagram). Repair if necessary.
If the fault persists, change the relay.

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of commands

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

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of commands

<b>AC271</b>	<u>LOW-SPEED FAN RELAY</u>
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<b>NOTES</b>	No faults should be present or stored.
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<p>Check <b>the cleanliness and condition</b> of the low speed fan assembly relay connections. Replace any parts if necessary.</p>
<p>Disconnect the low speed fan relay. With the ignition on, check for <b>+12 V on track 1</b> of the relay. Repair if necessary.</p>
<p>Check <b>the resistance of the low speed fan assembly relay</b> on <b>tracks 1 and 2</b>. (See the value in the <b>HELP</b> section). Change the low speed fan relay if necessary.</p>
<p>Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:</p> <p style="text-align: center;"><b>Computer track F1 connector C</b> —————&gt; <b>Low speed fan assembly relay</b></p> <p>(See connector track number in the corresponding wiring diagram). Repair if necessary.</p>
<p>Check <b>the insulation, continuity and the absence of interference resistance</b> of the connection between track 5 of the relay and the fan assembly. Repair if necessary.</p>
<p>Check <b>the insulation, continuity and the absence of interference resistance</b> of the fan assembly earth connection. Repair if necessary.</p>
<p>Check the <b>condition</b> of the motor-driven fan assembly. Replace the fan assembly if necessary.</p>

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of commands

<b>AC272</b>	<u>HIGH-SPEED FAN RELAY</u>
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<b>NOTES</b>	No faults should be present or stored.
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Check the cleanliness <b>and condition</b> of the high speed fan assembly relay connections. Replace any parts if necessary.
Disconnect the high speed fan relay. With the ignition on, check for <b>+12 V on track 1</b> of the relay. Repair if necessary.
Check <b>the resistance of the high speed fan assembly relay</b> on <b>tracks 1 and 2</b> . (See the value in the <b>HELP</b> section). Change the high speed fan relay if necessary.
Disconnect the battery. Disconnect the computer. Check the <b>cleanliness and condition</b> of the connections. Connect the bornier in place of the computer and check the <b>insulation, continuity and absence of interference resistance</b> on the following connection:  <b>Computer track F2 connector C —————&gt; High speed fan assembly relay</b>  (See connector track number in the corresponding wiring diagram). Repair if necessary.
Check <b>the insulation, continuity and the absence of interference resistance</b> of the connection between track 5 of the relay and the fan assembly. Repair if necessary.
Check <b>the insulation, continuity and the absence of interference resistance</b> of the fan assembly earth connection. Repair if necessary.
Check the <b>condition</b> of the fan assembly. Replace the fan assembly if necessary.

<b>AFTER REPAIR</b>	Repeat the conformity check from the start.
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## Fault finding – Interpretation of commands

<b>AC612</b>	<u>MOTORISED THROTTLE VALVE</u>
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<b>NOTES</b>	<b><u>Important:</u> Never drive the vehicle without having checked that the computer is not showing any faults relating to the throttle valve.</b>
	No faults should be present or stored.

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

<b>AFTER REPAIR</b>	<p>If the throttle valve has been changed, reinitialise the programming (RZ008).</p> <p>Repeat the conformity check from the start.</p>
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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%
Ignition coils	→	Primary: 0.5 Ohm
Ignition coils	→	Secondary: 11 Kohms ± 20%
Flywheel sensor	→	230 Ohms ± 20%
Upstream oxygen sensor heating	→	9 Ohms ± 10%
Downstream oxygen sensor heating	→	9 Ohms ± 10%
Low speed fan assembly relay	→	65 Ohms ± 10%
High speed fan assembly relay	→	65 Ohms ± 10%

# INJECTION

## Fault finding – Help

**17B**

Values for variable resistance components:

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

<b>Accelerator pedal potentiometer (20°C)</b>		
No load position, track 1	Tracks G2 and H2, computer connector A <b>3245 Ohms ± 20%</b>	Tracks H3 and H2, computer connector A <b>1945 Ohms ± 20%</b>
Full load position, track 1	Tracks G2 and H2, computer connector A <b>1610 Ohms ± 20%</b>	Tracks H3 and H2, computer connector A <b>3100 Ohms ± 20%</b>
No load track 2	Tracks F2 and F3, computer connector A <b>4530 Ohms ± 20%</b>	Tracks F3 and F4, computer connector A <b>1925 Ohms ± 20%</b>
Full load track 2	Tracks F2 and F3, computer connector A <b>5600 Ohms ± 20%</b>	Tracks F3 and F4, computer connector A <b>5350 Ohms ± 20%</b>

MGI throttle potentiometer (20°C)		
Throttle position "Limp-home" gang 1 (Throttle position with engine stopped)	Tracks D3 and G2, computer connector B <b>1180 Ohms ± 20%</b>	Tracks D3 and G4, computer connector B <b>1910 Ohms ± 20%</b>
Throttle position fully open gang 1 (Keep throttle open manually)	Tracks D3 and G2, computer connector B <b>1935 Ohms ± 20%</b>	Tracks D3 and G4, computer connector B <b>735 Ohms ± 20%</b>
Throttle position "Limp-home" gang 2 (Throttle position with engine stopped)	Tracks G4 and G3, computer connector B <b>1045 Ohms ± 20%</b>	Tracks G3 and G2, computer connector B <b>1770 Ohms ± 20%</b>
Throttle position fully open gang 2 (Keep throttle open manually)	Tracks G4 and G3, computer connector B <b>1890 Ohms ± 20%</b>	Tracks G3 and G2, computer connector B <b>685 Ohms ± 20%</b>

## Fault finding – Customer complaints

### 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

IDLE SPEED FAULTS

ALP 3

FAULTS WHEN DRIVING

ALP 4

### AFTER REPAIR

Test using the diagnostic tool.

## Diagnostic – Fault finding charts

<b>ALP1</b>	<b>NO DIALOGUE WITH THE COMPUTER</b>
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<b>NOTES</b>	None.
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Check the <b>condition of the battery and the vehicle earths</b> . Repair if necessary.
Try the diagnostic tool on another vehicle.
<ul style="list-style-type: none"> <li>– Check the injection, engine and passenger compartment fuses.</li> <li>– Check the condition of the cable and the diagnostic socket.</li> <li>– Use the diagnostic socket to check the following tracks:</li> </ul> <div style="margin-left: 40px;"> <b>Track 1</b>            ➡ <b>+ After ignition feed</b>  <b>Track 16</b>          ➡ <b>+ Battery feed</b>  <b>Track 4 and 5</b>   ➡ <b>Earth</b> </div> <p>Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the <b>insulation, continuity, and absence of interference resistance</b> on the connections between:</p> <div style="margin-left: 40px;"> <b>Injection computer track H1 connector C</b> ➡ <b>Earth</b>  <b>Injection computer track H4 connector A</b> ➡ <b>Earth</b>  <b>Injection computer track G4 connector A</b> ➡ <b>Earth</b>  <b>Injection computer track B4 connector A</b> ➡ <b>Diagnostic socket track 7</b>  <b>Injection computer track A4 connector B</b> ➡ <b>+ After ignition</b>  <b>Injection computer track G2 connector C</b> ➡ <b>+ After ignition</b> </div> <p>Repair if necessary.</p>
Check <b>the connection and condition</b> of the connector of the injection actuator relay. Change the connector if necessary.
Check <b>the resistance</b> of the injection actuator relay. (See the value in the <b>HELP</b> section). Replace the actuator relay if necessary.
Check for <b>12 Volts on track 1</b> of the injection actuator relay. Repair the wire to the fuse.
<p>Check the insulation and continuity of the connection between:</p> <div style="margin-left: 40px;"> <b>Injection computer track D4 connector B</b> ➡ <b>Injection actuator relay</b> </div> <p>Repair if necessary.</p>

<b>AFTER REPAIR</b>	Test using the diagnostic tool.
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## Diagnostic – Fault finding charts

<b>ALP2</b>	<b>THE ENGINE WILL NOT START</b>
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<b>NOTES</b>	<p><b>Only refer to fault finding chart 2 after a complete check with the diagnostic tool.</b></p> <p>(Refer to the Workshop Repair Manual to execute certain commands).</p>
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<ul style="list-style-type: none"> <li>– Check the cleanliness and condition of the battery.</li> <li>– Check that the battery is correctly earthed to the vehicle body.</li> <li>– Check + battery connections.</li> <li>– Check the battery charge.</li> </ul>
<ul style="list-style-type: none"> <li>– Check that the starter motor is properly connected.</li> <li>– Check that the starter motor is operating correctly. (See the corresponding section in the Workshop Repair Manual).</li> </ul>
<p>If the starter motor does not engage, there may be an engine immobiliser fault.</p> <p>Check the multi-timer unit with the diagnostic tool.</p>
<ul style="list-style-type: none"> <li>– Check that the impact sensor is not switched on. Check that it is working.</li> </ul>
<ul style="list-style-type: none"> <li>– Check whether there is fuel in the tank (fuel gauge fault).</li> <li>– Check the conformity of the fuel in the tank.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the cleanliness and condition (cracking) of the ignition coil unit and the high voltage wires (continuity).</li> <li>– Check the condition and conformity of spark plugs.</li> <li>– Check the electrical resistance of the primary and secondary circuits of the ignition coils (see the value in the <b>HELP</b> section).</li> <li>– Check the attachment, cleanliness and condition of the flywheel signal sensor.</li> <li>– Check the position (air gap) of the flywheel signal sensor (see the value in the Workshop Repair Manual).</li> <li>– Check the electrical resistance of the flywheel signal sensor (see the value in the <b>HELP</b> section).</li> <li>– Check the condition of the flywheel.</li> </ul>
<ul style="list-style-type: none"> <li>– Check that the air inlet circuit is not obstructed.</li> </ul>
<ul style="list-style-type: none"> <li>– Check that the tank vent is not blocked.</li> <li>– Check that no hoses are pinched (especially after a removal operation).</li> <li>– Check the condition of the petrol filter.</li> <li>– Check that the fuel pump is operating correctly.</li> <li>– Check that there is no leak in the fuel circuit, from the fuel tank to the injectors.</li> <li>– Check fuel pressure.</li> <li>– Check that the injectors function properly (no seizing up).</li> </ul>
<ul style="list-style-type: none"> <li>– Check that the exhaust system is not blocked nor the catalytic converter clogged.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the engine compression.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the valve clearances and timing.</li> </ul>

<b>AFTER REPAIR</b>	Test using the diagnostic tool.
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## Diagnostic – Fault finding charts

<b>ALP3</b>	<b>IDLE SPEED FAULTS</b>
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<b>NOTES</b>	<p><b>Only refer to fault finding chart 3 after a complete check with the diagnostic tool.</b> (Refer to the Workshop Repair Manual to execute certain commands).</p>
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<ul style="list-style-type: none"> <li>– Check the cleanliness and good connection of the electrical earths.</li> <li>– Check the charge circuits.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the engine oil level.</li> <li>– Check that the restrictions are present in the oil vapour rebreathing circuit.</li> </ul>
<ul style="list-style-type: none"> <li>– Check that the exhaust pipe is not blocked (catalytic converter deteriorated).</li> </ul>
<ul style="list-style-type: none"> <li>– Check the cleanliness and conformity of the air filter.</li> <li>– Check that the air inlet circuit is not obstructed.</li> <li>– Check that the throttle valve unit is not clogged.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the absence of leaks between the throttle valve and the inlet manifold.</li> <li>– Check the tightness of the air temperature sensor,</li> <li>– Check the tightness of the manifold pressure sensor,</li> <li>– Check the canister bleed, which should not be jammed open,</li> <li>– Check the tightness of the canister bleed circuit.</li> <li>– Check the tightness of the brake servo circuit.</li> <li>– Check the absence of leaks between the inlet manifold and the cylinder head.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the cleanliness and condition (cracking) of the ignition coil unit and the high voltage wires (continuity).</li> <li>– Check the condition and conformity of spark plugs.</li> <li>– Check the electrical resistance of the primary and secondary circuits of the ignition coils (see the values in the <b>HELP</b> section).</li> <li>– Check the attachment, cleanliness and condition of the flywheel signal sensor.</li> <li>– Check the position (air gap) of the flywheel signal sensor (see the value in the Workshop Repair Manual).</li> <li>– Check the electrical resistance of the flywheel signal sensor (see the value in the <b>HELP</b> section).</li> <li>– Check the condition of the flywheel.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the conformity of the fuel.</li> <li>– Check that the tank vent is not blocked.</li> <li>– Check that no hoses are pinched (especially after a removal operation).</li> <li>– Check the condition of the petrol filter.</li> <li>– Check that the fuel pump is operating correctly.</li> <li>– Check that there is no leak in the fuel circuit, from the fuel tank to the injectors.</li> <li>– Check fuel pressure.</li> <li>– Check that the injectors function properly (no seizing up).</li> </ul>
<ul style="list-style-type: none"> <li>– Check the engine compression</li> </ul>
<ul style="list-style-type: none"> <li>– Check the valve clearances and timing.</li> </ul>

<b>AFTER REPAIR</b>	Test using the diagnostic tool.
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## Diagnostic – Fault finding charts

<b>ALP4</b>	<b>FAULTS WHEN DRIVING</b>
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<b>NOTES</b>	<p><b>Only refer to fault finding chart 4 after a complete check with the diagnostic tool.</b></p> <p>(Refer to the Workshop Repair Manual to execute certain commands).</p>
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<ul style="list-style-type: none"> <li>– Check the cleanliness and good connection of the electrical earths.</li> <li>– Check the charge circuits.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the engine oil level.</li> <li>– Check that the restrictions are present in the oil vapour rebreathing circuit.</li> </ul>
<ul style="list-style-type: none"> <li>– Check that the exhaust pipe is not blocked (catalytic converter deteriorated).</li> </ul>
<ul style="list-style-type: none"> <li>– Check the cleanliness and conformity of the air filter.</li> <li>– Check that the air inlet circuit is not obstructed.</li> <li>– Check that the throttle valve unit is not clogged.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the absence of leaks between the throttle valve and the inlet manifold.</li> <li>– Check the tightness of the air temperature sensor,</li> <li>– Check the tightness of the manifold pressure sensor,</li> <li>– Check the canister bleed, which should not be jammed open,</li> <li>– Check the tightness of the canister bleed circuit.</li> <li>– Check the tightness of the brake servo circuit.</li> <li>– Check the absence of leaks between the inlet manifold and the cylinder head.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the cleanliness and condition (cracking) of the ignition coil unit and the high voltage wires (continuity).</li> <li>– Check the condition and conformity of spark plugs.</li> <li>– Check the electrical resistance of the primary and secondary circuits of the ignition coils (see the values in the <b>HELP</b> section).</li> <li>– Check the attachment, cleanliness and condition of the flywheel signal sensor.</li> <li>– Check the position (air gap) of the flywheel signal sensor (see the value in the Workshop Repair Manual).</li> <li>– Check the electrical resistance of the flywheel signal sensor (see the value in the <b>HELP</b> section).</li> <li>– Check the condition of the flywheel.</li> </ul>
<ul style="list-style-type: none"> <li>– Check the conformity of the fuel.</li> <li>– Check that the tank vent is not blocked.</li> <li>– Check that no hoses are pinched (especially after a removal operation).</li> <li>– Check the condition of the petrol filter.</li> <li>– Check that the fuel pump is operating correctly.</li> <li>– Check that there is no leak in the fuel circuit, from the fuel tank to the injectors.</li> <li>– Check fuel pressure.</li> <li>– Check that the injectors function properly (no seizing up).</li> </ul>
<ul style="list-style-type: none"> <li>– Check the engine compression</li> </ul>
<ul style="list-style-type: none"> <li>– Check the valve clearances and timing.</li> </ul>

<b>AFTER REPAIR</b>	Test using the diagnostic tool.
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