



3 Chassis

38 ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

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FAULT FINDING - INTRODUCTION

This document outlines the fault finding procedure applicable to all DAE 45 A and 60 A (electric power assisted steering) computers fitted to the Clio II.

Computer type: DAE 45 A and 60 A.
Program No.: 52 for the 45 A.
21 for the 60 A.
Version no: 83 for the 45 A.
54 for the 60 A.
VDIAG No.: 04

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

- The Fault Finding Technical Note for the vehicle,
- The wiring diagram of the function for the vehicle concerned,
- The tools listed under Special tooling.

GENERAL APPROACH TO FAULT FINDING:

- Use one of the diagnostic tools to identify the system fitted to the vehicle (reading the electric power assisted steering computer group)
- Search for fault finding documents corresponding to the system identified.
- Take note of information contained in the introductory sections.
- Read the faults stored in the computer memory and use the Interpretation of Faults section of the documents.
Reminder: Each fault is interpreted for a particular type of storage (present fault, stored fault, present or stored fault). The checks defined for dealing with each fault are therefore only to be performed on the vehicle if the fault declared by the diagnostic tool is interpreted in the document for its type of storage. The way in which the fault is stored should be considered when using the diagnostic tool after the ignition has been switched off and on again. If a fault is interpreted when it is declared stored, the conditions for applying the fault finding procedure appear in the Notes box. If the conditions are not met, use the fault finding procedure to check the circuit of the faulty component, since the fault is no longer present on the vehicle. Perform the same procedure when a fault is declared as stored by the diagnostic tool but is only interpreted in the documentation as a present fault.
- Perform the conformity check (appearance of possible faults not yet stated by the system's self diagnosis procedure) and apply the associated fault finding procedure according to results.
- Confirm the repair (customer complaint disappears).
- Use the Customer complaints fault finding procedures if the fault persists.

FAULT FINDING - INTRODUCTION

Tooling required:

- CLIP and NXR diagnostic tools only.
- Multimeter.

Connect the wire to the diagnostic socket and switch on the ignition.

Clip or NXR:

- Switch on the diagnostic tool,
- Select the vehicle type,
- Select the area: Power assisted steering,
- Then follow the fault finding procedure described previously.

Note on when the electric power assisted steering warning light comes on:

- When starting: The warning light comes on without flashing for 3 seconds after top dead centre is reached.
- When certain faults are detected: The warning light is continuously on.
- During fault finding: The warning light flashes.

IMPORTANT

The repair method must be followed for all operations to replace parts on the electric power assisted steering system.

FAULT FINDING - INTERPRETATION OF FAULTS

DF002 PRESENT or STORED	<u>COMPUTER</u> 1.DEF: Supply relay permanently closed 2.DEF: Internal electrical fault
--------------------------------------------	-----------------------------------------------------------------------------------------------

NOTES	Processing priority in the event of a number of faults: This fault must be dealt with last.
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1.DEF	NOTES	none
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Replace the computer (refer to the repair methods).

2.DEF	NOTES	none
--------------	--------------	------

Replace the computer (refer to the repair methods).

AFTER REPAIR	Deal with any other faults. Switch off the ignition for 5 seconds. Switch on the ignition again. Clear the fault memory.
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FAULT FINDING - INTERPRETATION OF FAULTS

DF007 PRESENT or STORED	<u>VEHICLE SPEED SENSOR SIGNAL MISSING</u> 1.DEF: Inconsistency with engine speed 2.DEF: Vehicle speed signal fault
--------------------------------------------	---------------------------------------------------------------------------------------------------------------------------

NOTES	<p>Firstly check that the speed signal and the odometer on the instrument panel are working.</p> <p>If not, consult the fault finding procedure for the ABS, then for the instrument panel. Carry out any necessary repairs then, when driving, check with the diagnostic tool that the vehicle speed on the power assisted steering computer is not zero (PR003). If it is not, deal with this fault by following the procedure below.</p>
--------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

1.DEF	NOTES	none
--------------	--------------	------

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

Computer track 9 —————> ABS computer

Repair if necessary.

Carry out a road test and check with the diagnostic tool that the vehicle speed on the power assisted steering computer is not zero.

If this speed is not zero, the fault has been fixed; check the ABS fault finding procedure to confirm.

If not, replace the computer (refer to the repair methods).

Note:

Certain abnormal or exceptional driving conditions may cause this fault to arise, e.g.: raised engine speed when stopping (see: ALP 3 page 25).

2.DEF	NOTES	none
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Check that the speed signal is absent using parameter PR003.

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

Computer track 9 —————> ABS computer

Repair if necessary.

Carry out a road test and check with the diagnostic tool that the vehicle speed on the power assisted steering computer is not zero.

If this speed is correct, the fault (connections) has been fixed; check the ABS fault finding procedure to confirm.

If not, replace the computer (refer to the repair methods).

AFTER REPAIR	<p>Deal with any other faults.</p> <p>Switch off the ignition for 5 seconds.</p> <p>Switch on the ignition again.</p> <p>Clear the fault memory.</p> <p>Check for the speed signal using parameter PR003.</p>
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FAULT FINDING - INTERPRETATION OF FAULTS

DF028 PRESENT or STORED	<u>ENGINE SPEED ABSENT</u> 1.DEF: Engine speed signal inconsistent
--------------------------------------------	------------------------------------------------------------------------------

NOTES	Apply this fault finding procedure whether the fault is present or stored. Special note: If the engine speed signal on the instrument panel rev counter is not working, run the injection computer fault finding procedure.
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Start the engine and check the speed signal using the electric power assisted steering fault finding procedure (PR004). If the speed signal is correct, the fault has disappeared (the fault may be stored, but not present). This fault may have stemmed either from a faulty contact (check the appearance of the 20-track connector), or from a fault on the injection computer (run fault finding on the injection). Consider this fault to be solved. If the speed signal is incorrect, carry out the following procedure.	
Check the insulation and continuity of the connection between: Computer track 19 —————> Injection computer Repair if necessary. Start the engine and check the speed signal using the electric power assisted steering fault finding procedure (PR004). If the speed signal is incorrect, run fault finding on the injection. If no fault is detected during fault finding on the injection, replace the power assisted steering computer (refer to the repair methods).	
Note: Check the different functions using this signal. Repair if necessary.	

AFTER REPAIR	Deal with any other faults. Switch off the ignition for 5 seconds. Switch on the ignition again. Clear the fault memory. Check the engine speed signal using parameter PR004.
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FAULT FINDING - INTERPRETATION OF FAULTS

DF035 PRESENT or STORED	<u>VARIABLE POWER ASSISTED STEERING MOTOR</u> CC : Short circuit CC.0 : Short circuit to earth 1.DEF: Engine short circuit 2.DEF: Open circuit or Internal electrical fault
--------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

NOTES	If 2.DEF is shown as present, deal with it before the CC, CC.0 or 1.DEF (possibility of faulty connection of the engine to the computer).
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CC or CC.0 or 1.DEF	NOTES	none
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Disconnect the electric motor from the computer.

Switch on the ignition, without starting the engine and check the following points **without moving the steering wheel**:

- Check **the insulation between the following connections**:

Computer track 23	————→	+ Battery feed
Computer track 24	————→	+ Battery feed
Computer track 23	————→	Vehicle earth
Computer track 23	————→	Vehicle earth
Computer track 23	————→	Track 24 computer

If one of these tests is negative, replace the computer (refer to the repair methods).

- Check **the insulation between the following connections**:

Check the insulation between the following tracks, whilst gently turning the steering wheel:

Engine wiring track 23	————→	+ Battery feed
Engine wiring track 23	————→	Vehicle earth

If one of these tests is negative, replace the steering column (refer to the repair methods).

AFTER REPAIR	Deal with any other faults. Switch off the ignition for 5 seconds. Switch on the ignition again. Clear the fault memory.
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FAULT FINDING - INTERPRETATION OF FAULTS

DF035 CONTINUED	
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2.DEF	NOTES	If 2.DEF is shown as present, deal with it before CC, CC.0 or 1.DEF (possibility of faulty connection of the motor to the computer).
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Check the condition and connection of the power assisted steering motor connector. Repair if necessary.
Switch off the ignition and wait 5 minutes. Start the engine (with all connectors reconnected). Measure the voltage at terminals 23 and 24, without disconnecting the connector (pass the test tips along the length of the wires behind the connector). Turn the steering wheel approximately a half turn in one direction and then the other. Check that the voltage read at terminals 23 and 24 is inverted when the direction the steering wheel is turned changes. If no voltage can be read, check that the engine is correctly connected and start the test again.
Switch off the ignition for 5 seconds. Switch on the ignition again. Clear the fault memory. Carry out a road test. If the fault reappears as present, replace the steering column (refer to the repair methods).

AFTER REPAIR	Deal with any other faults. Switch off the ignition for 5 seconds. Switch on the ignition again. Clear the fault memory.
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FAULT FINDING - INTERPRETATION OF FAULTS

DF037 PRESENT or STORED	BATTERY VOLTAGE 1.DEF: Supply relay faulty contact
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NOTES	Special note: The fault finding procedure below is applied differently depending on whether the fault is shown as present or stored. If the fault is present, the engine must be started. Start the test by starting the engine, wait 3 seconds, then check if the fault is present or stored.
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1.DEF	NOTES	Fault present
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<p>Check the battery voltage. If this does not fall within the following range:</p> <p>9.5 volts < correct voltage < 16 volts</p> <p>Carry out the necessary operations to bring it within this range, if not carry out the following procedure.</p> <ul style="list-style-type: none"> – Check the battery charge. – Check the charge circuit. – Check the tightness and the condition of the battery terminals. <p>Check again that the fault is present. If the fault is no longer present, but stored, the repair has been carried out.</p>
<p>If the battery voltage falls within the following range:</p> <p>9.5 volts < correct voltage < 16 volts</p> <p>And the fault is still present, replace the computer (supply relay faulty contact).</p>

1.DEF	NOTES	Stored fault
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<p>A stored fault shows that the battery voltage has dropped in the past.</p> <ul style="list-style-type: none"> – Check the charge circuit. – Check the tightness and the condition of the battery terminals. <p><i>Finally, check for this fault on other computers and clear them from the fault finding procedure.</i></p>

AFTER REPAIR	<p>Deal with any other faults.</p> <p>Switch off the ignition for 5 seconds.</p> <p>Switch on the ignition again.</p> <p>Clear the fault memory.</p>
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DF038 PRESENT or STORED	ANGLE SENSOR CO : Open circuit or sensor out of order 1.DEF: Sensor supply fault
--------------------------------------------	-----------------------------------------------------------------------------------------------

NOTES	Priority when dealing with a number of faults: If both the CO and CC.0 faults arise, deal with CC.0 first, then carry out the test referred to in after repair (parameter PR121). If this test is correct, then consider fault CC.0 to be solved. If not, deal with it.
	Special notes: The angle sensor is located on the steering rack. It is not the angle sensor connected to the EPS.

CO	NOTES	None
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<p>Check the insulation and continuity of the following connections:</p> <p>Computer track 4 —————> Track 4 Steering wheel angle sensor Computer track 2 —————> Track 1 Steering wheel angle sensor Computer track 13 —————> Track 3 Steering wheel angle sensor Computer track 3 —————> Track 2 Steering wheel angle sensor</p> <p>Repair the electrical wiring and the connectors if necessary (see the angle sensor connector locating diagrams on page...).</p> <p>Start the vehicle and check to see if parameter PR121 varies when the steering wheel is turned from left to right. If parameter PR121 varies when the steering wheel is turned, the fault is fixed.</p> <p>With the engine started and the angle sensor connected, check the voltages between tracks 2 and 1 and between tracks 3 and 1 of the angle sensor. If these voltages change in turn from 0 V to 5 V when the steering wheel is turned, replace the power assisted steering computer (refer to the repair methods).</p>

AFTER REPAIR	After repair, start the vehicle and check that parameter PR121 varies when the steering wheel is turned. Deal with any other faults. Switch off the ignition for 5 seconds. clear stored faults.
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ELECTRONIC CONTROL SYSTEM

Electric power assisted steering

38

DF038
CONTINUED

NOTES

Priority when dealing with a number of faults:
If both the CO and CC.0 faults arise, deal with CC.0 first, then carry out the test referred to in after repair (parameter PR121). If this test is correct, then consider fault CC.0 to be solved. If not, deal with it.

Special notes:
The angle sensor is located on the steering rack.
It is not the angle sensor connected to the EPS.

1.DEF

NOTES

None

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

Computer track 4 —————→ **Track 4 Steering wheel angle sensor**
Computer track 2 —————→ **Track 1 Steering wheel angle sensor**
Computer track 13 —————→ **Track 3 Steering wheel angle sensor**
Computer track 3 —————→ **Track 2 Steering wheel angle sensor**

Repair the electrical wiring and the connectors if necessary.

Reconnect the 20-track connector to the computer (do not reconnect the harness on the angle sensor side).
Switch on the ignition without starting the engine, then check for a voltage of $5\text{ V} \pm 0.8\text{ V}$ between track 4 of the angle sensor wiring harness and the vehicle earth.
If this voltage cannot be detected, switch off the ignition and check the appearance of the 20-track connector again.
If no fault is found, replace the computer (refer to the repair methods).

Reconnect the 20-track connector. With the ignition and the engine switched off, (do not reconnect the wiring harness on the angle sensor side) check that the resistance between track 1 of the wiring harness angle sensor side and the vehicle earth is zero (test 1).
If the resistance is not zero, disconnect the 20-track connector and check that the resistance between track 2 of the computer and the vehicle earth is zero (test 2).
If both tests are positive, move on to the next step.
If test 1 is negative and test 2 is positive, the fault is stemming from the wiring harness or from its connection.
If both the tests are negative, replace the computer (refer to the repair methods).

Check the resistance between track 4 of the steering wheel angle sensor and the vehicle earth.
If the resistance is $< 1\ \Omega$ then the angle sensor has a short circuit to earth, replace the steering (refer to the repair methods).

AFTER REPAIR

After repair, start the vehicle and check that parameter PR121 varies when the steering wheel is turned.
Deal with any other faults.
Switch off the ignition for 5 seconds.
clear stored faults.

ELECTRONIC CONTROL SYSTEM

Electric power assisted steering

FAULT FINDING - INTERPRETATION OF FAULTS

<p>DF040 PRESENT or STORED</p>	<p><u>TORQUE SENSOR CIRCUIT</u> 1.DEF: Sensor internal electrical fault</p>
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<p>NOTES</p>	<p>If faults DF048, DF049 or DF050 are present or stored, deal with them first. DF040 must be dealt with differently depending on whether the fault is shown as present or stored.</p>
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<p>Once faults DF048, DF049 and DF050 have been dealt with, if arising, switch off the engine for 5 seconds, restart the engine and turn the steering wheel a half-turn. Refer to the fault finding procedure to confirm whether fault DF040 is present or stored.</p>	
<p>If the fault is present, replace the column (refer to the repair methods).</p>	
<p>If the fault is stored, check the condition and the appearance of the 20-track connectors and the torque sensor, and repair if necessary. Consider this fault to be solved.</p>	

<p>AFTER REPAIR</p>	<p>Deal with any other faults. Switch off the ignition for 5 seconds. Switch on the ignition again. Clear the fault memory.</p>
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FAULT FINDING - INTERPRETATION OF FAULTS

DF048 PRESENT or STORED	<u>TORQUE SENSOR CIRCUIT</u> CC : Torque sensor supply short circuit
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NOTES	None
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Check the insulation and continuity of the connections between: <div>Computer track 8 —————> Track 1 Torque sensor</div> <div>Computer track 6 —————> Track 3 Torque sensor</div> Repair if necessary.	
Reconnect the connector on the torque sensor side (leave the 20-track connector disconnected). Check the insulation between the following connections: <div>20-track connector track 8 —————> 20-track connector, track 6</div> <div>20-track connector track 8 —————> Vehicle earth</div> <div>20-track connector track 6 —————> Vehicle earth</div> If the resistance is < 1 Ω, replace the steering column (refer to the repair methods).	
Disconnect the 20-track connector, check the insulation between the connection: <div>Computer track 8 —————> Track 6 Computer</div> If the resistance is < 1 Ω, replace the computer (refer to the repair methods).	
Reconnect the 20-track connector, disconnect the torque sensor, and switch on the ignition. Check for a voltage of 8 volts between: <div>Torque sensor wiring harness track 1 —————> Torque sensor wiring harness track 6</div> If this voltage cannot be detected, replace the computer (refer to the repair methods).	

AFTER REPAIR	Deal with any other faults. Switch off the ignition for 5 seconds. Switch on the ignition again. Clear the fault memory.
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FAULT FINDING - INTERPRETATION OF FAULTS

DF050 or DF049 PRESENT or STORED	<u>TORQUE SENSOR CIRCUIT SIGNAL 1 (DF049)</u> <u>TORQUE SENSOR CIRCUIT SIGNAL 2 (DF050)</u> CO.0 : Open circuit or short circuit to earth
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NOTES	Priority when dealing with more than one fault: If faults DF049 and DF050 reappear as present at the same time, then test track 1 of the torque sensor straight away.
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Check the insulation and continuity of the connections between: Computer track 8 —————> Track 1 Torque sensor Computer track 7 —————> Track 4 Torque sensor Computer track 17 —————> Track 2 Torque sensor Computer track 6 —————> Track 3 Torque sensor Repair if necessary.	
Reconnect the 20-track connector to the computer (do not reconnect the harness on the torque sensor side). Switch on the ignition without starting the engine, then check for a voltage of 8 V ± 0.5 V between track 1 of the torque sensor wiring harness and the vehicle earth. If this voltage cannot be detected, switch off the ignition and check the appearance of the 20-track connector again. If no fault is found, replace the computer (refer to the repair methods).	
With the ignition and the engine switched off and the 20-track connector connected, check the resistance between track 3 of the wiring harness torque sensor side and the vehicle earth. If the resistance is not < 1 Ω, check the appearance of the 20-track connector again. If no fault is found, replace the computer (refer to the repair methods).	
With the ignition and the engine switched of and the torque sensor connector connected, check the continuity and the insulation between tracks 1, 2, 3, and 4 of the torque sensor and the vehicle earth. If the resistance is < 1 Ω, then the steering column must be replaced (refer to the repair methods).	

AFTER REPAIR	Deal with any other faults. Switch off the ignition for 5 seconds. Switch on the ignition again. Clear the fault memory.
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FAULT FINDING - INTERPRETATION OF FAULTS

DF049 and DF50 CONTINUED	
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NOTES	Priority when dealing with more than one fault: If faults DF049 and DF050 reappear as present at the same time, then test track 1 of the torque sensor straight away.
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<p>With the ignition and the engine switched off and the 20-track connector connected, check the resistance between tracks 2 and 3 of the wiring harness torque sensor side. If this resistance is not approximately 500 ± 50, disconnect the 20-track connector and check its appearance. Repair if necessary. Reconnect the 20-track connector and run the test again. If the resistance is still not approximately $500 \pm 50 \Omega$, replace the computer (refer to the repair methods).</p>	
<p>With the ignition and the engine switched off and the 20-track connector connected, check the resistance between tracks 4 and 3 of the wiring harness torque sensor side. If this resistance is not approximately 500 ± 50, disconnect the 20-track connector and check its appearance. Repair if necessary. Reconnect the 20-track connector and run the test again. If the resistance is still not approximately $500 \pm 50 \Omega$, replace the computer (refer to the repair methods).</p>	

AFTER REPAIR	Deal with any other faults. Switch off the ignition for 5 seconds. Switch on the ignition again. Clear the fault memory.
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FAULT FINDING - INTERPRETATION OF STATUSES

ET021	<u>MOTOR THERMAL PROTECTION INDICATOR</u>
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<p>Technical protection limits the assistance in order to protect the system from heat. If the electric power assisted steering is overloaded, the setpoint current is lowered to ensure that certain components are protected from the heat. The level of assistance decreases as a consequence. To deactivate the technical protection, the steering must not be used for a maximum of 1 hour.</p> <p>Note: If the technical protection is activated, stored faults cannot be cleared</p>

AFTER REPAIR	Check using the diagnostic tool.
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FAULT FINDING - INTERPRETATION OF PARAMETERS

PR003	<u>VEHICLE SPEED</u>
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NOTES	To read this parameter, the engine speed must be present. There must be no present or stored faults.
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If the speed is not consistent with the actual speed of the vehicle, refer to the fault finding procedure for fault DF007.

AFTER REPAIR	Check using the diagnostic tool.
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FAULT FINDING - INTERPRETATION OF PARAMETERS

PR108	<u>COMPUTER SUPPLY VOLTAGE</u>
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NOTES	<p>To enable communication, the voltage must be within the following range:</p> <p>5 volts < computer voltage < 16 volts</p> <p>There must be no present or stored faults. No electrical consumers.</p>
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Ignition on

<p>If the voltage < Minimum, the battery is discharged: Check the charging circuit to determine the cause of this fault.</p>
<p>If the voltage > Maximum, the battery may be overcharged: Check that the charging voltage is correct with and without electrical consumers switched on.</p>

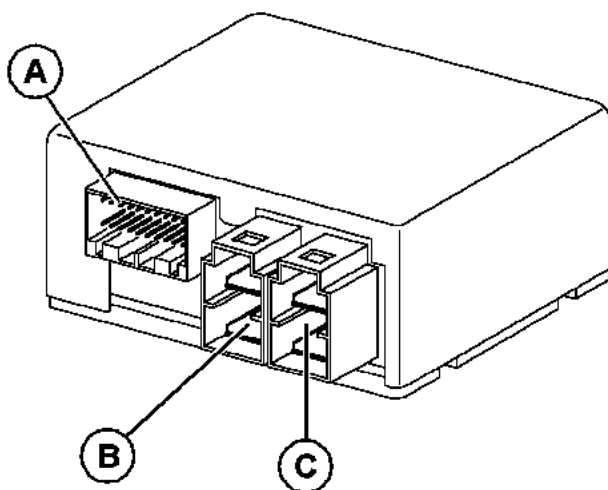
At idle speed

<p>If the voltage < 10 volts, the charging voltage is too low: Check the charge circuit to determine the cause of this fault.</p>
<p>If the voltage > 16 volts, the charging voltage is too high: The alternator regulator is faulty. Rectify this fault.</p>

AFTER REPAIR	Restart the conformity check from the beginning.
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FAULT FINDING - HELP

Location of the power assisted steering computer connectors:



20707

Key:

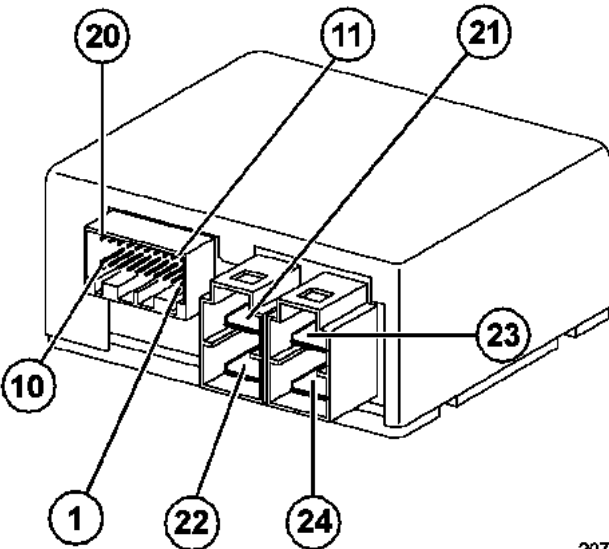
A : 20-track computer connector.

B : 2-track computer supply voltage connector.

C : 2-track connector for controlling the variable power assisted steering motor.

FAULT FINDING - HELP

Power assisted steering computer:



1	Not connected	11	Electric power assisted steering warning light
2	Angle sensor earth	12	
3	Angle sensor signal 1	13	Angle sensor signal 2
4	Angle sensor + 12 volts	14	Not connected
5	Test terminal	15	K line
6	Torque sensor earth	16	
7	Torque sensor signal	17	Torque sensor shielding
8	Torque sensor supply	18	Not connected
9	Vehicle speed signal	19	Engine speed
10	+ after ignition feed	20	

Power assisted steering computer supply:

21	+ B	+ battery
22	GND	Earth -

Power assisted steering computer power:

23	+ M	+ Motor
24	- M	- Motor

FAULT FINDING - HELP

THE VARIOUS FUSES RELATING TO THE ELECTRIC STEERING ASSISTANCE

1) Passenger compartment fuse board:

No.	Symbol	Rating	Description
F2		15 A	Brake light - Diagnostic socket - Instrument panel - Cruise control - Gear change pattern control
F39		15 A	Electric power assisted steering (EPAS)

2) Engine fuse board:

No.	Symbol	Rating	Description
F14		80 A	Electric power assisted steering (EPAS) supply

FAULT FINDING - HELP**For greater precision, refer to the Technical Note dealing with your vehicle**

Description	Measuring range	Functional range	Tool name
Supply voltage	0 to 30 volts	10 to 16 volts	PR108
Torque sensor	± 8.256 Nm	± 8.256 Nm	PR117
Motor reference current	0 to 57.38 A or 0 to 76.5 A	0 to 45 A or 0 to 60 A	PR120
Motor current measured	0 to 57.38 A	0 to 45 A or 0 to 60 A	PR118
Vehicle speed	0 to 153 mph (0-255 km/h)	0 to 153 mph (0-255 km/h)	PR003
Engine speed	0 to 5100 rpm	0 to 5100 rpm	PR004
Steering wheel angle	- 384° to + 381°(*)		PR121
Maximum assistance	V < 5 mph (8 km/h)		
Minimum assistance	V > 42-48 mph (70-80 km/h)		
Thermal protection condition	0 : not active 1 : active -assistance limited		ET021
Calculation of zero	0 : zero position not detected 1 : zero position detected		PR020

Assistance is maximum for speeds < 5 mph (8 km/h).

Assistance is minimum for speeds > 42-48 mph (70-80 km/h).

(*) The value of the angle is relative so long as the calculation of zero has not been carried out.
It becomes absolute, and therefore centred in relation to the position of the right-hand wheel, when the calculation of zero has been carried out.

FAULT FINDING - HELP

CF085: STEERING WHEEL ANGLE SENSOR PROGRAMMING PROCEDURE

IMPORTANT

Computer 45 A cannot be configured.

Computer 60 A contains four different tunings. It is therefore necessary to select the assistance strategy appropriate to the computer fitting. (See the table of assistance on page 23).

The computer is supplied with the default calibration strategy <<0>>.

It is impossible to calibrate the computer if the vehicle is not stationary.

The different levels of assistance:

- Level 0: Minimum assistance
- Level 1: Intermediate assistance
- Level 2: Assistance specific to driving school vehicles
- Level 3: Maximum assistance

IMPORTANT

An inappropriate calibration level can lead to a reduction in performance.

Note:

To check that the calibration has been carried out correctly, consult the identification screen:

- ID008: CALIBRATION NUMBER (Example: for a **60 Ah** computer with a **Level 3 calibration** —> **6003**)

FAULT FINDING - HELP

Criteria for allocating assistance strategies

General criteria:

With wheel 185/55 R15 on D4F or D7F
set the DAE 60 A to strategy Level: 1

If a driving school vehicle
set the DAE 60 A to strategy Level: 2

45 A computer: 8 200 061 924

x

Default calibration

VEHICLE TYPE:
BBXX 5-door hatch
CBXX 3-door hatch
LBXX 4-door hatch
SBXX Utility vehicle

60 A computers: 8 200 092 424 8 200 149 673		No change in the equipment strategy	
Strategy 3	Level 3	=	
Strategy 2	Level 2		
Strategy 1	Level 1		
Strategy 0	Level 0		

Engine suffixes	E1 BBXX	E1 CBXX	E1 SBXX	E2 BBXX	E2 CBXX	E3 BXX	E3 CBXX
D4F 712	x	x		x	x	1	1
D7F 746	x	x	x	x	x	1	1
D7F 764	x	x	x	x	x	1	1
D7F 726	x	x		x	x	1	1
D7F 746	x	x	x	x	x	1	1
F9Q 782				0	0		
K4J 710				0	0	0	0
K4J 711				0	0	0	0
K4M 744						3	3
K4M 745						3	3
K4M 746			3				
K9K 704	0	0	0	0	0		
K9K 702			0	0	0	0	0
K9K 710			0				

FAULT FINDING - HELP

Criteria for allocating assistance strategies

General criteria:

With wheel 185/55 R15 on D4F or D7F
set the DAE 60 A to strategy Level: 1

If a driving school vehicle
set the DAE 60 A to strategy Level: 2

45 A computer: 8 200 061 924

x

Default calibration

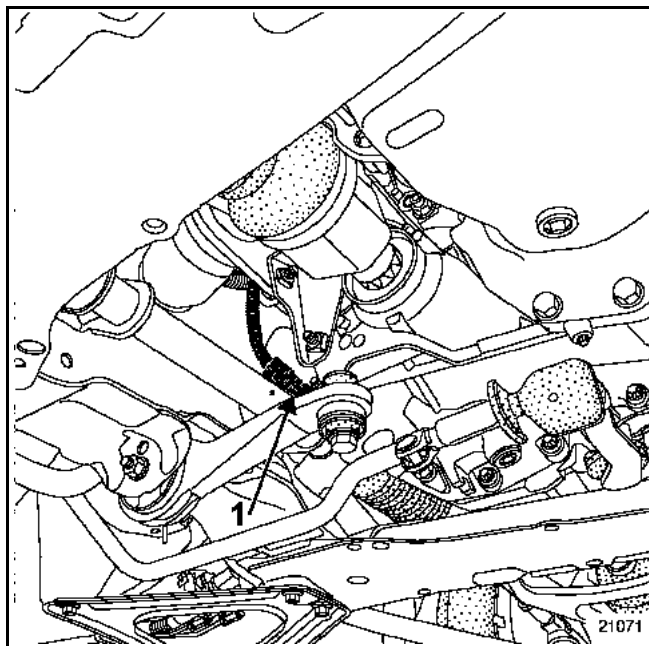
VEHICLE TYPE:
BBXX 5-door hatch
CBXX 3-door hatch
LBXX 4-door hatch
SBXX Utility vehicle

60 A computers: 8 200 092 424 8 200 149 673		No change in the equipment strategy		
Strategy 3	Level 3	<table border="1"><tr><td>=</td></tr></table>		=
=				
Strategy 2	Level 2			
Strategy 1	Level 1			
Strategy 0	Level 0			

Engine suffixes	E5 BBXX	E5 CBXX	ES BBXX	ES CBXX	if driving school vehicle	if alloy wheel
D4F 712			1	1	2	1
D7F 746					2	
D7F 764					2	
D7F 726						
D7F 746					2	
F9Q 782						=
K4J 710	0	0	3	3		=
K4J 711	0	0				=
K4M 744	3	3	3	3		=
K4M 745	3	3				=
K4M 746						=
K9K 704			3	3	2	=
K9K 702	0	0	3	3	2	=
K9K 710						=

FAULT FINDING - HELP

Location of the steering wheel angle sensor:



Key:

1 - Steering wheel angle sensor

FAULT FINDING - CUSTOMER COMPLAINTS

NOTES	Customer complaints should only be investigated after a complete check with the diagnostic tool.
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NO DIALOGUE WITH THE COMPUTER	ALP 1
LOSS OF VEHICLE ASSISTANCE WITHOUT WARNING	ALP 2
WARNING LIGHT COMES ON ERRATICALLY	ALP 3
UNEVEN ASSISTANCE UNDER ASSISTANCE OR OVER ASSISTANCE	ALP 4

FAULT FINDING - FAULT FINDING CHARTS

ALP 1	NO DIALOGUE WITH THE COMPUTER
NOTES	None
Check the vehicle's battery voltage.	
Try the diagnostic tool on another computer on the same vehicle or a different one.	
Check: – The connection between the diagnostic tool and the diagnostic socket (lead in good condition). – The fuses for electric power assisted steering, engine and passenger compartment. Repair if necessary.	
Check for + 12 volts on track 16 and for earth on track 5 and track 4 of the diagnostic socket. Repair if necessary.	
Check the insulation, continuity and the absence of interference resistance on the connections between: Computer track 22 —————> Earth Computer track 15 —————> Track 7 Diagnostic socket Repair if necessary.	

AFTER REPAIR	Check using the diagnostic tool.
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FAULT FINDING - FAULT FINDING CHARTS

ALP 2	LOSS OF VEHICLE ASSISTANCE WITHOUT WARNING						
NOTES	Only consult this customer complaint after a complete check with the diagnostic tool.						
<p>The vehicle is no longer assisted if the electric power assisted steering fuse is damaged or the power supply is lost.</p> <p>The steering is then the same as for manual steering, manoeuvrable when driving even at low speed, but very difficult to manoeuvre when stopped.</p> <p>With no power supply, the electric power assisted steering computer is no longer capable of switching the warning light on and so the driver is not made aware of the fault.</p> <p>The driver will only detect the fault by noticing the loss of assistance to the steering wheel.</p>							
<p>Check fuse F39 on the passenger compartment fuse board and fuse F14 on the engine fuse board.</p> <p>Change the fuses if necessary.</p>							
<p>Check the computer supply voltage:</p> <table><tr><td>Computer track 10</td><td>————→</td><td>Vehicle earth</td></tr><tr><td>Computer track 21</td><td>————→</td><td>Vehicle earth</td></tr></table> <p>Repair if necessary.</p>		Computer track 10	————→	Vehicle earth	Computer track 21	————→	Vehicle earth
Computer track 10	————→	Vehicle earth					
Computer track 21	————→	Vehicle earth					

AFTER REPAIR	Check using the diagnostic tool.
--------------	----------------------------------

FAULT FINDING - FAULT FINDING CHARTS

ALP 3	WARNING LIGHT COMES ON ERRATICALLY
NOTES	Only consult this customer complaint after a complete check with the diagnostic tool.
<p>The EPAS safe mode and the petrol engine management defect mode are currently incompatible in the event of a motorised throttle fault.</p> <p>When there is a fault concerning the engine, one of the engine management computer defect modes consists of positioning the valve in a fixed position, so that the engine speed is kept above 2500 rpm in order to enable the vehicle to get home or to a garage.</p> <p>If, during such a fault, the driver stops at the side of the road with the engine running for 20 seconds, the EPAS safe mode starts up:</p> <p>vehicle speed = 0 and engine speed > 2500 rpm, the EPAS computer starts up a safe mode which means the EPAS warning light comes on and the steering becomes exceptionally heavy.</p> <p>If the driver drives off, when the vehicle speed is above 3 mph (5 km/h), the vehicle will once again be assisted and the EPAS warning light will go out.</p>	
<p>Refer to the fault finding procedure for Fault: DF007, if Present.</p> <p>If Stored then clear this fault.</p>	

AFTER REPAIR	Check using the diagnostic tool.
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FAULT FINDING - FAULT FINDING CHARTS

ALP 4	UNEVEN STEERING UNDER ASSISTANCE OR OVER ASSISTANCE
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool.
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<p>Before any operations, look at the EPAS computer calibration on the Identification screen.</p> <p>For the same steering wheel angle (positive or negative) in relation to the centre point of the steering, the driver will feel a different steering assistance (in general, over assistance or 'increased effort').</p> <p>In this case, the driver must check Parameter: PR117 (EPAS motor torque), with the vehicle stationary, without moving the steering wheel.</p> <p>This parameter must be within the following tolerance: from 0 to ± 0.3 Nm.</p> <p>If it is not in this tolerance range, then replace the steering column (refer to the repair methods).</p> <p>If parameter PR117 is within the tolerances and if there are no present or stored faults, then check the front axle and carry out a road test (refer to the repair methods).</p>

AFTER REPAIR	Check using the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

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FAULT FINDING - INTRODUCTION

CONDITIONS FOR APPLICATION OF THE CHECKS DEFINED IN THIS FAULT FINDING

The checks set out in this fault finding procedure are only to be performed on the vehicle if the description of the fault to be dealt with corresponds exactly to the display shown on the diagnostic tool.

If a fault is dealt with because the bargraph is flashing, the conditions for confirming the actual presence of this fault (and the need to apply the fault finding procedure) are shown in the Notes box or at the start of the interpretation of the bargraph section.

If a bargraph is only interpreted when it is continuously lit, the application of the checks recommended in the fault finding procedure for when the bargraph is flashing will not enable the origin of the storage of this fault to be located. In this case, only a check of the wiring and the connections of the component concerned should be carried out (the fault is only stored as it was not present at the point when it was tested).

Note:

Switch off ignition before using the diagnostic tool.

The new **ABS BOSCH 5.3** computers fitted to the CLIO II have a speedometer function.

The computer is able to provide the vehicle speed signal to all the vehicle components which use this information (instrument panel, engine management, etc.).

This vehicle speed signal will replace the one currently supplied by the speed sensor located on the gearbox.

The **ABS** computer calculates the vehicle speed from the speed of the wheels and the circumference of the tyres fitted on the vehicle.

SPECIAL TOOLING REQUIRED FOR OPERATIONS ON THE ABS SYSTEM

- **XR25** kit (except speedometer function).
- Cassette: **XR25 no. 17** (minimum).
- **NXR** station or **CLIP** referring to the May 99 updates.
(no access to the special notes for this computer with the **XR25** kit and cassette no. 18).
- Multimeter.

REMINDER:

When an intermittent fault has been stored, the **ABS** warning light will come on the next time the vehicle is used until its speed reaches **7 mph (12 km/h)**. When the fault is stored, a counter linked to the fault is reset to the value of **40**. This value drops by **1** each time the ignition is switched on if the fault is not present when the vehicle speed goes over **7 mph (12 km/h)**.

When the counter value is **1**, it remains at **1** and the fault is not cleared.

The instrument panel fitted to the CLIO II, developed speedometer version, becomes 'active'. It therefore runs fault finding on the **ABS** and brake warning light connections.

The instrument panel then lights up the warning lights when the **ABS** computer is not connected.

The shunt in the **ABS** computer connector, which earths the warning light lines when the computer is disconnected, disappears.

In the absence of an entered tyre circumference, a fault is registered in the computer memory and the **ABS warning light flashes**. The **ABS** and Electronic Braking Distribution (**EBD**) functions are ensured but the vehicle speed is calculated with the maximum circumference.

When dialogue is established between the diagnostic tool and the **ABS** computer, the **ABS** and **EBD** (Electronic Braking Distribution) functions are interrupted which risks a loss of control of the vehicle under emergency braking. For this reason, dialogue will therefore be cut once the vehicle speed exceeds **6 mph (10 km/h)** in order to re-establish operation of the **ABS** and **EBD** functions.


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FAULT FINDING - XR25 SHEET

EXAMPLE OF SHEET TO BE USED

N°53		 S8		code : D 1 1	lire : n.53
1	<input type="checkbox"/>	ALIMENTATION / CALCULATEUR	CODE PRESENT		<input type="checkbox"/>
2	<input type="checkbox"/>	AV.G	CIRCUIT ELECTROVANNES	AV.D	<input type="checkbox"/>
3	<input type="checkbox"/>	AR.G	ADMISSION	AR.D	<input type="checkbox"/>
4	<input type="checkbox"/>	AV.G	CIRCUIT ELECTROVANNES	AV.D	<input type="checkbox"/>
5	<input type="checkbox"/>	AR.G	ECHAPPEMENT	AR.D	<input type="checkbox"/>
6	<input type="checkbox"/>	AV.G	CIRCUIT CAPTEURS	AV.D	<input type="checkbox"/>
7	<input type="checkbox"/>	AR.G	DE VITESSE ROUES	AR.D	<input type="checkbox"/>
8	<input type="checkbox"/>	AV.G	SIGNAUX CAPTEURS	AV.D	<input type="checkbox"/>
9	<input type="checkbox"/>	AR.G	VITESSE ROUES	AR.D	<input type="checkbox"/>
10		CIRCUITS MOTEUR POMPE		*30	<input type="checkbox"/>

A.B.S. BOSCH

Effacement mémoire défauts : G 0 **
Fin de diagnostic : G13 *

CONTROLES ANNEXES : # . .
(voir nota)

01	Vitesse roue AV.D	Km/h
02	Vitesse roue AV.G	Km/h
03	Vitesse roue AR.D	Km/h
04	Vitesse roue AR.G	Km/h
06	alimentation	volts

12 Identification calculateur
2 5 5, 5 si X56
2 2 0, 5 si X65 / 75
2 14, 5 si X54 Ph2

90 numéro de la fiche (53)

MODES COMMANDES : G . . *
(si vitesse véhicule nulle et, pour tests E.V. appuyer sur la pédale de frein)

03	Test électrovannes AV.G
04	Test électrovannes AV.D
05	Test électrovannes AR.G
06	Test électrovannes AR.D
20	Test statique moteur et électrovannes

11	<input type="checkbox"/>	ALIMENTATION ELECTROVANNES	
12	<input type="checkbox"/>	CIRCUIT STOP (CO)	CIBLE D'UNE DES ROUES <input type="checkbox"/>
13	<input type="checkbox"/>	PEDALE DE FREIN ENFONCEE ← → RELACHEE <input type="checkbox"/>	
14			
15			
16			
17			
18			
19			
20			

NOTA : par sécurité, le calculateur peut sortir du diagnostic en roulant

17 FRA


F111753

B65531.0

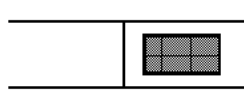
FAULT FINDING - interpretation of XR25 bargraphs

BARGRAPH SYMBOLS

- Fault bargraphs (always on a coloured background):





	<p>If lit, indicates a fault on the product tested. The associated text defines the fault.</p> <p>This bargraph may be:</p> <ul style="list-style-type: none"> – Continuously lit : fault present – Flashing : fault stored – Not lit : fault absent or not found
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- Status bargraphs (always on a white background):

	<p>Bargraph always located on the top right-hand side.</p> <p>If lit, indicates establishment of dialogue with the product computer.</p> <p>If it remains off:</p> <ul style="list-style-type: none"> – The code does not exist. – There is a fault on the tool, the computer or the XR25/computer connection.
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The following bargraph representations indicate their initial status:

Initial status: (ignition on, engine stopped, no operator action).

<div>  or  </div> <p>Not defined</p>	<p>is lit when the function of the condition described on the sheet is realised.</p>
<div>  </div> <p>Off</p>	
<div>  </div> <p>On</p>	<p>goes out when the function or the condition described on the fiche is no longer carried out.</p>

- Additional notes:


Some bargraphs have a...command. The...command, when the bargraph is lit, enables additional information regarding the type of fault or the status to be displayed.

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FAULT FINDING - interpretation of XR25 bargraphs

<p>1</p> 	<p>Right-hand bargraph 1 off</p> <p><u>Code present</u></p>	Sheet no. 53
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NOTES	None.
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Check that the diagnostic tool is not causing the fault by trying to establish dialogue with a computer on another vehicle. If the diagnostic tool is not the cause of the fault and dialogue cannot be established with any other computer on the same vehicle, it may be that a faulty computer is disrupting diagnostic lines **K** and **L**. Proceed by successive disconnections to locate this computer.

Check the battery voltage and carry out the operations necessary to obtain the correct voltage (**9.5 volts < U battery < 17.5 volts**).

Check the presence and the condition of the **ABS** fuse on the passenger compartment fuse board (**10A**).
Check that the computer connector is properly connected and check the condition of its connections.
Check the connection and condition of the connection at the **R107** dashboard/front of engine and **R255** front of engine/**ABS** intermediate connections.
Check the **ABS** earths (tighten the two earth bolts above the **ABS** unit).
Check that the supply to the computer is correct:

- **earth on track 19** of the **31-track** connector,
- **+ after ignition feed on track 15** of the **31-track** connector.

Ensure that the supply to the diagnostic socket is correct:

- **+ after ignition feed on track 16**
- **earth on track 5**.

Check the continuity and the insulation of the diagnostic socket/**ABS** computer connection lines:

- between **track 12** of the computer connector and **track 15** of the diagnostic socket.
- between **track 11** of the computer connector and **track 7** of the diagnostic socket.

If dialogue is still not established following these various checks, replace the **ABS computer**.


AFTER REPAIR	When communication is established, deal with the fault bargraphs currently lit.
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FAULT FINDING - interpretation of XR25 bargraphs

<div>1</div> 	Left-hand bargraph 1 continuously lit <u>Supply/Computer</u>	Sheet no. 53
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NOTES	None.
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Check the condition and position of the **60A ABS fuse** in the engine connection unit.
Check the continuity between this fuse and **tracks 17** and **18** of the computer connector (+ **AVC** on the two tracks). Check the tightness and the condition of the battery terminals.
Check the connections on the **31-track connector** of the **ABS** computer.
Check the **ABS earths** (above the hydraulic unit) and visually inspect all **ABS** wiring.

Clear the computer memory, exit fault finding (G13*) and switch off the ignition.
Perform a new check using the diagnostic tool. If the power supply/computer fault is still present, replace the **ABS** computer.


AFTER REPAIR	After replacing the computer, run another test with the diagnostic tool.
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FAULT FINDING - interpretation of XR25 bargraphs

<p>2 - 3 - 4 - 5</p> 	<p>Right or left-hand bargraphs 2, 3, 4 or 5 flashing</p> <p><u>Solenoid valve circuit</u></p>	Sheet no. 53
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<p>NOTES</p>	<p>Even if present at the time of testing, these faults will always be indicated by a flashing bargraph.</p> <p>To confirm that they are present, and therefore the need to apply the fault finding procedure below, run command G20*. The fault is present if the bargraph reappears as continuously lit at the end of the command.</p> <p>If the left-hand bargraph 11 is also lit, deal with the left-hand bargraph 11 first.</p>
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Check the **ABS earths** (tighten the two bolts above the **ABS** unit).

Check the condition and the positioning of the **ABS 60A fuse** in the engine compartment connection unit.

Check the connection and condition of the connections on the **31-track connector** of the computer.

Clear the computer memory, exit fault finding (**G13***) and switch off the ignition.

Switch on the ignition and carry out a new check with the diagnostic tool using command **G20**.

If the solenoid valve circuit fault reappears, replace the **ABS** computer.


<p>AFTER REPAIR</p>	<p>Clear the computer memory (G0**).</p> <p>Carry out a road test then check with the diagnostic tool.</p>
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FAULT FINDING - interpretation of XR25 bargraphs

<p>6</p> 	<p>Left-hand bargraph 6 continuously lit</p> <p><u>Front left-hand wheel sensor circuit</u></p>	Sheet no. 53
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NOTES	None.
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Check the connection and the condition of the sensor connectors.
If the connector is correct, check the resistance of the sensor at its connector.
Replace the sensor if its resistance is not approximately **1.6 K Ω (1.6 K Ω \pm 320 Ω)**.

If the resistance is correct, check and ensure the continuity of the connections between the sensor connector and the computer connector:

- between one track of the sensor connector and **track 7** of the computer connector,
- between the other track of the sensor connector and **track 6** of the computer connector.

Also check the insulation between these connections.

Carry out a visual inspection of the sensor wiring and check the quality of the connection on the **31-track computer connector**.

If the results of the checks are correct, reconnect the computer and the wheel speed sensor and clear the computer memory.

Exit fault finding (**G13***) and switch off the ignition.

Switch the ignition on and replace the sensor if the fault recurs.

If the fault recurs after changing the sensor, change the computer.


AFTER REPAIR	<p>Clear the computer memory (G0**).</p> <p>Carry out a road test then check with the diagnostic tool.</p>
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FAULT FINDING - interpretation of XR25 bargraphs

<p>6</p> 	<p>Right-hand bargraph 6 continuously lit</p> <p><u>Front right-hand wheel sensor circuit</u></p>	Sheet no. 53
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NOTES	None.
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Check the connection and the condition of the sensor connectors.
If the connector is correct, check the resistance of the sensor at its connector.
Replace the sensor if its resistance is not approximately **1.6 K Ω (1.6 K Ω \pm 320 Ω).**

If the resistance is correct, check and ensure the continuity of the connections between the sensor connector and the computer connector:

- between one track of the sensor connector and **track 3** of the computer connector,
- between the other track of the sensor connector and **track 5** of the computer connector.

Also check the insulation between these connections.

Carry out a visual inspection on the sensor wiring and check the condition of the connections on the computer's **31 track connector**.

If the results of the checks are correct, reconnect the computer and the wheel speed sensor and clear the computer memory.

Exit fault finding (**G13***) and switch off the ignition.

Switch the ignition on and replace the sensor if the fault recurs.

If the fault recurs after changing the sensor, change the computer.


AFTER REPAIR	<p>Clear the computer memory (G0**).</p> <p>Carry out a road test then check with the diagnostic tool.</p>
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FAULT FINDING - interpretation of XR25 bargraphs

<p>7</p> 	<p>Left-hand bargraph 7 continuously lit</p> <p><u>Rear left-hand wheel sensor circuit</u></p>	Sheet no. 53
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NOTES	None.
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Check the connection and the condition of the sensor connectors.
Check the connections at the intermediate underbody connection (**R101**).
If the connector and the connection are correct, check the sensor resistance on the connector.
Replace the sensor if its resistance is not approximately **1.6 K Ω (1.6 K Ω \pm 320 Ω)**.

If the resistance is correct, check and ensure the continuity of the connections between the sensor connector and the computer connector:

- between one track of the sensor connector and **track 8** of the computer connector (via **track B** of the **R101** underbody connection),
- between one track of the sensor connector and **track 9** of the computer connector (via **track A** of the **R101** underbody connection).

Also check the insulation between these connections.

Carry out a visual inspection on the sensor wiring and check the condition of the connections on the computer's **31 track connector**.

If the results of the checks are correct, reconnect the computer and the wheel speed sensor and clear the computer memory.

Exit fault finding (**G13***) and switch off the ignition.

Switch the ignition on and replace the sensor if the fault recurs.

If the fault recurs after changing the sensor, change the computer.


AFTER REPAIR	<p>Clear the computer memory (G0**).</p> <p>Carry out a road test then check with the diagnostic tool.</p>
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FAULT FINDING - interpretation of XR25 bargraphs

<p>7</p> 	<p>Right-hand bargraph 7 continuously lit</p> <p><u>Rear right-hand wheel sensor connector circuit</u></p>	Sheet no. 53
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NOTES	None.
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Check the connection and the condition of the sensor connectors.
Check the connections at the intermediate underbody connection (**R101**).
If the connector and the connection are correct, check the sensor resistance on the connector.
Replace the sensor if its resistance is not approximately **1.6 K Ω (1.6 K Ω \pm 320 Ω)**.

If the resistance is correct, check and ensure the continuity of the connections between the sensor connector and the computer connector:

- Between one track of the sensor connector and **track 1** of the computer connector (via **track D** of the **R101** underbody connection),
- between one track of the sensor connector and **track 2** of the computer connector (via **track C** of the **R101** underbody connection).

Also check the insulation between these connections.

Carry out a visual inspection on the sensor wiring and check the condition of the connections on the computer's **31 track connector**.

If the results of the checks are correct, reconnect the computer and the wheel speed sensor and clear the computer memory.

Exit fault finding (**G13***) and switch off the ignition.

Switch the ignition on and replace the sensor if the fault recurs.

If the fault recurs after changing the sensor, change the computer.


AFTER REPAIR	<p>Clear the computer memory (G0**).</p> <p>Carry out a road test then check with the diagnostic tool.</p>
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FAULT FINDING - interpretation of XR25 bargraphs

<p>8</p> 	<p>Right or left-hand bargraph 8 flashing</p> <p><u>Front left-hand or right-hand wheel sensor signal</u></p>	Sheet no. 53
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<p>NOTES</p>	<p>Even if present when being tested, these faults will always be indicated by a left or right-hand flashing BG8.</p> <p>To confirm that they are present, and therefore the need to apply the fault finding procedure below, carry out a road test. The fault is present if the bargraph is lit during the test.</p> <p>If left-hand bargraphs 6 and 8 are both lit, deal with bargraph 6 first.</p> <p>If right-hand bargraphs 6 and 8 are both lit, deal with bargraph 6 first.</p>
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Check the condition of the wheel speed sensor mounting (position and torque tightening).
Check the sensor/target air gap over one wheel revolution: **0.1 < air gap < 1.9**.
Check the conformity of the target (condition, **number of teeth = 26**).

Check the connection and the condition of the sensor connectors.
If the connector is correct, check the resistance of the sensor at its connector.
Replace the sensor if its resistance is not approximately **1.6 K Ω (1.6 K Ω \pm 320 Ω)**.

Carry out a visual inspection on the sensor wiring and check the condition of the connections on the computer's **31 track connector**.

If the results of the checks are correct, reconnect the computer and the wheel speed sensor and clear the computer memory.
Exit fault finding (**G13***) and switch off the ignition.
Replace the sensor if the fault recurs.

If the fault recurs after the sensor is replaced, it may be caused by a solenoid valve operating fault. It is therefore necessary to carry out the solenoid valve hydraulic test with the diagnostic tool using command **G03*** or **G04*** (refer to the Help section). If the **10 unlocking/locking cycles** do not occur on one of the wheels, replace the hydraulic unit.
If the hydraulic unit is not faulty, change the computer.

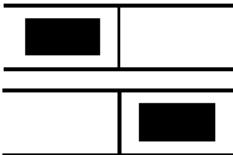
<p>AFTER REPAIR</p>	<p>Clear the computer memory (G0**). Carry out a road test then check with the diagnostic tool.</p>
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FAULT FINDING - interpretation of XR25 bargraphs

<p>9</p> 	<p>Right or left-hand bargraph 9 flashing</p> <p><u>Rear left-hand or right-hand wheel sensor signal</u></p>	Sheet no. 53
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<p>NOTES</p>	<p>Even if present when being tested, these faults will always be indicated by a left or right-hand flashing BG9.</p> <p>To confirm that they are present, and therefore the need to apply the fault finding procedure below, carry out a road test. The fault is present if the bargraph is lit during the test.</p> <p>If left-hand bargraphs 7 and 9 are both lit, deal with bargraph 7 first.</p> <p>If right-hand bargraphs 7 and 9 are both lit, deal with bargraph 7 first.</p>
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Check the condition of the wheel speed sensor mounting (position and torque tightening).
Check the connection and the condition of the sensor connectors.
Check the connections at the **R101** intermediate underbody connection.
If the connector is correct, check the resistance of the sensor at its connector.
Replace the sensor if its resistance is not approximately **1.6 KΩ (1.6 KΩ ± 320 Ω)**.

Carry out a visual inspection on the sensor wiring and check the condition of the connections on the computer's **31 track connector**.

If the results of the checks are correct, reconnect the computer and the wheel speed sensor and clear the computer memory. Exit fault finding (**G13***) and carry out a road test.
If the fault reappears, check the conformity of the target: condition, **number of teeth = 26**.

If the results of the checks are correct, clear the computer memory, exit from the fault finding and carry out a road test.
Replace the sensor if the fault recurs.

If the fault recurs after the sensor is replaced, it may be caused by a solenoid valve operating fault. It is therefore necessary to carry out the solenoid valve hydraulic test with the diagnostic tool using command **G05*** or **G06*** (refer to the Help section). If the **10 unlocking/locking cycles** do not occur on one of the wheels, replace the hydraulic unit.
If the hydraulic unit is not faulty, change the computer.


<p>AFTER REPAIR</p>	<p>Clear the computer memory (G0**). Carry out a road test then check with the diagnostic tool.</p>
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FAULT FINDING - interpretation of XR25 bargraphs

<div>10</div> 	Right-hand bargraph 10 continuously lit or flashing <u>Pump motor circuit</u> XR25 Help: *30 1.dEF: Permanent control or motor earth open circuit 2.dEF: No motor rotation	Sheet no. 53
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NOTES	<p>If right-hand bargraph 10 is flashing, confirm the presence of the fault and therefore the need to apply the fault finding procedure below by running command G20* using the diagnostic tool.</p> <p>The fault is present if the bargraph reappears as continuously lit at the end of the command.</p>
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1.dEF	NOTES	Replace the computer if the pump motor is operating continuously.
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Check the **ABS earths** (tightening of the two earth bolts above the hydraulic unit).
Check/ensure the continuity between the **ABS earth** and **track 16** of the computer connector.
Check the locking of the 2-track connector of the pump motor.

If all the checks are in order, reconnect the computer then clear the memory using command **G0***.
Exit fault finding (**G13***) and carry out a road test.
Change the computer if the fault recurs.

2.dEF	NOTES	None.
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Replace the hydraulic unit (mechanical locking of the pump, etc).


AFTER REPAIR	<p>Clear the computer memory (G0**). Carry out a road test then check with the diagnostic tool.</p>
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

38

FAULT FINDING - interpretation of XR25 bargraphs

<p>11</p> 	<p>Left-hand bargraph 11 continuously lit</p> <p><u>Solenoid valve supply fault</u></p>	Sheet no. 53
---------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------	--------------

NOTES	None.
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Carry out the operations necessary to obtain the correct voltage between **tracks 19** and **17/18** of the **31-track connector** of the **ABS computer (9.5 volts < correct voltage < 17.5 volts)**:

- Check the tightness and the condition of the battery terminals.
- Check the **60A fuse** on the engine compartment connection unit (white mounting).
- Ensure continuity between the **60A fuse** and **tracks 17 and 18** of the computer connector.
- Check the **ABS earths** (tightening of the two earth bolts above the hydraulic unit).
- Check/ensure continuity between the **ABS earth** and **track 19** of the computer connector.

If all the checks are in order, reconnect the computer then clear the fault memory using command **G0****. Exit fault finding (**G13***) and carry out a road test. Change the computer if the fault recurs.


AFTER REPAIR	<p>Clear the computer memory (G0**).</p> <p>Carry out a road test then check with the diagnostic tool.</p>
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - interpretation of XR25 bargraphs

<p>12</p> 	<p>Left-hand bargraph 12 continuously lit or flashing</p> <p><u>Brake circuit</u></p>	Sheet no. 53
---------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------	--------------

NOTES	None.
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Depress the brake pedal, whilst monitoring the **left-hand and right-hand bargraph 13**.
Are the pedal released and pedal depressed positions correctly identified?

YES	Check the two brake light bulbs and the earth of the rear light units (no earthing of track 14 via the bulbs when the pedal is not depressed).
NO	apply the fault finding procedure set out in the interpretation of left and right-hand bargraphs 13 for the case of left-hand bargraph 13 off, brake pedal depressed.


AFTER REPAIR	Clear the computer memory (G0**). Carry out a road test then check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - interpretation of XR25 bargraphs

<p>12</p> 	<p>Right-hand bargraph 12 flashing</p> <p><u>Target on one of the wheels</u></p>	Sheet no. 53
---------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------	--------------

<p>NOTES</p>	<p>Even if present at the time of testing, these faults will always be indicated by a right-hand flashing BG12.</p> <p>To confirm that they are present, and therefore the need to apply the fault finding procedure below, carry out a road test. The fault is present if the bargraph is lit during the test.</p>
---------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Check the quality of wheel speed sensor mountings (position and torque tightening).
Check the conformity of the targets: condition, **number of teeth = 26**.


<p>AFTER REPAIR</p>	<p>Clear the computer memory (G0**).</p> <p>Carry out a road test then check with the diagnostic tool.</p>
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

38

FAULT FINDING - interpretation of XR25 bargraphs

<p>13</p> 	<p>Right and left-hand bargraph 13</p> <p><u>Brake pedal</u></p> <p>Lit on left-hand side if pedal depressed. Lit on right-hand side if pedal not depressed</p>	Sheet no. 53
---------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------

NOTES	Apply the tests only if the illumination of the bargraph is not consistent with the pedal position.
--------------	-----------------------------------------------------------------------------------------------------

Left-hand bargraph 13 off, brake pedal depressed.

The right-hand **BG13** therefore remains continuously lit.

If brake lights operate:

- Check the continuity between the dashboard/rear left-hand **R2** connection at **track 3** and **track 14** of the **ABS** computer connector.
Dashboard/front of engine **R107 (track G7)** and front of engine/**ABS R255 (track 8)** intermediate connections.

If the brake lights do not operate:

- Check the condition and settings of the brake light switch and the brake light **15A fuse** (on the passenger compartment fuse board). Replace it if necessary.
- Disconnect the brake light switch, then check/ensure the presence of **+ after ignition feed** on **track B1** of the connector.
- Check the operation of the brake light switch contact (contact closed between **tracks A3** and **B1**).
- Check and ensure the continuity between **track A3** of the brake light switch connector and the dashboard/rear left-hand **R2** connection on **track 3**.

Bargraph 13 continuously lit on the left-hand side.

- Check the condition and the adjustment of the brake switch. Replace it if necessary.
- Check the operation of the brake light switch contact (closed contact between **tracks A3** and **B1**). Replace the brake light switch if there is permanent continuity between these two tracks.
- Check and ensure the insulation of **12 volts** on the connection between **track A3** of the brake light switch and **track 14** of the **ABS** computer connector.
Intermediate connections: Dashboard/front of engine **R107** on **track G7**.
Front of engine/**ABS R255** on **track 8**.

AFTER REPAIR	Carry out a road test then check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - Interpretation of faults

14G PRESENT	<u>Speedometer function not programmed</u>
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NOTES	None.
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The **ABS Bosch 5.3** computer with speedometer function can supply the vehicle speed signal to all consumers of the signal in the vehicle (instrument panel, engine management, etc).

This vehicle speed signal will replace the one supplied by the speed sensor located on the gearbox.

The **ABS** computer calculates the vehicle speed from the speed of the wheels and the circumference of the tyres fitted on the vehicle.

The tyre circumference must be programmed into the memory of a new computer. To do this, use the diagnostic tool to enter an index "X" with the command WHEEL DIAMETER CONFIGURATION or SPEEDOMETER INDEX.

Value of index **X**:

165 / 70 / R13 175 / 70 / R13 175 / 60 / R14 165 / 65 / R14	X = 108
175 / 65 / R14 185 / 60 / R14 185 / 55 / R15 195 / 50 / R15	X = 148
175 / 70 / R14	X = 232

Once the index has been entered using the **WHEEL DIAMETER CONFIGURATION** command, clear the computer memory and then switch off the ignition.

Use the Speedometer index parameter to check that the index has been entered correctly.

AFTER REPAIR	Clear the computer memory. Check again using the diagnostic tool.
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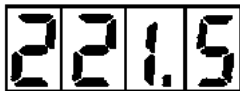
ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

38

FAULT FINDING - CONFORMITY CHECK

NOTES	Only perform this conformity check after a complete check with the diagnostic tool.
--------------	-------------------------------------------------------------------------------------

Order	Function	Parameter/status checked or action	Display/notes	Fault finding
1	Conformity computer with speedometer function	PR012 COMPUTER NUMBER		None
2	Conformity computer without speedometer function	#12		
3	Computer configuration	PR030 SPEEDOMETER INDEX	Check that the index entered corresponds to the tyres fitted to the vehicle (refer to the Help section)	None
4	Operation of the ABS and brake warning lights Computer initialisation check.	Ignition on	Warning lights switch on for 3 seconds when the ignition is switched on	None
5	Detection of brake pedal positions	ET013 BRAKE PEDAL	Check that the system recognises the DEPRESSED and RELEASED positions.	MR337 Fault finding

ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - HELP

USE OF COMMAND MODES

Controlling the solenoid valves for the hydraulic test: **G03*** to **G06***

Raise the vehicle in order to be able to rotate the wheels, and check that they rotate freely. Keep the brake pedal depressed to prevent the wheel being tested from being turned by hand (do not brake so firmly that full braking power is reached).

Hit **G0X*** —————> Ten cycles of unlocking/locking must be noted for the wheel concerned.

Pump motor operation: **G08***

Hit **G08*** and depress the brake pedal —————> The motor should operate for **2 seconds**.

Pump motor and solenoid valve operation: **G20***

Hit **G20*** and depress the brake pedal —————> Brief motor and solenoid valve operation should be noted.

Bleeding the hydraulic circuits: **G15*3* Front LH/G15*4* Front RH/G15*5* Rear LH/G15*6* Rear RH**

Apply the procedure described in the section on bleeding the circuits in the **MR**.

SPECIAL NOTES

REPLACING THE COMPUTER WITH SPEEDOMETER FUNCTION

The **ABS Bosch 5.3** computer with speedometer function can supply the vehicle speed signal to all consumers of the signal in the vehicle (instrument panel, engine management, etc).

This vehicle speed signal will replace the one supplied by the speed sensor located on the gearbox.

The **ABS** computer calculates the vehicle speed from the speed of the wheels and the circumference of the tyres fitted on the vehicle.

The tyre circumference must be programmed into the memory of a new computer. To do this, use the diagnostic tool to enter an index "X" with the command WHEEL DIAMETER CONFIGURATION or SPEEDOMETER INDEX.

Value of index **X**:

165 / 70 / R13 175 / 70 / R13 175 / 60 / R14 165 / 65 / R14	X = 108
175 / 65 / R14 185 / 60 / R14 185 / 55 / R15 195 / 50 / R15	X = 148
175 / 70 / R14	X = 232

Once the index has been entered using the **WHEEL DIAMETER CONFIGURATION** command, clear the computer memory and then switch off the ignition.

Use the Speedometer index parameter to check that the index has been entered correctly.

ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - CUSTOMER COMPLAINTS

NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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WARNING LIGHT FAULTS

_____	The ABS warning light does not light up for 3 seconds when the ignition is switched on	ALP 1
_____	The ABS warning light is continuously lit with the ignition on (with no fault being indicated by the diagnostic tool)	ALP 2
_____	The ABS and/or Brake warning light comes back on continuously after the engine is started	ALP 3
_____	The ABS and/or Brake warning light comes on intermittently when driving	ALP 3
_____	The brake warning light does not light up for 3 seconds after the ignition is switched on	ALP 4
_____	Brake warning light continuously lit, ignition on	ALP 5
_____	ABS and brake warning lights continuously lit, ignition on	ALP 6

FAULTS WHICH OCCUR WHEN BRAKING WITH ABS REGULATION

_____	Locking of one or more wheels	ALP 7
_____	Pulling	ALP 8
_____	Wandering	ALP 9
_____	Unexpected ABS operation at low speed and with slight pedal pressure	ALP 10
_____	Unexpected ABS operation on a poor road surface	ALP 11
_____	Unexpected ABS operation with use of special equipment (car phone, CB, etc.)	ALP 12
_____	Lengthening of brake pedal travel following ABS (with pedal receding when entering ABS)	ALP 13
_____	Spongy pedal	ALP 14
_____	Brake pedal vibration	ALP 15
_____	Noise from the pump, the pipes or the hydraulic unit	ALP 16

ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - CUSTOMER COMPLAINTS

NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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OTHER CASES

	The ABS and brake warning lights do not come on, computer disconnected	ALP 17
	No communication with the ABS computer	ALP 18

ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

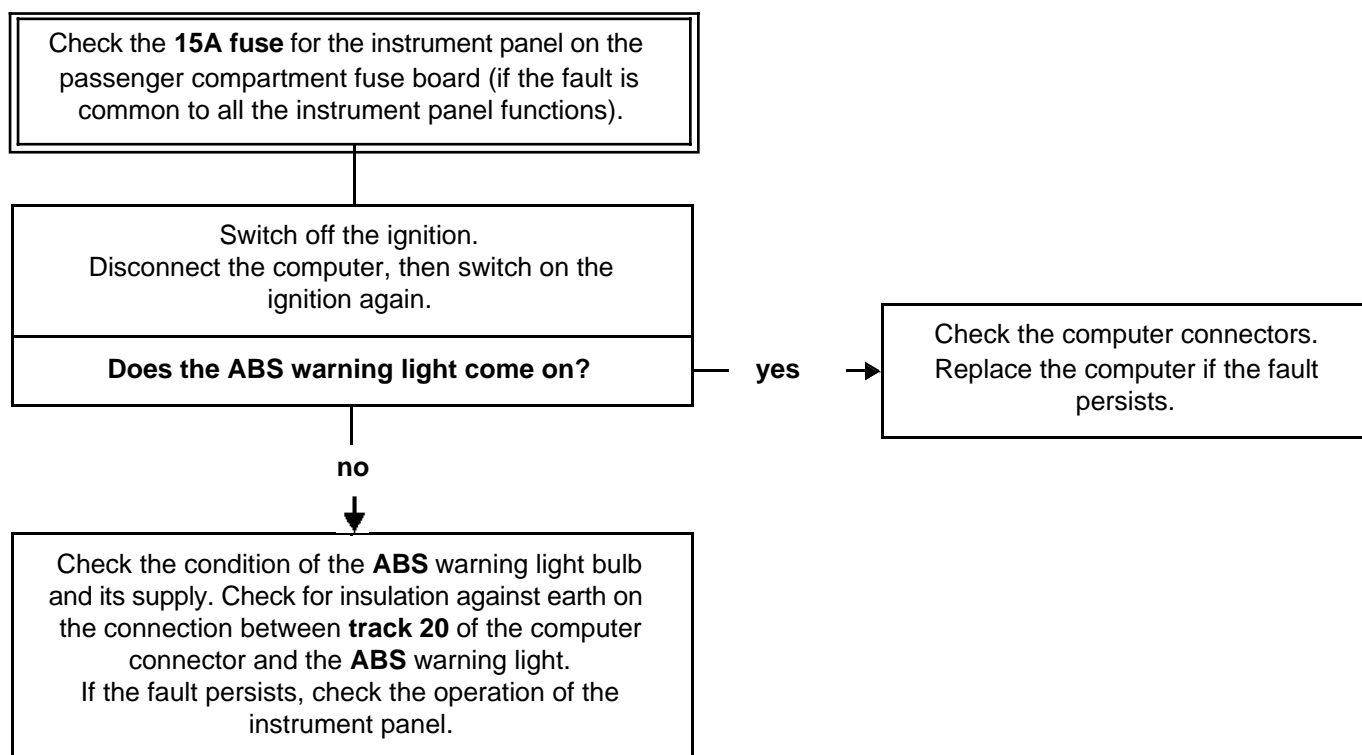
Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 1	THE ABS WARNING LIGHT DOES NOT LIGHT UP FOR 3 SECONDS WHEN THE IGNITION IS SWITCHED ON
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool. The ABS and brake warning lights switch on by the loss of earth on the connections.
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AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

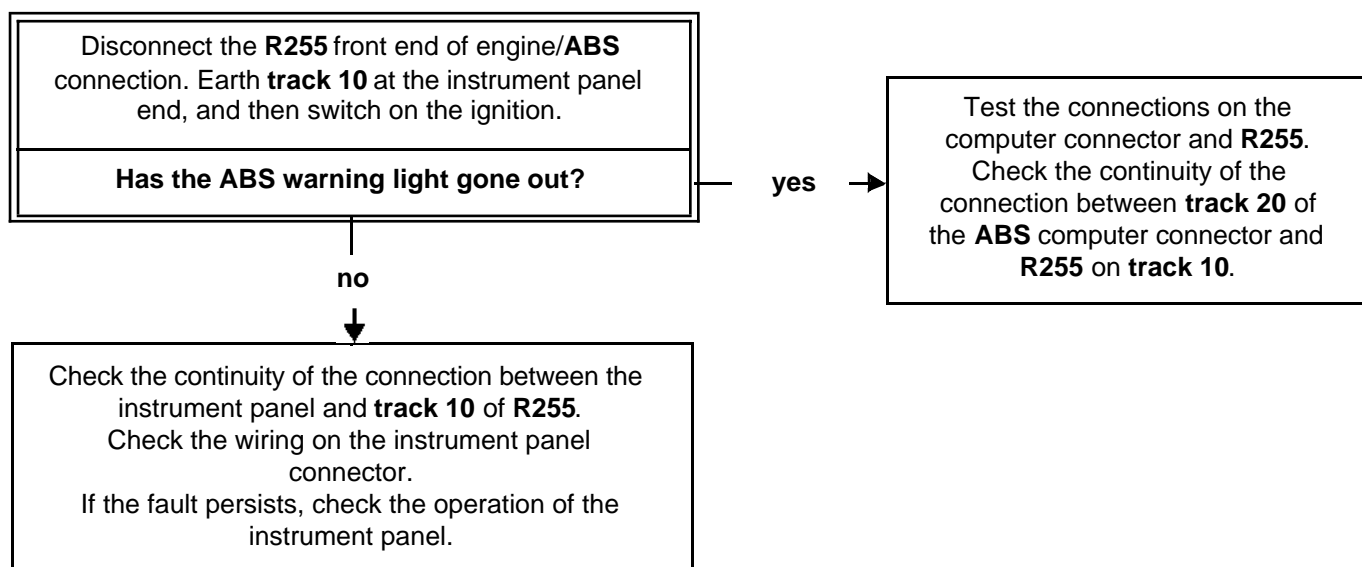
Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 2	THE ABS WARNING LIGHT COMES ON CONTINUOUSLY, IGNITION ON (with no faults indicated by the diagnostic tool)
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool. The ABS and brake warning lights switch on by the loss of earth on the connections.
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AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 3	THE ABS AND/OR BRAKE WARNING LIGHT COMES BACK ON CONTINUOUSLY AFTER THE ENGINE IS STARTED THE ABS AND/OR BRAKE WARNING LIGHT COMES ON INTERMITTENTLY WHEN DRIVING
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool. The ABS and brake warning lights switch on by the loss of earth on the connections.
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<p>Check the voltage of the computer power supply: 9.5 volts < correct voltage < 17.5 volts.</p> <p>If necessary, carry out the following operations:</p> <ul style="list-style-type: none">– Check the battery charge (check the charging circuit if necessary).– Check the tightness and condition of the battery terminals.– Check the ABS earths (tightening of the two earth bolts above the ABS unit). <p>Check the continuity of the connection between track 20 of the ABS computer connector and the ABS warning light.</p> <p>Check the continuity of the connection between track 21 of the ABS computer connector and the brake warning light.</p> <p>Test the connections on these two connections.</p>

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

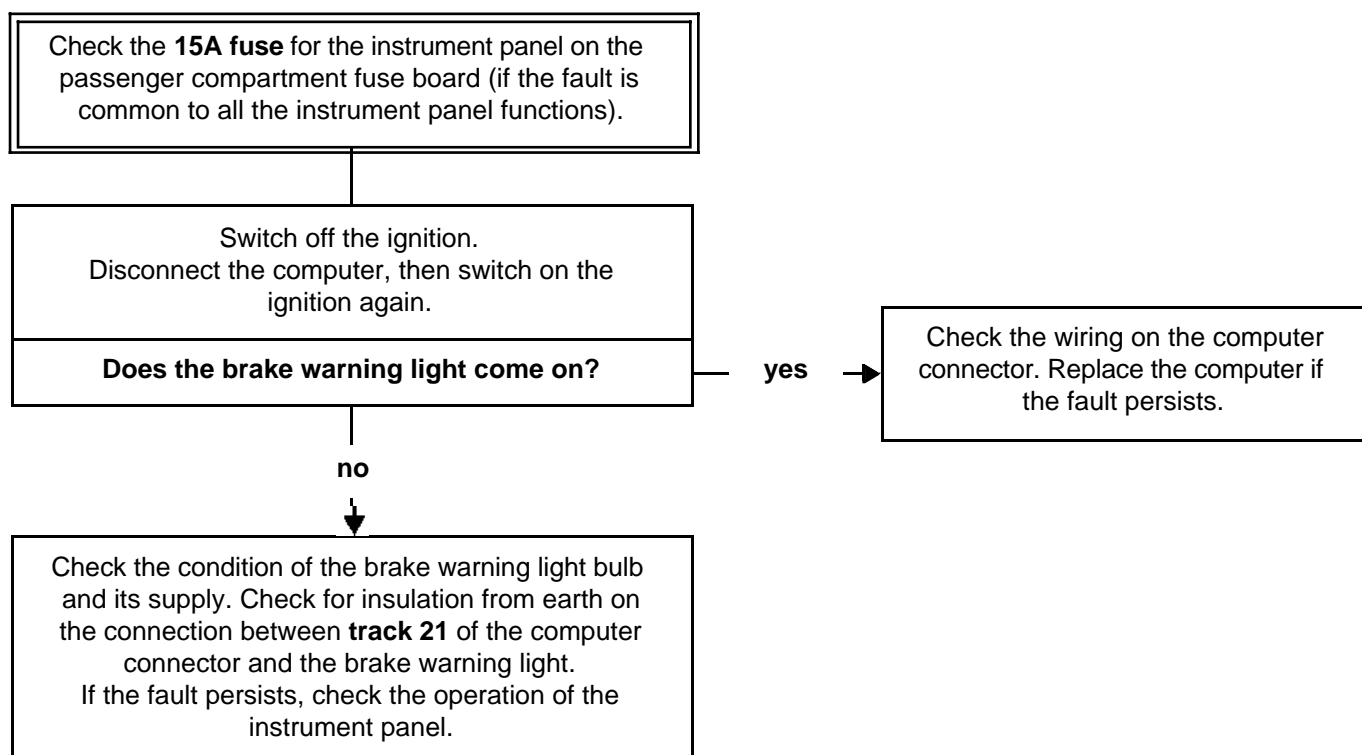
Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 4	THE BRAKE WARNING LIGHT DOES NOT LIGHT UP 3 SECONDS AFTER THE IGNITION IS SWITCHED ON
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool. The ABS and brake warning lights switch on by the loss of earth on the connections.
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AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

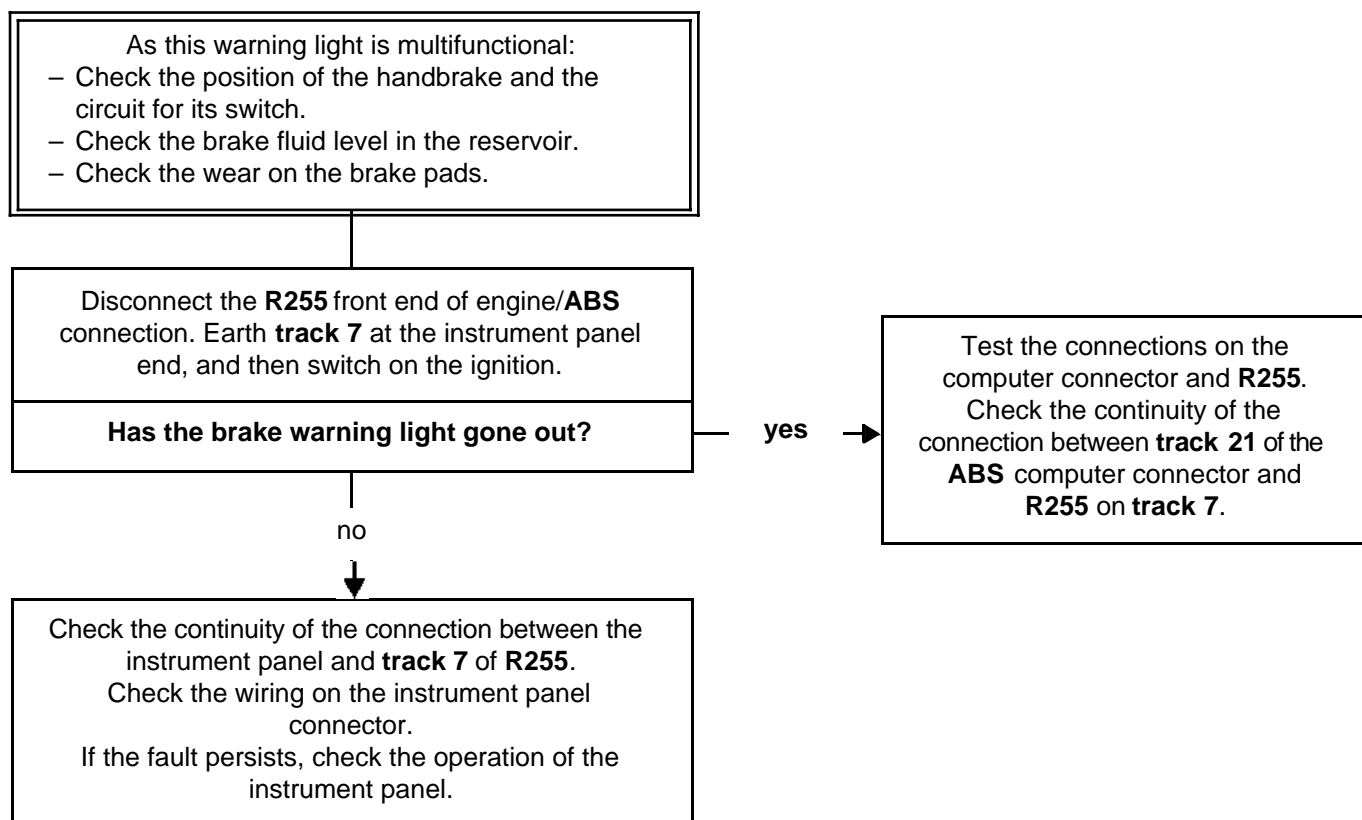
Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 5	BRAKE LIGHT CONTINUOUSLY LIT, IGNITION ON
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool. The ABS and brake warning lights switch on by the loss of earth on the connections.
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AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 6	ABS AND BRAKE WARNING LIGHTS CONTINUOUSLY LIT WITH IGNITION ON
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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Check the **ABS 10A fuse** on the passenger compartment fuse board.
Check the **ABS earths** (tightening of the two bolts above the hydraulic unit).
Check that the computer and the **R107** dashboard/front of engine and **R255** front of engine/**ABS** intermediate connections are correctly connected (also check the condition of the connections).
Check that the supply to the computer is correct:
– Check for the **+ after ignition feed** on **track 15** of the computer connector.
– Check the continuity with **earth** on **tracks 16** and **19** of the computer connector.

If the fault is still present, refer to **ALP 2** and **ALP 5**.

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 7	LOCKING OF ONE OR MORE WHEELS
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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REMINDER: locking of wheels on a vehicle fitted with **ABS** or squealing of the tyres, which feels like locking to the customer, may be linked to normal operation of the system and should not always be considered a fault:

- Locking is authorised below **4 mph (6 km/h)** (the system will not trigger control).
- **ABS** braking on very poor roads (significant squealing).

However, if the wheels are actually locking, raise the vehicle in order to be able to turn the wheels and check:

- Possible inversion when connecting the speed sensors.
 - Use the functions **#01, #02, #03 and #04** whilst rotating the wheels concerned and check that the results obtained are consistent.
 - If the value measured is zero, rotate the other wheels to confirm an electrical inversion of the sensors and repair the wiring harness.
- Possible inversion of pipes on the hydraulic unit.
 - Use the functions **G03*, G04*, G05* and G06*** whilst depressing the brake pedal and check for ten unlocking/locking cycles on the wheel concerned (refer to the Help section).
 - If the ten cycles do not occur on the wheel tested, (wheel remains locked), see if they occur on another wheel (if inversion is confirmed: repair).
 - If the ten cycles do not occur on a wheel without inversion of the pipes, replace the hydraulic unit.
 - Check the condition and conformity of the **ABS** targets.
 - Also check the sensor/target air gap on one rotation of each front wheel (impossible to check on rear axle):
0.1 mm < air gap on one front rotation < 1.9 mm

If the fault is still present after these checks, replace the hydraulic unit.

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

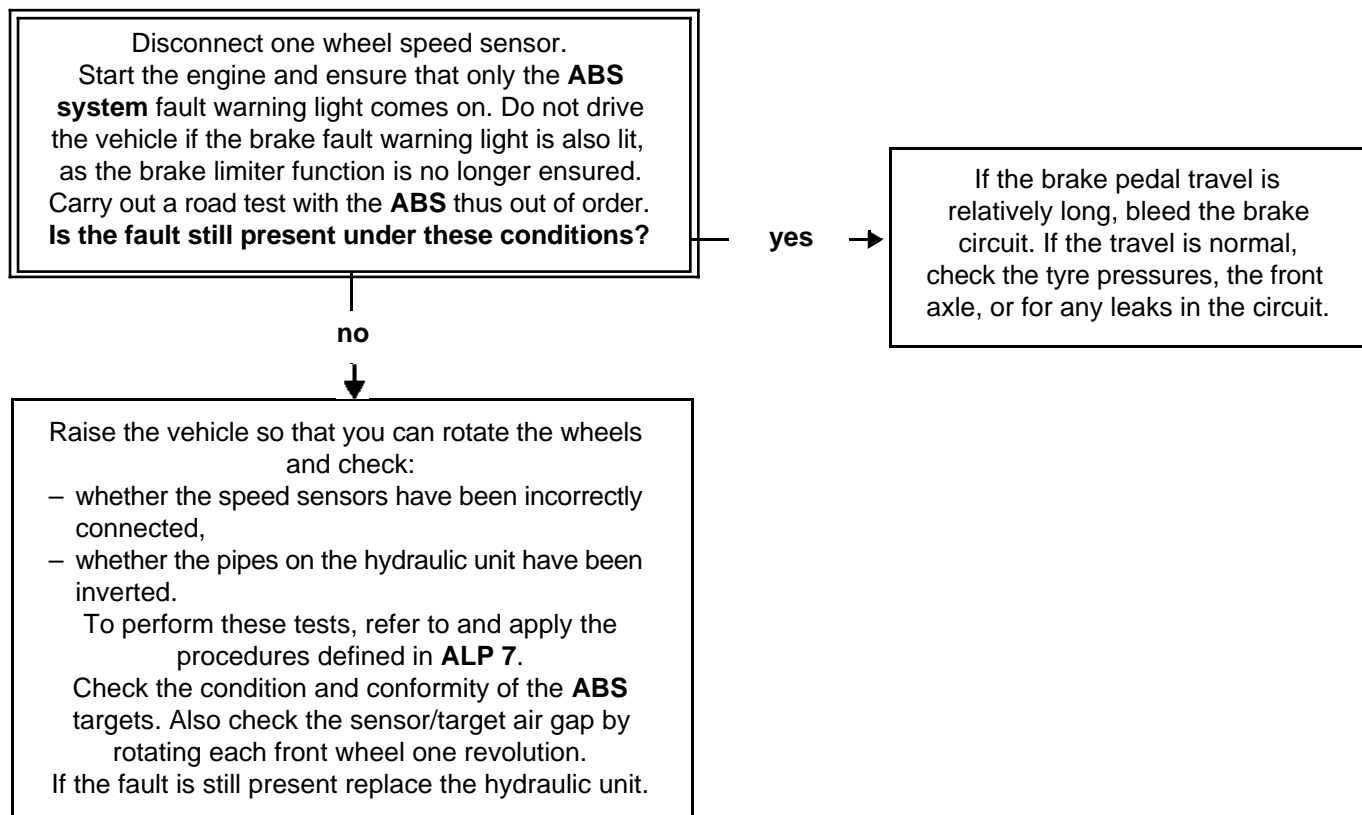
Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 8	PULLING
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

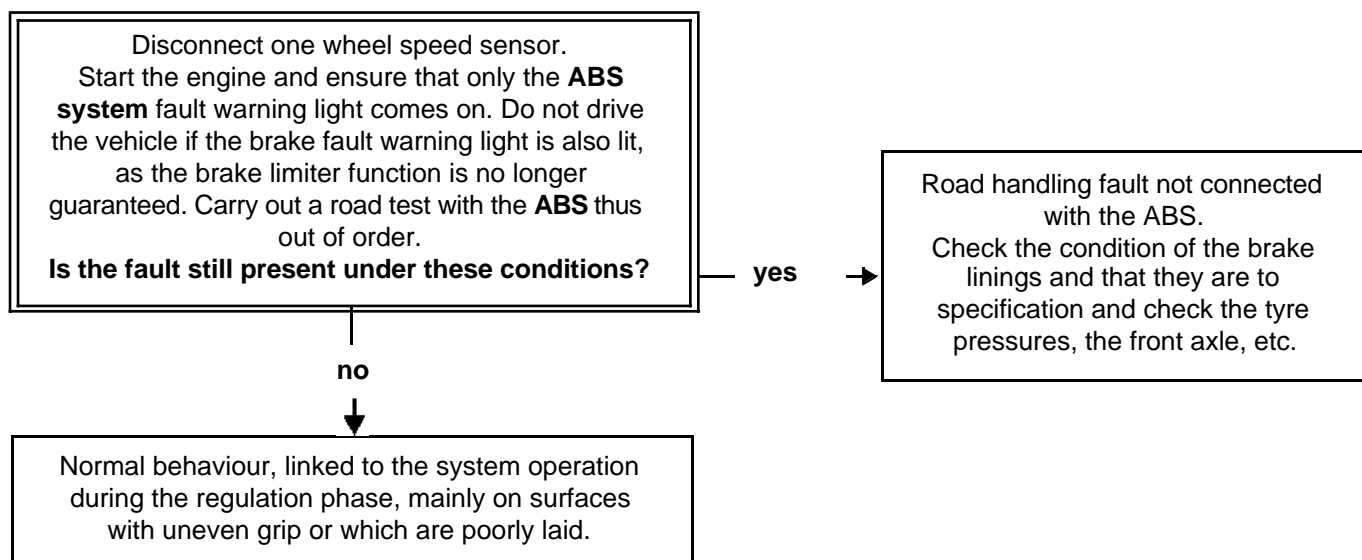
Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 9	WANDERING
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 10	UNEXPECTED ABS OPERATION AT LOW SPEEDS AND SLIGHT PEDAL PRESSURE
---------------	-------------------------------------------------------------------------

NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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It is possible to feel brake pedal vibrations which are associated with the reaction of the system in particular circumstances, such as:

- Driving over speed bumps.
- Tight cornering with lifting of the inside rear wheel.

These vibrations may be linked to simple brake limiter activation, when the pressure on the rear axle is limited. If the fault is different, check the speed sensor connectors (micro-breaks) as well as the air gaps.

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
---------------------	---------------------------------------------------------------------

ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 11	UNEXPECTED ABS OPERATION ON A POOR ROAD SURFACE
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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On poor road surfaces it is normal to feel bucking and vibration of the pedal as well as more significant tyre squealing than on good surfaces.
This gives the impression of a variation in efficiency, but this should be considered normal.

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 12	UNEXPECTED ABS OPERATION WITH USE OF SPECIAL EQUIPMENT (radio, car phone, CB, etc)
--------	------------------------------------------------------------------------------------

NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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Check that the equipment which is causing the fault is approved.
Check that this equipment has been correctly installed without modification to the original wiring, in particular, that of the **ABS** (connections to earth and **+ after ignition/+ before ignition** of the **ABS** are not permitted).

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
--------------	---------------------------------------------------------------------

ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 13	LENGTHENING OF THE BRAKE PEDAL TRAVEL FOLLOWING A REGULATION PHASE (with an irregular pedal when entering the regulation phase)
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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Air transit from the hydraulic unit regulation channels to the brake circuits.
Bleed the circuits in accordance with the procedure recommended in the MR (use the command modes from the **XR25** kit).
Following the operation, carry out a road test with ABS regulation.

If the fault is still present, perform the above operation once or twice more.
If the customer complaint is particularly serious, and bleeding does not improve matters, replace the hydraulic unit.

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

38

FAULT FINDING - FAULT FINDING CHART

ALP 14	SPONGY PEDAL
---------------	---------------------

NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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Air in the brake circuits.
Bleed the circuits in the conventional way starting with the rear left-hand brake, followed by the front left-hand then front right-hand brakes.
Repeat the operation if necessary.

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

38

FAULT FINDING - FAULT FINDING CHART

ALP 15	BRAKE PEDAL VIBRATION
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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Normal reaction of the brake pedal during an ABS regulation phase or pressure limitation on the rear axle (brake limiter function).

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 16	NOISE FROM THE PUMP, PIPES OR HYDRAULIC UNIT
---------------	-----------------------------------------------------

NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
--------------	----------------------------------------------------------------------------------------

- Vibration of the unit: check the presence and the condition of the unit bracket insulating rubber mounting bushes.
 - Vibration of pipes: check that all the pipes are secured in their mounting clips and that there is no contact between pipes or between pipes and bodywork.
- To determine where the noise is coming from, the **G03***, **G04***, **G05*** and **G06*** functions from the **XR25** kit may be used (refer to the Help section).

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 17	THE ABS AND BRAKE WARNING LIGHTS DO NOT COME ON, COMPUTER DISCONNECTED
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NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
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Disconnect the **ABS** computer.
Check for the shunt between **track 19** and **tracks 20 and 21** of the computer connector.

AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.
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ELECTRONICALLY CONTROLLED HYDRAULIC SYSTEM

Anti-lock braking system

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FAULT FINDING - FAULT FINDING CHART

ALP 18	NO COMMUNICATION WITH ABS COMPUTER
NOTES	Only consult this customer complaint after a complete check using the diagnostic tool.
<p>Check that the diagnostic tool is not causing the fault by trying to establish dialogue with a computer on another vehicle. If the diagnostic tool is not the cause of the fault and dialogue cannot be established with any other computer on the same vehicle, it may be that a defective computer is disrupting the diag K and L bus. Proceed by successive disconnections to locate this computer.</p> <p>Check the voltage of the battery and carry out the operations necessary to obtain a voltage which is to specification (9.5 volts < U battery < 17.5 volts).</p>	
<p>Check the presence and the condition of the ABS (10A) fuse on the passenger compartment fuse board.</p> <p>Check that the computer connector is properly connected and check the condition of its connections.</p> <p>Check the connection and condition of the connections at the R107 dashboard/front of engine and R255 front of engine/ABS intermediate connections.</p> <p>Check the ABS earths (tighten the two earth bolts above the ABS unit).</p> <p>Check that the supply to the computer is correct:</p> <ul style="list-style-type: none">– earth on track 19 of the 31-track connector,– + after ignition feed on track 15 of the 31-track connector.	
<p>Ensure that the supply to the diagnostic socket is correct:</p> <ul style="list-style-type: none">– + before ignition feed on track 16– earth on track 5 <p>Check the continuity and the insulation of the lines connecting the diagnostic socket/ABS computer:</p> <ul style="list-style-type: none">– between track 12 of the computer connector and track 15 of the diagnostic socket.– between track 11 of the computer connector and track 7 of the diagnostic socket.	
<p>If dialogue is still not established following these various checks, replace the ABS computer.</p>	
AFTER REPAIR	Carry out a road test followed by a check with the diagnostic tool.