Mégane

# N.T. 2916A

## XA0X

**Basic manual : M.R. 312**

# BOSCH ABS 5.3

**77 11 197 913** **JANUARY 1998** **Edition Anglaise**

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

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

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This vehicle is equipped with **BOSCH ABS 5.3** of the four channel additional type ; the conventional braking equipment and the **ABS** equipment are separate.

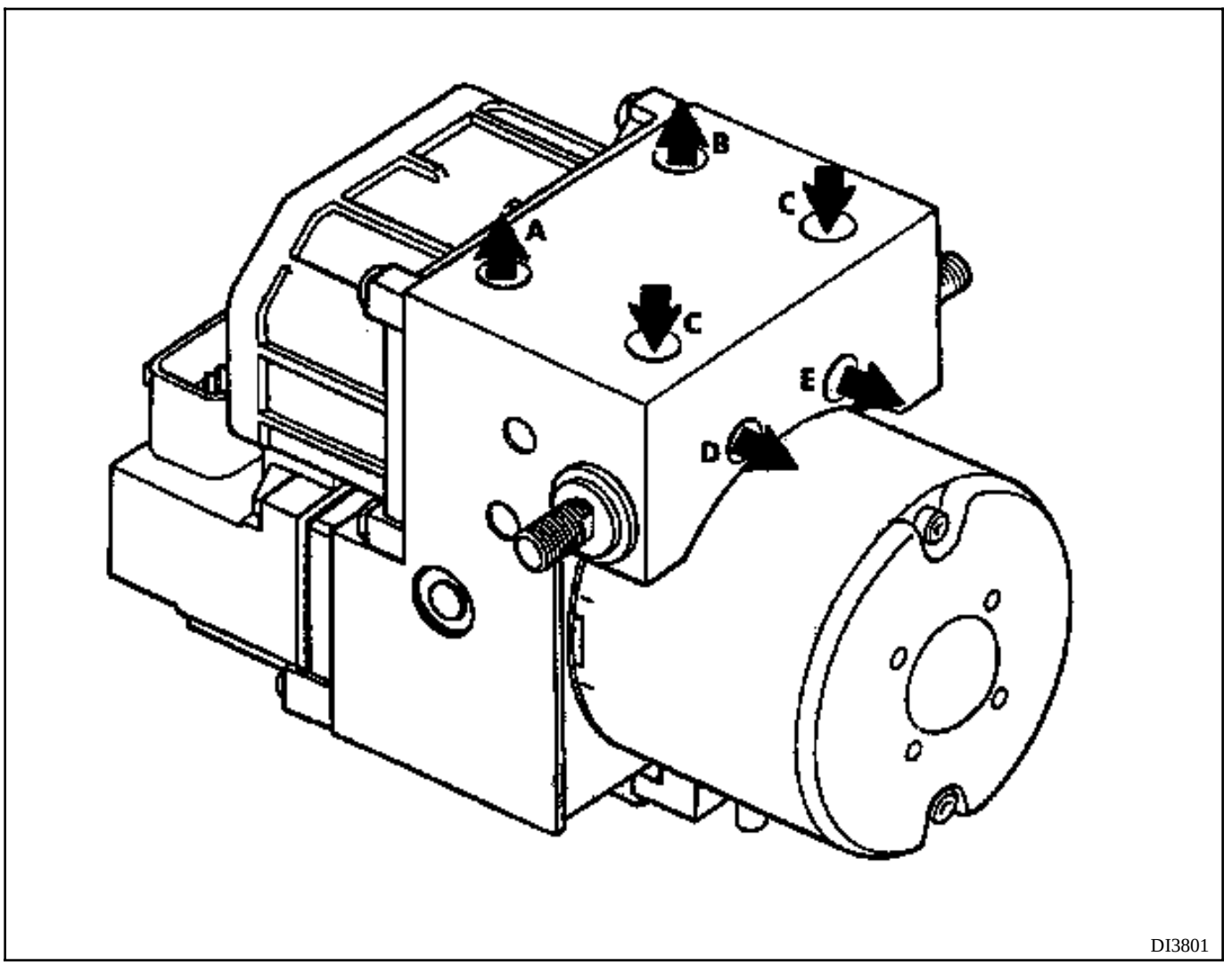
**SPECIAL FEATURES**

The system comprises four speed sensors. Each hydraulic braking channel has a sensor at each wheel. The front wheels are therefore separately regulated. On the other hand, the rear wheels are simultaneously regulated and in the same way according to the low selection principle known as "**select low**" (the first wheel which tends to lock, causes immediate regulation on the complete axle assembly ).

On this vehicle, the braking compensator is suppressed (on versions equipped with **ABS**) and its role is ensured by a special programme in the **ABS** assembly computer, called **REF** (Electronic Braking Distributor).

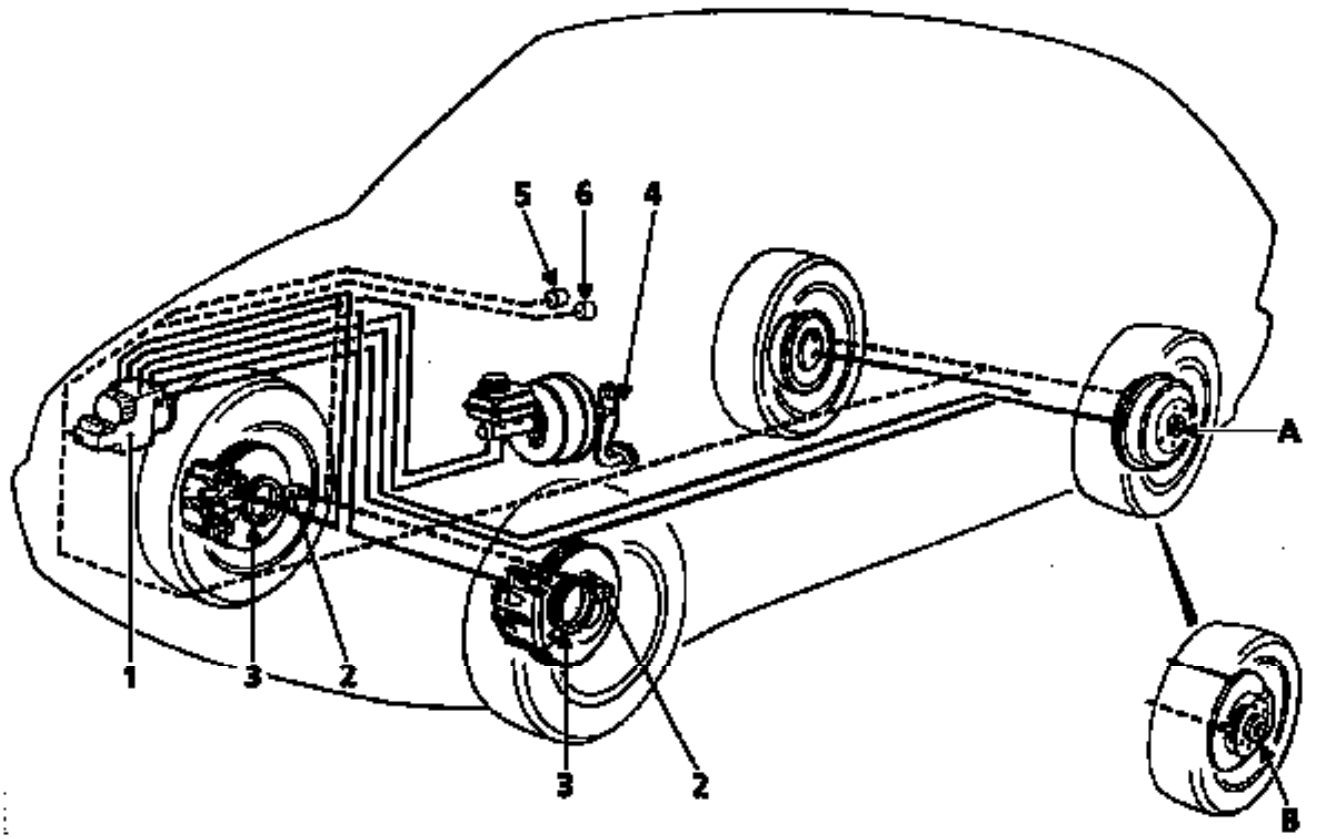
**IMPORTANT :** when the **ABS** fuse is removed, if a road test is carried out, be careful not to brake sharply as the **REF** function is no longer activated (front and rear pressure is identical), so there is a risk that the vehicle will spin.

**PRESENTATION OF THE HYDRAULIC REGULATION UNIT**




A Front left wheel
B Front right wheel
C Master cylinder inlet
D Rear right wheel
E Rear left wheel

**LOCATION OF COMPONENTS**




PRH3801R

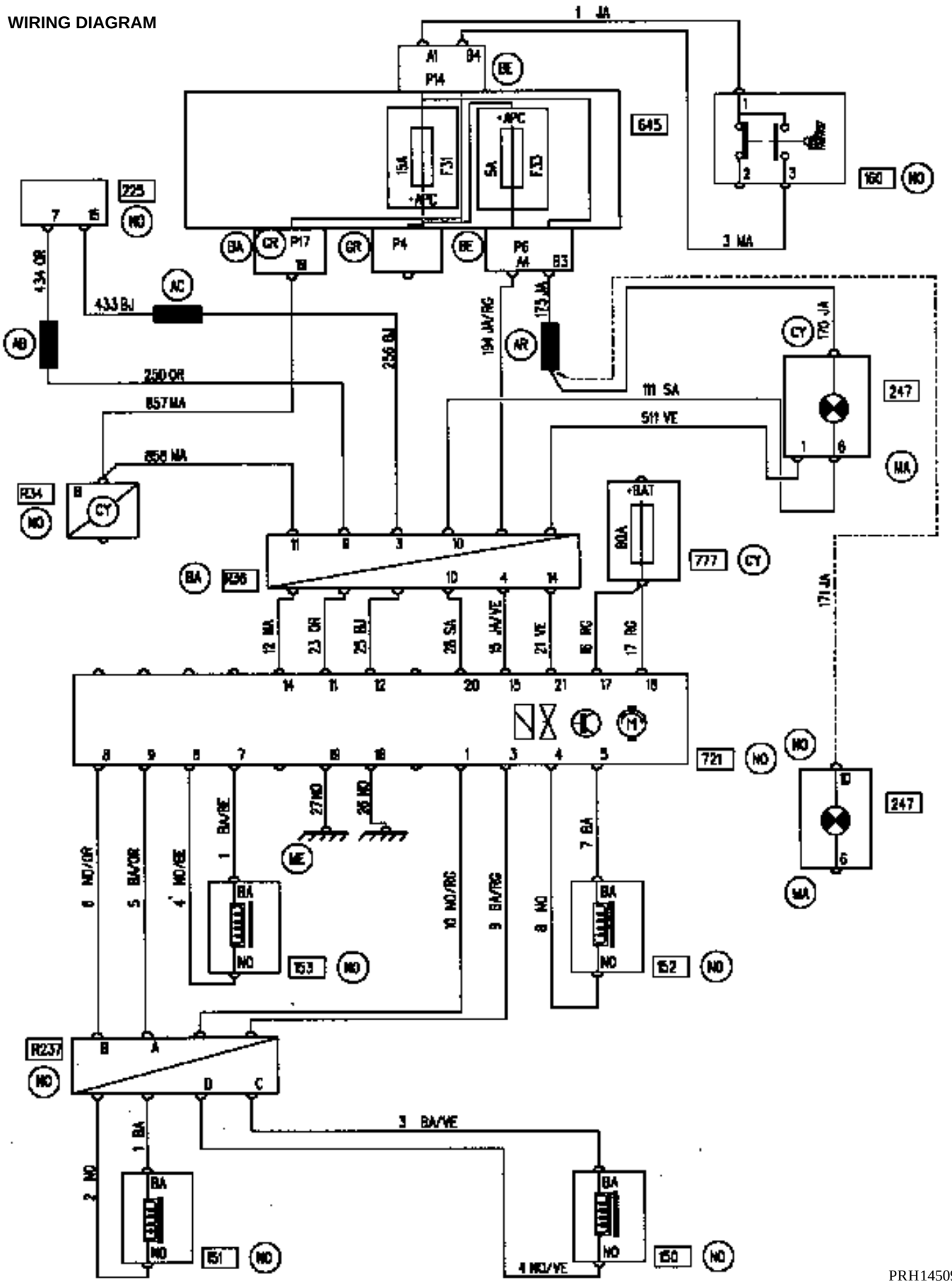
——— Hydraulic connections

— — — Electrical connections

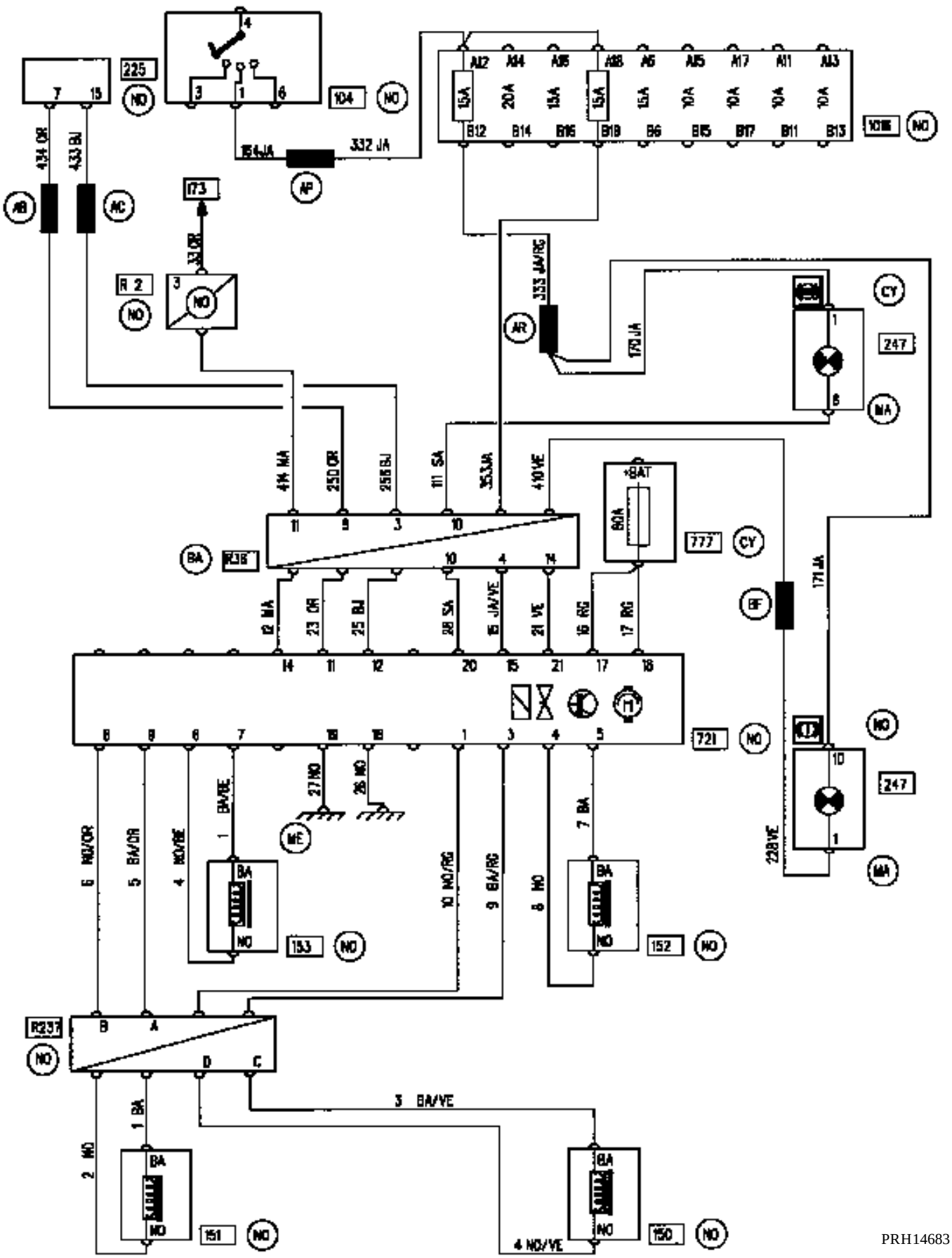
1 Hydraulic distributor
2 Wheel speed sensor
3 Toothed target
4 Brake lights switch
5 Nivocode warning light
6 ABS warning light

A Fitting of wheel drum
B Fitting of wheel disc

**WIRING DIAGRAM**



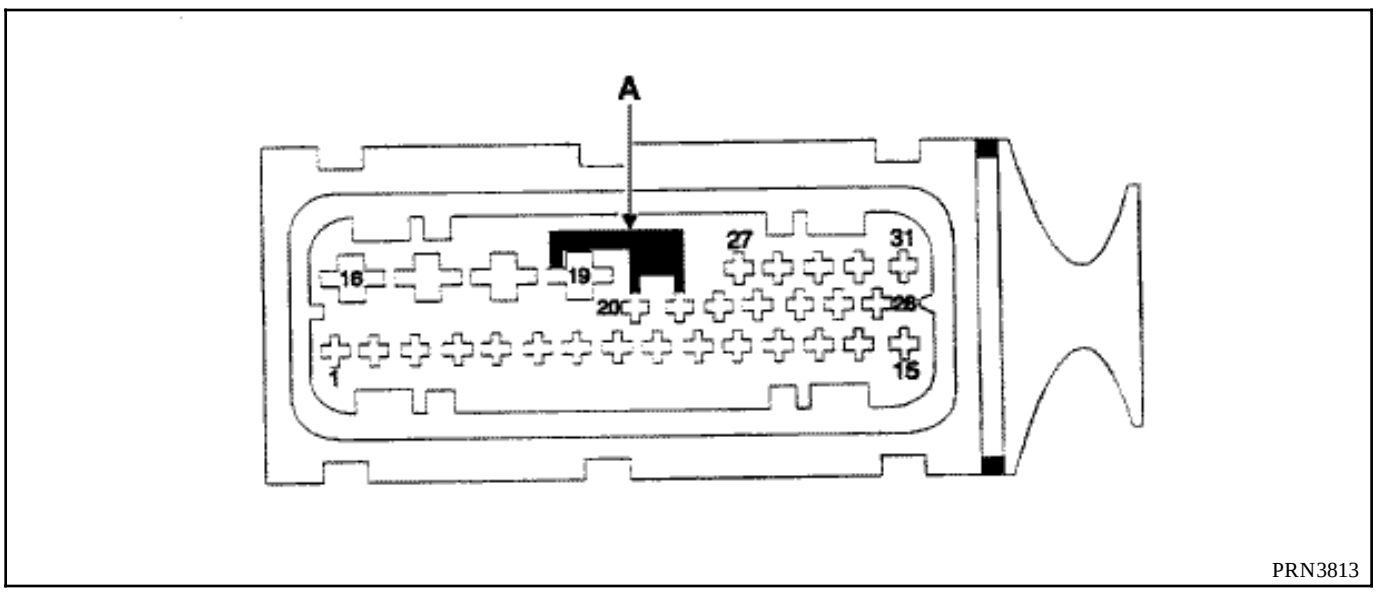
**WIRING DIAGRAM**



**WIRING DIAGRAM KEY**

| | |
|---|---|
| 150 | Rear right hand wheel sensor |
| 151 | Rear left hand wheel sensor |
| 152 | Front right hand wheel sensor |
| 153 | Front left hand wheel sensor |
| 160 | Stop switch |
| 225 | Diagnostic socket |
| 247 | Instrument panel |
| 645 | Passenger compartment connection unit |
| 721 | ABS / hydraulic assembly / computer assembly |
| 777 | Power supply fuse board |
| | |
| R34 | Engine / dashboard |
| R36 | ABS / dashboard |
| R237 | ABS engine / ABS under body |

**31 TRACK CONNECTOR**



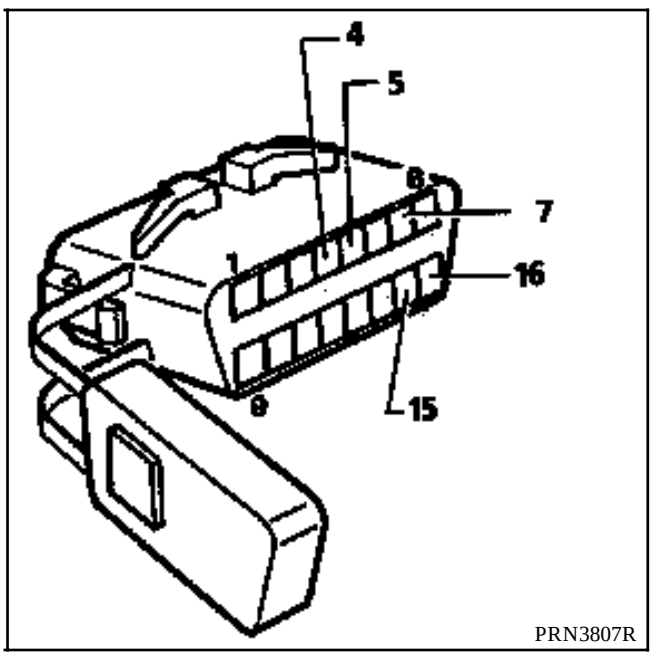

**Allocation of connector tracks**

| Track | Description |
|---|---|
| 1 | Rear RH sensor earth |
| 2 | Not connected |
| 3 | Rear RH sensor information |
| 4 | Front RH sensor earth |
| 5 | Front RH sensor information |
| 6 | Front LH sensor earth |
| 7 | Front LH sensor information |
| 8 | Rear LH sensor earth |
| 9 | Rear LH sensor information |
| 10 | Not connected |
| 11 | Diagnostic line K |
| 12 | Diagnostic line L |
| 13 | Not connected |

| Track | Description |
|---|---|
| 14 | Stop lights switch information |
| 15 | + after ignition computer feed |
| 16 | Pump motor earth |
| 17 | + BAT (solenoid valves and pump motor) |
| 18 | + BAT (solenoid valves and pump motor) |
| 19 | Electronic earth |
| 20 | ABS fault warning light |
| 21 | NIVOCODE (REF) fault warning light |
| 22 | Not connected |
| 25 | Not connected |
| 26 | Front RH wheel speed output |
| 27 | Not connected |
| 31 | Not connected |

A : Micro - spring earthing (terminal **19**) pins **20** and **21** ( **ABS** and **NIVOCODE** warning lights) in case the connector is disconnected.

**DIAGNOSTIC SOCKET**




4 Chassis earth
5 Electronic earth
7 Diagnostic line K
15 Diagnostic line L
16 + battery

| TIGHTENING TORQUES (in daN.m) | | |
|---|---|---|
| **Pipe unions** | **M 10 x 100** | **1.7** |
| | **M 12 x 100** | **1.7** |

Place the vehicle on a lift.

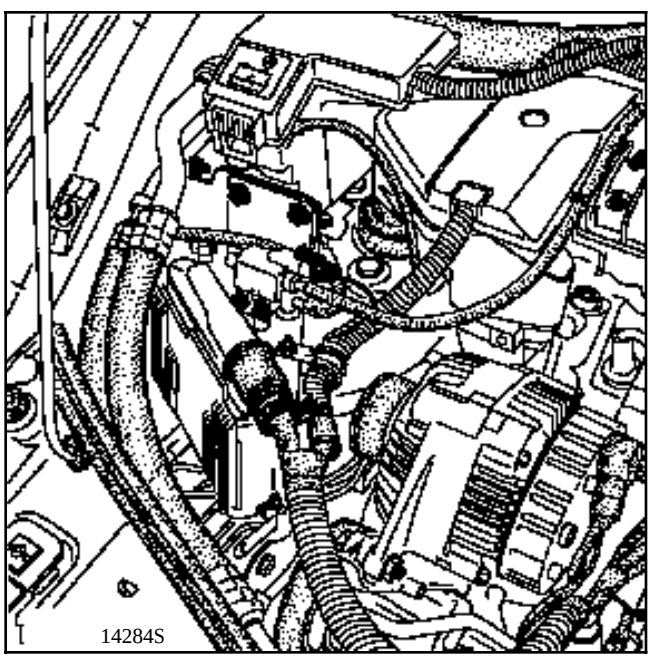
**REMOVAL**

Disconnect the battery.

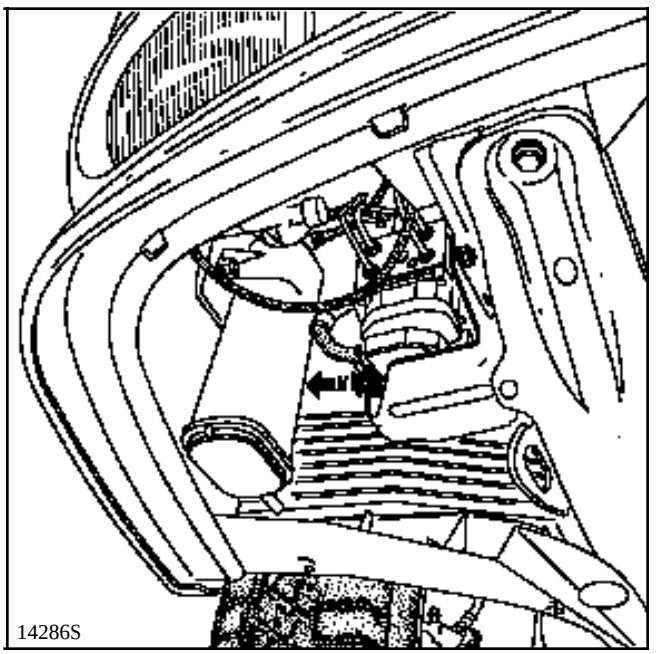
Fit a pedal press to limit the amount of brake fluid which will run out.

Disconnect the connectors from the injection computer and from the canister bleed solenoid valve.

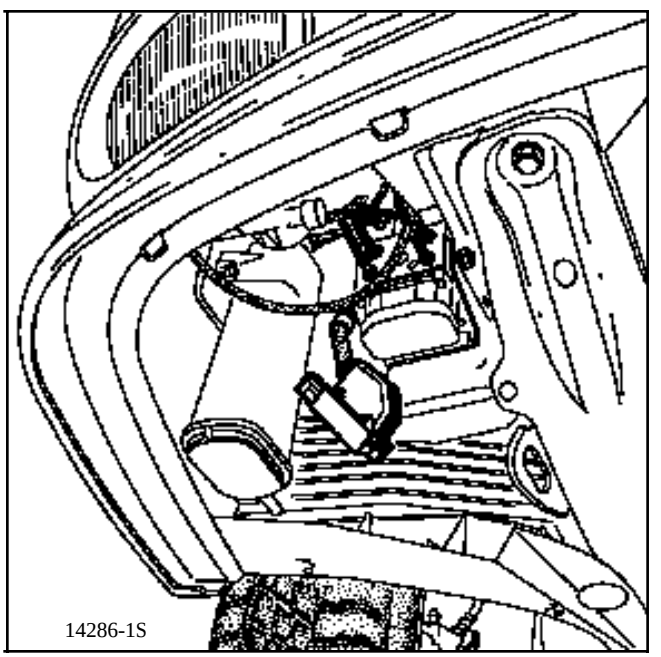
Remove the canister bleed solenoid valve (two nuts) and the injection computer (two bolts).



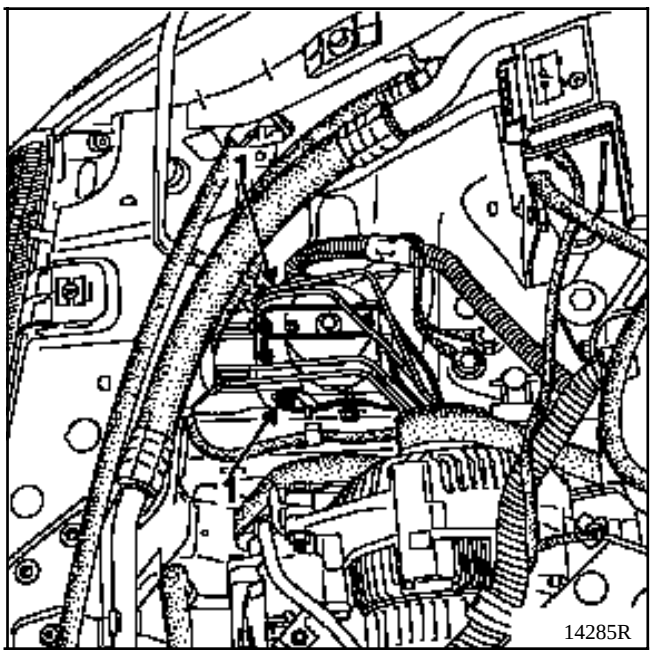

Lift the vehicle and disconnect the ABS computer connector by pulling the control collar.




Disconnect the four hydraulic assembly pipes, mark their position for refitting.



Lower the vehicle and disconnect the two hydraulic assembly pipes.




Remove the hydraulic assembly by slackening the two retaining nuts (1) (without removing them).

**REFITTING**

Refitting is the reverse of removal.

Bleed the braking circuit.

**NOTE :** the computer must not be removed.If it is faulty, replace the complete hydraulic assembly.

**BLEEDING PROCEDURE**

**NOTE :** the hydraulic assembly is pre-filled.

This bleeding procedure must be used when one of the following components has been removed:
- the hydraulic assembly,
- the master cylinder,
- the pipework (between the hydraulic assembly and the master cylinder).

**NOTE :** a braking circuit equipped with **ABS** must have no faults and must be operating correctly.If this is not the case, overhaul the **ABS** circuit hydraulically and electrically.

1) Bleed the braking system conventionally using the pedal or a bleeding device.

   **NOTE :** if, after a road test with **ABS** regulation, the pedal travel is not correct, bleed the hydraulic assembly.

2) Bleeding the hydraulic assembly.

   **IMPORTANT :** the bleeding order must be observed, beginning with the **rear right** brake, then **rear left**, **front left** then **front right**.

   a) Bleed the **rear right** brake by bleeding the hydraulic assembly secondary circuit using the **XR25** :

      - position the bleed container and the hose, open the brake bleed screw,
      - pump the brake pedal (about **10 times**),
      - start the bleed command on the **XR25** (refer to the section "Fault finding - Aid"),
      - pump the brake pedal during the diagnostic bleed phase,
      - at the end of the bleed cycle on the **XR25**, continue to pump the brake pedal and close the brake bleed screw.

   b) Carry out the procedure described in a) for the **rear left**, **front left** and **front right** brake.

   c) Check the pedal travel and if it is not correct, restart the bleeding procedure.

**IMPORTANT :** ensure that there is sufficient brake fluid in the reservoir.

**CHECKING THE WHEEL SPEED SENSORS**

Carry out:

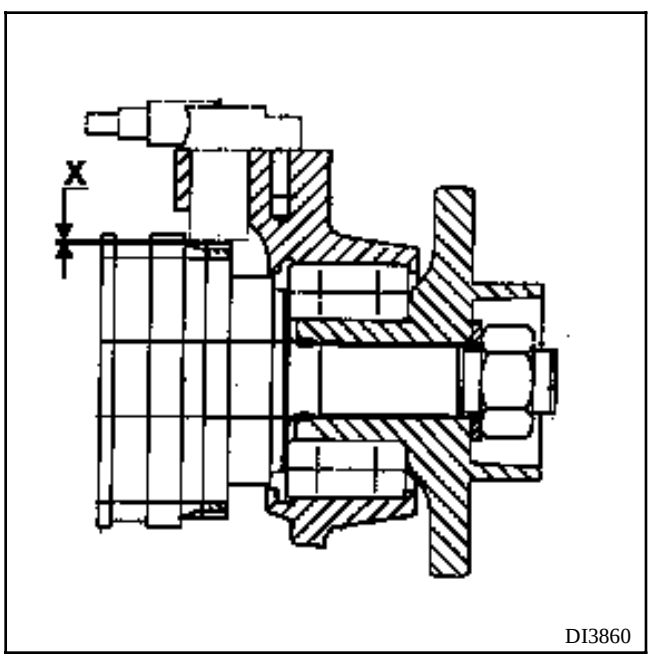
a) a check of the resistance on the sensor connections (from the computer connector to the speed sensor **2 track** connector),

b) a visual inspection of the teeth on the target : if they are faulty replace them,

c) a check of the air gap using a set of shims,

**Front : 0.3 < X < 1.5 mm**

**Rear : 0.2 < X < 1.4 mm**




The air gap can only be checked on vehicles equipped with rear disc brakes.

d) a check of the sensor mounting.

### CONDITIONS FOR APPLYING THE TESTS DEFINED IN THIS FAULT FINDING

The tests defined in this fault finding are only to be applied when the description of the fault dealt with corresponds exactly to the display given on the **XR25**.

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

If a bargraph is only interpreted when it is permanently illuminated, applying the tests recommended in the fault finding when the bargraph is flashing will not allow the reason why this fault was memorised to be located. In this case, only the wiring of the faulty component should be checked (the fault is simply memorised since it was not present at the time of the test).

**NOTE :** the ignition must have been switched on before the **XR25** is used.

### SPECIAL TOOLING REQUIRED FOR WORKING ON THE ABS SYSTEM

- **XR25** test kit.

- Cassette **XR25 n° 17** minimum.

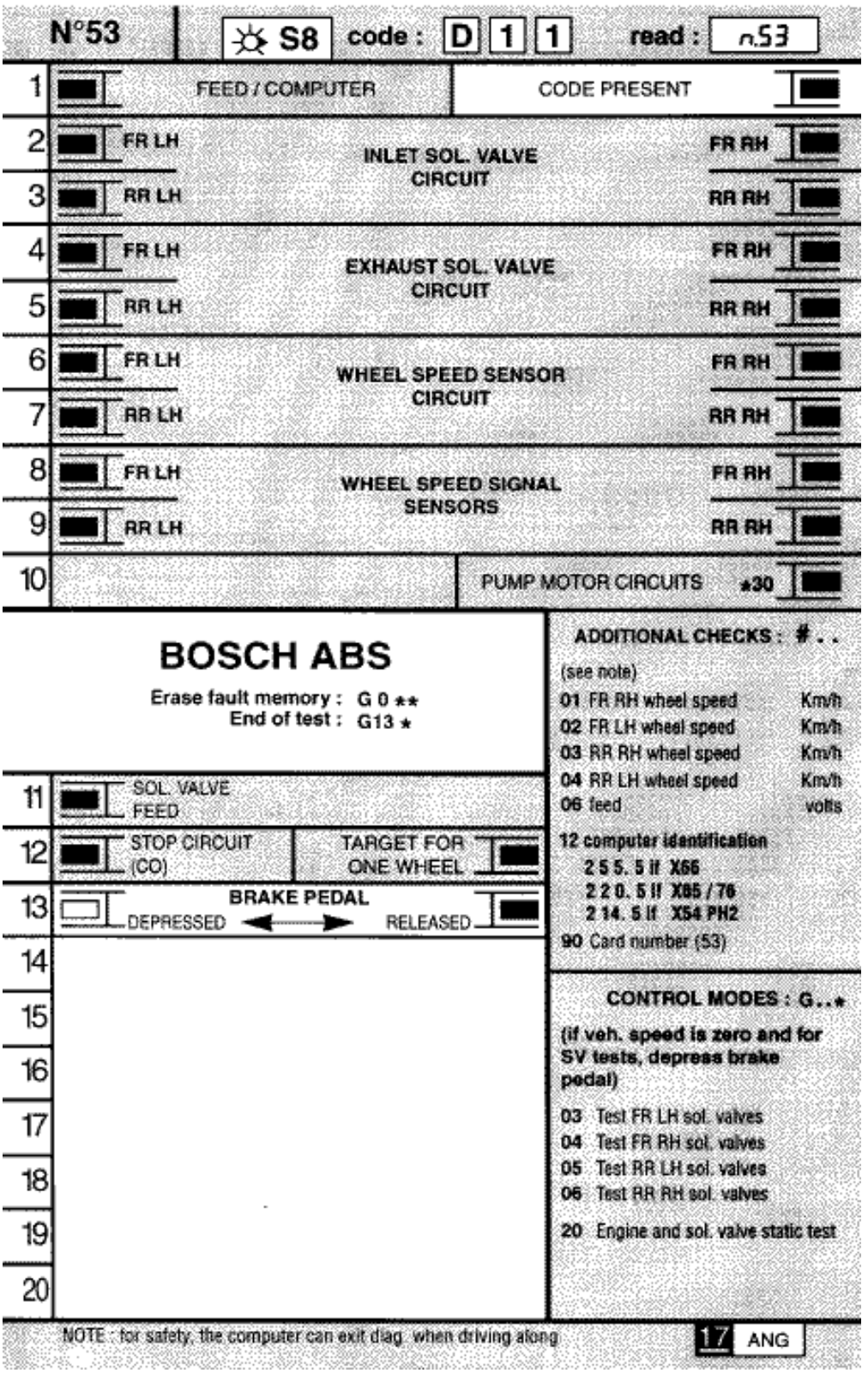
**Reminders:**

The connection between the engine compartment / passenger compartment is different on "right hand drive" and Scénic versions in relation to "left hand drive" versions :
- left hand drive apart from the Scénic : R36 ABS / dashboard union.
- right hand drive and Scénic : R254 dashboard / scuttle panel + R255 ABS / scuttle panel union.

The right hand drive and Scénic have additional scuttle panel wiring, the R255 connection being identical to the R36 on the left hand drive version.

When memorising an intermittent fault, the **ABS** warning light will illuminate the next time the vehicle is used until the speed equals **7.5 mph** (12 km / h). When the fault is memorised, a counter associated to the fault is set to **40**. This value is reduced by 1 every time the ignition is switched on if the fault is not present when the vehicle speed exceeds 7.5 mph (12 km / h).
When the counter value equals 1, it remains at 1 and the fault is not erased.

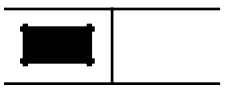
**XR25 FICHE N° 53 CASSETTE N° 17**




FI21753

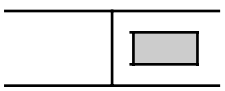
**REPRESENTATION OF THE BARGRAPHS**

- Faults (always on a coloured background) :



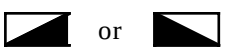
If illuminated, there is a fault on the product tested. The associated text defines the fault.
This bargraph can be:
- Illuminated : fault present.
- Flashing : fault memorised.
- Extinguished : fault absent or not found.

- Status (always on a white background):



Bargraph always located at the top right.
If illuminated, there is a problem setting up the dialogue with the product computer.
If it remains extinguished:
- The code does not exist.
- There is a tool, computer or XR25/computer connection fault.

The representation of the following bargraphs gives their initial status:
Initial status: (ignition on, engine stopped, no operator action).

 or  Undefined | is illuminated when the function or condition specified on the fiche is met

 Extinguished

 Illuminated | extinguishes when the function or condition specified on the fiche is no longer being met

Additional details:

Some bargraphs have a *. The command *.., when the bargraph is illuminated is used to display additional information about the type of fault or status present.

| 1 | Fiche n° 53<br>**Bargraph 1 RH extinguished**<br>Code present |
|---|---|

| ***NOTES*** | None. |
|---|---|

Ensure that the XR25 kit is not the cause of the fault by trying to communicate with a computer on another vehicle. If the XR25 is not the cause and if dialogue cannot be established with another computer on the same vehicle, it may be that a faulty computer is disrupting fault finding lines **K** and **L**. Disconnect the computers in sequence to locate the faulty one.
Check the **ISO** interface is in position **S8** and that you are using the latest version of the XR25 cassette and the correct access code.
Check the battery voltage and carry out any necessary repairs to obtain a correct voltage (**9.5 volts** < U battery < **17.5 volts**).

Check the presence and condition of the ABS fuse on the passenger compartment fuse board (5A).
Check that the computer connector is correctly connected and check the condition of the connection.
Check the connection of the 14 track R36 ABS / dashboard (R254 + R255 on the Scénic and on right hand drive vehicles) connection in the scuttle panel near the battery and check the condition of the connection.
Check the ABS earths (tighten the two earth bolts above the ABS assembly).
Check that the computer feed is correct :
- **earth on track 19** of the 31 track connector,
- **+ after ignition on track 15** of the 31 track connector.

Check that the diagnostic socket feed is correct:
- **+before ignition 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 a dialogue is still not established after these various tests, replace the ABS computer.

| ***AFTER REPAIR*** | When communication has been established, deal with any fault bargraphs which may be illuminated. |
|---|---|

| 1 | Fiche n° 53<br>**Bargraph 1 LH illuminated**<br>Feed / Computer |
|---|---|

| ***NOTES*** | None. |
|---|---|

Check the condition and the position of the **ABS 60A** fuse on the engine connection unit.

Ensure the continuity between the fuse and tracks **17** and **18** of the computer connector ( presence of **+before ignition** on both tracks ). Check the condition of the battery terminals and that they are tight.

Check the wiring on the **31 track** connector of the **ABS** computer.

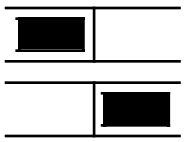
Check the ABS earths (above the hydraulic assembly) and visually check all the ABS wiring.

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

Test again with the **XR25**. If the "**feed / computer**" fault persists, replace the ABS computer.

| ***AFTER REPAIR*** | After replacing the computer, carry out another test using the XR25. |
|---|---|

**2 - 3 - 4 - 5**



Fiche n° 53

**Bargraph 2, 3, 4 or 5 RH or LH flashing**

Solenoid valve circuit

***NOTES***

Even when present at the time of the test, these faults will always be declared by a flashing bargraph.

To confirm their presence and therefore the need to apply the fault finding below, start command **G20***. The fault is present if the bargraph illuminates again permanently at the end of the command.

If bargraph **11** LH is also illuminated, deal with this bargraph **11** LH first.

Check the ABS earths (tighten the two bolts above the ABS assembly).

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

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

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

Switch on the ignition and test again with the **XR25** using command **G20***.
If the "**solenoid valve circuit**" fault reappears, replace the ABS computer.

***AFTER REPAIR***

Erase the computer memory (**GO****).
Carry out a road test then check using the **XR25**.

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| 6 | Fiche n° 53<br>**Bargraph 6 LH illuminated**<br>Front LH wheel sensor circuit |
|---|---|

| ***NOTES*** | None. |
|---|---|

Check the connection and the condition of the sensor wiring.

If the connector is correct, check the resistance of the sensor on its connector. Replace the sensor if its resistance is not around **1.1 KOhms**.

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.

Visually check the wiring of the sensor and check the quality of the wiring on the **31 track** connector of the computer.

If all the checks are correct, reconnect the computer and the wheel speed sensor then erase the computer memory.

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

Switch on the ignition again and replace the sensor if the fault reappears.

If the fault reappears after the sensor is replaced, replace the computer.

| ***AFTER REPAIR*** | Erase the computer memory (**GO****).<br>Carry out a road test then check using the **XR25**. |
|---|---|

| 6 | Fiche n° 53<br>**Bargraph 6 RH illuminated**<br>Front right hand wheel sensor circuit |
|---|---|

| ***NOTES*** | None. |
|---|---|

Check the connection and the condition of the sensor wiring.

If the connector is correct, check the resistance of the sensor on its connector.
Replace the sensor if its resistance is not around **1.1 KOhms**.

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 4** 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.

Visually check the wiring of the sensor and check the quality of the wiring on the **31 track connector** of the computer.

If all the checks are correct, reconnect the computer and the wheel speed sensor then erase the computer memory.

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

Switch on the ignition again and replace the sensor if the fault reappears.

If the fault reappears after the sensor has been replaced, replace the computer.

| ***AFTER REPAIR*** | Erase the computer memory (**GO****).<br>Carry out a road test then check using the **XR25**. |
|---|---|

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| 7 | Fiche n° 53<br>**Bargraph 7 LH illuminated**<br>Rear LH wheel sensor circuit |
|---|---|

| ***NOTES*** | None. |
|---|---|

Check the connection and the condition of the sensor wiring.

Check the connections at the intermediate connector under the body (R237).

If the connector and the connection are correct, check the resistance of the sensor on its connector.
Replace the sensor if its resistance is not around **1.1 KOhms**.

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 connection under the body R237),
- between the other track of the sensor connector and **track 9** of the computer connector (via track A of the connection under the body R237).

Also check the insulation between these connections.

Visually check the wiring of the sensor and check the quality of the wiring on the **31 track connector** of the computer.

If all the checks are correct, reconnect the computer and the wheel speed sensor then erase the computer memory.

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

Switch on the ignition again and replace the sensor if the fault reappears.

If the fault reappears after the sensor has been replaced, replace the computer.

| ***AFTER REPAIR*** | Erase the computer memory (**GO****).<br>Carry out a road test then check using the **XR25**. |
|---|---|

ABS 53641.0

| 7 | Fiche n° 53<br>**Bargraph 7 RH illuminated**<br>Rear RH wheel sensor circuit |
|---|---|

| NOTES | None. |
|---|---|

Check the connection and the condition of the sensor wiring.

Check the connections at the intermediate connector under the body (R237).

If the connector and the connection are correct, check the resistance of the sensor on its connector.
Replace the sensor if its resistance is not around **1.1 KOhms**.

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 connection under the body R237),
- between the other track of the sensor connector and **track 3** of the computer connector (via track C of the connection under the body R237).

Also check the insulation between these connections.

Visually check the wiring of the sensor and check the quality of the wiring on the 31 track connector of the computer.

If all the checks are correct, reconnect the computer and the wheel speed sensor then erase the computer memory.

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

Switch on the ignition again and replace the sensor if the fault reappears.

If the fault reappears after the sensor has been replaced, replace the computer.

| AFTER REPAIR | Erase the computer memory (**GO****).<br>Carry out a road test then check using the **XR25**. |
|---|---|

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**8**

Fiche n° 53

**Bargraph 8 RH or LH flashing**

Front RH or front LH wheel sensor signal

***NOTES***

Even if present at the time of the test, these faults will always be declared by **BG8** LH or RH flashing.

To confirm their presence and therefore the need to apply the fault finding below, carry out a road test . The fault is present if the bargraph illuminates permanently during the test.

If bargraphs **6** and **8** LH are both illuminated, deal with bargraph **6** first.
If bargraphs **6** and **8** RH are both illuminated, deal with bargraph **6** first.

Check the quality of the wheel speed sensor mounting (position and tightening torque).
Check the sensor / target air gap over one wheel revolution : **0.3 mm < air gap < 1.5 mm**.
Check the conformity of the target (condition, number of teeth= 44).

Check the connection and the condition of the sensor wiring.
If the connector is correct, check the resistance of the sensor on its connector.
Replace the sensor if its resistance is not around **1.1 KOhms**.

Visually check the sensor wiring and check the quality of the wiring on the **31 track connector** of the computer.

If all the checks are correct, reconnect the computer and the wheel speed sensor then erase the computer memory.
Exit fault finding (**G13***) and carry out a road test . Replace the sensor if the fault reappears.

If the fault reappears after replacing the sensor, it may be caused by the faulty operation of a solenoid valve. The solenoid valves must therefore be checked hydraulically with the **XR25** using command **G03*** or **G04***(refer to section "Aid"). If ten locking / releasing cycles are not performed on one of the wheels, replace the hydraulic assembly.

If the hydraulic assembly is not faulty, replace the computer.

***AFTER REPAIR***

Erase the computer memory (**GO****).
Carry out a road test then check using the **XR25**.

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| 9  | Fiche n° 53<br><br>**Bargraph 9 RH or LH flashing**<br>Rear RH or rear LH wheel sensor signal |
|---|---|

| ***NOTES*** | Even if present at the time of the test, these faults will always be declared by **BG9** LH or RH flashing.<br><br>To confirm their presence and therefore the need to apply the fault finding below, carry out a road test. The fault is present if the bargraph illuminates permanently during the test.<br><br>If bargraphs **7** and **9** LH are both illuminated, deal with bargraph **7** first.<br>If bargraphs **7** and **9** RH are both illuminated, deal with bargraph **7** first. |
|---|---|

Check the quality of the wheel speed sensor mounting (position and tightening torque).
Check the connection and the condition of the sensor wiring.
Check the connections at the intermediate connector under the body R237.
If the connector is correct, check the resistance of the sensor on its connector.
Replace the sensor if its resistance is not around **1.1 KOhms**.

Visually check the sensor wiring and check the quality of the wiring on the **31 track connector** of the computer.

If all the checks are correct, reconnect the computer and the wheel speed sensor then erase 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 = 44**.
Check the sensor / target air gap over one wheel revolution : **0.2 mm < air gap < 1.4 mm** (if disc brakes).

If all the checks are correct, erase the computer memory, exit fault finding and carry out a road test.
Replace the sensor if the fault reappears .

If the fault reappears after the sensor has been replaced, it may be caused by a solenoid valve operating fault. It is therefore necessary to check the solenoid valves hydraulically with the XR25 using command **G05*** or **G06*** (refer to the section "Aid"). If **ten locking/releasing cycles** are not performed on one of the wheels, replace the hydraulic assembly.

If the hydraulic assembly is not faulty, replace the computer.

| ***AFTER REPAIR*** | Erase the computer memory (**GO****).<br>Carry out a road test then check using the **XR25**. |
|---|---|

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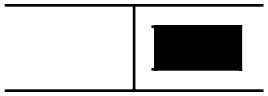
10



**Bargraph 10 RH illuminated or flashing**

Fiche n° 53

Pump motor circuit

**XR25 aid: * 30**

1.dEF : Permanent control or CO engine earth.
2.dEF : Motor not rotating.

***NOTES***

If bargraph 10 RH is flashing, confirm the presence of the fault and therefore the need to apply the fault finding below by starting command **G20*** on the XR25.

The fault is present if the bargraph reappears permanently illuminated at the end of the command.

**1.dEF**

**NOTES**

Replace the computer if the pump motor operates permanently.

Check the ABS earths (tighten the two earth bolts above the hydraulic assembly).

Check / ensure the continuity between the **ABS** earth and track **16** of the computer connector.

Check that the **2 track** connector of the pump motor is locked.

If all the tests are correct, reconnect the computer then erase the memory using command **G0****.

Exit fault finding (G13*) and carry out a road test.

Replace the computer if the fault reappears.

**2.dEF**

**NOTES**

None.

Replace the hydraulic assembly (mechanical blockage of the pump...).

***AFTER REPAIR***

Erase the computer memory (**GO****).
Carry out a road test then check using the **XR25**.

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| 11 | Fiche n° 53<br>**Bargraph 11 LH illuminated**<br>Solenoid valve feed fault |
|---|---|

| ***NOTES*** | None. |
|---|---|

Carry out the operations necessary to obtain a 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 condition of the battery terminals.
- Check the **60A** fuse on the engine connection unit (white mounting).
- Ensure the continuity between the **60A fuse** and **tracks 17 and 18** of the computer connector.
- Check the ABS earths (tighten the two earth bolts above the hydraulic assembly).
- Check / ensure the continuity between the **ABS earth** and **track 19** of the computer connector.

If all checks are correct, reconnect the computer then erase the fault memory using command **G0**.**

Exit fault finding (**G13***) and carry out a road test. Replace the computer if the fault reappears.

| ***AFTER REPAIR*** | Erase the computer memory (**GO****).<br>If the computer is replaced, test again using the XR25. |
|---|---|

| 12 | Fiche n° 53<br>**Bargraph 12 LH illuminated or flashing**<br>Brake light circuit |
|---|---|

| ***NOTES*** | None. |
|---|---|

Operate the brake pedal whilst monitoring bargraphs **13 RH** and **LH**.

**Are the "pedal released" and "pedal pressed down" positions correctly recognised?**

| **YES** | Check the two stop light bulbs and the earth of the rear light units ( **track 14** not earthed through the bulbs when the pedal is not pressed down). |
|---|---|

| **NO** | Apply the fault finding described in the interpretation of bargraphs **13 LH and RH** for cases "Bargraph 13 LH extinguished, brake pedal pressed down". |
|---|---|

| ***AFTER REPAIR*** | Erase the computer memory (**GO****).<br>If the computer has been replaced, test again using the XR25. |
|---|---|

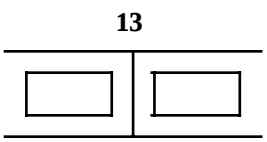
| 12 | Fiche n° 53<br>**Bargraph 12 RH flashing**<br>Target of one of the wheels |
|---|---|

| NOTES | Even if present at the time of the test, this fault will always be declared by a **BG12** RH flashing.<br><br>To confirm its presence and therefore the need to apply the fault finding below, carry out a road test. The fault is present if the bargraph illuminates permanently during the test. |
|---|---|

Check the quality of the wheel speed sensor mounting (position and tightening torque).

Check the conformity of the targets :condition, **number of teeth = 44**.

| AFTER REPAIR | Erase the computer memory (GO**).<br>Test again using the XR25. |
|---|---|




**Bargraph 13 RH and LH**

Brake pedal — Illuminated LH side if pedal pressed down.
Illuminated RH side if pedal not pressed down.

***NOTES***

Only apply the checks below if the bargraph illumination is not consistent with the pedal position.

**Bargraph 13 LH extinguished, brake pedal pressed down on a vehicle equipped with a passenger compartment connection unit (UC BIC)**

If the brake lights are operating :
- Ensure the continuity between **track 19** of the **P17 connector** of the passenger compartment connection unit and **track 14** of the ABS computer connector .
- Replace the passenger compartment connection unit if its internal continuity between **tracks B4** of **P14** and **19** of **P17** is not ensured.

If the brake lights are not operating :
- Check the condition and adjustment of the stop switch and the **15A** fuse of the brake lights (on the passenger compartment connection unit). Replace it if necessary.
- Disconnect the brake light switch then check / ensure the presence of **+ after ignition** on **track 1** of the connector (continuity between this track 1 and track A1 of the P14 connector of the passenger compartment connection unit).
- Check the operation of the brake light switch contact (closed contact between tracks 1 and 3).
- Check and ensure the continuity between **track 3** of the brake light switch connector and **track B4** of the **P14 connector** of the passenger compartment connection unit.
- Replace the passenger compartment connection unit if the internal continuity between **tracks B4** of **P14**, **B5** of **P13** and **19** of **P17** is not ensured.
- Also ensure the continuity between **track 19** of the **P17** connector of the passenger compartment connection unit and **track 10** of the ABS computer connector ( R36 ABS / dashboard intermediate connection or R254 + R255 on the Scénic and on right hand drive vehicles).

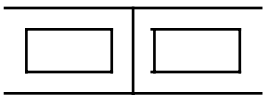
**Bargraph 13 LH extinguished brake pedal pressed down on vehicles equipped with a relay fuse unit (no UC BIC)**

If the brake lights are operating :
- Ensure the continuity between dashboard / rear LH connection **R2** on **track 3** and **track 14** of the ABS computer connector .

If the brake lights are not operating :
- Check the condition and adjustment of the brake light switch and the **15A** brake light fuse (on the passenger compartment fuse board). Replace it if necessary.
- Disconnect the brake light switch then check / ensure the presence of **+ after ignition** on **track 1** of the connector.
- Check the operation of the brake light switch contact (closed contact between tracks 1 and 3).
- Check and ensure continuity between **track 3** of the brake light switch connector and the dashboard / Rear LH **R2 connection** on **track 3**.

***AFTER REPAIR***

Carry out a road test followed by a check with the XR25 kit.

| | |
|---|---|
| 13<br>  <br>CONT | |

**Bargraph 13 permanently illuminated on the LH on vehicles equipped with a passenger compartment connection unit (UC BIC)**

- Check the condition and adjustment of the brake light switch. Replace it if necessary.
- Check the operation of the brake light switch contact (contact closed between 1 and 3). Replace the brake light switch if there is permanent continuity between these two tracks.
- Check and ensure insulation from 12 **volts** of the connection between **track 3** of the brake light switch connector and **track 14** of the ABS computer connector .
  Intermediate connections (internal connection to the passenger compartment connection unit) :
  - **track B4 of the P14 connector.**
  - **track 19 of the P17 connector.**

  Intermediate connection(s) : **R36** ABS / dashboard or **R254** + **R255** on the Scénic and on right hand drive vehicles.

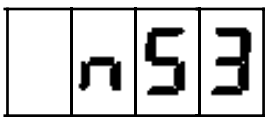
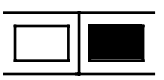
**Bargraph 13 permanently illuminated LH on vehicles equipped with a relay fuse unit (not UC BIC)**

- Check the condition and adjustment of the brake light switch. Replace it if necessary.
- Check the operation of the brake light switch contact (closed contact between tracks 1 and 3). Replace the brake light switch if there is permanent continuity between these two tracks.
- Check and ensure insulation from **12 volts** of the connection between **track 3** of the brake light switch connector and **track 14** of the ABS computer connector.
  Intermediate connections :
  - ABS / dashboard **R36** (or **R254** + **R255** on the Scénic and on right hand drive vehicles)
  - Dashboard / rear LH **R2**.

| | |
|---|---|
| ***AFTER REPAIR*** | Carry out a road test followed by a check using the XR25. |

# Fault finding - Checking conformity

| NOTES | Carry out this conformity check only after a complete check using the XR25. |
|---|---|

| Order of operations | Function to be checked | Action | Bargraph | Display and notes |
|---|---|---|---|---|
| 1 | Dialogue with XR25 | **D11** (selector on S8) | |  |
| 2 | Computer conformity | **#12** | |  |
| 3 | Operation of the **ABS** warning light-computer initialisation check | Ignition turned on | | Warning light illuminates for **2 seconds** when the ignition is turned on (refer to fault finding if it remains illuminated or if it does not illuminate). |
| 4 | Recognition of brake pedal not pressed | | **13**  | |
| 5 | Recognition of brake pedal pressed down | Press brake pedal | **13**  | |

**USING THE COMMAND MODES :**

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

Lift the vehicle to allow the wheels to be turned and check that they rotate freely.
Keep the brake pedal pressed down to prevent the wheel being tested rotating if when it is being moved by hand (do not brake too hard so as to be at the releasing limit).

Enter G0X* → Ten cycles of unlocking / locking must be noted on the wheel concerned.

Controlling the pump motor : **G08***

Enter G08* and press down on the brake pedal → The motor should operate for **2 seconds**.

Controlling the pump motor and the solenoid valves : **G20***

Enter G20* and press down on the brake pedal → The motor and solenoid valves should operate briefly.

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 "Bleeding the circuits" section of the Technical Note.

# Fault finding - Customer complaints

| NOTES | Only refer to these customer complaints after carrying out a complete check using the **XR25**. |
|---|---|

## FAULTS FOUND IN THE WARNING LIGHT OPERATION

- The ABS warning light does not illuminate for 3 seconds after the ignition is switched on. **Chart 1**
- Permanent illumination of the ABS warning light when the ignition is switched on **Chart 2**
- Re-illumination of the ABS and / or brake warning light after engine started. **Chart 3**
- ABS and / or brake warning light illuminates temporarily when driving. **Chart 3**
- The brake warning light does not illuminate for 1 second when the ignition is switched on. **Chart 4**
- Permanent illumination of the brake warning light when the ignition is switched on. **Chart 5**
- Permanent illumination of the ABS and brake warning lights when the ignition is on. **Chart 6**

## BRAKING FAULTS NOTICED WITH ABS REGULATION

- Locking of one or more wheels. **Chart 7**
- Pulling. **Chart 8**
- Wandering. **Chart 9**
- Unexpected ABS operation at low speed and low brake pedal force. **Chart 10**
- Unexpected ABS operation on poor road surface. **Chart 11**
- Unexpected ABS operation when special equipment used (carphone, CB...). **Chart 12**
- Extended brake pedal travel following a regulation phase (with irregular pedal when regulation begins) **Chart 13**
- Spongy pedal. **Chart 14**
- Brake pedal vibration. **Chart 15**
- Noise from pump, pipes or hydraulic assembly. **Chart 16**

# Fault finding - Customer complaints



| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

**OTHER CASES**

- The ABS and brake warning lights do not illuminate, computer disconnected. **Chart 17**
- No communication with ABS computer. **Chart 18**

| Chart 1 | THE ABS WARNING LIGHT DOES NOT ILLUMINATE FOR 3 SECONDS WHEN THE IGNITION IS SWITCHED ON |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Check the **15A** fuse for the instrument panel on the passenger compartment fuse board
(if the problem is general to all instrument panel operations).

Switch off the ignition.
Disconnect the computer then switch the ignition on again.
**Does the ABS warning light illuminate?**

yes → Check the connections on the **31 track** connector.
Replace the computer if the fault persists.

no ↓

Check the condition of the ABS warning light bulb and its power supply.
Ensure the continuity of the connection between **track 20** of the computer connector and the ABS warning light.
If the fault persists, check the operation of the instrument panel.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

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| Chart 2 | ABS WARNING LIGHT ILLUMINATED PERMANENTLY, IGNITION ON (without a fault being declared on the XR25) |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the **XR25**. |
|---|---|

Disconnect the computer and check the position of the shunt in the connector (between track 19 and tracks 20 and 21). Ensure on the computer side that a shunt opening pin is present between tracks **19 and 20/21** of the computer connector.

Reconnect the computer .
Check that there is continuity between **track 10** of connector **R36 / R255** front engine / ABS on the ABS side and earth.
**Is continuity ensured?**

yes → Search for a fault on the shunt or a short circuit to earth of the connection between **track 20** of the computer connector and **R36 / R255** on **track 10**.

no ↓

Search for a short circuit to earth of the connection between **track 10** of connector **R36 / R255** and the ABS warning light.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

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| Chart 3 | RE-ILLUMINATION OF ABS AND/OR BRAKE WARNING LIGHT AFTER ENGINE STARTED<br>TEMPORARY ILLUMINATION OF ABS AND/OR BRAKE WARNING LIGHT WHEN DRIVING |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Check the voltage of the computer power supply : **9.5 volts < correct voltage < 17.5 volts**.

If necessary, carry out the following operations :
- Check the battery charge (check the charging circuit if necessary).
- Check the tightness and condition of the battery terminals.
- Check the ABS earths (tightness of the two earth bolts above the ABS assembly).

Disconnect the computer and check the condition of the connection and the position of the shunt in the 31 track connector (between track 19 and tracks 20 and 21).

On the computer side,check the condition of the opening pin of this shunt.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

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| Chart 4 | THE BRAKE WARNING LIGHT DOES NOT ILLUMINATE FOR 1 SECOND WHEN THE IGNITION IS SWITCHED ON |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Switch off the ignition.
Disconnect the computer then switch the ignition on again.
**Does the brake warning light illuminate?**

yes → Check the connection on the computer connector.
Replace the computer if the fault persists.

no → Check the condition of the brake warning light bulb and its power supply.
Ensure the continuity of the connection between **track 21** of the computer connector and the warning light.
If the fault persists, check the operation of the instrument panel.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

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| Chart 5 | PERMANENT ILLUMINATION OF THE BRAKE WARNING LIGHT, IGNITION ON |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

As this is a multi-function warning light,

- check the position of the handbrake and the circuit of its switch.
- check the brake fluid level in the reservoir.
- check the level of brake pads wear.

Ensure insulation in relation to earth of the connection between **track 21** of the computer connector and the brake warning light.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

| Chart 6 | PERMANENT ILLUMINATION OF THE ABS AND BRAKE WARNING LIGHTS, IGNITION ON |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Check **5A ABS fuse** on the passenger compartment fuse board.

Check the ABS earths (tightness of the two earth bolts above the hydraulic assembly).

Check that the computer and the intermediate connections **R36 or R254 and R255** are correctly connected (also check the condition of the connections).

Check that the computer is correctly fed :
- Ensure the presence of **+after ignition on track 15** of the computer connector .
- Ensure the continuity with **earth** of **tracks 16 and 19** of the computer connector .

If the problem persists, refer to **Chart 2** and **Chart 5**.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

| Chart 7 | LOCKING OF ONE OR MORE WHEELS |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

**REMINDER:** The locking of the wheels of a vehicle fitted with **ABS** or tyre squeal, which the customer perceives to be the wheels locking, can be linked to a normal reaction of the system and must not systematically be considered as a fault:

- Locking is allowed below **3.75 mph** (6 km / h) (the system no longer triggers regulation).
- Braking with **ABS** regulation on very poor roads (high degree of tyre squeal).
- ----------

However, to check that the wheels really are locking , raise the vehicle so as to be able to rotate the wheels and check for:

- A possible incorrect connection of the speed sensors.
  - Use functions **#01, #02, #03 and #04** while rotating the associated wheels and ensure the coherence of the results obtained.
  - If the value measured is zero, rotate the other wheels to confirm an incorrect electrical connection of the sensors and repair the wiring.

- A possible incorrect connection of the pipes in the hydraulic assembly.
  • Use functions **G03***, **G04***, **G05*** and **G06*** whilst pressing the brake pedal and check for the presence of ten locking / releasing cycles on the wheel in question (refer to the "**Aid**" section).
  - If the ten cycles do not occur on the wheel tested (wheel remains locked), see if they occur on another wheel (if a bad connection is confirmed : repair).
  - If the ten cycles do not occur on a wheel without the pipes being incorrectly connected , replace the hydraulic assembly.
  - Check the condition of the ABS targets and their conformity.
  - Also check the sensor / target air gap over one revolution of each wheel (check impossible on rear axle assembly with drums) :

    **0.3 mm < air gap over one revolution of front wheel < 1.5 mm.**

    **0.2 mm < air gap over one revolution of rear wheel < 1.4 mm** (if disc brakes).

If the fault persists after these checks, replace the hydraulic assembly.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

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| Chart 8 | PULLING |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Disconnect one wheel sensor.
Start the engine and ensure that only the ABS fault warning light is illuminated. If the brake fault warning light is also illuminated, do not drive the vehicle as the "braking compensator" function is no longer guaranteed.
Carry out a road test with the ABS not operating.
**Does the fault persist under these conditions?**

yes →

If the pedal travel is relatively long, bleed the braking circuit.
If the travel is normal, check the tyre pressures, the front axle assembly or for any possible leaks in the circuit.

non ↓

Lift the vehicle so that the wheels can be rotated and check for :
- a possible incorrect connection of the speed sensors,
- a possible incorrect connection of the pipes in the hydraulic assembly.

For both the tests, refer to and apply the methods defined in **Chart 7**.
Check the condition of the ABS targets and their conformity. Also check the sensor / target air gap over one revolution of each front + rear wheel if disc brakes.
If the fault persists, replace the hydraulic assembly.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

| Chart 9 | WANDERING |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Disconnect one wheel speed sensor.
Start the engine and ensure that only the ABS fault warning light is illuminated. If the brake warning light is also illuminated, do not drive the vehicle since the "**braking compensator**" function is no longer ensured.
Carry out a road test with the **ABS** not operating.
**Does the fault persist under these conditions?**

yes → Fault in road holding not linked to the **ABS** system.
Check the condition and conformity of the brake linings, check the tyre pressure, the front axle assembly, ...

no ↓

Normal behaviour linked to the operation of the system in the regulation phase essentially on uneven adherence or poor road surfaces.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

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| Chart 10 | UNEXPECTED ABS OPERATION AT LOW SPEED AND LOW PEDAL FORCE |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Vibrations can be felt at the brake pedal which may be linked to the reactions in the system in specific situations:
- driving over speed bumps.
- rear inside wheel lifts off the ground on tight bends.

This feeling may be linked to the operation of the "**braking compensator**" when the pressure is limited at the rear axle assembly.

If the problem is different to this, check the speed sensor connectors (micro-breaks) and the air gaps.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

| Chart 11 | UNEXPECTED ABS OPERATION UNDER POOR ROAD CONDITIONS |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

On poor roads, it is normal to feel juddering and vibrations at the pedal as well as more tyre squeal than when on a good road surface.
The result is an impression of a variation in efficiency which should be considered as being normal.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

| Chart 12 | UNEXPECTED ABS OPERATION WHEN SPECIAL EQUIPMENT USED (carphone, CB...) |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Check that the equipment causing the problem when being used is approved.
Check that this equipment has been correctly installed without modifying the original wiring, especially that of the **ABS** (connections to earth and **+after ignition** / **before ignition** of the **ABS** not authorised).

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

| Chart 13 | EXTENDED PEDAL TRAVEL FOLLOWING A REGULATION PHASE (with irregular pedal when entering a regulation phase) |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Air leaking into the braking circuits from the regulation channels of the hydraulic assembly.
Bleed the circuits according to the procedure recommended in the Workshop Repair Manual (use of command modes on the XR25).
After the operation, carry out a road test with ABS regulation

If the fault persists, carry out the previous operation once or twice again.
If the customer complaint is particularly serious and if bleeding does not improve the situation, replace the hydraulic assembly.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

| Chart 14 | SPONGY PEDAL |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Air in the braking circuits.

Bleed the circuits in the normal way starting with the rear right brake, then the rear left brake, front left brake then front right brake.

Repeat the operation if necessary.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

| Chart 15 | BRAKE PEDAL VIBRATION |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Normal reaction at the brake pedal during an ABS regulation phase or when pressure is limited on the rear axle ("**brake compensator**" function).

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

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| Chart 16 | NOISE FROM THE PUMP, PIPES OR HYDRAULIC ASSEMBLY |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

- Vibration of the assembly : check the presence and condition of the insulating rubber assembly mounting blocks.
- Vibration of the pipes : check that all pipes are properly clipped into their mounting clips and that there is no contact between pipes or between the pipes and bodywork.

To determine the origin of the noise, the functions **G03*, G04*, G05* and G06*** on the XR25 can be used (refer to the "Aid" section).

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

| Chart 17 | THE ABS WARNING LIGHT DOES NOT ILLUMINATE, COMPUTER DISCONNECTED |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Disconnect the ABS computer .
Check for the presence of the shunt between **track 19** and **tracks 20 and 21** of the computer connector .

| AFTER REPAIR | Carry out a road test then check using the XR25. |
|---|---|

| Chart 18 | NO COMMUNICATION WITH THE ABS COMPUTER |
|---|---|

| NOTES | Only refer to these customer complaints after carrying out a complete check using the XR25. |
|---|---|

Ensure that the XR25 is not the cause of the fault by trying to communicate with a computer on another vehicle. If the XR25 is not the cause and dialogue cannot be established with any other computer on the same vehicle, it may be that a faulty computer is disrupting the **K** and **L** fault finding bus. Disconnect the computers in sequence to locate the faulty one.
Check that the ISO interface is in position **S8** and that you are using the latest version of the XR25 cassette and the correct access code.
Check the battery voltage and carry out any necessary repairs to obtain a correct voltage **(9.5 volts < U battery < 17.5 volts)**.

Check the presence and condition of the ABS fuse on the passenger compartment fuse board (5A).
Check the connection of the computer connector and the condition of its connections.
Check the connection of the 14 track R36 ABS / dashboard connection (R254 + R255 on the Scénic and on right hand drive vehicles) in the scuttle panel near the battery and check the condition of its connections.
Check the ABS earths (tightness of the two earth bolts above the ABS assembly).
Check that the computer power supply is correct :
- **earth on track 19** of the 31 track connector,
- **+after ignition on track 15** of the 31 track connector.

Check that the diagnostic socket is receiving the correct power supply :
- **+ before ignition on track 16**,
- **earth on track 5**.

Check the continuity and 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 a dialogue is still not established after these various tests, replace the ABS computer.

| AFTER REPAIR | Carry out a road test then check using the XR25. |
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ABS 53641.0