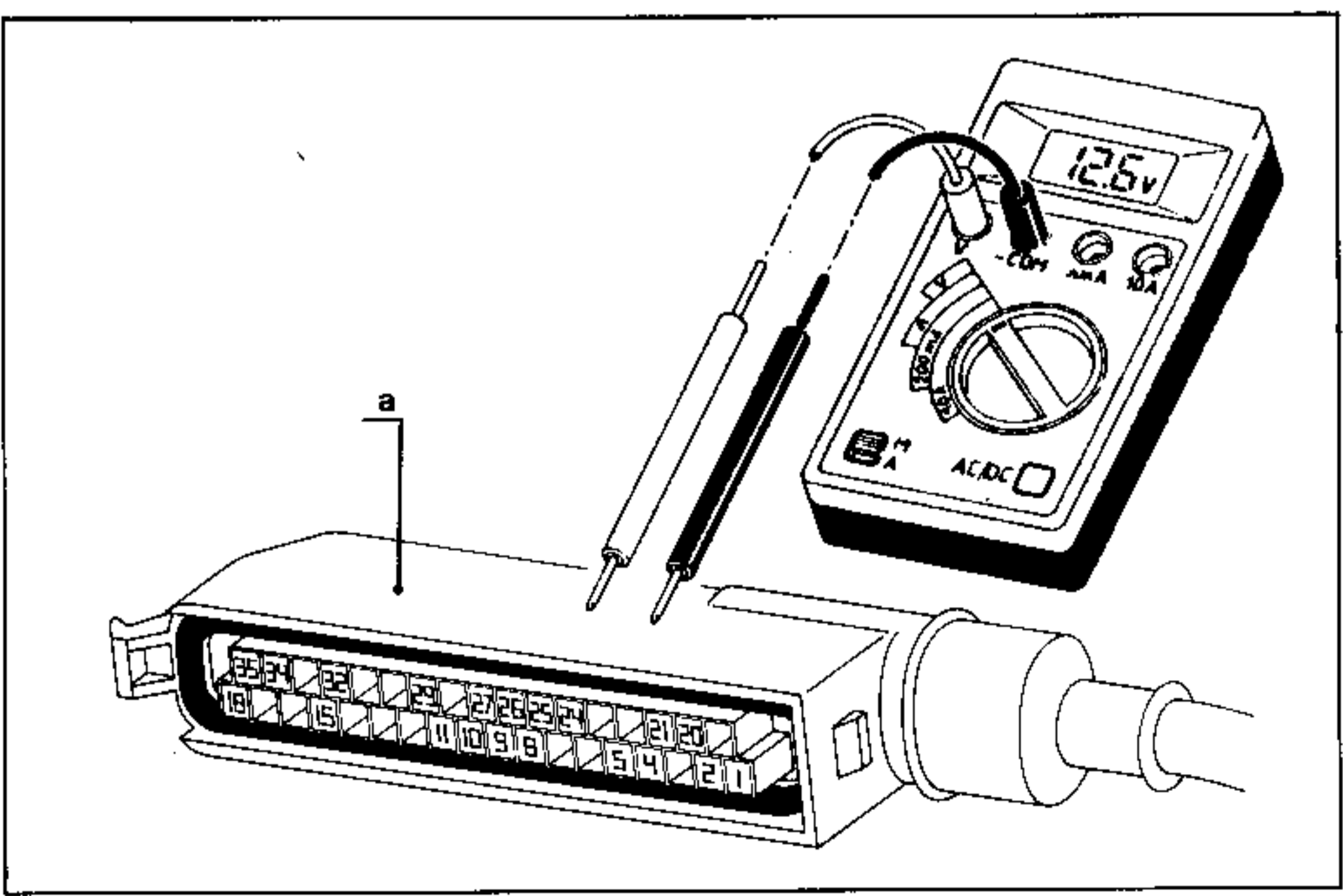


BX. 45-25e



PARTS LIST

47 : A.B.S. hydraulic control block
 54 : A.B.S. electronic control unit
 146 : Front LH wheel sensor
 147 : Front RH wheel sensor
 148 : Rear LH wheel sensor
 149 : Rear RH wheel sensor
 185 : Stoplamp switch
 229 : Antitheft/ignition switch
 312 : Anti-blocage system diode
 457 : LH stoplamp
 458 : RH stoplamp
 470 : Fuse
 756 : A.B.S. electrovalve relay
 963 : A.B.S. warning lamp.

WARNESS IDENTIFICATION

A : Front
 E : Screen wiper
 F : Connection for rear lamps
 MF : Rear lamp earth
 R : Rear
 (No identification) : Anti-blocage system.

* : Connection to stoplamp 1/9/87 →

NOTE : For the parts and connectors location, see the wiring diagram of (12) Op. XB19E.510.00C.

A.B.S. SYSTEM AUTO-CHECKING DEVICE :

The anti-locking braking system has a self check device built into the electronic control unit.

• AIM :

- Check of the internal circuits of the ECU
- Check of the A.B.S. units.

Remark : the road wheel sensor signals will be checked with the engine running.

• PRINCIPLE OF OPERATION :

- The A.B.S. warning lamp (963) circuit is completed, being connected to earth by connection **27** of the electronic control unit (54). The lamp **is on**.
- Connection **2** of the ECU is electrically supplied.
- Connection **8** supplies the control relay (**756**) via the ECU.
- Connections **8** and **20** of the ECU are supplied by the control relay (**756**) power circuit.
- If no fault is found, the ECU will cut off the earth circuit at connection **27** : **the warning lamp will go out.**
- **The system is ready to operate.**

A.B.S. FAULT FINDING :

When a fault is detected :

- Connection **8** of the ECU is no longer supplied electrically.
- Control relay (**756**) does not operate.
- **The warning lamp circuit is completed to earth via the relay.**
- **The A.B.S. is out of operation.**

DIAGNOSTIC AND ELECTRICAL CHECKS

NORMAL CYCLE	FAULT DETECTED	POINTS TO CHECK	Chapter
<p>ANTITHEFT/IGNITION SWITCH IN « HOME » POSITION</p> <p>↓ E</p> <p>ANTITHEFT/IGNITION SWITCH IN THE « ACCESSORY » POSITION</p> <p>↓ E</p> <p>ANTITHEFT/IGNITION SWITCH IN THE « IGNITION ON » POSITION</p> <p>↓ A</p> <p>SELF CHECK</p> <p>↓ E</p> <p>ANTITHEFT/IGNITION SWITCH IN THE « STARTER » POSITION</p> <p>↓ A</p> <p>ANTITHEFT/IGNITION SWITCH IN THE « IGNITION/ON, ENGINE RUNNING » POSITION</p> <p>↓ A</p> <p>SELF CHECK</p> <p>↓ E</p> <p>VEHICLE MOVING</p> <p>↓ E</p> <p>A = ABS warning lamp stays on</p>	<p>A →</p>	<ul style="list-style-type: none"> - Electrical supply to the ECU - Wheel sensor resistances - Resistance of controlling electrovalves (inlet and exhaust) - Resistance of the main electrovalve - Earth screening of the wheel sensor leads - Current output from the wheel sensors 	<p>1 (page 5)</p> <p>2 (page 5)</p> <p>4 (page 6)</p> <p>5 (page 6)</p> <p>6 (page 6)</p> <p>3 (page 5)</p>

CHECKING THE A.B.S. ELECTRONIC UNITS AND ELECTRICAL CIRCUITS :

The ECU connector checks are carried out with the ECU disconnected.

So as not to deteriorate the sockets of the harness connector, it is advised to remove the protection cover « a » and to take readings on the wire entry as shown on drawing, page 2.

With the protector cover removed, the multipin connector has the sockets numbered 1 to 35.

IMPORTANT : Always switch off the electrical supply to the ECU before disconnecting it.

CHAPTER 1 – Electrical supply to the ECU :

CHECKING EQUIPMENT VOLTMETER or OHM-METER	CORRECT VALUE	IF READING IS INCORRECT
<ul style="list-style-type: none"> Switch the ignition on (accessory or ignition position) – Voltmeter between connections 1 and 2. 	above 12 V	Check the electrical circuit for continuity.
<ul style="list-style-type: none"> Switch the ignition off : – Ohm-meter between connections 1 and 3 	less than 1Ω	Check : – control relay (756) – the continuity of the circuit
<ul style="list-style-type: none"> – Ohm-meter between connections 1 and 20 	less than 1Ω	Check, for continuity, the electrical circuit
<ul style="list-style-type: none"> – Ohm-meter between connections 1 and 8 	between 50 and 100Ω	Check : – control relay (756) – the continuity of the circuit
<ul style="list-style-type: none"> Link up connections 2 and 8 then switch the ignition on : – Volt-meter between connections 1 and 3. 	above 12 V	Check : – control relay (756) – the continuity of the circuit

CHAPTER 2 – Wheel sensor resistances :

CHECKING EQUIPMENTS : OHM-METER	CORRECT VALUE	IF READING IS INCORRECT
R.H. rear sensor (149) : Ohm-meter between connections 4 and 22. L.H. rear sensor (148) : Ohm-meter between connections 6 and 24. R.H. front sensor (147) : Ohm-meter between connections 7 and 25. L.H. front sensor (146) : Ohm-meter between connections 5 and 23.	between 800 and 1400Ω	Connect an ohm-meter on the connections of the corresponding sensor. – if the reading is correct, check the circuit for continuity between the sensor and the ECU plug. – if the reading is incorrect, change the sensor.

CHAPTER 3 – Current output from the sensors :

CHECKING EQUIPMENT : VOLTMETER « AC » (or « ≈ ») range	CORRECT VALUE	IF READING IS INCORRECT
The check is carried out by rotating the road wheel of the sensor concerned at approximately 1 turn per second : R.H. rear sensor (149) : Voltmeter between connections 4 and 22. L.H. rear sensor (148) : Voltmeter between connections 6 and 24.	between 100 and 570mV	Check : – the reading of the sensor, – the air gap (not adjustable) – the rotor wheel (fitting and condition of the teeth)
R.H. front sensor (147) : Voltmeter between connections 7 and 25. L.H. front sensor (146) : Voltmeter between connections 5 and 23.	between 100 and 350mV	

CHAPTER 4 – Resistance of the controlling electrovalves (located inside the hydraulic control block) :

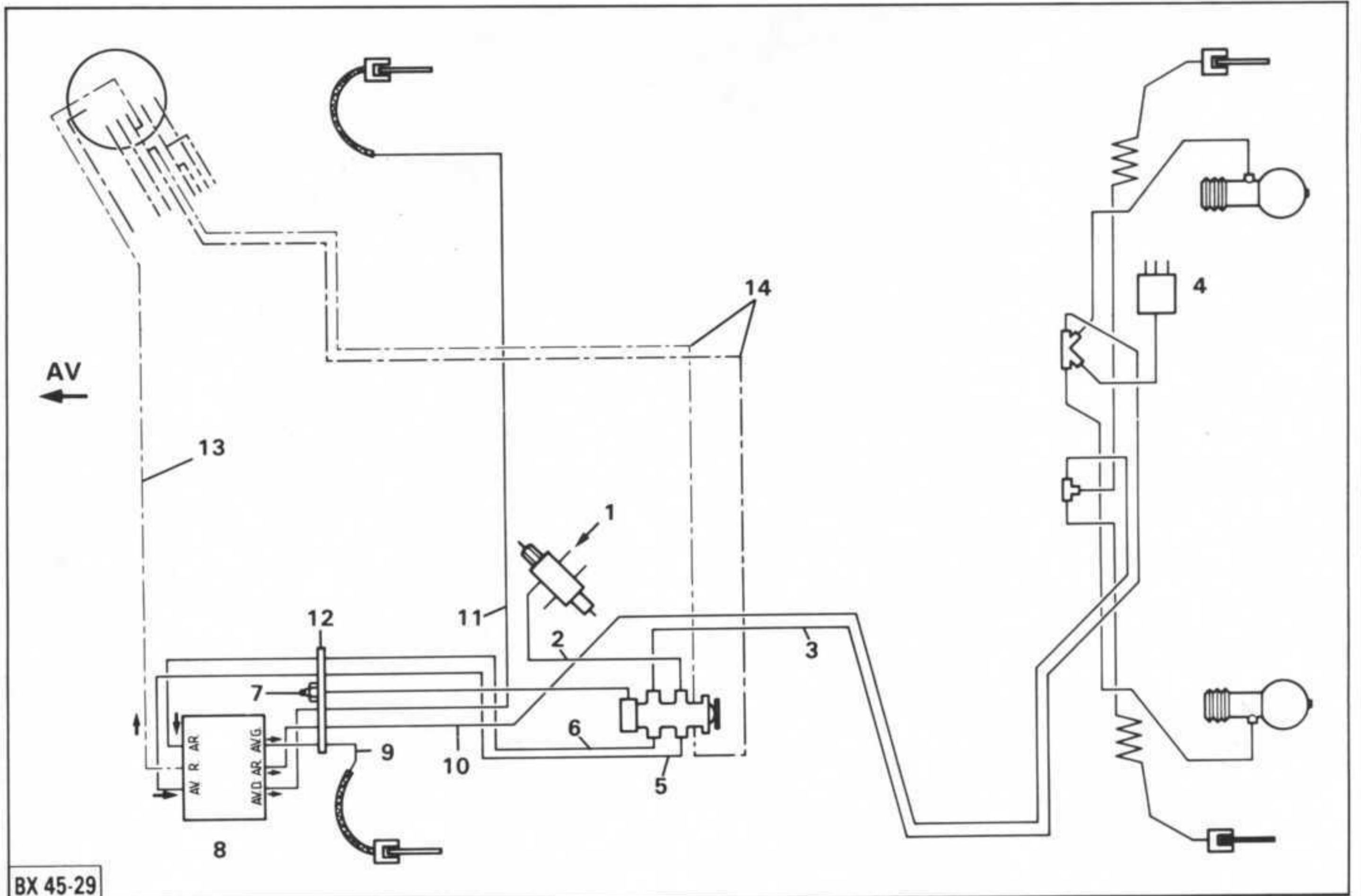
CHECKING EQUIPMENT : OHM-METER	CORRECT VALUE	IF READING IS INCORRECT
Ohm-meter between connections 11 and 1	less than 1 Ω	Check : <ul style="list-style-type: none"> - on the 7-way connector of the hydraulic control block, if lead 11 is to earth. - for continuity, the circuit on lead 11 between the ECU and the hydraulic control block.
R.H. front electrovalve (inlet) : ohm-meter between connections 11 and 15 R.H. front electrovalve (exhaust) : ohm-meter between connections 11 and 34 L.H. front electrovalve (inlet) : ohm-meter between connections 11 and 35 L.H. front electrovalve (exhaust) : ohm-meter between connections 11 and 16 Rear electrovalve (inlet) : ohm-meter between connections 11 and 17 Rear electrovalve (exhaust) : ohm-meter between connections 11 and 33	between 3 and 7 Ω	Check : <ul style="list-style-type: none"> - on the 7-way connector of the hydraulic control block, the resistance of the electrovalves : ohm-meter between leads : - 11 and 15 - 11 and 34 - 11 and 35 - 11 and 16 - 11 and 17 - 11 and 33 - If one of the readings is incorrect, change the hydraulic block. - If all the readings are correct, check the continuity of the electrical circuit between the 7-way connector of the hydraulic control block and the ECU plug.

CHAPTER 5 – Resistance of the main electrovalve (attached to the hydraulic control block)

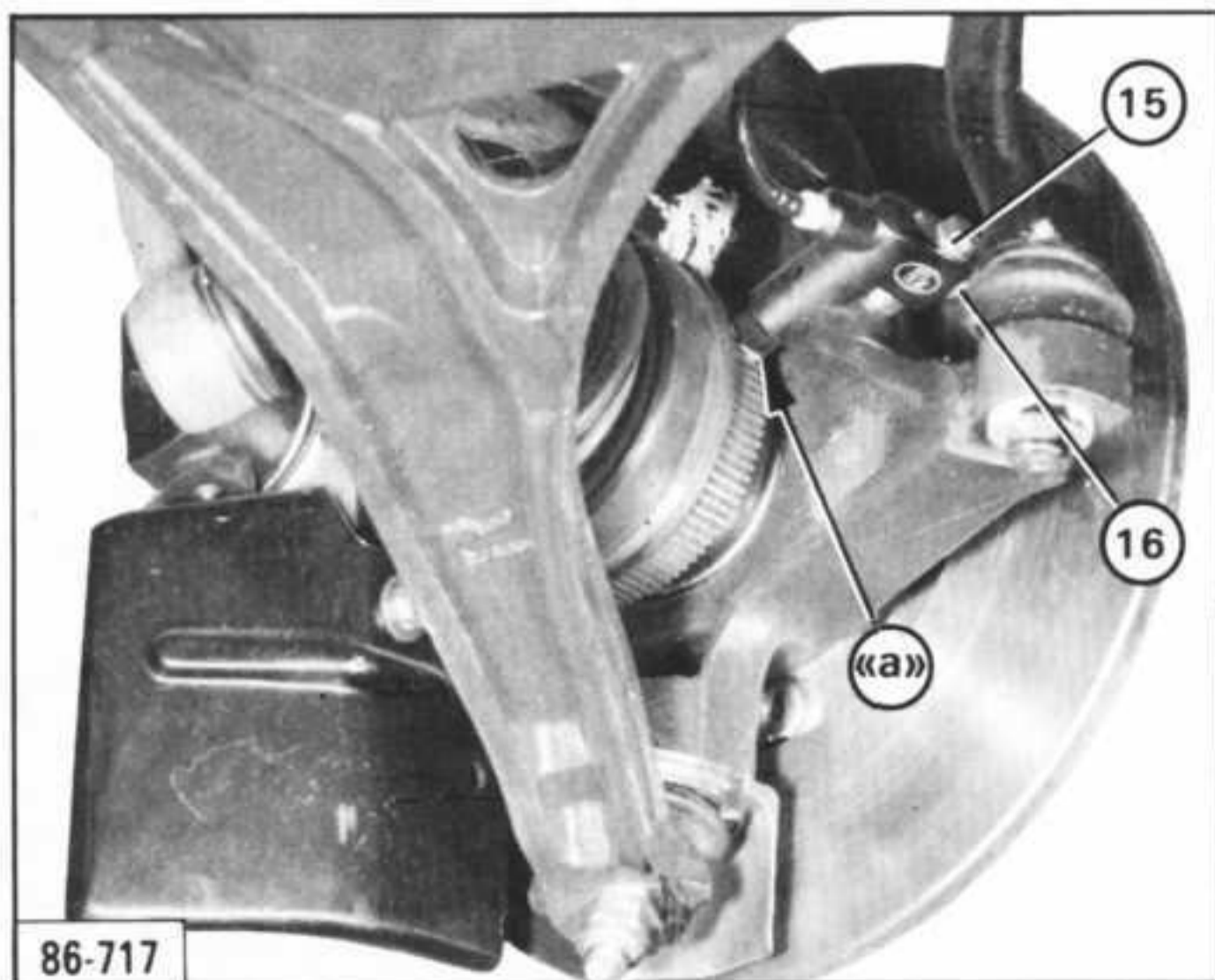
CHECKING EQUIPMENT : OHM-METER	CORRECT VALUE	IF READING IS INCORRECT
Ohm-meter between connections 11 and 18	between 2 and 5 Ω	Connect an ohm-meter on the 2-way connector of the hydraulic control block (not disconnected) : <ul style="list-style-type: none"> - if the reading is correct, check the continuity of the circuit between the electrovalve connector and the ECU plug, - if the reading is incorrect, change the hydraulic block.

CHAPTER 6 – Screening of the sensor leads :

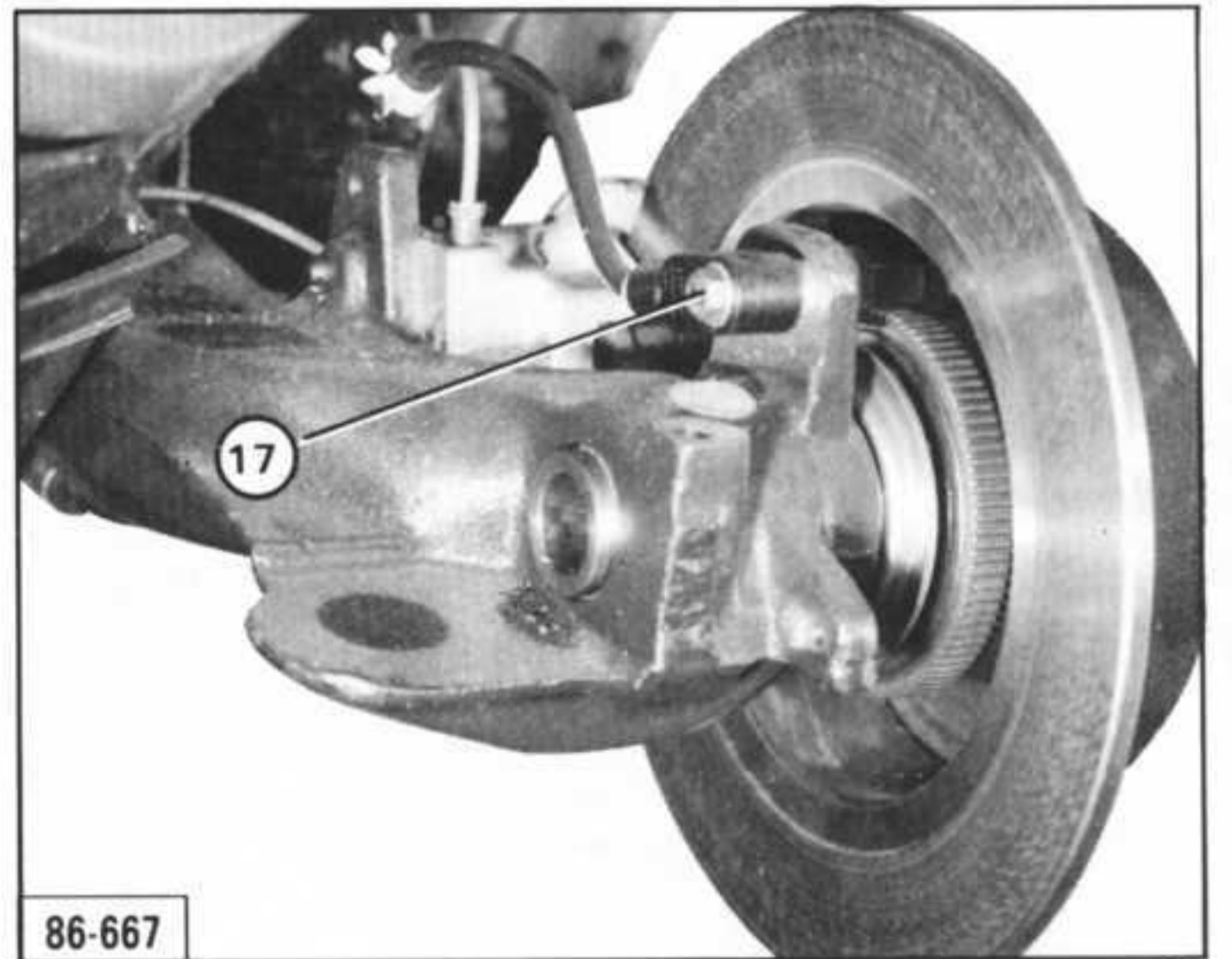
CHECKING EQUIPMENT : OHM-METER	CORRECT VALUE	IF READING IS INCORRECT
R.H. rear sensor (149) : ohm-meter between connections 4 and 1 L.H. rear sensor (148) : ohm-meter between connections 6 and 1 R.H. front sensor (147) : ohm-meter between connections 7 and 1 L.H. front sensor (146) : ohm-meter between connections 5 and 1	∞	Check the insulation of the electrical circuit screening against the earth of the vehicle.



BX 45-29



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II

III

ANTI-LOCKING BRAKING SYSTEM**Hydraulic circuit, Fig. I**

- 1 : Source of pressure.
- 2 : High pressure supply to the brake control valve (front brakes).
- 3 : Rear suspension pressure ; feed to control valve (rear brakes).
- 4 : Rear suspension height corrector.
- 5 : Front braking pressure to hydraulic control block.
- 6 : Rear braking pressure to hydraulic control block.
- 7 : Compensator bleed screw.
- 8 : A.B.S. hydraulic control block.
- 9 : Front LH wheel braking pressure.
- 10 : Rear wheels braking pressure.
- 11 : Front RH wheel braking pressure.
- 12 : Brake tube carrier on bulkhead.
- 13 : Hydraulic block return to reservoir.
- 14 : Brake control valve return to reservoir.

Note : Front brake hoses have a blue identification mark ; hose connection is M. 9 x 125 instead of M. 8 x 125.

Road wheel sensors*Front wheel sensors, Fig. II.*

Air gap : 0.30 mm to 1 mm (not adjustable)

Fitting a new sensor :

- slacken screw (16),
- offer up the sensor with its adjusting paper shim « a »,
- tighten screw (15) previously coated with LOCTITE FRENATANCH compound, to 1 mdaN,
- push the sensor until its paper shim is into contact with the toothed wheel,
- tighten screw (16) until it shears.

Rear wheel sensors, Fig. III.

Air gap : 0,50 to 1,10 mm (not adjustable)

Screw (17) tightening : 1 mdaN (previously coated with LOCTITE FRENATANCH)

Hydraulic block (8), Fig. I (identification : purple disc 09/87 →)

Situated on the front LH wheel arch.

It is composed of 6 electro-valves (2 per braking circuit : LH front, RH front and rear).


The hydraulic pipe connections are marked as shown on the drawing of **Fig. I**.

Electronic control unit (identification : purple disc 09/87 →)

Located under the front LH seat.

REPAIR : On the vehicles produced until 09/87, the electronic control unit or the hydraulic block with the purple identification replaces the former ones.

It is compulsory to fit a part with a purple identification to the vehicles manufactured since 09/87 or having components with purple ident. marks.

CHECKING the A.B.S. : See Op  XB 453-Oa.