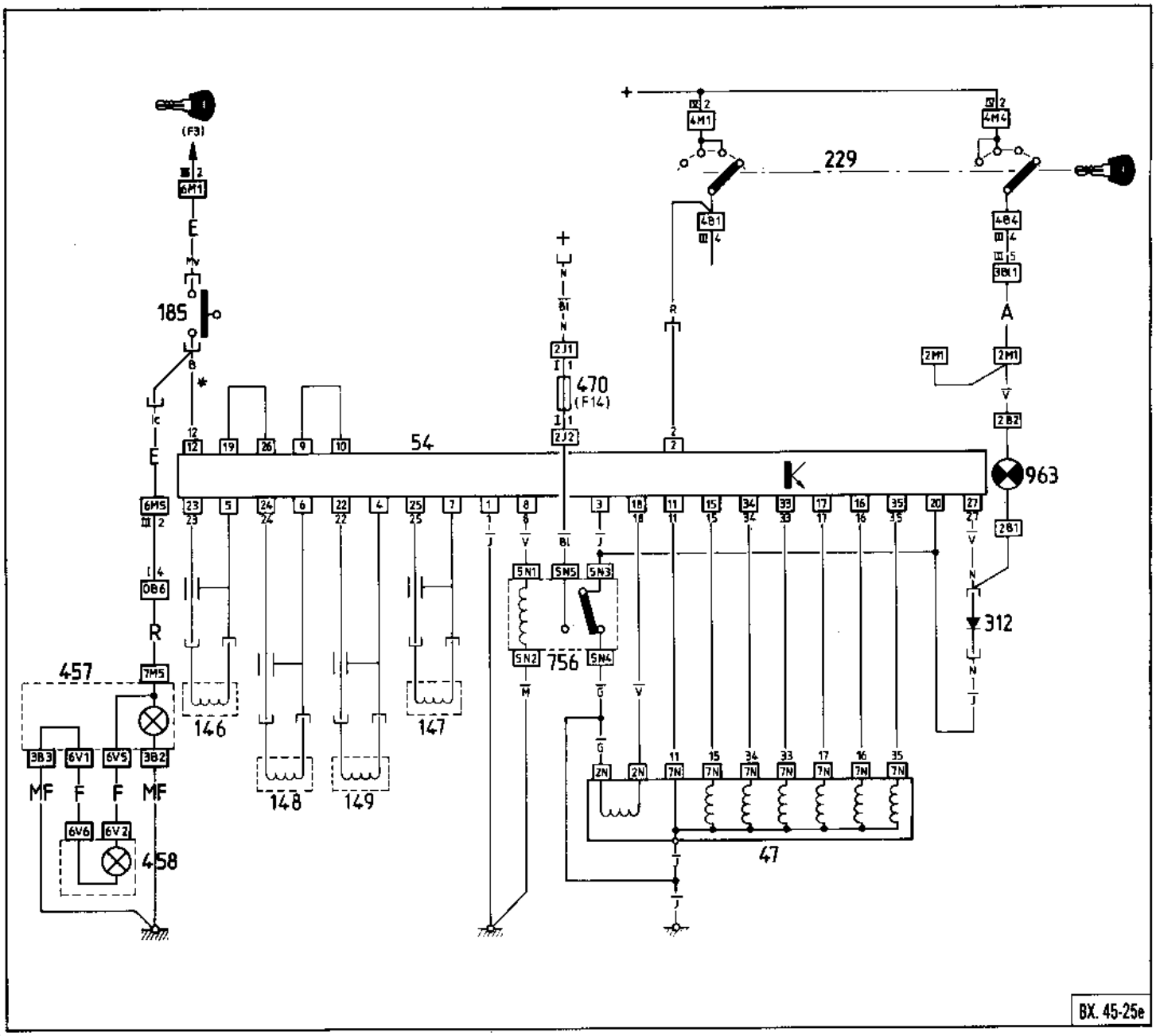
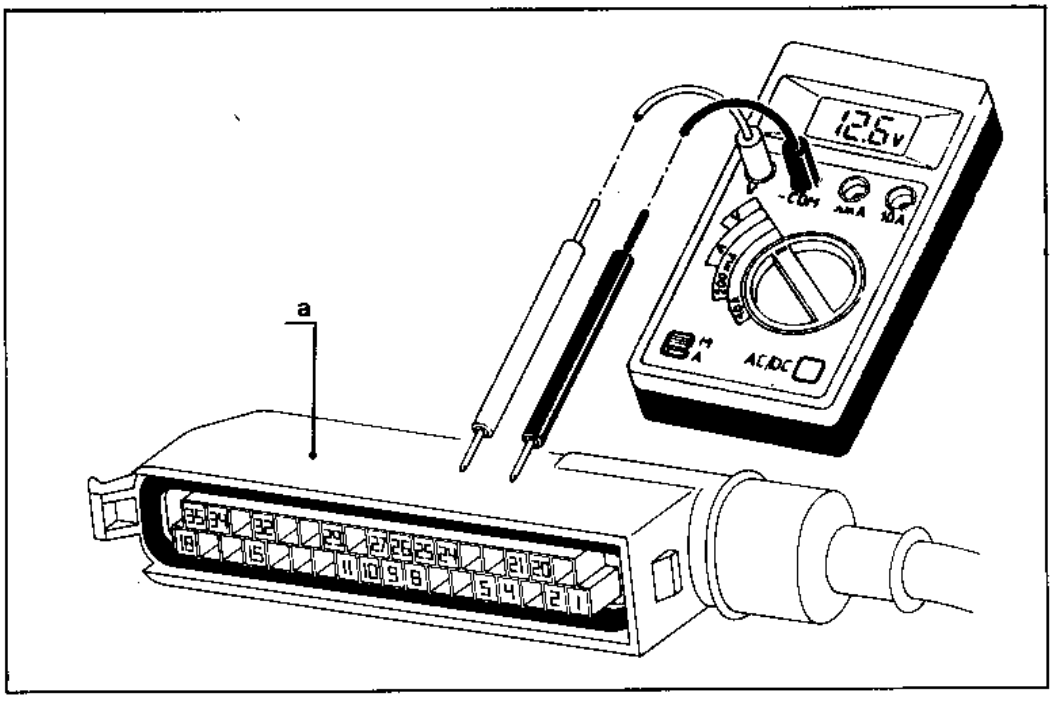

(F3)
6M1
E
185
229
4M1
4M4
4B1
4B4
3BM1
A
2M1
2B2
963
2B1
312
470
(F14)
2J1
2J2
54
K
6M5
0B6
R
7M5
457
458
MF
F
6V1
6V5
6V6
6V2
3B3
3B2
146
147
148
149
5N1
5N2
5N3
5N4
5N5
756
2N
7N
47
BX. 45-25e


a
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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 electron 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
ANTITHEFT/IGNITION SWITCH IN « **HOME** » POSITION			
↓ **E**			
ANTITHEFT/IGNITION SWITCH IN THE « **ACCESSORY** » POSITION			
↓ **E**			
ANTITHEFT/IGNITION SWITCH IN THE « **IGNITION ON** » POSITION		– Electrical supply to the ECU	**1** (page 5)
↓ **A**		– Wheel sensor resistances	**2** (page 5)
SELF CHECK →	**A** →	– Resistance of controlling electrovalves (inlet and exhaust)	**4** (page 6)
↓ **E**		– Resistance of the main electrovalve	**5** (page 6)
ANTITHEFT/IGNITION SWITCH IN THE « **STARTER** » POSITION		– Earth screening of the wheel sensor leads	**6** (page 6)
↓ **A**			
ANTITHEFT/IGNITION SWITCH IN THE « **IGNITION/ON, ENGINE RUNNING** » POSITION			
↓ **A**			
SELF CHECK			
↓ **E**			
VEHICLE MOVING →	**A** →	Current output from the wheel sensors	**3** (page 5)
↓ **E**			

A = ABS warning lamp stays on

E = warning lamp does not light

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 VOLMETER or OHM-METER	CORRECT VALUE	IF READING IS INCORRECT
• Switch the ignition on (accessory or ignition position) – Voltmeter between connections **1** and **2**.	above **12 V**	Check the electrical circuit for continuity.
• Switch the ignition off : – Ohm-meter between connections **1** and **3**	less than **1Ω**	Check : – control relay **(756)** – the continuity of the circuit
– Ohm-meter between connections **1** and **20**	less than **1Ω**	Check, for continuity, the electrical circuit
– Ohm-meter between connections **1** and **8**	between **50** and **100Ω**	Check : – control relay **(756)** – the continuity of the circuit
• 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) :

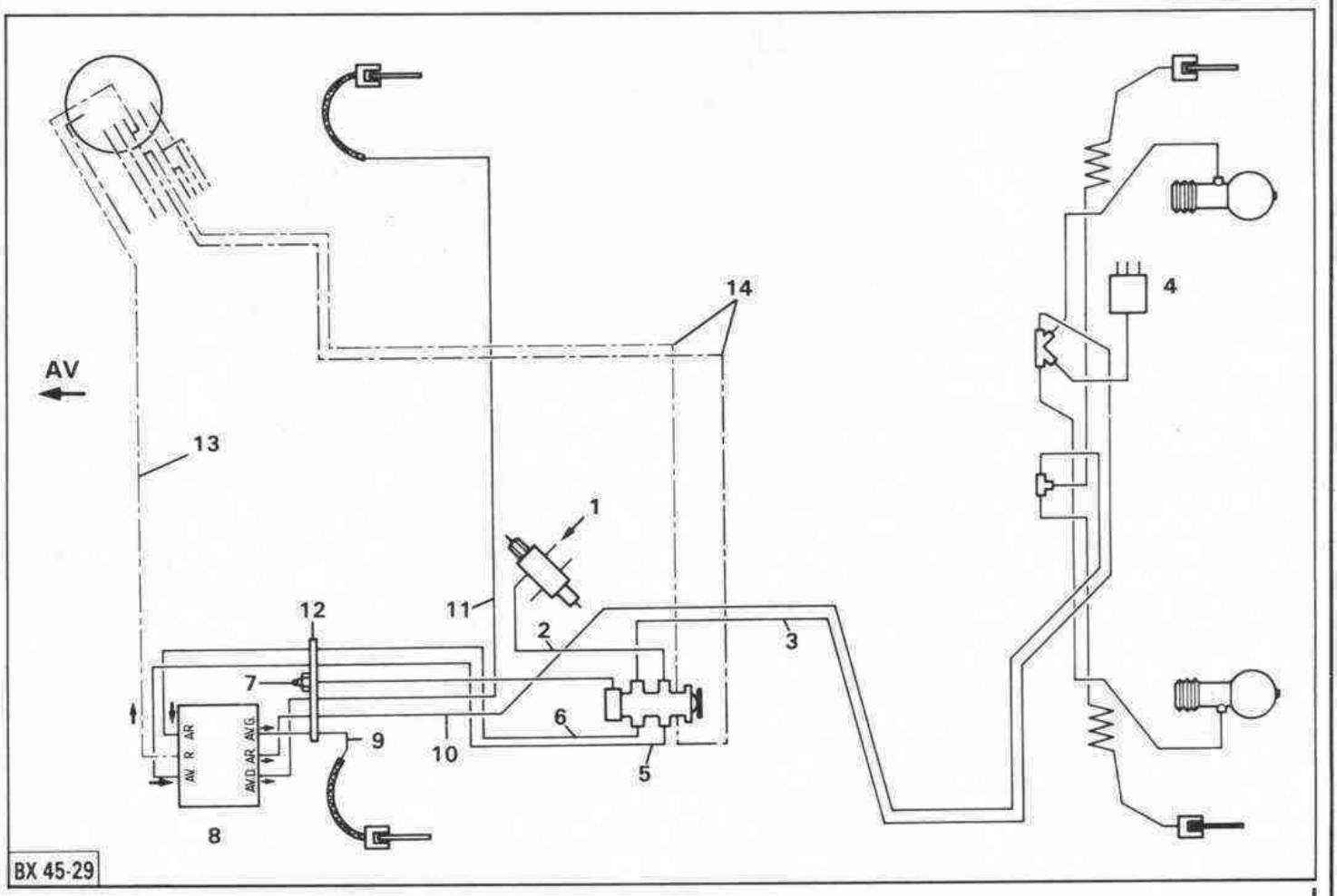
CHECKING EQUIPMENT : OHM-METER	CORRECT VALUE	IF READING IS INCORRECT
Ohm-meter between connections **11** and **1**	less than **1 Ω**	Check : – on the 7-way connector of the hydraulic control block, if lead **11** is to earth. – for continuity, the circuit on lead **11** between the ECU and the hydraulic 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 : – 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 bloc 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) : – 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.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BX 45-29

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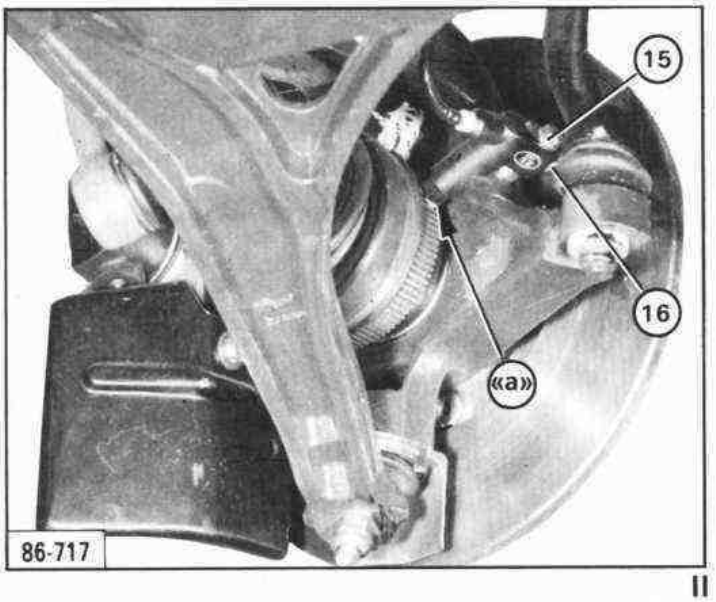
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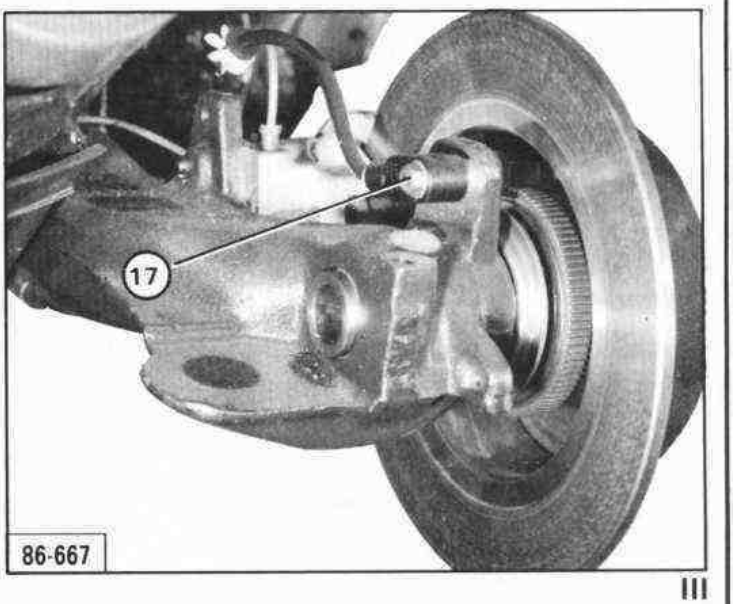
II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III

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 m 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 FRENETANCH 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 FRENETANCH)

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* (11) *XB 453-Oa.*