

- 11.1 Models 129, 140, 170
Models 202, 208, 210 (without ESP) as of M.Y. 1998

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Diagnosis – Diagnostic Trouble Code (DTC) Memory

Preparation for DTC Readout

1. Review 21, 22, 23
2. Connect Hand-Held Tester (HHT) to data link connector (X11/4) according to connection diagram (see section 0).
3. Read out DTC memory and actual values for BAS system.
4. Read out DTC memory for traction systems (ABS, ASR, ESP).
5. Perform Function Test via the HHT.
6. Ignition: **ON**



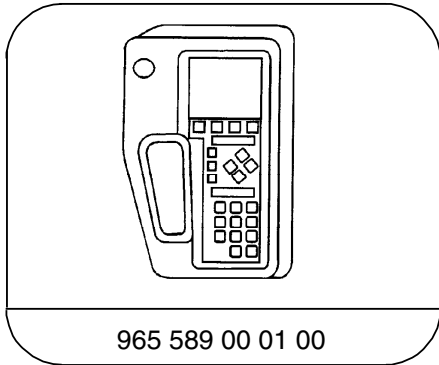
DTC readout is not possible using an impulse counter scan tool.

In case of complaint, and no fault is present in system, perform 23 in its entirety.

Test equipment; See MBUSA Standard Service Equipment Program

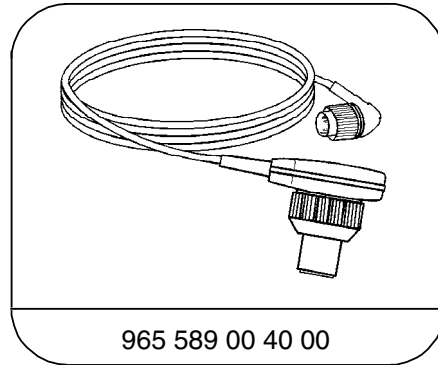
Description	Brand, model, etc.
Digital multimeter	Fluke models 23, 77 III, 83, 85, 87

Special Tools



965 589 00 01 00

Hand-Held-Tester




965 589 00 40 00

Test cable

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Diagnosis – Diagnostic Trouble Code (DTC) Memory


DTC 	Possible cause	Test step/Remedy ¹⁾
–	No fault in system	In case of complaint: 23 (entire test).
C 1000	BAS control module (N48) Solenoid valve (A7/7y1)(BAS) short to ground Circuit 30, open circuit	Replace BAS control module (N48), 23 ⇒ 4.0 23 ⇒ 1.0
C 1010	Battery voltage too low, circuit 87	23 ⇒ 1.0
C 1012	Battery voltage excessive, circuit 87	23 ⇒ 1.0
C 1022	Incorrect engine control module (ME-SFI)	Read out DTC's for engine control module, Code engine control module.
C 1025	CAN communication with traction systems control module (N47) interrupted CAN communication faulty overall CAN signal from stop lamp switch (S9/10), interrupted CAN signal from VSS (wheel rpm) or ABS, interrupted	9.3, 13/1
C 1201	Release switch (BAS) (A7/7s1), open circuit Release switch (BAS) (A7/7s1), short circuit Release switch (BAS) (A7/7s1), short to ground	See Actual Values, via HHT.
C 1202	Release switch (BAS) (A7/7s1), plausibility	See Actual Values, via HHT.
C 1203	Release switch (BAS) (A7/7s1), redundancy	See Actual Values, via HHT.
C 1204	Membrane travel sensor (BAS) (A7/7b1), open circuit or short to ground Membrane travel sensor (BAS) (A7/7b1), short circuit Membrane travel sensor (BAS) (A7/7b1), short to ground or open circuit	23 ⇒ 5.0

¹⁾ Observe Preparation for Test, see 22.

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Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC 	Possible cause	Test step/Remedy ¹⁾
C 1205	Membrane travel sensor (BAS) (A7/7b1), plausibility	23 ⇒ 5.0
C 1206	Membrane travel sensor (BAS) (A7/7b1), membrane speed	23 ⇒ 5.0
C 1207	Stop lamp switch (S9/1) plausibility, membrane comparison Stop lamp switch (S9/1) plausibility, release switch comparison	23 ⇒ 5.0 See Actual Values, via HHT.
C 1332	Solenoid switch (BAS) (A7/7y1), short to ground Solenoid switch (BAS) (A7/7y1), short circuit to positive + Solenoid switch (BAS) (A7/7y1), short circuit Solenoid switch (BAS) (A7/7y1), open circuit	23 ⇒ 4.0

¹⁾ Observe Preparation for Test, see 22.

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Diagnosis – Complaint Related Diagnostic Chart

Preparation for Test

1. Review 21, 22, 23
2. Review section 0 entirely.

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
BAS/ESP MIL (A1e47), BAS/ASR ABS MIL (A1e48) or BAS/ETS (A1e49) illuminate with engine running.		Read DTC memory, using HHT. See 12
BAS/ESP MIL (A1e47), BAS/ASR ABS MIL (A1e48) or BAS/ETS (A1e49) illuminate while driving and remain illuminated.		Read DTC memory, using HHT. See 12
BAS/ESP MIL (A1e47), BAS/ASR ABS MIL (A1e48) or BAS/ETS (A1e49) illuminate while driving, but then go out.	Vehicle electrical system voltage < 11 V, too many electrical consumers in use. Check generator and voltage regulator	Read DTC memory, using HHT. See 12 See SMS, Job no. Model 129 RA 15-5010 Model 140 RA15-5010 Model 210 AR15.40-P-5010EA

¹⁾ Observe Preparation for Test, see 22.

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Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Brake pad wear indicator lamp (A1e6), low brake fluid level/parking brake indicator lamp (A1e7), ASR warning lamp (A1e21), ESP warning lamp (A1e41), ABS MIL (A1e17), BAS/ETS MIL (A1e49), BAS/ASR ABS MIL (A1e48), or BAS/ESP MIL (A1e47) do not illuminate with ignition turned on.	CAN data line	Read DTC memory, for Instrument cluster, using HHT.
BAS system responds too fast or too slowly (late).	Parametering does not coincide with engine control module.	See "Parametering" using HHT, Readout DTC's from BAS system, Code engine control module, See 22
The following DTC stored in memory: "C 1025" (CAN communication with Traction System control module interrupted). There are also CAN signals stored in memory for: No stop lamp signal or No wheel speed signal (VSS), additionally, there are no customer complaints in regards to BAS system. Lastly, none of the BAS MIL are illuminated .	When the ABS, ETS, ASR or ESP systems are selected with the HHT, it is possible that the DTC "C 1025" is subsequently stored in BAS memory.	Erase DTC. Additional diagnostic work is not required.

¹⁾ Observe Preparation for Test, see 22.

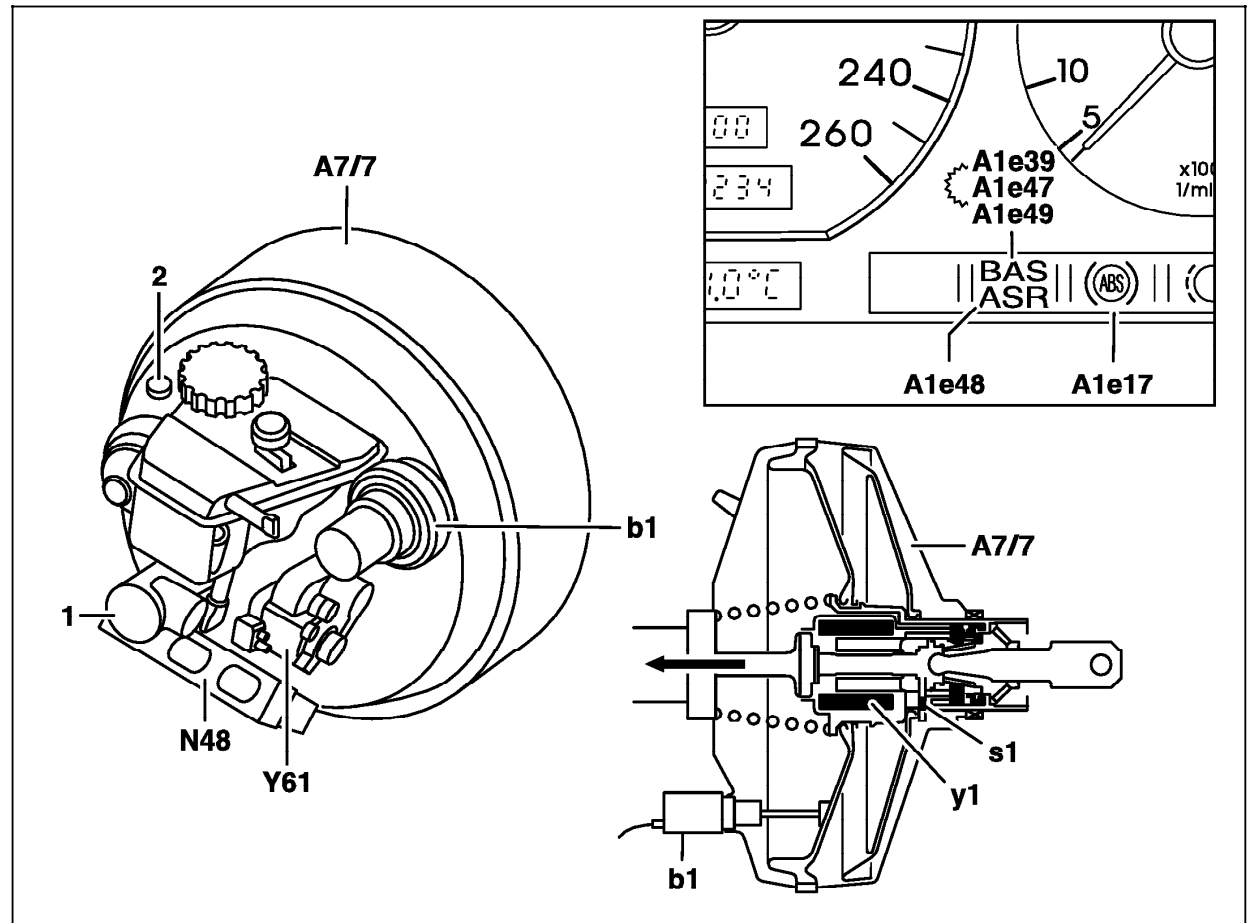
Electrical Test Program – Component Locations

Figure 1

- 1 Tandem master cylinder
- 2 Vacuum connection
- A1e17 ABS MIL
- A1e39 BAS warning lamp
- A1e47 BAS/ESP MIL
- A1e48 BAS/ASR MIL
- A1e49 BAS/ETS MIL
- A7/7 Brake booster (BAS)
- b1 Membrane travel sensor (BAS)
- s1 Release switch (BAS)
- y1 Solenoid valve (BAS)
- N48 BAS control module
(Integrated into ESP/SPS control module (N47-5), in vehicles with ESP and engine 112, 113 and Model 210 with engine 606)
Models 163, 220 integrated into ESP/SPS control module (N47-5) as well.
- Y61 Master brake cylinder switch over valve
(Models 129.067 with ESP, 129.076, 140.04/05/07)



Model 220: In place of the MIL, a multifunction indicator (A1p13) will be used in the instrument cluster (A1)



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Electrical Test Program – Preparation for Test

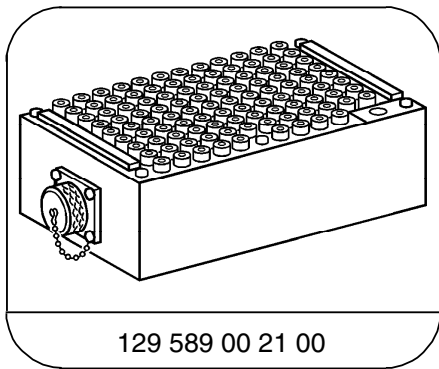
1. Review 21, 22, 23 (connector connections).
2. Ignition: **OFF**
3. Disconnect BAS control module (N48).
4. Connect socket box with test cable as per connection diagram (Figure 1).

Electrical Wiring Diagrams:

(location of grounds and connectors)

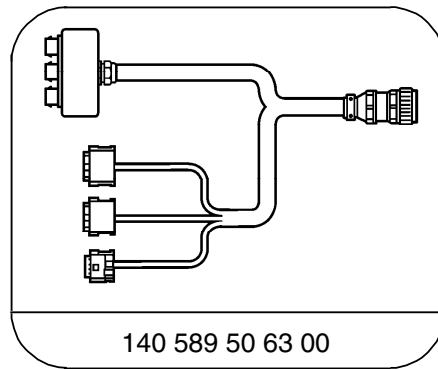
Electrical Troubleshooting Manual, Model 129, Group 42 and 00,
Electrical Troubleshooting Manual, Model 140, Group 42 and 00,
Electrical Troubleshooting Manual, Model 170, Group 42 and 00,
Electrical Troubleshooting Manual, Model 202, 208, Group 42 and 00,
Electrical Troubleshooting Manual, Model 210, Group 42 and 00.

Special Tools



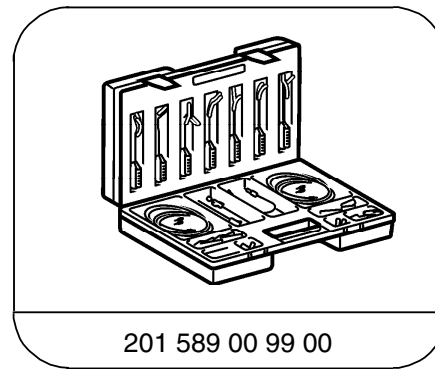
129 589 00 21 00

126-pin socket box



140 589 50 63 00

Test cable 16-pin



201 589 00 99 00

Electrical connecting set

Test equipment; See MBUSA Standard Service Equipment Program

Description	Brand, model, etc.
Digital multimeter	Fluke models 23, 77 III, 83, 85, 87

Electrical Test Program – Preparation for Test

Connection Diagram – Socket Box

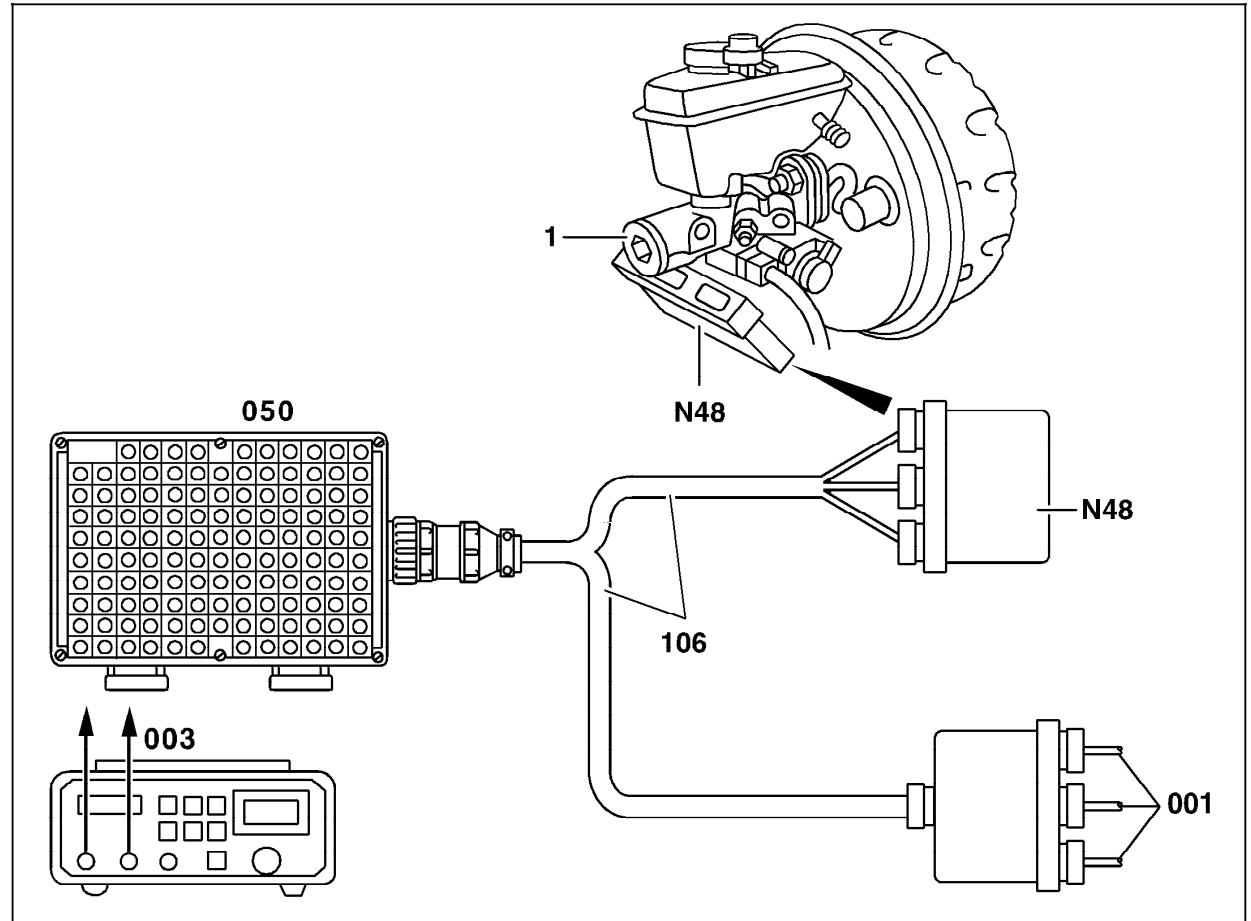


Figure 1

- 1 Tandem master cylinder
- 001 Electrical connector
- 003 Digital multimeter
- 050 Socket box, 126-pole
- 106 Test cable set, BAS
- N48 BAS control module

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Electrical Test Program – Preparation for Test

Parameterizing BAS control module, model 129

Model	Engine	Control module parameter: Teves 025 545 48 32 Lucas 025 545 47 32
129	104, 112	4
129	113, 119, 120	3

Parameterizing BAS control module, model 140

Model	Engine	Control module parameter: Teves 020 545 16 32 Lucas 023 545 55 32 019 545 32 32	Control module parameter: Teves 025 545 48 32 Lucas 025 545 47 32
140	119, 120	8	8
140	104	2	2

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Electrical Test Program – Preparation for Test

Parameterizing BAS control module, model 170

Model	Engine	Control module parameter: Teves 020 545 16 32 Lucas 023 545 55 32 019 545 32 32	Control module parameter: Teves 025 545 48 32 Lucas 025 545 47 32
170	111	10	10

Parameterizing BAS control module, model 202

Model	Engine	Control module parameter: Teves 020 545 16 32 Lucas 023 545 55 32 019 545 32 32	Control module parameter: Teves 025 545 48 32 Lucas 025 545 47 32
202	104, 111, 112	7	7

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Electrical Test Program – Preparation for Test

Parameterizing BAS control module, model 208

Model	Engine	Control module parameter: Teves 020 545 16 32 Lucas 023 545 55 32 019 545 32 32	Control module parameter: Teves 025 545 48 32 Lucas 025 545 47 32
208	112	9	9
208	113	1	11

Parameterizing BAS control module, model 210

Model	Engine	Control module parameter: Teves 020 545 16 32 Lucas 023 545 55 32 019 545 32 32	Control module parameter: Teves 025 545 48 32 Lucas 025 545 47 32
210 Sedan	104, 112.941, 113	5	5
210 Sedan	606	5	21

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Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		BAS control module (N48) Circuit 87 Voltage supply	<p>N48</p> <p>1 — (1.1) — 3 (1.3)</p>	Ignition: ON	11 – 14 V	⇒ 1.1, ⇒ 1.2
1.1		Voltage supply from: Models 129, 140 Base module (N16/1) Models 202, 208, 210 Driver-side fuse and relay module box (K40/2)	<p>⊥ — 3 (1.3)</p> <p>N48</p>	Ignition: ON	11 – 14 V	Wiring, Model 129, 140: Fuse (F3) on N16/1, N16/1, DM, Chassis & Drivetrain, Vol. 1, sections 1.1, 23
1.2		Ground wire Model 140 W15 Model 170 W35 Model 129 W27 Models 202, 208 W29/2 Model 210 W16/3	<p>⊥ — 1 (1.1)</p> <p>N48</p>	Ignition: OFF Disconnect BAS control module (N48).	< 1 Ω	Wiring, Model 140: Ground (electronics ground output-right footwell) (W15). Model 129: Ground (control module box/module box) (W27). Model 170: Ground (left front spring tower) (W35). Models 202, 208: Ground (right A-pillar) (W29/2). Model 210: Ground (output ground - left wheel housing ground) (W16/3).

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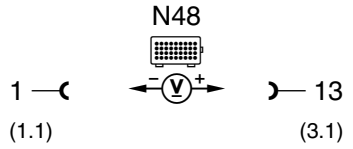
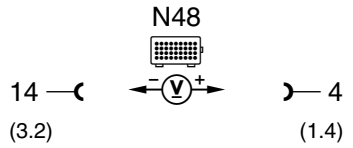
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
2.0	<ul style="list-style-type: none"> ┌ 1010 ┌ 1011 ┌ 1012 	BAS control module (N48) Circuit 30 Voltage supply		Ignition: OFF	11 – 14 V	Wiring.
3.0		Diagnosis output		Ignition: ON	1 – 2 V	Wiring, BAS control module (N48).
4.0	┌ 1322	Solenoid valve (BAS) (A7/7y1) Voltage supply		Ignition: ON	4.0 – 5.5 V	⇒ 4.1, Wiring, BAS control module (N48).
4.1		Resistance		Ignition: OFF Disconnect BAS control module (N48).	1 – 2 Ω	Wiring, Brake booster (BAS) (A7/7).

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Electrical Test Program – Test

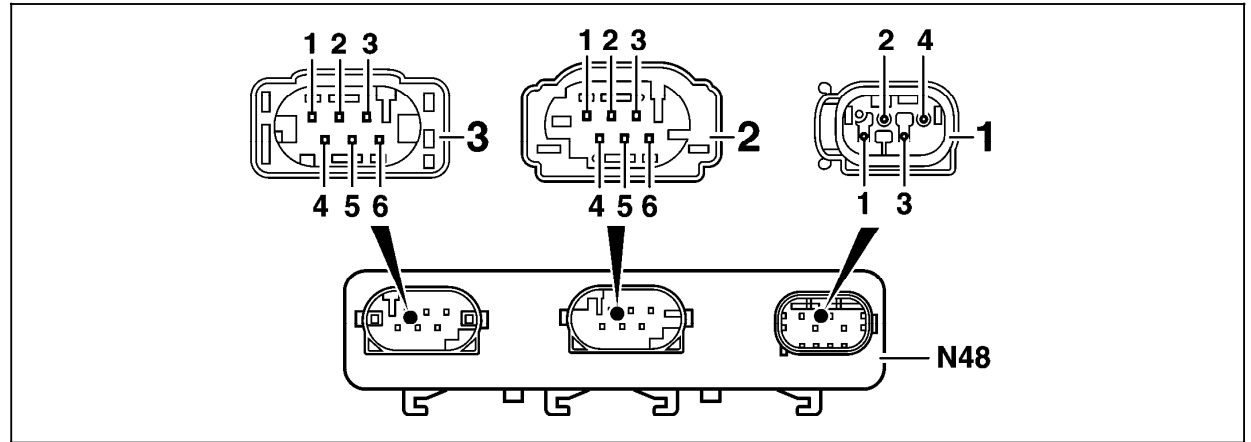
⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	<ul style="list-style-type: none"> ⌈ 1204 ⌈ 1205 ⌈ 1206 ⌈ 1207 	Membrane travel sensor (BAS) (A7/7b1) Voltage supply		Ignition: ON	4.75 – 5.25 V	Wiring, BAS control module (N48).
5.1		Ground		Ignition: ON	11 – 14 V	

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Electrical Test Program – Test

Connector Layout - BAS control module (N48)



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c Connector 1

- 1 Membrane travel sensor (A7/7b1) (BAS) (+)
- 2 Membrane travel sensor (A7/7b1) (BAS) (-)
- 3 —
- 4 Membrane travel sensor (A7/7b1) (BAS), signal

b Connector 2

- 1 Release switch (BAS) (A7/7s1) N.C. contact
- 2 Release switch (BAS) (A7/7s1) N.O. contact
- 3 Solenoid valve (BAS) (A7/7y1) (-)
- 4 —
- 5 Release switch (BAS) (A7/7s1) signal
- 6 Solenoid valve (BAS) (A7/7y1) (+)

a Connector 3 (black)

- 1 Ground (W15, W16/3, W27, W29/2)
- 2 CAN data line (+)
- 3 Circuit 87, voltage supply
- 4 Circuit 30, voltage supply
- 5 CAN data line (-)
- 6 Diagnosis output

N48 BAS control module