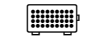
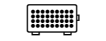
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	C 1010 C 1012	**ESP control module (N47-5)** Circuit 30 Voltage supply from fuse and relay box (F23/1)	N47-5 44 (1.44) — V — 45 (1.45) 46 (1.46) — V — 47 (1.47)	In order to apply a load onto the voltage source: ignition: **ON**	11 – 14 V	Wiring, Fuse f9 and F8 in F23/1, for model 202, Fuse f3 in F31 for model 170, Values >14 V: check generator (G1).
1.1		Voltage supply for circuit 87 from passenger-side fuse and relay module box (K40/4).	N47-5 44 (1.44) — V — 18 (1.18)	Ignition: **ON**	11 – 14 V	Wiring, Fuse in K40/4 for model 202, Fuse f1 in K40k5 for model 170.
2.0		**Diagnostic output** Resistance of K harness	X11/4 6 — Ω — N47-5 8 (1.8)	Ignition: **OFF** Disconnect N47-5 from test cable.	< 1 Ω	Wiring, Passenger-side fuse and relay module box (K40/4).
3.0	C 1140	**Steering angle sensor (N49) Model 202:** Voltage supply circuit 30 **Model 170:**	N49 44 (1.44) — V — 4 N49 2 — V — 4	Ignition: **OFF** Disconnect connector at N49.	11 – 14 V	Wiring. Fuse f13 in F1 for model 170.

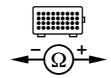
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.1		Voltage supply Circuit 87 **Model 202:** **Model 170:**	N49 3 — (–) (V) (+) — 2 N49 2 — (–) (V) (+) — 3	Ignition: **ON**	11 – 14	Wiring.
4.0	C1000 C 1141 C 1149	**ESP brake pressure sensor 1** **ESP brake pressure sensor 2** Actual values: brake pressure		Ignition: **ON** Readout brake pressures for B34/1 and B34/2 brake not applied: B34/1 B34/2	 –7 to +7 bar –7 to +7 bar	Wiring, B34/1, B34/2 ⇒ 4.1, ⇒ 4.2, ⇒ 4.3
4.1		Plausibility of the brake pressure signals		Ignition: **ON** Readout brake pressures for B34/1 and B34/2 and determine the difference between the two values. Apply medium pedal pressure.	 –20 to +20 bar	Wiring, B34/1, B34/2 ⇒ 4.2, ⇒ 4.3 Other possible faults: Brake fluid aged, fluid leak or air in lines of one of the brake circuits.
4.2		**Voltage supply for B34/1 from ESP control module (N47-5)**	N47-5 11 — (–) (V) (+) — 26 (1.11) (1.26)	Ignition: **ON**	 4.75 – 5.25 V	Wiring, B34/1 (short circuit), N47-5.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.3		**Voltage supply for B34/2 from ESP control module (N47-5)**	N47-5  27 (1.27) — (+) — 40 (1.40)	Ignition: **ON**	4.75 – 5.25 V	Wiring, B34/2 (short circuit), N47-5
5.0	C 1142 C 1149	**ABS lateral acceleration sensor (B24/2)** Voltage supply from ESP control module (N47-5)	N47-5  9 (1.9) — (+) — 24 (1.24)	Ignition: **ON**	4.75 – 5.25 V	Wiring, B34/2 (short circuit), N47-5, Connector X99/4 om model 170
6.0	C 1120 C 1149	**ESP yaw rate sensor (N64)** Voltage supply from ESP control module (N47-5)	N47-5  25 (1.25) — (+) — 38 (1.38)	Ignition: **ON**	4.75 – 5.25 V	Wiring, N64 (short circuit), N47-5
7.0	C1204 C1205 C1206	**Membrane travel sensor (BAS) (A7/7b1)** Supply voltage from N47-5	N47-5  21 (1.21) — (+) — 22 (1.22)	Ignition: **ON**	4.75 – 5.25 V	Wiring, A7/7b1 (short circuit), N47-5
8.0	BAS: C1332 ESP: C1529	**Solenoid valve (BAS) (A7/7y1)** Resistance	N47-5  43 (1.43) — (Ω) — 14 (1.14)	Ignition: **ON** **Disconnect ESP control module (N47-5) from test cable.**	1 – 2 Ω	Wiring, Brake booster for A7/7y1

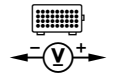
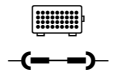
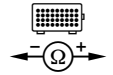
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.0		**ESP OFF switch (S76/6)**		S76/6 in position: ON Hold pressed: At rest: S76/6 in position: OFF Hold pressed:	 0.75 – 3.5 V > 3.5 V < 0.75 V	Wiring, S76/6
10.0		**Parking brake switch (S12) and low brake fluid level and parking brake indicator lamp (A1e7)**		Engine: **at idle** Apply parking brake pedal: Parking brake pedal not apply:	ON Parking brake warning lamp (A1e7): **ON** OFF **(**A1e7): **OFF**	Wiring, S12, ⇒ 10.1 A1e7, readout actual values of instrument cluster (A1)
10.1		Resistance	N47-5  44 (1.44) — 31 (1.31)	Ignition: **OFF** Disconnect (N47-5) from test cable. Parking brake is not activated: Parking brake activated:	 > 20 kΩ < 1 Ω	Wiring, S12
11.0	ESP: C1200 BAS: C1207	**Stop lamp switch (S9/1) Closed (N.C.)**		Service brake: Not applied: Applied:	 OFF ON	Wiring, S9/1, ESP stop lamp supression relay (K55), 23 ⇒ 12.0 ESP control module (N47-5).

Electrical Test Program – Test

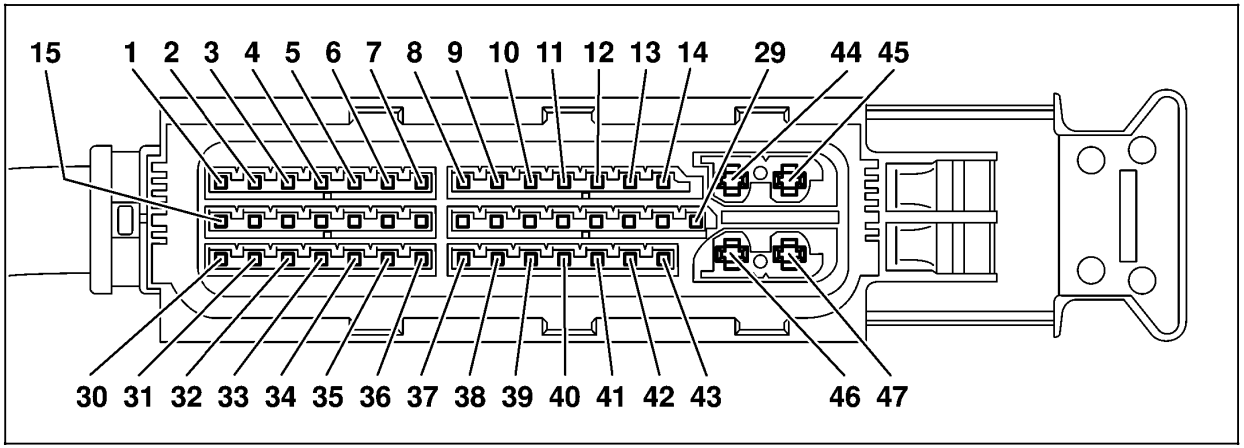
⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
11.1		Open (N.O.)		Service brake: Not applied: Applied:	 ON OFF	Wiring, Voltage supply to passenger-side fuse and relay module box (K40/4) S9/1: 23 ⇒ 12.0
12.0	C1200 C1207	**Stop lamp supression relay module (K55)** Voltage supply for circuit 15 from fuse and relay module box (F1) for the circuit of K55	N47-5 ⊥ – V + 5	Ignition: **ON** K55 disconnected. Measure at plug socket for K55	11 – 14 V	Wiring Fuse in fuse and relay module box (F1).
12.1		Voltage supply for circuit 15 from F1 for the control circuit of K55	N47-5 ⊥ – V + 6	Ignition: **ON** K55 disconnected. Measure at plug socket for K55	11 – 14 V	Wiring Fuse in fuse and relay module box (F1).
12.2		Signal from S9/1 (N.C.)	N47-5 44 (1.44) – V + 17 (1.17)	Ignition: **ON** K55 reconnected. Service brake not applied: Service brake applied:	 < 3 V 11 – 14 V	Wiring, Stop lamp supression relay module (K55), S9/1

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
12.3		Signal from S9/1 (N.O.)	N47-5  44 (1.44) — 17 (1.17)	Ignition: **ON** K55 reconnected. Service brake not applied: Service brake applied:	 11 – 14 V < 3 V	Wiring, Voltage supply from passenger-side fuse and relay module (K40/4) to S9/1, S9/1
12.4		Activation of K55	N47-5  44 (1.44) — 28 (1.28)	Ignition: **ON** Press service brake: Bridge not connected: Bridge connected:	 Stop lamp ON Stop lamp OFF	Wiring, K55
13.0	ESP/ BAS: C 1022 ESP: C 1020 C 1024 C 1031 BAS: C 1025	**CAN data lines and Endstage resistance**	N47-5  15 (1.15) — 16 (1.16)	Ignition: **OFF**	 55 – 65 Ω	CAN lines, Endstage resistance of injection system control module (N3), Endstage resistance of electronic ignition-switch (EIS) control module (N73), Readout DTC memory of the corresponding control modules.

Electrical Test Program – Test

Connector Layout
ESP control module (N47-5)



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Connector 2

1	Stop lamp switch (S9/1) N.C. contact N.O.
2	Left front brake pad wear sensor (S10/1), right (S10/2)
3	Left front axle VSS sensor (L6/1) (–)
4	Left front axle VSS sensor (L6/1) (+)
5	Left front VSS output
6	Left rear axle VSS sensor (L6/3) (+)
7	Left rear axle VSS sensor (L6/3) (–)
8	Diagnostic output (K-line)
9	ABS lateral acceleration sensor (B24/2) (–)
10	ABS lateral acceleration sensor (B24/2), signal
11	ESP brake pressure sensor (B34/1) (–)
12	ESP brake pressure sensor (B34/1) (signal)
13	Release switch (BAS) (A7/7s1), N. O. contact
14	Solenoid valve (BAS) (A7/7y1) (+)
15	CAN data line, low (–)
16	CAN data line High (+)
17	Stop lamp switch (S9/1) N.C.
18	Circuit 87 voltage supply
19-20	–
21	Membrane travel sensor (BAS) (A7/7b1) (–)
22	Membrane travel sensor (BAS) (A7/7b1) (+)
23	Release switch (BAS) (A7/7s1), signal
24	ABS lateral acceleration sensor (B24/2) (+)
25	ESP yaw rate sensor (N46), (–)
26	ESP brake pressure sensor 1 (B34/1) (+)
27	ESP brake pressure sensor 2 (B34/2) (–)
28	Stop lamp supression relay module (K55), control circuit, (–)
29	Steering angle sensor (N49), signal
30	ESP OFF switch (S76/6)
31	Parking brake switch (S12)
32	Right front axle VSS sensor (L6/2) (–)
33	Right front axle VSS sensor (L6/2) (+)
34	Right front axle VSS output
35	Right rear axle VSS sensor (L6/4) (+)
36	Right rear axle VSS sensor (L6/4) (–)
37	Membrane travel sensor (BAS) (A7/7b1) signal
38	ESP yaw rate sensor (N64) (+)
39	ESP yaw rate sensor (N64), signal
40	ESP brake pressure sensor 2 (B34/2) (+)
41	ESP brake pressure sensor 2 (B34/2), signal
42	Release switch (BAS) (A7/7s1), N. C. contact
43	Solenoid valve (BAS) (A7/7y1) (–)
44	Ground W16/3
45	Circuit 30, voltage supply
46	Gorund W16/3
47	Circuit 30, voltage supply