01-301

Electronic Stabilization Program (ESP), electrical testing

- If the On Board Diagnostic (OBD) sequence does not provide any indication of the source of the malfunction, work through all of the electrical test steps.

- If the OBD sequence identifies the source of the malfunction, only carry out the test steps recommended in the DTC table (specific testing).

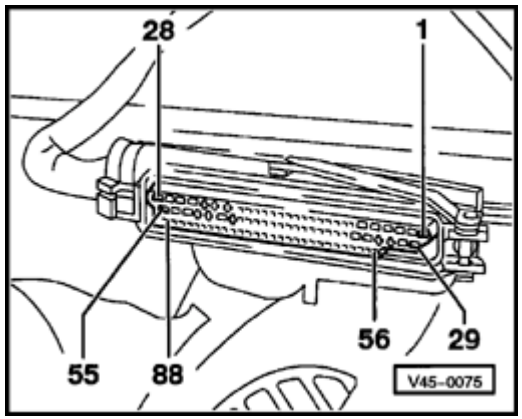
01-302

Test requirements

- The "Automatic Test Sequence" was carried out and it was determined that the Transmission Control Module (TCM) and Engine Control Module (ECM) only contain DTCs relating to ABS.

- Connect the VAG1551 Scan Tool (ST) and select the address word 00 with ignition switched on;

- After completing electrical test, check and erase DTC memories of Transmission Control Module (TCM) and Engine Control Module (ECM).



- Multi-pin harness connector for ABS control module -J104- in proper condition, with no bent, broken or corroded terminals. Replace any damaged terminals using VAS1978 wiring repair kit.

01-303

Note:

The operation manual for the VAS1978 wiring harness repair kit generally forbids the repair of any lines in the ABS or related systems. This rule only pertains to the shielded lines in these systems.

- Ignition and electrical consumers switched off before beginning testing (headlights, lighting, fan, etc.).

- For steps 13 through 16, raise the vehicle until the wheels rotate freely. On vehicles with manual transmission put the gear shift lever in neutral. On vehicles with automatic transmission move the selector lever to position "N".

01-304

Required special tools and test equipment:

- VAG1551 Scan Tool (ST) or VAG1552 mobile scan tool
- VAG1598/20 test box
- VAG1594 connector test kit
- VAG1526 Multimeter
- VAG1310A Pressure gauge

01-305

Connecting VAG1598/20 test box and checking ESP system

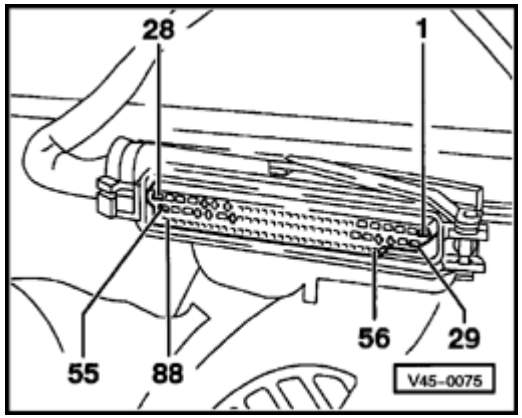
- Switch ignition off.

- Remove ABS control module -J104-.

⇒ *Repair manual, Brake System, Repair Group 45*

- Disconnect multi-pin connector from ABS control module -J104-.

- Check multi-pin connector between harness connector and ABS control module -J104-.



The socket designations on the VAG1598/20 test box are identical to the terminal designations on the ABS control module -J104- and on the wiring harness connector.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- Connect VAG1598/20 test box to multi-pin connector of wiring harness.

01-306

Terminal allocation, ABS control module -J104-

Multi-pin connector at ABS control module (w/EDL) -J104-			
Terminal	**Connected to...**		**Terminal**
1	⇒	**Voltage supply, terminal 15** **Traction control switch**	- 5
2	⇒	**ABS return flow pump relay -J105- (B+)** **ABS solenoid valve relay -J106- (B+)** **Voltage supply for steering angle sensor -G85- via terminal 15**	86 86 5
3	⇒	**Hydraulic unit; activation of left front ABS outlet valve -N102-**	15
4	⇒	**Hydraulic unit; activation of right rear ABS outlet valve -N135-**	12
5	⇒	**Hydraulic unit; activation of left front ABS inlet valve -N101-**	8
6	⇒	**Hydraulic unit; activation of right rear ABS inlet valve -N133-**	2
7	⇒	**ABS return flow pump relay -J105- (GND)**	85
8	⇒	**Left front ABS wheel speed sensor -G47-** ♦ For vehicles with all-wheel-drive:	-

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-307

Multi-pin connector at ABS control module (w/EDL) - J104-			
Terminal	**Connected to...**		**Terminal**
9	⇒	**Left front ABS wheel speed sensor -G47-** ♦ For vehicles with front-wheel-drive:	-
10	⇒	**Left front ABS wheel speed sensor -G47- (GND)**	-
11	⇒	**Right rear ABS wheel speed sensor -G44-**	-
12	⇒	**Right rear ABS wheel speed sensor -G44- (GND)**	-
13	⇒	**Left rear ABS wheel speed sensor -G46-**	
14	⇒	**Left rear ABS wheel speed sensor -G46- (GND)**	-
15	⇒	**Right front ABS wheel speed sensor -G45-**	-
16	⇒	**Right front ABS wheel speed sensor -G45- (GND)**	-
17	⇒	Not assigned	-

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-308

Multi-pin connector at ABS control module (w/EDL) -J104-			
Terminal	**Connected to...**		**Terminal**
18	⇒	**Sensor for transverse acceleration -G200-; signal wire (control module 4B0 907 389)**	2
18	⇒	**Sensor for transverse acceleration -G200-; signal wire (combined sensor for rotation rate and transverse acceleration) (control module 8D0 907 389/A/D/E)**	4
19	⇒	**Sensor for transverse acceleration -G200-; (Ground -GND-) (control module 4B0 907 389)**	1
19	⇒	**not occupied; (control module 8D0 907 389/A/D/E)**	-
19	⇒	**not occupied; (control module 8D0 907 389A)**	-
20	⇒	**ABS return flow pump relay -J105-** **Hydraulic unit; control wire for ABS return flow pump -V39-**	87 14
21	⇒	Not assigned	-
22	⇒	**Hydraulic pump for traction control -V156-; voltage supply**	2
23	⇒	Not assigned	-
24	⇒	**Hydraulic pump for traction control -V156-; (GND)**	1

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

Multi-pin connector at ABS control module (w/EDL) -J104-			
Terminal	**Connected to...**		**Terminal**
25	⇒	**Hydraulic unit; activation of left rear ABS outlet valve -N136-**	11
26	⇒	**Hydraulic unit; activation of right front ABS inlet valve -N99-**	5
27	⇒	Not assigned	-
28	⇒	**Ground (GND) supply, terminal 31**	-
29	⇒	**Ground (GND) supply, terminal 31**	-
30	⇒	Not assigned	-
31	⇒	**Instrument cluster; activation of traction control indicator light; (control module 4B0 907 389)**	15
31	⇒	**Rear left wheel speed sensor output; (control module 8D0 907 389/A/D/E)**	-
32	⇒	**Instrument cluster; ABS/EDL warning light activation**	26
33	⇒	Not assigned	-

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-310

Multi-pin connector at ABS control module (w/EDL) -J104-			
Terminal	**Connected to...**		**Terminal**
34	⇒	**Sender for rotation rate -G202-; voltage supply; (control module 4B0 907 389)**	2
34	⇒	**Sender for rotation rate -G202-; voltage supply (combined sensor for rotation rate and transverse acceleration) (control module 8D0 907 389/A/D/E)**	1
35	⇒	Not assigned	-
36	⇒	not occupied; (control module 4B0 907 389)	-
36	⇒	**ABS solenoid valve relay -J106- (GND); (control module 8D0 907 389/A/D/E)**	85
37	⇒	**ABS solenoid valve relay -J106- (GND); (control module 4B0 907 389/A/D/E)**	85
37	⇒	not occupied; (control module 8D0 907 389/A/D/E)	-
38	⇒	Not assigned	-
39	⇒	Not assigned	-

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

Multi-pin connector at ABS control module (w/EDL) -J104-			
Terminal	**Connected to...**		**Terminal**
40	⇒	Not assigned	-
41	⇒	Not assigned	-
42	⇒	**Brake light switch -F; brake test switch**	4
43	⇒	Not assigned	-
44	⇒	**Traction control switch**	6
45	⇒	Not assigned	-
46	⇒	**Diagnostic connector; K-wire**	7
47	⇒	Not assigned	-
48	⇒	**Brake light switch -F-; brake light switch**	2
49	⇒	**ABS hydraulic unit -N55-; activation of pilot valve -1- traction control -N225-**	7
50	⇒	**ABS hydraulic unit -N55-; activation of pilot valve -2- traction control -N226-**	6
51	⇒	**Voltage supply; terminal 30 for hydraulic pump for traction control -V156-;**	-

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-312

Multi-pin connector at ABS control module (w/EDL) -J104-			
Terminal	**Connected to...**		**Terminal**
52	⇒	**ABS hydraulic unit -N55-; activation of high pressure switch valve -2- traction control -N228-**	4
53	⇒	**ABS hydraulic unit -N55-; activation of left rear ABS inlet valve -N134-**	3
54	⇒	**ABS hydraulic unit -N55-; activation of high pressure switch valve -1- traction control -N227-**	1
55	⇒	**ABS hydraulic unit -N55-; activation of right front ABS outlet valve -N100-**	9
56	⇒	not used	-
57	⇒	not used	-
58	⇒	not used	-
59	⇒	not used	-
60	⇒	not used	-
61	⇒	**Not assigned**	-
62	⇒	Not assigned	-
63	⇒	**Not assigned**	-

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-313

Multi-pin connector at ABS control module (w/EDL) -J104-			
Terminal	**Connected to...**		**Terminal**
64	⇒	**CAN-bus; (Engine Control Module (ECM); Transmission Control Module (TCM), steering angle sensor -G85-)**	⇒ *EWD* **2**
65	⇒	not occupied; (control module 4B0 907 389)	-
65	⇒	CAN-bus shielding; (control module 8D0 907 389/A/D/E)	-
66	⇒	**CAN-bus; (Engine Control Module (ECM); Transmission Control Module (TCM), steering angle sensor -G85-)**	⇒ *EWD* **3**
67	⇒	**Sender 1 for brake booster -G201-; (GND) (control module 4B0 907 389)**	1
67	⇒	**Sender 1 for brake booster -G201-; voltage supply (control module 8D0 907 389/A/D/E)**	1
68	⇒	**Sensor for brake pressure -G201-; signal wire**	2
69	⇒	**Sender 1 for brake booster -G201-; voltage supply (control module 4B0 907 389)**	3
69	⇒	**Sender 1 for brake booster -G201-; (GND) (control module 8D0 907 389/A/D/E)**	3

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-314

Multi-pin connector at ABS control module (w/EDL) -J104-			
Terminal	**Connected to...**		**Terminal**
70	⇒	**Left-rear wheel speed sensor output; (control module 4B0 907 389)**	⇒ *EWD*
70	⇒	**Instrument cluster; activation of traction control indicator light (control module 8D0 907 389/A/D/E)**	15
71	⇒	**Speed sensor output rear right**	⇒ *EWD*
72	⇒	not occupied; (control module 4B0 907 389)	-
72	⇒	**Front left wheel speed sensor output; (control module 8D0 907 389/A/D/E)**	⇒ *EWD*
73	⇒	not occupied; (control module 4B0 907 389)	-
73	⇒	**Front right wheel speed sensor output; (control module 8D0 907 389/A/D/E)**	⇒ *EWD*
74	⇒	Not assigned	-
75	⇒	**Sensor for transverse acceleration -G200-; voltage supply; (control module 4B0 907 389)**	3
75	⇒	not occupied; (control module 8D0 907 389/A/D/E)	-
76	⇒	**Parking brake warning light switch -F9-**	⇒ *EWD*

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-315

Multi-pin connector at ABS control module (w/EDL) -J104-			
Terminal	**Connected to...**		**Terminal**
77	⇒	**Sender for rotation rate -G202-; test signal; (control module 4B0 907 389)**	5
77	⇒	**Sender for rotation rate -G202-; test signal (combined sensor for rotation rate and transverse acceleration); (control module 8D0 907 389/A/D/E)**	3
78	⇒	**Sender for rotation rate -G202-; reference signal; (control module 4B0 907 389)**	4
78	⇒	**Sender for rotation rate -G202-; reference signal (combined sensor for rotation rate and transverse acceleration); (control module 8D0 907 389/A/D/E)**	5
79	⇒	**Sender for rotation rate -G202-; signal wire; (control module 4B0 907 389)**	3
79	⇒	**Sender for rotation rate -G202-; signal wire (combined sensor for rotation rate and transverse acceleration); (control module 8D0 907 389/A/D/E)**	6
80	⇒	**Sender for rotation rate -G202-; (GND); (control module 4B0 907 389)**	1
80	⇒	**Sender for rotation rate -G202-; (GND) (combined sensor for rotation rate and transverse acceleration); (control module 8D0 907 389/A/D/E)**	2

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-316

Multi-pin connector at ABS control module (w/EDL) -J104-			
Terminal	**Connected to...**		**Terminal**
81	⇒	Not assigned	-
82	⇒	Not assigned	-
83	⇒	Not assigned	-
84	⇒	Not assigned	-
85	⇒	Not assigned	-
86	⇒	not occupied; (control module 4B0 907 389)	-
86	⇒	Instrument cluster; standing time signal; (control module 8D0 907 389/A/D/E)	11
87	⇒	Not assigned	-
88	⇒	Not assigned	-

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-317

Notes:

For test table

- *The socket designations of the VAG1598 test box are identical to the terminal designations of the ABS control module (w/EDL) -J104- in the wiring diagram. Incorrect test procedures can cause damage to the system. Do not bridge any terminals other than those listed in the table.*

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- *Specified values refer to readings on the VAG1526 and are not necessarily applicable for other test units.*

- *If the measured values do not match specifications, carry out the corrective actions listed on the right side of the table.*

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- *If values are obtained, also check wiring for intermittent loose terminals and short circuit to B+ and Ground (GND). This applies especially to sporadic malfunctions.*

- *Use the VAG1594 connector test kit for checking continuity (bridges).*

- *If the measured values only differ slightly from the specifications, clean the sockets and harness connectors of the testers and adapter leads (using contact spray G 000 700 04) and repeat the test. Before replacing actual components, check wiring and connections once more. This is especially important if the specification for a resistance test is under 10 Ω.*

01-318

Electrical test; steps 1-12

Resistance measurement: Select measurement range on VAG1526 (200 Ω)					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
1	5 + 3	Left front ABS inlet valve -N101-, left front ABS outlet valve -N102-		9 Ω ÷ 22 Ω	- An infinitely high resistance indicates an open circuit. Check for this. - A resistance less than the specified value indicates a short circuit between both lines. Check for this. - Check electrical wiring for short circuit to Ground (GND) or B+.
2	55 + 26	Right front ABS inlet valve -N99-, right front ABS outlet valve -N100-			
3	53 + 25	Inlet valve -N134-, outlet valve -N136- left-rear			

01-319

Resistance measurement: Select measurement range on VAG1526 (200 Ω)					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
4	6 + 4	Inlet valve -N133-, outlet valve -N135- right-rear		9 Ω ÷ 22 Ω	⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If the electrical wiring is OK, replace the hydraulic unit.
5	49 + 50	♦ Pilot valve -1- traction control - N225- ♦ Pilot valve -2- traction control - N226-		12 Ω ÷ 28 Ω	- An infinitely high resistance indicates an open circuit. Check for this. - A resistance less than the specified value indicates a short circuit between both lines. Check for this.

01-320

Resistance measurement: Select measurement range on VAG1526 (200 Ω)					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
6	52 + 54	♦ High pressure switch valve -1- traction control -N227-		6 W ÷ 16 Ω	- Check electrical wiring for short circuit to Ground (GND) or B+. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If the electrical wiring is OK, replace the hydraulic unit.
		♦ High pressure switch valve -2- traction control -N228-			
7	8 + 10 1) 9 + 10 2)	Left front ABS wheel speed sensor -G47-		400 Ω ÷ 2300 Ω	- An infinitely high resistance indicates an open circuit. Check for this.

♦ Outlets on ABS control module -J104- differ depending on installed equipment

1) Vehicles with all-wheel-drive

2) Vehicles with front-wheel-drive

01-321

Resistance measurement: Select measurement range on VAG1526 (2kΩ or 20 kΩ)					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
8	15 + 16	Right front ABS wheel speed sensor -G45-			- A resistance less than the specified value indicates a short circuit between both lines. Check for this. - Check electrical wiring for short circuit to Ground (GND) or B+. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If the electrical wiring is OK, replace the relevant ABS wheel speed sensor.
9	13 + 14	Left rear ABS wheel speed sensor -G46-		400Ω ÷ 2300Ω	
10	11 + 12	Right rear ABS wheel speed sensor -G44-			

01-322

Resistance measurement: Select measurement range on VAG1526 (200 Ω)					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
11	2 + 37 [1] 2 + 36 [2]	Activation of ABS solenoid valve relay -J106-		5 0W ÷ 70 Ω	- An infinitely high resistance indicates an open circuit. - A resistance less than the specified value indicates a short circuit between both lines. - Check electrical wiring for short circuit to Ground (GND) or B+. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If the electrical wiring is OK, replace the relay.
12	2 + 7	Activation of ABS return flow pump relay -J105-			

♦ Outlets on ABS control module -J104- differ depending on installed equipment

[1] Vehicles with control module 4B0 907 389

[2] Vehicles with control module 8D0 907 389/A/D/E

01-323

Electrical test; steps 13-27

Function test					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
13 [1]	Bridge 1 + 2, 28+37 [2] 28+36 [3]	Inlet valve -N101 and front left brake line connection	• Ignition on - for vehicles with automatic transmission, engage neutral position "N" - Bridge terminals 5 + 28 - Depress brake pedal and hold.	♦ Left front wheel can be rotated by hand	- If the wheel does not rotate, check the other wheels for free rotation. If yes, then hydraulic brake lines are mixed-up (switched). Check brake line connections and coupling pieces. Make sure every component is OK.
		See continuation on next page			

♦ Outlets on ABS control module -J104- differ depending on installed equipment

[1] This test step requires two technicians.

2) Vehicles with control module 4B0 907 389

3) Vehicles with control module 8D0 907 389/A/D/E

01-324

Continuation:

Function test					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
13 1)	Bridge 1 + 2, 28+37 2) 28+36 3)	Inlet valve -N101 and front left brake line connection	- Remove bridge - Release brake pedal.	♦ The left-front wheel remains locked.	- If all wheels are blocked, inlet valve is malfunctioning ⇒ DTC table, DTC 00257.

♦ Outlets on ABS control module -J104- differ depending on installed equipment

1) This test step requires two technicians.

2) Vehicles with control module 4B0 907 389

3) Vehicles with control module 8D0 907 389/A/D/E

01-325

Function test					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
14 [1]	Bridge 1 + 2, 28+37 [2] 28+36 [3]	Inlet valve -N99- and front right brake line connection	• Ignition on - for vehicles with automatic transmission, engage neutral position "N" - Bridge terminals 26 + 28 - Depress brake pedal and hold.	♦ Right front wheel can be rotated by hand	- If the wheel does not rotate, check the other wheels for free rotation. If yes, then hydraulic brake lines are mixed-up (switched). Check brake line connections and coupling pieces. Make sure every component is OK.
		See continuation on next page			

♦ Outlets on ABS control module -J104- differ depending on installed equipment

[1] This test step requires two technicians.

[2] Vehicles with control module 4B0 907 389

3) Vehicles with control module 8D0 907 389/A/D/E

01-326

Continuation:

Function test					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
14 1)	Bridge 1 + 2, 28+37 2) 28+36 3)	Inlet valve -N99- and front right brake line connection	- Remove bridge - Release brake pedal.	♦ The right-front wheel remains locked.	- If all wheels are blocked, inlet valve is malfunctioning ⇒ DTC table, DTC 00259.

♦ Outlets on ABS control module -J104- differ depending on installed equipment

1) This test step requires two technicians.

2) Vehicles with control module 4B0 907 389

3) Vehicles with control module 8D0 907 389/A/D/E

01-327

Function test					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
15 [1]	Bridge 1 + 2, 28+37 [2] 28+36 [3]	Inlet valve - N134- and rear left brake line connection	• Ignition on - for vehicles with automatic transmission, engage neutral position "N" - Bridge terminals 53 + 28 - Depress brake pedal and hold.	♦ Left rear wheel can be rotated by hand	- If the wheel does not rotate, check the other wheels for free rotation. If yes, then hydraulic brake lines are mixed-up (switched). Check brake line connections and coupling pieces. Make sure every component is OK.
		See continuation on next page			

♦ Outlets on ABS control module -J104- differ depending on installed equipment

[1] This test step requires two technicians.

[2] Vehicles with control module 4B0 907 389

3) Vehicles with control module 8D0 907 389/A/D/E

01-328

Continuation:

Function test					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
15 1)	Bridge 1 + 2, 28+37 2) 28+36 3)	Inlet valve -N134- and rear left brake line connection	- Remove bridge - Release brake pedal.	♦ The left-rear wheel remains locked.	- If all wheels are blocked, inlet valve is malfunctioning ⇒ DTC table, DTC 00274.

♦ Outlets on ABS control module -J104- differ depending on installed equipment

1) This test step requires two technicians.

2) Vehicles with control module 4B0 907 389

3) Vehicles with control module 8D0 907 389/A/D/E

01-329

Function test					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
16 [1]	Bridge 1 + 2, 28+37 [2] 28+36 [3]	Inlet valve - N133- and rear right brake line connection	• Ignition on - for vehicles with automatic transmission, engage neutral position "N" - Bridge terminals 6 + 28 - Depress brake pedal and hold.	♦ Right rear wheel can be rotated by hand	- If the wheel does not rotate, check the other wheels for free rotation. If yes, then hydraulic brake lines are mixed-up (switched). Check brake line connections and coupling pieces. Make sure every component is OK.
		See continuation on next page			

♦ Outlets on ABS control module -J104- differ depending on installed equipment

[1] This test step requires two technicians.

[2] Vehicles with control module 4B0 907 389

3) Vehicles with control module 8D0 907 389/A/D/E

01-330

Continuation:

Function test					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
16 1)	Bridge 1 + 2, 28+37 2) 28+36 3)	Inlet valve -N133- and rear right brake line connection	- Remove bridge - Release brake pedal.	♦ The right-rear wheel remains locked.	- If all wheels are blocked, inlet valve is malfunctioning ⇒ DTC table, DTC 00273.

♦ Outlets on ABS control module -J104- differ depending on installed equipment

1) This test step requires two technicians.

2) Vehicles with control module 4B0 907 389

3) Vehicles with control module 8D0 907 389/A/D/E

01-331

Function test: ABS warning light -K47-					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
17	-	Function of ABS warning light -K47-	• DTC memory checked and no DTC present in DTC memory of ABS control module -J104-. • Ignition switched off • Multi-pin connector connected to ABS control module -J104- and retainer catch engaged.		
		See continuation on next page			

01-332

Continuation:

Function test: ABS warning light -K47-					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
17	-	Function of ABS warning light -K47- **See continuation on next page**	- Switch on ignition	ABS warning light -K47- lights up for two (2) seconds and then goes out.	- If ABS warning light does not come on, check voltage of electrical system and test wiring from terminal 32 of ABS control module -J104- to instrument cluster for short circuit to Ground (GND).

01-333

Continuation:

Function test: ABS warning light -K47-					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
17	-	Function of ABS warning light -K47-			- The ABS warning lamp does not switch off after 2 seconds. The red "brake system malfunction" symbol lights up after 2 seconds. Check wire from terminal 32 of ABS control module -J104- to instrument cluster for short circuit to B+ or open circuit. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If voltage of electrical system is OK and wiring from terminal 32 of ABS control module -J104- to instrument cluster is intact ⇒ there is a malfunction in instrument cluster. ⇒ *Repair Manual, Electrical Equipment, Repair Group 90; Instrument cluster*

01-334

Function test: Red brake warning symbol					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
18	-	Function of red "brake system malfunction" symbol **See continuation on next page**	• Brake fluid level is OK ⇒ *Repair Manual, Brake System, Repair Group 47* • Function of ABS warning light -K47- already checked in step 17. • Multi-pin connector connected to ABS control module -J104- and retainer catch engaged. • Switch on ignition		

01-335

Continuation:

Function test: Red brake warning symbol					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
18	-	Function of red "brake system malfunction" symbol	- Connect VAG1551 scan tool and select address word 03 - For vehicles with automatic transmission and instrument cluster with DIS, depress the brake pedal and select a driving gear.	The ABS/EDL indicator lamp and the red "brake system malfunction" symbol light up. If the traction control indicator light is OK, it lights up as well.	- Malfunction in instrument cluster ⇒ *Repair Manual, Electrical Equipment, Repair Group 90; Instrument cluster*

01-336

Function test: Traction control indicator light -K86-					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
19	-	Function of traction control indicator light -K86-	• DTC memory checked and no DTC present in DTC memory of ABS control module -J104-. • Ignition switched off • Multi-pin connector connected to ABS control module -J104- and retainer catch engaged.		
		See continuation on next page			

01-337

Continuation:

Function test: Traction control indicator light -K86-					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
19 Continuation:	-	Function of traction control indicator light -K86-	- Switch on ignition	Traction control indicator light -K86- comes on for two (2) seconds and then goes out.	- If traction control indicator light does not light up, check vehicle voltage and wire from terminal 31 of ABS control module -J104- to instrument cluster for short circuit to B+ and open circuit. - If traction control indicator lights continuously, test wiring from terminal 31 of ABS control module -J104- to instrument cluster for short circuit to Ground (GND). ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*
		See continuation on next page			

01-338

Continuation:

Function test: Traction control indicator light -K86-					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
19	-	Function of traction control indicator light -K86-			- Are voltage of electrical system OK and wiring from terminal 31 of ABS control module -J104- to instrument cluster intact? ⇒ malfunction in instrument cluster ⇒ *Repair Manual, Electrical Equipment, Repair Group 90; Instrument cluster*

01-339

Function test: Traction control button; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
20	-	Function of ASR/ESP button **See continuation on next page**	• Ignition switched off • Function of traction control indicator light - K86- already checked in step 19. • Multi-pin connector connected to ABS control module -J104- and retainer catch engaged.		

01-340

Continuation:

Function test: Traction control button; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
20	-	Function of ASR/ESP button	- Switch on ignition		
			- Press ASR/ESP button	Traction control indicator light -K86- lights up	- Switch off ignition. - Detach multi-pin connector from ABS control module -J104- and remove.
			- Press ASR/ESP button again	Traction control indicator light -K86- goes out	- Connect VAG1598/20 test box.
		See continuation on next page			

01-341

Continuation:

Function test: Traction control button; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
20	28 + 44	Function of ASR/ESP button	• Ignition switched on. - ASR/ESP button not pressed	0.0 to 1.0 V	- Check wire from terminal 28 to Ground (GND). - Check wiring from terminal 44 to traction control button, terminal 6. - Check voltage supply from terminal 5 of ASR/ESP button to terminal 15. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*
		See continuation on next page			

01-342

Continuation:

Function test: Traction control button; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
20	28 + 44	Function of ASR/ESP button	- ASR/ESP button pressed	10.0 to 14.5 V	- Check wire from terminal 28 to Ground (GND). - Check wiring from terminal 44 to traction control button, terminal 6. - Check voltage supply from terminal 5 of ASR/ESP button to terminal 15. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If no malfunctions can be found using the procedures in these steps, replace the ASR/ESP button.

01-343

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
21	1 + 28 1 + 29	Voltage supply to ABS control module -J104- via terminal 15	• Ignition switched on.	10.5 to 14.5 V	- Check wiring from terminals 28 and 29 to Ground (GND). - Check wiring from terminal 1 to terminal 15 via fuse (10A). ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-344

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
22	-	Voltage supply of solenoid valves via ABS solenoid valve relay -J106-.	- Remove ABS solenoid valve relay -J106-. ⇒ *Repair Manual, Brake System, Repair Group 45* - Check voltage supply for ABS solenoid valve relay -J106- at terminal 30 for open circuit or short circuit to B+ or Ground (GND).	10.5 to 14.5 V	- Check the relevant fuse, 25A, and repair the wiring problem. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*
		See continuation on next page			

01-345

Continuation:

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
22	-	Voltage supply of solenoid valves via ABS solenoid valve relay -J106- .	- Check wiring from ABS solenoid valve relay -J106- (terminal 87) to ABS hydraulic unit -N55- (terminal 10) for open circuit or short circuit to B+ or Ground (GND).		- Fix the wiring problem. - If the power supply lines are OK, replace the relay. - If the original malfunction "ABS solenoid valve relay -J106-" is still not fixed, replace the ABS hydraulic unit.

01-346

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
23	-	Voltage supply for ABS return flow pump relay -J105- via terminal 30	- Remove ABS return flow pump relay -J105-. ⇒ *Repair Manual, Brake System, Repair Group 45* - Check voltage supply for ABS return flow pump relay -J105- at terminal 30 for open circuit or short circuit to Ground (GND).	10.5 to 14.5 V	- Check the relevant fuse, 60A, and repair wire damage. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-347

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
24	-	♦ Ground (GND) supply and voltage supply for ABS return flow pump -V39- **See continuation on next page**	- Remove ABS return flow pump relay -J105-. ⇒ *Repair Manual, Brake System, Repair Group 45*		

01-348

Continuation:

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
24	-	♦ Ground (GND) supply and voltage supply for ABS return flow pump -V39-	- Check wiring from ABS return flow pump relay -J105- (terminal 87) to ABS control module -J104- (terminal 20) and to ABS hydraulic unit -N55- (terminal 14) for open circuit or short circuit to B+ or Ground (GND).		- Fix the wiring problem.
		See continuation on next page			

01-349

Continuation:

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
24	-	♦ Ground (GND) supply and voltage supply for ABS return flow pump - V39-	- Check the Ground (GND) for ABS return flow pump at ABS hydraulic unit (terminal 13).		- Fix the open circuit or short circuit to B+ in Ground (GND).
		See continuation on next page			

01-350

Continuation:

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
24	Bridge 7 + 28, 1 + 2	♦ Function of ABS return flow pump relay -J105-.	• ABS return flow pump relay -J105- installed		
			- Use VAG1598/20 to measure voltage between terminals 20 and 29.	♦ Voltage should be between 10.5 to 14.5 V between terminals 20 and 29.	
			- Switch on ignition for max. 10 seconds and switch off again.	♦ ABS return flow pump -V39- runs	- If you do not measure any voltage between terminals 20 and 29, replace the relay. - If you measure voltage between terminals 20 and 29, the ABS return flow pump is malfunctioning. Replace ABS hydraulic unit -N55-.

01-351

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
25	51 + 28	ABS control module -J104- is supplied with power at terminal 51 from terminal 30. The ABS control module -J104- uses this voltage supply as a voltage supply for the hydraulic pump for traction control -V156.	- Check the wiring from ABS control module -J104- (terminal 51) to terminal 30 for open circuit and short circuit to Ground (GND).	10.5 to 14.5 V	- Check the relevant fuse, 25A, and repair the wiring problem. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-352

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
26	28 + 48	Function of brake light switch -F-	• Ignition switched off • Brake pedal not depressed - Operate brake pedal.	0.0 to 1.0 V 10.0 to 14.5 V	- Check wire from terminal 28 to Ground (GND). - Check wiring from terminal 48 to terminal 30 via fuse (10A). ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Adjust brake light switch -F-. ⇒ *Repair Manual, Brake System, Repair Group 45*
		See continuation on next page			

01-353

Continuation:

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
26	28 + 42	Function of brake light switch -F-(Brake test switch)	• Brake pedal not depressed - Operate brake pedal.	10.0 to 14.5 V 0.0 to 1.0 V	- Check wiring from terminal 42 to terminal 15 via fuse (10A). ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Adjust brake light switch -F-. ⇒ *Repair Manual, Brake System, Repair Group 45*

01-354

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
27	1 + 76	Function of parking brake warning light switch -F9-	• Ignition switched on. • Parking brake not engaged - Set parking brake	0.0 to 1.0 V 10.0 to 14.5 V	- Check wiring from terminal 1 to terminal 15 via fuse (10A). - Check wiring from terminal 76 to parking brake warning light switch -F9- for open circuit or short circuit to B+. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*
		See continuation on next page			

01-355

Continuation:

Voltage measurement; set measurement range on VAG1526: 20 V =					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
27	1 + 76	Function of parking brake warning light switch -F9-	• Parking brake not engaged - Set parking brake	0.0 to 1.0 V 10.0 to 14.5 V	- Check Ground (GND) to parking brake warning light switch -F9-. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If no malfunction could be determined using the procedures in these steps, replace the parking brake warning light switch -F9-.