Read Measuring Value Block (function 08)

The control module can transmit measured values to the VAG1551 Scan Tool (ST). These measured values provide information about the operational status of the system and the sensors connected to it. In many cases the data supplied can be used to troubleshoot and repair malfunctions. The measured values from the Bosch 5.0 series are contained in three display groups, which can be accessed via their display group numbers.

- Connect the VAG1551 Scan Tool (ST) and select "Brake Electronics" via address word 03 ⇒ page 01-4 .

Notes:

- *When the printer is switched on, the contents of the display will be printed out on the scan tool log.*

- *When reading the measuring value block, also check wiring and connectors for loose terminals.*

- Check the control module version ⇒ page 01-52 and press the →button.

01-62

Rapid data transfer	**HELP**
Select function XX	

Indicated on display:

- Press buttons -0- and -8- to select "Read measuring value block" function 08.

Rapid data transfer	**Q**
08 - Read measuring value block	

Indicated on display:

- Press -Q- button to confirm input.

Read measuring value block	**HELP**
Input display group number	**XXX**

Indicated on display:

- Press buttons -0-, -0- and -1-.
- Press -Q- button to confirm input.

01-63

Test table: display group 1

Notes:

- *Display fields 1 through 4 show the current wheel circumference speeds in km/h. These are calculated by the ABS control module -J104- on the basis of the signals received from the wheel speed sensors. If one of the display fields shows no reading, proceed as for DTCs 00283, 00285, 00287, 00290 "ABS Wheel Speed Sensor" DTC table ⇒ page 01-98 .*

- *In order to check whether wheel speed sensors are properly allocated to each wheel, the vehicle must be raised. On vehicles with manual transmission put the gear shift lever in neutral. On vehicles with automatic transmission move the selector lever to position "N". Turn appropriate wheel by hand. Remaining drive wheels must be secured against turning.*

- *When a vehicle is accelerated uniformly on a dry surface, the displayed value will increase continuously by whole numbers; e.g. 6 km/h, 7 km/h, 8 km/h ... . The difference between displayed values 1 to 4 should not be more than ± 1 km/h (error from out-of-round wheels). If the values jump, for instance from ...6km/h, 7 km/h, to 12 km/h...or if the difference between the displayed values is greater than ± 1 km/h, then check the installation of the wheel speed sensors and rotors.*

⇒ *Repair Manual, Suspension, Wheels, Steering, Repair Group 40*

⇒ *Repair Manual, Suspension, Wheels, Steering, Repair Group 42*

Read measuring value block			1 →	◀ Indicated on display
1 to 19 [1)] km/h	1 to 19 [1)] km/h	1 to 19 [1)] km/h	1 to 19 [1)] km/h	
			Rear right wheel circumference speed	
		Rear left wheel circumference speed		

	Front right wheel circumference speed
Front left wheel circumference speed	

1) On Board Diagnostic (OBD) is terminated by the ABS control module -J104- if road speed exceeds 19 km/h.

01-64

Note:

The display group numbers can be selected in sequence by pressing buttons <-1 and 3-> on the VAG1551 scan tool, or the arrow buttons ↑ and ↓ on the VAG1552 mobile scan tool.

- Press -C- button to input display group number manually.

Read measuring value block

Enter display group number XXX

Indicated on display:

- Press buttons -0-, -0- and -2-.
- Press -Q- button to confirm input.

01-65

Test table: display group 2

Read measuring value block			2 →	◀ Indicated on display
0 or 1	0 or 1	0 or 1	0 or 1	
			ABS solenoid valve relay: For vehicles with Front Wheel Drive (FWD), the display shifts one field toward left. ♦ 0 → not permitted during "Read measuring value block", the relay was not activated during "ignition on". - Carry out "Electrical test", step 11 ⇒ page 01-68 . ♦ 1 → specified value, relay was activated by ABS control module -J104- during ignition on.	
		Voltage at motor for ABS return flow pump: For vehicles with Front Wheel Drive (FWD), the display shifts one field toward left. ♦ 0 → specified value, there is no voltage at the motor for the ABS return flow pump. ♦ 1 → not permitted during "Read measuring value block", there is voltage at the motor for the ABS return flow pump. - Carry out "Electrical test", step 12 ⇒ page 01-68 .			
	Brake light switch: Additional signal only for All Wheel Drive (AWD):			

	♦ 0 → Brake pedal not operated ♦ 1 → Brake pedal operated	- Check brake light switch if there are deviations. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*
Brake light switch: Signal for Front and All Wheel Drive: ♦ 0 → Brake pedal not operated ♦ 1 → Brake pedal operated		- Check brake light switch if there are deviations. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-66

Note:

The display group numbers can be selected in sequence by pressing buttons <-1 and 3-> on the VAG1551 scan tool, or the arrow buttons ↑ and ↓ on the VAG1552 mobile scan tool.

- Press -C- button to input display group number manually.

Read measuring value block

Enter display group number XXX

➢ Indicated on display:

Note:

For display group 3 (005):

- *To read the display fields for engine speed and current engine torque with the engine running, communication between the scan tool and the control module must be terminated via the "End Output" function ⇒ page 01-16 . Start the engine and reinitiate communication between the scan tool and the control module.*

- Press buttons -0- and -8- to select "Read measuring value block" function 08.
- Press -Q- button to confirm input.
- Press buttons -0-, -0- and -3-.
- Press -Q- button to confirm input.

01-67

Test table: display group 3

Read measuring value block			3 →	◀ Indicated on display
60 to 8000 1 RPM	0 to 100 %	0 or 1	---	

Traction control (ASR) button: (Only for vehicles equipped with ASR)

- ♦ 0 → Traction control button not operated.
- ♦ 1 → The traction control button is operated, operational condition of ASR alternates, i.e. "ASR OFF" and "ASR ON".
- ♦ When ASR is switched off via the traction control button, the warning lamp for ASR lights up.

- Check traction control button if there are deviations. Carry out "Electrical test", step 22 ⇒ page 01-68 .

Actual engine torque (AET): (Only for vehicles equipped with ASR)

- ♦ 0% → vehicle is in deceleration mode.
- ♦ 20% - 30% → represents engine idle.
- ♦ 100% → engine is offering its maximum torque.

- If no indication is displayed, proceed according to DTC 00647 "ABS-ASR engine electrical connection 2". DTC table ⇒ page 01-98 .

Engine speed: (Only for vehicles equipped with ASR)

- ♦ Engine speed is displayed in increments of 60 RPM, starting at 60 RPM.

- If no indication is displayed, proceed according to DTC 00529 "Wheel speed information missing. No signal". DTC table ⇒ page 01-98 .

01-68

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).

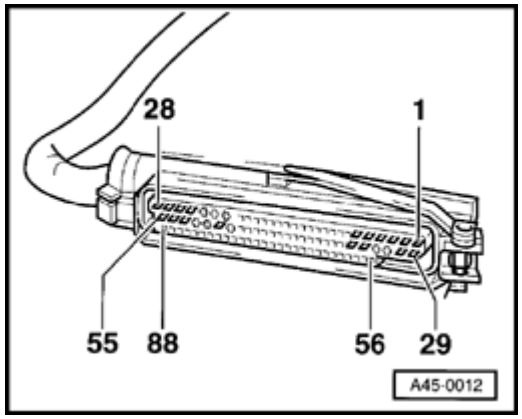
Test requirements

- 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).

01-69



- 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.

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".

01-70

Required special tools and test equipment:

- VAG1598/20 test box
- VAG1594 connector test kit
- VAG1526 Multimeter
- VAG1310A Pressure gauge

01-71

Connecting the VAG1598/20 test box and checking the ABS, ABS/EDL or ASR system

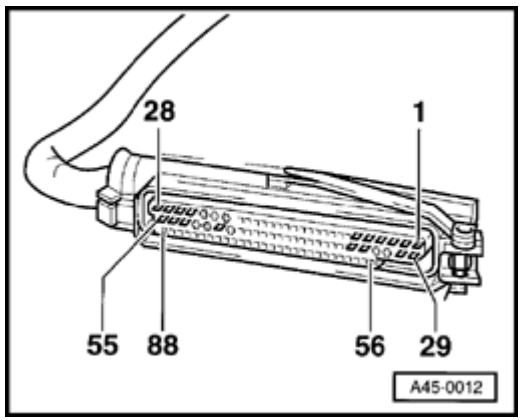
- Switch ignition off.

- 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 ABS wiring harness.

01-72

Terminal assignment of multi-pin connector for wiring harness / ABS control module (w/EDL) -J104-

Terminal	Wire connection to component ...
1	**Voltage supply, terminal 15**
2	**Hydraulic unit; activation of ABS return flow pump relay -J105-**
3	**Hydraulic unit; left front traction control switch-over valve -N168- (secondary piston circuit)**
4	**Hydraulic unit; left front traction control outlet valve -N169- (secondary piston circuit)**
5	**Hydraulic unit; left front ABS inlet valve -N101-**
6	**Hydraulic unit; right rear ABS inlet valve -N133-**
7	**Hydraulic unit; activation of ABS return flow pump relay -J105-**
9	**Left front ABS wheel speed sensor -G47-** ♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL ♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL/ASR
10	**Left front ABS wheel speed sensor -G47-**
11	**Right rear ABS wheel speed sensor -G44-**
12	**Left rear ABS wheel speed sensor -G46-**
13	**Left rear ABS wheel speed sensor -G46-**
14	**Right front ABS wheel speed sensor -G45-**
15	**Right front ABS wheel speed sensor -G45-** ♦ for vehicles with Front Wheel Drive (FWD) and ABS

	♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL ♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL (ABS pressure regulation)

01-73

Terminal	Wire connection to component ...
18	**Engine Control Module (ECM); MMD signal (Masked Misfire Diagnostic)** ♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL/ASR, the SET signal (Specified Engine Torque) is also transmitted via this wiring harness.
19	**Hydraulic unit; control wire for ABS return flow pump -V39-**
20	**Engine Control Module (ECM); Engine RPM** ♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL/ASR
25	**Hydraulic unit; Left rear ABS outlet valve -N136-**
26	**Hydraulic unit; Right front ABS outlet valve -N100-**
27	**Hydraulic unit; right front traction control outlet valve -N167- (primary piston circuit)**
28	**Ground (GND) terminal 31 (ABS control module -J104-)**
29	**Ground (GND) terminal 31 (ABS control module -J104-)**
31	**Instrument cluster; activation of traction control indicator light** ♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL/ASR
32	**Instrument cluster; ABS/EDL warning light activation (active)**
33	**Hydraulic unit; Left front ABS outlet valve -N102-**
34	**Hydraulic unit; Right rear ABS outlet valve -N135-**
35	**Left front ABS wheel speed sensor -G47-** ♦ for vehicles with All Wheel Drive (AWD) and ABS/EDL

36	**Left front ABS wheel speed sensor -G47-** ♦ for vehicles with Front Wheel Drive (FWD) and ABS

01-74

Terminal	Wire connection to component ...
37	**Hydraulic unit; activation of ABS solenoid valve relay -J106-**
38	**Right rear ABS wheel speed sensor -G44-**
42	**Right front ABS wheel speed sensor -G45-** ♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL/ASR ♦ for vehicles with All Wheel Drive (AWD) and ABS/EDL (throttle valve regulation)
44	**Traction control (ASR) button** ♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL/ASR
45	**TI (Transmission Influence)** ♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL/ASR
46	**K-wire**
47	**Engine Control Module (ECM); AET (Actual Engine Torque)** ♦ for vehicles with Front Wheel Drive (FWD) and ABS/EDL/ASR
47	**Brake light switch -F-** ♦ for vehicles with All Wheel Drive (AWD) and ABS/EDL
48	**Brake light switch -F-**
50	**Battery + (terminal 30)**
53	**Hydraulic unit; left rear ABS inlet valve -N134-**

54	**Hydraulic unit; right front ABS inlet valve -N99-**
55	**Hydraulic unit; right front traction control switch-over valve -N166- (primary piston circuit)**

01-75

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.*

01-76

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 + 33	Left front ABS inlet valve -N101-, left front ABS outlet valve -N102-	• Electrical wiring between control module and hydraulic unit OK	9 Ω ÷ 22 Ω	- Check electrical wiring between control module and hydraulic unit for short circuit to Ground (GND) or B+ ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If the electrical wiring is OK, replace the hydraulic unit.
2	54 + 26	Right front ABS inlet valve -N99-, right front ABS outlet valve -N100-			
3	53 + 25	Inlet valve -N134-, outlet valve -N136- left-rear			
4	6 + 34	Inlet valve -N133-, outlet valve -N135- right-rear			

01-77

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**
5 Note: Only for vehicles with ABS/EDL or ASR	3 + 55	Left front traction control switch-over valve -N168- (secondary piston circuit) Right front traction control switch-over valve -N166- (primary piston circuit)	• Electrical wiring between control module and hydraulic unit OK	12 Ω ÷ 28 Ω	- Check electrical wiring between control module and hydraulic unit for short circuit to Ground (GND) or B+. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If the electrical wiring is OK, replace the hydraulic unit.
6 Note: Only for vehicles with ABS/EDL or ASR	4 + 27	Left front traction control outlet valve -N169- (secondary piston circuit) Right front traction control outlet valve -N167- (primary piston circuit)	• Electrical wiring between control module and hydraulic unit OK	12 Ω ÷ 28 Ω	- Check electrical wiring between control module and hydraulic unit for short circuit to Ground (GND) or B+. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If the electrical wiring is OK, replace the hydraulic unit.

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**
7	9 + 10 1) 2) 35 + 10 3) 5) 36 + 10 4)	Left front ABS wheel speed sensor -G47-	• Electrical wiring between control module and wheel speed sensor OK	400Ω ÷ 2300Ω	- Check electrical wiring between control module and wheel speed sensor 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.
8	15 + 14 1) 3) 4) 42 + 14 2) 5)	Right front ABS wheel speed sensor -G45-			
9	13 + 12	Left rear ABS wheel speed sensor -G46-			
10	11 + 38	Right rear ABS wheel speed sensor -G44-			

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

1) Only for vehicles with Front Wheel Drive (FWD) and ABS/EDL Bosch 5

2) Only for vehicles with Front Wheel Drive (FWD) and ABS/ASR Bosch 5

3) Only for vehicles with All Wheel Drive (AWD) and ABS/EDL Bosch 5, (ABS) pressure regulation

4) Only for vehicles with Front Wheel Drive (FWD) and ABS Bosch 5

5) Only for vehicles with All Wheel Drive (AWD) and ABS/EDL Bosch 5, throttle valve regulation

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	ABS solenoid valve relay -J106-	• Electrical wiring between control module and hydraulic unit OK	30 Ω ÷ 80 Ω	- Check electrical wiring between control module and hydraulic unit for short circuit to Ground (GND) or B+. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If electrical wiring is OK, replace the relay.
12	2 + 7	ABS return flow pump relay -J105-	• Electrical wiring between control module and hydraulic unit OK	30 Ω ÷ 80 Ω	- Check electrical wiring between control module and hydraulic unit for short circuit to Ground (GND) or B+. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If electrical wiring is OK, replace the relay.

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	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. - Remove bridge 5 + 28.	♦ Left front wheel can be rotated by hand ♦ The left-front wheel remains	- 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. Repeat test step 13. - If all wheels are blocked, inlet valve is malfunctioning DTC table ⇒ page 01-98 , DTC 00257.

			- Release brake pedal.	locked.	

1) This test step requires two technicians.

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	Inlet valve -N99- and front right brake line connection	• Ignition on - for vehicles with automatic transmission, engage neutral position "N" - Bridge terminals 54 + 28 - Depress brake pedal and hold. - Remove bridge 54 + 28.	♦ Right front wheel can be rotated by hand ♦ The right-front wheel remains	- 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. Repeat test step 14. - If all wheels are blocked, inlet valve is malfunctioning DTC table ⇒ page 01-98 , DTC 00259.

			- Release brake pedal.	locked.	

1) This test step requires two technicians.

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	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. - Remove bridge 53 + 28.	♦ Left rear wheel can be rotated by hand ♦ The left-rear wheel remains	- 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. Repeat test step 15. - If all wheels are blocked, inlet valve is malfunctioning DTC table ⇒ page 01-98 , DTC 00274.

			- Release brake pedal.	locked.	

1) This test step requires two technicians.

01-83

Test step	**VAG 1598/20 sockets**	Test of	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
16 [1)]	Bridge 1 + 2, 28 + 37	Inlet valve - N133- and rear right brake line connection	• Ignition on		
			- for vehicles with automatic transmission, engage neutral position "N"		- 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. Repeat test step 16.
			- Bridge terminals 6 + 28		
			- Depress brake pedal and hold.		- If all wheels are blocked, inlet valve is malfunctioning DTC table ⇒ page 01-98 , DTC 00273.
				♦ Right rear wheel can be rotated by hand	
			- Remove bridge 6 + 28.	♦ The right-rear wheel remains locked.	

			- Release brake pedal.		

1) This test step requires two technicians.

Function test and check for proper seal					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
17	Bridge 1 + 2, 7 + 37, 37 + 28	♦ ABS return flow pump -V39- ♦ Left front traction control switch-over valve -N168- ♦ Left front traction control outlet valve -N169-	- Connect VAG1310A pressure gauge to front left brake caliper and bleed. ⇒ *Repair Manual, Brake System, Repair Group 47* - Bridge terminals 3 + 28		- ABS return flow pump malfunctioning, replace ABS hydraulic unit -N55- ⇒ *Repair Manual, Brake System, Repair Group 45*
		♦ Pressure relief valve in ABS hydraulic unit -N55- ♦ Left front ABS outlet valve -N102-	- Switch on ignition for max. 10 seconds and switch off again.	♦ Left front traction control switch-over valve -N168- switched ♦ ABS return flow pump -V39- runs ♦ Pressure on pressure	- Check left front traction control switch-over valve -N168- and left front traction control outlet valve -N169- via resistance test ⇒ test steps 5 + 6. Replace ABS hydraulic unit -N55- if malfunctioning.

				gauge max. 5 bar	
Test step 17: Continued on next page.					

01-85

Function test and check for proper seal					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
17 Continuation:		♦ Right rear ABS outlet valve -N135-	- Bridge terminals 4 + 28 - Switch on ignition for max. 10 seconds and switch off again. - Remove VAG1310A pressure gauge and bleed brakes	♦ Left front traction control outlet valve -N169- switched ♦ Pressure increases on pressure gauge: Front Wheel Drive (FWD): 170 ± 25 bar All-Wheel Drive (AWD), pressure regulation (ABS): 90 ± 25 bar All Wheel Drive (AWD), throttle valve regulation: 170 ± 25 bar	- Pressure relief valve and/or left front ABS outlet valve -N102- and/or right rear ABS outlet valve -N135- malfunctioning. Replace ABS hydraulic unit -N55-.

			⇒ *Repair Manual, Brake System, Repair Group 47*		

Function test and check for proper seal					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
18	Bridge 1 + 2, 7 + 37, 37 + 28	♦ ABS return flow pump -V39- ♦ Right front traction control switch-over valve -N166- ♦ Right front traction control outlet valve -N167-	- Connect VAG1310A pressure gauge to front RIGHT brake caliper and bleed. ⇒ *Repair Manual, Brake System, Repair Group 47* - Bridge terminals 55 + 28		- ABS return flow pump malfunctioning, replace ABS hydraulic unit -N55- ⇒ *Repair Manual, Brake System, Repair Group 45*
		♦ Pressure relief valve in ABS hydraulic unit -N55- ♦ Right front ABS outlet valve -N100-	- Switch on ignition for max. 10 seconds and switch off again.	♦ Right front traction control switch-over valve -N166- switched ♦ ABS return flow pump -V39- runs ♦ Pressure on pressure	- Check right front traction control switch-over valve -N166- and right front traction control outlet valve -N167- via resistance test ⇒ test steps 5 + 6. Replace ABS hydraulic unit -N55- if malfunctioning.

				gauge max. 5 bar	
Test step 18: Continued on next page.					

Function test and check for proper seal					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
18 Continuation:		♦ Left rear ABS outlet valve -N136-	- Bridge terminals 27 + 28 - Switch on ignition for max. 10 seconds and switch off again. - Remove VAG1310A pressure gauge and bleed brakes	♦ Right front traction control outlet valve -N167- switched ♦ Pressure increases on pressure gauge: Front Wheel Drive (FWD): 170 ± 25 bar All-Wheel Drive (AWD), pressure regulation (ABS): 90 ± 25 bar All Wheel Drive (AWD), throttle valve regulation: 170 ± 25 bar	- Pressure relief valve and/or right front ABS outlet valve -N100- and/or left rear ABS outlet valve -N136- malfunctioning. Replace ABS hydraulic unit -N55-.

			⇒ *Repair Manual, Brake System, Repair Group 47*		

01-88

Function test: ABS warning light -K47-					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
19	-	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.		
				Test step 19: Continued on next page.	

01-89

Function test: ABS warning light -K47-					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
19 Continuation:	-	Function of ABS warning light -K47-	- 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). - 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+ and open circuit. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Are both the vehicle voltage and the wiring from terminal 32 of ABS control module -J104- to the instrument cluster OK? ⇒ Malfunction in instrument cluster. ⇒ *Repair Manual, Electrical Equipment, Repair Group 90; Instrument cluster*

01-90

Function test: Red brake warning symbol					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
20	-	Function of red "brake system malfunction" symbol	• Brake fluid level is OK ⇒ *Repair Manual, Brake System, Repair Group 47* • Function of ABS warning light -K47- already checked in step 19. • Multi-pin connector connected to ABS control module -J104- and retainer catch engaged. • Switch on ignition		
				Test step 20: Continued on next page.	

01-91

Function test: Red brake warning symbol					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
20 Continuation:		Function of red "brake system malfunction" symbol	- For vehicles with automatic transmission and high-line instrument cluster, 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 installed and OK, it also lights up.	- Malfunction in instrument cluster ⇒ *Repair Manual, Electrical Equipment, Repair Group 90; Instrument cluster*

01-92

Function test: Traction control indicator light -K86-. This is only installed if vehicle is equipped with ASR.					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
21	-	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.		
				Test step 21: Continued on next page.	

01-93

Function test: Traction control indicator light -K86-. This is only installed if vehicle is equipped with ASR.					
Test step	**VAG 1598/20 sockets**	**Test of**	• Test requirements - Additional work steps	**Specified value**	**Corrective action**
21 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 lamp remains continuously lit, check wire from terminal 31 of ABS control module -J104- to instrument cluster for short circuit to Ground (GND). ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Are both the vehicle voltage and the wiring from terminal 31 of ABS control module -J104- to the instrument cluster OK? ⇒ Malfunction in instrument cluster. ⇒ *Repair Manual, Electrical Equipment, Repair Group 90; Instrument cluster*

01-94

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**
22	-	Function of traction control button	• Ignition switched off • Function of traction control indicator light -K86- was already checked in step 21. • Multi-pin connector connected to ABS control module -J104- and retainer catch engaged. - Switch on ignition		
			- Press traction control button	Traction control indicator light -K86- lights up	- Switch off ignition. - Detach multi-pin connector from ABS control module -J104- and remove.
			- Press traction control button again	Traction control indicator light -K86- goes out.	- Connect VAG1598/20 test box.
					Test step 22: Continued on next page.

01-95

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**
22 Continuation:	28 + 44	Function of traction control button	• Ignition switched on. - Traction control button not pressed - Traction control button pressed	0.0 to 0.5 V 10.0 to 14.5 V	- Check wire from terminal 28 to Ground (GND). - Check wire from terminal 44 to traction control button, terminal 6. - Check voltage supply from terminal 5 of traction control button to terminal 15. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - If no malfunctions can be found using the procedures in these steps, replace the traction control button.

01-96

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	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 wire from terminal 1 to terminal 15. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-97

Diagnostic Trouble Code (DTC) table

Notes:

- *Connect the VAG1551 Scan Tool (ST) and select address word 03 "Brake Electronics".*
- *Check the control module version ⇒ page 01-52 and press the → button.*
- *Press buttons -0- and -2- to select "Check DTC Memory" function 02. Press -Q- button to confirm input.*

Notes:

- *Each malfunction is assigned a 5-digit Diagnostic Trouble Code (DTC). The DTC is located in the left column of the DTC table. If you have switched the printer on by pressing the "PRINT" button, the VAG1551 scan tool (ST) prints the message identifying the malfunction and the DTC. Otherwise, DTCs are not displayed by the VAG1551 scan tool.*
- *The contents of DTC memory remain stored until memory is erased, ⇒ page 01-15 .*
- *Sporadically occurring malfunctions are identified via indication of "/SP" on the right-hand side of the display.*
- *Static malfunctions that cannot be detected when the vehicle is stationary are also identified with "/SP" if the ignition has been switched off and then on again.*
- *The following DTC table includes all the DTCs that can be stored by the ABS control module -J104- and displayed and printed out by the VAS5051 tester or VAG1551 scan tool. Malfunctions are listed by DTC number.*

Diagnostic Trouble Code (DTC) table

Output on printer of VAG1551 Scan Tool (ST)	Possible cause	Corrective action
DTC		
00000 No malfunction recognized! If this display appears, process is concluded. No DTCs are stored in DTC memory. If corresponding warning lamps light up anyway, check the following points:	♦ Voltage supply for ABS control module -J104- below 10.5 volts at a vehicle speed less than 6 km/h. ♦ Open circuit in activation wire for ABS warning light -K47- between ABS control module (w/EDL) -J104- and instrument cluster combination processor -J218-. If no malfunction can be found, and there is still a problem, there may be a mechanical malfunction (e.g. solenoid valve sticking).	- See section "Overview of indicator lamp functions" - Expand troubleshooting to include "Electrical test", function test ⇒ page 01-68 .

01-99

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00257 Left front ABS inlet valve -N101-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit -N55- and ABS control module -J104-. ♦ Left front ABS inlet valve -N101- malfunctioning	- Carry out "electrical test", steps 1 + 13 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.
00259 Right front ABS inlet valve -N99-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit and ABS control module -J104-. ♦ Right front ABS inlet valve -N99- malfunctioning.	- Carry out "electrical test", steps 2 +14 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.

01-100

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00265 Left front ABS outlet valve -N102-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit and ABS control module -J104-. ♦ Left front ABS outlet valve -N102- malfunctioning.	- Carry out "Electrical test", step 1 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.
00267 Right front ABS outlet valve -N100-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit and ABS control module -J104-. ♦ Right front ABS outlet valve -N100- malfunctioning	- Carry out "Electrical test", step 2 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00273 Right rear ABS inlet valve -N133-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit and ABS control module -J104-. ♦ Right rear ABS inlet valve -N133- malfunctioning	- Carry out "electrical test", steps 4 +16 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.
00274 Left rear ABS inlet valve -N134-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit and ABS control module -J104-. ♦ Left rear ABS inlet valve -N134- malfunctioning	- Carry out "electrical test", steps 3 +15 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.

01-102

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00275 Right rear ABS outlet valve -N135-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit and ABS control module -J104-. ♦ Right rear ABS outlet valve -N135- malfunctioning.	- Carry out "Electrical test", step 4 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.
00276 Left rear ABS outlet valve -N136-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit and ABS control module -J104-. ♦ Left rear ABS outlet valve -N136- malfunctioning	- Carry out "Electrical test", step 3 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00283 Left front ABS wheel speed sensor -G47- or:	♦ ABS wheel speed sensor rotor dirty or damaged. ♦ Excessive wheel bearing play. ♦ Left rear ABS wheel speed sensor -G47- installed incorrectly. ♦ ABS wheel speed sensor -G47- malfunctioning. ♦ Short circuit to Ground (GND).	- Check rotor, clean or replace ⇒ *Repair Manual, Brake System, Repair Group 45* - Replace wheel bearing ⇒ *Repair Manual, Suspension, Wheels, Steering, Repair Group 40* - Check installation of ABS wheel speed sensor. ⇒ *Repair Manual, Brake System, Repair Group 45* - "Read measuring value block" display group 1 ⇒ page 01-63 . - Carry out "Electrical test", step 7 ⇒ page 01-68 . - If neither the "Read measuring value block" function nor the "electrical test" reveal any malfunctions, check all wiring and harness connectors for loose contacts.
Left front ABS wheel speed sensor -G47-	♦ Incorrect control module version.	- Check control module version ⇒ page 01-52 .

Open circuit/short circuit to B+	♦ Open circuit or short circuit to B+ in wiring between ABS wheel speed sensor -G47- and ABS control module -J104-.	- If no problems are found after implementing the specified steps, replace the control module.

01-104

Output on printer of VAG1551 Scan Tool (ST) **DTC**	Possible cause	Corrective action
00285 Right front ABS wheel speed sensor -G45- or:	♦ ABS wheel speed sensor rotor dirty or damaged. ♦ Excessive wheel bearing play. ♦ Left rear ABS wheel speed sensor -G45- installed incorrectly. ♦ ABS wheel speed sensor -G45- malfunctioning. ♦ Short circuit to Ground (GND).	- Check rotor, clean or replace ⇒ *Repair Manual, Brake System, Repair Group 45* - Replace wheel bearing ⇒ *Repair Manual, Suspension, Wheels, Steering, Repair Group 40* - Check installation of ABS wheel speed sensor. ⇒ *Repair Manual, Brake System, Repair Group 45* - "Read measuring value block", display group 1 ⇒ page 01-63 . - Carry out "Electrical test", step 8 ⇒ page 01-68 . - If neither the "Read measuring value block" function nor the "electrical test" reveal any malfunctions, check all wiring and harness connectors for loose contacts.
Right front ABS wheel speed sensor -	♦ Incorrect control module version.	- Check control module version ⇒ page 01-52 .

G45- Open circuit/short circuit to B+	◆ Open circuit or short circuit to B+ in wiring between ABS wheel speed sensor -G45- and ABS control module -J104-.	- If no problems are found after implementing the specified steps, replace the control module.

01-105

Output on printer of VAG1551 Scan Tool (ST) **DTC**	Possible cause	Corrective action
00287 Right rear ABS wheel speed sensor -G44- or:	♦ ABS wheel speed sensor rotor dirty or damaged. ♦ Excessive wheel bearing play. ♦ Left rear ABS wheel speed sensor -G44- installed incorrectly. ♦ ABS wheel speed sensor -G44- malfunctioning. ♦ Short circuit to Ground (GND).	- Check rotor, clean or replace ⇒ *Repair Manual, Brake System, Repair Group 45* - Replace wheel bearing ⇒ *Repair Manual, Suspension, Wheels, Steering, Repair Group 42* - Check installation of ABS wheel speed sensor. ⇒ *Repair Manual, Brake System, Repair Group 45* - "Read measuring value block", display group 1 ⇒ page 01-63 . - Carry out "Electrical test", step 10 ⇒ page 01-68 .
Right rear ABS wheel speed sensor -G44- Open circuit/short circuit to B+	♦ Open circuit or short circuit to B+ in wiring between ABS wheel speed sensor -G44- and ABS control module -J104-.	- If neither the "Read measuring value block" function nor the "electrical test" reveal any malfunctions, check all wiring and harness connectors for loose contacts. - If no problems are found after implementing the

		specified steps, replace the control module.

01-106

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00290 Left rear ABS wheel speed sensor -G46- or:	♦ ABS wheel speed sensor rotor dirty or damaged. ♦ Excessive wheel bearing play. ♦ Left rear ABS wheel speed sensor -G46- installed incorrectly. ♦ ABS wheel speed sensor -G46- malfunctioning. ♦ Short circuit to Ground (GND).	- Check rotor, clean or replace ⇒ *Repair Manual, Brake System, Repair Group 45* - Replace wheel bearing ⇒ *Repair Manual, Suspension, Wheels, Steering, Repair Group 42* - Check installation of ABS wheel speed sensor. ⇒ *Repair Manual, Brake System, Repair Group 45* - "Read measuring value block", display group 1 ⇒ page 01-63 . - Carry out "Electrical test", step 9 ⇒ page 01-68 .
Left rear ABS wheel speed sensor -G46- Open circuit/short circuit to B+	♦ Open circuit or short circuit to B+ in wiring between ABS wheel speed sensor -G46- and ABS control module -J104-.	- If neither the "Read measuring value block" function nor the "electrical test" reveal any malfunctions, check all wiring and harness connectors for loose contacts. - If no problems are found after implementing the

		specified steps, replace the control module.

01-107

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00301 ABS return flow pump -V39 -	♦ Open circuit in wire or contact resistance in Ground (GND) connection or voltage supply to ABS return flow pump -V39-. ♦ Open circuit or short circuit to B+ or Ground (GND) in wiring between ABS return flow pump relay -J105- and the ABS control module -J104-. ♦ ABS return flow pump relay -J105-, ABS return flow pump -V39- or hydraulic unit malfunctioning.	- Locate and repair open circuit or contact resistance. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Locate and repair open circuit or short circuit. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Check ABS return flow pump relay -J105-, ABS return flow pump -V39- and ABS hydraulic unit -N55-, carry out "electrical test", step 12+17 ⇒ page 01-68 , "Read measuring value block", display group 2 ⇒ page 01-65 .

01-108

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00302 ABS solenoid valve relay -J106-	♦ Faulty wire connection or excessively large contact resistance in Ground (GND) connection to ABS solenoid valve relay -J106-. ♦ Open circuit or short circuit to B+ or Ground (GND) in wiring between ABS solenoid valve relay -J106- and the ABS control module -J104-. ♦ ABS solenoid valve relay -J106- or ABS hydraulic unit -N55- malfunctioning.	- Check Ground (GND) connection for contact resistance and faulty wiring. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Locate and repair open circuit or short circuit. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Check ABS solenoid valve relay -J106- and ABS hydraulic unit, carry out "electrical test", step 11 ⇒ page 01-68 , "Read measuring value block", display group 2 ⇒ page 01-65 .

01-109

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00526 Brake light switch -F- FWD: Open circuit	♦ Both brake lights -M9- (left) and -M10- (right) malfunctioning or ABS control module -J104- malfunctioning. ♦ Wire from brake lights to control module faulty.	- Locate and repair open circuit or short circuit. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Replace bulbs. - Check brake light switch, "Read measuring value block", display group 2 ⇒ page 01-65 .
AWD: Implausible signal	♦ Open circuit or short circuit to B+ or Ground (GND) in wiring between brake light switch and the bulbs for brake lights -M9- (left), -M10- (right) or ABS control module -J104-. ♦ Bulb for left brake light -M9- or right brake light -M10- malfunctioning. ♦ Brake light switch malfunctioning.	

01-110

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00529 Wheel speed information missing No signal ♦ This malfunction only occurs if vehicle is equipped with ASR.	♦ Open circuit or short circuit to B+ or Ground (GND) in wiring between ABS control module -J104- and Engine Control Module (ECM).	- "Read measuring value block", display group 3 ⇒ page 01-67 . - Locate and repair open circuit or short circuit. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*
	♦ Engine Control Module (ECM) malfunctioning.	- If the tachometer in the instrument cluster is malfunctioning and no malfunctions can be found in the wiring, the Engine Control Module (ECM) is malfunctioning and must be replaced.
	♦ ABS control module -J104- malfunctioning	- If the tachometer in the instrument cluster functions properly and no malfunctions can be found in the wiring, the ABS control module (w/EDL) -J104- is malfunctioning and must be replaced.

01-111

Output on printer of VAG1551 Scan Tool (ST) **DTC**	Possible cause	Corrective action
00532 Voltage supply Signal too small Notes: ♦ This malfunction affects the voltage supply of the control module. ♦ This DTC is only stored, if the malfunction occurs at a vehicle speed above 6 km/h. ♦ As soon as vehicle voltage is within the valid voltage range again, the ABS, ABS/EDL or ASR system is switched back on and the warning lights turn off.	♦ Open circuit or resistance too high between voltage supply of terminal 15 and ABS control module -J104- (terminal 1). ♦ Voltage jumps in vehicle system. ♦ Battery malfunctioning.	- Carry out "Electrical test", step 23 ⇒ page 01-68 . - Locate and repair open circuit or contact resistance. - Check Generator (GEN.) and Voltage Regulator (VR). ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Check battery ⇒ *Repair Manual, Electrical Equipment, Repair Group 90; Instrument cluster*

01-112

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00597 Varying wheel speed impulse	♦ ABS wheel speed sensor rotor dirty or damaged.	- Check rotor. ⇒ *Repair Manual, Brake System, Repair Group 45*
	♦ Excessive wheel bearing play.	- Check wheel bearing ⇒ *Repair Manual, Brake System, Repair Group 45*
	♦ ABS wheel speed sensors -G44-, -G45-, -G46-, and -G47- installed incorrectly. ♦ ABS wheel speed sensors -G44-, -G45-, -G46-, and -G47- malfunctioning	- Check ABS wheel speed sensors. ⇒ *Repair Manual, Brake System, Repair Group 45* - Carry out "electrical test", steps 7 through 10 ⇒ page 01-68 .
	♦ Wheel or tire sizes not the same on all four wheels.	- Check wheel and tire sizes.

01-113

Output on printer of VAG1551 Scan Tool (ST) **DTC**	Possible cause	Corrective action
00623 ABS / transmission electrical connection ♦ This malfunction only occurs if vehicle is equipped with ASR.	**Manual transmission:** ♦ ABS/EDL/ASR control module -J104- incorrectly coded. ♦ Short circuit to B+ at terminal 45 **Automatic transmission:** ♦ Open circuit or short circuit to Ground (GND) in wiring between ABS/EDL/ASR control module -J104- and Transmission Control Module (TCM) -J217-. ♦ ABS/EDL/ASR control module -J104- incorrectly coded.	- Check coding of ABS/EDL/ASR control module -J104- ⇒ page 01-56 . - Locate and repair short circuit. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* - Check coding of ABS/EDL/ASR control module -J104- ⇒ page 01-56 . - Locate and repair open circuit or short circuit. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00642 Right front traction control switch-over valve -N166-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit -N55- and ABS control module -J104-. ♦ Right front traction control switch-over valve -N166- malfunctioning.	- Carry out "electrical test", steps 5 +18 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.
00643 Right front traction control outlet valve -N167-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit -N55- and ABS control module -J104-. ♦ Right front traction control outlet valve -N167- malfunctioning.	- Carry out "electrical test", steps 6 +18 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00644 Left front traction control switch-over valve -N168-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit -N55- and ABS control module -J104-. ♦ Left front traction control switch-over valve -N168- malfunctioning.	- Carry out "electrical test", steps 5 +17 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.
00645 Left front traction control outlet valve -N169-	♦ Open circuit, short circuit to B+ or Ground (GND) in wiring between ABS hydraulic unit -N55- and ABS control module -J104-. ♦ Left front traction control outlet valve -N169- malfunctioning.	- Carry out "electrical test", steps 6 +17 ⇒ page 01-68 . - If the electrical test does not reveal any malfunctions, check all wiring and connectors for loose contacts. - If no problems are found after implementing the specified steps, replace the control module.

01-116

Output on printer of VAG1551 Scan Tool (ST) **DTC**	Possible cause	Corrective action
00646 ABS-ASR motor electrical connection 1	♦ Open circuit or short circuit to B+ or Ground (GND) in wiring between ABS control module -J104- terminal 18 and Engine Control Module (ECM).	- Locate and repair open circuit or short circuit. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*
Note: The following signals are sent from the ABS control module (w/EDL) -J104- to the Engine Control Module (ECM) via this connection: ♦ MMD signal (Masked Misfire Diagnostic) for On Board Diagnostic (OBD) ♦ SET signal (Specified Engine Torque)	♦ ABS control module -J104- malfunctioning	- Replace ABS control module (w/EDL) -J104-.
	♦ Engine Control Module (ECM) malfunctioning.	- Replace Engine Control Module (ECM).

01-117

Output on printer of VAG1551 Scan Tool (ST)	Possible cause	Corrective action
DTC		
00647 ABS-ASR motor electrical connection 2	♦ Open circuit or short circuit to B+ or Ground (GND) in wiring between ABS control module -J104- terminal 47 and Engine Control Module (ECM).	- "Read measuring value block", display group 3 ⇒ page 01-67 . - Locate and repair open circuit or short circuit. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*
Note: The following signal is sent from the Engine Control Module (ECM) to the ABS control module (w/EDL) -J104- via this connection: ♦ AET signal (Actual Engine Torque)	♦ Engine Control Module (ECM) malfunctioning.	- Replace Engine Control Module (ECM).

	◆ ABS/EDL/ASR control module -J104- malfunctioning.	- Replace ABS/EDL/ASR control module -J104-.

01-118

Output on printer of VAG1551 Scan Tool (ST) DTC	Possible cause	Corrective action
00668 Vehicle voltage terminal 30, open circuit ♦ When equipped with EDL, the ABS control module -J104- requires this voltage supply after ignition is switched off in order to calculate the drop in brake temperature; ⇒ page 01-39 .	♦ Voltage supply to ABS control module (w/EDL) -J104- (terminal 50) has an open circuit or short circuit to Ground (GND).	- Check wire connection. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-119

Output on printer of VAG1551 Scan Tool (ST) **DTC**	Possible cause	Corrective action
00761 DTC stored in Engine Control Module (ECM) ♦ This malfunction only occurs if vehicle is equipped with ASR.	♦ A DTC was stored in the Engine Control Module (ECM). The Engine Control Module (ECM) is not able to reduce engine torque.	- Repair the engine management malfunction using the appropriate engine repair manual and erase DTC memory of the Engine Control Module (ECM).
65535 Control module malfunctioning	♦ ABS control module -J104- malfunctioning	- Replace ABS control module (w/EDL) -J104-. Note: Do not erase DTC memory in this case. The data stored in the DTC memory provides information about the cause of the malfunction. This information helps to continually improve the product.