

Volkswagen Golf 4 / Bora (1998-2005), GTI / Jetta (1998-2005), R32 (A4)

Note: For Guided Fault Finding information, refer to VAS 5051 Diagnostic Tester

01 - On Board Diagnostic (OBD)

ABS ITT Mark 20 IE On Board Diagnostic (OBD)

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ABS Mark 60 On Board Diagnostic (OBD), vehicles from my 10.00

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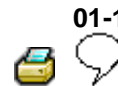
Electrical check of Mark 60

[Multi-pin connector with contact assignments](#)

[Test table \(test steps 1 - 16\)](#)

[Test table \(test steps 17 - 23\)](#)

Definitions



ABS ITT Mark 20 IE On Board Diagnostic (OBD)

Function

Since the control modules are interconnected with CAN-bus, always begin OBD by checking the Diagnostic Trouble Code (DTC) memories of all the control modules in the vehicle.

This occurs in the Automatic test sequence and is activated with key function 00.

When doing this, check to see if there are DTCs stored which may influence the ABS.

On Board Diagnostic (OBD) relates to the electrical/electronic part of the ABS, i.e. only malfunctions via the electrical connection to the control module are recognized (e.g. speed sensor open circuit).

The 25-pin ABS Control Module (w/EDL) -J104-forms with the hydraulic unit a compact unit. The unit is located on the left in the engine compartment. The control module is equipped with a DTC memory. The diagnostic connection is located in the center console below the heating/air conditioning controls.

The control module recognizes malfunctions during vehicle operation and stores them in a permanent memory, the contents of which remain even during periods of no battery voltage.

01-2



Sporadic (isolated) malfunctions will also be recognized and stored. But if these malfunctions do not occur again within the next 50 vehicle starts and driving off sequences then, with the exception of "control module inoperative", the DTC memory will be erased.

After switching on the ignition and/or starting the engine the ABS warning light -K47- and the warning light for brake system -K118- light up for approx. 2 seconds.

During this period a test sequence (self-check) is run in the control module for the following functions:

- ◆ To check if the supply voltage is at least 10.0 Volt
- ◆ To check control module including the valve windings
- ◆ To check the coding of the control module
- ◆ A static check of the speed sensor (no speed signal)
- ◆ If after driving off and exceeding a speed of approx. 20 km/h (approx. 13 mph) the speed signal is not OK. The ABS warning light -K47- will light up again.

01-3

**V.A.G 1551 Scan Tool or tester VAS 5051**

The On Board Diagnostic (OBD) must be initiated always at the commencement of troubleshooting. Electrical malfunctions which influence the braking characteristics will be stored. They can be checked with the V.A.G 1551 Scan Tool or with the tester VAS 5051.

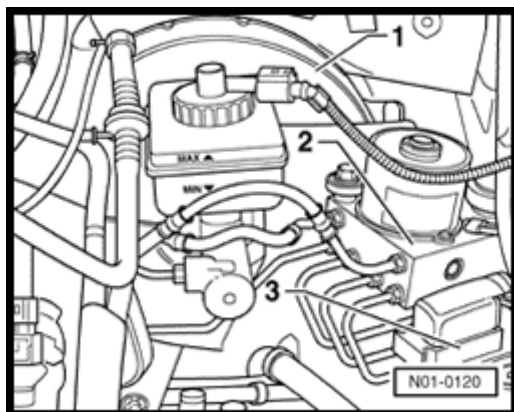
The information displayed is used in conjunction with a DTC table which has information on the possible DTC causes for repair measures.

01-4



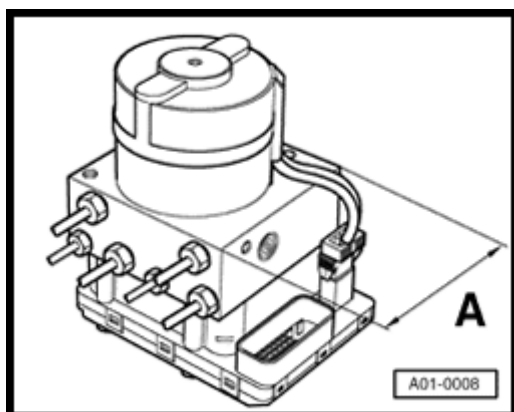
Identifying characteristics

The brake booster boost is produced by vacuum pressure.



Distinguishing features:

- 1 - 10" brake booster
- 2 - Hydraulic unit
- 3 - Control module, 25-pin (bolted to hydraulic unit)



Distinguishing features of ABS, ABS/EDL and ABS/EDL/ASR ITT Mark 20 IE hydraulic unit

- ◆ Dimension -A- 100 mm vehicles with ABS
- ◆ Dimension -A- 130 mm vehicles with ABS/EDL
- ◆ Dimension -A- 130 mm vehicles with ABS/EDL/ASR



Technical data

Control module identification

The control module version is displayed when the V.A.G 1551 Scan Tool or the tester VAS 5051 is connected and the control module for brake electronics is selected ⇒ [Page 01-23](#) .

1J0 907 379 D / G - ABS

1J0 907 379 E / H - ABS/EDL

1J0 907 379 R / J - ABS/EDL/ASR

Diagnostic Trouble Code (DTC) memory

A non-volatile memory ensures that the contents of the DTC memory are retained even without a voltage supply.

Data output is achieved in operating mode 1 (rapid data transfer).



Safety precautions

- ◆ The ABS is a vehicle safety system; the appropriate knowledge is necessary to work on the system.
- ◆ In order to check complaints and to be able to carry out pin-pointed troubleshooting, the Diagnostic Trouble Code (DTC) memory must be checked before beginning work on the ABS system.
- ◆ Only separate connectors when the ignition is switched off.
- ◆ Observe the appropriate instructions regarding the handling of brake fluid.

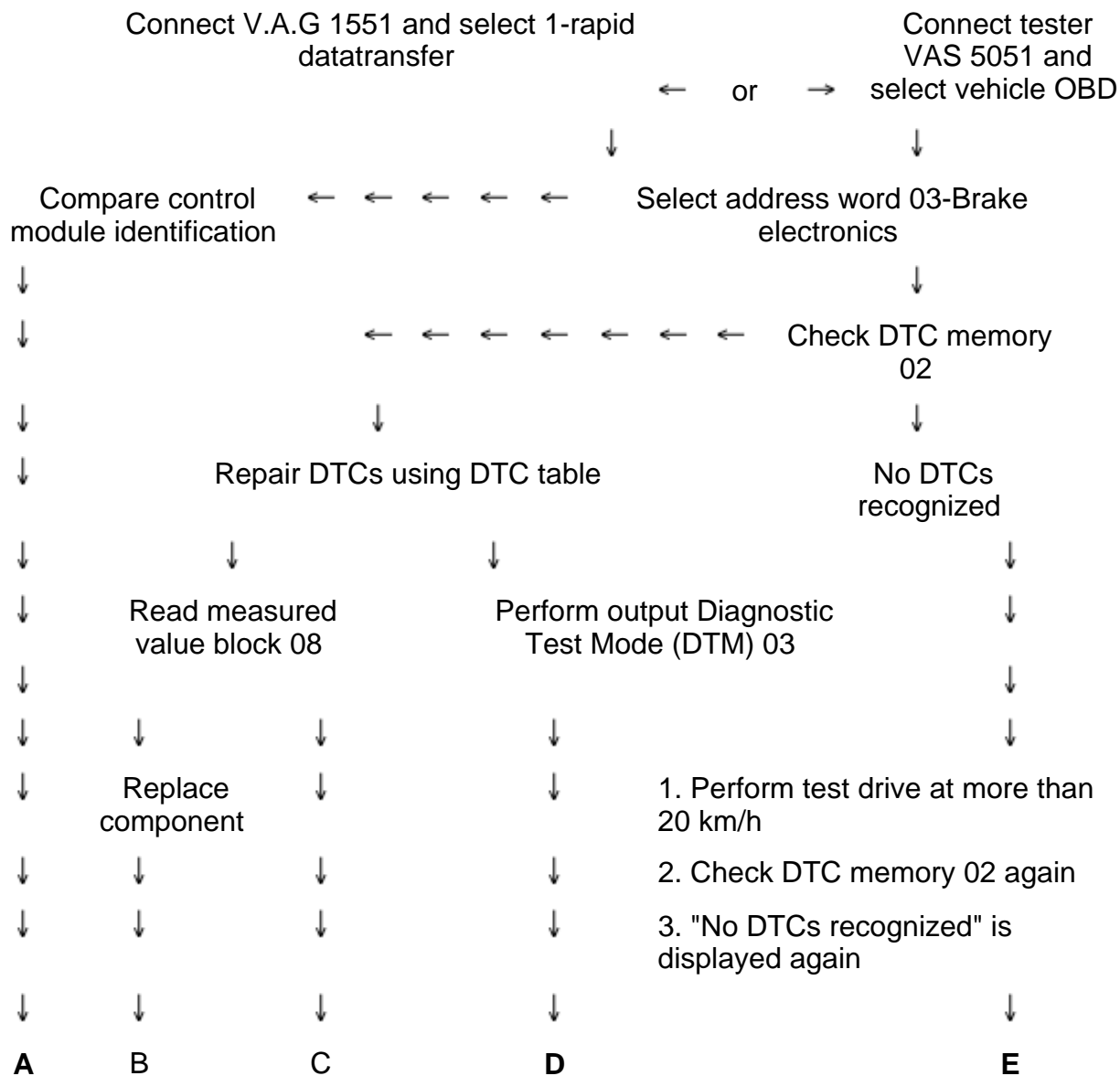
⇒ [Repair Manual, Brake System, Repair Group 47](#)

- ◆ ABS malfunctions are indicated by the ABS warning light illuminating. Certain malfunctions will only be recognized at speeds above 20 km/h (approx. 13 mph) (carry out road test).
- ◆ If the ABS Warning Light -K47- and the warning light for brake system -K118- do not light up, but the brake system is not functioning correctly then the malfunction must be sought in the conventional braking system.

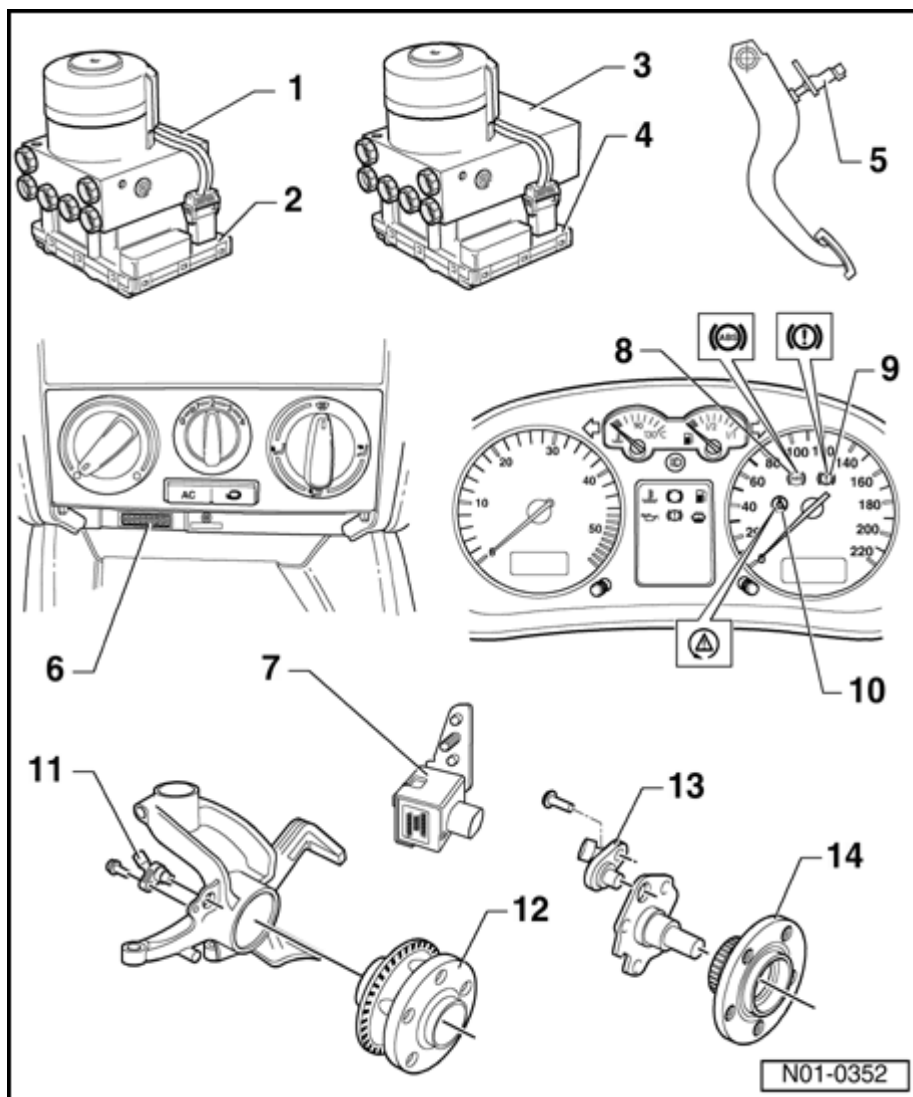
⇒ [Repair Manual, Brake System; Repair Group 45](#)



On Board Diagnostic (OBD) with V.A.G 1551 Scan Tool or Tester VAS 5051 (flow chart)



Volkswagen Technical Site: <http://volkswagen.msk.ru> <http://vwts.info> <http://vwts.ru>
огромный архив документации по автомобилям Volkswagen, Skoda, Seat, Audi



Electrical/electronic components and locations

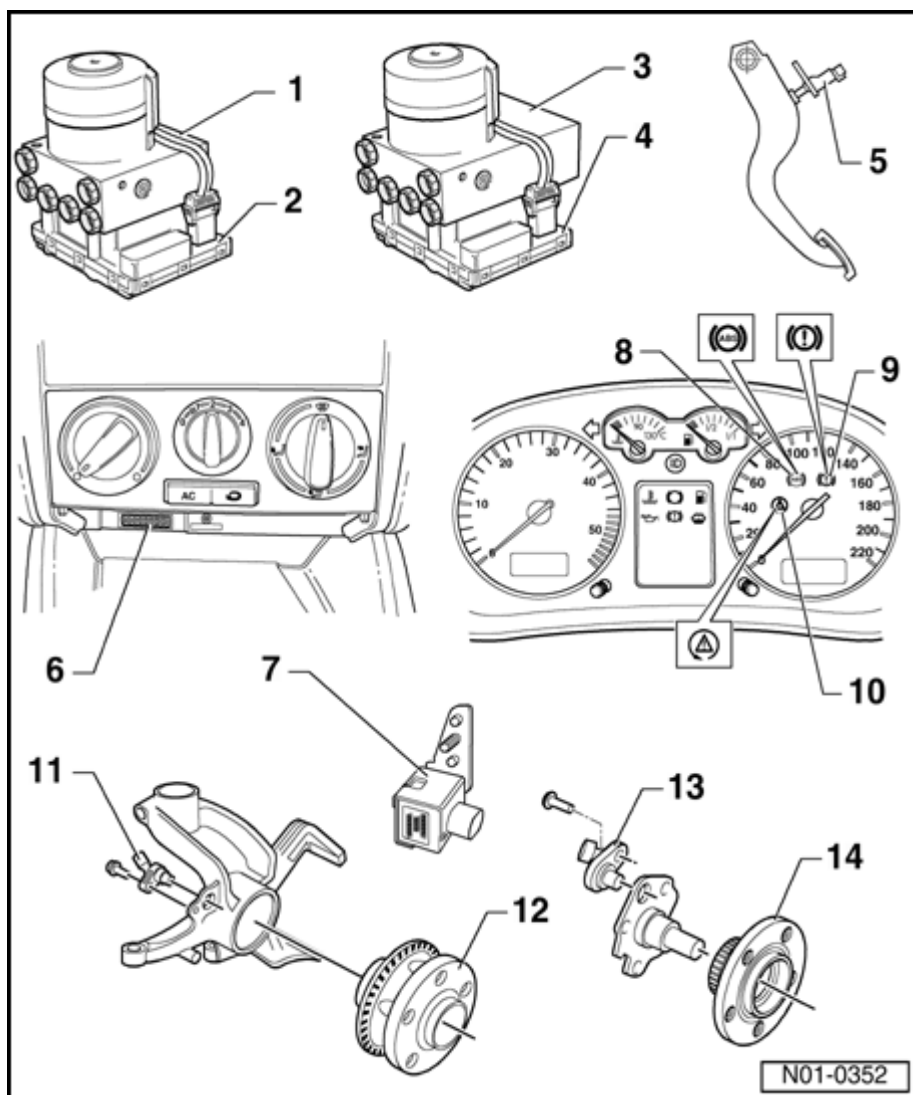
1 - ABS hydraulic unit N55-

- ◆ Located on left of engine compartment
- ◆ The ABS hydraulic pump -V64- and the inlet/outlet valves in the hydraulic unit are checked by On Board Diagnostic (OBD)
- ◆ The ABS Hydraulic Pump -V64- and valve block must not be separated from one another
- ◆ Removing and installing:

⇒ [Repair Manual, Brake System, Repair Group 45](#)

- ◆ When changing the hydraulic unit, always seal the old part with the plugs from the repair set Part No. 698 311 A

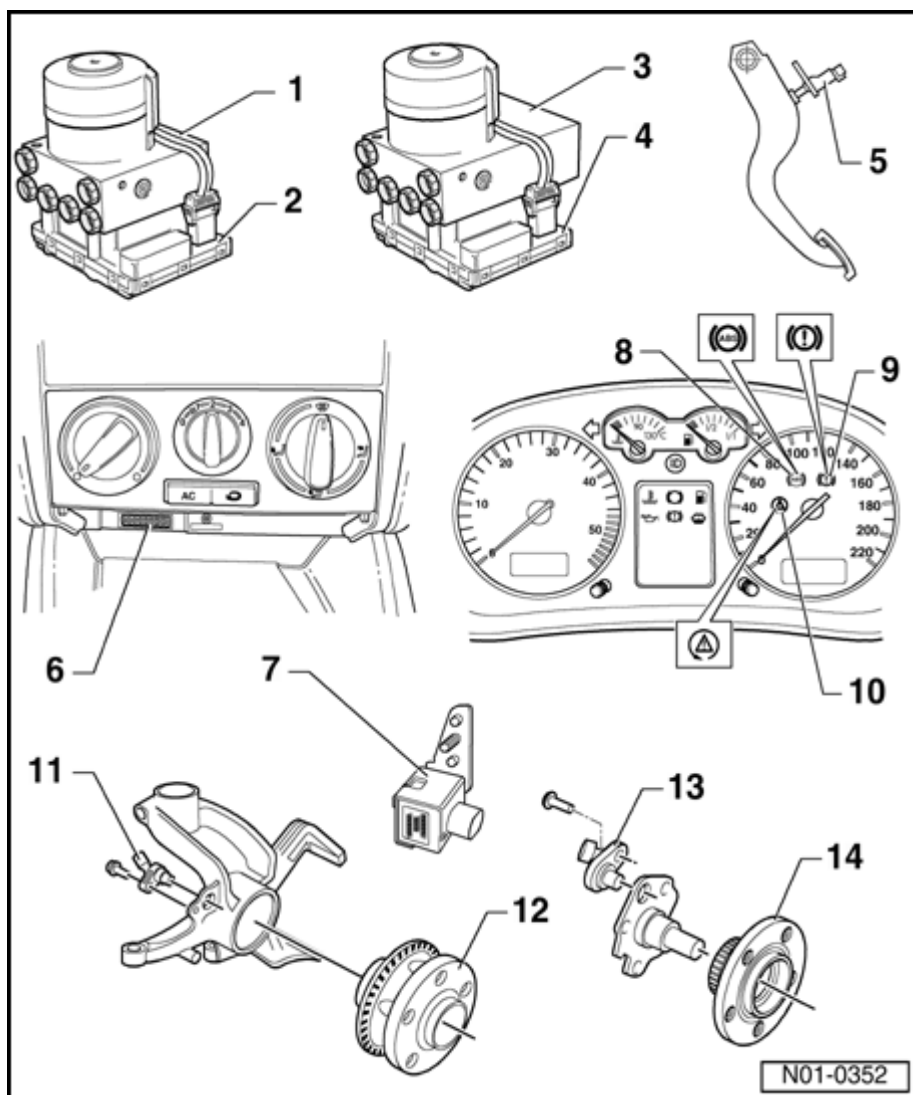
01-10



2 - ABS control module (w/EDL) - J104-

- ◆ Location: on hydraulic unit on left of engine compartment
- ◆ Checked by On Board Diagnostic (OBD)
- ◆ Checking the multi-pin connector to control module ⇒ [Page 01-106](#)
- ◆ Do not disconnect connector before successfully completing OBD. Switch ignition off before separating connection.

01-11



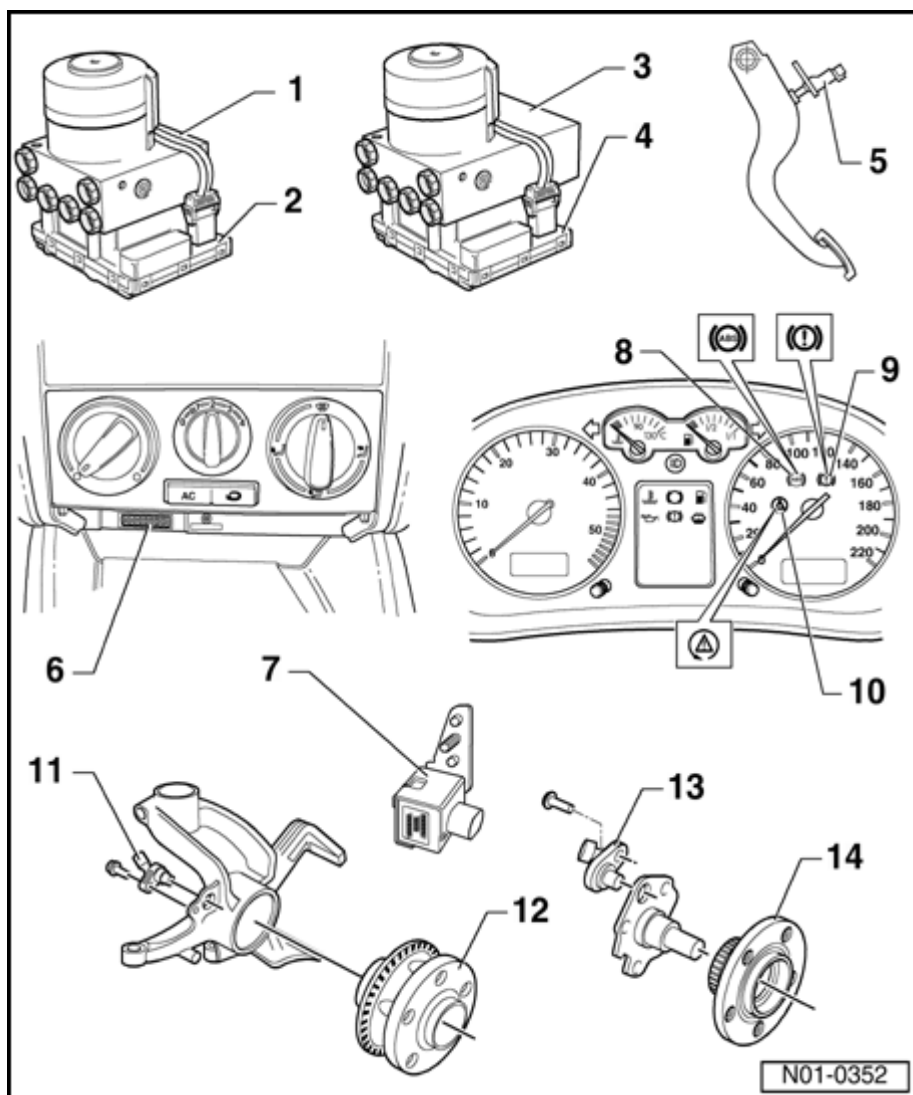
3 - ABS/EDL and ABS/EDL/ASR hydraulic unit -N55-

- ◆ Located on left of engine compartment.
- ◆ The ABS hydraulic pump -V64- and the inlet/outlet valves in the hydraulic unit are checked by On Board Diagnostic (OBD)
- ◆ The ABS hydraulic pump -V64- and valve block must not be separated from one another
- ◆ Removing and installing

⇒ [Repair Manual,](#)
[Brake System,](#)
[Repair Group 45](#)

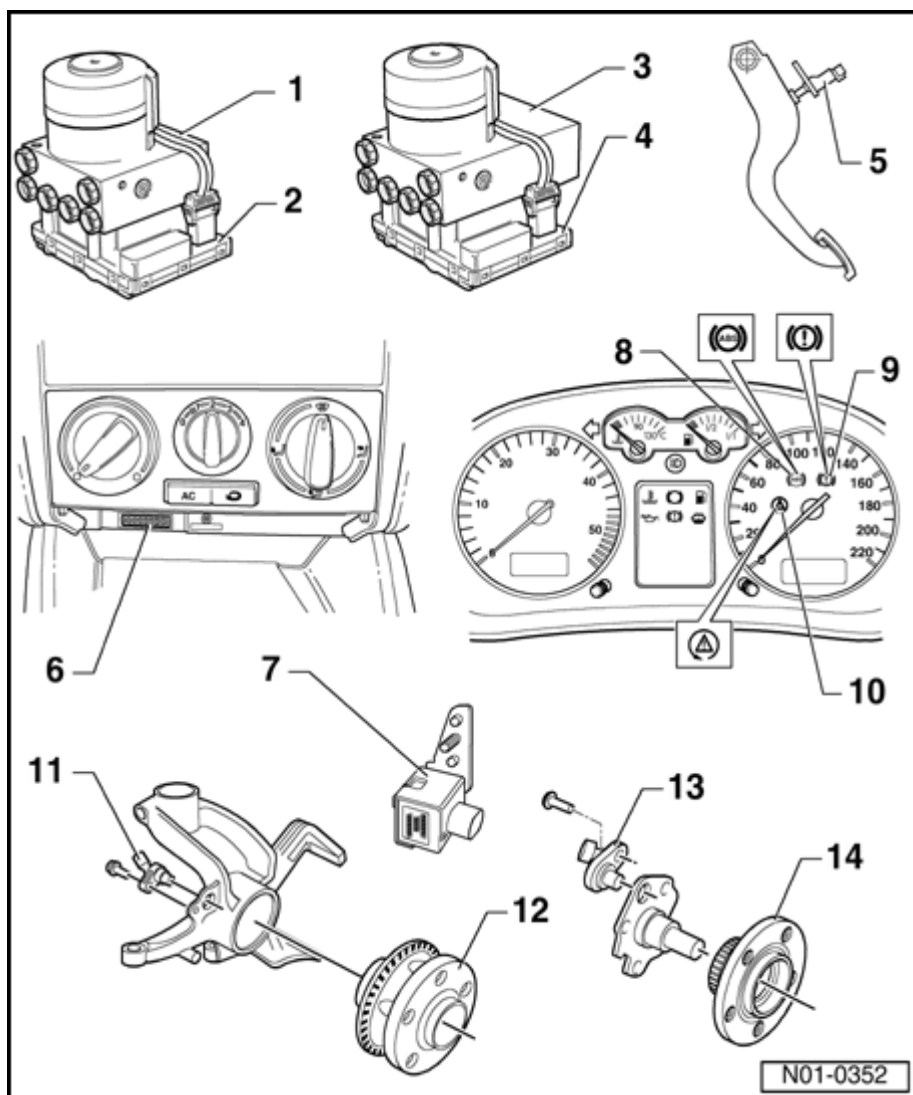
- ◆ When changing the hydraulic unit, always seal the old part with the plugs from the repair set Part No. 1H0 698 311 A

01-12



4 - ABS/EDL and ABS/EDL/ASR Control Module -J104-

- ◆ Location: on hydraulic unit on left of engine compartment
- ◆ Checked by On Board Diagnostic (OBD)
- ◆ Checking the multi-pin connector to control module ⇒ [Page 01-106](#)
- ◆ Do not disconnect connector before successfully completing OBD. Switch ignition off before separating connection.



5 - Brake light switch -F-

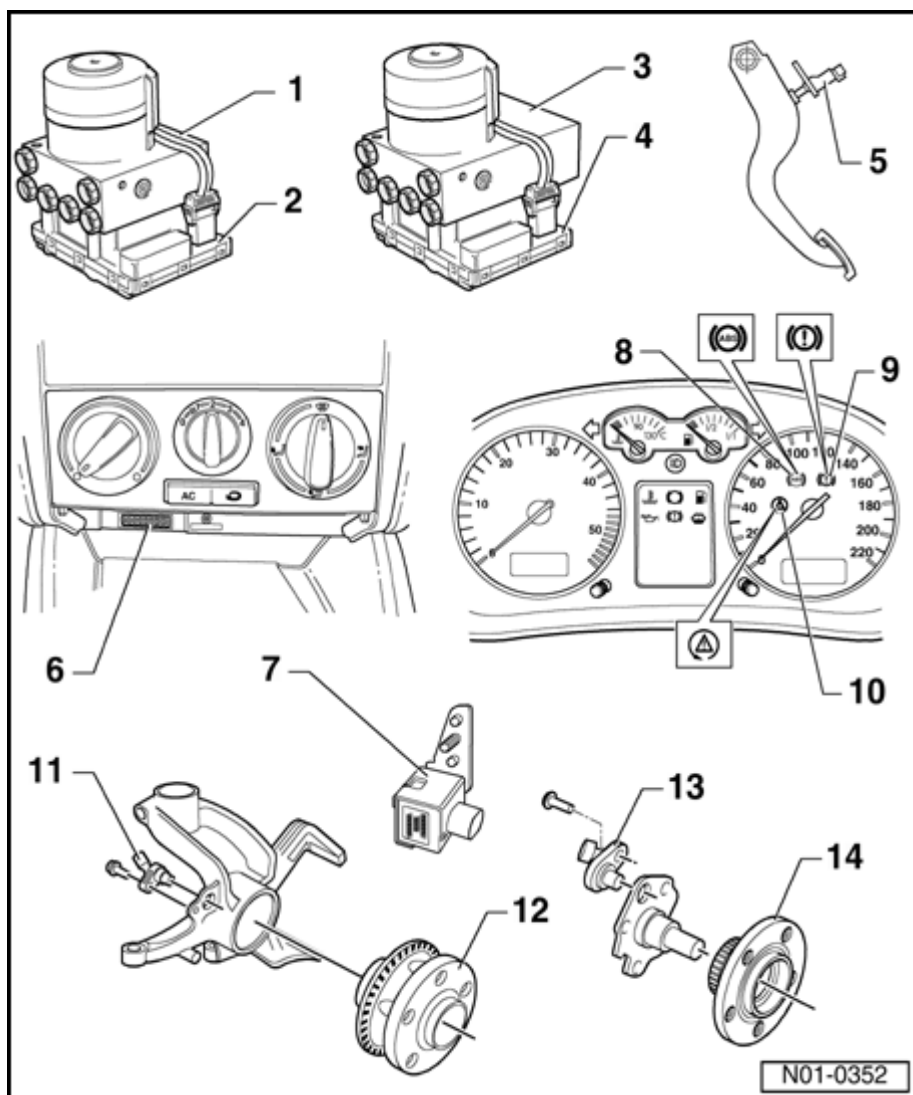
- ◆ The brake light switch is open in the rest position;
- ◆ Adjusting ⇒ [Page 01-131](#)
- ◆ Can be checked via read measured value block ⇒ [Page 01-61](#)

6 - Data Link Connector (DLC)

- ◆ Installation position: in center console below heating/air conditioning controls

7 - Longitudinal acceleration sensor -G251-

- ◆ All-wheel drive vehicles with Haldex coupling only



8 - ABS warning light -K47-

◆ Location:
instrument cluster

Function: ⇒
[Page 01-17](#)

9 - Warning light for brake system -K118-

◆ Location:
instrument cluster

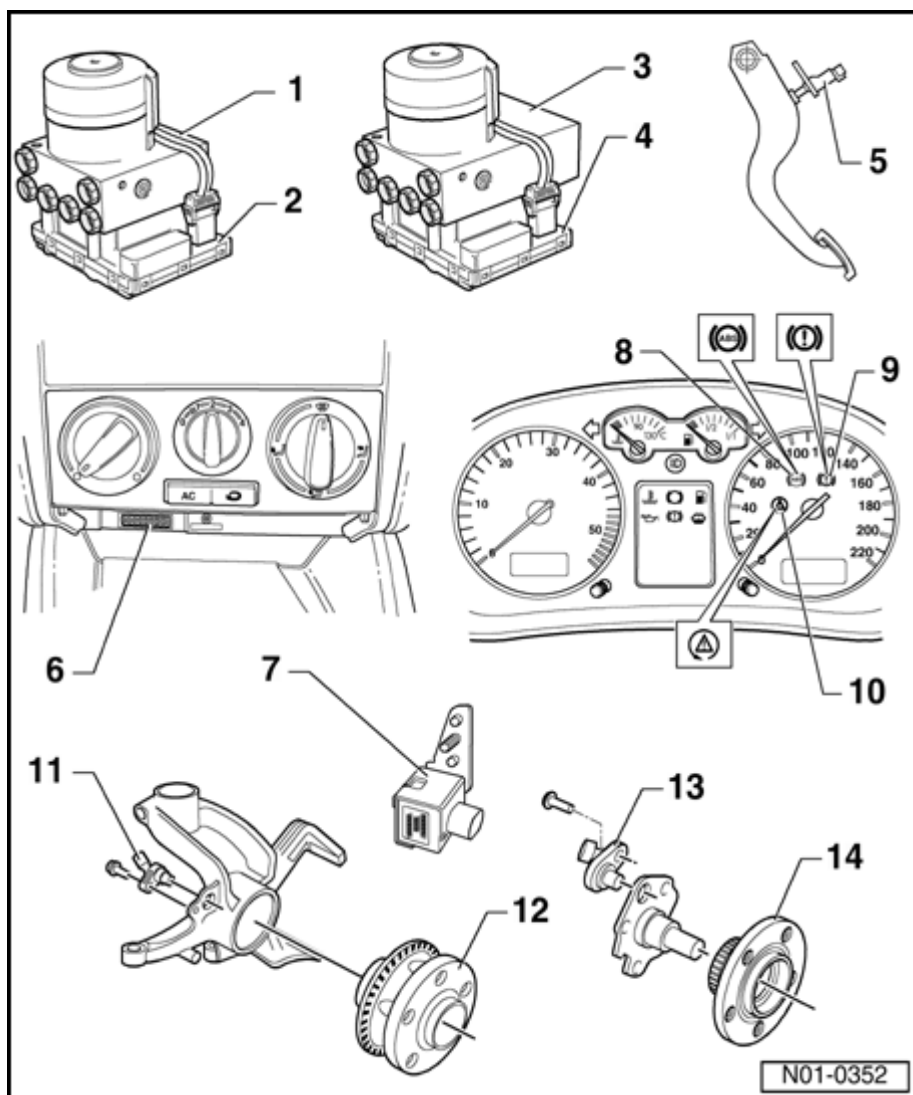
Function: ⇒
[Page 01-17](#)

10 - ESP control lamp -K155-

◆ Location:
instrument cluster

N01-0352

01-15



11 - Right/left front ABS wheel speed sensor -G45/-G47-

- ◆ Checked by On Board Diagnostic (OBD)
- ◆ Before inserting the sensor clean the inner surface of the sensor mounting and coat with lubricating paste G 000 650
- ◆ When connecting the speed sensor wire ensure it is not twisted in the wheel housing
- ◆ Bolt tightening torque - 10 Nm

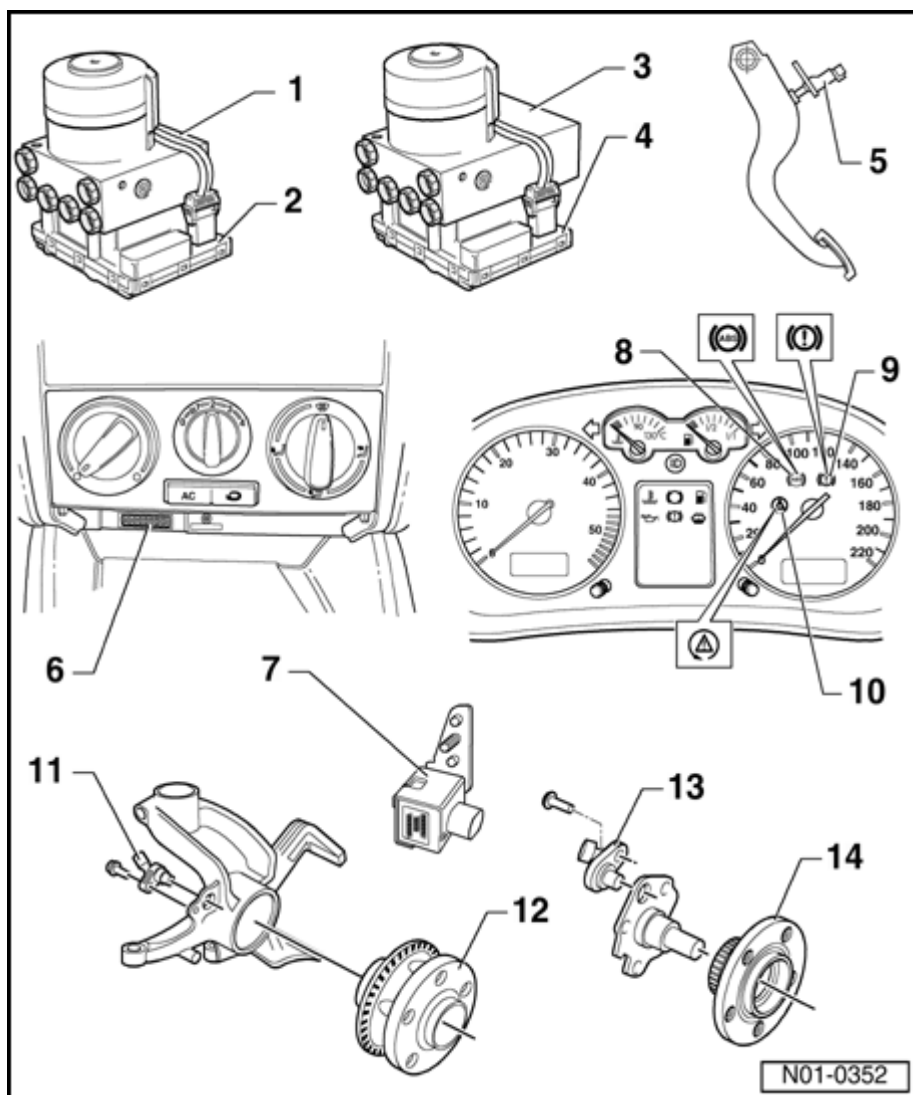
12 - Wheel hub with impulse rotor for right/left front speed sensors

- ◆ Rotor and speed sensors for front left and right-hand sides are identical

◆ Removing
and installing

⇒ [Repair Manual,
Suspension, Wheels,
Steering, Repair
Group 40](#)

01-16



13 - Right/left rear ABS wheel speed sensor -G44/-G46-

- ◆ Checked by On Board Diagnostic (OBD)
- ◆ Before inserting the sensor clean the inner surface of the sensor mounting and coat with lubricating paste G 000 650
- ◆ When connecting the speed sensor wire ensure it is not twisted in the wheel housing
- ◆ Bolt tightening torque - 10 Nm

14 - Wheel hub with impulse rotor for right/left rear speed sensors

- ◆ Rotor and speed sensors for left and right-hand sides are identical
- ◆ Removing and installing

⇒ [Repair Manual,
Suspension, Wheels,
Steering, Repair
Group 42](#)

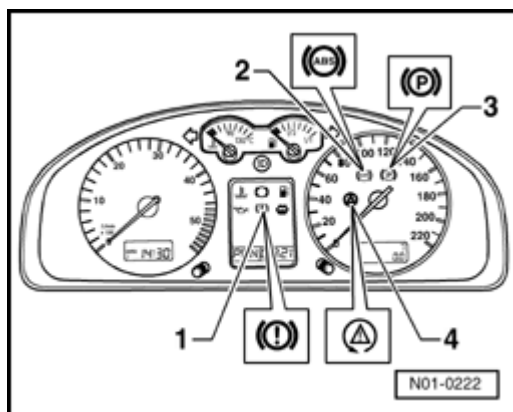
01-17



Diagnostic Trouble Codes (DTC) displayed by warning lights -K14-, -K47- and -K118-



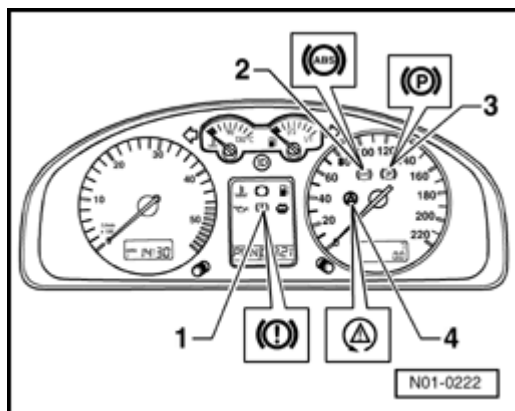
Warning lights



Item	Designation
1	Warning light for brake system - K118-
2	ABS warning light -K47-
3	Parking brake indicator light -K14-

For vehicles with ABS/EDL/ASR and/or a radio/navigation system, the warning light for brake system -K118- is at position -3-.

The function of the parking brake warning light -K14- is then taken on by the warning light for brake system -K118-.



ABS warning light -K47-

◆ If the ABS warning light -K47- (-2-) does not go out after switching ignition on and completion of test sequence then the malfunction may be:

- a- Voltage supply is below 10 Volts
- b- There is a malfunction in the ABS

The anti-locking brake system remains switched off with an ABS malfunction -b-, but the brake system remains fully operational.

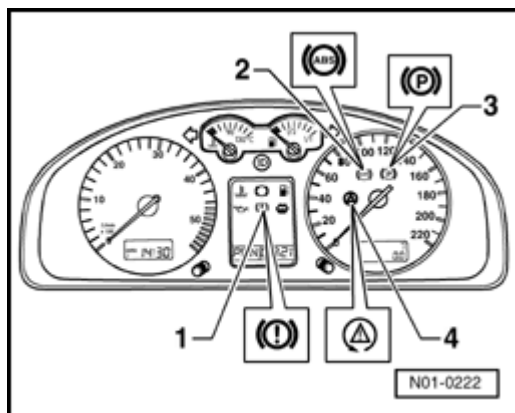
-c- Since the last time the vehicle was started there was a temporary speed sensor malfunction.

In the case of a sensor malfunction -c-, the ABS warning light -K47- will extinguish after restarting the engine and attaining a speed of above 20 km/h (approx. 13 mph).

-d- The connection from instrument cluster to ABS control module (w/EDL) -J104- is interrupted.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

-e- Instrument cluster is faulty.



ABS warning lights -K47- and -K118-

- ◆ If the ABS warning light -K47- (-2-) goes out but the warning light for brake system -K118- (-1-) remains on and three warning tones are audible then the malfunction may be:

-a- The brake fluid level is too low.

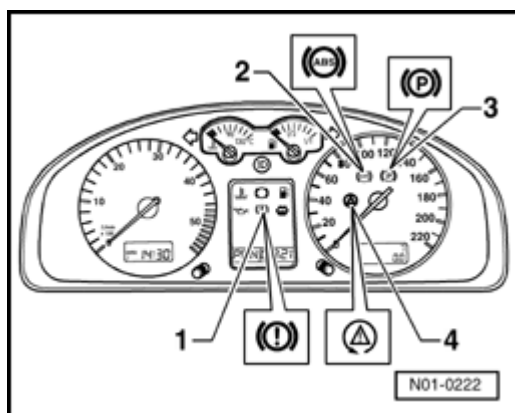
-b- There is a malfunction in the activation of the warning light for brake system - K118-.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

- ◆ If the ABS warning light -K47- (-2-) and the brake system warning light -K118- (-1-) light up, the ABS system is faulty and the EBD (Electronic Brake pressure Distribution) is not functioning.

WARNING!

After the ABS warning light -K47- and warning light for brake system -K118- have illuminated it is possible that the rear wheels will lock-up earlier when braking.



Parking brake indicator light -K14-

◆ If the parking brake indicator light -K14- -3- does not go out after switching the ignition on, the malfunction may be:

- a- The parking brake is applied.
- b- The parking brake warning light switch - F9- for the parking brake indicator light - K14- is faulty or incorrectly adjusted.
- c- There is a wire routing malfunction.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

Vehicles with ABS/EDL

Malfunction: Vehicle has no EDL function

For this complaint a possible cause may be the brake light switch -F- is incorrectly adjusted. Adjusting brake light switch ⇒ [Page 01-131](#) .

Another possible cause may be the brake light switch -F- is not functioning. The function can be checked in Read measured value block ⇒ [Page 01-61](#) , display group number 003.

01-21



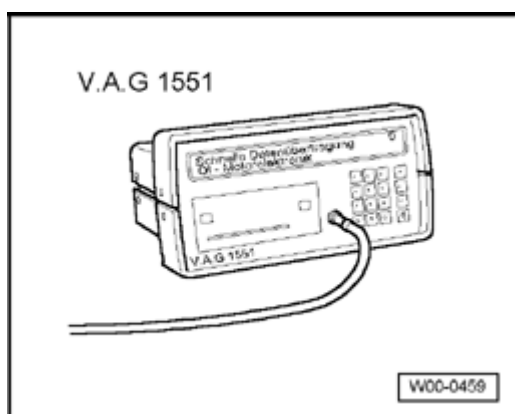
ABS ITT Mk 20 IE On Board Diagnostic (OBD) program

All functions which could previously be performed with V.A.G 1551 can also be performed with the new tester VAS 5051.

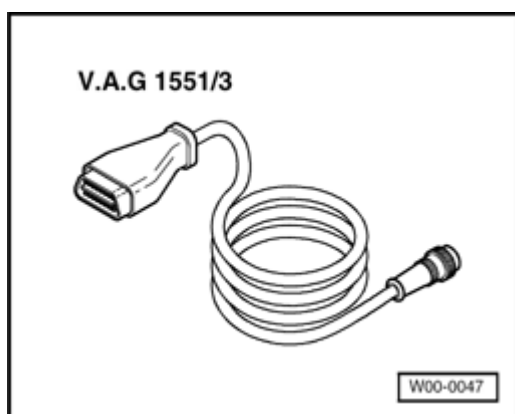
Special tools and equipment



- ◆ V.A.G 1551 Scan Tool or V.A.G 1552 vehicle system tester.



- ◆ V.A.G 1551/3 or 1551/3A Adapter cable



01-22



Test requirements

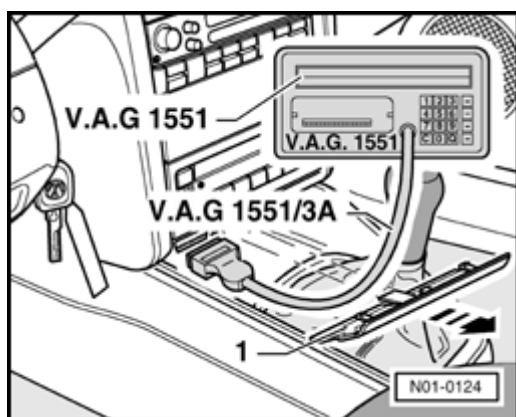
- The tires installed to all wheels must be of the same (approved) size; tires inflated to prescribed pressure.
- Mechanical/hydraulic parts of the brake system including brake light switch and brake lights OK.
- Hydraulic lines and connections not leaking (visual check of hydraulic unit, brake calipers, wheel cylinders, tandem master brake cylinder).
- Wheel bearings and wheel bearing play OK.
- ABS control module (w/EDL) -J104- is correctly bolted to hydraulic unit -N55-.
- Connector on ABS control module (w/EDL) -J104- correctly plugged-in (retainer is engaged).
- Check contacts of ABS components for damage and correct seating.
- All fuses OK according to wiring diagram (remove fuse from fuse holder to check).
- Supply voltage OK (at least 10.0 V).



V.A.G 1551 Scan Tool, connecting and selecting function

Note:

- ◆ All functions which could previously be performed with V.A.G 1551 can also be performed with the new tester VAS 5051.
- ◆ The ABS function is switched off in the control module during the On Board Diagnostic (OBD).
- ◆ The Diagnostic Trouble Code (DTC) memory can be erased after successful checking and repair.



- Pull cover -1- off in direction of arrow.
- With ignition switched off connect V.A.G 1551 using cable V.A.G 1551/3(A) to Data Link Connector

Connecting VAS 5051 ⇒ [Page 01-31](#) .

V.A.G - On Board Diagnostic HELP

1 - Rapid data transfer1)

2 - Blink code output1)



Indicated on display

1) Is displayed alternately

Note:

If there is no indication on display, check DLC, Electrical checks ⇒ [Page 01-102](#) , test steps 14 and 15.

- ◆ Depending on the program, additional operating information can be printed out by pressing the HELP key of V.A.G 1551.
- ◆ The → key is used for moving forward within the program.

01-24



◆ *The PRINT key is used for switching on the printer (warning lamp in key comes on).*

- Switch ignition on.
- Switch on printer with Print key (indicator lamp in key lights up).
- Press key -1- for "Rapid data transfer" operating mode.

Rapid data transfer
Enter address word XX

HELP



Indicated on display

- Press keys -0- and -3-; 03 inputs the address word of the vehicle system to be tested "Brake electronics".

Rapid data transfer
03 - Brake electronics

Q



Indicated on display

- Confirm input with Q key.

1J0 907 379 D ABS 20 IE CAN 0001 →
Coding 03604 WSC XXXXX



Display shows e.g.

Displayed is:

◆ The control module identification number.

e.g. (1J0 907 379 D)

Allocation of control module see Parts catalog

◆ System designation (ABS 20 IE)

◆ Data BUS present. (CAN)

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*



◆ Control module code (03604).

Coding control module ⇒ [Page 01-58](#)

◆ Workshop code

⇒ *V.A.G 1551 Scan Tool operating instructions*

If the control module identification number does not appear ⇒ Summary of selectable functions ⇒ [Page 01-27](#)

- Press → key.

Rapid data transfer HELP
Select function XX



Indicated on display (select function, e.g. 02
- Check DTC memory).

Rapid data transfer HELP
Control module does not answer!



Indicated on display

By pressing the HELP key, a list of possible fault causes is printed out.

- After eliminating possible causes of malfunctions, enter the address word 03 for "Brake electronics" again and confirm.

If "Control module does not answer!" again appears:

Rapid data transfer HELP
Control module does not answer!



Indicated on display

- Perform test steps 1, 2 and 3 ⇒ [Page 01-102](#) , Electrical check.

Rapid data transfer →
No signal from control module!



malfunctions have occurred during checking of control module identification (possibly influenced from external sources?)

01-26



- Check DLC as well as voltage supply and Ground connection for ABS Control Module (w/EDL) -J104-, Electrical check, ⇒ [Page 01-102](#) .
- After repairing possible causes of malfunction, again enter address word 03 for "Brake electronics" and confirm with Q key.

**List of selectable functions**

		Page
00 -	Automatic test sequence	⇒ Page 01-30
01 -	Check control module version ⇒Connecting V.A.G 1551 Scan Tool and selecting functions	⇒ Page 01-23
02 -	Check DTC memory	⇒ Page 01-28
03 -	Output Diagnostic Test Mode	⇒ Page 01-74
04 -	Initiate basic setting	⇒ Page 01-91
05 -	Erase DTC memory	⇒ Page 01-56
06 -	End output	⇒ Page 01-56
07 -	Code control module	⇒ Page 01-58
08 -	Read measured value block	⇒ Page 01-61



Diagnostic Trouble Code (DTC), memory

All functions which could previously be performed with V.A.G 1551 can also be performed with the new tester VAS 5051.

Rapid data transfer HELP
Select function XX



Indicated on display:

- Press keys -0- and -2-; 02 enters the "Check DTC memory" function.

Rapid data transfer Q
02 - Check DTC memory



Indicated on display

- Confirm entry with Q key.

X DTCs recognised!



The number of stored DTCs or "No DTCs recognized" appears in the display.

- Press → key.

The stored DTCs are displayed and printed out one after the other.

- With DTC information print-out eliminate malfunctions according to DTC table, ⇒ [Page 01-35](#) .

As with "No DTC recognized", the program returns to the start position after pressing the → key:

Rapid data transfer HELP
Select function XX



Indicated on display

- End output (Function 06) ⇒ [Page 01-56](#) .

01-29



- Switch off ignition and disconnect tester at DLC.

Work sequence if a DTC has been detected:

1. Repair according to DTC table, ⇒ [Page 01-35](#)
2. Check DTC memory (Function 02)
3. Erase DTC memory (Function 05)
4. End output (Function 06)
5. Perform a test drive
6. Check DTC memory again

01-30



Automatic test sequence

The automatic test sequence checks all the Diagnostic Trouble Code (DTC) memories of the control modules.

- Switch ignition on.

V.A.G - On Board Diagnostic HELP

1 - Rapid data transfer1)

2 - Blink code output1)



Indicated on display

1) Is displayed alternately

- Press key -1- for "Rapid data transfer" operating mode.
- Switch on printer with the Print key (indicator lamp in key lights up).

Rapid data transfer HELP

Select function XX



Indicated on display

- Press key -0- twice; 00 enters "Automatic test sequence" function.
- Confirm entry with Q key.

1J0 907 379 D ABS 20 IE CAN0001 →

Coding 03604 WSC XXXXX



The V.A.G 1551 Scan Tool display will show the control module identification, e.g.:

Thereafter all control module identifications with eventual DTC memory entries are displayed

01-31



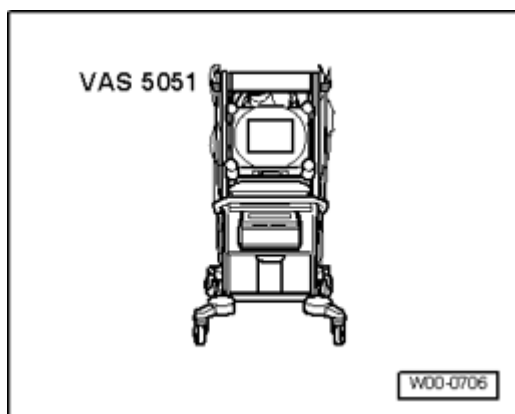
Vehicle Diagnosis, Testing and Information System VAS 5051, connecting and selecting ABS control module

All functions which could previously be performed with V.A.G 1551 can also be performed with the new tester VAS 5051 in the operating mode "Vehicle On Board Diagnostic":

⇒ *Operating instructions for Vehicle Diagnosis, Testing and Information System VAS 5051.*

Special tools and equipment

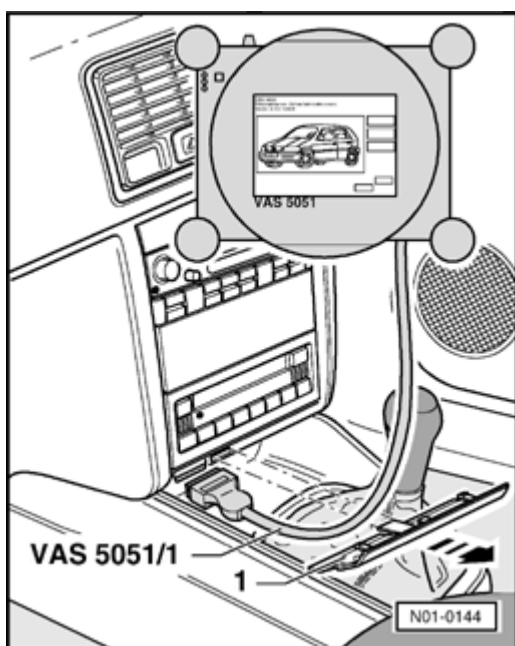
- ◆ VAS 5051 Vehicle Diagnosis, Testing and Information System



01-32

**Note:**

- ◆ *The ABS function is switched off in the control module during the On Board Diagnostic.*
- ◆ *The DTC memory can be erased after successful checking and repair.*



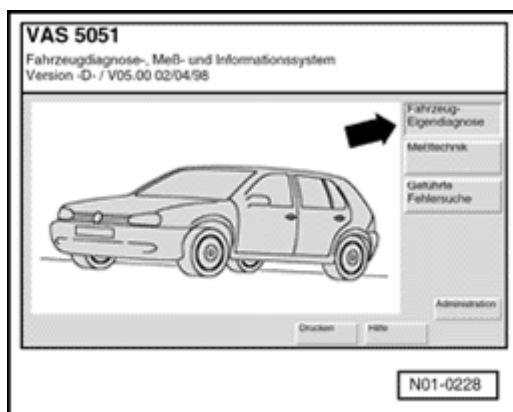
- Pull cover -1- off in direction of -arrow-.
- With ignition switched off, connect tester VAS 5051 to diagnosis connection using diagnosis cable VAS 5051/1 or VAS 5051/3.

Note:

- ◆ *In the functions 04 - Basic setting/08 - Read Measured value block, the display zones will be listed from top to bottom.*
- ◆ *If the display does not indicate as described in the work sequence:*

⇒ *Operating instructions for Vehicle Diagnosis, Testing and Information System VAS 5051.*

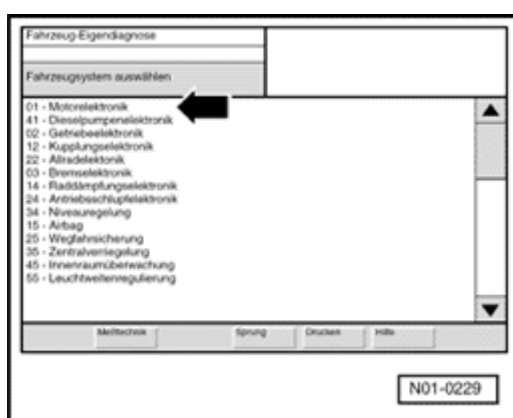
01-33



← Indicated on display

Select operating mode:

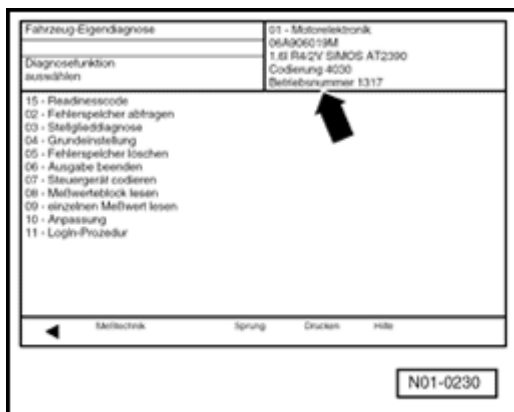
- Press button on display for "Vehicle On Board Diagnostic" -arrow-.



← Indicated on display

Select vehicle system:

- Press "03 - Brake electronics" on display -arrow-.



← Displayed is

- ◆ The control module identification number.

e.g. (1J0 907 379 D)

Allocation of control module see Parts catalog

- ◆ System designation (ABS 20 IE)
- ◆ Data BUS present. (CAN)

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

- ◆ Control module code (03504).

Coding control module ⇒ [Page 01-58](#)

- ◆ Workshop code

⇒ *Operating instructions for Vehicle Diagnosis, Testing and Information System VAS 5051.*



← Indicated on display

Select diagnostic function:

At this point all diagnostic functions are available.

For further measures see repair procedures.



Diagnostic Trouble Code (DTC) table

Note on DTC table:

- ◆ *When beginning OBD of the vehicle control modules, always start with function "Automatic test sequence" by pressing keys 0 and 0 because the control modules are interconnected with a data bus wire. This checks the DTC memories of the control modules in the vehicle.*
- ◆ *All the possible DTCs which can be recognized by the ABS control module -J104- and printed-out on V.A.G 1551 or VAS 5051, are listed on the following pages according to the 5-digit DTC.*
- ◆ *DTC appears (in the "Rapid data transfer" mode) only on the print-out.*

Example:

DTC	P code	DTC type code
5-digit	5-digit	3-digit
18256	P1848	035

- ◆ *The 5-digit P code which may appear next to the DTC, is for use with the On Board Diagnostic (OBD) II and may be disregarded.*
 - ◆ *The 3-digit DTC type code is a data code and may be disregarded, but the DTC type text is of use.*
 - ◆ *Before replacing components indicated as being faulty, check all the appropriate connectors, wiring and Ground connections using the wiring diagram*
- ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*
- ◆ *On completion of repairs always check the DTC memory with V.A.G 1551 Scan Too. or the tester VAS 5051 and erase.*
 - ◆ *Carry out road test exceeding 20 km/h (13 mph).*
 - ◆ *After the road test check DTC memory again.*



V.A.G 1551 print-out	Possible cause	Repair
No DTC recognized	<p>If "No DTC recognized" appears after carrying out repairs, On Board Diagnostic (OBD) is ended.</p> <p>If, despite "No DTC recognized" appearing in the display, the ABS system does not function properly, then proceed as follows:</p> <ol style="list-style-type: none">1. Carry out road test exceeding 20 km/h (13 mph),2. Again check DTC memory, if there is still no DTC stored,3. Continue troubleshooting without OBD and work through the complete Electrical check ⇒ Page 01-102 .	



V.A.G 1551 print-out	Possible cause	Repair
00283		
Left front ABS wheel speed sensor - G47-	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground, or loose contact in connections between left front ABS wheel speed sensor -G47- and ABS Control Module (w/EDL) - J104- 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical checks ⇒ from ⇒ Page 01-102
	<ul style="list-style-type: none"> ◆ Damaged rotor or left front ABS wheel speed sensor -G47 ◆ Left front ABS wheel speed sensor windings -G47- faulty 	<ul style="list-style-type: none"> - Check left front ABS wheel speed sensor -G47- and rotor for damage - Replace rotor/speed sensor -G47-
		⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles
		If the malfunction occurs again:
	<ul style="list-style-type: none"> ◆ ABS Control Module (w/EDL) - J104- faulty 	<ul style="list-style-type: none"> - Replace ABS Control Module (w/EDL) -J104- ⇒ Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit



V.A.G 1551 print-out	Possible cause	Repair
00283		
Left front ABS wheel speed sensor -G47- Signal outside tolerances ¹⁾	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground, or loose contact in connections between left front ABS wheel speed sensor -G47- and ABS Control Module (w/EDL) -J104- 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical checks ⇒from ⇒ Page 01-102
	<ul style="list-style-type: none"> ◆ Electrical interference from other sources (high frequency radiation e.g. non-insulated ignition cable) 	<ul style="list-style-type: none"> - Read measured value block ⇒ Page 01-61 Display group number 001
	<ul style="list-style-type: none"> ◆ Damaged rotor or left front ABS wheel speed sensor -G47- 	
	<ul style="list-style-type: none"> ◆ Excessive air gap between left front ABS wheel speed sensor-G47- and rotor (signal not OK.) 	<ul style="list-style-type: none"> - Check left front ABS wheel speed sensor -G47- and rotor for damage - Replace rotor/speed sensor ⇒ Repair Manual, Brake System, Repair Group 45: Removing and installing parts of ABS system on front and rear axles

¹⁾ Type of DTC, this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
00283		
Left front ABS wheel speed sensor -G47- Mechanical malfunction ¹⁾	◆ Excessive air gap between left front ABS wheel speed sensor - G47- and rotor (signal not OK.)	- Check installation of left front ABS wheel speed sensor -G47- and rotor ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles - Read measured value block ⇒ Page 01-61 Display group number 002 - Perform output Diagnostic Test Mode (DTM) ⇒ Page 01-74
		If the malfunction occurs again:
	◆ Outlet valve in ABS hydraulic unit -N55- faulty	- Replace ABS hydraulic unit -N55- ⇒ Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit

¹⁾ Type of DTC, this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).

01-40



V.A.G 1551 print-out	Possible cause	Repair
00285		
Right front ABS wheel speed sensor - G45-	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground, or loose contact in connections between right front ABS wheel speed sensor -G45- and ABS Control Module (w/EDL) - J104- 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical checks ⇒from ⇒ Page 01-102
	<ul style="list-style-type: none"> ◆ Damaged rotor or speed sensor - G45 ◆ Speed sensor windings -G45- faulty 	<ul style="list-style-type: none"> - Check right front ABS wheel speed sensor -G45- and rotor for damage - Replace rotor/right front ABS wheel speed sensor -G45- <p>⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles</p>
		If the malfunction occurs again:
	<ul style="list-style-type: none"> ◆ ABS Control Module (w/EDL) - J104- faulty 	<ul style="list-style-type: none"> - Replace ABS Control Module (w/EDL) -J104- <p>⇒ Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit</p>



V.A.G 1551 print-out	Possible cause	Repair
00285		
Right front ABS wheel speed sensor -G45- Signal outside tolerances ¹⁾	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground, or loose contact in connections between right front ABS wheel speed sensor -G45- and ABS Control Module (w/EDL) -J104- 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical checks ⇒from ⇒ Page 01-102
	<ul style="list-style-type: none"> ◆ Electrical interference from other sources (high frequency radiation e.g. non-insulated ignition cable) 	<ul style="list-style-type: none"> - Read measured value block ⇒ Page 01-61 Display group number 001
	<ul style="list-style-type: none"> ◆ Damaged rotor or right front ABS wheel speed sensor -G45- 	
	<ul style="list-style-type: none"> ◆ Excessive air gap between right front ABS wheel speed sensor-G45- and rotor (signal not OK) 	<ul style="list-style-type: none"> - Check right front ABS wheel speed sensor -G45- and rotor for damage - Replace rotor/speed sensor ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles

¹⁾ Type of DTC, this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).

01-42



V.A.G 1551 print-out	Possible cause	Repair
00285		
Right front ABS wheel speed sensor -G45- Mechanical malfunction ¹⁾	◆ Excessive air gap between right front ABS wheel speed sensor-G45- and rotor (signal not OK.)	- Check installation of right front ABS wheel speed sensor -G45- and rotor ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles - Read measured value block ⇒ Page 01-61 Display group number 002 - Perform output Diagnostic Test Mode (DTM) ⇒ Page 01-74
		If the malfunction occurs again:
	◆ Outlet valve in ABS hydraulic unit -N55- faulty	- Replace ABS hydraulic unit -N55- ⇒ Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit

¹⁾ Type of DTC, this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
00287		
Right rear ABS wheel speed sensor - G44-	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground, or loose contact in connections between right rear ABS wheel speed sensor -G44- and ABS Control Module (w/EDL) - J104- 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical checks ⇒from ⇒ Page 01-102
	<ul style="list-style-type: none"> ◆ Damaged rotor or right rear ABS wheel speed sensor -G44- ◆ Right rear ABS wheel speed sensor windings -G44- faulty 	<ul style="list-style-type: none"> - Check right rear ABS wheel speed sensor -G44- and rotor for damage - Replace rotor/right rear ABS wheel speed sensor -G44- <p>⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles</p>
		If the malfunction occurs again:
	<ul style="list-style-type: none"> ◆ ABS Control Module (w/EDL) - J104- faulty 	<ul style="list-style-type: none"> - Replace ABS Control Module (w/EDL) -J104- <p>⇒ Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit</p>



V.A.G 1551 print-out	Possible cause	Repair
00287		
Right rear ABS wheel speed sensor -G44- Signal outside tolerances ¹⁾	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground, or loose contact in connections between right rear ABS wheel speed sensor -G44- and ABS Control Module (w/EDL) -J104- 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical checks ⇒ Page 01-102
	<ul style="list-style-type: none"> ◆ Electrical interference from other sources (high frequency radiation e.g. non-insulated ignition cable) 	<ul style="list-style-type: none"> - Read measured value block ⇒ Page 01-61 Display group number 001
	<ul style="list-style-type: none"> ◆ Damaged rotor or right rear ABS wheel speed sensor -G44- 	
	<ul style="list-style-type: none"> ◆ Excessive air gap between right rear ABS wheel speed sensor -G44- and rotor (signal not OK.) 	<ul style="list-style-type: none"> - Check right rear ABS wheel speed sensor -G44- and rotor for damage - Replace rotor/speed sensor ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles

¹⁾ Type of DTC, this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).

01-45



V.A.G 1551 print-out	Possible cause	Repair
00287		
Right rear ABS wheel speed sensor -G44- Mechanical malfunction ¹⁾	◆ Excessive air gap between right rear ABS wheel speed sensor - G44- and rotor (signal not OK.)	- Check installation of right rear ABS wheel speed sensor -G44- and rotor ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles - Read measured value block ⇒ Page 01-61 Display group number 002 - Perform output Diagnostic Test Mode (DTM) ⇒ Page 01-74
		If the malfunction occurs again:
	◆ Outlet valve in ABS hydraulic unit -N55- faulty	- Replace ABS hydraulic unit -N55- ⇒ Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit

¹⁾ Type of DTC, this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).

01-46



V.A.G 1551 print-out	Possible cause	Repair
00290		
Left rear ABS wheel speed sensor - G46-	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground, or loose contact in connections between left rear ABS wheel speed sensor -G46- and ABS Control Module (w/EDL) - J104- 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical checks ⇒ Page 01-102
	<ul style="list-style-type: none"> ◆ Left rear ABS wheel speed sensor windings -G46- faulty ◆ Damaged rotor or left rear ABS wheel speed sensor -G46- 	<ul style="list-style-type: none"> - Check left rear ABS wheel speed sensor -G46- and rotor for damage - Replace rotor/left rear ABS wheel speed sensor -G46- <p>⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles</p>
		If the malfunction occurs again:
	<ul style="list-style-type: none"> ◆ ABS Control Module (w/EDL) - J104- faulty 	<ul style="list-style-type: none"> - Replace ABS Control Module (w/EDL) -J104- <p>⇒ Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit</p>



V.A.G 1551 print-out	Possible cause	Repair
00290		
Left rear ABS wheel speed Sensor -G46- Signal outside tolerances ¹⁾	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground, or loose contact in connections between left rear ABS wheel speed sensor -G46- and ABS Control Module (w/EDL) -J104- 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical checks ⇒ Page 01-102
	<ul style="list-style-type: none"> ◆ Electrical interference from other sources (high frequency radiation e.g. non-insulated ignition cable) 	<ul style="list-style-type: none"> - Read measured value block ⇒ Page 01-61 Display group number 001
	<ul style="list-style-type: none"> ◆ Damaged rotor or left rear ABS wheel speed sensor -G46- 	
	<ul style="list-style-type: none"> ◆ Excessive air gap between left rear ABS wheel speed sensor -G46- and rotor (signal not OK.) 	<ul style="list-style-type: none"> - Check left rear ABS wheel speed sensor -G46- and rotor for damage - Replace rotor/speed sensor ⇒ Repair Manual, Brake System, Repair Group 45: Removing and installing parts of ABS system on front and rear axles

¹⁾ Type of DTC; this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
00290		
Left rear ABS wheel speed sensor -G46- Mechanical malfunction ¹⁾	◆ Excessive air gap between left rear ABS wheel speed sensor - G46- and rotor (signal not OK.)	- Check installation of left rear ABS wheel speed sensor -G46- and rotor ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles - Read measured value block ⇒ Page 01-61 Display group number 002 - Perform output Diagnostic Test Mode (DTM) ⇒ Page 01-74
		If the malfunction occurs again:
	◆ Outlet valve in ABS hydraulic unit -N55- faulty	- Replace ABS hydraulic unit -N55- ⇒ Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit

¹⁾ Type of DTC; this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
00668		
Vehicle voltage terminal 30 Signal outside tolerances	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground in the wiring 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical checks ⇒ Page 01-102
01044		
Control module incorrectly coded	<ul style="list-style-type: none"> ◆ ABS Control Module (w/EDL) - J104- incorrectly coded ◆ Coding bridge in multi-pin connector has open or short circuit 	<ul style="list-style-type: none"> - Check ABS Control Module (w/EDL) -J104- coding ⇒ Page 01-58 - Check wiring and connections using wiring diagram - Perform electrical checks ⇒ Page 01-102

01-50



V.A.G 1551 print-out	Possible cause	Repair
01130		
ABS operation Implausible signal ¹⁾	<ul style="list-style-type: none"> ◆ Electrical interference from other sources (high frequency radiation e.g. non-insulated ignition cable) 	<ul style="list-style-type: none"> - Erase DTC memory - Perform test drive at more than 20 km/h (13 mph) - Check DTC memory again
	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground in the wiring 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical checks ⇒ Page 01-102
		If the malfunction occurs again:
	<ul style="list-style-type: none"> ◆ ABS Control Module (w/EDL) -J104- faulty 	<ul style="list-style-type: none"> - Replace ABS control module (w/EDL) - J104- ⇒ Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit

¹⁾ Type of DTC; this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
01276		
ABS hydraulic pump -V64- Signal outside tolerances ¹⁾	◆ ABS hydraulic pump -V64-connector to control module faulty	- Perform output Diagnostic Test Mode (DTM) ⇒ Page 01-74
	◆ Open circuit, short to positive or Ground in the wiring	- Check wiring and connections using wiring diagram
		- Perform electrical checks ⇒from ⇒ Page 01-102
	◆ ABS hydraulic pump -V64- faulty	- If the ABS hydraulic pump -V64- runs free while electrical check test step 18 performed ⇒ Page 01-102 , replace ABS control module (w/EDL) - J104-
	◆ ABS control module (w/EDL) -J104- faulty	- Replace ABS control module (w/EDL) -J104- ⇒ Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit

¹⁾ Type of DTC; this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
01312		
Drive train data bus faulty ¹⁾ or:	<ul style="list-style-type: none"> ◆ ABS control module (w/EDL) - J104- incorrectly coded ◆ Engine control module incorrectly coded 	<ul style="list-style-type: none"> - Check ABS control module (w/EDL) -J104- coding ⇒ Page 01-58 - Check engine control module coding ⇒ <i>Repair group 01 for relevant engine code</i>
	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground in the wiring 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram
		<ul style="list-style-type: none"> - Perform electrical checks ⇒ Page 01-102
Drive train data bus faulty ¹⁾ Sporadic	<ul style="list-style-type: none"> ◆ Ignition/starter switch turned too slowly 	<ul style="list-style-type: none"> - Erase DTC memory ⇒ Page 01-56 - No further measures required - Inform customer

1) The DTC "Drive train data bus" will not cause the ABS warning light -K47- or warning light for brake system -K118- to light up. The ABS function is retained over the complete range.



V.A.G 1551 print-out	Possible cause	Repair
01314		
Engine control module No communication		- Read measured value block ⇒ Page 01-61 display group number 125
	◆ Open circuit, short to positive or Ground in data bus wiring	- Check wiring and connections of data bus wiring using wiring diagram - Perform electrical checks ⇒ Page 01-102
01315		
Transmission Control Module (TCM) ¹⁾ No communication		- Read measured value block ⇒ Page 01-61 display group number 125
	◆ Open circuit, short to positive or Ground in data bus wiring	- Check wiring and connections of data bus wiring using wiring diagram - Perform electrical checks ⇒ Page 01-102

¹⁾ Vehicles with automatic transmission only.

01-54



V.A.G 1551 print-out	Possible cause	Repair
01316		
Brake control module No communication	◆ Open circuit, short circuit to positive or Ground in data bus wiring	- Check data bus wiring and connection using wiring diagram - Perform electrical checks ⇒ Page 01-102

01-55



V.A.G 1551 print-out	Possible cause	Repair
18256		
Check Engine Control Module (ECM) memory	◆ DTC in ECM	- Check engine control module DTC memory ⇒ <i>Repair Manual, Fuel Injection & Ignition, Repair Group 01 for relevant engine code</i>
65535		
Control module faulty	ABS Control Module (w/EDL) -J104- faulty	- Replace ABS control module (w/EDL) -J104- ⇒ <i>Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit</i>

01-56



Diagnostic Trouble Code (DTC) memory, erasing and ending output

Note:

All functions which could previously be performed with V.A.G 1551 can also be performed with the tester VAS 5051.

Test requirements:

- ◆ DTC memory checked ⇒ [Page 01-28](#) .

1. Erasing DTC memory

- Press → key.

Rapid data transfer
Select function XX

HELP



Indicated on display

- Press keys -0- and -5-; 05 enters "Erase DTC memory" function.

Rapid data transfer
05 - Erase DTC memory

Q



Indicated on display

- Confirm entry with Q key

Rapid data transfer
DTC memory is erased!

→



Indicated on display

- Press → key.

Rapid data transfer
Select function XX

HELP



Indicated on display

01-57

**Warning!**

DTC memory was not interrogated.



Indicated on display

Note:

Adhere exactly to test sequence: First check DTC memory, then erase

2. Ending output

- Press keys -0- and -6-, to end output.

Rapid data transfer

Q



Indicated on display

06 - End output

- Confirm input with Q key.

Rapid data transfer

HELP



Indicated on display

Select function XX

- Switch ignition off.
- Disconnect V.A.G 1551 Scan Tool at Data Link Connector (DLC).
- Switch ignition on.

ABS warning light -K47- and warning light for brake system -K118- must go out after approx. 2 seconds.



ABS control module, coding

- ◆ All functions which could previously be performed with V.A.G 1551 can also be performed with the tester VAS 5051.
- ◆ Warning light for ABS -K47- and warning light for brake system -K118- flash when control module is coded with 00000. An entry is not set in the DTC memory.
- ◆ The ABS control module (w/EDL) -J104- must be recoded if the vehicle relevant coding is not displayed or the control module has been replaced.

Coding is only possible after the workshop code (WSC) has been entered into the V.A.G 1551 Scan Tool.

Test sequence

- Connect V.A.G 1551 Scan Tool and select (address word 03) "Brake electronics" with ignition switched on; ⇒ [Page 01-23](#)
- Establish which type of ABS hydraulic control module is installed ⇒ [Page 01-4](#) .
- Establish engine code.



Rapid data transfer Select function XX	HELP	◀	Indicated on display - Input 07 for "Code control module" and confirm with Q key.
Rapid data transfer 07 - Code control module	Q	◀	Indicated on display - Confirm input with Q key.
Coding control module Enter code number XXXXX	Q (0-32000)	◀	Indicated on display - Enter relevant code number for this vehicle and confirm with Q key. Coding variations ⇒ Page 01-60 .
1J0 907 379 D ABS 20 IE CAN 0001 → Coding 03604	WSC 00000	◀	On the display the control module identification and coding are displayed, e.g.:



Coding table

Code number	Engine code	Variant
03504	AEG	ABS
13504	AEG	ABS/EDL
03504	AFP	ABS
13504	AFP	ABS/EDL
13204	AFP	ABS/EDL/ASR
03504	ALH	ABS
13504	ALH	ABS/EDL
13204	APH	ABS/EDL/ASR

01-61



Measured value block, reading

Note:

All functions which could previously be performed with V.A.G 1551 can also be performed with the tester VAS 5051.

The control module can transfer a considerable amount of test data. This test data delivers information on the operational condition of the system and/or sensors connected to it. In many cases the transferred test data supports troubleshooting and repair. The test data has been summarized into single display groups because all the information cannot be evaluated at the same time. The information can be selected via display group numbers.

01-62



Safety precautions

Observe following if test and measuring instruments are required during a test drive:

- ◆ Test and measuring instruments must be secured to rear seat and operated by a 2nd person from this location.
- ◆ When test and measuring instruments are operated from the front passenger seat there is a danger that the person sitting there could be injured in an accident when the airbag is triggered.

01-63



- Connect V.A.G 1551 Scan Tool and select address word 03 for "Brake electronics" with ignition switched on; ⇒ [Page 01-23](#)

Rapid data transfer

HELP



Indicated on display

Select function XX

- Press keys 0 and 8 to select function "Read measured value block".

Rapid data transfer

Q



Indicated on display

08 - Read measured value block

- Confirm entry with key Q.

Read measured value block



Indicated on display

Enter display group number XXX

- Enter display group number ⇒ List of selectable display group numbers, ⇒ [Page 01-64](#) .

01-64

**List of selectable display group numbers**

Display group number	Display zone	Designation
001	1	Wheel speed at left front wheel sensor (km/h)
	2	Wheel speed at right front wheel sensor (km/h)
	3	Wheel speed at left rear speed sensor (km/h)
	4	Wheel speed at right rear speed sensor (km/h)
002	1	Wheel speed at left front speed sensor (km/h)
	2	Wheel speed at right front wheel sensor (km/h)
	3	Wheel speed at left rear speed sensor (km/h)
	4	Wheel speed at right rear speed sensor (km/h)
003	1	Brake light switch
	2	Vacant
	3	Vacant
	4	Vacant

01-65



Display group number	Display zone	Designation
006	1	Longitudinal acceleration sensor -G251- ¹⁾
	2	Vacant
	3	Vacant
	4	Vacant
125	1	Data bus for engine
	2	Data bus for four-wheel drive ¹⁾
	3	Data bus for transmission ²⁾
	4	Vacant

¹⁾ Four-wheel drive vehicles with Haldex coupling only.

²⁾ Vehicles with automatic transmission only.

01-66



Test sequence and test tables with measured values

Checking speed sensor allocation

Display group number 001

- Press keys 0, 0 and 1.
- Confirm entry with key Q.

Read measured value block 1 →

→ 1 → 2 → 3 → 4



There are always 4 display zones -arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read from the following tables.

Read measured value block 1 →

0 km/h 0 km/h 0 km/h 0 km/h



Indicated on display: (vehicle stationary)

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterwards to regain entry.

01-67

**Note:**

For display group number 001 remember:

The actual wheel speeds are displayed. They serve to check the speed sensor allocation to the wheel. (The vehicle must be raised and the wheel must be rotated by hand by a 2nd mechanic).

Read measured value block			1 →	Display group number: 001
0 km/h	4 km/h	0 km/h	0 km/h	◀ Indicated on display: (Example)
				Wheel speed at right rear speed sensor ◆ (0 to 255 km/h)
				Wheel speed at left rear speed sensor ◆ (0 to 255 km/h)
				Wheel speed at right front speed sensor ◆ (0 to 255 km/h)
				Wheel speed at left front speed sensor ◆ (0 to 255 km/h)

01-68



Checking speed sensor

Display group number 002

- Press keys 0, 0 and 2.
- Confirm entry with key Q.

Read measured value block 2 →

→ 1 → 2 → 3 → 4



There are always 4 display zones -arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read from the following tables.

Read measured value block 2 →

255 km/h 255 km/h 255 km/h 255 km/h



Indicated on display: (Vehicle stationary)

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterwards to regain entry.

**Note:**

For display group number 002 remember:

- ◆ The reading of measured value blocks in display group number 002 must be undertaken when driving off slowly. Then the ABS Control Module (w/EDL) -J104- will store the first usable voltage signals provided by the speed sensors and display these as a fixed value in the measured value block.

Read measured value block			2 →	Display group number: 002
3 km/h ¹⁾	6 km/h ¹⁾	2 km/h ²⁾	1 km/h ²⁾	◀ Indicated on display: (when driving off slowly)
				Wheel speed at right rear speed sensor ◆ (0 to 255 km/h)
				Wheel speed at left rear speed sensor ◆ (0 to 255 km/h)
				Wheel speed at right front speed sensor ◆ (0 to 255 km/h)
				Wheel speed at left front speed sensor ◆ (0 to 255 km/h)

1) If the deviations in display zones 1 and 2 are greater than 6 km/h (approx. 3.75 mph), the following malfunctions may be present:

2) If the deviations in display zones 3 and 4 are greater than 2 km/h (approx. 1.25 mph), the following malfunctions may be present:

Note:

- ◆ Air gap between speed sensor and rotor may be too wide.
- Check that speed sensor is attached correctly to wheel bearing housing.
- ◆ Speed sensor or rotor exterior damaged.
- Change damaged component.

01-70



Checking brake light switch for ABS and ABS/EDL function

Display group number 003

- Press keys 0, 0 and 3
- Confirm entry with key Q.

Read measured value block 3 →

→ 1 → 2 → 3 → 4



There are always 4 display zones -arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read from the following tables.

Read measured value block 3 →

0



Indicated on display

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterwards to regain entry.

01-71



Read measured value block		3 →	Display group number: 003
0			◀ Indicated on display
			Vacant
		Vacant	
	Vacant		
	<p>Brake light switch:</p> <ul style="list-style-type: none"> ◆ 0 → Brake pedal not depressed ◆ 1 → Brake pedal depressed <p>If despite pressed foot brake a -0-, or not pressed foot brake a -1- is displayed on the V.A.G 1551 display; perform test step No. 4 of Electrical check, ⇒ Page 01-102 .</p> <p>There is also a possibility that the brake light switch has not been correctly adjusted. Adjusting brake light switch, ⇒ Page 01-131 .</p>		

01-72



Checking data bus wiring

Display group number 125

- Press keys 1, 2 and 5
- Confirm entry with key Q.

Read measured value block 125 →

→ 1 → 2 → 3 → 4



There are always 4 display zones -arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read from the following tables.

Read measured value block 125 →

Engine 1 4WD 1 Gear. 1



Indicated on display: (vehicle stationary)

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterwards to regain entry.

01-73



Read measured value block			125 →	Display group number: 125
Engine	AWD	Gear.		◀ Indicated on display (example)
1	1	1		
				Vacant
			Data bus connection for transmission¹⁾	
			◆ 1 → Data bus connection is available.	
			◆ 0 → Data bus connection is not available. ³⁾	
			Data bus for all-wheel drive²⁾	
			◆ 1 → Data bus connection is available.	
			◆ 0 → Data bus connection is available.	
			Data bus for engine	
			◆ 1 → Data bus connection is available.	
			◆ 0 → Data bus connection is not available.	

1) Vehicles with automatic transmission only.

◆ Incorrect transmission control module or incorrect transmission control module coding.

◆ Transmission control module faulty.

⇒ *Repair Group 01 for relevant transmission code.*

2) All-wheel drive vehicles with Haldex coupling only.

3) Data bus connection is interrupted or data bus wires are interchanged.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder.*

01-74



Output Diagnostic Test Mode (DTM)

Note:

- ◆ *All functions which could previously be performed with V.A.G 1551 can also be performed with the tester VAS 5051.*
- ◆ *The pump motor and the correct functioning of the hydraulic circuits (allocation of brake lines to wheel cylinders and function of valves) can be checked via the output DTM for interchange or leaks.*
- ◆ *The vehicle must be raised until all wheels are free to turn. (2nd mechanic required to rotate wheels)*
- ◆ *The -C- key can be used to exit the test sequence at any time.*
- ◆ *After depressing the brake pedal several times the vacuum in the brake booster will be exhausted. Therefore more pressure must be applied to the brake pedal in order to attain the same fluid pressure in brake system, as that attained with vacuum.*
- ◆ *When vacuum in brake booster is exhausted wheels may not lock; start engine and build-up vacuum in brake booster.*

01-75

**Example:**

Indicated on V.A.G 1551 display during output Diagnostic Test Mode (DTM):

(e.g. front left wheel, FL)

Output Diagnostic Test Mode - →
IFL: VBAT OFL: 0V Wheel FL locked

IFL = Inlet valve Front Left

VBAT = Voltage Battery; Voltage at valve

OFL = Outlet valve Front Left

0V = 0 Volt; No voltage at valve

Locked/free = Wheel condition; must be checked by 2nd mechanic if required

Output Diagnostic Test Mode - →
EDL valves/Hyd-P: VBAT Wheel FL/FR locked

Hydr-P = Hydraulic pump

01-76



- Connect V.A.G 1551 Scan Tool.
- Switch ignition on.
- Press key -1- for "Rapid data transfer" operating mode.
- Select brake electronics (address word 03); ⇒ [Page 01-23](#)

Rapid data transfer
03 - Brake electronics

Q



Indicated on display

- Confirm entry with key Q.

Note:

During the next work steps the ABS warning light - K47- flashes.

- Read off control module version in V.A.G 1551 display.
- Press → key.

01-77



Rapid data transfer Select function XX	HELP	◀	Indicated on display - Press keys 0 and 3
Rapid data transfer 03 - Output Diagnostic Test Mode	Q	◀	Indicated on display - Confirm entry with key Q. • ABS hydraulic pump -V64- must run.
Output Diagnostic Test Mode ABS hydraulic pump - V64	. →	◀	Indicated on display - Press → key.
Output Diagnostic Test Mode Operate brakes	. →	◀	Indicated on display - Operate brake pedal. - Press → key.
Output Diagnostic Test Mode IFL: 0V OFL: 0V Wheel FL locked	. →	◀	Indicated on display - Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-78



Output Diagnostic Test Mode . →

IFL: VBAT OFL: 0V Wheel FL locked



- Press → key.

Indicated on display

- Press → key.

- ABS hydraulic pump -V64- must run.
- Brake pedal must not give.

If the brake pedal gives, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit](#)

Output Diagnostic Test Mode . →

IFL: VBAT OFL: VBAT Wheel FL free



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel locks there is a possibility that the brake lines to the wheel calipers/cylinders have been interchanged.

01-79



Output Diagnostic Test Mode . →

IFL: VBAT OFL: 0V Wheel FL free



- Press → key.

- ABS hydraulic pump -V64- no longer runs.

Indicated on display

- Press → key.

- Brake pedal must give perceptibly

If the brake pedal does not give, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit](#)

Output Diagnostic Test Mode . →

IFL: 0V OFL: 0V Wheel FL locked



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-80



Output Diagnostic Test Mode . →	←	Indicated on display	- Press → key.
Release brakes			- Remove foot from brake pedal. - Press → key.
Output Diagnostic Test Mode . →	←	Indicated on display	
Operate brakes			- Operate brake pedal. - Press → key.
Output Diagnostic Test Mode . →	←	Indicated on display	
IFR: 0V OFR: 0V Wheel FR locked			- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.



Output Diagnostic Test Mode . →

IFR: VBAT OFR: 0V Wheel FR locked



- Press → key.

Indicated on display

- Press → key.

- ABS hydraulic pump -V64- must run.
- Brake pedal must not give

If the brake pedal gives, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit](#)

Output Diagnostic Test Mode . →

IFR: VBAT OFR: VBAT Wheel FR free



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel locks there is a possibility that the brake lines to the wheel calipers/cylinders have been interchanged.

01-82



Output Diagnostic Test Mode . →

IFR: VBAT OFR: 0V Wheel FR free



Indicated on display

- Press → key.
- ABS hydraulic pump -V64- no longer runs.

- Press → key.

- Brake pedal must give perceptibly

If the brake pedal does not give, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit](#)

Output Diagnostic Test Mode . →

IFR: 0V OFR: 0V Wheel FR locked



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-83



Output Diagnostic Test Mode . →	←	Indicated on display	- Press → key.
Release brakes			- Remove foot from brake pedal. - Press → key.
Output Diagnostic Test Mode . →	←	Indicated on display	
Operate brakes			- Operate brake pedal. - Press → key.
Output Diagnostic Test Mode . →	←	Indicated on display	
IRL: 0V ORL: 0V Wheel RL locked			- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-84



Output Diagnostic Test Mode . →

IRL: VBAT ORL: 0V Wheel RL locked



- Press → key.

Indicated on display

- Press → key.

- ABS hydraulic pump -V64- must run.
- Brake pedal must not give

If the brake pedal gives, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit](#)

Output Diagnostic Test Mode . →

IRL: VBAT ORL: VBAT Wheel RL free



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel locks there is a possibility that the brake lines to the wheel calipers/cylinders have been interchanged.

01-85



Output Diagnostic Test Mode . →

IRL: VBAT ORL: 0V Wheel RL free



Indicated on display

- Press → key.
- ABS hydraulic pump -V64 no longer runs.

- Press → key.

- Brake pedal must give perceptibly

If the brake pedal does not give, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit](#)

Output Diagnostic Test Mode . →

IRL: 0V ORL: 0V Wheel RL locked



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-86



Output Diagnostic Test Mode . →	←	Indicated on display	- Press → key.
Release brakes			- Remove foot from brake pedal. - Press → key.
Output Diagnostic Test Mode . →	←	Indicated on display	
Operate brakes			- Operate brake pedal. - Press → key.
Output Diagnostic Test Mode . →	←	Indicated on display	
IRR: 0V ORR: 0V Wheel RR locked			- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-87



Output Diagnostic Test Mode . →

IRR: VBAT ORR: 0V Wheel RR locked



- Press → key.

Indicated on display

- Press → key.

- ABS hydraulic pump -V64- must run.
- Brake pedal must not give

If the brake pedal gives, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit](#)

Output Diagnostic Test Mode . →

IRR: VBAT ORR: VBAT Wheel RR free



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel locks there is a possibility that the brake lines to the wheel calipers/cylinders have been interchanged.

01-88



Output Diagnostic Test Mode . →

IRR: VBAT ORR: 0V Wheel RR free



Indicated on display

- Press → key.
- ABS hydraulic pump -V64- no longer runs.

- Press → key

- Brake pedal must give perceptibly

If the brake pedal does not give, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit](#)

Output Diagnostic Test Mode . →

IRR: 0V ORR: 0V Wheel RR locked



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-89



Output Diagnostic Test Mode . →

Release brakes



- Press → key.

Indicated on display

- Remove foot from brake pedal.

- Press → key.

Output Diagnostic Test Mode . →

EDL valves/Hyd-P: VBAT Wh FL/FR locked



Indicated on display (vehicles with EDL)

Note:

A 2nd mechanic is required to rotate the respective wheel by hand.

If the wheels do not lock, there is a malfunction in the hydraulic part of the ABS system. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/brake master cylinder - Assembly overview; Removing and installing control module and hydraulic unit](#)

01-90



Function is unknown or
cannot be carried out at the moment



- Press → key.

- The ABS warning light -K47- goes out.

Indicated on display

The Output Diagnostic Test Mode (DTM) is completed

- Press → key.

Rapid data transfer
Select function XX

HELP



Indicated on display

Note:

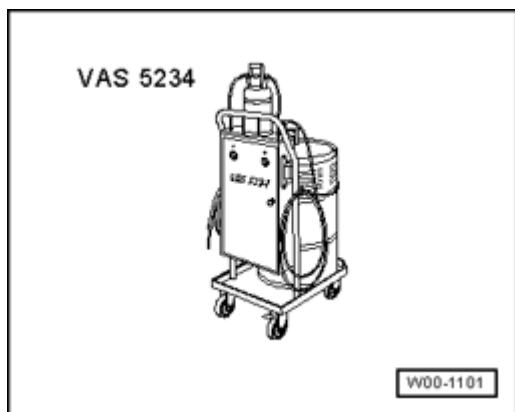
- ◆ *There is a malfunction in the system if the ABS warning light -K47- does not go out.*
- ◆ *Adhere exactly to test sequence: First check Diagnostic Trouble Code (DTC) memory, then erase.*

- End output (Function 06) ⇒ [Page 01-56](#) .



Basic setting, initiating

Special tools and equipment



- ◆ VAS 5234 Brake filler and bleeder unit

Function 04 "Initiate basic settings" performs several functions:

- ◆ Display group 001 is required to bleed the hydraulic system ⇒ [Page 01-91](#)

Note:

The basic setting to bleed the hydraulic unit is only required when one chamber of the brake fluid reservoir is completely empty.

The basic setting is used to bleed the hydraulic unit only. The brake system must be bled separately.

⇒ [Repair Manual, Brake System, Repair Group 47](#)

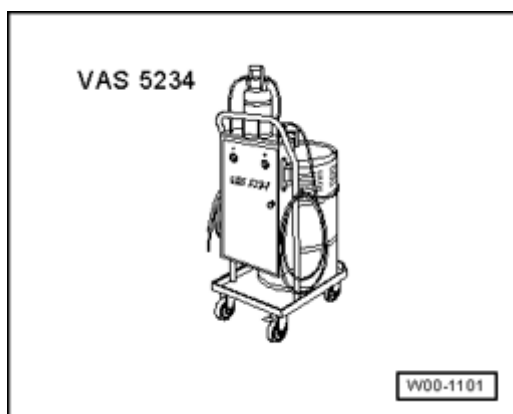
01-92



Display group number 01: Bleeding hydraulic unit.

Note:

All functions which could previously be performed with V.A.G 1551 can also be performed with the tester VAS 5051.



- Connect VAS 5234 Brake filler and bleeder unit.
- Connect V.A.G 1551 Scan Tool and select (address word 03) "Brake electronics" with ignition switched on; ⇒ [Page 01-23](#)

Rapid data transfer

HELP

Select function XX



Indicated on display

- Press keys 0 and 4. (The function "Initiating basic setting" is selected with 04).

Rapid data transfer

Q

04 - Basic setting



Indicated on display

- Confirm entry with key Q.

01-93



Basic setting Enter display group number XXX	HELP	◀	Indicated on display: - Press keys 0, 0 and 1 - Confirm entry with key Q.
System in basic setting Depress pedal and hold...	1	◀	Indicated on display: - Operate pedal with substantial foot pressure and hold. <ul style="list-style-type: none"> • Pedal moves down • Hydraulic pump runs • Pedal comes back
System in basic setting Rel. pedal; FR/FL bleed screw OPEN <3>	1	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.
System in basic setting Please wait...(10 secs.)	2	◀	Indicated on display <ul style="list-style-type: none"> • Hydraulic pump runs
System in basic setting Depr. pedal 10X; bleed screw CLOSED <3>	2	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.

01-94



System in basic setting Depress pedal and hold...	3	◀	Indicated on display - Operate pedal with substantial foot pressure and hold. <ul style="list-style-type: none">• Pedal moves down• Hydraulic pump runs• Pedal comes back
System in basic setting Rel. pedal; FR/FL bleed screw OPEN <3>	3	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.
System in basic setting Please wait...(10 secs.)	4	◀	Indicated on display • Hydraulic pump runs
System in basic setting Depr. pedal 10X; bleed screw CLOSED <3>	4	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.

01-95



System in basic setting Depress pedal and hold...	5	◀	Indicated on display - Operate pedal with substantial foot pressure and hold. <ul style="list-style-type: none">• Pedal moves down• Hydraulic pump runs• Pedal comes back
System in basic setting Rel. pedal; FR/FL bleed screw OPEN <3>	5	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.
System in basic setting Please wait...(10 secs.)	6	◀	Indicated on display • Hydraulic pump runs
System in basic setting Depr. pedal 10X; bleed screw CLOSED <3>	6	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.

01-96



System in basic setting Depress pedal and hold...	7	◀	Indicated on display - Operate pedal with substantial foot pressure and hold. <ul style="list-style-type: none">• Pedal moves down• Hydraulic pump runs• Pedal comes back
System in basic setting Rel. pedal; FR/FL bleed screw OPEN <3>	7	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.
System in basic setting Please wait...(10 secs.)	8	◀	Indicated on display • Hydraulic pump runs
System in basic setting Depr. pedal 10X; bleed screw CLOSED <3>	8	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.

01-97



System in basic setting Depress pedal and hold...	9	◀	Indicated on display - Operate pedal with substantial foot pressure and hold. <ul style="list-style-type: none">• Pedal moves down• Hydraulic pump runs• Pedal comes back
System in basic setting Rel. pedal; FR/FL bleed screw OPEN <3>	9	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.
System in basic setting Please wait...(10 secs.)	10	◀	Indicated on display • Hydraulic pump runs
System in basic setting Depr. pedal 10X; bleed screw CLOSED <3>	10	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.

01-98



System in basic setting Depress pedal and hold...	11	◀	Indicated on display - Operate pedal with substantial foot pressure and hold. <ul style="list-style-type: none">• Pedal moves down• Hydraulic pump runs• Pedal comes back
System in basic setting Rel. pedal; FR/FL bleed screw OPEN <3>	11	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.
System in basic setting Please wait...(10 secs.)	12	◀	Indicated on display • Hydraulic pump runs
System in basic setting Depr. pedal 10X; bleed screw CLOSED <3>	12	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.

01-99



System in basic setting 13

Depress pedal and hold...



Indicated on display

- Operate pedal with substantial foot pressure and hold.
- Pedal moves down
- Hydraulic pump runs

System in basic setting 13

Rel. pedal; FR/FL bleed screw OPEN <3>



Indicated on display

- Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.

System in basic setting 14

Please wait...(10 secs.)



Indicated on display

- Hydraulic pump runs

System in basic setting 14

Depr. pedal 10X; bleed screw CLOSED <3>



Indicated on display

- Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.

01-100



System in basic setting Depress pedal and hold...	15	◀	Indicated on display - Operate pedal with substantial foot pressure and hold. <ul style="list-style-type: none">• Pedal moves down• Hydraulic pump runs• Pedal comes back
System in basic setting Rel. pedal; FR/FL bleed screw OPEN <3>	15	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.
System in basic setting Please wait...(10 secs.)	16	◀	Indicated on display • Hydraulic pump runs
System in basic setting Depr. pedal 10X; bleed screw CLOSED <3>	16	◀	Indicated on display - Press key 3 on V.A.G 1551 or arrow up key on VAS 5051.

01-101



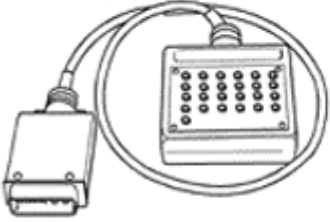
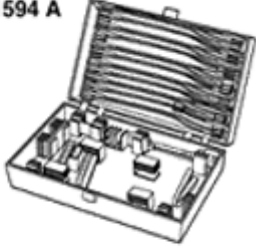


System in basic setting Partial bleeding ended	17	◀	Indicated on display - Press → key.
Rapid data transfer Select function XX	HELP	◀	Indicated on display - Press keys -0- and -6- to end output.
Rapid data transfer 06 - End output	Q	◀	Indicated on display - Confirm entry with Q key.
Rapid data transfer Enter address word XX	Help	◀	Indicated on display - Press C key. - Switch ignition off. - Disconnect connections to V.A.G 1551 Scan Tool. - Bleed brake system.

The basic setting is used to bleed the hydraulic unit only. The brake system must be bled separately.

⇒ [*Repair Manual, Brake System, Repair Group 47; Bleeding brake system, vehicles with and without ABS*](#)

01-102



<p>V.A.G 1598/21</p> 	<p>V.A.G 1594 A</p> 
<p>V.A.G 1526 A</p> 	<p>V.A.G 1921</p> 
	<p>W01-0002</p>

ABS, ABS/EDL and ABS/EDL/ASR ITT Mark 20 IE, electrical check

Special tools and equipment

- ◆ V.A.G 1598/21 Adapter
- ◆ V.A.G 1594 A Adapter set
- ◆ V.A.G 1526 A Multimeter
- ◆ V.A.G 1921 Pliers

01-103



The test steps from ⇒ [Page 01-111](#) are valid for:

- ◆ For vehicles on which the On Board Diagnostic (OBD) does not give any indication of the source of the malfunction, work through the complete electrical check.

- ◆ For vehicles on which the OBD provides a direct indication of the source of the malfunction, only carry out the test steps recommended in the Diagnostic Trouble Code (DTC) table (directed entry).

An overview of all the test steps in the electrical check can be found on ⇒ [Page 01-109](#) .

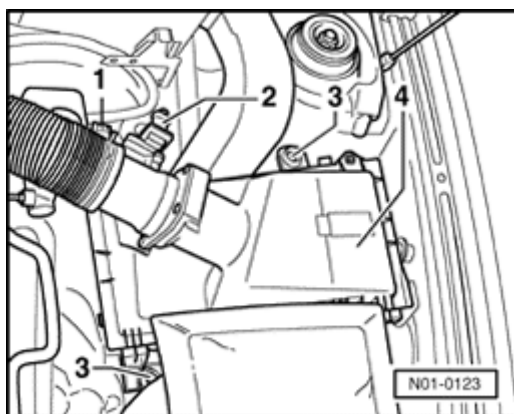
01-104



Test requirements

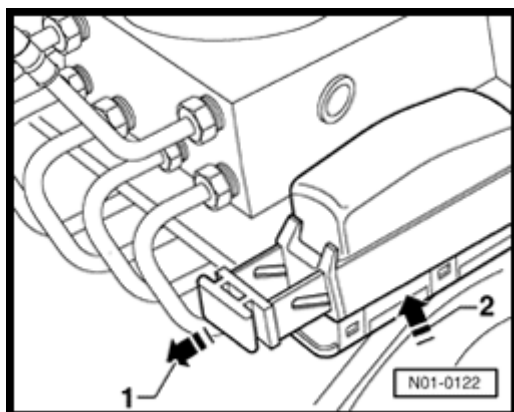
- Switch ignition and electrical consumers off before beginning the check (headlights, lighting, fan ...).
- Fuses S9, S13, S178 and S179 must be OK (remove fuses from fuse holder to check).

Removing air cleaner

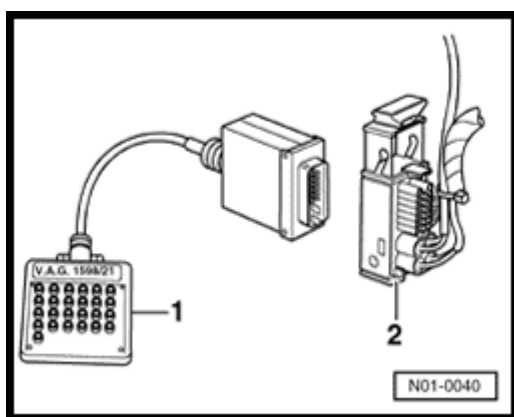


- Pull connector -2- off mass air flow sensor.
- Release spring-type clip -1- on air duct hose with pliers V.A.G 1921 and pull hose off air cleaner.
- Remove air cleaner bolts -3- and take out air cleaner -4-.

01-105



- Release ABS control module (w/EDL) - J104- connector -arrow 1- and pull off - arrow 2-.



- Connect test box V.A.G 1598/21 -1- to multi-pin connector of ABS control module (w/EDL) -J104- (-2-).

The specified values are matched to the V.A.G 1526 and are not necessarily applicable for other test units.

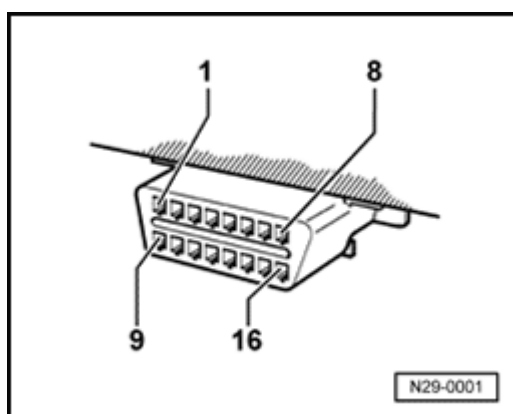
01-106



Multi-pin connector with contact assignment

Note:

All contacts not listed are currently not assigned and must never be connected to other components!

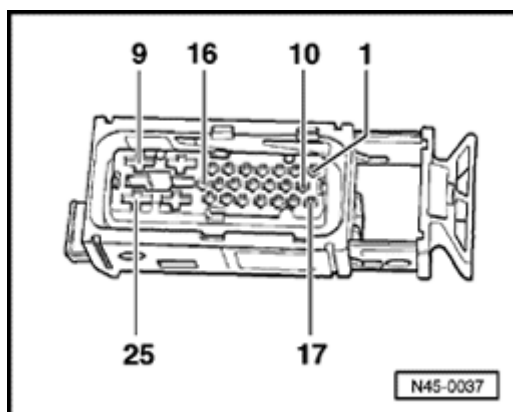


✦ Contact assignment of connectors for voltage supply and On Board Diagnostic (OBD) with V.A.G 1551 Scan Tool

Contact = Ground (terminal 31)
4

Contact = Positive (terminal 30) to S12
16

Contact = K wire to contact 7 of multi-pin connector T25 of ABS control module (w/EDL) - J104-



✦ Contact assignment of connector T25 wiring harness/ABS control module (w/EDL) -J104-

01-107



Contact	Wiring connection to component ...	
1	⇒	Left front ABS wheel speed sensor -G47-
2	⇒	Left front ABS wheel speed sensor -G47-
3	⇒	Coding bridge to contact 14
4	⇒	Voltage supply to ignition switch
5	⇒	Left rear ABS wheel speed sensor -G46-
6	⇒	Left rear ABS wheel speed sensor -G46-
7	⇒	Connector T16/7, K wire
8	⇒	Ground point left in engine compartment and Ground connection in engine compartment wiring harness
9	⇒	Voltage supply from battery +
10	⇒	Data bus wire ⇒ Wiring diagrams
11	⇒	Data bus wire ⇒ Wiring diagrams
12	⇒	Vehicles with navigation system only

01-108



Contact	Wiring connection to component ...	
13	⇒	Longitudinal acceleration sensor -G251-(all-wheel drive vehicles with Haldex coupling only)
14	⇒	Coding bridge to contact 3
15	⇒	Longitudinal acceleration sensor -G251-(four-wheel drive vehicles with Haldex coupling only)
15	⇒	ESP Control lamp -K155- activation (vehicles with ABS/EDL/ASR only)
16	⇒	ABS warning light -K47- activation
17	⇒	Longitudinal acceleration sensor -G251-(four-wheel drive vehicles with Haldex coupling only)
18	⇒	Brake light switch -F-
19	⇒	Right front ABS wheel speed sensor -G45-
20	⇒	Right front ABS wheel speed sensor -G45-
21	⇒	Vehicles with navigation system only
22	⇒	Right rear ABS wheel speed sensor -G44-
23	⇒	Right rear ABS wheel speed sensor -G44-
24	⇒	Ground point left in engine compartment and Ground connection in engine compartment wiring harness
25	⇒	Voltage supply from battery +

01-109



Test step overview

To test component	
Voltage supply for ABS hydraulic pump -V64- to ABS control module (w/EDL) -J104-	- Perform test step 1
Voltage supply for valves in ABS hydraulic unit -N55- to ABS control module (w/EDL) -J104-	- Perform test step 2
Voltage supply (terminal X) on ABS control module (w/EDL) -J104-	- Perform test step 3
Function of brake light switch -F-	- Perform test step 4
Resistance of right front ABS wheel speed sensor -G45-	- Perform test step 5
Resistance of left front ABS wheel speed sensor -G47-	- Perform test step 6
Resistance of right rear ABS wheel speed sensor -G44-	- Perform test step 7
Resistance of rear left ABS wheel speed sensor -G46-	- Perform test step 8
Voltage signal of right front ABS wheel speed sensor -G45-	- Perform test step 9
Voltage signal of left front ABS wheel speed sensor -G47-	- Perform test step 10

01-110



To test component	
Voltage signal of right rear ABS wheel speed sensor -G44-	- Perform test step 11
Voltage signal of rear left ABS wheel speed sensor -G46-	- Perform test step 12
Coding bridge	- Perform test step 13
Voltage supply for V.A.G 1551, T16 connector	- Perform test step 14
Resistance of K wire for On Board Diagnostic (OBD), T16 connector	- Perform test step 15
Function of ABS warning light -K47-	- Perform test step 16
Function of warning light for brake system -K118-	- Perform test step 17
Function of ABS hydraulic pump -V64-	- Perform test step 18
Check of data bus wiring	- Perform test step 19
Activation of longitudinal acceleration sensor -G251- ¹⁾	- Perform test step 20
Function of ESP Control lamp -K155-	- Perform test step 21

¹⁾ All-wheel drive vehicles with Haldex coupling only.

01-111



Test table

Notes on test table

- ◆ *The socket designations of adapter V.A.G 1598/21 are identical to the control module -J104 contact designations in wiring diagram.*

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

- ◆ *If the readings obtained deviate from the specifications, carry out repair measure in the right-hand part of the table.*

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

- ◆ *Continuity checks with adapter set V.A.G 1594 A (bridging).*

- ◆ *If the measured figures only deviate slightly from the specifications, clean sockets and connectors of the testers and adapter cables (with contact spray G 000 700 04) and repeat check. Before replacing components, check wiring and connections and also, particularly for specifications of less than 10 Ω , repeat resistance check on the component.*

01-112



Switch to measuring range:					
Voltage measurement (20 V =)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
1	8 + 25	Voltage supply for ABS hydraulic pump -V64- to ABS Control Module (w/EDL) - J104-	<ul style="list-style-type: none"> • Ignition switched off 	10.0 to 14.5 V	- Check wire using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
2	9 + 24	Voltage supply for the valves in ABS hydraulic unit -N55- to ABS Control Module (w/EDL) -J104-	<ul style="list-style-type: none"> • Ignition switched off 	10.0 to 14.5 V	- Check wire using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

01-113



Switch to measuring range:					
Voltage measurement (20 V =)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
3	8 + 4	Voltage supply (terminal X) to ABS Control Module (w/EDL) - J104-	<ul style="list-style-type: none"> • Ignition switched on 	10.0 to 14.5 V	<ul style="list-style-type: none"> - Check wire using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
4	8 + 18	Function of brake light switch -F-	<ul style="list-style-type: none"> • Ignition switched off • Brake pedal not depressed 	0.0 to 0.5 V	<ul style="list-style-type: none"> - Check brake light switch -F- and Read measured value block, display group 003 - Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
			- Press brake pedal	approx. battery voltage	- Checking brake light switch -F- ⇒ Page 01-131

01-114



Switch to measuring range:					
Resistance measurement (2 kΩ)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
5	19 + 20	Resistance of right front ABS wheel speed sensor -G45-	<ul style="list-style-type: none"> • Ignition switched off 	1.0 to 1.3 k Ω	<ul style="list-style-type: none"> - Separate connector on right front ABS wheel speed sensor -G45- - Check wiring using wiring diagram - Wiggle wiring during test ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> If no malfunction can be located in the wiring: - Replace right front ABS wheel speed sensor -G45- ⇒ <i>Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles</i>

01-115



Switch to measuring range:					
Resistance measurement (2 kΩ)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
6	1 + 2	Resistance of left front ABS wheel speed sensor -G47-	<ul style="list-style-type: none"> • Ignition switched off 	1.0 to 1.3 k Ω	<ul style="list-style-type: none"> - Separate connector on left front ABS wheel speed sensor -G47- - Check wiring using wiring diagram - Wiggle wiring during test <p>⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i></p> <p>If no malfunction can be located in the wiring:</p> <ul style="list-style-type: none"> - Replace left front ABS wheel speed sensor - G47- <p>⇒ <i>Repair Manual, Brake System Repair Group 45; Removing and installing parts of ABS system on front and rear axles</i></p>

01-116



Switch to measuring range:					
Resistance measurement (2 kΩ)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
7	22 + 23	Resistance of right rear ABS wheel speed sensor -G44-	<ul style="list-style-type: none"> • Ignition switched off 	1.0 to 1.3 k Ω	<ul style="list-style-type: none"> - Separate connector on right rear ABS wheel speed sensor -G44 - Check wiring using wiring diagram - Wiggle wiring during test <p>⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i></p> <p>If no malfunction can be located in the wiring:</p> <ul style="list-style-type: none"> - Replace right rear ABS wheel speed sensor - G44- <p>⇒ <i>Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles</i></p>

01-117



Switch to measuring range:					
Resistance measurement (2 kΩ)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
8	5 + 6	Resistance of left rear ABS wheel speed sensor -G46-	<ul style="list-style-type: none"> • Ignition switched off 	1.0 to 1.3 k Ω	<ul style="list-style-type: none"> - Separate connector on left rear ABS wheel speed sensor -G46- - Check wiring using wiring diagram - Wiggle wiring during test ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> If no malfunction can be located in the wiring: - Replace left rear ABS wheel speed sensor - G46- ⇒ <i>Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles</i>

01-118



Switch to measuring range:					
Voltage measurement (2 V \approx)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
9	19 + 20	Right front ABS wheel speed sensor - G45- voltage signal	<ul style="list-style-type: none"> • Vehicle raised 		- Check installation of right front ABS wheel speed sensor -G45- and rotor.
			<ul style="list-style-type: none"> • Ignition switched off 		
			- Rotate front right wheel at approx. 1 rev./sec.	min. 65 mV alternating voltage	- Check whether right front ABS wheel speed sensor -G45- has been interchanged and Read measured value block \Rightarrow Page 01-61 , display group number 001
10	1 + 2	Left front ABS wheel speed sensor - G47- voltage signal	<ul style="list-style-type: none"> • Vehicle raised 		- Check installation of left front ABS wheel speed sensor -G47- and rotor.
			<ul style="list-style-type: none"> • Ignition switched off 		
			- Rotate front left wheel at approx. 1 rev./sec.	min. 65 mV alternating voltage	- Check whether left front ABS wheel speed sensor -G47- has been interchanged and Read measured value block \Rightarrow Page 01-61 , display group number 001

01-119



Switch to measuring range:					
Voltage measurement (2 V ≈)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
11	22 + 23	Right rear ABS wheel speed sensor - G44- voltage signal	<ul style="list-style-type: none"> • Vehicle raised 		- Check installation of right rear ABS wheel speed sensor -G44- and rotor.
			<ul style="list-style-type: none"> • Ignition switched off 		
			- Rotate rear right wheel at approx. 1 rev./sec.	min. 190 mV alternating voltage	- Check whether right rear ABS wheel speed sensor -G44- has been interchanged and Read measured value block ⇒ Page 01-61 , display group number 001
12	6 + 5	Left rear ABS wheel speed sensor - G46- voltage signal	<ul style="list-style-type: none"> • Vehicle raised 		- Check installation of left rear ABS wheel speed sensor -G46- and rotor.
			<ul style="list-style-type: none"> • Ignition switched off 		
			- Rotate rear left wheel at approx. 1 rev./sec.	min. 190 mV alternating voltage	- Check whether left rear ABS wheel speed sensor -G46- has been interchanged and Read measured value block ⇒ Page 01-61 , display group number 001

01-120



Switch to measuring range:					
Resistance measurement (200 Ω)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
13	3 + 14	Coding bridge	<ul style="list-style-type: none"> • Ignition switched off 	0.0 to 1.0 Ω	
					<ul style="list-style-type: none"> - Check wiring using wiring diagram <p><i>⇒ Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i></p>

01-121



Switch to measuring range:					
Voltage measurement (20 V =)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
14	-	Supply voltage for V.A.G 1551, connector T16 ¹⁾	<ul style="list-style-type: none"> • Ignition switched off - Connect multimeter V.A.G 1526 using adapter set V.A.G 1594 to connector T16¹⁾ 	10.0 to 14.5 V	
					<ul style="list-style-type: none"> - Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

¹⁾ Diagnostic connection contact assignment ⇒ [Page 01-106](#) .

01-122



Switch to measuring range:					
Resistance measurement 200 Ω					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
15	-	Resistance of K wire for V.A.G 1551 connector T16 ¹⁾	<ul style="list-style-type: none"> • Ignition switched off - Disconnect multi-pin connector from ABS control module (w/EDL) -J104- 	max. 1.5 Ω	- Check wiring using wiring diagram
					<i>⇒ Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
			- Connect test box V.A.G 1598/21		
			- Connect multimeter V.A.G 1526 to contacts T16/7 ¹⁾ and T25/7 of multi-pin connectors from ABS control module (w/EDL) -J104- using adapter set V.A.G 1594		

¹⁾ Diagnostic connection contact assignment ⇒ [Page 01-106](#) .

01-123



Functional check: ABS warning light -K47-					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
16	-	Function of ABS warning light -K47-	<ul style="list-style-type: none"> • Switch ignition on 	ABS warning light - K47- lights up for approx. 2 seconds and goes out again	
					<ul style="list-style-type: none"> - Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> - Malfunction in instrument cluster ⇒ Repair Manual, Body Interior, Repair Group 70

01-124



Functional check: Warning light for brake system -K118-					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
17	-	Function of warning light for brake system - K118-	<ul style="list-style-type: none"> • Brake fluid level is OK. • Switch ignition on 	Warning light for brake system - K118- lights up for approx. 2 seconds and goes out again	- Check brake fluid level warning switch -F34- in sealing cap ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
			- Pull connectors off both front speed sensors - Start engine and run at more than 2000 rpm	Warning light - K118- lights up and 3 warnings are sounded	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> - Malfunction in instrument cluster ⇒ Repair Manual, Body Interior, Repair Group 70
			- Reconnect connectors to both front speed sensors again - Check DTC memory and erase		

01-125



Functional check: ABS hydraulic pump -V64-					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
18	-	Function of ABS hydraulic pump - V64-	<ul style="list-style-type: none"> • Ignition switched off - Pull hydraulic pump -V64- connector T2 off control module 		
			- Connect Ground to connector T2/1 and battery voltage to connector T2/2 on hydraulic pump	Hydraulic pump runs without malfunction (max. 10 secs.)	<ul style="list-style-type: none"> - Perform output Diagnostic Test Mode (DTM) ⇒ Page 01-74 . - Replace control module.
				Hydraulic pump does not run	<ul style="list-style-type: none"> - Replace hydraulic unit. ⇒ Repair Manual, Brake System, Repair Group 45

01-126



Switch to measuring range:					
Resistance measurement (200 Ω/20 M Ω)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
19	11 +10	Data bus wiring	<ul style="list-style-type: none"> • Ignition switched off • Set to measuring range 200 Ω 		
			- Disconnect multi-pin connection from a control module which is connected via data bus wiring:		
			- Connect test box V.A.G 1598/21		
			- Check data bus wiring for open circuit	max. 1.5 Ω	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
				Test step 19: Continued on next page	

01-127



Continuation of test step 19					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
19			<ul style="list-style-type: none"> • Set to measuring range 20 M Ω 		
			- Remove fuse S9		
			- Check wiring for short circuit to positive or earth	$\infty \Omega$	
					<ul style="list-style-type: none"> - Check wiring using wiring diagram \Rightarrow <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

01-128



Switch to measuring range:					
Resistance measurement (200 Ω/20 M Ω)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
20	-	Longitudinal acceleration sensor - G251- wiring	<ul style="list-style-type: none"> • Ignition switched off • Select 200 Ω measuring range - Disconnect connector for longitudinal acceleration sensor - G251- - Disconnect multi-pin connector T25 from ABS control module (w/EDL) -J104- - Connect test box V.A.G 1598/21 		
			- Check wiring between multi-pin connector for longitudinal acceleration sensor - G251- and multi-pin connector for ABS control module (w/EDL) -J104- for open circuit	max. 1.5 Ω	- Check wiring using wiring diagram <i>⇒ Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
				Test step 20: Continued on next page.	

01-129



Continuation of test step 20					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
			<ul style="list-style-type: none"> • Set to measuring range 20 M Ω 		
			- Remove fuse S9		
			- Check wiring for short circuit to positive or Ground	$\infty \Omega$	
					<ul style="list-style-type: none"> - Check wiring using wiring diagram \Rightarrow <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

01-130



Functional check: ESP Control lamp -K155					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
21	-	Function of ESP Control lamp - K155-	<ul style="list-style-type: none"> • Switch ignition on 	ESP Control lamp - K155- lights up for 2 seconds and goes out again	
					- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> - Malfunction in instrument cluster ⇒ <i>Repair Manual, Body Interior, Repair Group 70</i>

01-131

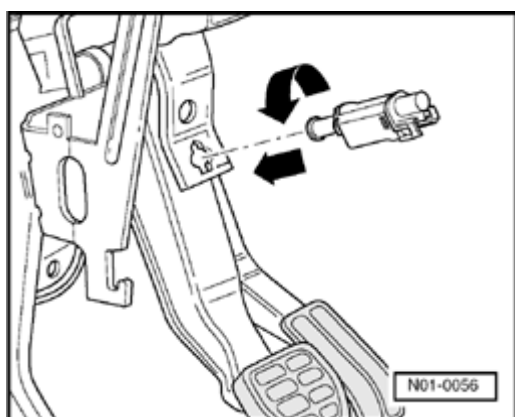


Brake light switch, adjusting

Vehicle up to my 02.00

⇒ [Repair Manual, Brake System, Repair Group 46; Installing brake light switch](#)

Remove brake light switch to adjust.



- Disconnect connector from brake light switch.
- Remove brake light switch by turning to left through 90° .
- Pull brake light switch plunger fully out.
- Press brake pedal down as far as possible by hand.
- Guide brake light switch through assembly opening and reinstall by turning 90° to right.
- Release brake pedal.
- Connect brake light switch connector.
- Install driver's side stowage tray if necessary.
- Operate brake pedal.
 - Brake lights light up.
- Take foot off brake pedal.
 - Brake lights do not light up.

01-132



Vehicle from my 03.00

- Pull out brake light switch plunger to full extension.
- Keep brake pedal in up position (IMPORTANT! hold pedal up if necessary while installing switch).
- Guide switch through mounting hole (only fits in one position).
- Seat switch fully into opening (pressing plunger against pedal to adjust).
- Seat switch by turning it 45° clockwise. This action also turns the plunger shoe into the correct orientation to make electrical contacts in switch operate as well as locks in plunger adjustment.
- Connect brake light switch connector.
- Operate brake pedal to verify proper function.
- Reinstall lower cover panel.



ABS Mark 60 On Board Diagnostic (OBD), vehicles from my 10.00

There are four versions of the ABS Mark 60.

- ◆ ABS
- ◆ ABS/EDL/ASR
- ◆ ABS/EDL/ASR/ESP with front wheel drive
- ◆ ABS/EDL/ASR/ESP with 4MOTION

Each version has its own control module. The control modules can be coded accordingly through coding bridges via tester VAS 5051 or V.A.G 1551.

The ESP (Electronic Stabilization Program) is an electronic dynamics Program (EDP). It stabilizes the vehicle when oversteering or understeering. The ESP works over the whole speed range. If the ESP is regulating the system the ESP warning lamp will flash 3 times per second.

The ESP is a further extension of the familiar vehicle safety systems.

ESP increases control over the vehicle in critical situations. It reduces the danger of skidding and increases the steering control when compared with familiar vehicle safety systems.

01-134



Function

As the control modules are interconnected with a data bus wire, always start troubleshooting by the Diagnostic Trouble Code (DTC) memories of all the control modules in the vehicle.

This occurs in "Automatic test sequence" and is activated with key function 00.

When doing this, check to see if there are DTCs stored which may influence the ABS.

The On Board Diagnostic (OBD) relates to the electrical/electronic part of the ABS, in other words only malfunctions via the electrical connection to the control module are recognized (e.g. speed sensor open circuit).

The 47 pin ABS Control Module (w/EDL) -J104- forms with the hydraulic unit a compact unit. The unit is located on the left of the engine compartment. The control module is equipped with a DTC memory. The Data Link Connector (DLC) is located in the center console below the heating/air conditioning controls.

The control module recognizes malfunctions during vehicle operation and stores them in a permanent memory, the contents of which remain even during periods of no battery voltage.

01-135



Sporadic (irregular) malfunctions will also be recognized and stored. But if malfunctions affecting the data bus system do not occur again within the next 15 vehicle start and driving off sequences, or other malfunctions within the next 50 vehicle start and driving off sequences, they will be erased from DTC memory except for the malfunction "Control module faulty" (forget-malfunction counter).

After switching on the ignition and/or starting the engine, the ABS warning light -K47- and the ESP control lamp -K155- will light up for approx. 2 seconds.

During this period a test sequence (self-check) is run in the control module for the following functions:

- ◆ To check if the supply voltage is at least 10.0 Volt,
- ◆ To check control module including the valve windings,
- ◆ To check the coding of the control module,
- ◆ A static check of the speed sensor (no speed signal),
- ◆ If the wheel speed signal is not OK after the car has been driven and a speed of approx. 20 km/h (approx. 13 mph) has been exceeded, the ABS warning light -K47- will light up again.



Features of 4MOTION

In order to utilize the engine's maximum performance for a test, e.g. on a rolling road test bed, the longitudinal acceleration sensor - G251- must be switched off ⇒ [Page 01-264](#) , Initiating basic setting, Display group number 040.

Switch ignition off and on again to reactivate the longitudinal acceleration sensor -G251-.

All-wheel drive vehicles with a Haldex coupling are equipped with EDL (Electronic Differential Lock).

Special detail for bleeding brake systems with ABS/EDL

If a chamber in the brake fluid reservoir has run empty, basic setting must be performed for bleeding the brakes ⇒ [Page 01-264](#) .

V.A.G 1551 scan tool or tester VAS 5051

The On Board Diagnostic must be initiated at the commencement of troubleshooting. Electrical malfunctions which influence the braking characteristics will be stored.

They can be checked with the V.A.G 1551 Scan Tool, Vehicles system tester V.A.G 1552 or Vehicle Diagnosis, Testing and Information System VAS 5051.

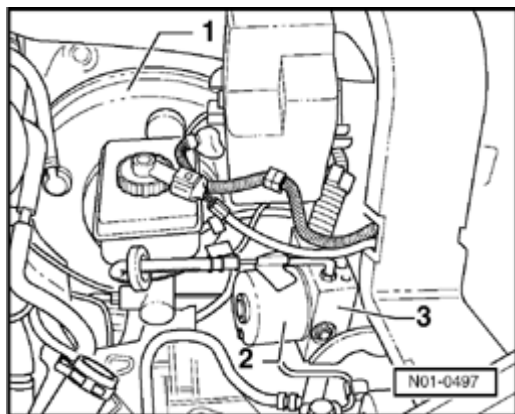
The program card in the V.A.G 1551 must be at least version 9.0 and in vehicle system tester V.A.G 1552, at least version 6.0.

01-137



Arrangement of ABS MARK 60

The brake booster boost is produced by vacuum pressure.



Distinguishing features:

- 1 - 10" brake booster
- 2 - Hydraulic unit
- 3 - Control module, 47-pin (bolted to hydraulic unit). Two 4.8 mm wide contacts are located at each end of the connection.



Technical data

Control module identification

The version of the control module is displayed after the V.A.G 1551 scan tool or the tester VAS 5051 has been connected and the control module for brake electronics has been selected ⇒ [Page 01-163](#) .

1C0 907 379 C / ABS
J

1C0 907 379 D / ABS/EDL/ASR
K

1C0 907 379 E / ABS/EDL/ASR/ESP
G

1C0 907 379 F / ABS/EDL/ASR/ESP
H 4MOTION

Diagnostic Trouble Code (DTC) memory

A non-volatile memory ensures that the contents of the DTC memory are retained even without voltage.

Data output takes place on V.A.G 1551 scan tool in operating mode 1 (rapid data transfer), and on tester VAS 5051 in operating mode "vehicle OBD".



Safety precautions and fundamental points regarding troubleshooting

Note:

- ◆ *The ABS is a vehicle safety system; the appropriate knowledge is necessary to work on the system.*
- ◆ *In order to check complaints and to be able to carry out pin-pointed troubleshooting, the Diagnostic Trouble Code (DTC) memory must be checked before commencing work on the ABS system.*
- ◆ *Only separate connectors when the ignition is switched off.*
- ◆ *Observe the appropriate instructions regarding the handling of brake fluid.*

⇒ [Repair Manual, Brake System, Repair Group 47](#)

- ◆ *ABS malfunctions are indicated by the ABS warning light illuminating. Certain malfunctions will only be recognized at speeds above 20 km/h (approx. 13 mph) (carry out road test).*
- ◆ *If the ABS -K47- and the brake system -K118- warning lights do not illuminate, but the brake system is not functioning correctly then the malfunction must be sought in the conventional braking system.*

⇒ [Repair Manual, Brake System, Repair Group 45](#)

01-140



Technical information

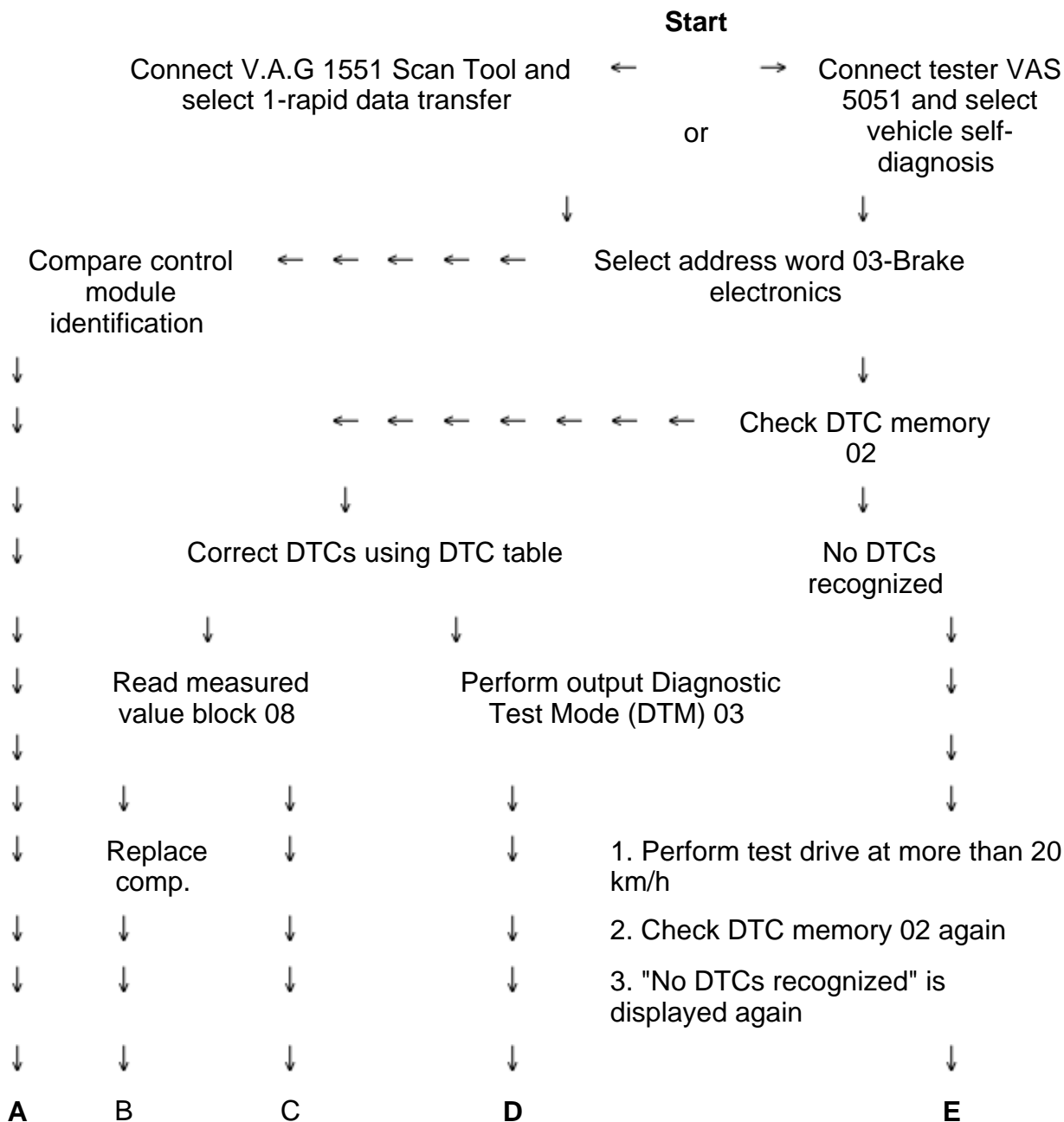
Electrical Wiring Diagrams, Troubleshooting &Component Locations binder
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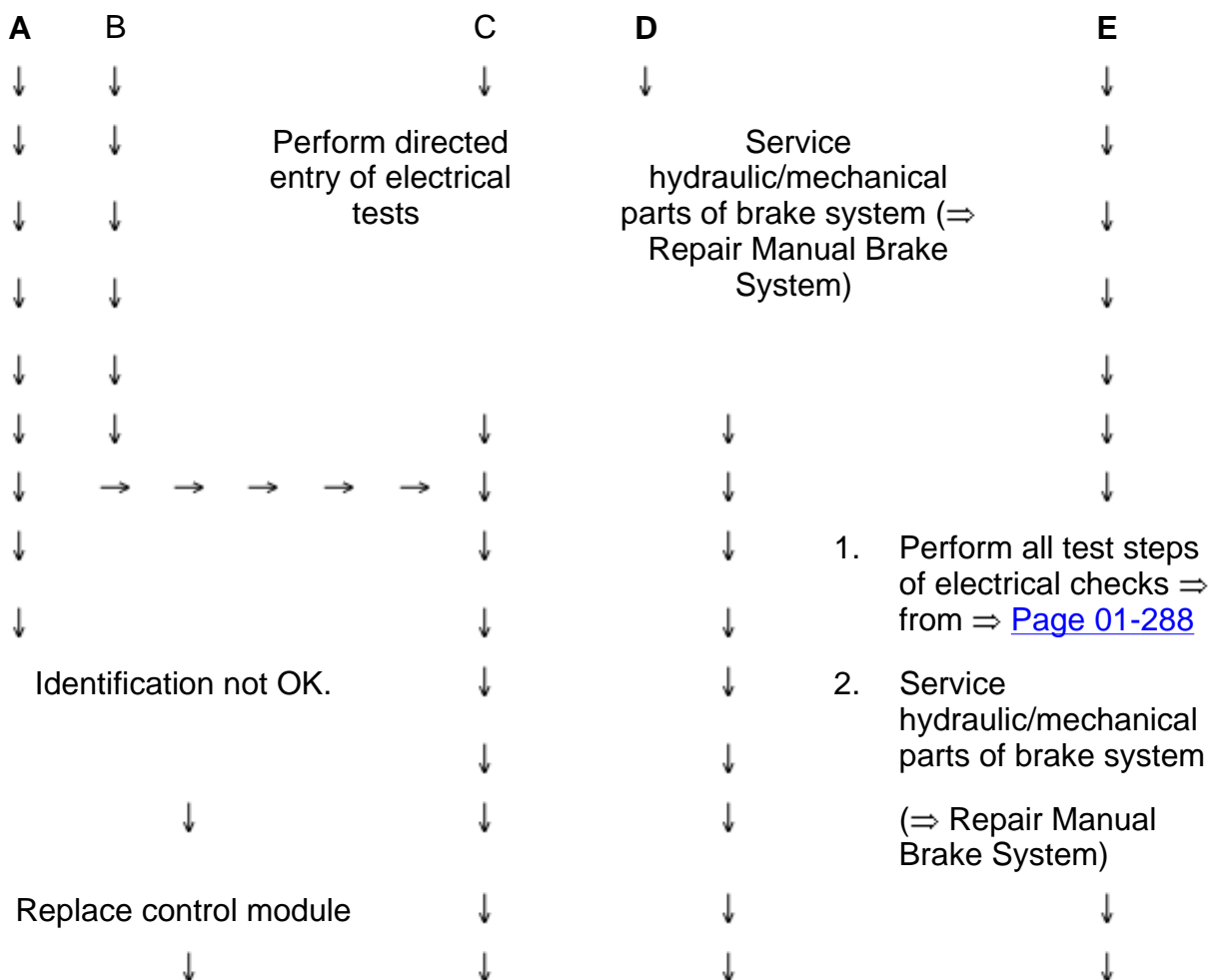
Repair Manual, Brake System

Repair Manual, Suspension, Wheels, Steering
--



Troubleshooting with V.A.G 1551 scan tool or tester VAS 5051 on ABS Mark 60 (flow chart)

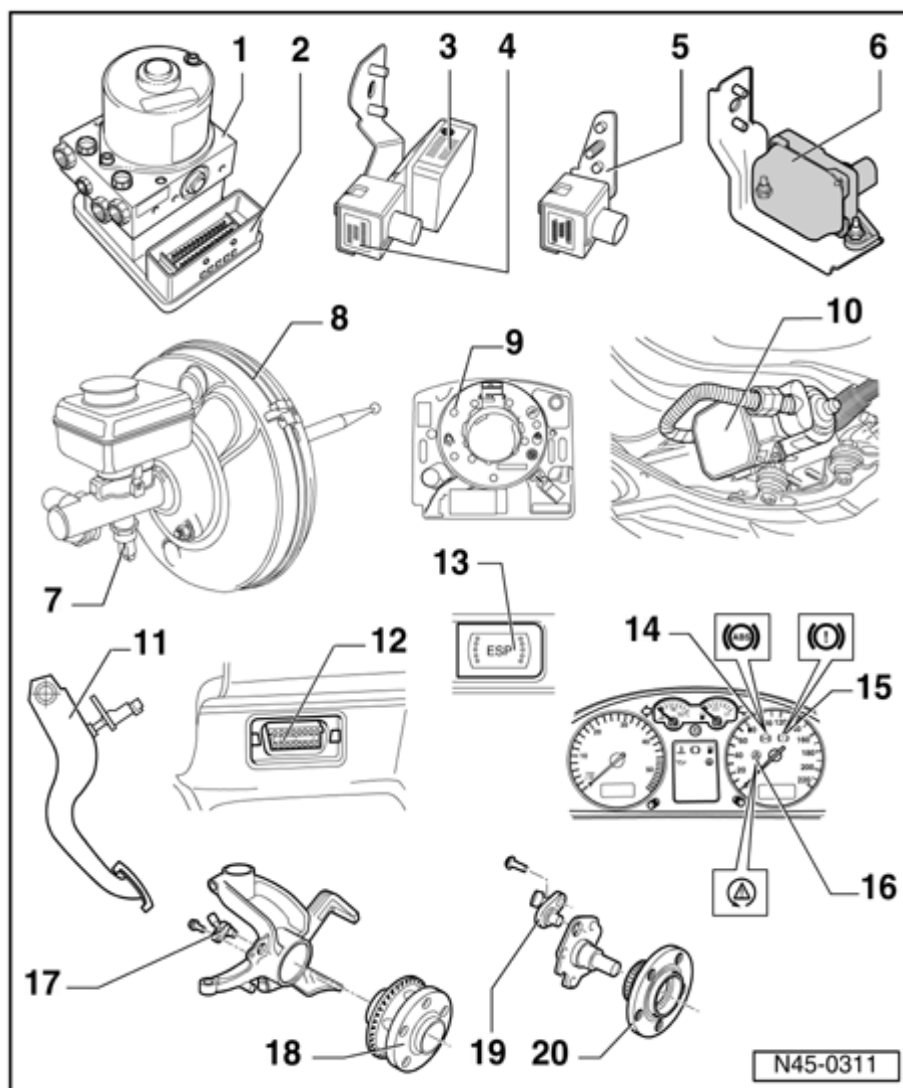




1. Perform all test steps of electrical checks ⇒ from ⇒ [Page 01-288](#)
2. Service hydraulic/mechanical parts of brake system (⇒ Repair Manual Brake System)

- Connect V.A.G 1551 scan tool or tester VAS 5051 and check DTC memory 02.
- Erase DTC memory (05)
- Perform test drive at more than 20 km/h (13 mph) and allow the ABS regulate braking.
- Check DTC memory after test drive. If "No DTC recognized" appears on display of V.A.G 1551 scan tool or tester VAS 5051 after repair DTCs and perform test drive, the On Board Diagnostic (OBD) is completed.

01-143



Electrical/electronic components and installing locations

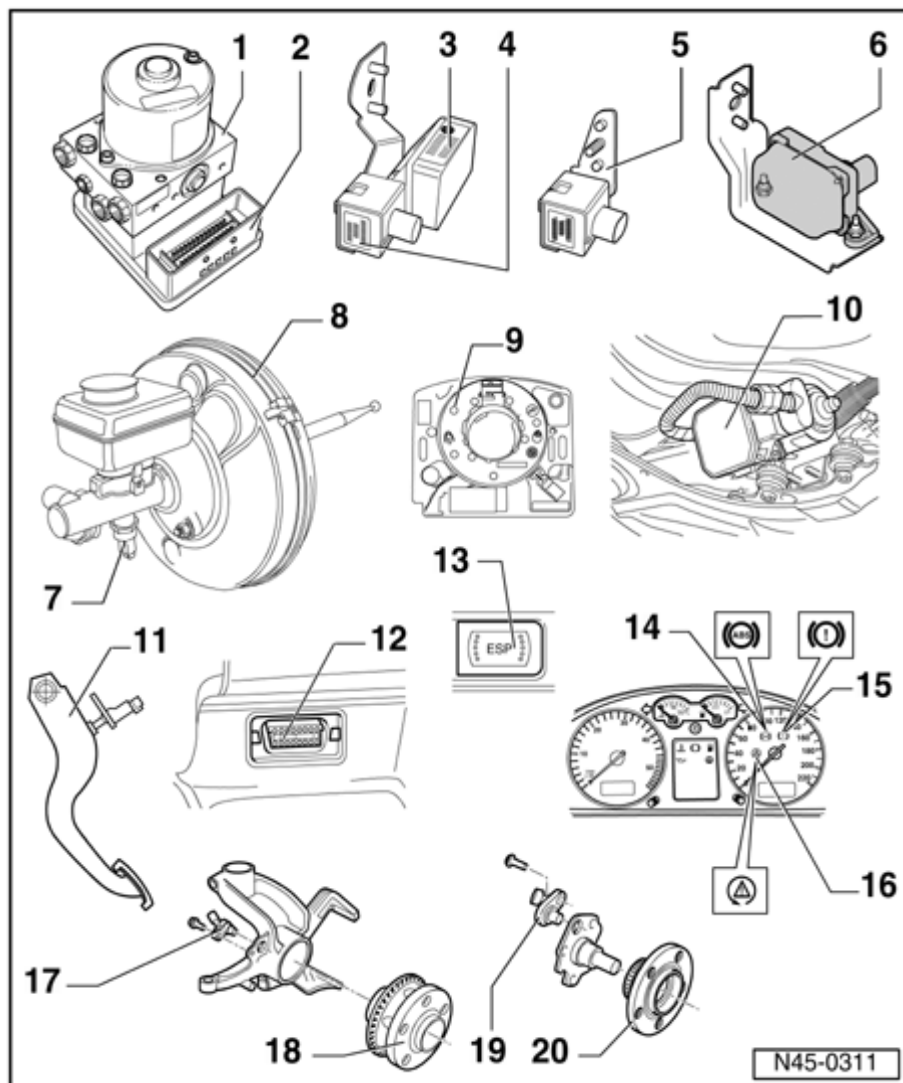
1 - ABS hydraulic unit N55-

- ◆ Located on left of engine compartment
- ◆ The ABS hydraulic pump -V64- and the inlet/outlet valves in the hydraulic unit are checked by On Board Diagnostic (OBD)
- ◆ The ABS hydraulic pump -V64- and valve block must not be separated from one another
- ◆ Removing and installing

⇒ [Repair Manual, Brake System, Repair Group 45; Hydraulic unit, brake booster/master cylinder - Assembly overview; Removal and installing control module and hydraulic control part](#)

- ◆ When changing the hydraulic unit, always seal the old part with the plugs from the repair set Part No. 698 311 A

01-144



2 - ABS Control Module (w/EDL) - J104-

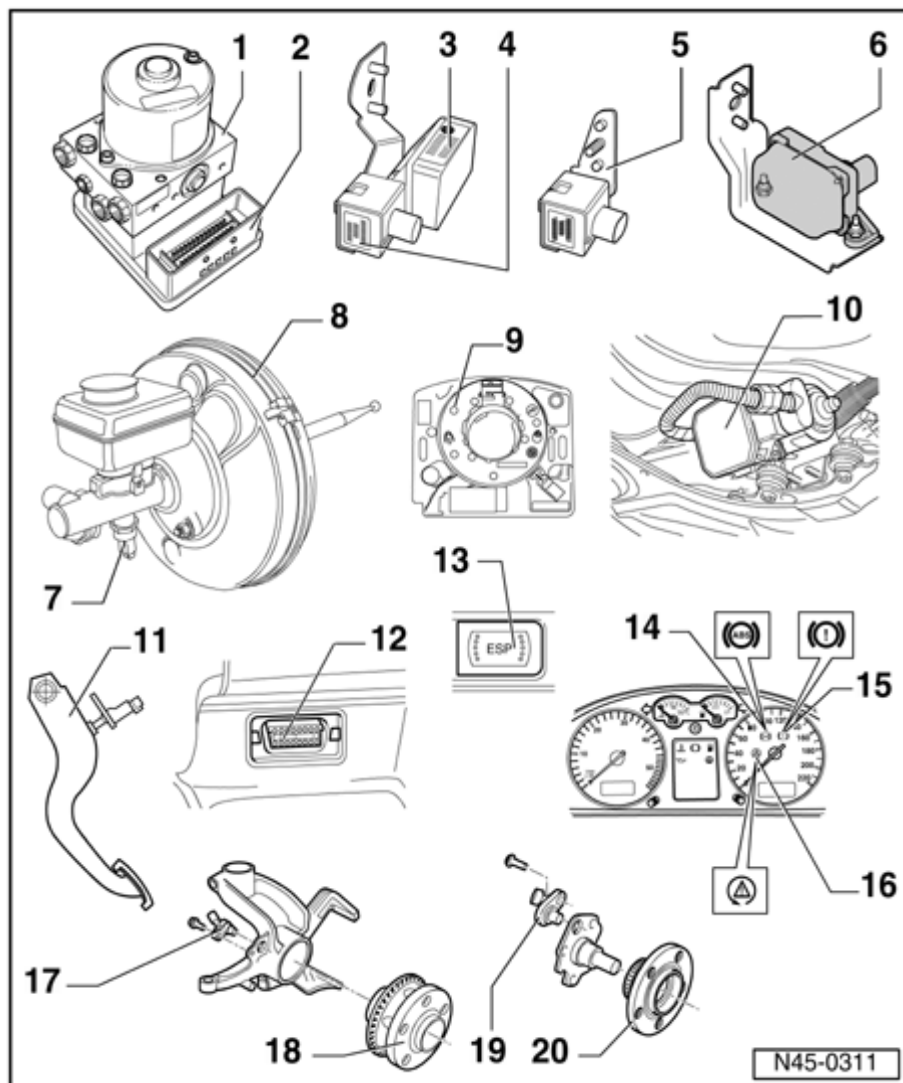
- ◆ Location: on hydraulic unit on left of engine compartment
- ◆ Checked by On Board Diagnostic (OBD)
- ◆ Checking the multi-pin connector to control module ⇒ [Page 01-292](#)
- ◆ Do not disconnect connector before successfully completing On Board Diagnostic (OBD). Switch ignition off before separating connection.

Vehicles with ABS/ESP only

- ◆ When the ABS Control Module (w/EDL) - J104- is replaced, a zero compensation must be performed

- ◆ Initiate basic setting ⇒
[Page 01-264](#) ,
perform display group numbers 060, 063, 066 and 069

01-145



3 - Sender for Rotation Rate - G202-

- ◆ Vehicles with ABS/EDL/ASR/ESP only

- ◆ Location: Under instrument panel next to steering column

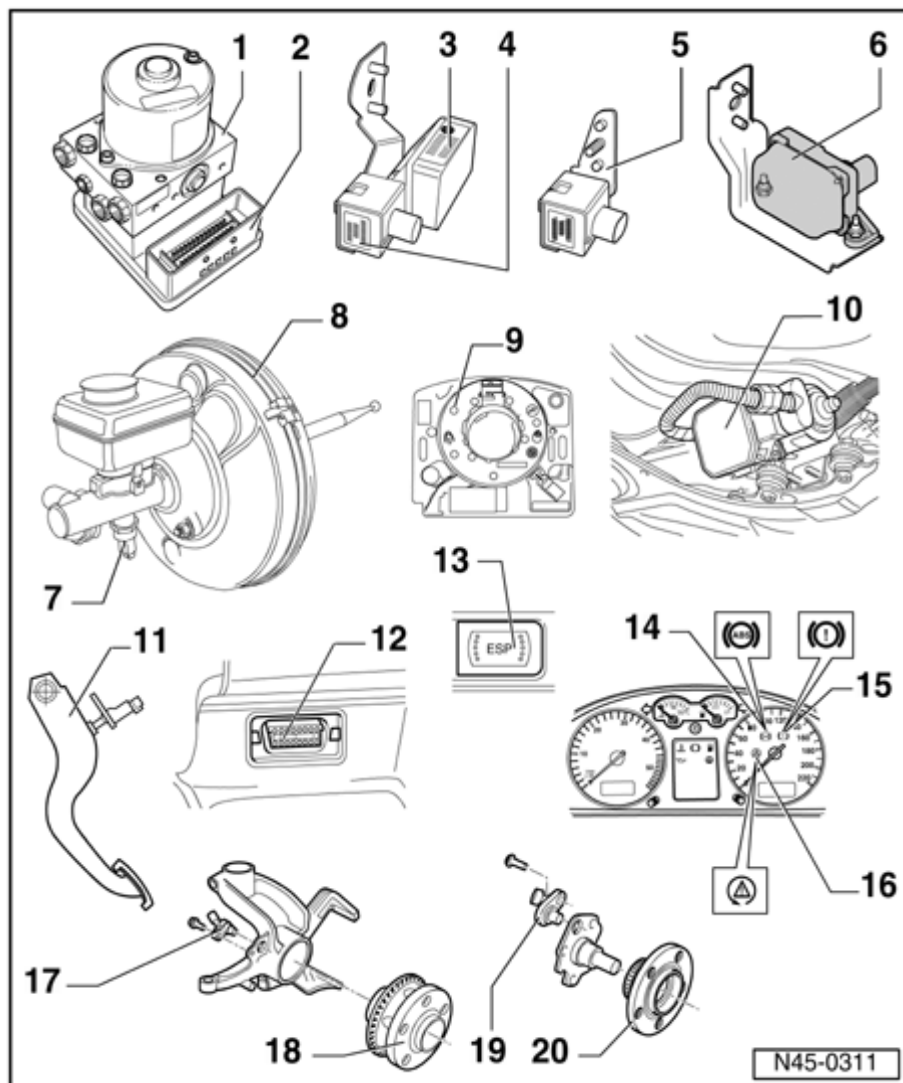
- ◆ Checked by OBD

- ◆ Can be checked via read measured value block ⇒ [Page 01-240](#)

- ◆ Observe installation instructions

⇒ [Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system](#)

01-146



4 - Sensor for transverse acceleration - G200-

- ◆ Vehicles with ABS/EDL/ASR/ESP only

- ◆ Location: Under instrument panel next to steering column

- ◆ Checked by OBD

- ◆ Can be checked via read measured value block ⇒ [Page 01-240](#)

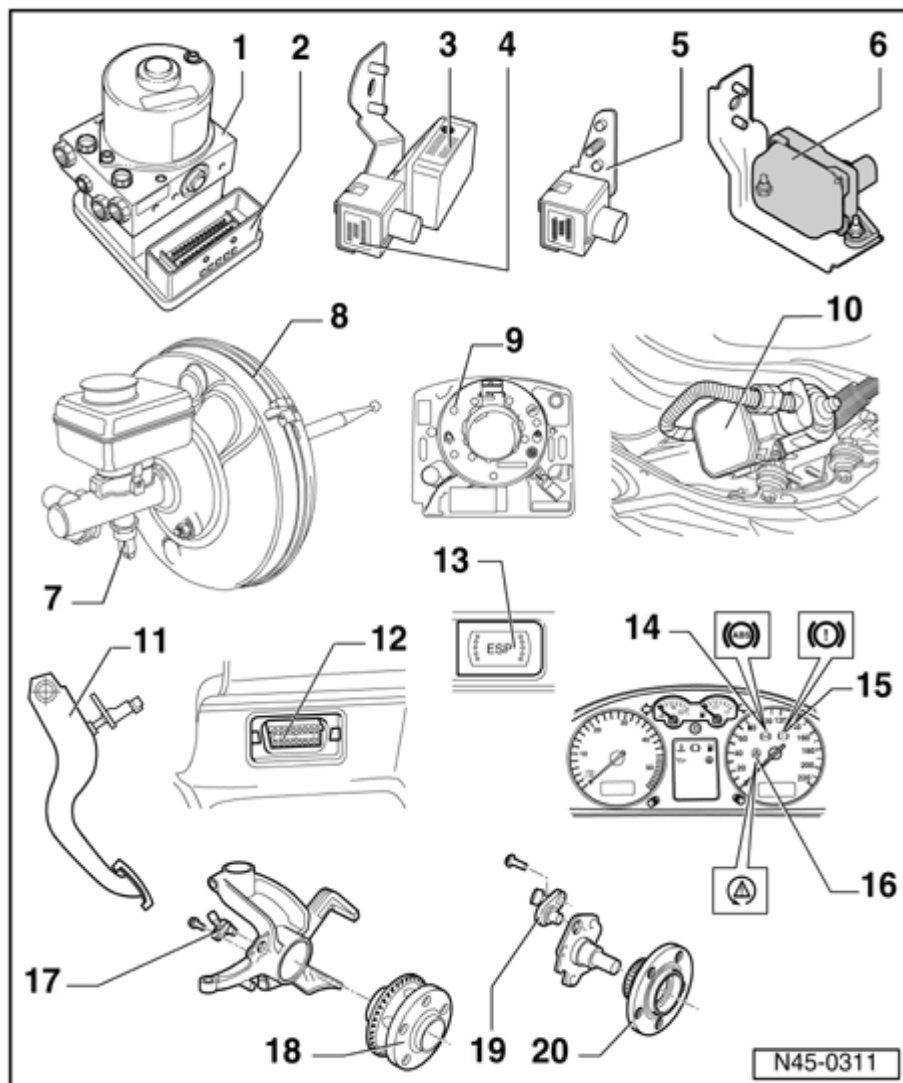
- ◆ Observe installation instructions

⇒ [Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system](#)

- ◆ When the sensor for transverse acceleration - G200- is replaced, a zero compensation must be performed

- ◆ Initiate basic setting ⇒ [Page 01-264](#) , perform display group number 063

01-147



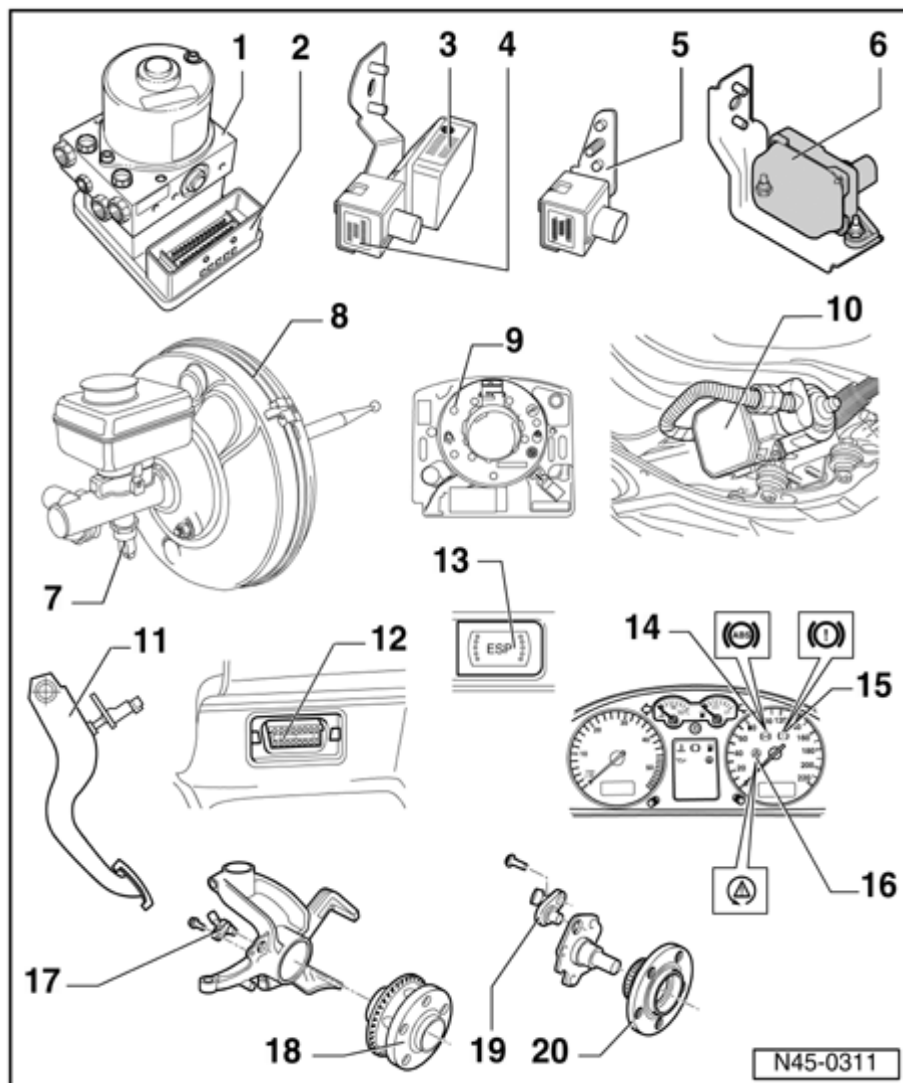
5 - Longitudinal acceleration sensor -G251-

- ◆ Vehicles with 4MOTION only
- ◆ Location: On right A pillar at height of instrument panel
- ◆ Checked by OBD
- ◆ Can be checked via read measured value block ⇒ [Page 01-240](#)
- ◆ Observe installation instructions

⇒ [Repair Manual, Brake System, Repair Group 45](#)

- ◆ When the lateral acceleration sensor - G251- is replaced, a zero compensation must be performed
- ◆ Initiate basic setting ⇒ [Page 01-264](#) , perform display group number 069

01-148



6 - ESP-Sensor unit -G419-, vehicles from 02.02

- ◆ Vehicles with ABS/EDL/ASR/ESP only

- ◆ Combined sensor for transverse acceleration - G200-, sender for rotation rate -G202- and longitudinal acceleration sensor¹⁾ - G251-

- ◆ Assembled together in one housing

- ◆ Checked electrically by On Board Diagnostic (OBD)

- ◆ Combined in one housing

- ◆ Can be checked via read measured value block ⇒ [Page 01-240](#)

- ◆ Observe installation instructions

⇒ [Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system](#)

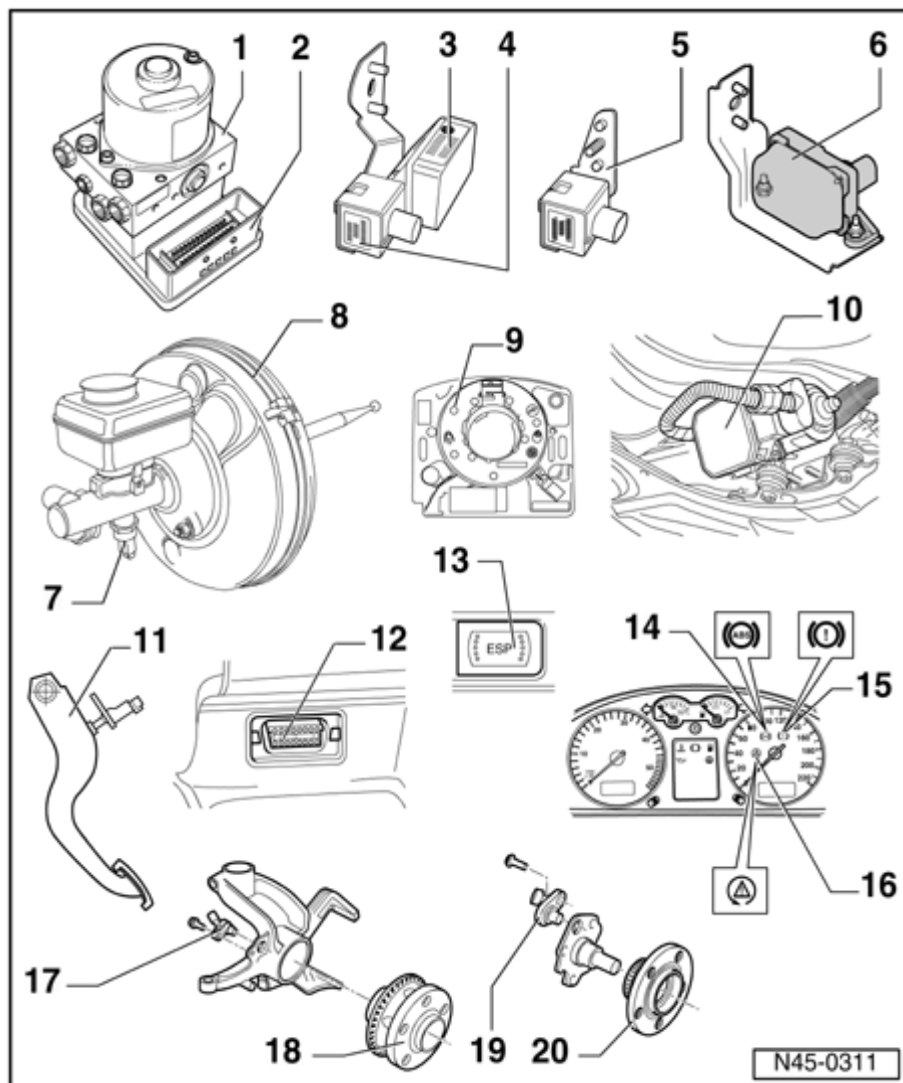
- ◆ When the

ESP-sensor unit -G419- is replaced, a zero compensation must be performed

- ◆ Initiate basic setting ⇒ [Page 01-264](#) , perform display group numbers 063 and 069

1) 4Motion vehicles with Haldex clutch only

01-149



7 - Sender 1 for brake booster - G201-

- ◆ Vehicles with ABS/EDL/ASR/ESP only

- ◆ Checked by OBD

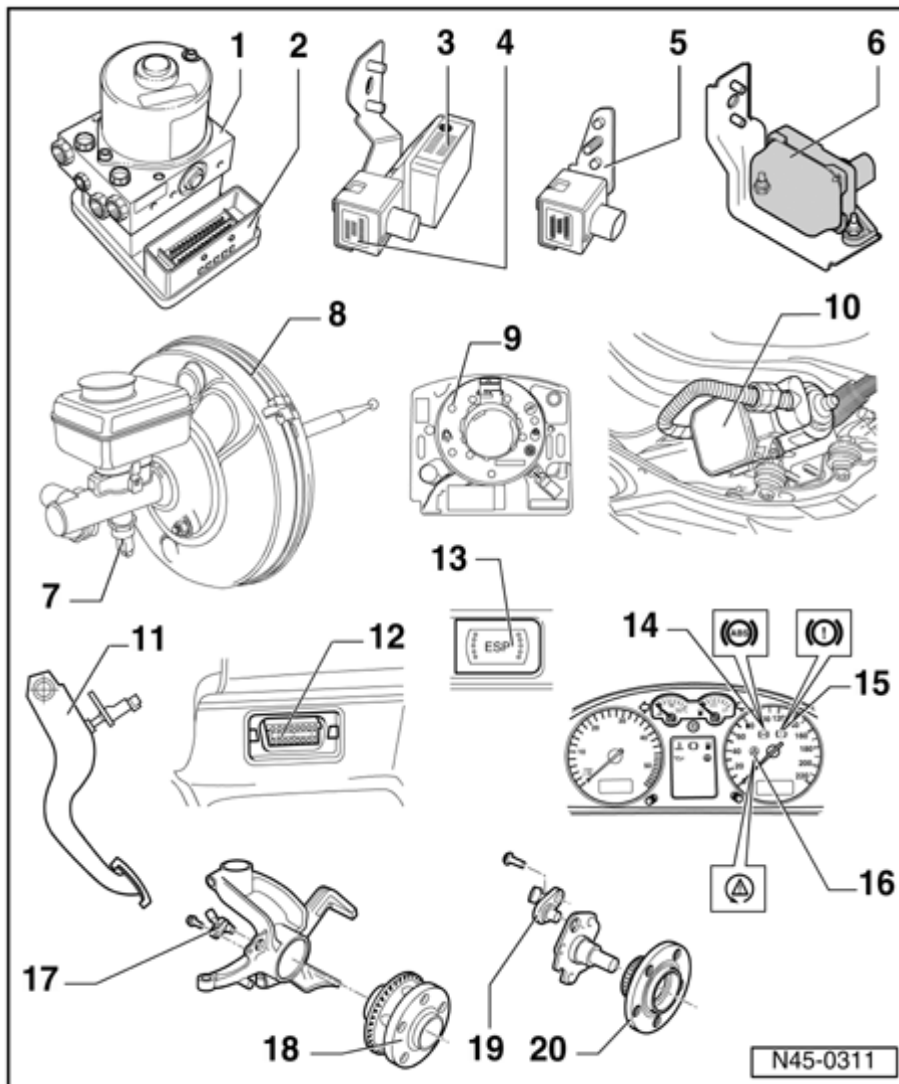
- ◆ Can be checked via read measured value block ⇒ [Page 01-240](#)

- ◆ Removing and installing

⇒ [Repair Manual, Brake System, Repair Group 47; Assembly overview: Brake booster/brake master cylinder for vehicles with ABS/EDL/ASR/ESP](#)

- ◆ When the sender 1 for brake booster -G201- is replaced, a zero compensation must be performed

- ◆ Initiate basic setting ⇒ [Page 01-264](#) , perform display group number 066

**8 - Brake booster****9 - Steering angle sensor -G85-**

- ◆ Vehicles with ABS/EDL/ASR/ESP only

- ◆ Location: On steering column between steering wheel and steering column switch.

- ◆ Checked by OBD

- ◆ Can be checked via read measured value block ⇒ [Page 01-240](#)

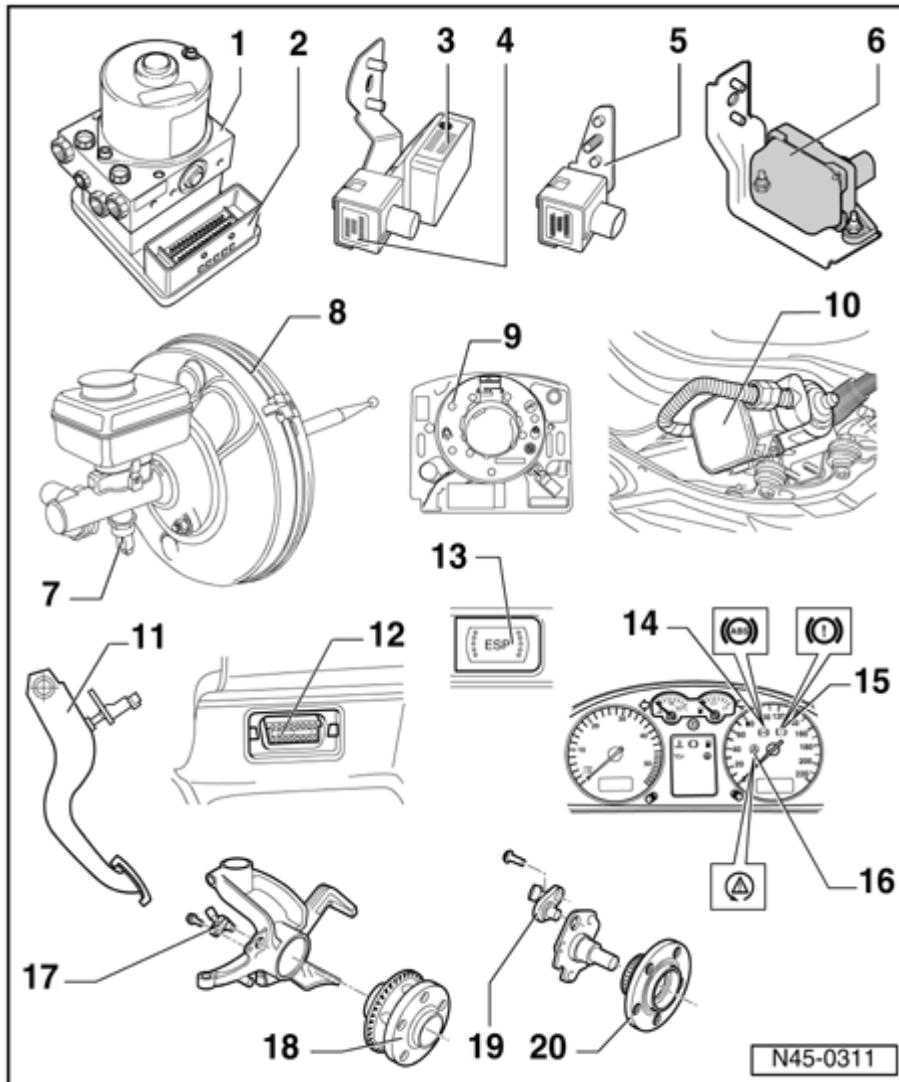
- ◆ Observe installation instructions

⇒ [Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system](#)

- ◆ When the steering angle sensor -G85- is replaced, a zero compensation must be performed

- ◆ Introduce basic setting ⇒ [Page 01-264](#), perform display group number 060

01-151



10 - Brake system vacuum pump -V192-

- ◆ Not installed in all vehicles
- ◆ Location: left of subframe
- ◆ Checked by OBD in engine control module
- ◆ Removing and installing

⇒ [Repair Manual, Brake System, Repair Group 47; Brake system vacuum pump -V192](#)

- ◆ Checking

⇒ [Repair Manual, Brake System, Repair Group 47; Brake system vacuum pump -V192](#)

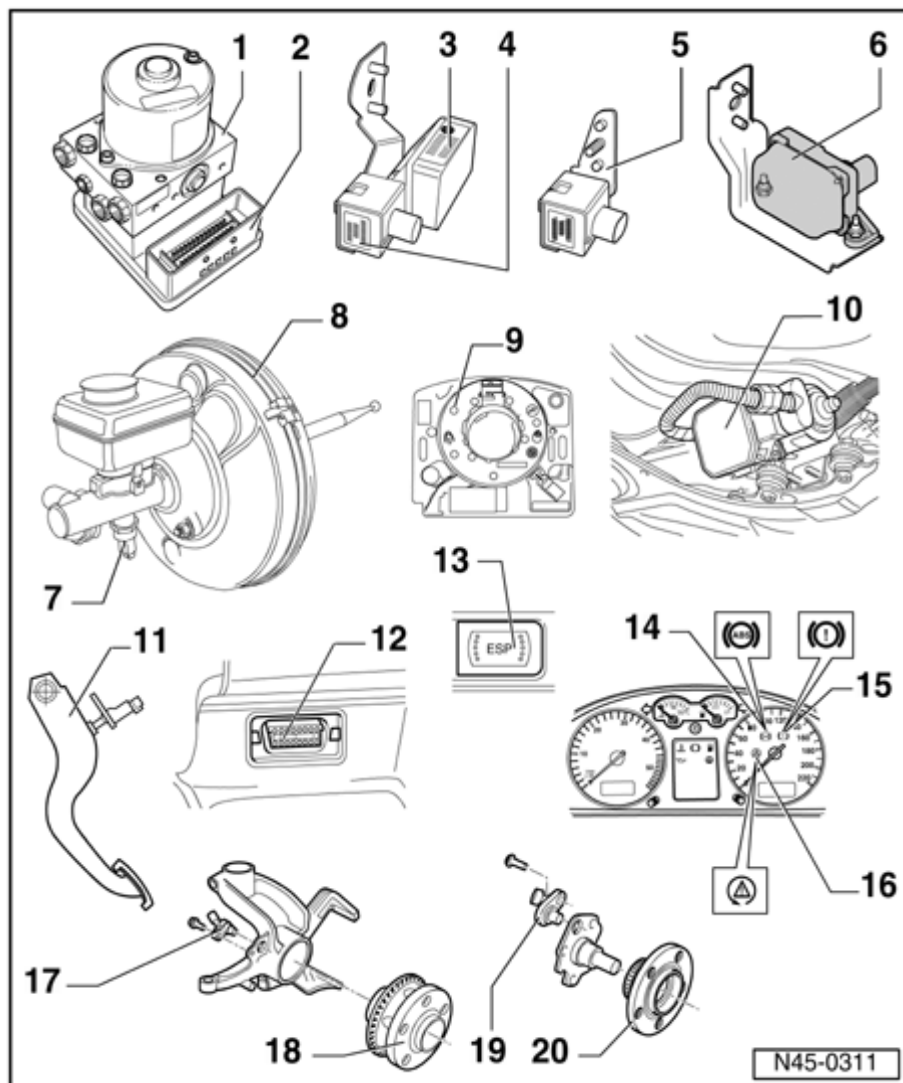
11 - Brake light switch -F-

- ◆ The brake light switch is open in the rest position;
- ◆ Can be checked via read measured value block
⇒ [Page 01-240](#)
- ◆ Adjusting

⇒ [Repair Manual, Brake System, Repair Group 46;](#)

[Brake pedal -
Assembly overview;
Adjusting brake light
switch](#)

01-152



12 - Data Link Connector (DLC)

- ◆ Location: In center console below heating/air conditioning controls module

13 - Button for ASR/ESP - E256-

- ◆ Vehicles with ABS/EDL/ASR/ESP only

14 - ABS warning light -K47-

- ◆ Location: In the instrument cluster

Function: ⇒
[Page 01-155](#)

15 - Warning light for brake system -K118-

- ◆ Location: In the instrument cluster

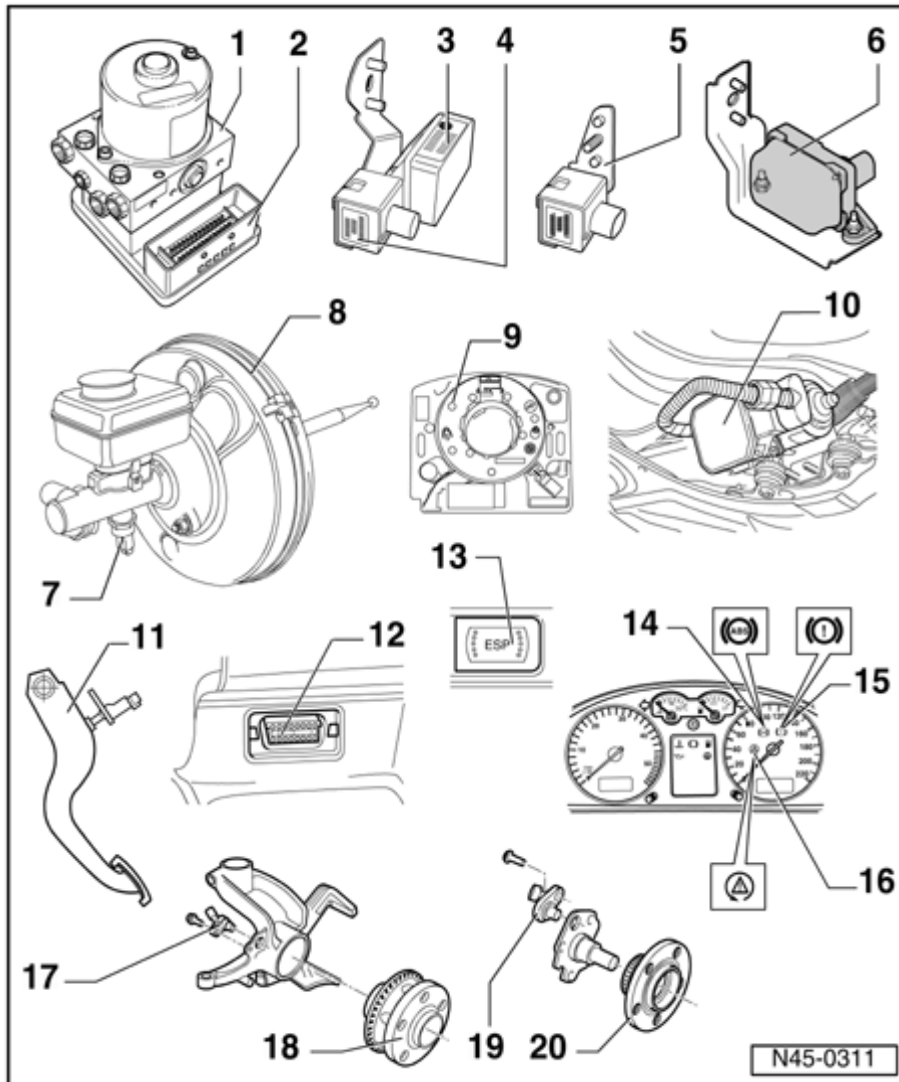
Function: ⇒
[Page 01-155](#)

16 - ASR/ESP Control Lamp - K155-

- ◆ Location: In the instrument cluster

Function: ⇒
[Page 01-155](#)

01-153



17 - Right/left front ABS wheel speed sensor -G45/-G47-

- ◆ Checked by OBD
- ◆ Before inserting the sensor clean the inner surface of the sensor mounting and coat with lubricating paste G 000 650
- ◆ When connecting the speed sensor wire make sure it is not twisted in the wheel housing
- ◆ Securing bolt tightening torque - 10 Nm (7.4 ft lb)

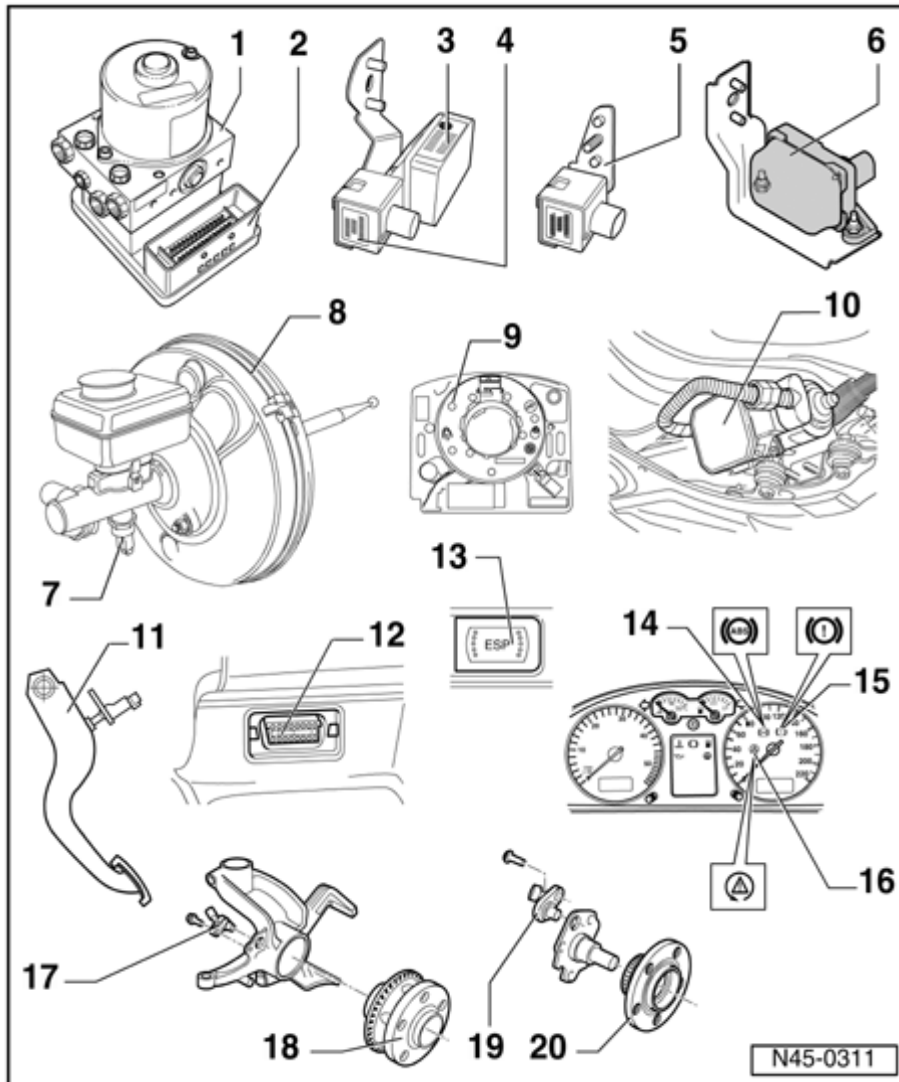
18 - Wheel hub with rotor for speed sensors

- ◆ Rotor and speed sensors for left front and right-hand sides are identical
- ◆ Removing and installing

⇒ [Repair Manual, Suspension, Wheels.](#)

*Steering, Repair
Group 40; Servicing
front suspension; II -
Servicing wheel
bearings*

01-154



19 - Right/left rear speed sensor -G44-/G46-

- ◆ Checked by OBD
- ◆ Before inserting the sensor clean the inner surface of the sensor mounting and coat with lubricating paste G 000 650
- ◆ When connecting the speed sensor wire make sure it is not twisted in the wheel housing
- ◆ Securing bolt tightening torque - 10 Nm (7.4 ft lb)

20 - Wheel hub with rotor for speed sensors

- ◆ Rotor and speed sensors for left rear and right-hand sides are identical
- ◆ Removing and installing

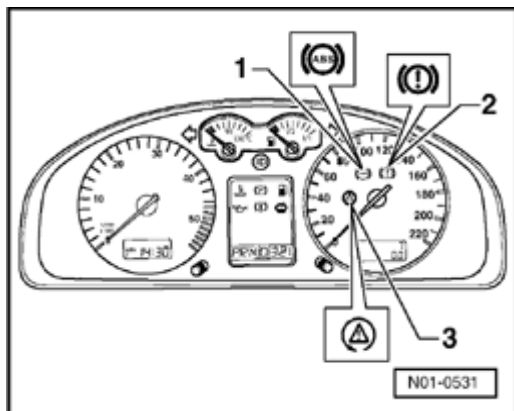
⇒ [Repair Manual, Suspension, Wheels, Steering, Repair Group 42; Servicing](#)

[*wheel bearings*](#)

01-155



Diagnostic Trouble Codes (DTCs) displayed by warning lights -K47-, -K118- and -K155-

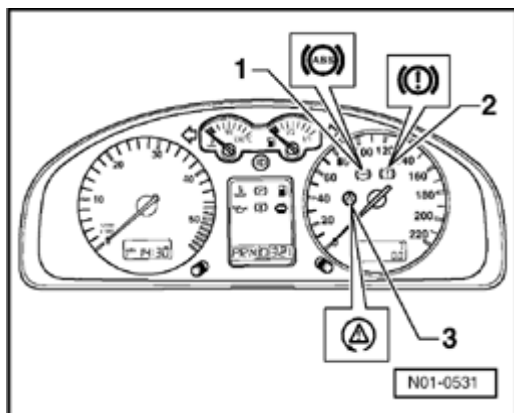


A

Warning lamps

Item	Designation
1	ABS warning light -K47-
2	Warning light for brake system - K118-
3	ASR/ESP Control Lamp -K155-

01-156



ABS warning light -K47-

- ◆ If the ABS warning light -K47- -1- does not go out after switching ignition on and completion of test sequence then the malfunction may be:

-a- Voltage supply is below 10 Volt

-b- There is a malfunction in the ABS

The anti-locking brake system remains switched off with an ABS malfunction -b-, but the brake system remains fully operational.

-c- Since the last time the vehicle was started there was a temporary speed sensor malfunction.

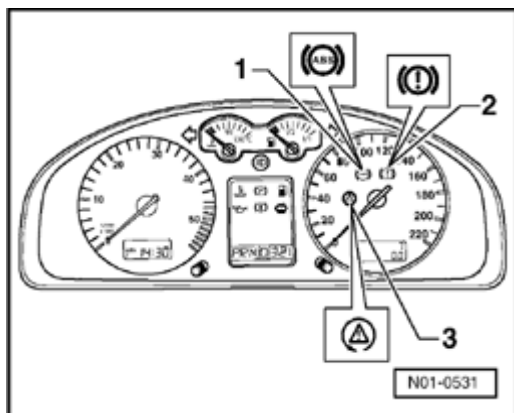
In the case of a sensor malfunction -c-, the ABS warning light -K47- will extinguish after restarting the engine and attaining a speed of above 20 km/h (approx. 13 mph).

-d- The connection from instrument cluster to ABS Control Module (w/EDL) - J104- is interrupted (open circuit).

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

-e- Instrument cluster is faulty.

01-157



Warning lights -K47- and -K118-

- ◆ If the ABS warning light -K47- -1- goes out but the warning light for brake system -K118- -2- remains on, then the malfunction may be:

-a- The parking brake is applied.

-b- There is a malfunction in the activation of the warning light for brake system -K118-.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

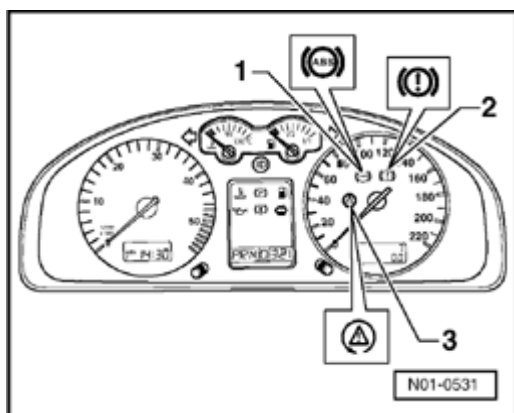
-c- The brake fluid level is too low.

- ◆ If the ABS warning light -K47- -1- and the warning light for brake system -K118- -2- illuminate, the ABS system is faulty and the EBD (Electronic brake pressure distribution) is not functioning.

WARNING!

After the ABS warning light -K47- and warning light for brake system -K118- have illuminated, it is possible that the rear wheels will lock-up earlier when braking.

01-158



ASR/ESP Control Lamp -K155-

◆ If the ESP control lamp -K155- -3- does not go out after ignition is switched on and test sequence is completed then the malfunction may be:

-a- Short to positive in ASR/ESP button -E256-.

-b- There is a malfunction in the activation of the ESP control lamp -K155-.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

-c- The ASR/ESP system has been switched off via ASR/ESP button -E256-.

There is a malfunction present which only affects the safety systems of the ASR/ESP. The ABS/EDL and EBD safety systems of the vehicle remain fully functional.

If ASR/ESP control lamp -K155- flashes while driving, the ASR or ESP system is regulating the system.

01-159



On Board Diagnostic (OBD), performing

Test prerequisites for OBD

- The tires installed to all wheels must be of the same (approved) size; tires inflated to prescribed pressure.
- Mechanical/hydraulic parts of the brake system including brake light switch and brake lights OK.
- Hydraulic lines and connections not leaking (visual check of hydraulic unit, brake calipers, wheel cylinders, tandem master brake cylinder).
- ABS Control Module (w/EDL) -J104- is correctly bolted to ABS Hydraulic Unit - N55-.
- Connector on ABS Control Module (w/EDL) -J104- correctly plugged-in (retainer is engaged).
- Check contacts of ABS components for damage and correct seating.
- All fuses according to wiring diagram OK (remove fuse from fuse holder to check).
- Supply voltage OK (at least 10.0 V).

01-160



- Access to the OBD is only possible when the vehicle is stationary and ignition turned on (or engine running).
- Wheel bearings and wheel bearing play are OK.
- When checking the ABS system make sure that the vehicle electric system is not affected by electro-magnetic interference, i.e. the vehicle is kept away from equipment with a high current draw, e.g. from an electric welding module.

Safety precautions

WARNING!

- ◆ ***You must always secure testing and measuring equipment on the rear seat.***
- ◆ ***When vehicle is being driven, a second technician must operate this equipment.***

01-161

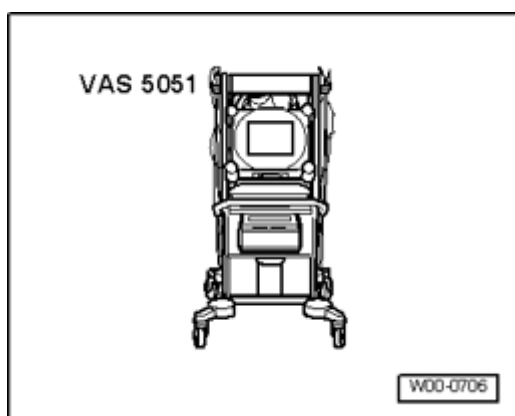


Scan tool, connecting

All functions which could previously be performed with V.A.G 1551/1552 can also be performed with the new tester VAS 5051 in the operating mode vehicle OBD.

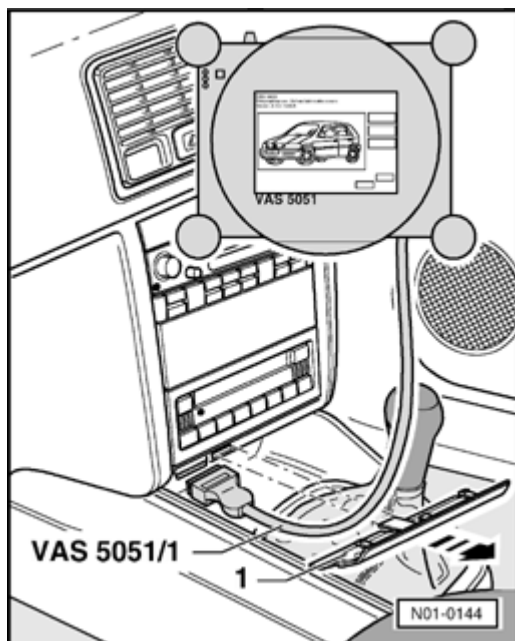
⇒ *Operating instructions for Vehicle Diagnosis, Testing and Information System VAS 5051.*

Special tools and equipment



- ◆ VAS 5051 Vehicle Diagnosis, Testing and Information System
- ◆ Diagnostic cable VAS 5051/1 or VAS 5051/3
- ◆ The ABS function is switched off in the control module during the On Board Diagnostic (OBD).
- ◆ The Diagnostic Trouble Code (DTC) memory can be erased after successfully checking and repair.

01-162



Connecting VAS 5051

- Pull cover -1- off in direction of -arrow-.
- With ignition switched off, connect tester VAS 5051 to Data Link Connector using diagnosis cable VAS 5051/1 or VAS 5051/3.

Selecting operating mode:

- Press button on display for "Vehicle On Board Diagnostic (OBD)".

Selecting vehicle system:

- Press button "03 - brake electronics" on the display.

The control module identification and coding are indicated on the display.

Selecting diagnosis function:

All diagnostic functions available are indicated on the display.

- Press button on display for desired function.
- Further measures see repair procedures.

Note:

The following test sequences are for V.A.G 1551 scan tool.

01-163

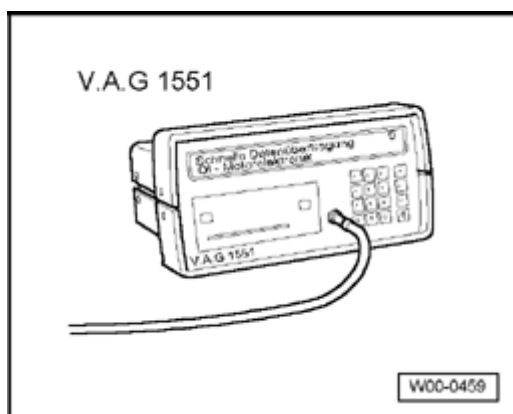


V.A.G 1551 scan tool, connecting and selecting function

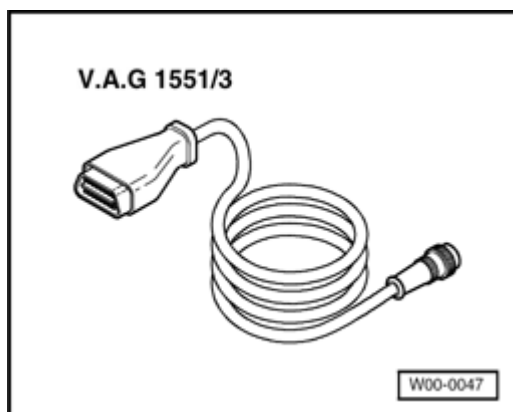
Note:

All functions that have so far been carried out with V.A.G 1551 can now also be carried out with the tester VAS 5051.

Special tools and equipment



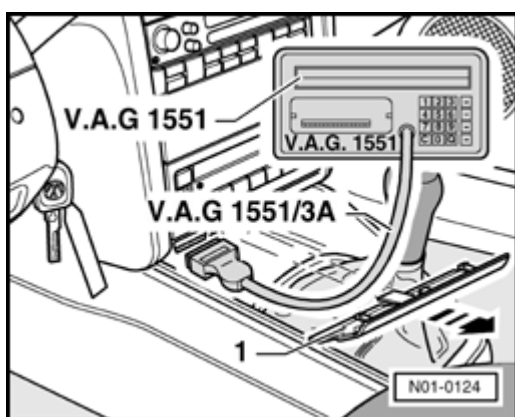
- ◆ V.A.G 1551 or V.A.G 1552 scan tool vehicle system tester.



- ◆ V.A.G 1551/3 or 1551/3A adapter cable

**Note:**

- ◆ The ABS function is switched off in the control module during the OBD. This is indicated by the flashing of ABS warning light -K47- and warning light for brake system -K118-. If there is a malfunction currently, it will be indicated by the lights being on constantly.
- ◆ The DTC memory can be erased after successful check and repair.



V.A.G - On Board Diagnostic HELP

1 - Rapid data transfer1)

2 - Blink code output1)

- With ignition switched off, connect V.A.G 1551 to diagnostic connection using cable V.A.G 1551/3 A.
- Connect VAS 5051 ⇒ [Page 01-31](#) .

Indicated on display:

1) Is displayed alternately

If the display remains blank, check Data Link Connector connection, Electrical check, ⇒ [Page 01-288](#) , test steps 21 and 22.

Note:

- ◆ Depending on the program, additional operating information can be printed out by pressing the HELP key of V.A.G 1551.
- ◆ The → key is used for moving forward within the program
- ◆ The PRINT key is used for switching on the printer (warning lamp in key comes on).

01-165



- Switch on ignition.
- Switch on printer with the Print key (indicator lamp in key lights up).
- Press key -1- for "Rapid data transfer" operating mode.

Rapid data transfer
Enter address word XX

HELP



Indicated on display:

- Press keys -0- and -3-; 03 to input address word of vehicle system to be tested: "Brake electronics".

Rapid data transfer
03 - Brake electronics

Q



Indicated on display:

- Confirm input with Q key.

1C0 907 379 E ESP FRONT MK60 0103 →

Coding 0011266

WSC XXXXX



And then the display shows e.g.:

Displayed is:

- ◆ The control module identification number.

e.g. (1C0 907 379 E).

Allocation of control module see Parts catalog



◆ System designation (ESP).

◆ Type of drive (front wheel).

◆ ABS (Mark 60).

◆ Control module coding (0011266).

Coding control module ⇒ [Page 01-232](#) .

◆ Workshop code

⇒ *V.A.G 1551 scan tool operating instructions*

If the control module identification number does not appear; Summary of functions ⇒ [Page 01-168](#) .

- Press → key.

Rapid data transfer HELP
Select function XX



Indicated on display (select function, e.g. 02
- Interrogate fault memory).

Rapid data transfer HELP
Control module does not answer!



Indicated on display:

- By pressing the HELP key, a list of possible fault causes is printed out.
- After eliminating the possible causes of malfunctions, enter the address word 03 for "Brake electronics" again and confirm.

01-167



Rapid data transfer HELP
control module does not answer!



If "control module does not answer!" again appears:

Indicated on display:

- Perform test steps 1, 2 and 3 ⇒ [Page 01-288](#) , Electrical check.

Rapid data transfer →
No signal from control module!



Control module identification influenced during checking (possibly influenced from external sources?)

- Check diagnostic wire as well as voltage supply and Ground connection for ABS Control Module (w/EDL) -J104-, Electrical check, ⇒ [Page 01-288](#) .
- After repairing the possible causes of the malfunction, again enter the address word 03 for "Brake electronics" and confirm with Q key.



List of selectable functions

		Page
00 -	Automatic test sequence	⇒ Page 01-169
01 -	Check control module version ⇒ Connecting V.A.G 1551 scan tool and selecting function	⇒ Page 01-163
01 -	Check control module version ⇒ Connecting tester VAS 5051 and selecting function	⇒ Page 01-31
02 -	Check Diagnostic Trouble Code (DTC) memory	⇒ Page 01-170
03 -	Output Diagnostic Test Mode (DTM)	⇒ Page 01-74
04 -	Initiate basic setting	⇒ Page 01-264
05 -	Erase DTC memory	⇒ Page 01-230
06 -	End output	⇒ Page 01-230
07 -	Code control module	⇒ Page 01-232
08 -	Read measured value block	⇒ Page 01-240
11 -	Login procedure	⇒ Page 01-287

01-169



Automatic test sequence

The automatic test sequence checks all the Diagnostic Trouble Codes (DTC) memories of the control modules.

- Switch on ignition.

V.A.G - On Board Diagnostic

HELP



Indicated on display:

1 - Rapid data transfer1)

2 - Blink code output1)

1) Is displayed alternately

- Press key -1- for "Rapid data transfer" operating mode.
- Switch on printer with the Print key (indicator lamp in key lights up).

Rapid data transfer

HELP



Indicated on display:

Select function XX

- Press key -0- twice; 00 to enter "Check automatic test sequence" function.
- Confirm entry with Q key.

032906026BI 1.6I R4 MONO 1.3 D1 TEV

Coding 00002 WSC XXXXX



The V.A.G 1551 scan tool will show the engine control module identification is displayed first e.g.

Thereafter all control module identifications with eventual DTC memory entries are displayed.



Diagnostic Trouble Code (DTC) memory, checking

Note:

All functions which could previously be performed with V.A.G 1551 can now also be carried out with the tester VAS 5051.

Rapid data transfer
Select function XX

HELP



Indicated on display:

- Press keys -0- and -2-; 02 enters the "Check DTC memory" function.

Rapid data transfer
02 - Check DTC memory

Q



Indicated on display:

- Confirm entry with Q key.

X DTCs recognized!



The number of stored DTCs or "No DTC recognized" appears in the display.

- Press → key.

The stored DTCs are displayed and printed out one after the other.

- With DTC information print-out, eliminate malfunction according to DTC table, ⇒ [Page 01-189](#) .

As with "No DTC recognized", the program returns to the start position after pressing the → key:

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Rapid data transfer

HELP



Indicated on display:

Select function XX

- End output (Function 06) ⇒ [Page 01-230](#) .
- Switch off ignition and unplug diagnostic connector.

Work sequence if a DTC has been recognized:

1. Repair malfunction according to DTC table, ⇒ [Page 01-189](#)
2. Check DTC memory (Function 02)
3. Erase DTC memory (Function 05)
4. End output (Function 06)
5. Perform a test drive
6. Check DTC memory again



Output Diagnostic Test Mode (DTM)

Note:

- ◆ *All functions which could previously be performed with V.A.G 1551 can now also be carried out with the tester VAS 5051.*
- ◆ *The pump motor and the correct functioning of the hydraulic circuits (allocation of brake lines to wheel cylinders and function of valves) can be checked via the output DTM for interchange or leaks.*
- ◆ *The vehicle must be raised until all wheels are free to turn. (2nd mechanic required to rotate wheels)*
- ◆ *The -C- key can be used to exit the test sequence at any time.*
- ◆ *After depressing the brake pedal several times the vacuum in the brake booster will be exhausted. Therefore more pressure must be applied to the brake pedal in order to attain the same fluid pressure in brake system, as that attained with vacuum.*
- ◆ *When vacuum in brake booster is exhausted it can happen that the wheels do not lock; start engine and build-up vacuum in brake booster.*

01-173

**Example:**

Indicated on V.A.G 1551 display during Output DTM:

(e.g. front left wheel, FL)

Output Diagnostic Test Mode - → IFL: VBAT OFL: 0V Wheel FL locked
--

IFL = Inlet valve Front Left

VBAT = Voltage Battery; Voltage at valve

OFL = Outlet valve Front Left

0V = 0 Volt; No voltage at valve

Locked/free = Wheel condition; must be checked by 2nd mechanic if required

Output Diagnostic Test Mode - → EDL valves/Hyd-P: VBAT Wheel FL/FR locked

Hydr-P = Hydraulic pump

01-174



- Connect V.A.G 1551 scan tool.
- Switch on ignition.
- Press key -1- for "Rapid data transfer" operating mode.
- Select brake electronics control module (address word 03); ⇒ [Page 01-165](#) .

Rapid data transfer
03 - Brake electronics

Q



Indicated on display:

- Confirm entry with key Q.

Note:

During the next work steps the ABS warning light - K47- flashes.

- Read off control module version in V.A.G 1551 display.
- Press → key.

01-175



<p>Rapid data transfer HELP</p> <p>Select function XX</p>	HELP	◀	<p>Indicated on display</p> <p>- Press keys 0 and 3</p>
<p>Rapid data transfer Q</p> <p>03 - Output Diagnostic Test Mode</p>	Q	◀	<p>Indicated on display</p> <p>- Confirm entry with key Q.</p> <p>ABS hydraulic pump -V64- must run.</p>
<p>Output Diagnostic Test Mode . →</p> <p>ABS hydraulic pump - V64</p>	. →	◀	<p>Indicated on display</p> <p>- Press → key.</p>
<p>Output Diagnostic Test Mode . →</p> <p>Operate brakes</p>	. →	◀	<p>Indicated on display</p> <p>- Operate brake pedal.</p> <p>- Press → key.</p>
<p>Output Diagnostic Test Mode . →</p> <p>IFL: 0V OFL: 0V Wheel FL locked</p>	. →	◀	<p>Indicated on display</p> <p>- Indicate to 2nd mechanic which wheel requires turning by hand.</p>

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-176



Output Diagnostic Test Mode . →

IFL: VBAT OFL: 0V Wheel FL locked



- Press → key.

Indicated on display

- Press → key.

ABS hydraulic pump -V64- must run.

Brake pedal must not give.

If the brake pedal gives, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45](#)

Output Diagnostic Test Mode . →

IFL: VBAT OFL: VBAT Wheel FL free



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel locks there is a possibility that the brake lines to the wheel calipers/cylinders have been interchanged.

01-177



Output Diagnostic Test Mode . →

IFL: VBAT OFL: 0V Wheel FL free



- Press → key.

ABS hydraulic pump -V64 no longer runs.

Indicated on display

- Press → key.

Brake pedal must give perceptibly

If the brake pedal does not give, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45](#)

Output Diagnostic Test Mode . →

IFL: 0V OFL: 0V Wheel FL locked



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-178



Output Diagnostic Test Mode . →	←	Indicated on display	- Press → key.
Release brakes			- Remove foot from brake pedal. - Press → key.
Output Diagnostic Test Mode . →	←	Indicated on display	
Operate brakes			- Operate brake pedal. - Press → key.
Output Diagnostic Test Mode . →	←	Indicated on display	
IFR: 0V OFR: 0V Wheel FR locked			- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-179



Output Diagnostic Test Mode . →

IFR: VBAT OFR: 0V Wheel FR locked



- Press → key.

Indicated on display

- Press → key.

ABS hydraulic pump -V64- must run.

Brake pedal must not give

If the brake pedal gives, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45](#)

Output Diagnostic Test Mode . →

IFR: VBAT OFR: VBAT Wheel FR free



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel locks there is a possibility that the brake lines to the wheel calipers/cylinders have been interchanged.



Output Diagnostic Test Mode . →

IFR: VBAT OFR: 0V Wheel FR free



- Press → key.

ABS hydraulic pump -V64- no longer runs.

Indicated on display

- Press → key.

Brake pedal must give perceptibly

If the brake pedal does not give, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45](#)

Output Diagnostic Test Mode . →

IFR: 0V OFR: 0V Wheel FR locked



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-181



<p>Output Diagnostic Test Mode . →</p> <p>Release brakes</p>	<p>←</p>	<p>- Press → key.</p> <p>Indicated on display</p> <p>- Remove foot from brake pedal.</p> <p>- Press → key.</p>
<p>Output Diagnostic Test Mode . →</p> <p>Operate brakes</p>	<p>←</p>	<p>Indicated on display</p> <p>- Operate brake pedal.</p> <p>- Press → key.</p>
<p>Output Diagnostic Test Mode . →</p> <p>IRL: 0V ORL: 0V Wheel RL locked</p>	<p>←</p>	<p>Indicated on display</p> <p>- Indicate to 2nd mechanic which wheel requires turning by hand.</p>

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-182



Output Diagnostic Test Mode . →

IRL: VBAT ORL: 0V Wheel RL locked



- Press → key.

Indicated on display

- Press → key.

ABS hydraulic pump -V64- must run.

Brake pedal must not give

If the brake pedal gives, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45](#)

Output Diagnostic Test Mode . →

IRL: VBAT ORL: VBAT Wheel RL free



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel locks there is a possibility that the brake lines to the wheel calipers/cylinders have been interchanged.

01-183



Output Diagnostic Test Mode . →

IRL: VBAT ORL: 0V Wheel RL free



- Press → key.

ABS hydraulic pump -V64 no longer runs.

Indicated on display

- Press → key.

Brake pedal must give perceptibly

If the brake pedal does not give, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45](#)

Output Diagnostic Test Mode . →

IRL: 0V ORL: 0V Wheel RL locked



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-184



<p>Output Diagnostic Test Mode . →</p> <p>Release brakes</p>	<p>←</p>	<p>- Press → key.</p> <p>Indicated on display</p> <p>- Remove foot from brake pedal.</p> <p>- Press → key.</p>
<p>Output Diagnostic Test Mode . →</p> <p>Operate brakes</p>	<p>←</p>	<p>Indicated on display</p> <p>- Operate brake pedal.</p> <p>- Press → key.</p>
<p>Output Diagnostic Test Mode . →</p> <p>IRR: 0V ORR: 0V Wheel RR locked</p>	<p>←</p>	<p>Indicated on display</p> <p>- Indicate to 2nd mechanic which wheel requires turning by hand.</p>

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-185



Output Diagnostic Test Mode . →

IRR: VBAT ORR: 0V Wheel RR locked



- Press → key.

Indicated on display

- Press → key.

ABS hydraulic pump -V64- must run.

Brake pedal must not give

If the brake pedal gives, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45](#)

Output Diagnostic Test Mode . →

IRR: VBAT ORR: VBAT Wheel RR free



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel locks there is a possibility that the brake lines to the wheel calipers/cylinders have been interchanged.

01-186



Output Diagnostic Test Mode . →

IRR: VBAT ORR: 0V Wheel RR free



- Press → key.

ABS hydraulic pump -V64 no longer runs.

Indicated on display

- Press → key.

Brake pedal must give perceptibly

If the brake pedal does not give, there is a malfunction in the hydraulic unit. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45](#)

Output Diagnostic Test Mode . →

IRR: 0V ORR: 0V Wheel RR locked



Indicated on display

- Indicate to 2nd mechanic which wheel requires turning by hand.

Note:

If the wheel does not lock, there is a possibility that there is a malfunction in the mechanical/hydraulic part of the brake system.

01-187



Output Diagnostic Test Mode . →

Release brakes

- Press → key.



Indicated on display

- Remove foot from brake pedal.

- Press → key.

Output Diagnostic Test Mode . →

EDL valves/Hyd-P: VBAT Wh FL/FR locked



Indicated on display (vehicles with EDL)

A 2nd mechanic is required to rotate the respective wheel by hand.

If the wheels do not lock, there is a malfunction in the hydraulic part of the ABS system. In this case the hydraulic unit must be replaced.

⇒ [Repair Manual, Brake System, Repair Group 45](#)

01-188



Function is unknown or →
cannot be carried out at the moment



Indicated on display

The ABS warning light -K47- goes out.

The final control diagnosis is completed

- Press → key.

Rapid data transfer HELP
Select function XX



Indicated on display

Note:

- ◆ *There is a malfunction in the system if the ABS warning light -K47- does not go out.*
 - ◆ *Adhere exactly to test sequence: First check DTC memory, then erase.*
- End output (Function 06) ⇒ [Page 01-231](#) .



Diagnostic Trouble Code (DTC) table

Note:

- ◆ *When beginning On Board Diagnostic (OBD) troubleshooting of the vehicle control modules, always start with function "Automatic test sequence" by pressing keys 0 and 0 because the control modules are interconnected with a data bus wire. This checks the DTC memories of the control modules in the vehicle.*
- ◆ *All the possible DTCs which can be recognized by the ABS control module (w/EDL) -J104- and printed-out on V.A.G 1551 or VAS 5051, are listed on the following pages according to the 5 digit DTC code.*
- ◆ *DTC code appears (in the "Rapid data transfer" mode) only on the print-out.*

Example:

DTC code	P code	DTC code
5 digit	5 digit	3 digit
18256	P1848	035

- ◆ *The 5 digit P code which may appear next to the DTC code, is for use with the On Board Diagnosis (OBD) and may be disregarded.*
 - ◆ *The 3 digit DTC type code is a data code and may be disregarded, but the DTC type text is of use.*
 - ◆ *Before replacing components indicated as being faulty, check all the appropriate connectors, wiring and Ground connections using the wiring diagram.*
- ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder.*
- ◆ *On completion of repairs always check the DTC memory with V.A.G 1551 scan tool or the VAS 5051 and erase.*
 - ◆ *Carry out road test exceeding 20 km/h (13 mph).*
 - ◆ *After the road test check DTC memory again.*



V.A.G 1551 print-out	Possible cause	Repair
No DTC recognized	<p>If "No DTC recognized" appears after carrying out repairs, On Board Diagnostic (OBD) is ended.</p> <p>If, despite "No DTC recognized" appearing in the display, the ABS system does not function properly, then proceed as follows:</p> <ol style="list-style-type: none"> 1. Carry out road test exceeding 20 km/h (13 mph), 2. Again check DTC memory, if there is still no DTC stored, 3. Continue troubleshooting without OBD and work through the complete <p>Electrical check ⇒ Page 01-288 .</p>	
00003		
Fault number: 00003 / literature	ABS Control Module (w/EDL) - J104- malfunction	<p>- Replace ABS Control Module (w/EDL) -J104-</p> <p>⇒ Repair Manual, Brake System, Repair Group 45</p>

01-191



V.A.G 1551 print-out	Possible cause	Repair
00283		
Left front ABS wheel speed sensor -G47- ¹⁾ Electrical malfunction in current circuit	◆ Open circuit in wiring between left front ABS wheel speed sensor -G47- and ABS control module (w/EDL) -J104-	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288 - Read measured value block ⇒ Page 01-240 Display group number 001 ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles
		If the malfunction occurs again:
	◆ Left front ABS wheel speed sensor -G47- faulty	- Replace left front ABS wheel speed sensor -G47- ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ This DTC is recognized when vehicle is stationary.



V.A.G 1551 print-out	Possible cause	Repair
00283		
Left front ABS wheel speed sensor -G47- ¹⁾ Implausible signal	◆ Open circuit or loose contact in wiring between Left front ABS wheel speed sensor -G47- and ABS control module (w/EDL) -J104-	- Check wiring and connections using wiring diagram
		- Perform electrical check ⇒ Page 01-288
	◆ Electrical interferences from other sources (high frequency radiation e.g. uninsulated ignition cable)	- Read measured value block ⇒ Page 01-240 Display group number 001

¹⁾ Type of DTC, this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
00283		
Left front ABS wheel speed sensor -G47- Mechanical fault ¹⁾	<ul style="list-style-type: none"> ◆ Excessive air gap between left front ABS wheel speed sensor-G47- and rotor (signal not OK) 	<ul style="list-style-type: none"> - Check installation of left front ABS wheel speed sensor -G47- and rotor ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles - Read measured value block ⇒ Page 01-240 Display group numbers 001 and 002 - Perform test drive
	<ul style="list-style-type: none"> ◆ Short to positive or ground in wiring 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	<ul style="list-style-type: none"> ◆ Left front ABS wheel speed sensor -G47- faulty 	<ul style="list-style-type: none"> - Replace left front ABS wheel speed sensor -G47- ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ Type of DTC, this DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
00285		
Right front ABS wheel speed sensor -G45- ¹⁾ Electrical malfunction in current circuit	♦ Open circuit in wiring between Right front ABS wheel speed sensor -G45- and ABS control module (w/EDL) -J104-	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288 - Read measured value block ⇒ Page 01-240 Display group number 001 ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles
		If the malfunction occurs again:
	♦ Right front ABS wheel speed sensor -G45- faulty	- Replace Right front ABS wheel speed sensor -G45- ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ This malfunction is recognized when vehicle is stationary.

01-195



V.A.G 1551 print-out	Possible cause	Repair
00285		
Right front ABS wheel speed sensor -G45- ¹⁾ Implausible signal	♦ Open circuit; short to ground or loose contact in wiring between Right front ABS wheel speed sensor -G45- and ABS control module (w/EDL) -J104-	- Check wiring and Connection using wiring diagram - Perform electrical check ⇒ Page 01-288
	♦ Electrical interferences from other sources (high frequency radiation e.g. uninsulated ignition cable)	- Read measured value block ⇒ Page 01-240 Display Group number 001

¹⁾ This DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
00285		
Right front ABS wheel speed sensor -G45- Mechanical malfunction ¹⁾	<ul style="list-style-type: none"> ◆ Excessive air gap between Right front ABS wheel speed sensor-G45- and rotor (signal not OK) 	<ul style="list-style-type: none"> - Check installation of right front ABS wheel speed sensor -G45- and rotor ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles - Read measured value block ⇒ Page 01-240 Display group numbers 001 and 002 - Perform test drive
	<ul style="list-style-type: none"> ◆ Short to positive or ground in wiring 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	<ul style="list-style-type: none"> ◆ Right front ABS wheel speed sensor -G45- faulty 	<ul style="list-style-type: none"> - Replace Right front ABS wheel speed sensor -G45- ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ This DTC is only recognized above 20 km/h (13 mph) (carry out test drive).

01-197



V.A.G 1551 print-out	Possible cause	Repair
00287		
Right rear ABS wheel speed sensor -G44- ¹⁾ Electrical malfunction in current circuit	<ul style="list-style-type: none"> ◆ Open circuit in wiring between Right rear ABS wheel speed sensor -G44- and ABS control module (w/EDL) -J104- 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288 - Read measured value block ⇒ Page 01-240 Display group number 001 ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles
	<ul style="list-style-type: none"> ◆ Right rear ABS wheel speed sensor -G44- faulty 	<ul style="list-style-type: none"> - Replace right rear ABS wheel speed sensor -G44-
		<ul style="list-style-type: none"> ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ This malfunction is recognized when vehicle is stationary.

01-198



V.A.G 1551 print-out	Possible cause	Repair
00287		
Right rear ABS wheel speed sensor -G44- ¹⁾ Implausible signal	◆ Open circuit; short to ground or loose contact in wiring between Right rear ABS wheel speed sensor -G44- and ABS control module (w/EDL) -J104-	- Check wiring and connections using wiring diagram
		- Perform electrical check ⇒ Page 01-288
	◆ Electrical interferences from other sources (high frequency radiation e.g. uninsulated ignition cable)	- Read measured value block ⇒ Page 01-240 Display group number 001

¹⁾ This DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
00287		
Right rear ABS wheel speed sensor -G44- ¹⁾ Mechanical malfunction	<ul style="list-style-type: none"> ◆ Excessive air gap between Right rear ABS wheel speed sensor -G44- and rotor (signal not OK) 	<ul style="list-style-type: none"> - Check installation of speed sensor -G44- and rotor ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles - Read measured value block ⇒ Page 01-240 Display group numbers 001 and 002 - Perform test drive
	<ul style="list-style-type: none"> ◆ Short to positive or ground in wiring 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	<ul style="list-style-type: none"> ◆ Right rear ABS wheel speed sensor -G44- faulty 	<ul style="list-style-type: none"> - Replace speed sensor -G44- ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ This DTC is only recognized above 20 km/h (13 mph) (carry out test drive).

01-200



V.A.G 1551 print-out	Possible cause	Repair
00290		
Left rear ABS wheel speed sensor -G46- 1)	<ul style="list-style-type: none"> ◆ Open circuit; short to positive or ground, or loose contact in connections between Left rear ABS wheel speed sensor - G46- and ABS control module (w/EDL) - J104- 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288 - Read measured value block ⇒ Page 01-240 Display group number 001 ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles
		If the malfunction occurs again:
	<ul style="list-style-type: none"> ◆ Left rear ABS wheel speed sensor - G46- faulty 	<ul style="list-style-type: none"> - Replace Left rear ABS wheel speed sensor -G46- ⇒ Repair Manual, Brake System, Repair Group 45

1) This DTC is recognized when vehicle is stationary.

01-201



V.A.G 1551 print-out	Possible cause	Repair
00290		
Left rear ABS wheel speed sensor -G46- ¹⁾ Implausible signal	◆ Open circuit; short to ground or loose contact in wiring between Left rear ABS wheel speed sensor -G46- and ABS control module (w/EDL) -J104-	- Check wiring and connections using wiring diagram
		- Perform electrical check ⇒ Page 01-288
	◆ Electrical interferences from other sources (high frequency radiation e.g. uninsulated ignition cable)	- Read measured value block ⇒ Page 01-240 Display group number 001

¹⁾ This DTC is only recognized above 20 km/h (13 mph) (carry out test drive).

01-202



V.A.G 1551 print-out	Possible cause	Repair
00290		
Left rear ABS wheel speed sensor -G46- ¹⁾ Mechanical malfunction	<ul style="list-style-type: none"> ◆ Excessive air gap between Left rear ABS wheel speed sensor -G46- and rotor (signal not OK) 	<ul style="list-style-type: none"> - Check installation of speed sensor - G46- and rotor ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles - Read measured value block ⇒ Page 01-240 Display group numbers 001 and 002 - Perform test drive
	<ul style="list-style-type: none"> ◆ Short to positive or ground in wiring 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	<ul style="list-style-type: none"> ◆ Left rear ABS wheel speed sensor -G46- faulty 	<ul style="list-style-type: none"> - Replace Left rear ABS wheel speed sensor -G46- ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ This DTC is only recognized above 20 km/h (13 mph) (carry out test drive).

01-203



V.A.G 1551 print-out	Possible cause	Repair
00493		
ESP-Sensor Unit, vehicles from 02.02 No Signal/Communication or ESP-Sensor Unit faulty	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or ground in CANbus wiring ◆ ESP-Sensor Unit - G419- faulty 	<ul style="list-style-type: none"> - Check wiring and connectors of data bus wiring using current flow diagram - Perform electrical check ⇒ Page 01-288 - Replace ESP-Sensor Unit -G419- ⇒ Brake systems; Repair group 45; Removing and installing parts of ESP system - Perform a zero compensation: - Initiate basic setting ⇒ Page 01-264 Display group number 063 - Initiate basic setting ⇒ Page 01-264 Display group number 069¹⁾

¹⁾ 4MOTION vehicles only

01-204



V.A.G 1551 print-out	Possible cause	Repair
00495		
ESP-Sensor Unit, vehicles from 02.02 Voltage supply	◆ Open circuit, short to positive or ground in CANbus wiring	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288



V.A.G 1551 print-out	Possible cause	Repair
00526		
Brake light switch -F- ¹⁾ Implausible signal		
		- Read measured value block ⇒ Page 01-240 Display group number 002
	◆ Open circuit, short to positive or ground in the wiring	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	◆ Brake light switch improperly adjusted ◆ Brake light switch faulty	- Adjust brake light switch ⇒ Repair Manual, Brake System, Repair Group 46; Brake pedal - Assembly overview; Adjusting brake light switch

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION

01-206



V.A.G 1551 print-out	Possible cause	Repair
00538		
Reference voltage Electrical malfunction in current circuit	<ul style="list-style-type: none"> ◆ Short to positive or ground in voltage supply wiring: ◆ Voltage supply less than 5 Volt ◆ Sender for rotation rate - G202- ◆ Sensor for transverse acceleration -G200- ◆ Sender 1 for brake booster - G201- ◆ Longitudinal acceleration sensor -G251⁻¹⁾ 	- Check wiring and connections using wiring diagram
		- Perform electrical check ⇒ Page 01-288

¹⁾ 4MOTION vehicles only

01-207



V.A.G 1551 print-out	Possible cause	Repair
00668		
Vehicle voltage terminal 30 Implausible signal	◆ Open circuit, short to positive or ground in the wiring	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	◆ Alternator voltage > 17 Volt	⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>



V.A.G 1551 print-out	Possible cause	Repair
00778		
Steering angle sensor - G85- No signal/communication ¹⁾	<ul style="list-style-type: none"> ◆ Open circuit or loose contact in data bus wiring between steering angle sensor -G85- and control module -J104- ◆ Terminals 15 and 30 on steering angle sensor -G85-, ◆ Ground not present 	- Check wiring and connections using wiring diagram
		- Perform electrical check ⇒ Page 01-288
	<ul style="list-style-type: none"> ◆ Steering angle sensor -G85- faulty 	<ul style="list-style-type: none"> - Replace steering angle sensor -G85- ⇒ Repair Manual, Brake System, Repair Group 45: Removing and installing parts of ESP system - Perform a zero compensation: - Initiate basic settings ⇒ Page 01-264 Display group number 060

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION



V.A.G 1551 print-out	Possible cause	Repair
00778		
Steering angle sensor -G85- ¹⁾ Mechanical malfunction		
	◆ Steering wheel has been removed and no subsequent zero compensation performed	- Perform a zero compensation: - Initiate basic settings ⇒ Page 01-264 Display group number 060
	◆ Check specification from steering angle sensor -G85-	- Read measured value block ⇒ Page 01-240 Display group number 004
	◆ Steering geometry of suspension is not OK.	- Check vehicle alignment ⇒ Repair Manual, Suspension, Wheels, Steering, Repair Group 44; Vehicle alignment
	◆ Installation of steering angle sensor -G85- is not OK	- Check installation of steering angle sensor -G85-
	◆ Steering angle sensor -G85- faulty	- Replace steering angle sensor -G85- ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION

01-210



V.A.G 1551 print-out	Possible cause	Repair
00778		
Steering angle sensor -G85- Implausible signal ¹⁾	◆ Installation of steering angle sensor -G85- is not OK.	- Check installation of steering angle sensor -G85- ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system
	◆ Steering geometry of suspension is not OK.	- Check vehicle alignment ⇒ Repair Manual, Suspension, Wheels, Steering, Repair Group 44; Vehicle alignment
	◆ Unacceptable vibrations in steering due to wear	- Perform a zero compensation: - Initiate basic settings ⇒ Page 01-264 Display group number 060
00778		
Steering angle sensor -G85- ¹⁾ No, or incorrect, basic setting/adaption	◆ Steering angle sensor - G85- sends no, or incorrect, setting values	- Perform a zero compensation: - Initiate basic setting ⇒ Page 01-264 Display group number 060

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION



V.A.G 1551 print-out	Possible cause	Repair
00778		
Steering angle sensor -G85- Faulty ¹⁾	◆ Steering angle sensor -G85- faulty	- Replace steering angle sensor - G85- ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system - Perform a zero compensation: - Initiate basic settings ⇒ Page 01-264 Display group number 060
01044		
Control module incorrectly coded	◆ ABS Control Module (w/EDL) - J104- incorrectly coded	- Re-code for ABS Control Module (w/EDL) -J104- ⇒ Page 01-232
	◆ Coding bridge in multi-pin connector to ABS Control Module (w/EDL) -J104- open or short circuit	- Check wiring and connections using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION

01-212



V.A.G 1551 print-out	Possible cause	Repair
01130		
ABS operation Implausible signal ¹⁾	<ul style="list-style-type: none"> ◆ Electrical interferences from other sources (high frequency radiation e.g. non-insulated ignition cable) 	<ul style="list-style-type: none"> - Erase DTC memory - Perform test drive at more than 20 km/h (13 mph) - Check DTC memory again
	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or ground in the wiring 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	<ul style="list-style-type: none"> ◆ ABS Control Module (w/EDL) -J104- faulty 	<ul style="list-style-type: none"> - Replace ABS Control Module (w/EDL) -J104- ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ This DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
01164		
ESP operation Implausible signal ¹⁾	◆ Electrical interferences from other sources (high frequency radiation e.g. uninsulated ignition cable)	- Erase DTC memory - Perform test drive at more than 20 km/h (13 mph) - Check DTC memory again
	◆ Open circuit, short to positive or ground in the wiring	- Check wiring and connections using wiring diagram
		- Perform electrical check ⇒ Page 01-288
	◆ Steering angle sensor -G85- sends incorrect setting values	- Perform a zero compensation: - Initiate basic setting ⇒ Page 01-264 Display group number 060
	◆ ABS Control Module (w/EDL) -J104- faulty	- Replace ABS Control Module (w/EDL) -J104- ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ This DTC is only recognized above 20 km/h (13 mph) (carry out test drive).

01-214



V.A.G 1551 print-out	Possible cause	Repair
01276		
ABS hydraulic pump -V64- Implausible signal 1)		
	◆ Resistance in ground or positive wiring	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	◆ Hydraulic pump -V64- faulty	- Replace ABS hydraulic unit -N55- ⇒ Repair Manual, Brake System, Repair Group 45
01276		
ABS hydraulic pump -V64- faulty ¹⁾	◆ Short in electronics	- Replace ABS hydraulic unit -N55- with ABS Control Module (w/EDL) -J104- ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ This DTC is only recognized above 20 km/h (13 mph) (carry out test drive).

01-215



V.A.G 1551 print-out	Possible cause	Repair
01276		
ABS hydraulic pump - V64- Electrical malfunction in current circuit ¹⁾	◆ Battery positive fuse faulty	- Check fuses
	◆ Open circuit, short to positive or ground in the wiring	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	◆ Hydraulic pump -V64- faulty	◆ Replace ABS hydraulic unit -N55- ⇒ Repair Manual, Brake System, Repair Group 45

¹⁾ This DTC is only recognized above 20 km/h (13 mph) (carry out test drive).



V.A.G 1551 print-out	Possible cause	Repair
01279		
Longitudinal acceleration sensor - G251- ¹⁾ Electrical malfunction in current circuit	♦ Voltage supply less than 5 Volt	- Read measured value block ⇒ Page 01-240 Display group number 006
	♦ Open circuit, short to positive or ground in the wiring	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	♦ Longitudinal acceleration sensor -G251- faulty	- Replace longitudinal acceleration sensor -G251- ⇒ Repair Manual, Brake System, Repair Group 45 - Perform a zero compensation: - Introduce basic setting ⇒ Page 01-264 Display group number 069

¹⁾ 4MOTION vehicles only

01-217



V.A.G 1551 print-out	Possible cause	Repair
01279		
Longitudinal acceleration sensor - G251- ¹⁾ Implausible signal		- Read measured value block ⇒ Page 01-240 Display group number 006
	◆ The installation position of the longitudinal acceleration sensor -G251- is not OK	- Check installation position of longitudinal acceleration sensor -G251-
	◆ Open circuit, short to positive or ground in the wiring	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	◆ Longitudinal acceleration sensor -G251- faulty	- Replace longitudinal acceleration sensor -G251- ⇒ Repair Manual, Brake System, Repair Group 45 - Perform a zero compensation: - Introduce basic setting ⇒ Page 01-264 Display group number 069

¹⁾ 4MOTION vehicles only

01-218



V.A.G 1551 print-out	Possible cause	Repair
01279		
Longitudinal acceleration sensor -G251- ¹⁾ No, or incorrect, basic setting/adaptation	♦ Longitudinal acceleration sensor -G251- sends no, or incorrect, setting values	- Read measured value block ⇒ Page 01-264 Display group number 069
01312		
Drive train data bus faulty ²⁾		- Read measured value block ⇒ Page 01-240 Display group number 125
	♦ Open circuit, short to positive or ground in data bus wiring	- Check wiring and connections of data bus wiring using wiring diagram - Perform electrical check ⇒ Page 01-288

1) 4MOTION vehicles only

2) This DTC occurs only together with DTC "Steering angle sensor -G85-, No communication".

01-219



V.A.G 1551 print-out	Possible cause	Repair
01314		
Engine control module No signal/communication		- Read measured value block ⇒ Page 01-240 Display group number 125
	◆ Open circuit, short to positive or Ground in data bus wiring	- Check wiring and connections of data bus wiring using wiring diagram
or:		
		- Perform electrical check ⇒ Page 01-288
Check DTC memory	◆ DTC entry in engine control module	- Check engine control module DTC memory: ⇒ <i>Repair Manual, Engine Mechanical, Repair Group 01</i>

01-220



V.A.G 1551 print-out	Possible cause	Repair
01315		
Transmission control module ¹⁾ No signal/communication		- Read measured value block ⇒ Page 01-240 Display group number 125
	◆ Open circuit, short to positive or ground in data bus wiring	- Check wiring and connections of data bus wiring using wiring diagram - Perform electrical check ⇒ Page 01-288
01317		
Control module with indicator unit in instrument panel insert - J285-	◆ Control module with indicator unit in instrument panel insert -J285- incorrectly coded	- Check coding for Control module with indicator unit in instrument panel insert - J285- ⇒Repair Manual, Electrical Equipment, Repair Group 01

¹⁾ Vehicles with automatic transmission only.

01-221



V.A.G 1551 print-out	Possible cause	Repair
01324		
All-Wheel Drive Control Module -J492- ¹⁾ No communication		- Read measured value block ⇒ Page 01-240 Display group number 125
	◆ Open circuit, short to positive or ground in data bus wiring	- Check wiring and connectors of data bus wiring using wiring diagram - Perform electrical check ⇒ Page 01-288

¹⁾ 4MOTION vehicles only

01-222



V.A.G 1551 print-out	Possible cause	Repair
01423		
Lateral acceleration sensor -G200- ¹⁾ Electrical malfunction in current circuit	<ul style="list-style-type: none"> ◆ Connections ◆ Voltage supply less than 5 Volt 	
	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or ground in the wiring 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	<ul style="list-style-type: none"> ◆ Sensor for transverse acceleration -G200- faulty 	<ul style="list-style-type: none"> - Replace sensor for transverse acceleration-G200- ⇒ Repair Manual, Brake System, Repair Group 45 - Perform a zero compensation: - Initiate basic setting ⇒ Page 01-264 Display group number 063

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION

01-223



V.A.G 1551 print-out	Possible cause	Repair
01423		
Sensor for transverse acceleration -G200- Implausible signal ¹⁾		- Read measured value block ⇒ Page 01-240 Display group number 004
	◆ Installation of sensor for transverse acceleration - G200- is not OK.	- Check installation of sensor for transverse acceleration -G200-
	◆ Open circuit, short to positive or Ground in the wiring	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	◆ Sensor for transverse acceleration -G200- faulty	- Replace sensor for transverse acceleration-G200- ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system
		- Perform a zero compensation:
	◆ Basic setting was not correctly performed in the past	- Initiate basic setting ⇒ Page 01-264 Display group number 063

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION

01-224



V.A.G 1551 print-out	Possible cause	Repair
01423		
Sensor for transverse acceleration -G200- ¹⁾ No, or incorrect, basic setting/adaption	◆ Zero compensation was never performed	- Perform zero compensation - Initiate basic setting ⇒ Page 01-264 Display group number 063
01435		
Sender 1 for brake booster -G201- No, or incorrect, basic setting/adaption ¹⁾	◆ Zero compensation was never performed	- Perform zero compensation - Initiate basic setting ⇒ Page 01-264 Display group number 066

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION



V.A.G 1551 print-out	Possible cause	Repair
01435		
Sender 1 for brake booster - G201- Implausible signal ¹⁾		- Read measured value block ⇒ Page 01-240 Display group number 005
	◆ Open circuit, short to positive or ground in the wiring	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	◆ Brake light switch improperly adjusted ◆ Brake light switch faulty	- Adjust brake light switch ⇒ Repair Manual, Brake System, Repair Group 46; Brake pedal - Assembly overview; Adjusting brake light switch
	◆ Sender 1 for brake booster-G201- faulty	- Replace sender 1 for brake booster -G201- : ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system - Perform a zero compensation: - Initiate basic setting ⇒ Page 01-264 Display group number 066

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION



V.A.G 1551 print-out	Possible cause	Repair
01435		
Sender 1 for brake booster -G201- Electrical malfunction in current circuit ¹⁾	<ul style="list-style-type: none"> ◆ Connections ◆ Voltage supply is less than 5 Volt 	
	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground in the wiring 	<ul style="list-style-type: none"> - Check wiring and connections using current flow diagram - Perform electrical check ⇒ Page 01-288
	<ul style="list-style-type: none"> ◆ Sender 1 for brake booster-G201- faulty 	<ul style="list-style-type: none"> - Replace sender 1 for brake booster-G201- ⇒ Repair Manual, Brake System, Repair Group 45 - Perform a zero compensation: - Initiate basic setting ⇒ Page 01-264 Display group number 066

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION

01-227



V.A.G 1551 print-out	Possible cause	Repair
01486 ¹⁾		
	◆ The ESP driving test is activated	- Perform the complete ESP driving test; the - DTC will be erased automatically - Initiate basic setting ⇒ Page 01-264 Display group number 093
01487 / literature ¹⁾		
	◆ The ESP driving test time has been exceeded	- Perform the complete ESP driving test within the allowed time

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION



V.A.G 1551 print-out	Possible cause	Repair
01542		
Sender for rotation rate -G202- Implausible signal 1)	◆	- Read measured value block ⇒ Page 01-240 Display group number 004
	◆ Installation of sender for rotation rate -G202- is not OK.	- Check installation of sender for rotation rate -G202-
	◆ Open circuit, short to positive or Ground in the wiring	- Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	◆ Sender for rotation rate - G202- faulty	- Replace sender for rotation rate - G202- ⇒ Repair Manual, Brake System, Repair Group 45

1) For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION

01-229



V.A.G 1551 print-out	Possible cause	Repair
01542		
Sender for rotation rate -G202- ¹⁾ Electrical malfunction in current circuit	<ul style="list-style-type: none"> ◆ Connections ◆ Voltage supply is less than 5 Volt 	
	<ul style="list-style-type: none"> ◆ Open circuit, short to positive or Ground in the wiring 	<ul style="list-style-type: none"> - Check wiring and connections using wiring diagram - Perform electrical check ⇒ Page 01-288
	<ul style="list-style-type: none"> ◆ Sender for rotation rate - G202- faulty 	<ul style="list-style-type: none"> - Replace sender for rotation rate - G202- ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION



Diagnostic Trouble Code (DTC) memory, erasing and ending output

Note:

All functions which could previously be performed with V.A.G 1551 can now also be carried out with the tester VAS 5051.

Prerequisites:

- DTC memory checked ⇒ [Page 01-170](#).

1. Erasing DTC memory

- Press → key.

Rapid data transfer
Select function XX

HELP



Indicated on display:

- Press keys -0- and -5-; 05 enters the "Erase DTC memory" function.

Rapid data transfer
05 Erase DTC memory

Q



Indicated on display:

- Confirm entry with Q key

Rapid data transfer
DTC memory is erased!

→



Indicated on display:

- Press → key.

Rapid data transfer
Select function XX

HELP



Indicated on display:

01-231

**Warning!**

DTC memory was not interrogated.



Indicated on display:

Note:

Adhere exactly to test sequence: First check DTC, then erase

2. Ending output

- Press keys -0- and -6-, this ends the output.

Rapid data transfer

Q



Indicated on display

06 - End output

- Confirm input with Q key.

Rapid data transfer

HELP



Indicated on display:

Select function XX

- Switch off ignition.
- Disconnect Connection to V.A.G 1551 scan tool.
- Switch on ignition.

ABS warning light -K47- must go out after approx. 2 seconds.

01-232



ABS control module, coding

Note:

- ◆ *All functions which could previously be performed with V.A.G 1551 can now also be carried out with the tester VAS 5051.*
- ◆ *ABS warning light -K47- and warning light for brake system -K118- flash when ABS control module (w/EDL) -J104- is coded with 00000. An entry is not made in the DTC memory.*
- ◆ *The ABS control module (w/EDL) -J104- must be recoded if the vehicle relevant coding is not displayed or the control module has been replaced.*

Coding is only possible after the workshop code (WSC) has been introduced into V.A.G 1551.



Test sequence

- Connect V.A.G 1551 scan tool and select (address word 03) brake electronics control module with ignition switched on; ⇒ [Page 01-163](#) .

- Establish engine code.

Rapid data transfer
Select function XX

HELP



Indicated on display:

- Input 07 for the function "Code control module" and confirm with Q key.

Rapid data transfer
07 - Code control module

Q



Indicated on display:

- Confirm input with Q key.

Coding control module
Enter code number XXXXX

Q
(0-32000)



Indicated on display:

- Enter the relevant code number for this vehicle and confirm with Q key.

Coding variations ⇒ [Page 01-236](#) .

1C0 907 379E ESP FRONT MK60 0103 →

Coding 0011266

WSC 00000



On the display the control module identification and coding are displayed , e.g.:



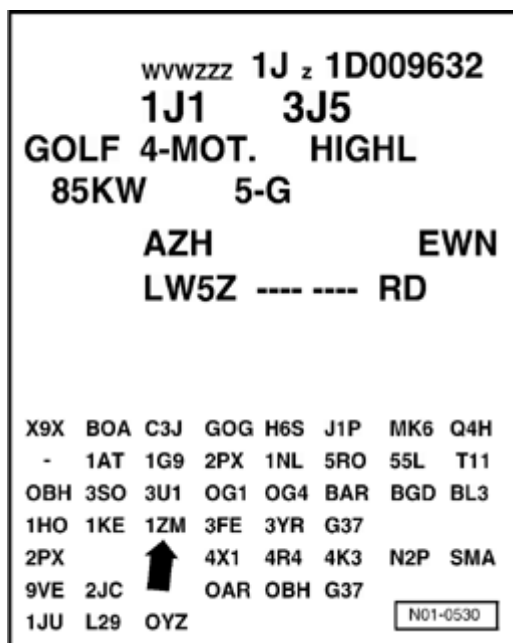
Vehicle data label

Explanation of the PR. numbers on vehicle data label

Various wheels are installed depending on engine and equipment level. These are identified by the PR. numbers.

The wheel installed in the vehicle is documented on the vehicle data label with the relevant PR number.

⇒ [Repair Manual, Suspension, Wheels, Steering, Repair Group 44; Vehicle alignment](#)



Location of optional equipment number (PR No.) on vehicle data plate (arrow)

Depending on equipment level, the PR number is printed in different locations on the vehicle data label.

In this example the vehicle is equipped with the standard wheel 1ZM -arrow-.

The PR numbers are critical for the assignment of coding.

01-235



PR number	Brakes
1LS	FS III Brakes
1LQ	FS III Brakes
1ZM	FS III Brakes
1ZF	FS III Brakes
1ZP	FS III Brakes

PR number	Brakes
1LE	FN 3 Brakes
1LJ	FN 3 Brakes
1ZE	FN 3 Brakes
1ZD	FN 3 Brakes

01-236



Table for ABS, coding

Note:

- ◆ *The control unit must be coded with the same code number as the previous control unit installed in the vehicle*

With control unit identification number 1C0 907 379 C/J/L for vehicles from 10.00

Engine	Engine code	Vehicle type	Code number
1.8 ltr.	AWD; AWW; AWP	Front wheel drive	04097
1.9 ltr. TDI	ALH	Front wheel drive	04097
2.0 ltr.	AEG; AVH; AZG; BEV; BBW	Front wheel drive	04097
2.8 ltr.	AFP	Front wheel drive	04097
Continued on next page:			

01-237

**Table for ABS/EDL/ASR, coding****Note:**

- ◆ *The control module must be coded with the same code number as the previous control module installed in the vehicle*

With control unit identification number 1C0 907 379 D/K for vehicles from 10.00

Engine	Engine code	Vehicle type	Code number
1.8 ltr.	AWD; AWW; AWP	Front wheel drive	18945
2.8 ltr.	AFP	Front wheel drive	18945
Continued on next page:			



Table for ABS/EDL/ASR/ESP, coding

Vehicles with front wheel drive

Note:

- ◆ The control module must be coded with the same code number as the previous control module installed in the vehicle

With control unit identification number 1C0 907 379 E/G/M for vehicles from 10.00

Engine	Engine codes	Brake type ¹⁾	Heavy duty package ²⁾	Coding
2.0 ltr.	AEG; AVH; AZG; BEV; BBW	FS III	without	22530
			with	22658
1.8 ltr.	AWD; AWW; AWP	FN 3	without	19970
			with	20098
1.9 ltr. TDI	ALH	FS III	without	19458
			with	19586
2.8 ltr.	AFP	FN 3	without	19970
			with	20098
2.8 ltr.	BDF	FN 3	without	19970
Continued on next page:				

1) Overview of types of brakes (PR No.) ⇒ [Page 01-234](#) .

2) Overview of types of vehicle.

⇒ [Repair Manual, Suspension, Wheels, Steering, Repair Group 44; Vehicle alignment; Vehicle alignment specifications](#)



Table for ABS/EDL/ASR/ESP, coding

Note:

- ◆ *The control module must be coded with the same code number as the previous control module installed in the vehicle*

4MOTION vehicles

With control unit identification number 1C0 907 379 F/H/N

Engine	Engine codes	Brake type ¹⁾	Heavy duty package ²⁾	Coding
2.8 ltr.	AQP; AUE; BDE	FN 3	without	23046
			with	23174

¹⁾ Overview of types of brakes (PR No.) ⇒ [Page 01-234](#) .

¹⁾ Overview of types of vehicle.

⇒ [Repair Manual, Suspension, Wheels, Steering, Repair Group 44; Vehicle alignment; Vehicle alignment specifications](#)

01-240



Measured value block, reading

Note:

All functions that have been carried out so far with V.A.G 1551 can now also be carried out with the tester VAS 5051.

The control module can transfer a considerable amount of test data. This test data delivers information on the operational condition of the system and/or sensors connected to it. In many cases the transferred test data supports troubleshooting and repair. The test data has been summarized into single display groups because all the information cannot be evaluated at the same time. The information can be selected via display group numbers.

Safety precautions

WARNING!

- ◆ ***If the use of test and information devices during a test drive is necessary, observe the following:***
- ◆ ***You must always secure testing and measuring equipment on the rear seat.***
- ◆ ***When vehicle is being driven, a second technician must operate this equipment.***



- Connect V.A.G 1551 scan tool and select (address word 03) brake electronics control module with ignition switched on; ⇒ [Page 01-163](#) .

Rapid data transfer
Select function XX

HELP



Indicated on display:

- Press keys 0 and 8. (The function "Read measured value block" is initiated with 08.)

Rapid data transfer
08 - Read measured value block

Q



Indicated on display:

- Confirm entry with key Q.

Read measured value block
Enter display group number XXX



Indicated on display:

- Enter display group number. List of selectable display group numbers ⇒ [Page 01-242](#) .

01-242



Overview of selectable display group numbers

Display group number	Display zone	Designation
001	1	Wheel speed at left front wheel sensor (km/h)
	2	Wheel speed at right front wheel sensor (km/h)
	3	Wheel speed at left rear speed sensor (km/h)
	4	Wheel speed at right rear speed sensor (km/h)
002	1	Wheel speed at left front speed sensor (km/h)
	2	Wheel speed at right front wheel sensor (km/h)
	3	Wheel speed at left rear speed sensor (km/h)
	4	Wheel speed at right rear speed sensor (km/h)
003	1	Brake light switch
	2	Brake system warning light
	3	ABS warning light
	4	ASR/ESP warning light

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Display group number	Display zone	Designation
004	1	Steering angle sensor
	2	Lateral accelerator sensor
	3	Sender for rotation rate
	4	Vacant
005	1	Brake pressure sensor
	2	Vacant
	3	Vacant
	4	Vacant

01-244



Display group number	Display zone	Designation
006	1	Longitudinal acceleration sensor ¹⁾
	2	Vacant
	3	Vacant
	4	Vacant
125	1	Data bus for engine
	2	Data bus for steering angle ²⁾
	3	Data bus for all-wheel drive ¹⁾
	4	Data bus for transmission ³⁾

1) 4MOTION vehicles only

2) ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION

3) Vehicles with automatic transmission only

01-245



Test sequence and test tables with measured values

Checking speed sensor allocation

Display group number 001

- Press keys 0, 0 and 1.
- Confirm entry with key Q.

Read measured value block 1 →

→ 1 → 2 → 3 → 4



- There are always 4 display zones - arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read-off from the following tables.

Read measured value block 1 →

0 km/h 0 km/h 0 km/h 0 km/h



Indicated on display: (vehicle stationary)

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterwards to regain entry.

01-246

**Note:**

For display group number 001 remember:

The actual wheel speeds are displayed. They serve to check the speed sensor allocation to the wheel. (The vehicle must be raised and the wheel must be rotated by hand by a 2nd mechanic).

Read measured value block			1 →	Display group number: 001
0 km/h	4 km/h	0 km/h	0 km/h	◀ Indicated on display: (Example)
				Wheel speed at right rear speed sensor ◆ (0...255 km/h)
				Wheel speed at left rear speed sensor ◆ (0...255 km/h)
				Wheel speed at right front speed sensor ◆ (0...255 km/h)
				Wheel speed at left front speed sensor ◆ (0...255 km/h)

01-247



Checking speed sensor

Display group number 002

- Press keys 0, 0 and 2.
- Confirm entry with key Q.

Read measured value block 2 →

→ 1 → 2 → 3 → 4



- There are always 4 display zones - arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read-off from the following tables.

Read measured value block 2 →

255 km/h 255 km/h 255 km/h 255 km/h



Indicated on display: (vehicle stationary)

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterwards to regain entry.

**Note:**

For display group number 002 remember:

The reading of measured value blocks in display group number 002 must be undertaken when driving off slowly. Then the ABS Control Module (w/EDL) -J104- will store the first usable voltage signals provided by the speed sensors and display these as a fixed value in the measured value block.

Read measured value block				2 →	Display group number: 002
3 km/h ¹⁾	6 km/h ¹⁾	2 km/h ²⁾	1 km/h ²⁾	◀	Indicated on display: (when driving off slowly)
					Wheel speed at right rear speed sensor ◆ (0...255 km/h)
					Wheel speed at left rear speed sensor ◆ (0...255 km/h)
					Wheel speed at right front speed sensor ◆ (0...255 km/h)
					Wheel speed at left front speed sensor ◆ (0...255 km/h)

¹⁾ If the deviations in display zones 1 and 2 are greater than 6 km/h (approx. 3.75 mph), the following faults may be present:

²⁾ If the deviations in display zones 3 and 4 are greater than 2 km/h (approx. 1.25 mph), the following faults may be present:

Note:

- ◆ Air gap between speed sensor and rotor may be too big.
- Check that speed sensor is screwed correctly to wheel bearing housing.
- ◆ Speed sensor or rotor exterior damaged.
- Change damaged component.

01-249



Checking brake light switch, brake system warning lamp, ABS warning lamp and ASR/ESP warning lamp

Display group number 003

- Press keys 0, 0 and 3
- Confirm entry with key Q.

Read measured value block 3 →

→ 1 → 2 → 3 → 4



- There are always 4 display zones - arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read-off from the following tables.

Read measured value block 3 →

not oper. off off off



Indicated on display: (vehicle stationary)

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterward to regain entry.



Read measured value block			3 →	Display group number: 003
not oper.	off	off	off	◀ Indicated on display
				ASR/ESP warning light ◆ off ◆ on
				ABS warning light¹⁾ ◆ off ◆ on
				Brake system warning light¹⁾ ◆ off ◆ on
Brake light switch: ◆ not oper. → Brake pedal not depressed ◆ operated → Brake pedal depressed If "not oper." is indicated on the V.A.G 1551 display despite foot brake being depressed or "operated", despite foot brake not being depressed, perform test step No. 4 of electrical check, ⇒ Page 01-288 . It is also possible that the brake light switch is not correctly adjusted. ⇒ Repair Manual, Brake System, Repair Group 46; Brake pedal - Assembly overview; Adjusting brake light switch				

¹⁾ During the diagnosis, ABS warning light -K47- and Warning light for brake system -K118- will flash.

01-251



Checking steering angle sensor, sensor for transverse acceleration and sender for rotation rate¹⁾

Display group number 004

- Press keys 0, 0 and 4
- Confirm entry with key Q.

Read measured value block 4 →
→ 1 → 2 → 3



- There are always 3 display zones - arrows- in the measured value block. Decoding the individual values in display zones 1 to 3 can be read-off from the following tables.

Read measured value block 4 →
0.0 ° 0.0m/s²- 1.26 ° /s



Indicated on display: e.g. (vehicle stationary)

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterwards to regain entry.

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION only



Read measured value block			4 →	Display group number: 004
0.0 °	0.0m/s ² -	1.26 ° /s		◀ Indicated on display (example)
				Vacant
			Sender for rotation rate: <ul style="list-style-type: none"> ◆ Specification when vehicle is stationary: +/- 2.5 ° /s ◆ Perform electrical check from ⇒ Page 01-288 	
		Sensor for transverse acceleration: <ul style="list-style-type: none"> ◆ Specification when vehicle stationary: +/- 1.5^m/s² ◆ Specification at full lock at a speed of 20 km/h (13 mph) in a left-hand curve: the values increase steadily. ◆ Specification at full lock at a speed of 20 km/h (13 mph) in a right-hand curve: the values increase steadily with a negative (-) sign. ◆ Check lateral acceleration sensor -G200- ⇒ Page 01-253 ◆ Perform electrical check from ⇒ from ⇒ Page 01-288 		
	Steering angle sensor: <ul style="list-style-type: none"> ◆ If the steering angle sensor -G85- is tested during straight-ahead travel, then zero compensation must also be performed.¹⁾ ◆ Specification at straight ahead ±4.5 ° ◆ Perform electrical checks from ⇒ Page 01-288 <p>- Initiate basic setting ⇒ Page 01-264 Display group number 060</p>			

¹⁾ During a test drive with the V.A.G 1551 scan tool or tester VAS 5051 connected and in "Diagnosis" or "Measured value block", there is no ABS or ESP regulation. The ABS or ESP warning lights will flash. The OBD of ABS control module (w/EDL) -J104- is terminated when a speed of 20 km/h (13 mph) is exceeded.

01-253



Checking sensor for transverse acceleration - G200-¹⁾

- Remove sensor for transverse acceleration - G200-. When doing this, do not pull connector off sensor for transverse acceleration -G200-.

⇒ [Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ESP system](#)

Note:

All functions that have so far been carried out with V.A.G 1551 can now also be carried out with the tester VAS 5051.

- Connect V.A.G. 1551 scan tool.

The sensor for transverse acceleration -G200- can be checked with the help of function "Read measured value block", display group 005.

Read measured value block 4 →

→ 1 → 2 → 3



- There are always 3 display zones -arrows-. Display zone 2 displays the value for the sensor for transverse acceleration -G200-.

Read measured value block 4 →

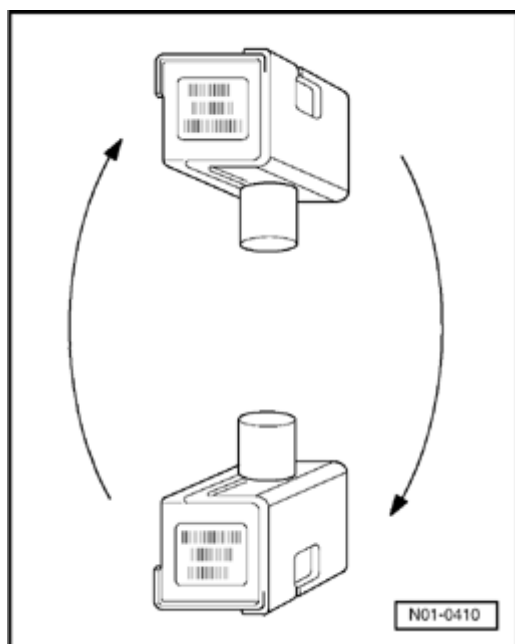
0.0 ^o 0.0m/s²- 1.26 ^o /s



Indicated on display: e.g. (vehicle stationary)

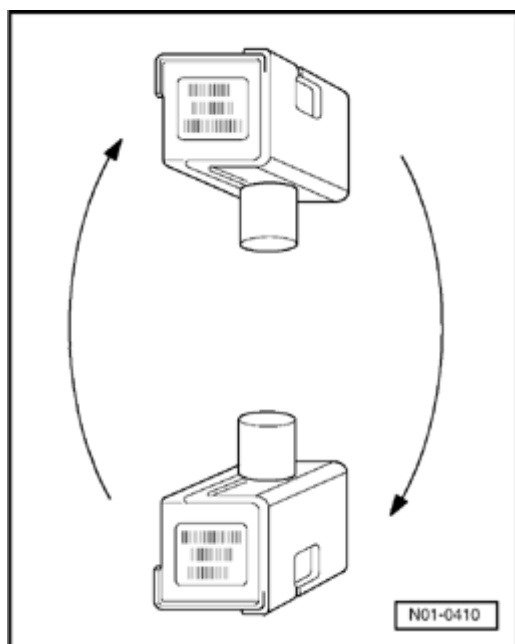
¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION only

01-254



- ▶ - Turn 90° to right of installation position (see illustration).
- Display in display zone 2 (with vehicle stationary) e.g. $-9.8 \pm 1 \text{ m/s}^2$.

A negative result equates to the forces during a right turn.



- ▶ - Turn 90° to left of installation position (see illustration).
- Display in display zone 2 (with vehicle stationary) e.g. $9.8 \pm 1 \text{ m/s}^2$.

A positive result equates to the forces during a left turn.

01-255



Checking brake pressure sensor ¹⁾

Display group number 005

- Press keys 0, 0 and 5
- Confirm entry with key Q.

Read measured value block 5 →

→ 1 → 2 → 3 → 4



- There are always 4 display zones - arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read-off from the following tables.

Read measured value block 5 →

- 1.06 bar



Indicated on display: e.g. (vehicle stationary)

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterwards to regain entry.

¹⁾ For ABS/EDL/ASR/ESP and ABS/EDL/ASR/ESP 4MOTION only

01-256



Read measured value block		5 →	Display group number: 005
-1.06 bar			◀ Indicated on display (example)
			Vacant
		Vacant	
		Vacant	
	Brake pressure sensor <ul style="list-style-type: none"> ◆ Specification when brake pedal is not depressed: ± 7 bar ◆ Perform electrical check from ⇒ Page 01-288 		

01-257



Checking longitudinal acceleration sensor -G251-¹⁾

Display group number 006

- Press keys 0, 0 and 6
- Confirm entry with key Q.

Read measured value block 6 →

→ 1 → 2 → 3 → 4



- There are always 4 display zones - arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read-off from the following tables.

Read measured value block 6 →

0.0m/s²



Indicated on display: (vehicle stationary)

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterwards to regain entry.

¹⁾ For 4MOTION vehicles only



Read measured value block		6 →	Display group number: 006	
0.0m/s ²			◀ Indicated on display (example)	
			Vacant	
		Vacant		
	Vacant			
	Longitudinal acceleration sensor:¹⁾ <ul style="list-style-type: none"> ◆ Specification when vehicle is stationary: +/- 1.5m/s² ◆ Specification when accelerating forwards: The values increase steadily. ◆ Specification when accelerating in reverse: The values increase steadily with a negative sign (-). ◆ Check longitudinal acceleration sensor -G251- ⇒ Page 01-259 ◆ Perform electrical check ⇒ Page 01-288 			

¹⁾ When performing a test drive where the V.A.G 1551 scan tool or tester VAS 5051 is connected and in diagnosis or read measured value block mode there is no ABS regulation. The ABS warning light does not light up. The OBD of ABS control module (w/EDL) -J104- is terminated when exceeding a speed of 20 km/h (13 mph).

01-259



Checking longitudinal acceleration sensor - G251-¹⁾

- Remove longitudinal acceleration sensor -G251- without pulling off connector.

⇒ [Repair Manual, Brake System, Repair Group 45](#)

Note:

All functions that have so far been carried out with V.A.G 1551 can now also be carried out with the tester VAS 5051.

- Connect V.A.G. 1551 scan tool.

The longitudinal acceleration sensor -G251- can be checked with the help of function "Read measured value block", display group 006.

Read measured value block 6 →

→ 1 → 2 → 3 → 4



- There are always 4 display zones -arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read-off from the following tables.

Read measured value block 6 →

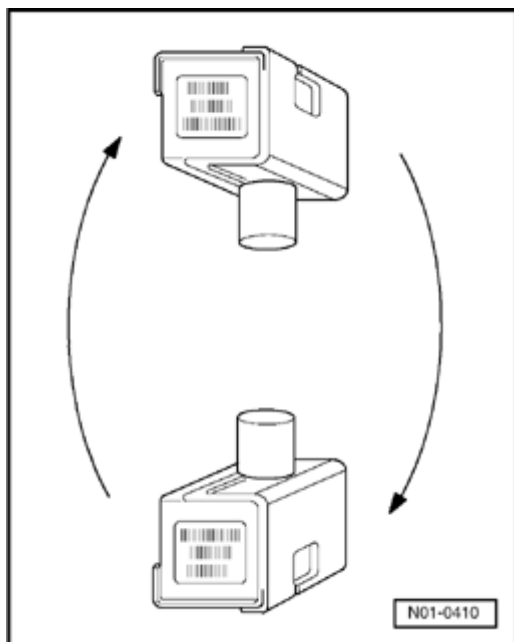
0.0m/s²



Indicated on display: e.g. (vehicle stationary)

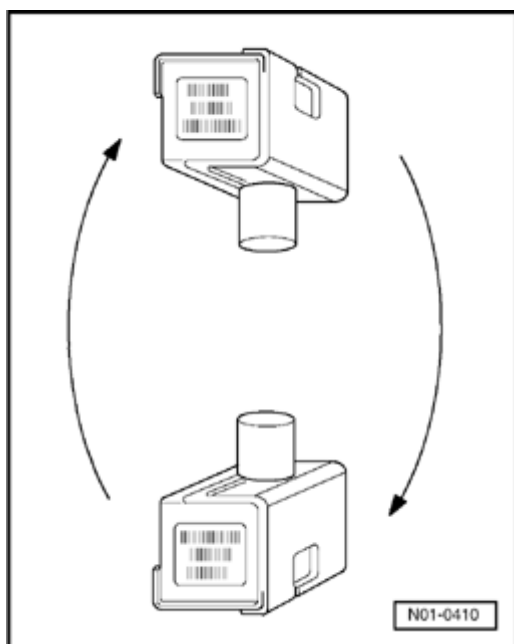
¹⁾ For 4MOTION vehicles only

01-260



- Turn 90° to right of installation position (see illustration).
- Display in display zone 1 (with vehicle stationary) e.g. $+9.8 \pm 1 \text{ m/s}^2$.

A positive sign corresponds to the force when driving forward.



- Turn 90° to left of installation position (see illustration).
- Display in display zone 1 (with vehicle stationary) e.g. $-9.8 \pm 1 \text{ m/s}^2$.

A negative sign corresponds to the force when driving backward.

01-261



Checking data bus wiring

Display group number 125

- Press keys 1, 2 and 5
- Confirm entry with key Q.

Read measured value block 125 →

→ 1 → 2 → 3 → 4



- There are always 4 display zones - arrows- in the measured value block. Decoding the individual values in display zones 1 to 4 can be read-off from the following tables.

Read measured value block 125 →

Engine 1 St.ang. 1 4WD 1 Gear.1



Indicated on display: (vehicle stationary)

Press C key for the next display group number entry.

If the → key is pressed, keys 0 and 8 for work sequence "Read measured value block" must be pressed again afterwards to regain entry.



Read measured value block			125 →	Display group number: 125
Engine	St.ang.	4WD	Gear.	◀ Indicated on display (example)
1	1	1	1	
				Data Bus for transmission¹⁾ ◆ 1 → Data bus connection is available. ◆ 0 → Data bus connection is not available. ³⁾
				Data bus for all-wheel drive²⁾ ◆ 1 → Data bus connection is available. ◆ 0 → Data bus connection is not available. ³⁾
				Data bus for steering angle ◆ 1 → Data bus connection is available. ◆ 0 → Data bus connection is not available. ³⁾
				Data bus for engine ◆ 1 → Data bus connection is available. ◆ 0 → Data bus connection is not available. ³⁾

¹⁾ Vehicles with automatic transmission only.

◆ *Incorrect transmission control module or incorrect transmission control module coding.*

◆ *Transmission control module malfunction.*

⇒ *Repair Manual, Transmission, Repair Group 01 for relevant transmission code.*

²⁾ For 4MOTION vehicles only

³⁾ Data bus connection is interrupted or data bus wires are interchanged.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder.*

01-263



Output Diagnostic Test Mode (DTM)

⇒ [Page 01-74](#)



Basic setting, initiating

Function 04 "Initiate basic setting" performs several functions with ABS Mark 60:

- ◆ Display group number 001 is required only to bleed the hydraulic system ⇒ [Page 01-266](#)

Note:

The basic setting is only necessary to bleed the hydraulic unit if at least one chamber of the brake fluid reservoir has completely run dry.

- ◆ *Display group number 040¹⁾ is required to shut off the longitudinal acceleration sensor -G251- in order to utilize the maximum engine performance for a test, e.g. on a rolling road test stand ⇒ [Page 01-269](#) .*
- ◆ Display group number 060²⁾ is required to perform a zero compensation for steering angle sensor -G85- ⇒ [Page 01-271](#) . Subsequently a test drive must be performed ⇒ [Page 01-284](#) .
- ◆ Display group number 063²⁾ is required to perform a zero compensation for sensor for transverse acceleration -G200- ⇒ [Page 01-275](#) . Subsequently a test drive must be performed ⇒ [Page 01-284](#) .
- ◆ Display group number 066²⁾ is required to perform a zero compensation for Sender 1 for brake booster -G201- ⇒ [Page 01-278](#) . Subsequently a test drive must be performed ⇒ [Page 01-284](#) .



- ◆ Display group number 069¹⁾ is required to perform a zero compensation of longitudinal acceleration sensor -G251- ⇒ [Page 01-281](#) .

- ◆ Display group number 093²⁾ is required to perform a driving test ⇒ [Page 01-284](#) . It serves to check the plausibility of the signals from the steering angle sensor -G85-, Sensor for transverse acceleration -G200- Sender for Rotation Rate -G202- and sender 1 for brake booster -G201-.

When the ABS control module (w/EDL) -J104- is replaced, a zero compensation must be performed for the following components:

- ◆ Sensor for transverse acceleration -G200-.

- ◆ Steering angle sensor -G85-.

- ◆ Sender 1 for brake booster -G201-.

- ◆ Longitudinal acceleration sensor -G251-.¹⁾

When the individual sensors or sensors are changed, a zero compensation must only be carried out for the changed component.

1) For 4MOTION vehicles only

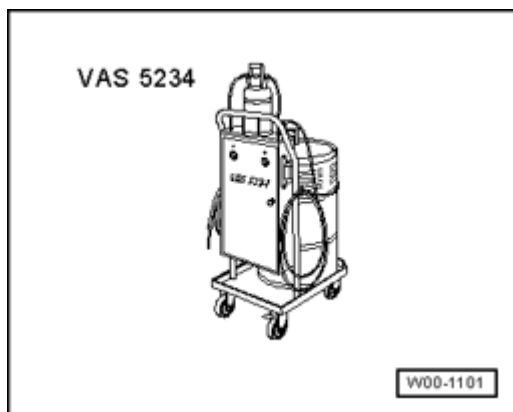
2) For ABS/EDL/ASR/ESP and
ABS/EDL/ASR/ESP 4MOTION only

01-266



Display group number 01: Bleeding hydraulic unit

Special tools and equipment



- ◆ VAS 5234 Brake filler and bleeder unit

Note:

All functions which could previously be performed with V.A.G 1551 can now also be carried out with the tester VAS 5051.

- Connect brake filling and bleeder unit VAS 5234.

- Pre-bleed brake system

⇒ [Repair Manual, Brake System, Repair Group 47; Bleeding brake system, vehicles with and without ABS](#)

- Connect V.A.G 1551 scan tool and select (address word 03) brake electronics control module with ignition switched on; ⇒ [Page 01-163](#) .

Rapid data transfer

HELP

Select function XX

Indicated on display

- Press keys 0 and 4. (The function "Initiating basic setting" is selected with 04).

01-267



Rapid data transfer Q
04 - Basic setting



Indicated on display:

- Confirm entry with key Q.

Basic setting HELP
Enter display group number XXX



Indicated on display:

- Press keys 0, 0 and 1
- Confirm entry with key Q.

The following cycle of steps must be repeated 8 times according to the basic setting prescribed by V.A.G 1551 or tester VAS 5051.

Basic setting 1 ON
Depress pedal and hold...



Indicated on display:

- Operate pedal with substantial foot pressure and hold.
 - ◆ Pedal moves down
 - ◆ Hydraulic pump runs
 - ◆ Pedal comes back

Basic setting 1
Rel. pedal; FR/FL bleed screw OPEN



Indicated on display:

- Press key 3 on V.A.G 1551 or arrow up key on VAS 5051

Basic setting 1 ON
Please wait...(10 secs.)



Indicated on display:

Hydraulic pump runs

01-269



Display group number 40: switching off longitudinal acceleration sensor -G251-

- ◆ All functions which could previously be performed with V.A.G 1551 can now also be carried out with the tester VAS 5051.

 - ◆ Display group 040 is necessary for shutting off longitudinal acceleration sensor -G251- in order to utilize the maximum engine performance for a test, e.g. on a rolling road test bed. In addition, the all wheel drive is shut off and the vehicle behaves like a front wheel drive vehicle.

 - ◆ Switch ignition off and on again to reactivate the longitudinal acceleration sensor -G251-.
- Connect V.A.G 1551 scan tool and select (address word 03) brake electronics control module with ignition switched on; ⇒ [Page 01-163](#) .

01-270



Rapid data transfer Enter address word XX	HELP	◀	Indicated on display: - Press keys 0 and 4. (The function "Initiating basic setting" is selected with 04).
Rapid data transfer 04 - Basic setting	Q	◀	Indicated on display: - Confirm entry with key Q.
Basic setting Enter display group number XXX	HELP	◀	Indicated on display: - Press keys 0, 4 and 0 - Confirm entry with key Q. ABS warning light flashes.
Basic setting	40	◀	Indicated on display: - The longitudinal acceleration sensor - G251- is now switched off. - After completing the checks, reactivate the longitudinal acceleration sensor - G251- by switching the ignition off and on again, once.

01-271



Display group number 60: zero compensation of steering angle sensor -G85-

Note:

- ◆ *All functions which could previously be performed with V.A.G 1551 can now also be carried out with the tester VAS 5051.*
- Connect V.A.G 1551 scan tool and select (address word 03) brake electronics control module with ignition switched on; ⇒ [Page 01-163](#) .
- Start engine.
- Carry out a short test drive over a flat and level surface. Drive straight-ahead and not faster than 20 km/h (12.5 mph) and observe the following points:
 - ◆ If the steering wheel is not in the centered position when driving straight ahead, the steering must be corrected within the framework of an alignment check.

⇒ [Repair Manual, Suspension, Wheels, Steering, Repair Group 44; Vehicle alignment.](#)

01-272



- ◆ If the steering wheel is in the straight ahead position during the test drive, stop the vehicle while still driving straight ahead.

- Check specifications with help of function 08 "Read measured value block" ⇒ [Page 01-240](#) , Display group number 004.

**Make sure steering wheel does not moved.
Do not turn ignition switch off!**

- First perform function 11 "Login procedure" successfully using V.A.G 1551 scan tool ⇒ [Page 01-287](#)

Rapid data transfer
Enter address word XX

HELP



Indicated on display:

- Press keys 0 and 4. (The function "Initiating basic setting" is selected with 04).

Rapid data transfer
04 - Basic setting

Q



Indicated on display:

- Confirm entry with key Q.

01-273



Basic setting

HELP

Enter display group number XXX



Indicated on display:

- Press keys 0, 6 and 0
- Confirm entry with key Q.
ABS warning light flashes.

Basic setting 60 OFF <4-ON>

Compens. OK.

0.0 °



And then the display shows e.g.:

Function is unknown or cannot be _ →
performed at moment



If this display appears the login procedure has not been performed successfully.

01-274



Basic setting 60 OFF <4-ON>

Compens. not poss.

12.

- or:



If this appears in the display, the measured values for the zero compensation are not within the allowed tolerance.

- Check specifications with help of function 08 "Read measured value block" ⇒ [Page 01-240](#) , Display group number 004.

1. Check DTC memory (Function 02)
2. Erase DTC memory (Function 05)
3. End output (Function 06)
4. Switch off ignition.
5. Switch on ignition.
6. Perform zero compensation again.

- Press → key.

Rapid data transfer

HELP

Enter address word XX



Indicated on display:

- Press keys 0 and 6, this ends the output.

Rapid data transfer

Q

06 - End output



Indicated on display

ABS and ESP warning lights light up for approx. 2 seconds.

01-275



Display group number 63: zero compensation of Sensor for transverse acceleration -G200-

Note:

All functions which could previously be performed with V.A.G 1551 can now also be carried out with the tester VAS 5051.

- Position vehicle on a flat level surface.

- Connect V.A.G 1551 scan tool and select (address word 03) brake electronics control module with ignition switched on; ⇒ [Page 01-163](#) .

- Check specifications with help of function 08 "Read measured value block" ⇒ [Page 01-240](#) , Display group number 004.

- First perform function 11 "Login procedure" successfully using V.A.G 1551 scan tool ⇒ [Page 01-287](#)

Rapid data transfer

HELP



Indicated on display:

Enter address word XX

- Press keys 0 and 4. (The function "Initiating basic setting" is selected with 04).

01-276



Rapid data transfer Q
 04 - Basic setting



Indicated on display:

- Confirm entry with key Q.

Basic setting HELP
 Enter display group number XXX



Indicated on display:

- Press keys 0, 6 and 3
- Confirm entry with key Q.
 ABS warning light flashes.

Basic setting 63 OFF <4-ON>
 Compens. OK. 0.6m/s²



And then the display shows e.g.:

Function is unknown or cannot be _ →
 performed at moment



If this display appears the login procedure has not been performed successfully.

- or:

Basic setting 63 OFF <4-ON>
 Compens. not poss. 5.0m/s²



If this appears in the display, the measured values for the zero compensation are not within the allowed tolerance.

- Check specifications with help of function 08 "Read measured value block" ⇒ [Page 01-240](#) , Display group number 004.

01-277



1. Check DTC memory (Function 02)
2. Erase DTC memory (Function 05)
3. End output (Function 06)
4. Switch off ignition.
5. Switch on ignition.
6. Perform zero compensation again.

- Press → key.

Rapid data transfer
Enter address word XX

HELP



Indicated on display:

- Press keys 0 and 6, this ends the output.

Rapid data transfer
06 - End output

Q



Indicated on display

ABS and ESP warning lights light up for approx. 2 seconds.

01-278



Display group number 66: zero compensation for Sender 1 for brake booster -G201-

Note:

All functions which could previously be performed with V.A.G 1551 can now also be carried out with the tester VAS 5051.

- Brake pedal not depressed.

- Connect V.A.G 1551 scan tool and select (address word 03) brake electronics control module with ignition switched on; ⇒ [Page 01-163](#) .

- Check measured values with help of function 08 "Read measured value block" ⇒ [Page 01-240](#) , Display group number 005.

- First perform function 11 "Login procedure" successfully using V.A.G 1551 scan tool ⇒ [Page 01-287](#)

Rapid data transfer

HELP



Indicated on display:

Enter address word XX

- Press keys 0 and 4. (The function "Initiating basic setting" is selected with 04).



Rapid data transfer Q
04 - Basic setting



Indicated on display:

- Confirm entry with key Q.

Basic setting HELP
Enter display group number XXX



Indicated on display:

- Press keys 0, 6 and 6
- Confirm entry with key Q.
ABS warning light flashes.

Basic setting 66 OFF <4-ON>
Compens. OK. - 0.85bar



And then the display shows e.g.:

Function is unknown or cannot be . →
performed at moment



If this display appears the login procedure has not been performed successfully.

- or:

Basic setting 66 OFF <4-ON>
Compens. not poss. 10.85bar



If this appears in the display the measured values for the zero compensation are not within the allowed tolerances.

- Check measured values with help of function 08 "Read measured value block" ⇒ [Page 01-240](#) , Display group number 005.

01-280



1. Check DTC memory (Function 02)
2. Erase DTC memory (Function 05)
3. End output (Function 06)
4. Switch off ignition.
5. Switch on ignition.
6. Perform zero compensation again.

- Press → key.

Rapid data transfer
Enter address word XX

HELP



Indicated on display:

- Press keys 0 and 6, this ends the output.

Rapid data transfer
06 - End output

Q



Indicated on display

ABS and ESP warning lights light up for approx. 2 seconds.

01-281



Display group number 69: zero compensation of longitudinal acceleration sensor -G251-

Note:

All functions which could previously be performed with V.A.G 1551 can now also be carried out with the tester VAS 5051.

- Position vehicle on a flat level surface.
- Connect V.A.G 1551 scan tool and select (address word 03) brake electronics control module with ignition switched on; ⇒ [Page 01-163](#) .
- Check measured values with help of function 08 "Read measured value block" ⇒ [Page 01-240](#) , Display group number 006.
- First perform function 11 "Login procedure" successfully using V.A.G 1551 scan tool ⇒ [Page 01-287](#)

Rapid data transfer

HELP



Enter address word XX

Indicated on display:

- Press keys 0 and 4. (The function "Initiating basic setting" is selected with 04).

01-282



Rapid data transfer Q
04 - Basic setting



Indicated on display:

- Confirm entry with key Q.

Basic setting HELP
Enter display group number XXX



Indicated on display:

- Press keys 0, 6 and 9
- Confirm entry with key Q.
ABS warning light flashes.

Basic setting 69 OFF <4-ON>
Compens. OK 0.3m/s²



Indicated on display:

Note:

After successfully completing the zero compensation the values in display do not go to 0.00 m/s²

Function is unknown or cannot be _ →
performed at moment



If this display appears the login procedure has not been performed successfully.

- or:

Basic setting 69 OFF <4-ON>
Compens. n. poss. 5.0m/s²



If this appears on display, the measured values are not within the accepted tolerance for zero compensation.

- Check measured values with help of function 08 "Read measured value block" ⇒ [Page 01-240](#) , Display group number 006.

01-283



1. Check DTC memory (Function 02)
2. Erase DTC memory (Function 05)
3. End output (Function 06)
4. Switch off ignition.
5. Switch on ignition.
6. Perform zero compensation again.

- Press → key.

Rapid data transfer
Enter address word XX

HELP



Indicated on display:

- Press keys 0 and 6, this ends the output.

Rapid data transfer
06 - End output

Q



Indicated on display

ABS and ESP warning lights light up for approx. 2 seconds.



Display group number 93: activation of ESP driving test

The ESP driving test is used to check the plausibility of the signals from sensor for transverse acceleration -G200-, sender for rotation rate -G202- and sender 1 for brake booster -G201-.

The ESP driving test should be performed each time parts of the ESP system are removed or replaced.

- Connect V.A.G 1551 scan tool and select (address word 03) brake electronics control module (address word 03) with ignition switched on; ⇒ [Page 01-163](#) .

Rapid data transfer
Enter address word XX

HELP



Indicated on display:

- Press keys 0 and 4. (The function "Initiating basic setting" is selected with 04).

Rapid data transfer
04 - Basic setting

Q



Indicated on display:

- Confirm entry with key Q.

Basic setting
Enter display group number XXX

HELP



Indicated on display:

- Press keys 0, 9 and 3

01-285



Basic setting 93 ON <8>

System test activated

OK



- Confirm entry with key Q.

Indicated on display:

The ESP driving test is activated.

ABS warning light -K47- lights up.

- Press → key.

Rapid data transfer

Select function XX

HELP



Indicated on display:

- Disconnect diagnostic connector.

- Start engine.

- Depress brake pedal firmly (brake pressure of more than 35 bar) until the ESP Control Lamp -K155- flashes.

This completes the stationary comparison test.

01-286



- Now perform test drive for maximum 50 seconds at a speed of 15km/h...30km/h:
- ◆ It must be driven so that no ABS, EDL, ASR or ESP regulation is performed.
- ◆ Make a turn with steering wheel turned at least 90°.
- ◆ When the ABS warning lamp -K47- and ESP warning lamp -K155- go out, the ESP driving test has been successfully completed.

WARNING!

Always comply with road traffic regulations and drive according to the traffic conditions.

Note:

- ◆ *If the ABS warning light -K47- does not go out, then the ESP driving test has not been performed correctly.*
- ◆ *If the ABS warning light -K47- does not go out and the ESP control lamp -K155- lights up again, check DTC memory ⇒ [Page 01-170](#) .*

01-287



Login procedure

- ◆ All functions that have so far been carried out with V.A.G 1551 can now also be carried out with the tester VAS 5051.
- ◆ The login procedure can only be performed once per calibration.

Coding is only possible after the workshop code (WSC) has been introduced into V.A.G 1551 or the new tester VAS 5051.

Test sequence

- Connect V.A.G 1551 scan tool and select (address word 03) brake electronics control module with ignition switched on; ⇒ [Page 01-163](#) .

Rapid data transfer
Enter address word XX

HELP



Indicated on display:

- Press key 1 and 1 (Function "Login procedure" is introduced with 11).

Rapid data transfer
11 Coding 2

Q



Indicated on display:

- Confirm entry with key Q.

Coding 2
Enter code number XXXXX

HELP



Indicated on display:

- Enter code number 40168.
- Confirm entry with key Q.

Rapid data transfer
Select function XX

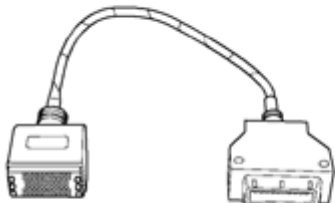
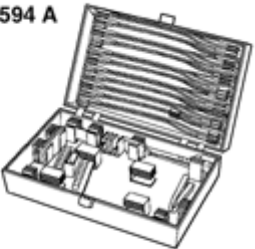



HELP



Indicated on display:

01-288



<p>V.A.G 1598/36</p> 	<p>V.A.G 1594 A</p> 
<p>V.A.G 1526 A</p> 	<p>V.A.G 1921</p> 
<p>V.A.G 1598 A</p> 	<p>W01-0021</p>

Electrical check of Mark 60

Special tools and equipment

- ◆ V.A.G 1598/36 Adapter
- ◆ V.A.G 1594 A Adapter set
- ◆ V.A.G 1526 A Hand multimeter
- ◆ V.A.G 1921 Pliers
- ◆ V.A.G 1598 A Test box

01-289



The test steps ⇒ [Page 01-297](#) apply only to vehicles with ABS/EDL/ASR/ESP

- ◆ For vehicles on which the On Board Diagnostic (OBD) does not give any indication of the source of the malfunction. Work through the complete electrical check.

- ◆ For vehicles on which the OBD provides a direct indication of the source of the malfunction. Only carry out the test steps recommended in the DTC table (directed entry).

An overview of all the test steps in the electrical check ⇒ [Page 01-297](#) .

01-290

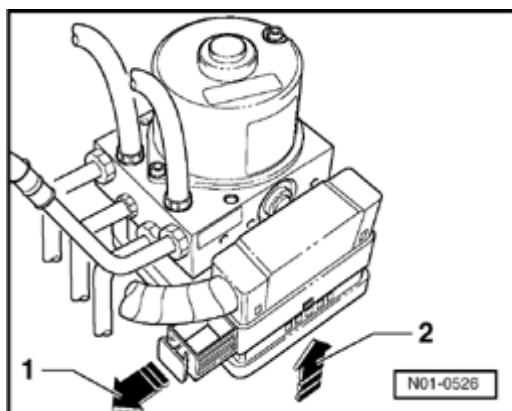


Test prerequisites

- Switch ignition and electrical consumers off before commencing the check (headlights, lighting, fans ...).
- Fuses must be OK (remove fuses from fuse holder to check).

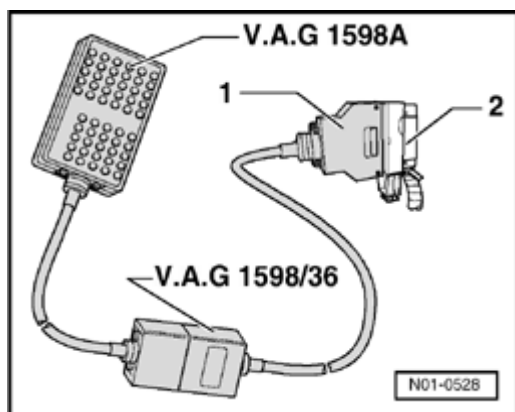
⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

- Pull fuse holder out of cable channel.



- Release ABS Control Module (w/EDL) - J104- connector -arrow 1- and pull off - arrow 2-.

01-291



- Connect test box V.A.G 1598/36 -1- to multi-pin connector of ABS control module (w/EDL) -J104- -2-.

The specified values are matched to the V.A.G 1526 and are not necessarily applicable for other test modules.

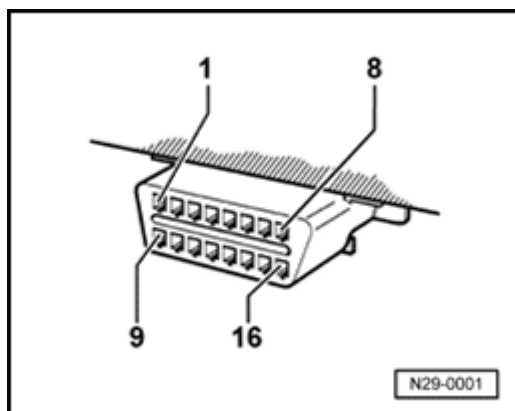
01-292



Multi-pin connector with contact assignments

Note:

All contacts not listed are currently not assigned and must never be connected to other components!

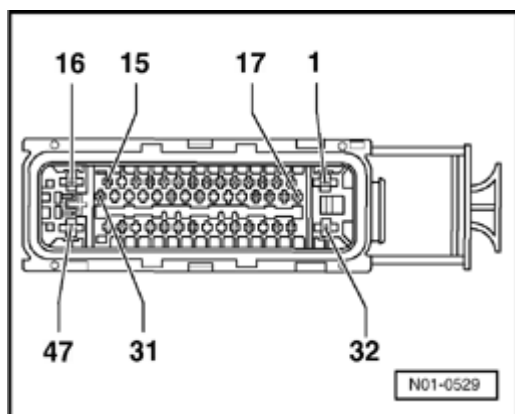


✦ Contact assignment of connectors for voltage supply and self-diagnosis with the V.A.G 1551 scan tool

Contact = Ground (terminal 31)
4

Contact = Positive (terminal 30)
16

Contact = K wire to contact 2 of multi-pin connector T47 of ABS control module (w/EDL) - J104-



✦ Contact assignment of connector T47 wiring harness/ABS control module (w/EDL) -J104-



Contact	Wiring connection to component ...	
1	⇒	Voltage supply from battery +
2	⇒	Connector T16/7, K wire
3	⇒	Longitudinal acceleration sensor -G251- sensor wire(4MOTION vehicles only)
	⇒	Vacant (4MOTION vehicles with ESP-sensor unit -G419, vehicles from 11.01)
4	⇒	Voltage supply from ignition/starter switch
5	⇒	Longitudinal acceleration sensor -G251- Ground(4MOTION vehicles only)
	⇒	Vacant (4MOTION vehicles with ESP-sensor unit -G419-, vehicles from 11.01)
6	⇒	Sensor for transverse acceleration -G200-
	⇒	Voltage supply for ESP-sensor unit -G419-, vehicles from 02.02
7	⇒	Longitudinal acceleration sensor -G251- voltage supply(4MOTION vehicles only)
	⇒	Vacant (4MOTION vehicles with ESP-sensor unit -G419-, vehicles from 11.01)
8	⇒	Vehicles with navigation system only
9	⇒	Coding bridge to contact 12 (vehicles with ABS/EDL/ASR/ESP 4MOTION only)
10	⇒	Vehicles with navigation system only
11	⇒	Data bus wire ⇒ Wiring diagrams
12	⇒	Coding bridge to contact 9 (vehicles with ABS/EDL/ASR/ESP 4MOTION only)
	⇒	Coding bridge to contact 38 (vehicles with ABS/EDL/ASR/ESP front wheel drive only)

01-294



Contact	Wiring connection to component ...	
13	⇒	ASR/ESP button -E256-
14	⇒	Coding bridge to contact 38 (vehicles with ABS and ABS/EDL/ASR front wheel drive only)
15	⇒	Data bus wire ⇒ Wiring diagrams
16	⇒	Ground point on left-hand longitudinal member
17	⇒	Vacant
18	⇒	Sender 1 for brake booster -G201- voltage supply
19	⇒	Sender 1 for brake booster -G201- signal wire
20	⇒	Sender 1 for brake booster -G201- ground wire
21	⇒	Vacant
22	⇒	Vacant
23	⇒	Vacant
24	⇒	Ground wire for sensor for transverse acceleration -G200- and sender for rotation rate -G202-
	⇒	Ground wire for ESP-sensor unit -G419-, vehicles from 02.02
25	⇒	Vacant
	⇒	Data bus wire for ESP-sensor unit -G419-, vehicles from 02.02
26	⇒	Voltage supply for sensor for transverse acceleration -G200- and sender for rotation rate -G202-

01-295



Contact	Wiring connection to component ...	
27	⇒	Vacant
28	⇒	Vacant
29	⇒	Vacant
	⇒	Data bus wire for ESP-sensor unit -G419-
30	⇒	Vacant
31	⇒	Vacant
32	⇒	Voltage supply from battery +
33	⇒	Right front ABS wheel speed sensor -G45-
34	⇒	Right front ABS wheel speed sensor -G45-
35	⇒	Vacant
36	⇒	Left rear ABS wheel speed sensor -G46-
37	⇒	Left rear ABS wheel speed sensor -G46-
38	⇒	Coding bridge to contact 12 (vehicles with ABS/EDL/ASR/ESP front wheel drive only)
	⇒	Coding bridge to contact 14 (vehicles with ABS and ABS/EDL/ASR front wheel drive only)

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Contact	Wiring connection to component ...	
39	⇒	Vacant
40	⇒	Sender for rotation rate -G202- signal wire
41	⇒	Brake light switch -F-
42	⇒	Right rear ABS wheel speed sensor -G44-
43	⇒	Right rear ABS wheel speed sensor -G44-
44	⇒	Vacant
45	⇒	Left front ABS wheel speed sensor -G47-
46	⇒	Left front ABS wheel speed sensor -G47-
47	⇒	Ground point on left-hand longitudinal member

01-297



Test step overview

Component to be tested	
Voltage supply for ABS hydraulic pump -V64- to ABS control module (w/EDL) -J104-	- Perform test step 1
Voltage supply for valves in ABS hydraulic unit -N55- to ABS control module (w/EDL) -J104-	- Perform test step 2
Voltage supply (ignition/starter switch) to ABS control module (w/EDL) -J104-	- Perform test step 3
Function of brake light switch -F-	- Perform test step 4
Resistance of right front ABS wheel speed sensor -G45-	- Perform test step 5
Resistance of left front ABS wheel speed sensor -G47-	- Perform test step 6
Resistance of right rear ABS wheel speed sensor -G44-	- Perform test step 7
Resistance of left rear ABS wheel speed sensor -G46-	- Perform test step 8
Voltage signal of right front ABS wheel speed sensor -G45-	- Perform test step 9
Voltage signal of left front ABS wheel speed sensor -G47-	- Perform test step 10
Voltage signal of right rear ABS wheel speed sensor -G44-	- Perform test step 11

01-298



Component to be tested	
Voltage signal of left rear ABS wheel speed sensor -G46-	- Perform test step 12
Warning lamp function for ABS warning light -K47-	- Perform test step 13
Warning lamp function for warning light for brake system -K118-	- Perform test step 14
Warning lamp function for ESP control lamp -K155-	- Perform test step 15
Function of ASR/ESP button -E256-	- Perform test step 16
Activation of steering angle sensor -G85-	- Perform test step 17
Activation of sensor for transverse acceleration -G200-	- Perform test step 18
Activation of sender for rotation rate -G202-	
Activation of sender 1 for brake booster -G201-	- Perform test step 19
Check of data bus wiring	- Perform test step 20
Voltage supply for V.A.G 1551, connector T16	- Perform test step 21
Resistance of K wire for self-diagnosis, connector T16	- Perform test step 22
Coding bridge	- Perform test step 23



Test table (test steps 1 - 16)

Test steps 17 - 23 ⇒ see ⇒ [Page 01-313](#)

Note on test table

- ◆ *The socket designations of adapter V.A.G 1598/33 are identical to the ABS control module (w/EDL) -J104- contact designations in wiring diagram.*

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

- ◆ *If the readings obtained deviate from the specifications, carry out repair measure in the right-hand part of the table.*

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

- ◆ *Continuity checks with adapter set V.A.G 1594 A (bridging).*

- ◆ *If the measured figures only deviate slightly from the specifications, clean sockets and plugs of the testers and adapter cables (with contact spray G 000 700 04) and repeat check. Before replacing components, check wiring and connections and also, particularly for specifications of less than 10 Ω , repeat resistance check on the component.*

01-300



Switch to measuring range:					
Voltage measurement (20 V =)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
1	1 + 47	Voltage supply for ABS hydraulic pump -V64- to ABS Control Module (w/EDL) - J104-	<ul style="list-style-type: none"> • Ignition switched off 	10.0 - 14.5 V	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
2	32 + 16	Voltage supply for the valves in ABS hydraulic unit -N55- to ABS Control Module (w/EDL) -J104-	<ul style="list-style-type: none"> • Ignition switched off 	10.0 - 14.5 V	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

01-301



Switch to measuring range:					
Voltage measurement (20 V =)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
3	4 + 47	Voltage supply (ignition/starter switch) to ABS Control Module (w/EDL) -J104-	<ul style="list-style-type: none"> • Ignition switched on 	10.0 - 14.5 V	<ul style="list-style-type: none"> - Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
4	47 + 41	Function of brake light switch -F-	<ul style="list-style-type: none"> • Ignition switched off • Brake pedal not depressed 	0.0 - 0.5 V	<ul style="list-style-type: none"> - Check brake light switch -F- and read measured value block ⇒ Page 01-240 , Display group number 003
			- Depress brake pedal	Approx. battery voltage	<ul style="list-style-type: none"> - Adjusting brake light switch ⇒ Repair Manual, Brake System, Repair Group 46: Brake pedal - Assembly overview; Adjusting brake light switch - Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

01-302



Switch to measuring range:					
Resistance measurement (2 kΩ)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
5	33 + 34	Resistance of right front ABS wheel speed sensor -G45-	<ul style="list-style-type: none"> • Ignition switched off 	1.0 - 1.3 k Ω	<ul style="list-style-type: none"> - Check wiring using wiring diagram - Wiggle wiring during test ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> If no malfunction can be located in the wiring: - Replace right front ABS wheel speed sensor -G45- ⇒ <i>Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles</i>

01-303



Switch to measuring range:					
Resistance measurement (2 kΩ)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
6	45 + 46	Resistance of left front ABS wheel speed sensor -G47-	<ul style="list-style-type: none"> • Ignition switched off 	1.0 - 1.3 k Ω	<ul style="list-style-type: none"> - Check wiring using wiring diagram - Wiggle wiring during test ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> If no malfunction can be located in the wiring: - Replace left front ABS wheel speed sensor - G47- ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles

01-304



Switch to measuring range:					
Resistance measurement (2 kΩ)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
7	42 + 43	Resistance of right rear ABS wheel speed sensor -G44-	<ul style="list-style-type: none"> • Ignition switched off 	1.0 - 1.3 k Ω	<ul style="list-style-type: none"> - Check wiring using wiring diagram - Wiggle wiring during test \Rightarrow <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> If no malfunction can be located in the wiring: - Replace right rear ABS wheel speed sensor - G44- \Rightarrow <i>Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles</i>

01-305



Switch to measuring range:					
Resistance measurement (2 kΩ)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
8	37 + 36	Resistance of left rear ABS wheel speed sensor -G46-	<ul style="list-style-type: none"> • Ignition switched off 	1.0 - 1.3 k Ω	- Check wiring using wiring diagram - Wiggle wiring during test ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> If no malfunction can be located in the wiring: - Replace left rear ABS wheel speed sensor - G46- ⇒ Repair Manual, Brake System, Repair Group 45; Removing and installing parts of ABS system on front and rear axles



Switch to measuring range:					
Voltage measurement (2 V \approx)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
9	33 + 34	Right front ABS wheel speed sensor - G45- voltage signal	<ul style="list-style-type: none"> • Vehicle raised 		- Check installation of right front ABS wheel speed sensor -G45- and rotor.
			<ul style="list-style-type: none"> • Ignition switched off 		
			- Rotate front right wheel at approx. 1 rev./sec.	Min. 65 mV alternating voltage	- Check whether right front ABS wheel speed sensor -G45- has been interchanged and read measured value block \Rightarrow Page 01-240 , Display group number 001
10	45 + 46	Left front ABS wheel speed sensor - G47- voltage signal	<ul style="list-style-type: none"> • Vehicle raised 		- Check installation of left front ABS wheel speed sensor -G47- and rotor.
			<ul style="list-style-type: none"> • Ignition switched off 		
			- Rotate front left wheel at approx. 1 rev./sec.	Min. 65 mV alternating voltage	- Check whether left front ABS wheel speed sensor -G47- has been interchanged and read measured value block \Rightarrow Page 01-240 , display group number 001

01-307



Switch to measuring range:					
Voltage measurement (2 V \approx)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
11	42 + 43	Right rear ABS wheel speed sensor - G44- voltage signal	<ul style="list-style-type: none"> • Vehicle raised 		- Check installation of right rear ABS wheel speed sensor -G44- and rotor.
			<ul style="list-style-type: none"> • Ignition switched off 		
			- Rotate rear right wheel at approx. 1 rev./sec.	Min. 190 mV alternating voltage	- Check whether right rear ABS wheel speed sensor -G44- has been interchanged and read measured value block \Rightarrow Page 01-240 , Display group number 001
12	37 + 36	Left rear ABS wheel speed sensor - G46- voltage signal	<ul style="list-style-type: none"> • Vehicle raised 		- Check installation of left rear ABS wheel speed sensor -G46- and rotor.
			<ul style="list-style-type: none"> • Ignition switched off 		
			- Rotate rear left wheel at approx. 1 rev./sec.	Min. 190 mV alternating voltage	- Check whether left rear ABS wheel speed sensor -G46- has been interchanged and read measured value block \Rightarrow Page 01-240 , Display group number 001

01-308



Functional check: ABS warning light -K47-					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
13	-	Function of ABS warning light -K47-	<ul style="list-style-type: none"> • Ignition switched on - Switch on ignition	The ABS warning light -K47- lights up for approx. 2 seconds and goes out again	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> - Malfunction in instrument cluster ⇒ <i>Repair Manual, Body Interior, Repair Group 70; instrument panel</i>

01-309



Functional check: Warning light for brake system -K118-					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
14	-	Function of warning light for brake system - K118-	<ul style="list-style-type: none"> • Parking brake not applied • Brake fluid level OK • Ignition switched on 	Warning light for brake system - K118- does not light up	
			- Apply parking brake	Warning light for brake system - K118- lights up	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> - Malfunction in instrument cluster ⇒ Repair Manual, Body Interior, Repair Group 70; instrument panel

01-310



Functional check: ESP Control Lamp -K155-					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
15	-	Function of ESP control lamp - K155-	<ul style="list-style-type: none"> • Ignition switched on - Switch ignition on	ESP control lamp - K155- lights up for 2 seconds and goes out again	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i> - Malfunction in instrument cluster ⇒ <i>Repair Manual, Body Interior, Repair Group 70; instrument panel</i>

01-311



Functional check: warning lamp for ASR/ESP button -E256-					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
16	-	Function of ASR/ESP button - E256-	<ul style="list-style-type: none"> • Ignition switched on • The function of the ESP Control Lamp -K155- was checked in test step 15. 	ESP control lamp - K155- lights up for 2 seconds and goes out again	
			- Operate ASR/ESP button - E256-	ESP control lamp - K155- lights up	
			- Operate ASR/ESP button - E256- again	ESP control lamp - K155- goes out	
				Test step 16: Continued on next page.	

01-312



Continuation of test step 16					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
					- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
			ASR/ESP button -E256- faulty		- Replace ASR/ESP button -E256- ⇒ <i>Repair Manual, Body Interior, Repair Group 70: instrument panel</i>

01-313



Test table (test steps 17 - 23)

Switch to measuring range:					
Voltage measurement (20 V =) in test step 17, resistance measurement (200 Ω)/(20 M Ω) in test step 17a					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
17	-	Voltage supply for steering angle sensor - G85-	<ul style="list-style-type: none"> • Ignition switched off - Disconnect connection from steering angle sensor -G85- 		
			- Disconnect multi-pin connection T47 from ABS control module (w/EDL) - J104-		
			- Check wiring between contact T6a/4 and contact T6a/1 of steering angle sensor -G85-	10.0 - 14.5 V	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
				Test step 17: Continued on next page.	

01-314



Continuation of test step 17					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
17	-	Voltage supply for steering angle sensor - G85-	- Ignition switched on - Check wiring between contact T6a/5 and connector contact T6a/1 of steering angle sensor -G85-	10.0 - 14.5 V	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
				Test step 17a: On next page.	

01-315



Continuation of test step 17a					
Switch to measuring range:					
Resistance measurement (200 Ω/20 M Ω)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
17a	-	Wiring for steering angle sensor - G85-	<ul style="list-style-type: none"> • Measuring range set to 200 Ω • Ignition switched off - Connect test box V.A.G 1598/36 		
			- Check wiring for open circuit between steering angle sensor - G85- and ABS control module (w/EDL) - J104- multi-pin connector	Max. 1.5 Ω	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
				Test step 17a: On next page.	

01-316



Continuation of test step 17a					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
17a		Wiring for steering angle sensor - G85-	<ul style="list-style-type: none"> - Set measuring range to 20 M Ω - Remove fuse S9 		
			<ul style="list-style-type: none"> - Check wiring for short circuit to positive or Ground 	$\infty \Omega$	
					<ul style="list-style-type: none"> - Check wiring using wiring diagram \Rightarrow <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

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Switch to measuring range:					
Resistance measurement (200 Ω/20 M Ω)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
18	-	Wiring for sensor for transverse acceleration - G200- and sender for rotation rate - G202-	<ul style="list-style-type: none"> • Ignition switched off • Measuring range set to 200 Ω 		
			- Connect test box V.A.G1598/36		
			- Check wiring for open circuit between multi-pin connector of sensor for transverse acceleration -G200-, sender for rotation rate -G202- and multi-pin connector of ABS control module (w/EDL) -J104-:	Max. 1.5 Ω	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
				Test step 18: Continued on next page.	

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Continuation of test step 18					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
			<ul style="list-style-type: none"> - Set measuring range to 20 M Ω - Remove fuse S9 		
			<ul style="list-style-type: none"> - Check wiring for short circuit to positive or Ground 	$\infty \Omega$	
					<ul style="list-style-type: none"> - Check wiring using wiring diagram \Rightarrow <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

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Switch to measuring range:					
Resistance measurement (200 Ω/20 M Ω)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
19	-	Wiring for sender 1 for brake booster - G201-	<ul style="list-style-type: none"> • Ignition switched off • Measuring range set to 200 Ω - Disconnect connection from sender 1 for brake booster -G201- - Disconnect multi-pin connection T47 from ABS control module (w/EDL) -J104- - Connect test box V.A.G 1598/36 		
			<ul style="list-style-type: none"> - Check wiring for open circuit between sender 1 for brake booster - G201- multi-pin connector and ABS control module (w/EDL) -J104- multi-pin connector 	Max. 1.5 Ω	<ul style="list-style-type: none"> - Check wiring using wiring diagram \Rightarrow <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
				Test step 19: Continued on next page.	

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Continuation of test step 19					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
			<ul style="list-style-type: none"> - Set measuring range to 20 M Ω - Remove fuse S9 		
			<ul style="list-style-type: none"> - Check wiring for short circuit to positive or Ground 	$\infty \Omega$	
					<ul style="list-style-type: none"> - Check wiring using wiring diagram \Rightarrow <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

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Switch to measuring range:					
Resistance measurement (200 Ω/20 M Ω)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
20	11 or 15	Data bus wiring	<ul style="list-style-type: none"> • Ignition switched off • Measuring set range to 200 Ω - Disconnect multi-pin connection from a control module which is connected via data bus wiring: - Connect test box V.A.G 1598/36 		
			- Check data bus wiring for open circuit	Max. 1.5 Ω	- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>
				Test step 20: Continued on next page	

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Continuation of test step 20					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
			<ul style="list-style-type: none"> - Set measuring range to 20 M Ω - Remove fuse S9 		
			<ul style="list-style-type: none"> - Check wiring for short circuit to positive or Ground 	$\infty \Omega$	
					<ul style="list-style-type: none"> - Check wiring using wiring diagram \Rightarrow <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

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Switch to measuring range:					
Voltage measurement (20 V =)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
21	-	Voltage supply for V.A.G 1551, connector T16 ¹⁾	<ul style="list-style-type: none"> • Ignition switched off - Connect hand multimeter V.A.G 1526 to connector T16 ¹⁾ using adapter set V.A.G 1594	10.0 -14.5 V	
					- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

¹⁾ Diagnosis connector contact assignment ⇒ [Page 01-292](#)

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Switch to measuring range:					
Resistance measurement 200 Ω					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations 	Specification	Measures for deviations from specification
22	-	Resistance of K wire for V.A.G 1551, connector T16 ¹⁾	<ul style="list-style-type: none"> • Ignition switched off - Disconnect multi-pin connector from ABS control module (w/EDL) -J104 - Connect test box V.A.G 1598/36 - Connect hand multimeter V.A.G 1526 to contacts T16/7¹⁾ and T47/2 of multi-pin connector of ABS control module (w/EDL) -J104- using cables from adapter set V.A.G 1594 	Max. 1.5 Ω	<ul style="list-style-type: none"> - Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

¹⁾ Diagnosis connector contact assignment ⇒ [Page 01-292](#)

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Switch to measuring range:					
Resistance measurement (200 Ω)					
Test step	V.A.G 1598 sockets	Item tested	<ul style="list-style-type: none"> • Test conditions - Additional operations	Specification	Measures for deviations from specification
23	14 + 38	Coding bridge for ABS and ABS/EDL/ASR front wheel drive	<ul style="list-style-type: none"> • Ignition switched off 	0.0 -1.0 Ω	
	12 + 38	Coding bridge for ABS/EDL/ASR/ESP front wheel drive			
	12 + 9	Coding bridge for ABS/EDL/ASR/ESP 4MOTION			
					- Check wiring using wiring diagram ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations binder</i>

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Definitions

These explanations refer only to this assembly group: ABS On Board Diagnostic (OBD). These definitions are not necessarily generally valid.

ABS

Anti-locking brake system. Further information on the ABS can be found in the relevant self-study programs.

Display group number ⇒ Read measured value block

ASR

Traction Control System

Data bus

Transportation of data. To do this the electrical signals are brought into a certain format (BUS). Further information can be found in Self-study programs. Also called CAN Bus.

Data bus low (high)

The voltage used to transport the data is low (high). Further information can be found in Self-study programs.

Speed sensor

Sends speed signals to control module.

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**EBD**

Electronic brake pressure distribution

EDL

Electronic differential lock

On Board Diagnostic (OBD)

The capability of the control module:

- ◆ Recognize Diagnostic Trouble Codes (DTCs)
- ◆ React to DTCs
- ◆ Store DTCs

and make them available in the Measured value block. Further information on this can be found in Self-study programs and test unit instruction manual.

Performing On Board Diagnostic (OBD)

Connecting the Scan Tool to be able to check the DTC memory. Further information on this can be found in Self-study programs and test unit instruction manual.

Performing electrical check

A targeted check of the electronic components by performing certain measurements.

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ESP

Electronic Stabilization program

ESP-Sensor unit -G419-, vehicles from 02.02

The sensor for transverse acceleration -G200-, the sender for rotation rate -G202- and the sensor for longitudinal acceleration sensor -G251- (4MOTION vehicles) are assembled together in a housing.

No communication

There is no connection for exchanging information between the control modules.

Sender for rotation rate -G202-

Recognizes the rotational movement of the vehicle along its vertical axis in relation to vehicle speed.

Longitudinal acceleration sensor -G251-

Determines the correct speed for 4MOTION vehicles

Steering angle sensor -G85-

Determines the angle and direction of steering lock (driver's wish). Data is transferred to control module via data bus wiring.

Short to Ground

Current flows incorrectly to Ground without supplying a consumer.

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**Short to positive**

Current flows incorrectly to a live component without supplying a consumer.

Brake pressure release solenoid -F84-

The trip switch is installed in the brake booster and is required by the control module to recognize the braking desired by the driver.

Magnetic coil for brake pressure, in brake booster, -N247-

The brake pressure solenoid is installed in the brake booster and ensures that a pre-pressure of 10 bar is available for the ABS/ESP pump.

Read measured value block

The control module can transfer a considerable amount of test data. This test data delivers information on the operational condition of the system and/or sensors connected to it. In many cases the transferred test data supports troubleshooting and malfunction repair. The test data has been summarized into single display groups because all the information cannot be evaluated at the same time. The information can be selected via display group numbers.

EBC

Engine braking control

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**Sensor for transverse acceleration -G200-**

The lateral acceleration sensor is used to register the speed through curves/bends on the road and decides which side of the vehicle the ESP is to brake.

Sender 1 for brake booster/Sensor -2- for brake pressure -G201-/-G214-

Recognizes the pressure exerted by the driver and is required to control the pressure of the pre-pressure system.

Program card version

Always use the most up-to-date program card. Further information can be found in the test unit operating instructions.

Sporadic

Happens occasionally

Infinity Ω

The resistance is infinite, open circuit.

Ω = Ohm

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**Infinity Ω**

The resistance is infinite, open circuit.

Ω = Ohm

Forget-malfunction counter

When a fault gets in the memory fault counter, after 50 vehicle starts, and this fault is not repeated again, the memory counter erases the fault.