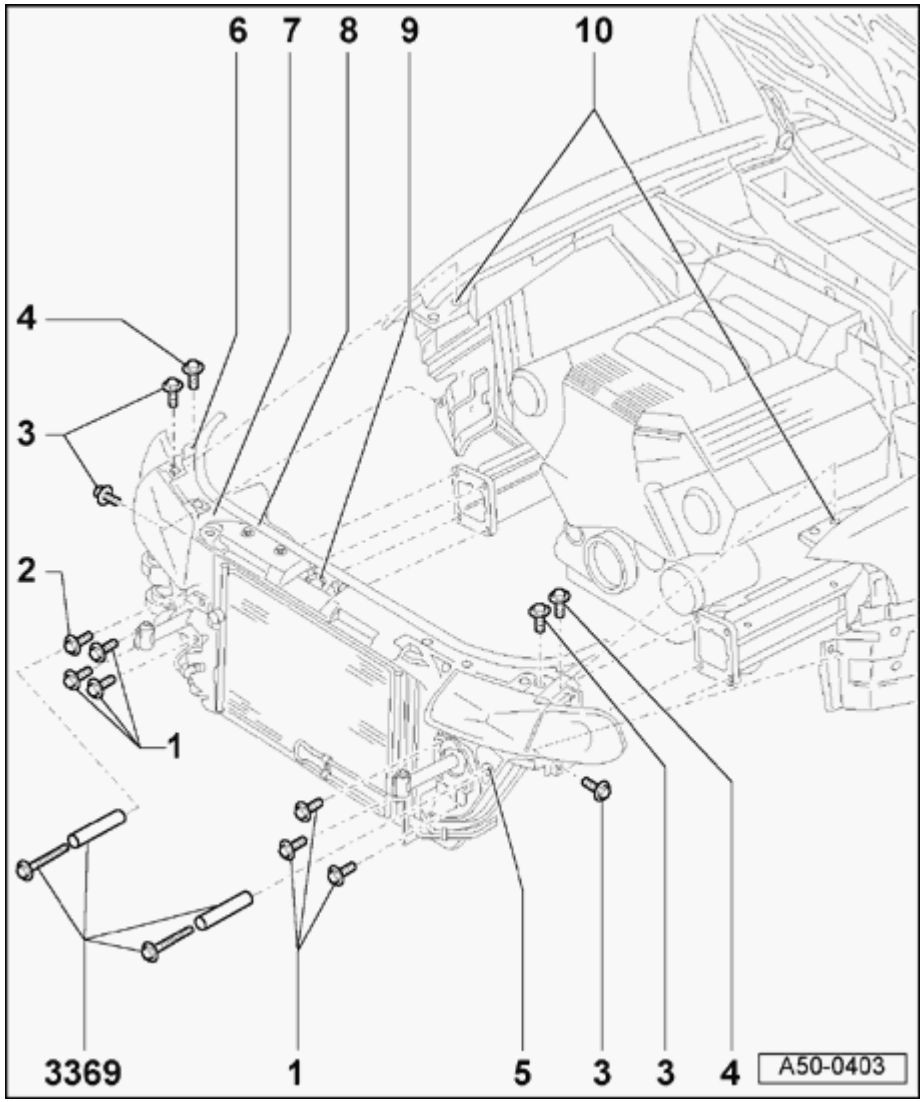


Notes:

- *Do not suspend hydraulic fluid cooler by its lines.*
- *Hydraulic fluid cooler must not be bent or kinked under any circumstances*
- On vehicles with automatic transmission, remove ATF cooler

⇒ *Repair Manual, Automatic Transmission, Repair Group 37*

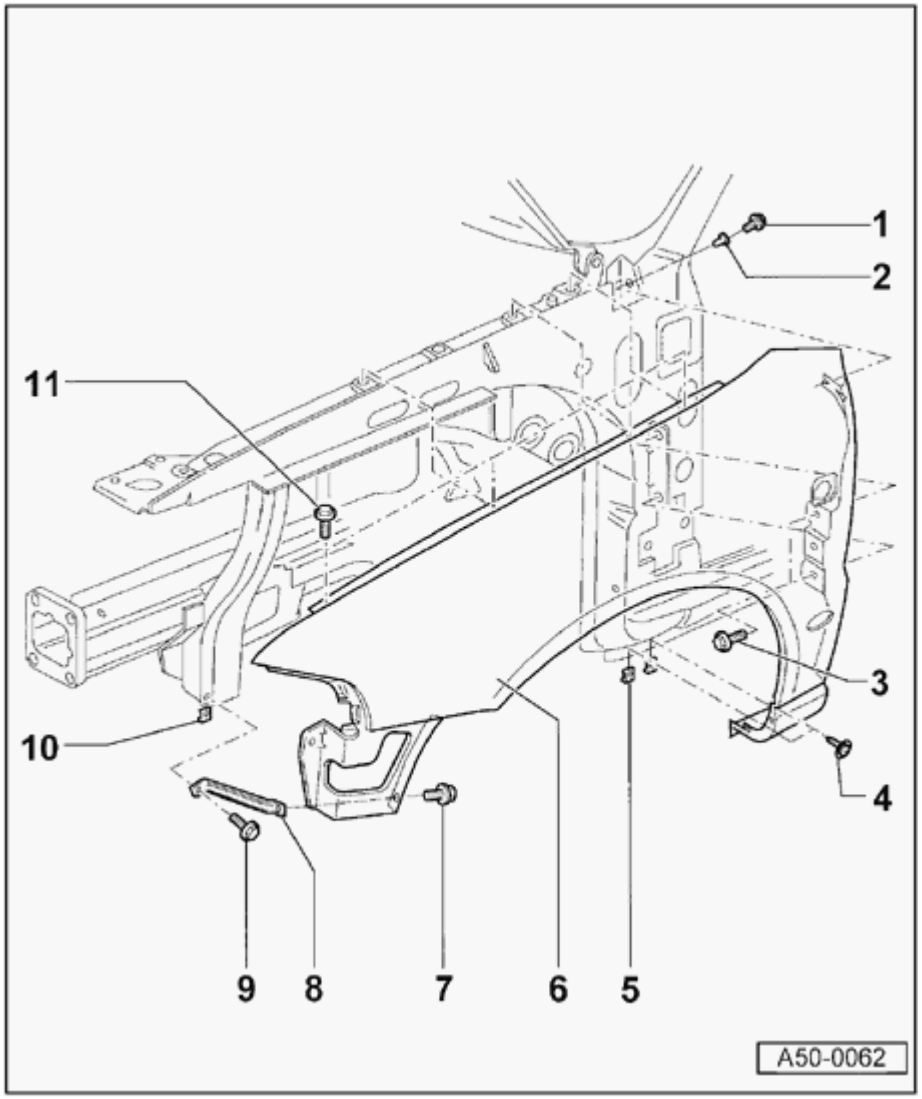
- On vehicles with charge air cooler, remove intake air duct

  - Loosen seal for hood -8- at left and right where fender meets lock carrier -7-.
  - Remove bolts -3- and -4-.

- A second mechanic is needed to support lock carrier -7-

  - Remove bolts -1- and -2-.

50-10



Front fender (➢ VIN 8D XA 200 000), assembly overview

1 - Combination bolt

- 4.5 Nm (40 in. lb)

2 - Threaded rivet

- Threaded rivet is inserted using VAG1618A

3 - Combination bolts (2x)

- 7.5 Nm (66 in. lb)

4 - Phillips head screw

- 4.5 Nm (40 in. lb)

5 - Metal nut (2x)

6 - Fender

- Remove bumper ⇒ page 63-1 .
- Remove wheelhousing liner ⇒ page 66-31 .
- Remove end plate ⇒ Fig. 1 .
- Remove headlights ⇒ Repair Manual, Electrical Equipment
- Disconnect electrical connectors for side blinkers

  - Remove bolts -1-, -3-, -4-, -7-, and -11-.

01-106

Measuring value block 002

Read Measuring Value Block 2 → ◀Indicated on display:

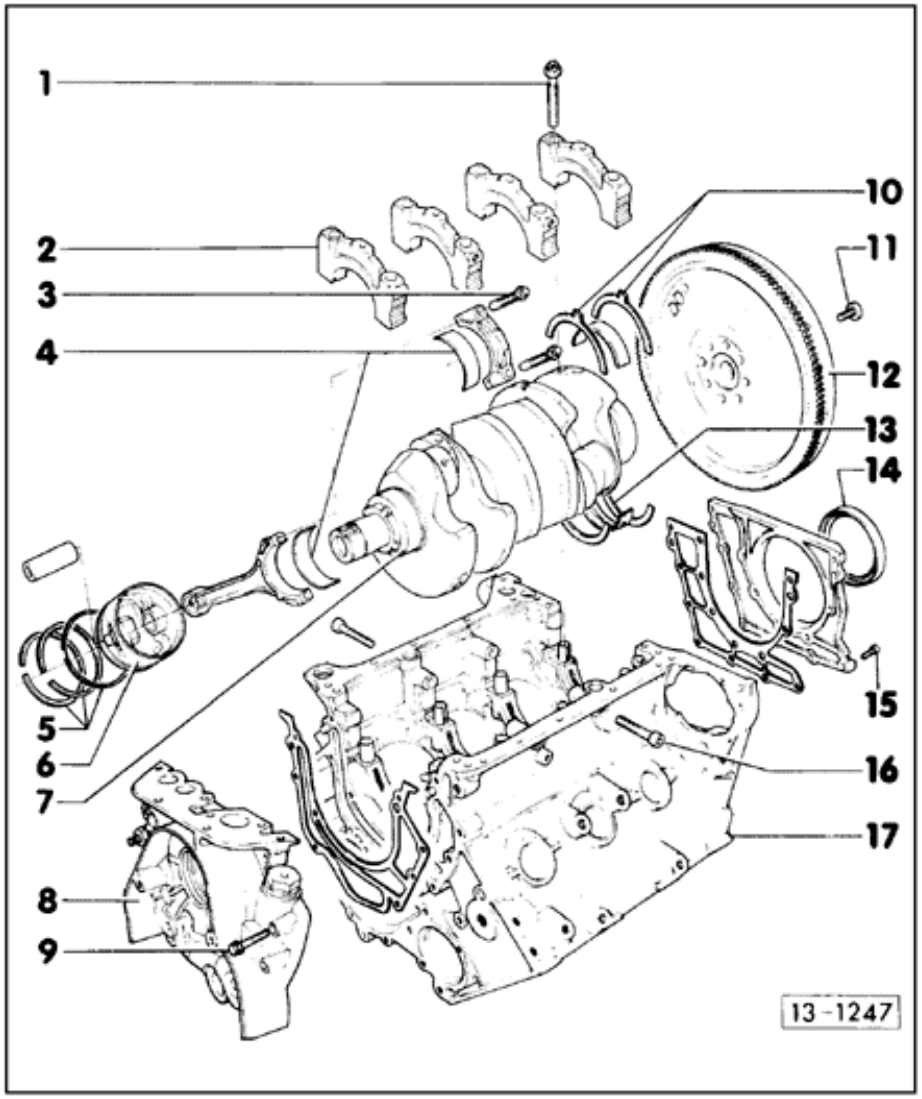
activated activated

Station buttons (preset) forward

- not operated
- operated

Station buttons (preset) backward

- not operated
- operated



5 - Piston rings

- Checking ⇒ page 13-25

6 - Piston

- Checking ⇒ page 13-26

7 - Crankshaft

- Checking ⇒ page 13-21
- Dimensions ⇒ page 13-24

8 - Oil pump

- Check drive gear on crankshaft when installing
- Removing ⇒ Repair Group 17

9 - 10 Nm (7 ft lb)

10 - Thrust washers

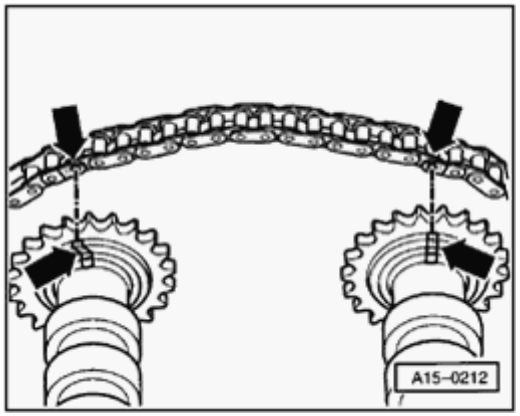
- Installed only at 4th crankshaft main bearing
- Checking crankshaft axial clearance ⇒ page 13-21

11 - Bolt

Automatic trans. (drive plate)

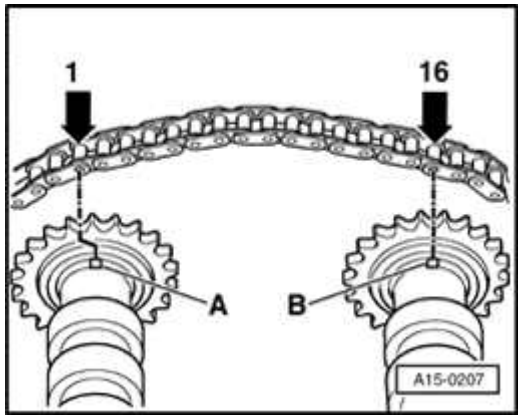
- Always replace
- Tightening torque: 60 Nm (44 ft lb) plus 1/4-turn (90°)

- Install drive chain on camshaft sprockets as follows:



➢

- When old chain is being re-installed, install so that colored markings are in line -arrows-.

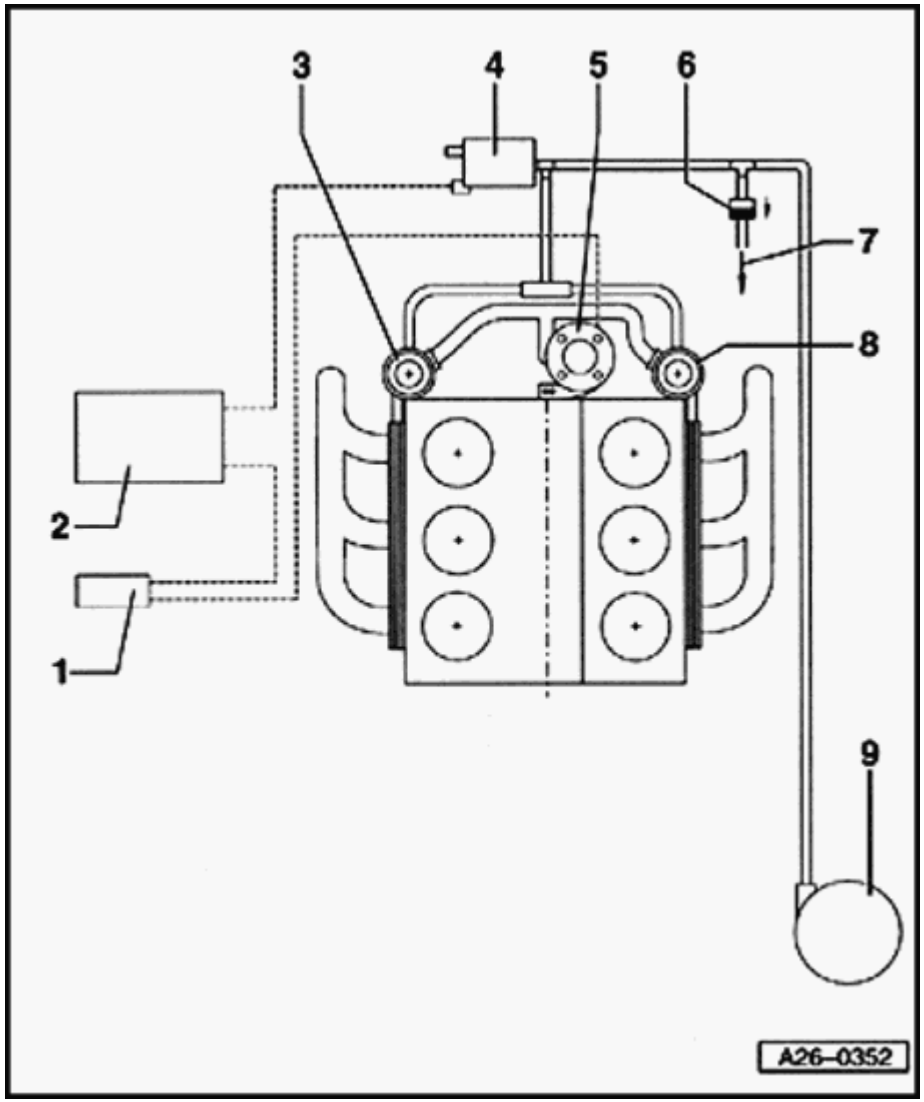


➢

- When a new chain is being installed, distance between notches -A- and -B- on camshafts must be 16 rollers on chain. The illustration shows exact positions of 1st and 16th rollers on sprockets.
- Notch -A- is offset slightly toward inside in relation to chain roller -1-.

- Push camshaft adjuster between drive chain (2nd mechanic required).

26-32



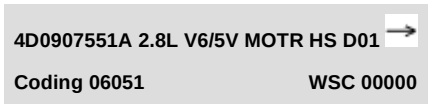
Function:

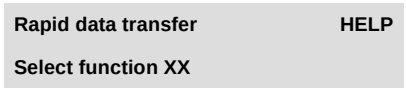
- In the cold start phase, the ECM -4- activates the secondary air pump -2- via the relay for secondary air pump -3-. Air reaches the combination valves for Secondary Air Injection (AIR) -5- and -9-.
- The Secondary Air Injection (AIR) valve -6- is activated in parallel, which allows the vacuum to reach the combination valves for Secondary Air Injection (AIR) -5- and -9-. The appropriate combination valve for Secondary Air Injection (AIR) thereby opens the path for secondary air to the exhaust channels of the cylinder head.

1 - Secondary Air Injection (AIR) pump relay - J299-

- Removing and installing ⇒ Page 26-37
- checking ⇒ Page 26-45

Output on GST and/or on VAG 1551 scan tool	Possible malfunction cause		Malfunction repair
P0322 / 16706 Ignition/Distributor Engine Speed Input Circuit No Signal	1 Malfunction P1339 / 17747 "Crankshaft Pos./Engine Speed Sensors Cross connected" also in DTC memory No ▼	Yes ▶	- 3-pin harness connector on Crankshaft Position (CKP) sensor -G4- and engine speed (RPM) sensor -G28- transposed ⇒disconnect both connectors and connect correctly; installation location ⇒ page 28-7
	Malfunction cause found: Yes ▶ No ▼		- Erase DTC memory, test drive and check DTC memory again
MIL Status: MIL lights up immediately	2 Harness connector for engine speed (RPM) sensor -G28- loose or corroded due to moisture in the harness connector	➠	- Check harness connector for tight fit and contact corrosion, if necessary reconnect and/or clean, installation ⇒ page 28-7
	Malfunction cause found: Yes ▶ No ▼		- Erase DTC memory, test drive and check DTC memory again
	3 Holding socket for engine speed (RPM) sensor -G28- loose or -G28- incorrectly adjusted	➠	- Check mounting - Adjust engine speed bracket ⇒ page 28-23
	Malfunction cause found: Yes ▶ No ▼ Continued next page		- Erase DTC memory, test drive and check DTC memory again





➢ Indicated on display (ECM identification and coding, e.g. 06051)

- Press → button to advance through program sequence.

➢ Indicated on display

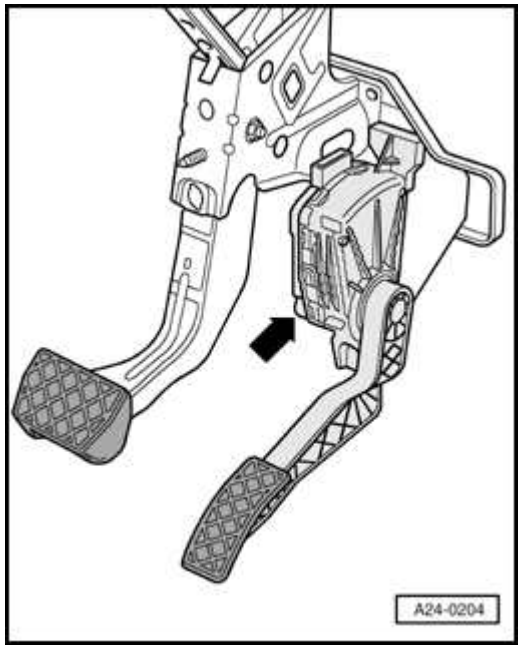
- Press buttons -0- and -6- to select "End Output" function 06, and press -Q- button to confirm input.

Notes:

The Motronic ECM -J220- only uses the code that has been entered after the ignition has been switched off once. Incorrect coding leads to:

- *Performance problems (e.g. jerky shifting, abrupt load changes, etc.)*
- *Increased fuel consumption*
- *Elevated exhaust gas values*
- *Storage of non-existent malfunctions in DTC memory*
- *Reduction in transmission service life*

Throttle Position (TP) sensor -G79 and Sender -2- for accelerator pedal position -G185, checking



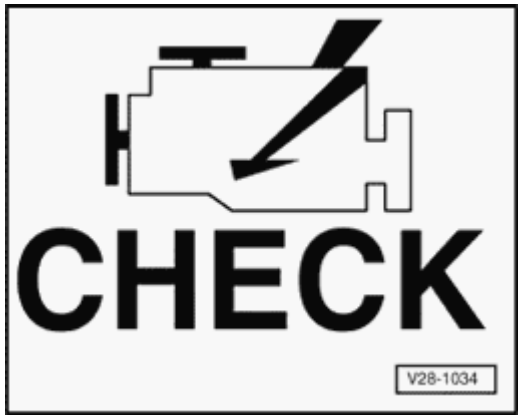
Component location of Throttle Position (TP) sensor -G79 and Sender -2- accelerator pedal position

The Throttle Position (TP) Sensor -G79 and Sender -2- for accelerator pedal position -G185 are located at the accelerator pedal. Both sensors inform (completely independently of the other) the engine control module of the driver's throttle requirement (pedal position). Both sensors are located in a single housing.

- Connect vehicle diagnostic, testing and information system VAS 5051 or VAG1551 scan tool and select engine electronics control module by entering address word "01" ⇒ Page 01-9 . When doing this the ignition must be switched on.

Malfunction Indicator Lamp (MIL), significance

If the ECM recognizes malfunctions that lead to a worsening of emissions values, it indicates them by lighting the Malfunction Indicator Lamp (MIL).

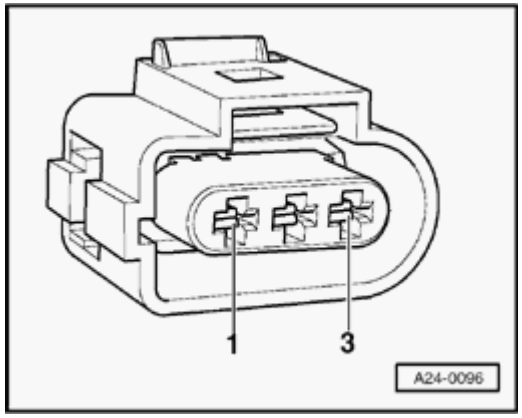


Installation location of Malfunction Indicator Lamp (MIL)

The Engine Control Module (ECM) switches on the Malfunction Indicator Lamp (MIL) after ignition is switched on. Shortly after engine is started, the exhaust MIL will go out. This requires, first of all, that the Engine Control Module (ECM) does not detect a malfunction that worsens the emissions values and, secondly, that activation of the lamp by the Engine Control Module (ECM) is OK.

If malfunctions that worsen emissions are recognized during operation of the engine, the ECM switches on the exhaust MIL in instrument cluster. (These malfunctions are listed in the DTC table). An entry is made in DTC memory at the same time.

The Malfunction Indicator Lamp (MIL) can blink or remain lit continuously. DTC memory should be checked in either case ⇒ Page 01-16 .



Output Diagnostic Test Mode →

LDP leak test

Checking output wiring (vehicles with electronic throttle control)

- Connect voltage tester VAG1527B as follows:

Electrical connector terminal	Specification
2	Battery Positive

- Initiate Diagnostic Test Mode (DTM) ⇒ Page 20-146 .
- Press → button until following display is shown:

Indicated on display:

- LED must blink

If LED does not blink:

- Switch ignition off.

ABS - K47-	Brake system	ASR - K86- 1)	Possible reasons why the indicator lamps light up
			If an irregularity occurs during the self test after ignition is switched on, and the warning lamps -K47- and -K86- do not light up for 2 seconds, check the warning lamps; "Electrical test" ⇒ page 01-68 , carry out test steps 19 and 21. The possible causes are as follows: ♦ The battery voltage is insufficient. None of the lamps in the instrument cluster light up. Check the battery. ⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations* ⇒ *Repair Manual, Electrical Equipment, Repair Group 90; Instrument cluster*
		X 1)	♦ The ABS warning light does not light up during the self-test. There is a short to Ground (GND) in the wiring that controls the ABS warning light between terminal 32 of the ABS control module -J104- and the instrument cluster. This malfunction does not affect activation of the ABS warning light. For vehicles equipped with ASR, the traction control indicator lamp lights up during the self-test; "Electrical test" ⇒ page 01-68 , carry out test step 19.
X			♦ The vehicle is equipped with ASR. The ABS warning light lights up during the self-test. The traction control indicator light does not light up during the self-test "Electrical test" ⇒ page 01-68 , carry out test step 21.

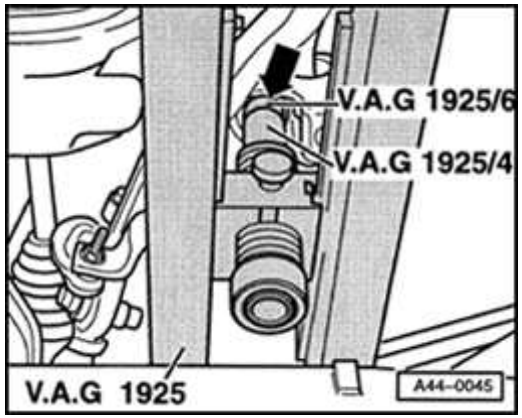
Continuation:

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

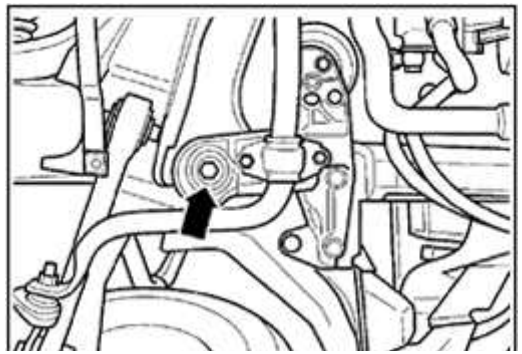
Bring vehicles with heavy duty suspension 1BB (vehicle ride height 20 mm higher) into defined starting position B1 ⇒ page 44-28

Note:

Depending on the type of wheel alignment equipment used, it may be necessary to raise the front of the vehicle in order to position the VAG1925 spacer. After lowering the vehicle again the suspension must be bounced.



- Insert VAG1925 spacer together with VAG1925/4 adapters and screw both threaded spindles out...



- ...until they just rest against front subframe bolts (arrow).

Make sure vehicle is not raised using the above procedure

- Vehicle with heavy duty suspension 1BB is now in defined starting position B1

Resistance specifications

Terminal on 16-pin connector	Socket on VAG1598/20 adapter	Specification	Corrective action
1	42	≤ 1.5 Ω	- Repair open circuit according to current wiring diagram. Check connectors for: - contact corrosion - ingress of water - leaks
2	5	≤ 1.5 Ω	
3	1	≤ 1.5 Ω	
4	32	≤ 1.5 Ω	
5	16	≤ 1.5 Ω	
6	44	≤ 1.5 Ω	
7	29	≤ 1.5 Ω	
8	30	≤ 1.5 Ω	
9	33	≤ 1.5 Ω	
10	14	≤ 1.5 Ω	
11	4	≤ 1.5 Ω	