Audi 80 1992 ➤

FWD Running gear

Edition 11.1995

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

List of Workshop Manual Repair GroupsList of Workshop Manual Repair GroupsList of Workshop Manual Repair Groups

Audi 80 1992 ➢

FWD Running gear

Repair Group

01 - Self-diagnosis, Electrical check
40 - Front suspension
42 - Rear suspension
44 - Wheels, Tyres, Wheel alignment
45 - Anti-locking brake system
46 - Brakes, Brake mechanics
47 - Brakes, Brake hydraulics
48 - Steering

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

All rights reserved.
No reproduction without prior agreement from publisher.

Copyright © 2010 Audi AG, Ingolstadt

Contents

01 - Self-diagnosis, Electrical check 1
1 Anti-lock braking system (ABS)/Anti-lock braking system with electronic differential lock (EDL) 1
1.1 Anti-lock braking system (ABS)/Anti-lock braking system with electronic differential lock (EDL) 1
1.2 Function 1
1.3 Additional functions for ABS with EDL 2
1.4 Technical self-diagnosis data 2
1.5 Safety measures as well as basic rules for fault finding 3
1.6 Connecting fault reader V.A.G 1551, interrogating and erasing fault memory and end of output 4
1.7 Fault table 7
1.8 Reading measured value block 12
1.9 Electrical testing 18
40 - Front suspension 23
1 Replacing wheel bearing housing 23
1.1 Replacing wheel bearing housing 23
2 Removing and installing strut and drive shaft 30
2.1 Removing and installing strut and drive shaft 30
3 Servicing suspension strut 37
3.1 Servicing suspension strut 37
4 Servicing drive shaft with constant velocity joint 44
4.1 Servicing drive shaft with constant velocity joint 44
5 Servicing drive shaft with tripod joint 52
5.1 Servicing drive shaft with tripod joint 52
6 Servicing suspension 59
6.1 Servicing suspension 59
6.2 Servicing forged wishbone 70
6.3 Attachment of rear subframe on vehicles with 6-cylinder engine 74
42 - Rear suspension 76
1 Servicing rear axle outer section 76
1.1 Servicing rear axle outer section 76
1.2 Drum brake 76
1.3 Disc brake 79
2 Removing, installing and servicing rear axle 85
2.1 Removing, installing and servicing rear axle 85
2.2 Replacing guide bearing without removing rear axle 90
3 Removing and installing strut 94
3.1 Removing and installing strut 94
4 Servicing suspension strut 97
4.1 Servicing suspension strut 97
44 - Wheels, Tyres, Wheel alignment 106
1 Wheels and tyres 106
1.1 Wheels and tyres 106
1.2 Steel disc wheel 106
1.3 Light alloy disc wheel, Aero design 109
1.4 Light alloy disc wheel, Speedline design 112
2 Vehicle alignment 113
2.1 Vehicle alignment 113
2.2 Test requirements: 113

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2.3 Specified values for wheel alignment 113
2.4 Calculation of direction of travel 114
2.5 Adjusting toe at front axle 115
2.6 Setting camber at front axle 118

45 - Anti-locking brake system 120

1 General repair information 120
1.1 General repair information 120
2 Removing and installing hydraulic unit 121
2.1 Removing and installing hydraulic unit 121
2.2 Hydraulic line connections for vehicles with ABS/EDL 126
2.3 High- and low pressure test 131
3 Removing and installing parts of electronic control system 131
3.1 Removing and installing parts of electronic control system 131
4 Removing and installing components of ABS system 132
4.1 Removing and installing components of ABS system 132
4.2 Front axle 132
4.3 Rear axle 136

46 - Brakes, Brake mechanics 139

1 Servicing front wheel brake, Girling 139
1.1 Servicing front wheel brake, Girling 139
1.2 Checking brake lining thickness 143
1.3 Replacing brake linings (Girling) 143
2 Servicing front wheel brake, dual piston 145
2.1 Servicing front wheel brake, dual piston 145
2.2 Checking brake lining thickness 147
2.3 Replacing brake linings (dual piston) 147
3 Servicing rear wheel brake, disc brake 150
3.1 Servicing rear wheel brake, disc brake 150
3.2 Checking brake lining thickness 153
3.3 Replacing rear brake linings 154
3.4 Basic setting of rear wheel brake 155
4 Servicing rear wheel brake, drum brake 156
4.1 Servicing rear wheel brake, drum brake 156
4.2 Servicing brake backplate 160
4.3 Removing and installing brake shoes 164
5 Servicing handbrake 167
5.1 Servicing handbrake 167
5.2 Removing and installing handbrake lever 170
5.3 Adjusting handbrake (vehicles with disc brake) 171
5.4 Adjusting handbrake (vehicles with drum brake) 172
6 Removing, installing and servicing pedal cluster 173
6.1 Removing, installing and servicing pedal cluster 173

47 - Brakes, Brake hydraulics 178

1 Servicing front brake calipers 178
1.1 Servicing front brake calipers 178
1.2 Girling brake caliper 178
1.3 Dual piston brake caliper 183
2 Servicing rear brake calipers 189
2.1 Servicing rear brake calipers 189
3 Servicing wheel brake cylinder 195
3.1 Servicing wheel brake cylinder 195
4 Servicing brake master cylinder/servo unit 197

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

4.1 Servicing brake master cylinder/servo unit 197
4.2 Vehicles with 6-cylinder engine as of vehicle no. 8C NA 132 158 208
4.3 Replacing sealing plug (pushrod circuit) 218
5 Location of brake pressure regulator at rear axle 220
5.1 Location of brake pressure regulator at rear axle 220
5.2 Checking brake pressure regulator 221
5.3 Adjusting brake pressure regulator 222
6 Bleeding braking system and brake fluid replacement 223
6.1 Bleeding braking system and brake fluid replacement 223
6.2 Bleeding brake system without ABS 223
6.3 Brake fluid replacement 224
6.4 Bleeding braking system with ABS and EDL 224
7 Pressurised leak test 226
7.1 Pressurised leak test 226

48 - Steering 227

1 Steering box components 227
1.1 Steering box components 227
1.2 Attachment sequence of screw connection steering box tie rod carrier 239
2 Removing and installing steering box 242
2.1 Removing and installing steering box 242
3 Servicing power-assisted steering 247
3.1 Servicing power-assisted steering 247
3.2 Replacing seal in valve housing 255
3.3 Fitting rack 256
4 Servicing power assisted steering with Servotronic 258
4.1 Servicing power assisted steering with Servotronic 258
4.2 Fitting rack 267
4.3 Checking power supply for Servotronic control unit 269
4.4 Checking wiring between plug at Servotronic control unit and plug at Servotronic valve . . 270
4.5 Checking valve for Servotronic 271
4.6 Checking valve lead for short to earth 271
4.7 Checking valve lead for open circuit 272
5 Removing and installing steering column with column tube 272
5.1 Removing and installing steering column with column tube 272
6 Servicing steering column with column tube 278
6.1 Servicing steering column with column tube 278
7 Removing and installing steering wheel 285
7.1 Removing and installing steering wheel 285
7.2 Standard version 285
7.3 Sports version 287
7.4 Solid wood version 292
7.5 Airbag version 296
8 Checking supply pressure of vane pump 299
8.1 Checking supply pressure of vane pump 299
8.2 Vehicles with 4 cylinder engine: 299
8.3 Vehicles with 5-cylinder engine: 301
8.4 Vehicles with 6-cylinder engine 303
9 Removing and installing impeller pump (vehicles with 4-cylinder engine) 305
9.1 Removing and installing impeller pump (vehicles with 4-cylinder engine) 305
9.2 Tensioning or replacing V-belt for vane pump 310
10 Removing and installing ZF vane pump, 5-cylinder engine 311
10.1 Removing and installing ZF vane pump, 5-cylinder engine 311
10.2 Tensioning or replacing V-belt for ZF vane pump 314

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

11 Servicing vane pump, ZF pump 315
11.1 Servicing vane pump, ZF pump 315
11.2 Checking pressure and current limiting valve 320
12 Removing and installing Vickers vane pump, 5-cylinder engine 321
12.1 Removing and installing Vickers vane pump, 5-cylinder engine 321
12.2 Tensioning or replacing V-belt for Vickers vane pump 325
13 Removing and installing impeller pump (vehicles with 6-cylinder engine) 326
13.1 Removing and installing impeller pump (vehicles with 6-cylinder engine) 326
14 Removing and installing hydraulic fluid cooler for vane pump 332
14.1 Removing and installing hydraulic fluid cooler for vane pump 332
14.2 Vehicles with 4-cylinder and 4-valve engine as well as vehicles with 6-cylinder engine 332
14.3 Vehicles with 5-cylinder engine 334
14.4 Topping up hydraulic fluid - bleeding steering system 335
14.5 Checking steering system for leaks 336
15 Removing and installing fluid reservoir 337
15.1 Removing and installing fluid reservoir 337

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted. Unauthorized use may violate copyright laws and entail civil and criminal penalties. Vehicles manufactured by AUDI AG from model year 2000 onwards are equipped with On-Board Diagnostic System (OBD).

01 - Self-diagnosis, Electrical check

1 - Anti-lock braking system (ABS)/Anti-lock braking system with electronic differential lock (EDL)

1.1 - Anti-lock braking system (ABS)/Anti-lock braking system with electronic differential lock (EDL)

As of model year 1993 a modified ABS and ABS with EDL have been available as standard or as optional extra for FWD vehicles. Both systems have self-diagnosis capabilities.

The control unit for ABS/ABS with EDL is fitted with a fault memory. A description is given of self- diagnosis using the fault reader V.A.G 1551 and electrical testing of this vehicle safety system.

Note:

The ABS switch -E83- and the combi relay for ABS -J156- were discontinued as of model year 1993.

1.2 - Function

- The term "Self-diagnosis" refers to the electrical/electronic part of the anti-lock braking system, i.e. only faults affecting electrical signals are detected.
- The first step should always be to interrogate the content of the fault memory.
- The control unit for ABS/ABS with EDL -J104 is fitted with a fault memory. If the monitored sensors or components malfunction, this is stored in the fault memory.

Notes:

- Switching of the relay can be heard on switching on the ignition and start-up of the return flow pump for the hydraulic unit (self-check) is audible on driving off (at 5 - 6 km/h). The self check is also apparent from slight vibration at the brake pedal. The hydraulic unit is not to be replaced if a complaint is received about such noise.

- If a fault is detected the ABS/ABS with EDL is automatically switched off and the ABS Warning! lamp -K47- (in the dash insert) lights up. The conventional vehicle braking system remains fully operational. Except in the case of a fault in the supply voltage (when the ABS/ABS with EDL is reactivated as soon as the vehicle voltage regains a permissible level) the ABS/ABS with EDL remains switched off for the rest of this driving period.
- If a fault (possibly established and stored during the last driving period) is no longer present after switching the ignition off and on or if it cannot be detected with the vehicle stationary (certain faults are only recognised after exceeding a minimum speed of 12 km/h) the ABS Warning! lamp -K47 goes out shortly (approx. 2 s) after switching on the ignition (as soon as self-test of ABS/ABS with EDL by control unit -J104 has been completed and no fault has been found).
- If there is no longer a fault present the static fault stored in the fault memory is switched to a sporadic fault after switching the ignition off and on.

- If a sporadic fault no longer occurs over the course of a certain number of driving periods (switch-off and switch-on ignition) it is cancelled automatically.
- "Sporadic faults" are additionally indicated by "/SP" on the right of the display (of V.A.G 1551).
- The control unit for ABS/ABS with EDL -J104 distinguishes (following evaluation of information) between 15 and 19 (ABS with EDL) different fault sources (=> Fault table Page 7) and stores these until the fault memory is erased (after fault memory interrogation) by the fault reader V.A.G 1551.
- The possibilities offered by self-diagnosis can only be utilised in conjunction with the fault reader V.A.G 1551, mode 1 "Rapid data transfer".

- In the case of ABS/ABS with EDL self- diagnosis is not restricted to the storage, interrogation, and cancelling of faults. Additional usage possibilities are provided with the control unit identification and measured value block reading. The operating mode 2 "Flash code output" is not envisaged for the control unit for ABS/ABS

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Audi AG. Audi AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Audi AG.

with EDL -J104. Further V.A.G 1551 operating modes are described in the appropriate operating instructions.
- Output of the (self- diagnosis) data by way of the fault reader V.A.G 1551 is only possible with the ignition switched on or the engine running.
- Entry into self- diagnosis is only possible with the vehicle stationary (the control unit -J104 no longer responds as of a vehicle speed of 2.5 km/h).
- Interrogating and erasing of the fault memory, control unit identification and readout of the measured value block can only be performed at vehicle speeds of up to 20 km/h (self-diagnosis is terminated as of the above speed).

1.3 - Additional functions for ABS with EDL

- To preclude the possibility of the vehicles brakes overheating even under extreme conditions the control unit for ABS with EDL -J104 calculates the temperature of the vehicle brakes on the basis of the following input variables: The basis are the following input variables:
  - Duration and number of EDL control operations
  - Duration and number of braking operations
  - Vehicle deceleration during braking operations
  - Vehicle speed
- As soon as the limit temperature (for the vehicle brakes) stored in the control unit -J104 is exceeded -J104 blocks further or terminates current EDL control operations. Proper functioning of the vehicle braking system and the ABS is thus always guaranteed.

- If brakes are hot the control unit for ABS with EDL -J104- remains in operation even after switching off the ignition until the calculated vehicle-brake temperature has dropped below a fixed value (however max. 1 hour). During this period the control unit -J104 has a higher current consumption (approx. 220 mA) as opposed to less than 2 mA (Type of fault: Vehicle voltage terminal 30)
- If the "Code XXX" of the control unit also appears on the display of the fault reader V.A.G 1551 on interrogating the control unit identification this is an indication that an attempt has been made to alter the specified encoding.

Note:

The function "Control unit encoding" is not envisaged with the control unit for ABS with EDL. If function 07 is nevertheless selected the system responds with "Encode control unit, Enter code number XXX". The specified encoding (currently 000) can still be altered at present but has no influence on the function of the control unit.

1.4 - Technical self-diagnosis data

- Fault memory
  - Non-erasable memory; content is retained even after disconnecting supply voltage.
- Data output
  - Rapid data transfer (Mode 1).
  - ABS lamp in instrument panel lights if ABS has been deactivated.
  - Flash code output not envisaged
- Functions
  - 01 - Interrogating control unit version
  - 02 - Interrogating fault memory =>Page 4
  - 05 - Erasing fault memory => Page 6
  - 06 - End of output => Page 6
  - 08 - Reading measured value block => Page 12

Notes:

- Control function cannot be implemented (ABS Warning! lamp -K47 lights up) during self- diagnosis. Self-diagnosis is thus terminated as soon as vehicle speed exceeds 20 km/h.
- The "Final control diagnosis" function is not possible with ED. The corresponding tests must be performed with the ABS tester -V.A.G 1710- in line with fault finding instructions.

=> Binder Fault finding "Power train, Running gear; Bosch ABS"

- Component fitting locations =>Page 120

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder

1.5 - Safety measures as well as basic rules for fault finding

General instructions for fault finding

- ABS is a vehicle safety system; Work on the system presupposes detailed system knowledge.
- Always interrogate fault memory before working on ABS.
- Do not drive with the plug disconnected from ABS control unit.
- Always switch off ignition before detaching or attaching connectors of ABS system components.
- Hydraulic unit screws are never to be loosened. Loosening of the cover screw to replace the relays for the return flow pump and the solenoid valves is an exception.
- Always pay attention to safety precautions governing the handling of brake fluid =>Page 223

- ABS faults are indicated by lighting of the ABS lamp. Certain faults are not recognised until the vehicle is moving at more than a minimum speed of 12 km/h (perform test drive).
- Information on eliminating current defects

=> Service manual

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Test requirements

- Permissible and identical wheels and tyre size. Correct tyre pressure at all wheels.
- Conventional brake system with brake light switch and brake lights OK
- Hydraulic connections and pipes are not leaking (visual check of hydraulic unit, brake calipers, etc.)
- Wheel bearings and bearing clearance OK.
- Earth connection for ABS return flow pump -V39 at hydraulic unit OK.

- ABS return flow pump relay -J105- and ABS solenoid valve relay -J106- properly connected.
- Connector at control unit -J104 correctly plugged in, retainer is engaged.
- When working with fault reader -V.A.G 1551-, test box -V.A.G 1498- must not be connected to control unit for ABS/ABS with EDL -J104-.
- All fuses OK"Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder
- Supply voltage OK (min. 10.5 V).

Technical information required

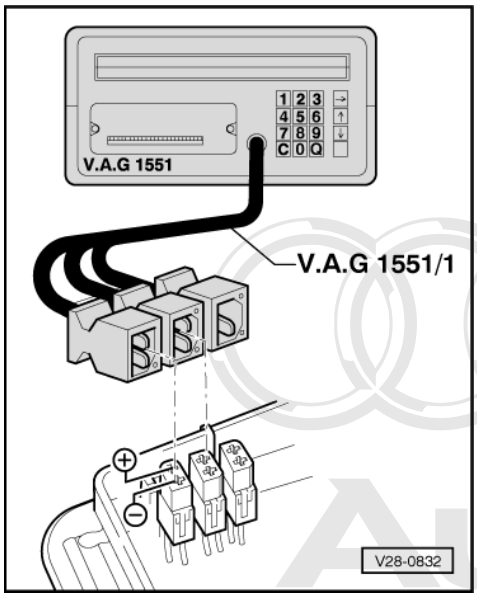
- "ABS" current flow diagrams.

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder

- ABS fault finding programme with ABS tester -V.A.G 1710-.

=> Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710-

1.6 - Connecting fault reader V.A.G 1551, interrogating and erasing fault memory and end of output



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Notes:

- The fault memory cannot be erased until it has been interrogated.
- During self- diagnosis the main program of the control unit for ABS/ABS with EDL -J104- is shut down. There is no control function.

Interrogating fault memory

Test requirements => Page 3 are satisfied.

- -> Connect fault reader V.A.G 1551 with diagnostic cable V.A.G 1551/1 to diagnostic connector at relay frame 1 on left of plenum chamber.
- Attach black connector to black diagnostic connector.

Note:

If there is no display check voltage supply for black diagnostic connector => Page 16

-> Indicated on display:

```
V.A.G - Self- diagnosis      HELP
1 Rapid data transfer 1)
2 Flash code output 1)
```

1) appears alternately

- Attach white connector to white diagnostic connector.

Note:

The blue connector is not required.

- Switch ignition on.

Notes:

- Additional operating instructions can be printed out by pressing the Help key on V.A.G 1551.

- The => key is used for continuation of program sequence.

- Switch on printer with PRINT key; indicator lamp in key illuminates.
- Press key 1 for operating mode "Rapid data transfer".

-> Indicated on display:

```
Rapid data transfer     HELP
Enter address word     XX
```

- Press keys 0 and 3; 03 enters the address word "Brake electronics".

-> Indicated on display:

```
Rapid data transfer     Q
03 - Brake electronics
```

- Confirm entry with Q key.

-> The control unit identification is shown in the display:

```
4A0 907 379 X Brake electronics
```

Index X	Allocation
A	Vehicles without EDL
E	Vehicles with EDL

or

Notes:

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Refer also to Parts List for assignment of control unit for ABS/ABS with EDL -J104.
-

```
4A0 907 379 X Brake electronics
Code XXX
```

The additional information "Code XXX" is displayed if an attempt has been made to change the specified encoding on vehicles with EDL (=> Page 2)

-> If display appears:

```
No reply from control unit
```

- Press the HELP key to obtain a printout of the possible causes of fault.

or

```
K -wire not switching to earth/positive
     HELP
```

Check wiring of diagnostic lines "L" and "K" => Page 16

or

```
No signal from control unit
```

Check voltage supply and earth connection to control unit -J104.

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder

- After eliminating the possible causes of the fault, once again enter address word 03 for brake electronics and confirm with the Q key.

-> If display appears:

```
Communication problem
```

- Fault elimination => Page 17

- Press => key.

-> Indicated on display:

```
Rapid data transfer     HELP
Select function     XX
```

- Press keys 0 and 2; 02 selects function "Interrogate fault memory".

-> Indicated on display:

```
Rapid data transfer     Q
02 - Interrogating fault memory
```

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Confirm entry with Q key.

-> The display shows the number of stored faults or "No fault detected".

```
X     Fault detected!
```

- Press =>key.

The stored fault are displayed consecutively and printed out =>Fault table, Page 7 .

Press ⇒ key after the last fault is displayed and printed.

Note:

- If faults were detected: End output with function 06, switch off ignition, erase faults, interrogate fault memory and erase.
- In the event of a complaint which the self- diagnosis does not detect: Perform fault finding with ABS tester -V.A.G 1710- as per fault finding instructions and electrical testing => Page 18

Erasing fault memory and ending output

-> Indicated on display:

```
Rapid data transfer     HELP
Select function     XX
```

- Press keys 0 and 5, 05 erases the fault memory.

-> Indicated on display:

```
Rapid data transfer     Q
05 - Erase fault memory
```

- Confirm entry with Q key.

-> If display appears:

```
Warning!
Fault memory not interrogated.
```

Notes:

- The fault memory cannot be erased until it has been interrogated.
- The fault memory is not erased if the ignition was switched off or the vehicle driven at more than 20 km/h for example between fault-memory interrogation and "Erase fault memory".

-> Indicated on display:

```
Rapid data transfer
Fault memory erased
```

- Press =>key.

-> Indicated on display:

```
Rapid data transfer     HELP
Select function     XX
```

- Press keys 0 and 6; 06 ends output.

-> Indicated on display:

```
Rapid data transfer     Q
06 - End of output
```

- Confirm entry with Q key.

-> Indicated on display:

```
Rapid data transfer     HELP
End of output
```

- Switch off ignition.
- Disconnect fault reader V.A.G 1551.
- Switch on ignition, The ABS Warning! lamp -K47- must go out after a brief period (roughly 2 seconds).
- Perform test drive, increasing vehicle speed at least once to more than 30 km/h (ABS Warning! lamp -K47- must not come on again).

1.7 - Fault table

All faults which can be detected by the control unit for ABS/ABS with EDL -J104 displayed on V.A.G 1551 and printed out are listed in the following on the basis of their fault codes.

Notes:

- The content of the fault memory is retained until it is erased => Page 6 .
- Before replacing components always check corresponding positive and earth connections in line with current flow diagram as well as all associated plug contacts.
- After replacing an ABS/ABS with EDL component always check ABS/ABS with EDL on the basis of fault finding instructions using ABS tester -V.A.G 1710-.

=> Binder Fault finding "Power train, Running gear; Bosch ABS"

- After replacing an ABS.ABS with EDL component always interrogate and erase fault memory => Page 4 . Perform test drive. For this purpose, drive vehicle at a speed of at least 30 km/h over 30 seconds. The ABS/EDL warning lamp -K47- must not come on.
- The 07.92 supplement to the Bosch ABS fault finding instructions using the BAS tester -V.A.G 1710- lists all the modifications to these instructions necessary for performing fault finding on vehicles featuring ABS/ABS with EDL.

- Use test box V.A.G 1598 with adapter cable 1598/3 to check electrical connections to control unit for ABS/ABS with EDL -J104 in line with "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder.
- Sporadic faults are also identified by /SP on the right of the display.
- In the case of sporadic faults shake the wiring to the component when checking (loose contact).
- Static faults which cannot be detected with the vehicle stationary are also marked "/SP" after switching the ignition off and on =>Page 1 .
- The fault code (5-digit) is not displayed; it merely appears on the printout.
- The fault remedy column in the following tables makes reference to individual test steps in the fault finding instructions "Bosch ABS, ABS tester -V.A.G 1710-". Fault finding using -V.A.G 1710- is however always to be performed in full and in the prescribed sequence.

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00000 No fault detected!	This display means that self- diagnosis is over.	

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
	If there is a problem with the vehicle despite no faults having been detected by control unit -J104: Fault finding with ABS tester -V.A.G 1710- and perform electrical test (vehicles with EDL only)-- 18 => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder	
00277 ABS inlet/outlet valve, front left -N137-	- Open circuit, short to positive or to earth in wiring between hydraulic unit -N55- and control unit -J104-. - ABS inlet/outlet valve -N137- defective	- Locate and eliminate open circuit or short circuit in line with current flow diagram for all ABS inlet/outlet valves (-N137-, -N138-, -N139-, -N140-) - Check hydraulic unit, test function with -V.A.G 1710- (test steps 1 and 5) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00279 Valve 1 for differential lock -N125- Note: For EDL	- Open circuit, short to positive or to earth in wiring between hydraulic unit -N55- and control unit -J104-. - Valve 1 -N125- defective	- Locate and rectify open circuit or short circuit => "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder - Check hydraulic unit, perform electrical testing (test steps 1 and 4) => Page 18
00280 Valve 2 for differential lock -N126- Note: For EDL	- Open circuit, short to positive or to earth between hydraulic unit -N55- and control unit -J104-. - Valve 2 -N126 defective	- Use current flow diagram to locate and rectify open circuit or short circuit - Check hydraulic unit, perform electrical testing (test steps 2 and 5) => Page 18

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00283 Front left speed sensor -G47- Note: May mistakenly be displayed as sporadic fault if individual wheel turn at more than 6 km/h with ignition switched on.	- Open circuit, short to positive or to earth in wiring between speed sensor -G47- and control unit -J104- - Rotor dirty or damaged - Excessive play in wheel bearing - Speed sensor -G47- not properly installed. - Speed sensor - G47- defective	- Locate and rectify open circuit or short circuit - Check, clean or replace rotor. - Replace wheel bearing => Page 132 . - Check speed sensor -G47-, perform electrical testing with ABS tester -V.A.G 1710- (test step 6). => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710-binder
00284		

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. Audi does not guarantee or accept any liability with respect to the correctness of information in this document. © Copyright by AUDI AG.

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
ABS inlet/outlet valve front right -N138-	- Open circuit, short to positive or to earth in wiring between hydraulic unit -N55- and ABS control unit -J104-. - ABS inlet/outlet valve -N138- defective	- Locate and eliminate open circuit or short circuit in line with current flow diagram for all ABS inlet/outlet valves (-N137-, -N138-, -N139-, -N140-) - Check hydraulic unit, test function with -V.A.G 1710- (test steps 1 and 5) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00285 Front right speed sensor -G45- Note: May mistakenly be displayed as sporadic fault if individual wheel turn at more than 6 km/h with ignition switched on.	- Open circuit, short to positive or to earth in wiring between speed sensor -G45- and control unit -J104-. - Rotor dirty or damaged - Excessive play in wheel bearing - Speed sensor -G45- not properly installed. - Speed sensor -G45- defective	- Use current flow diagram to locate and rectify open circuit or short circuit - Check, clean or replace rotor. - Replace wheel bearing => Page 132 . - Check speed sensor - G45-, perform electrical testing with ABS tester -V.A.G 1710- (test step 6). => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder
00286 ABS inlet/outlet valve rear left -N139-	- Open circuit, short to positive or to earth in wiring between hydraulic unit -N55- and control unit -J104-. - ABS inlet/outlet valve -N139- defective	- Locate and eliminate open circuit or short circuit in line with current flow diagram for all ABS inlet/outlet valves (-N137-, -N138-, -N139-, -N140-) - Check hydraulic unit, test function with V.A.G 1710 (test steps 1 and 5) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710-binder

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00287 Rear right speed sensor -G44- Note: May mistakenly be displayed as sporadic fault if individual wheel turn at more than 6 km/h with ignition switched on.	- Open circuit, short to positive or to earth in wiring between speed sensor -G44- and control unit -J104-. - Rotor dirty or damaged - Excessive play in wheel bearing - Speed sensor -G44- not properly installed. - Speed sensor -G44- defective	- Use current flow diagram to locate and rectify open circuit or short circuit - Check, clean or replace rotor. - Adjust wheel bearing clearance => Page 132 . - Check speed sensor -G44-, test function with -V.A.G 1710- (test step 6) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710-binder
00289		

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
ABS inlet/outlet valve rear right -N140	- Open circuit, short to positive or to earth in wiring between hydraulic unit -N55- and control unit -J104-. - ABS inlet/outlet valve -N140- defective	- Locate and eliminate open circuit or short circuit in line with current flow diagram for all ABS inlet/outlet valves (-N137-, -N138-, -N139-, -N140-) - Check hydraulic unit, test function with V.A.G 1710 (test steps 1 and 5) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00290 Rear left speed sensor -G46- Note: May mistakenly be displayed as sporadic fault if individual wheel turn at more than 6 km/h with ignition switched on.	- Open circuit, short to positive or to earth in wiring between speed sensor -G46- and control unit -J104-. - Rotor dirty or damaged - Excessive play in wheel bearing - Speed sensor -G46- not properly installed. - Speed sensor -G46- defective	- Use current flow diagram to locate and rectify open circuit or short circuit - Check, clean or replace rotor. - Adjust wheel bearing clearance => Page 132 . - Check speed sensor -G46-, perform electrical testing with ABS tester- V.A.G 1710- (test step 6). => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00301 ABS return flow pump -V39-	- Open circuit or contact resistance in earth connection or voltage supply to return flow pump -V39-. - Open circuit, short to positive or to earth in wiring between relay -J105- and control unit -J104-. - ABS return flow pump relay -J105-, return flow pump -V39- or hydraulic unit defective	- Use current flow diagram to locate and rectify open circuit or contact resistance. - Use current flow diagram to locate and eliminate open circuit or short circuit - Check relay -J105-, return flow pump -V39- and ABS hydraulic unit -N55- test function with V.A.G 1710 (test step 3). => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00302 ABS solenoid valve relay -J106-	- Open circuit or contact resistance in earth connection or voltage supply to relay -J106-.	- Use current flow diagram to locate and rectify open circuit or contact resistance.
Note: If this fault is displayed for vehicles with EDL additionally check valves 1 and 2 for differential lock --N135- and -N126- as described.	- Open circuit, short to positive or to earth in wiring between relay -J106- and control unit -J104-.	- Use current flow diagram to locate and eliminate short circuit or open circuit

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
	- Solenoid valve relay -J106 or ABS hydraulic unit -N55 defective.	- Check relay -J106- and hydraulic unit -N55- test function with V.A.G 1710 (test step 1) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00526 Brake light switch -F-	- Open circuit or short to positive in wiring between brake light switch and brake light bulbs. left/right -M9-, -M10- or control unit -J104-. - Brake light bulbs -M9 or -M10 defective - Brake light switch defective.	- Use current flow diagram to locate and eliminate open circuit or short circuit - Replace bulbs. - Check brake light switch, Read measured value block => Page 12 or test function with -V.A.G 1710- (test step 2) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00532 Supply voltage	- Open circuit or contact resistance in voltage supply to control unit -J104- (contact 1) or in earth connection to control unit -J104-.	- Use current flow diagram to locate and rectify open circuit or contact resistance. Test function with -V.A.G 1710- (test step 1) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder
	- Voltage dips or overvoltage in vehicle electrical system Notes: - As soon as vehicle voltage returns to permissible range ABS/ABS with EDL is reactivated and ABS Warning! lamp -K47 goes out. - This fault is only stored if it occurs when vehicle speed is more than 6 km/h.	- Check alternator and voltage regulator. => "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder - Test function with -V.A.G 1710- (test step 1 and 5) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00597 Differing wheel speed impulses Note: May mistakenly be displayed as sporadic fault if individual wheel turn at more than 6 km/h with ignition switched on.	- Rotor with wrong number of teeth fitted - Rotor dirty or damaged	- Check all rotors =>Page 132 .
	- Speed sensor not properly installed. - Excessive wheel bearing clearance or wheel bearing defective.	- Check all wheel bearings =>Page 82

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
	- Speed sensor defective.	- Check all speed sensors, test function with -V.A.G 1710- (test step 6) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
00668 Vehicle voltage terminal 30 Note: EDL only	- Vehicle brakes hot: Open circuit in voltage supply to control unit -J104- (contact 16) or plug detached from control unit -J104- 1) 2)	- Locate and rectify open circuit or contact resistance. - Test function with -V.A.G 1710- (test step 2 and 4) => Power train, running gear, and Bosch ABS fault finding, ABS tester -V.A.G 1710- binder

1) Depending on calculated vehicle brake temperature control unit J104 remains in operating status "Increased current consumption" (approx. 220 mA as opposed to less than 2 mA => Page 2) for max. 1 hour after switching off ignition

2) If control unit -J104- operates with increased current consumption without load on vehicle brakes prior to switching off the ignition check wiring to control unit -J104- (contact 25) for short to positive in line with current flow diagram.

V.A.G 1551 print-out Fault code	Possible causes of fault	Fault remedy
01278 EDL cut-off relay -J263-	- Open circuit, short to positive or earth in wiring to EDL cut-off relay -J263-. - No speed signal from speedometer -G21- (only detected on exceeding speed of 100 km/h). - EDL cut-off relay -J263- defective	- Use current flow diagram to locate and eliminate open circuit or short circuit - Check vehicle speed signal => "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder - Check EDL cut-off relay -J263-, perform electrical testing => Page 18 , test step 3
65535 Control unit faulty Note: If fault "ABS return flow pump -V39-" is simultaneously displayed or if one of the ABS inlet/outlet valves is shown as being defective on vehicles with EDL the cause of this fault is to be eliminated first.	- Open circuit or contact resistance in voltage supply or earth connection to control unit -J104- - Control unit -J104- defective.	- Use current flow diagram to locate and rectify open circuit or contact resistance. - Replace control unit -J104-.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

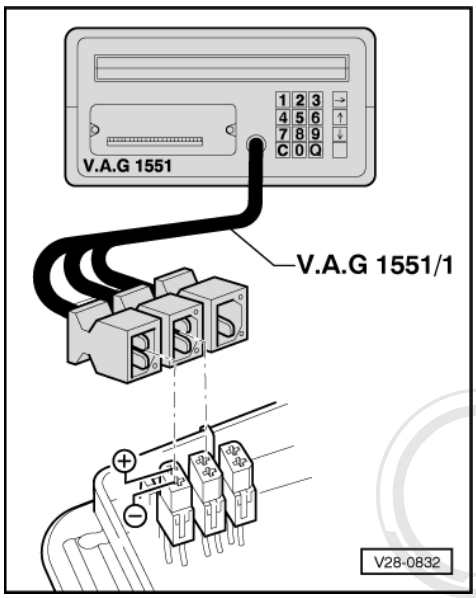
1.8 - Reading measured value block

Test requirements => Page 3 are satisfied.

- Fault memory has been interrogated and any faults displayed were located and eliminated.

Notes:

- A display group with 7 (8 with EDL) measured values is provided.
- If the printer is switched on, the current display will be printed out on the record slip.



- -> Connect fault reader V.A.G 1551 with diagnostic cable V.A.G 1551/1 to diagnostic connector at relay frame 1 on left of plenum chamber.
- Attach black connector to black diagnostic connector.

Note:

If there is no display check voltage supply for black diagnostic connector => Page 16

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Indicated on display:

```
V.A.G - Self- diagnosis      HELP
1 Rapid data transfer 1)
2 Flash code output 1)
```

1) appears alternately

- Attach white connector to white diagnostic connector.

Note:

The blue connector is not required.

- Switch on ignition or start engine.

Notes:

- Additional operating instructions can be printed out by pressing the Help key on V.A.G 1551.
- The ⇒ key is used for continuation of program sequence.

- Switch on printer with PRINT key; indicator lamp in key illuminates.
- Press key 1 for operating mode "Rapid data transfer".

-> Indicated on display:

```
Rapid data transfer     HELP
Enter address word     XX
```

- Press keys 0 and 3; 03 enters the address word "Brake electronics".

-> Indicated on display:

```
Rapid data transfer     Q
03 - Brake electronics
```

- Confirm entry with Q key.

-> The control unit identification is shown in the display:

```
4A0 907 379 X Brake electronics
```

Index X	Allocation
A	Vehicles without EDL
E	Vehicles with EDL

or

Notes:

- Refer also to parts list for assignment of control unit for ABS/ABS with EDL -J104-
- ```
  4A0 907 379 X Brake electronics
  Code XXX
  ```

  The additional information "Code XXX" is displayed if an attempt has been made to change the specified encoding on vehicles with EDL (=> Page 2)

-> If display appears:

```
No reply from control unit!
```

- Press the HELP key to obtain a printout of the possible causes of fault.

or

```
K-wire not switching to earth/positive
     HELP
```

Check wiring of diagnostic lines "L" and "K" => Page 16

or

```
No signal from control unit
```

Check voltage supply and earth connection to control unit -J104.

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder

- After eliminating the possible causes of the fault, once again enter address word 03 for brake electronics and confirm with the Q key.

-> If display appears:

```
Communication problem
```

- Fault elimination => Page 17
- Press => key.

-> Indicated on display:

```
Rapid data transfer     HELP
Select function     XX
```

- Press keys 0 and 8 (08 selects function "Read measured value block").

-> Indicated on display:

```
Rapid data transfer     Q
08 - Reading measured value block
```

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
```

- Confirm entry with Q key.

-> Indicated on display:

```
Read measured value block HELP
Enter display group number     XX
```

- Press key 0 twice.
- Confirm entry with Q key.

-> Display:

```
Reading measured value block
1     2     3     4     5     6     7
8
```

Notes:

- Display fields 1 to 4 indicate the wheel speed in km/h. This is calculated by the control unit -J104 on the basis of the incoming wheel-speed sensor pulses. If a vehicle is evenly accelerated/moved on a dry surface the max. perm difference between the display values 1 to 4 is max.±1 km/h (rounding error). If deviations exceed the above figure check wheel-speed sensors and rotors => Pages 136
- To check whether wheel speed sensors have been mixed up turn wheels by hand. Whilst doing so secure the other driven wheels against turning.
- If the measured values found indicate a fault test function with ABS tester -V.A.G 1710- in line with fault finding instructions.

=> Binder Fault finding "Power train, Running gear; Bosch ABS"

Test table Reading measured value block

Display zone	Designation	Test conditions	Reading on -V.A.G 1551-
1	Wheel speed front left (km/h)		1 (with vehicle stopped) to 19 1)
2	Wheel speed front right (km/h)		1 (with vehicle stopped) to 19 1)
3	Wheel speed rear left (km/h)		1 (with vehicle stopped) to 19 1)
4	Wheel speed rear right (km/h)		1 (with vehicle stopped) to 19 1)
5	Brake light switch -F- (contact 25 on -J104-)	- Brake pedal not operated	0
		- Brake pedal depressed	1
6	Voltage at ABS return flow pump -V39-		0 Note: If reading is 1 (not permissible- return flow pump running) Test function with -V.A.G 1710- (test step 3) => Binder Fault finding "Power train, Running gear; Bosch ABS"

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

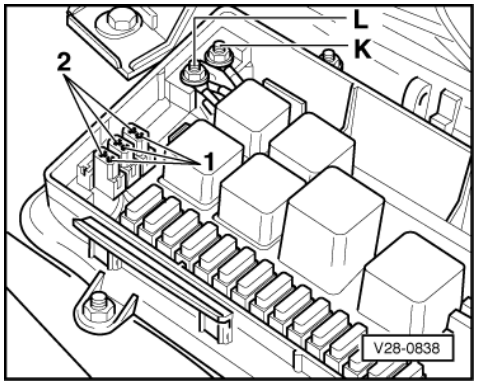
1) Control unit -J104- terminates self- diagnosis on exceeding a vehicle speed of 19 km/h.

Display zone	Designation	Test conditions	Reading on -V.A.G 1551-
7	ABS solenoid valve relay -J106- (contact 32 on -J104-)		1 Note: If reading is 0 (not permissible - relay -J106- not energised) Test function with -V.A.G 1710- (test step 1) => Binder Fault finding "Power train, Running gear; Bosch ABS"

Display zone	Designation	Test conditions	Reading on -V.A.G 1551-
8 2)	EDL cut-off relay -J263- (vehicles with EDL only)		1 Note: If reading is 0 (not permissible with vehicle stationary) perform electrical testing (test step 3) => Page 18

2) Display field not used on vehicles with no EDL

Checking wiring of diagnostic connector



Notes:

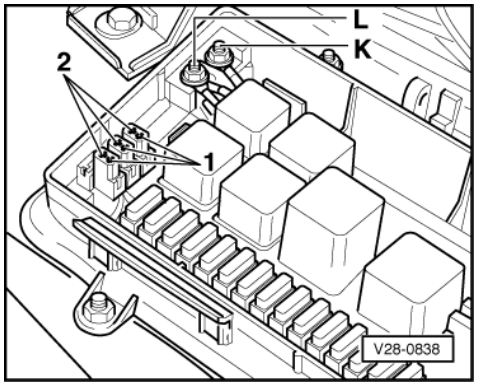
- -> The diagnostic connectors and the adapters "K" and "L" of all vehicle systems featuring self- diagnosis are located in relay station 1 (on left in plenum chamber).
- Wiring colours and other vehicle systems connected to "white diagnostic connectors

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder

- For testing use hand-held multimeter V.A.G 1526, adapter cable set V.A.G 1594 and test box V.A.G 1598 with adapter cable V.A.G 1593/3.
- Switch off ignition before checking wiring.

Black diagnostic connector, voltage supply

- Contact 1 connected to earth
- Contact 2 positive (via fuse 21 to terminal 30)



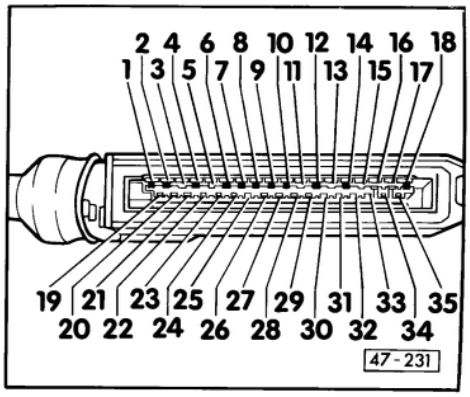
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Diagnostic connector white, data transfer

- -> Contact 1
  Not required for brake electronics.
- Contact 2

Data line for "Rapid data transfer". Wiring from diagnostic connector is routed via adapter "K" to control unit for ABS/ABS with EDL -J104-. (Contact 31)

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

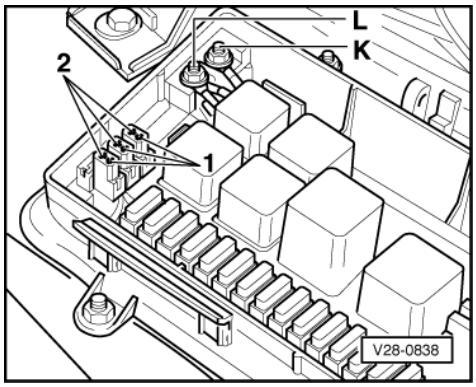
Notes:

- Pull plug off control unit -J104- => Page 131 , connect test box V.A.G 1598 with adapter cable V.A.G 1598/3 and measure at appropriate test box sockets.

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder

- Use V.A.G 1526 to check wiring for open circuit, short to positive or short to earth.

Checking wiring when "Fault in communication build-up" is displayed on V.A.G 1551



- -> Consecutively disconnect wiring between other vehicle systems featuring self-diagnosis "Rapid data transfer" and "white" diagnostic connector, contact 2 (in relay station 1) at adapter "K".

Note:

Further systems with self- diagnosis

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder

- After disconnecting the wiring to the respective vehicle system enter address word "03" again in "Rapid data transfer" mode.
- If control unit identification is then displayed check wiring to last control unit disconnected in line with current flow diagram.
- If no fault is found replace last control unit disconnected and re-establish all wiring connections.

Note:

If "Control unit does not answer" is displayed this indicates that the wiring to the control unit -J104- has also been disconnected at some point.

1.9 - Electrical testing

Vehicles with ABS/EDL only

- The following equipment is required:
  - Test box -V.A.G 1598- with adapter -V.A.G 1598/3-
  - Adapter cable set V.A.G 1594
  - Hand-held multimeter V.A.G 1526
  - For performing test steps 4 to 6 vehicle is to be jacked up such that front wheels are free to rotate.
- Socket designations of test box -V.A.G 1598- are identical to contact designations on control unit -J104-.

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder

- If the measured values deviate from the specified values perform measures for fault elimination listed in the right-hand column of the table.

Warning!
To avoid damaging individual components of ABS with EDL it is imperative not to exceed the specified test period of 30 s in each case for test steps 4, 5 and 6. Should it become necessary to repeat one of the test steps (4 to 6) wait at least 5 minutes.

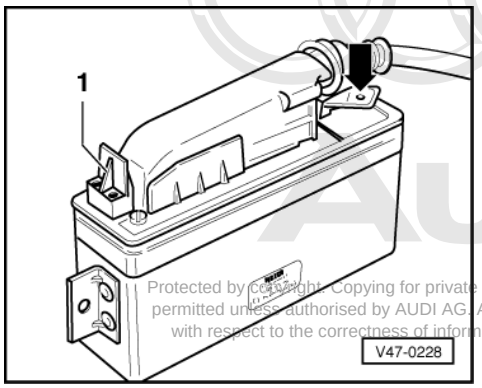
- Test step 7 is only to be performed for vehicles with EDL and automatic gearbox (e.g. 01K).

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder

Test requirements

- Fault memory of control unit for ABS/ABS with EDL -J104 must have been read out and any faults both located and eliminated.
- Fault finding (with functional test) using ABS test -V.A.G 1710- must not have revealed any faults in test steps 1 to 6.
- Vehicle is to be jacked up so that wheels can turn freely (do not engage gear).
- Level in brake fluid reservoir is OK.

Checking:



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Switch off ignition.
- -> Pull connector off control unit for ABS with EDL -J104-.
- Connect test box -V.A.G 1598- with adapter cable -V.A.G 1598/3- to vehicle wiring harness plug.

Notes:

- Do not connect control unit for ABS with EDL -J104-, -1- to test box.

- Use the current flow diagram to locate and rectify the fault in the wiring

Resistance measurement: Set measuring range (200 ω) on V.A.G 1526					
Test step	V.A.G 1598 socket	Testing of	Test requirements, additional operations	Specified value	Action in the event of deviation from specified value
1	13 + 3	Valve 1 for differential lock (EDL) - N125- and corresponding wiring	- Ignition switched off	4.5 Ohm to 6 Ohm	- Check for open circuit or contact resistance in wiring between -J104- and -N125- - Valve -N125- defective, replace hydraulic unit =>Page 121
2	13 + 33	Valve 2 for differential lock (EDL) - N126- and corresponding wiring	- Ignition switched off	4.5 Ohm to 6 Ohm	- Check for open circuit or contact resistance in wiring between -J104- and -N126- - Valve -N126- defective, replace hydraulic unit =>Page 121
3	13 + 20	EDLI cut off relay - J263- and corresponding wiring	- Ignition switched off	∞ Ohm	- Check for short to earth in wiring between -J104- and -J263-. Check for short to positive in wiring to -J263- (terminal 15) - Cut-off relay- J263- defective, replace

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Resistance measurement: Set measuring range (200 ω) on V.A.G 1526					
Test step	V.A.G 1598 socket	Testing of	Test requirements, additional operations	Specified value	Action in the event of deviation from specified value
3a	13 + 20	EDLI cut off relay - J263- and corresponding wiring	- Ignition switched on	Less than 10 Ohm	- Check for open circuit or contact resistance in wiring between - J104- and -J 263- - Check for contact resistance in earth connection to control unit -J104- (contact 20) - Check for open circuit in voltage supply or earth connection to - J263- (terminal 15 or 31) - Cut-off relay - J263- defective, replace

On exceeding a vehicle speed of 60 km/h cut-off relay- J263- deactivates EDL (open circuit between relay contacts 87 and 86).

Check vehicle speed signal

=> "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder

If battery voltage is still applied (via relays -J106- and -J263-) to contact 13 of control unit -J104- at vehicle speed of greater than 100 km/h this is stored as a fault and the ABS with EDL is deactivated. (=> Fault table, Page 7).

Functional check					
Test step	**V.A.G 1598 socket**	**Testing of**	**Test requirements, additional operations**	**Specified value**	**Action in the event of deviation from specified value**
4 Note: Assistance of second mechanic required	Jumper 1 + 3	Valve 1 for differential lock (EDL) -N125- and possible mix-up of corresponding wiring	- Ignition switched on - Press and hold brake pedal - Remove jumper - Release brake pedal	- Front right wheel can be turned by hand - Front right wheel blocked	- Check for fault in wiring between valve -N125- and -J104- - Cut-off relay -J263- has deactivated EDL function, for checking refer to test step 3 - Valve -N125- defective, replace hydraulic unit =>Page 121

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Warning!
Sockets 1 and 3 and 1 and 33 are not be jumpered for more than 30 s.

Test step	**V.A.G 1598 socket**	**Testing of**	**Test requirements, additional operations**	**Specified value**	**Action in the event of deviation from specified value**
5 Note: Assistance of second mechanic required	Jumper 1 + 33	Valve 2 for differential lock (EDL) -N126- and possible mix-up of corresponding wiring	- Ignition switched on - Press and hold brake pedal - Remove jumper - Release brake pedal	- Front left wheel can be turned by hand - Front left wheel blocked	- Check for fault in wiring between valve -N126- and -J104- - Cut-off relay -J263- has deactivated EDL function, for checking refer to test step 3 - Valve -N126- defective, replace hydraulic unit =>Page 121

Warning!
Sockets 1 and 3 and 1 and 33 are not be jumpered for more than 30 s.

Functional check					
Test step	V.A.G 1598 socket	Testing of	Test requirements, additional operations	Specified value	Action in the event of deviation from specified value
61)	Jumper 16 + 17	Function and leakage of charging valve and pressure limitation valve for EDL (in hydraulic unit)	- Ignition off. Pressure gauge V.A.G 1310 connected to front right at brake caliper and bled. - Switch ignition on. Depress brake pedal until a pressure of 10 bar has been reached at pressure gauge. Do not alter brake pedal position. Jump sockets 1 and 3. Jump sockets 28 and 20.	- Return flow pump -V39- is running	- Carry out fault detection in line with fault detecting programme for ABS tester V.A.G 1710 (test step 3).

1) This test step continued on next page.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Warning!
Test step 6 must be completed within 30 s (after jumpering sockets 1 and 3); all jumpers are to be removed.

Functional check Continuation test step 6					
Test step	V.A.G 1598 socket	Testing of	Test requirements, additional operations	Specified value	Action in the event of deviation from specified value
6	Jumper 16 + 17	Function and leakage of charging valve and pressure limitation valve for EDL (in hydraulic unit)		- Pressure increases less than 15 bar	- Charging valve defective, replace hydraulic unit =>Page 121
			- Release brake pedal	- Pressure increases to at least 40 to max. 60 bar	- Hose for EDL function between brake fluid reservoir and hydraulic unit kinked or blocked; check - Pressure limitation valve or charging valve defective, replace hydraulic unit =>Page 121 - Cut-off relay -J263- has deactivated EDL function, checking => Test step 3
			- Remove both jumpers		

Warning!
Test step 6 must be completed within 30 s (after jumpering sockets 1 and 3); all jumpers are to be removed.

Voltage measurement: Set measuring range on V.A.G 1526 (20 Volt, =)					
Test step	V.A.G 1598 socket	Testing of	Test requirements, additional operations	Specified value	Action in the event of deviation from specified value
7	30 + 20 1)	Wiring between control units -J104- and -J217-	Ignition switched on	approx. 5 V	- Use current flow diagram to locate and eliminate the open circuit: - Check control unit for automatic gearbox -J217- according to repair- instructions (e.g. 097, 01N).

1) Only to be performed on vehicles with EDL and automatic gearbox

During EDL control input (contact 30) of control unit -J104- is clocked to earth. Switching points of control unit for automatic gearbox J217 change during EDL control (enhanced comfort).

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not
permitted unless authorised by AUDI AG. Otherwise liability for damages can be claimed.
Vehicles with electronic control unit (enhanced comfort). Copyright by AUDI AG.

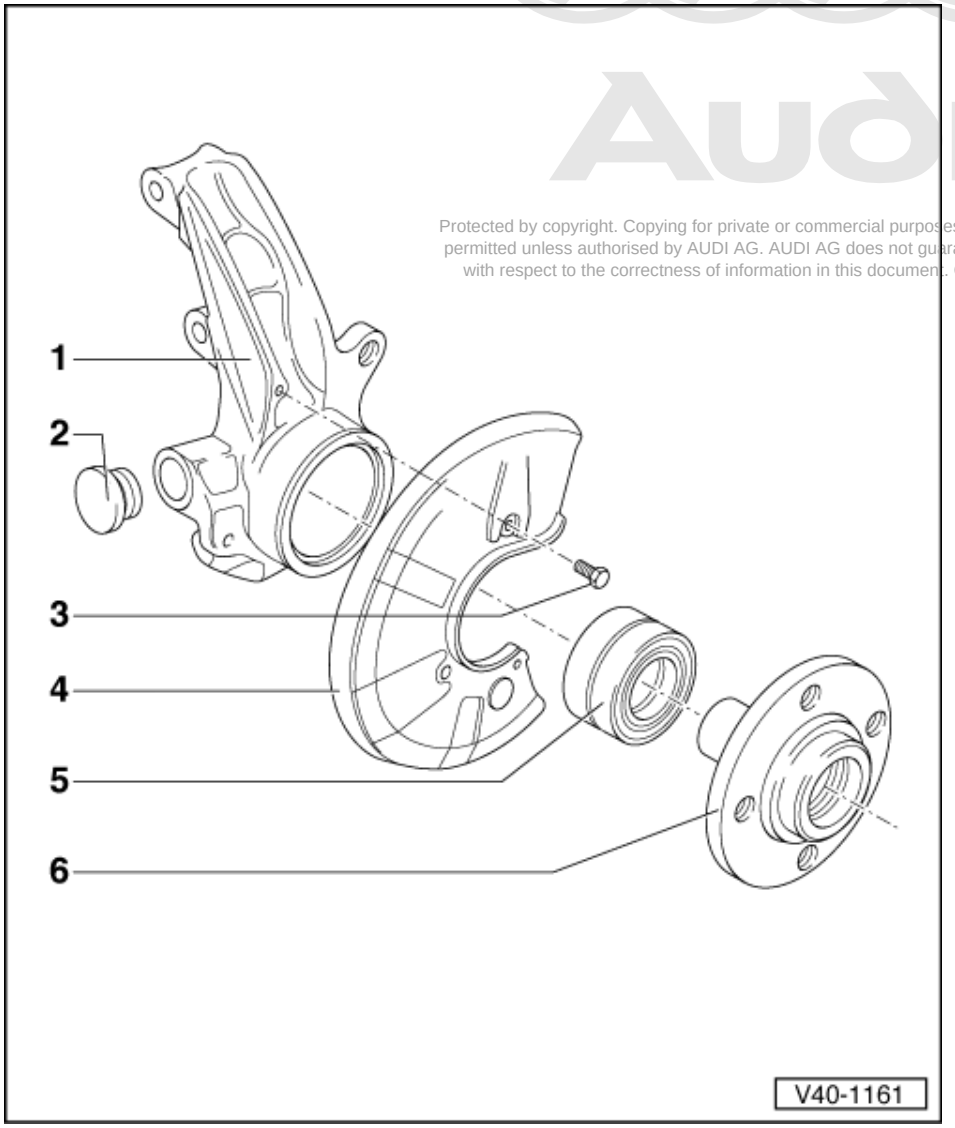
=> Automatic gearbox 097;

40 - Front suspension

1 - Replacing wheel bearing housing

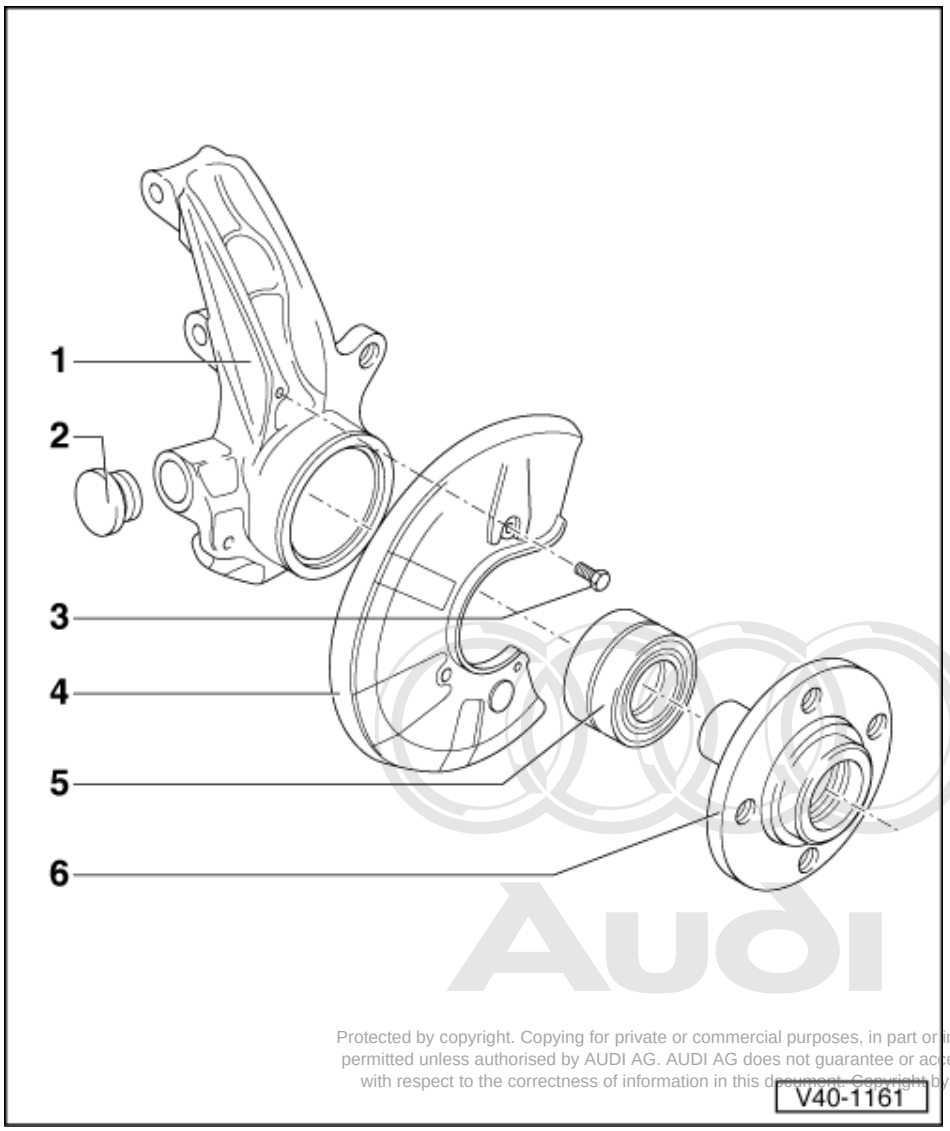
1.1 - Replacing wheel bearing housing

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



1 Wheel bearing housing

- with dia.ø75 mm bearing bore for vehicles with up to 101 kW- engines
- with dia.ø82 mm bearing bore for vehicles from 110 kW- engines
- Do not grease bearing seat in wheel bearing housing before pressing in wheel bearing
- Never widen slot in wheel bearing housing (seat for track control arm joint) to press out track control arm joint
- Align front axle after removing/installing or replacing wheel bearing housing.
- Note different types of wheel bearing housing => Fig. 11



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2 Plug

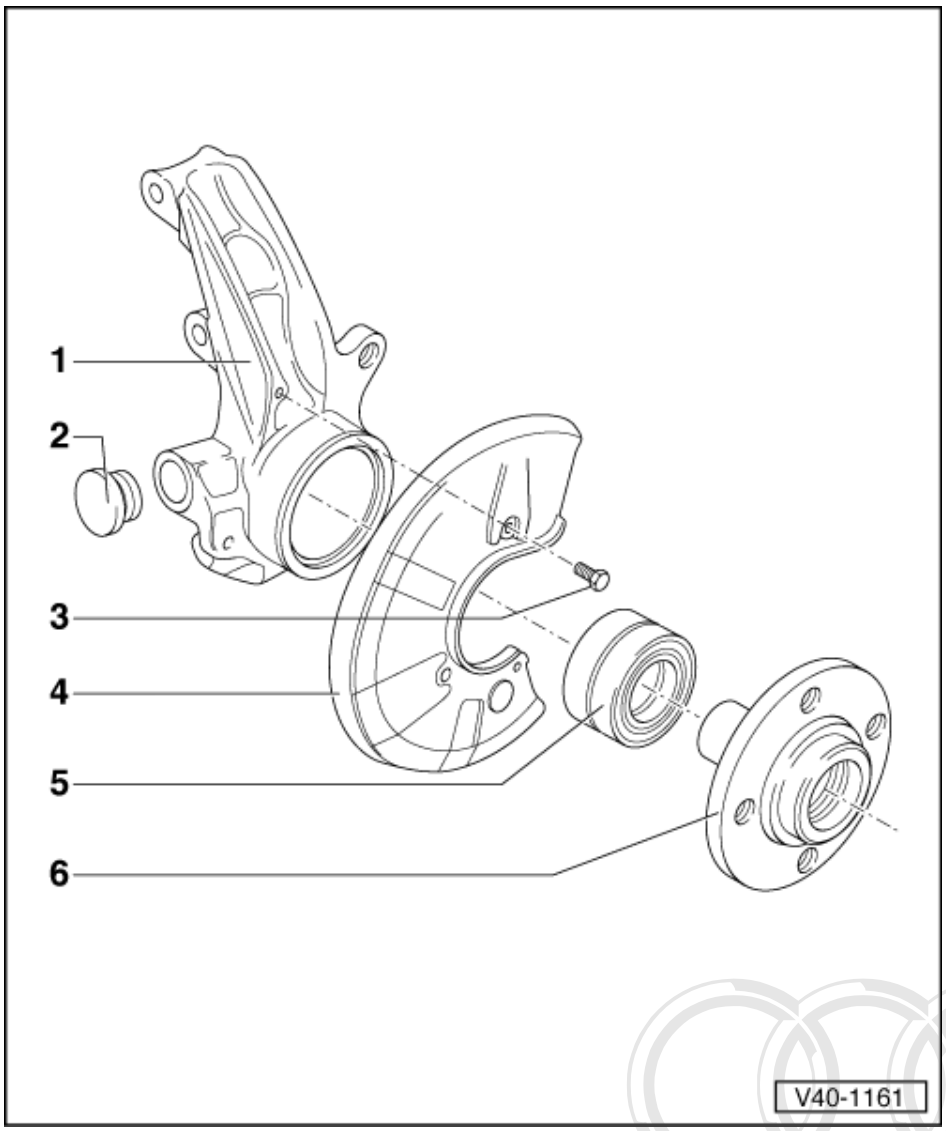
- Vehicles with ABS feature a spring sleeve for the wheel speed sensor instead of the plug

3 Hexagon bolt, 10 Nm

4 Brake guard plate

Note:

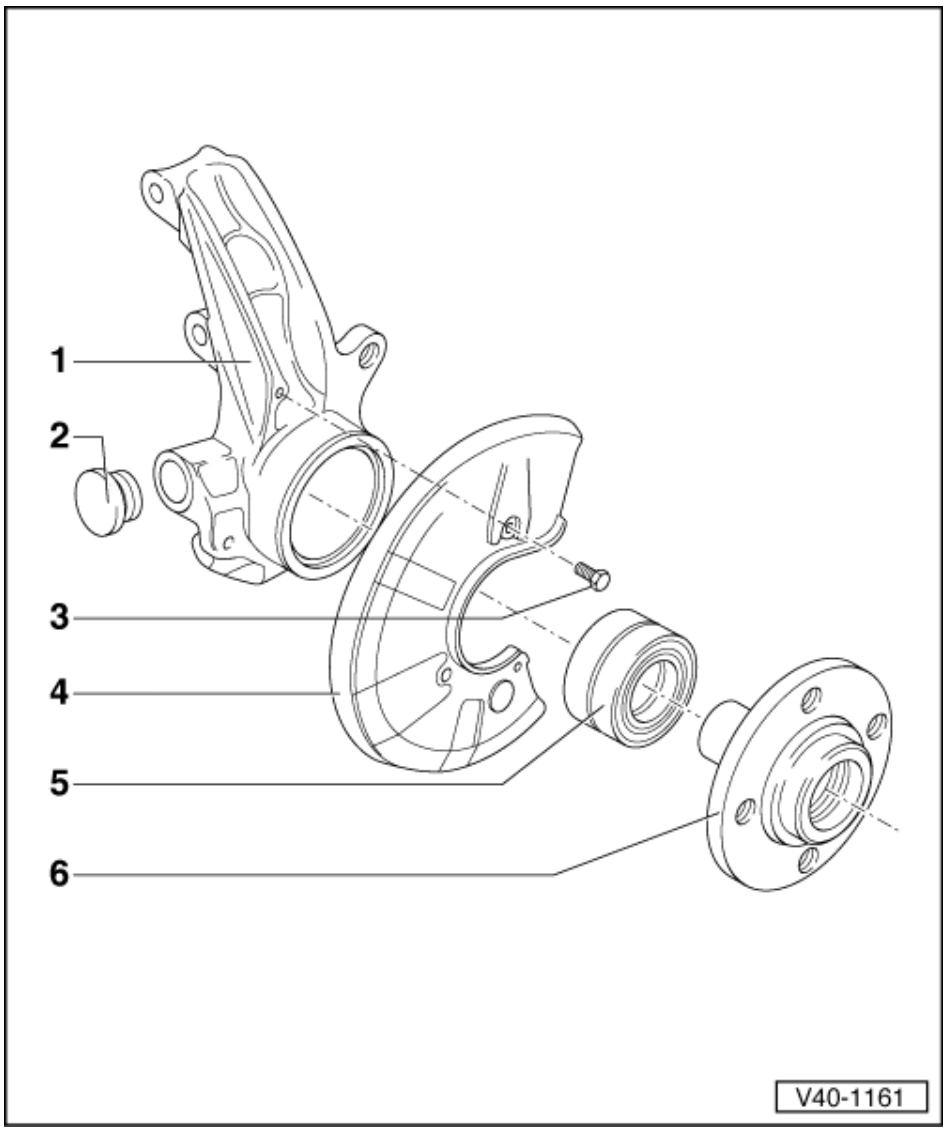
Vehicles with cast and forged wheel bearing housings have different cover plates.



5 Wheel bearing

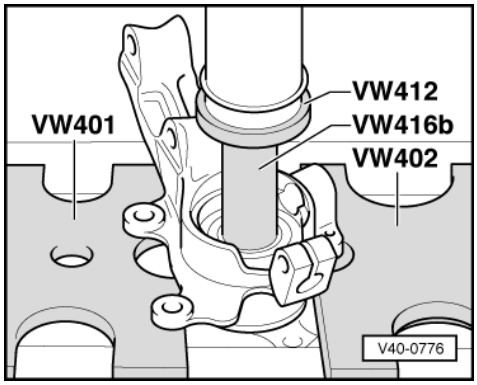
- With dia.ø75 mm for vehicles with up to 101 kW- engines
- With dia.ø82 mm for vehicles from 110 kW- engines
- Stepped ID
- Note correct installation position: Large internal diameter of wheel bearing points to wheel hub.
- Destroyed during removal
- Pressing out ø75 => Fig. 3
- Pressing in ø75=>Fig. 4
- Pressing out ø82 => Fig. 5
- Pressing in ø82 => Fig. 6

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



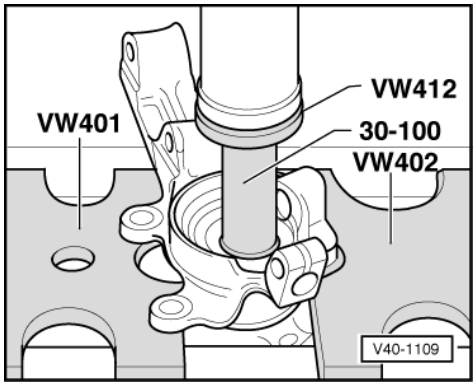
6 Wheel hub

- Note that there are different versions: 33 teeth up to 101 kW engines, 38 teeth as of 110 kW engine
- Pressing out ø75=>Fig. 1
- Pressing out ø82=>Fig. 2
- Pressing in ø75 => Fig. 7
- Pressing in ø82 => Fig. 8
- Pulling off bearing inner race =>Fig. 9 and 10

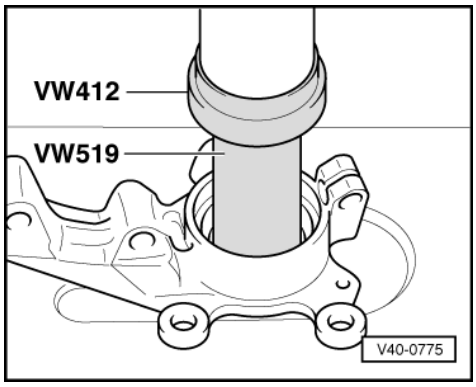


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

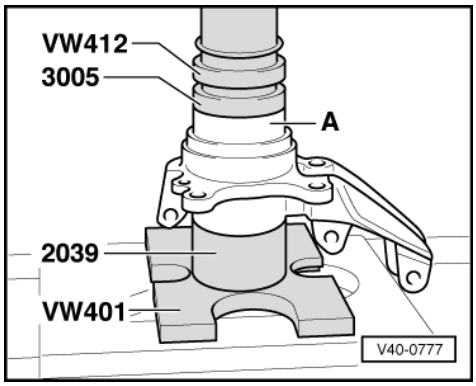
-> Fig.1 Pressing wheel hub out of dia. ø 75 mm wheel bearing



-> Fig.2 Pressing wheel hub out of dia. ø 82 mmwheel bearing



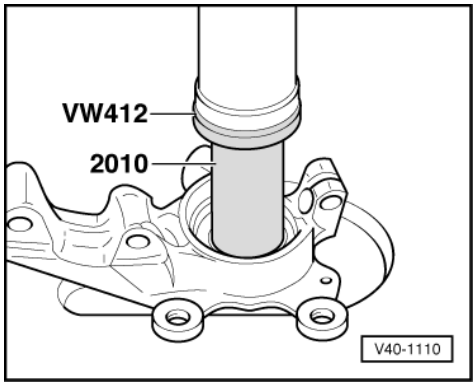
-> Fig.3 Pressing out dia.ø75 mm wheel bearing



-> Fig.4 Pressing home dia. ø75mm wheel bearing -A-

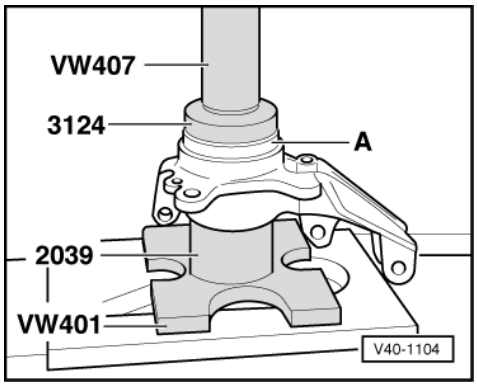
Note:

Large internal diameter of wheel bearing points to wheel hub.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

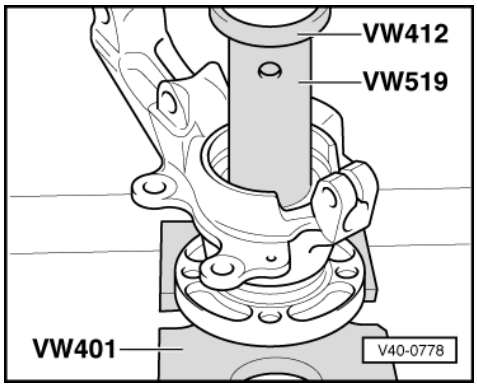
-> Fig.5 Pressing out dia ø82 mm wheel bearing



-> Fig.6 Pressing home dia. ø82mm wheel bearing -A-

Note:

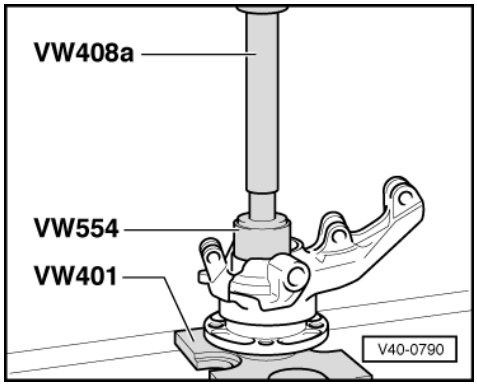
Large internal diameter of wheel bearing points to wheel hub.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

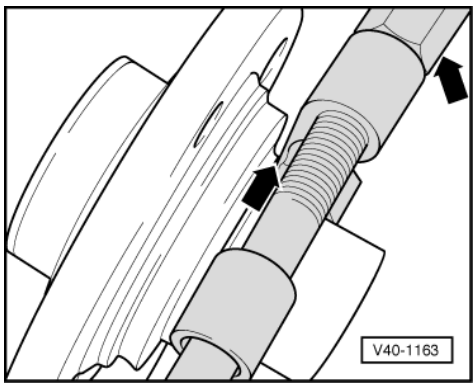
-> Fig.7 Pressing wheel hub into dia. ø75 mm wheel bearing

- When pressing in, thrust piece -VW519- must only make contact with inner race.



-> Fig.8 Pressing wheel hub into dia. ø82 mm wheel bearing

- When pressing in, thrust piece -VW554- must only make contact with inner race.



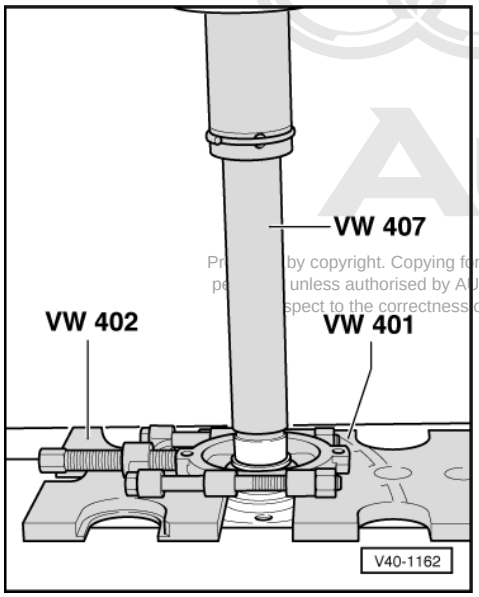
-> Fig.9 Inserting separating device

- Insert separating device into circular groove of bearing inner race and pre-tension with spindle.

Note:

Use commercially available separating device e.g. 15-17 from KUKKO.

Audi
Pr by copyright. Copying for private or commercial purposes, in part or in whole, is not pe unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability spect to the correctness of information in this document. Copyright by AUDI AG.



-> Fig.10 Pressing bearing inner race off wheel hub.

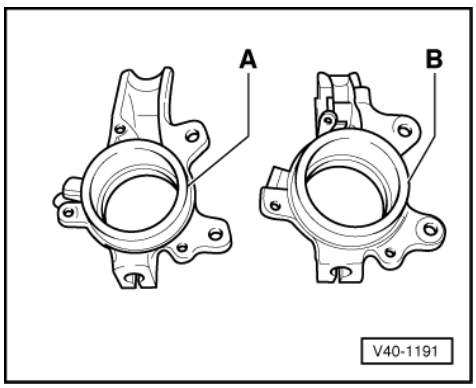


Fig.11 Forged and cast wheel bearing housings

A = forged version
B = cast version

Note:

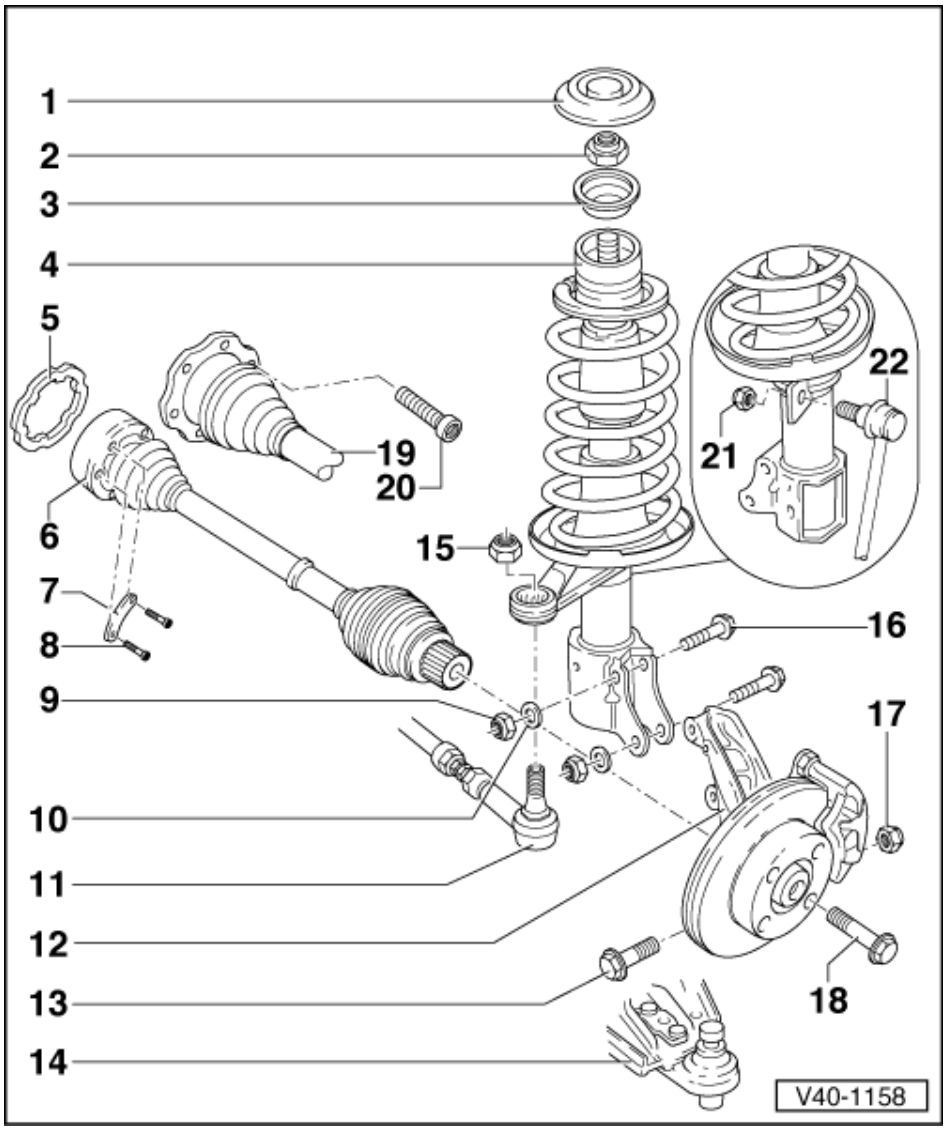
Forged wheel bearing housings are installed with 75 and 82 mm bearing diameter. Cast version are only fitted with 75 mm bearing diameter. From a technical point of view there are no reservations about installing different wheel bearing housing versions on the same axle.

Warning!
If cast wheel bearing housings are fitted when performing repairs use is also to be made of the modified cover plates and the corresponding lower ball joints are to be installed.
Part no. 8A0 407 365 - left
Part no. 8A0 407 366 - right

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2 - Removing and installing strut and drive shaft

2.1 - Removing and installing strut and drive shaft

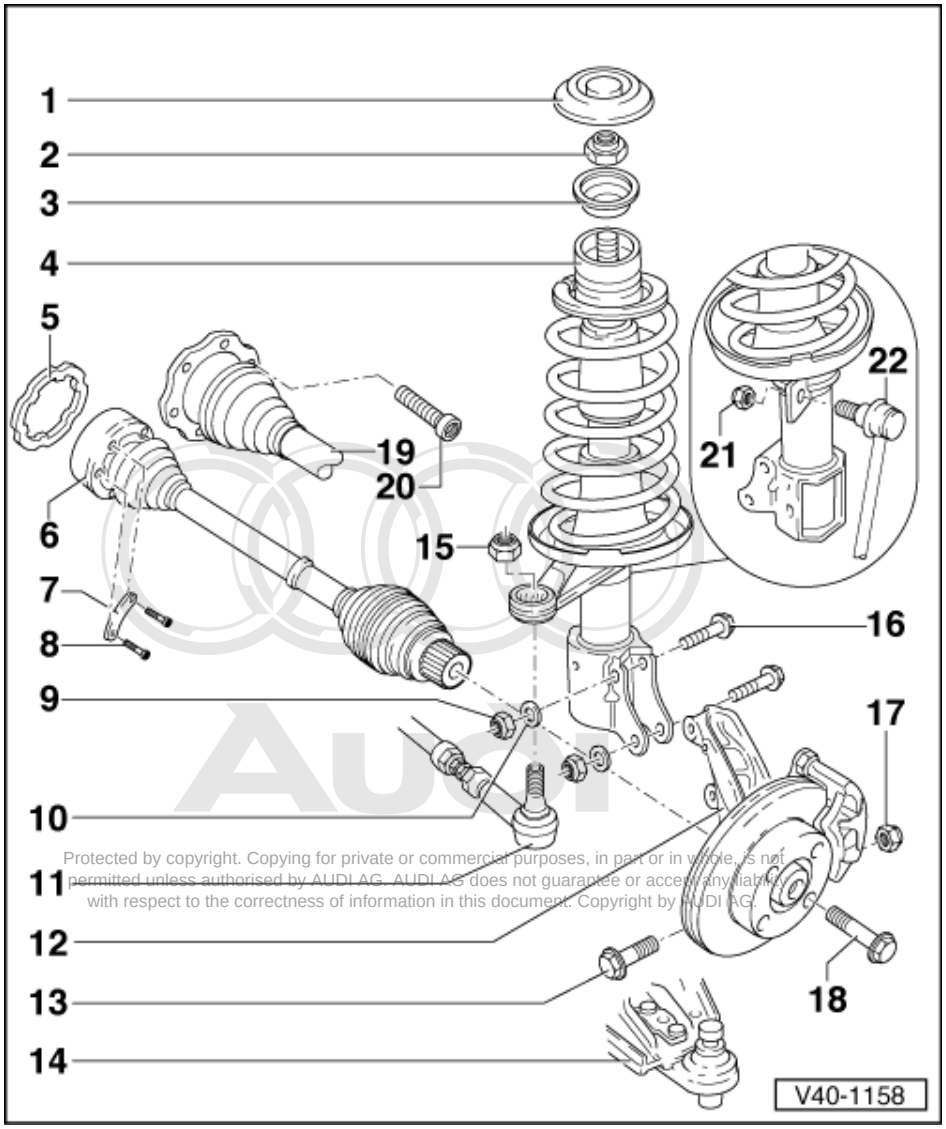


1 **Trim cap**
- Note different versions
- Screw to wheel housing on vehicles with 6 cyl. engine

2 **Self-locking nut 60 Nm**
- Always replace
- Tightening with torque wrench => Fig. 2

3 **Stop shell**

4 **Suspension strut**
- Do not screw off wheel bearing housing to replace shock absorber, coil spring and wheel bearing; remove and install as complete unit (camber setting)
- Do not remove the drive shaft
- Servicing => Page 38



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

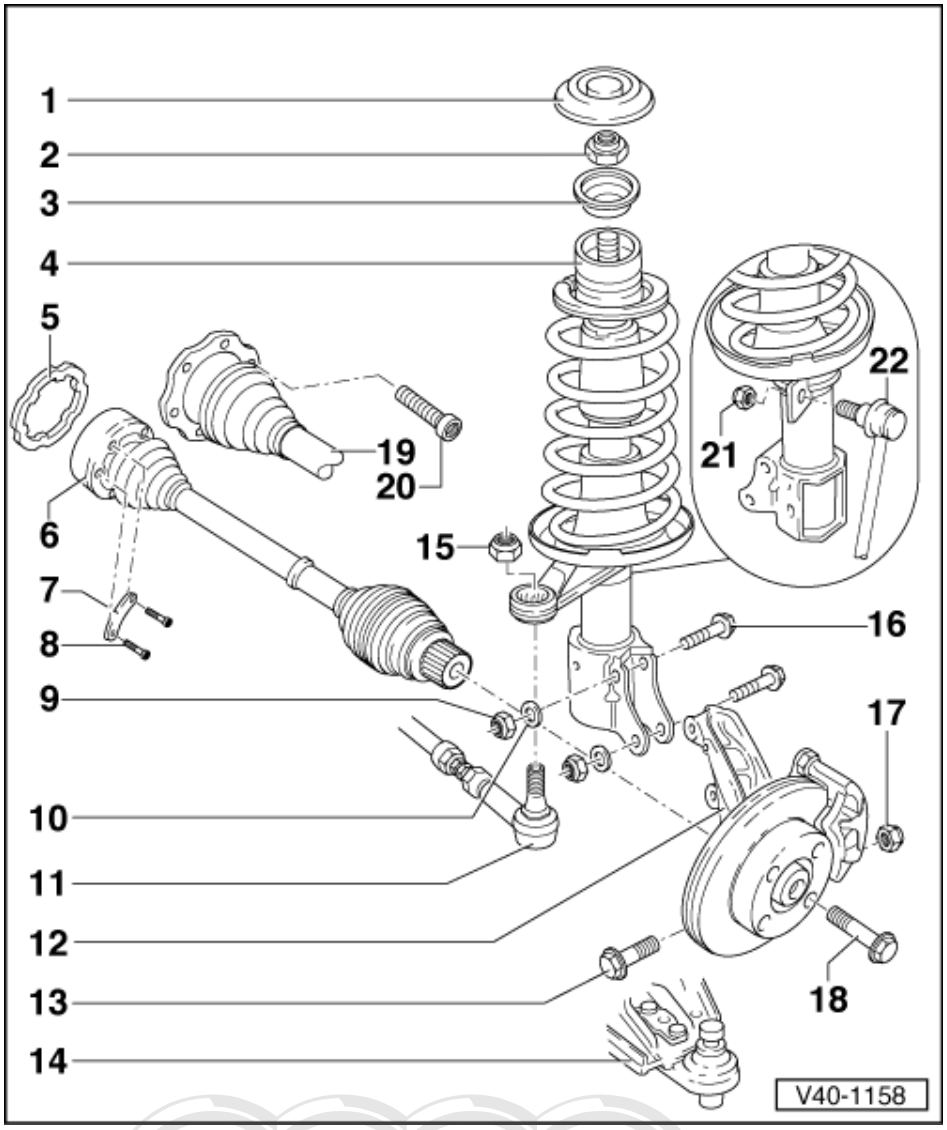
5 **Gasket**
- Always replace
- Pull off protective sheet and bond into joint.

6 **Drive shaft**

Note:

If vehicles on which the drive shaft has been taken out are to be moved an outer joint is to be fitted beforehand in place of the drive shaft so as not to damage the wheel bearing.

- Installed in all vehicles with 4 and 5 cylinder petrol engine with manual gearbox as well as in vehicles with 55 kW diesel engine
- To remove unscrew connecting links on either side of strut and push anti-roll bar upwards unscrew from flanged shaft and screw out hexagon bolt with washer



- To remove set appropriate wheel angle
- Servicing => Page 44
- Different lengths on left and right
- Note different versions (joints) depending on engine power
- On vehicles with ABS pull wheel speed sensor back slightly prior to removal and press home on installation

7 Packing plate

8 Cheese head bolt

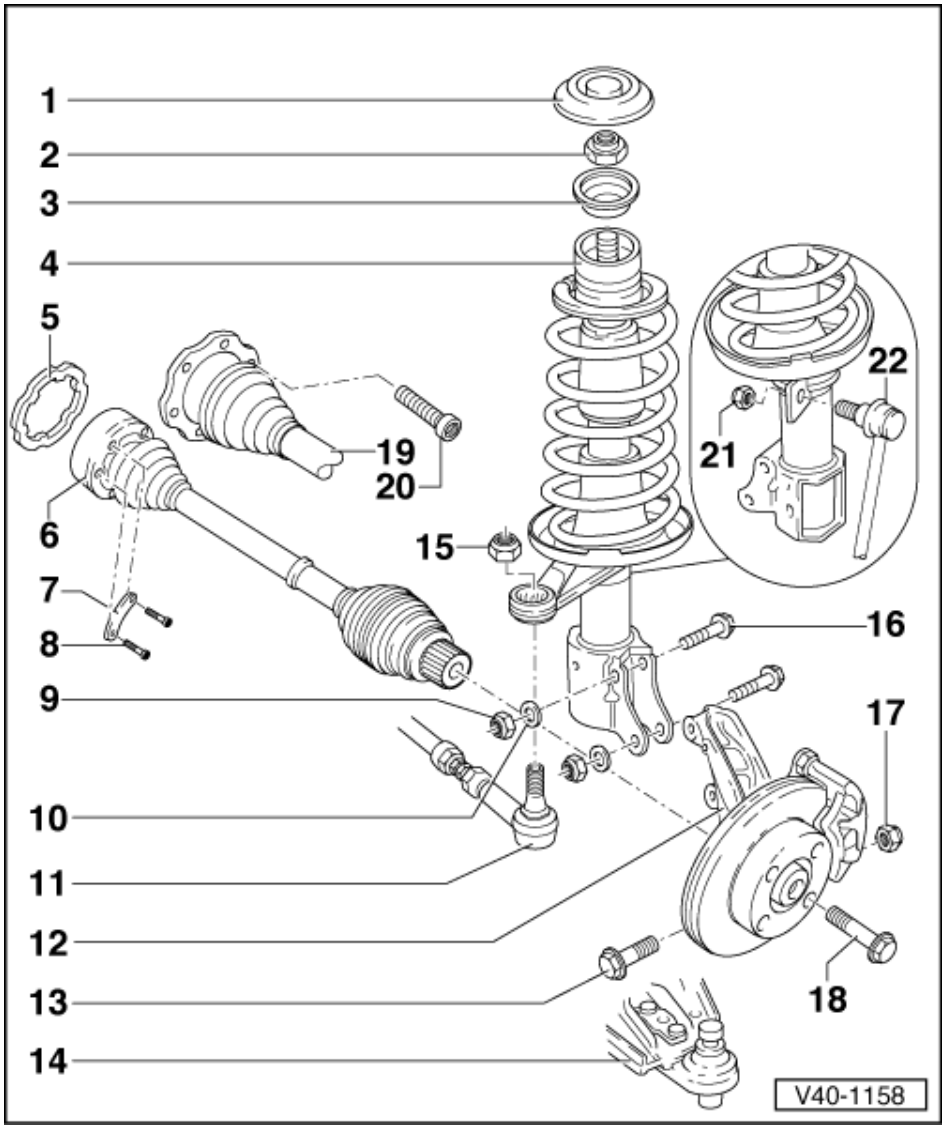
- M8 = 45 Nm
- M10 = 80 Nm

9 Self-locking nut

- Always replace

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Tighten to 110 Nm and then give a further 90o turn



10 Shim

11 Track rod

- Press off steering arm using two arm puller => Fig. 1

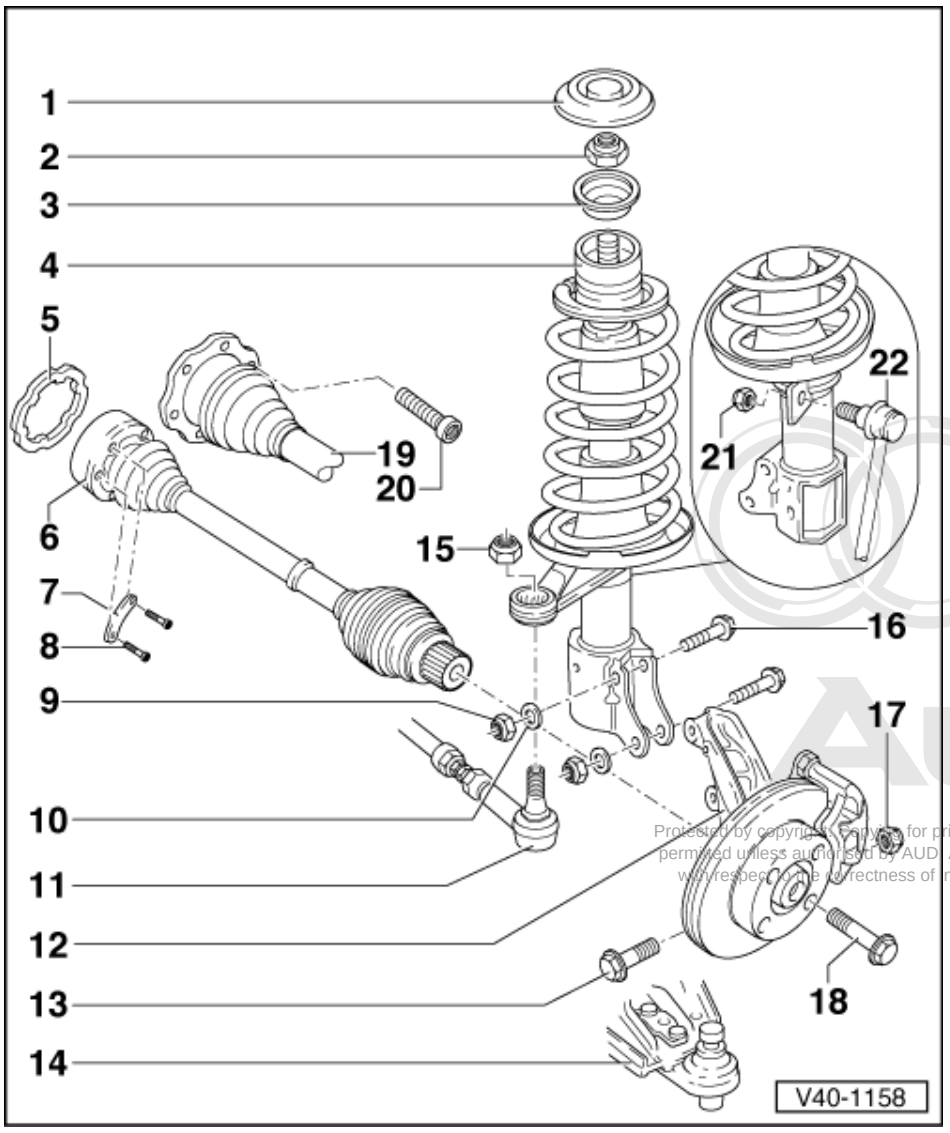
12 Wheel bearing housing with wheel hub

- Never widen slot in wheel bearing housing (seat for track control arm joint) to press out track control arm joint
- Align front axle after installing
- Note different wheel bearing housing versions => Page 30 , Fig. 11

13 Hexagon bolt

- Always replace
- Head of bolt faces in direction of travel

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

14 Wishbone with lower ball joint

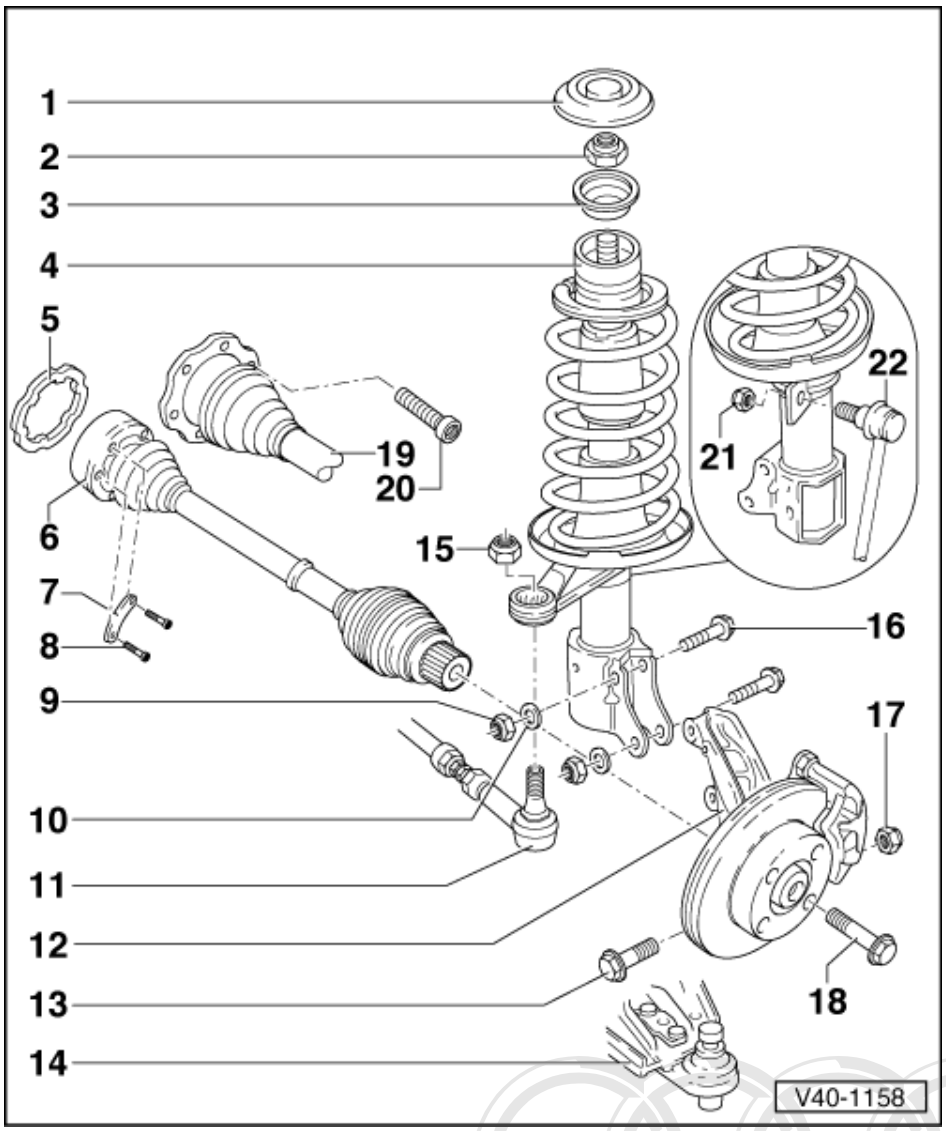
- Do not widen slot in wheel bearing housing when removing from wheel bearing housing
- Diameter of track control arm joint of lower ball joint 19.0 mm
- Sheet steel and forged versions are different

15 Self-locking nut 30 Nm

- Always replace

16 Hexagon flange bolt/hexagon bolt

- Always replace
- Fit hexagon bolt instead of hexagon flange bolt
- When using hexagon bolt always fit washer between damper housing and head of bolt



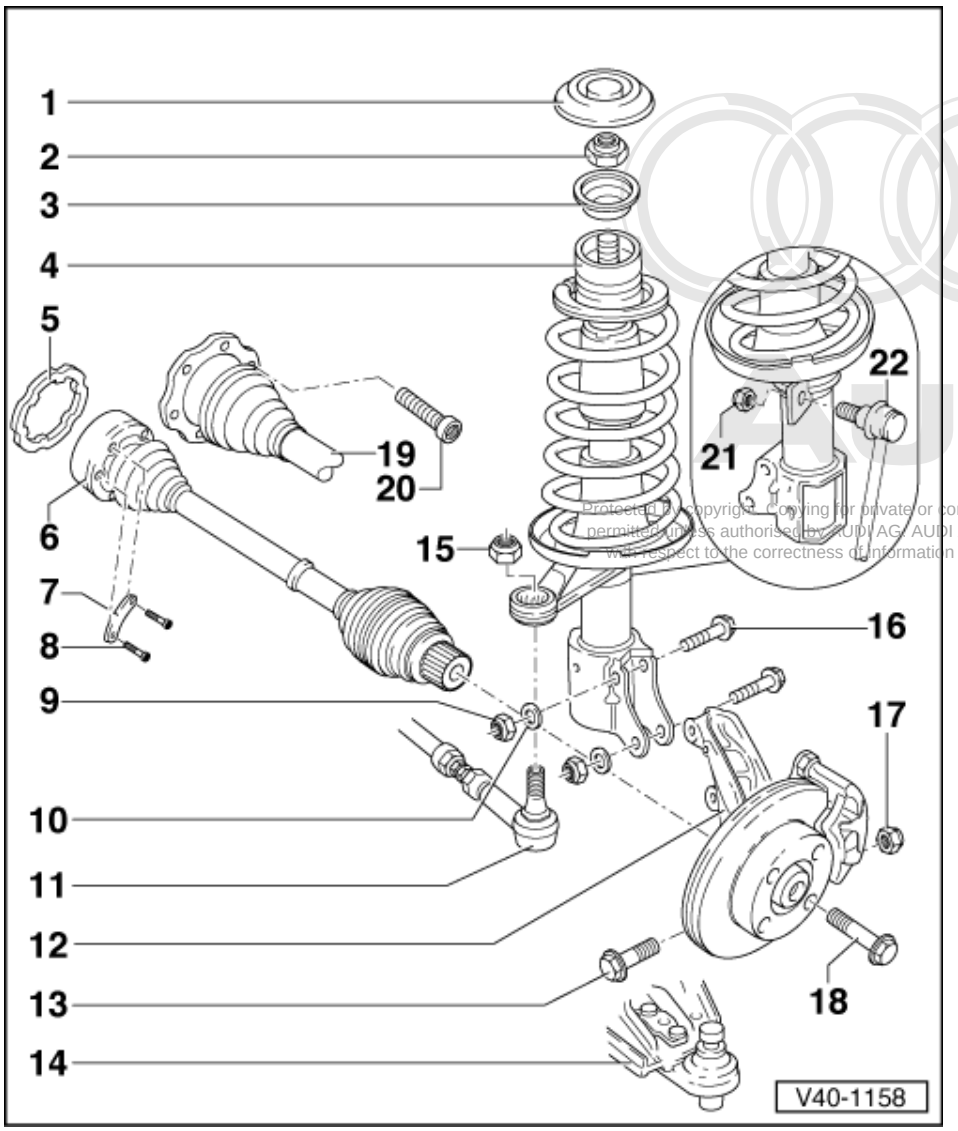
17 Self-locking nut 50 Nm

- Always replace

18 Hexagon bolt with washer/flange bolt

- Always replace
- Tighten M16 x 1.5 to 200 Nm and then turn a further 90o
- Tighten M14 x 1.5 to 120 Nm and then turn a further 90o
- Vehicle must be standing on its wheels for loosening and tightening (risk of accident).

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

19 Drive shaft with tripod joint

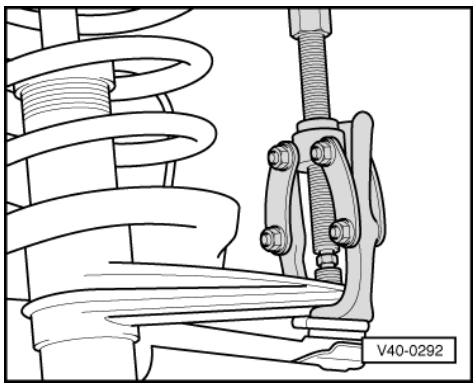
- Variation on item - 6 -
- Installed in all vehicles with 66 kW turbo diesel engine, 6 cylinder petrol engine and with automatic gearbox
- Servicing => Page 52

20 Cheese head bolt, 80 Nm

21 Self-locking nut 40 Nm

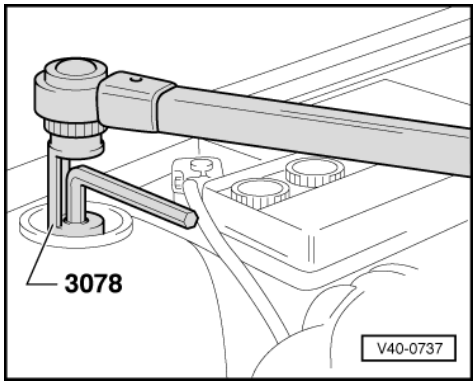
- Always replace

22 Connecting link



-> Fig.1 Pressing off tie rod end

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

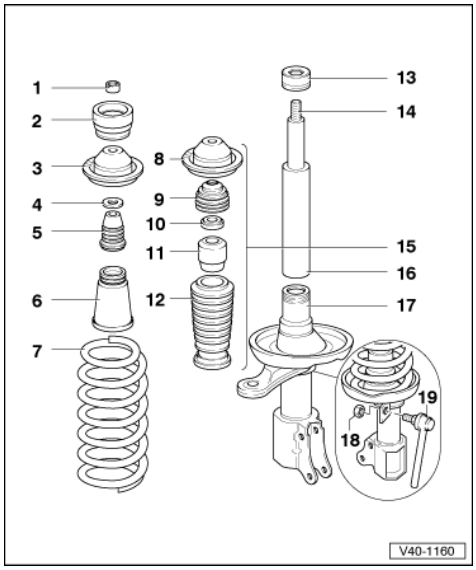


-> Fig.2 Tighten nut with torque wrench

- For this purpose, counterhold piston rod with Allen wrench

3 - Servicing suspension strut

3.1 - Servicing suspension strut



1 Slotted nut, 50 Nm

- Tensioning coil spring => Fig. 1
- Loosening and tightening => Fig. 2
- Tightening with torque wrench => Fig. 3

2 Suspension strut mounting

- Supplied as replacement part with integrated ball bearing

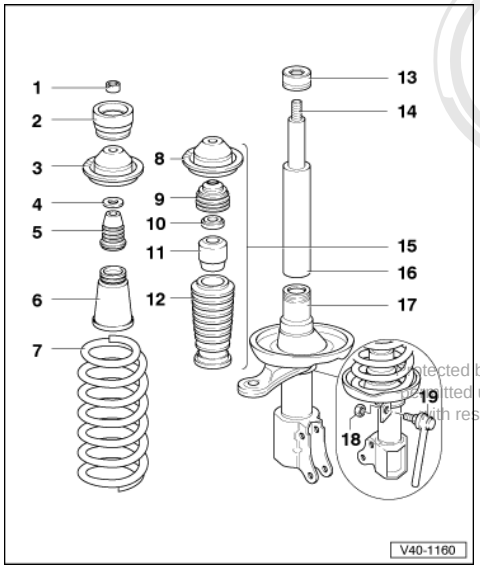
3 Spring plate

4 Shim

5 Stop buffer

- Not different versions depending on running gear design
- The codes on the data sticker stand for:

- 1BA = Standard version
- 1BE = Sports version
- 1BB = Bad road version



Audi
tected by copyright. Copying for private or commercial purposes, in part or in whole, is not
tted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
th respect to the correctness of information in this document. Copyright by AUDI AG.

6 Protective sleeve

7 Coil spring

- Refer to parts list
- Prior to replacement consult vehicle data sticker to establish spring version
- The codes on the data sticker stand for:

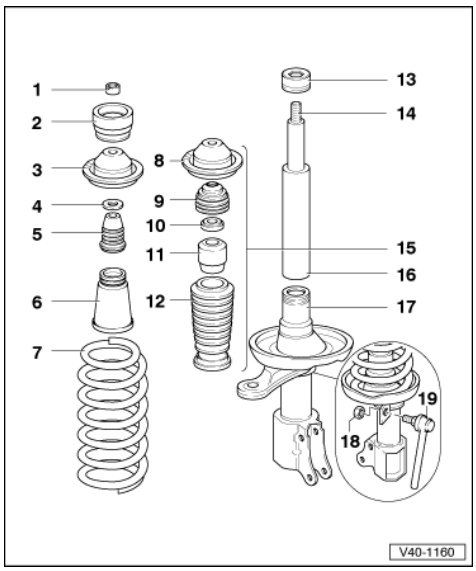
- 1BA = Standard version
- 1BE = Sports version
- 1BB = Bad road version

- Pay attention to note under - 16 - damper
- Replacing => Fig. 1 to 3
- Installation position: Colour code on spring points downwards towards damper housing

8 Spring plate

- With vent holes

9 Bellows cover



10 Shim

11 Stop buffer

12 Bellows

- Top: Fasten in position in cover
- Bottom: Pull over screw cap

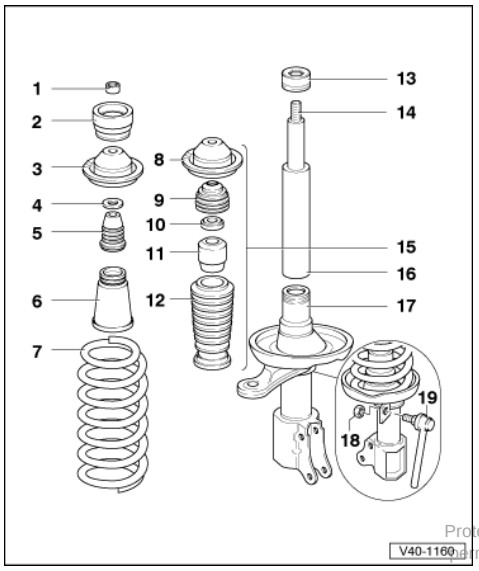
13 Screw cap 200 Nm

- Unscrewing and screwing on => Fig. 4

14 Piston rod

- Counterhold with Allen wrench when loosening and tightening slotted nut => Fig. 2

15 For vehicles with bad road version only



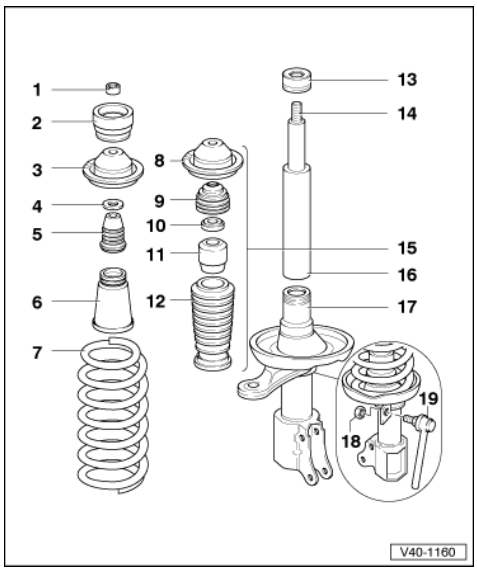
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

16 Shock absorber

- Refer to parts list
- Prior to replacement consult vehicle data sticker to establish spring version
- The codes on the data sticker stand for:

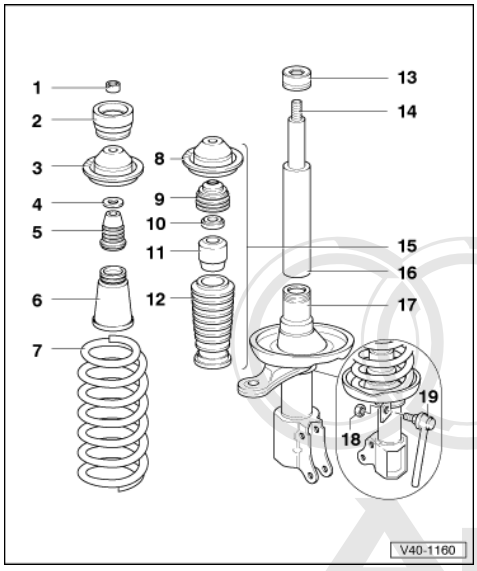
- 1BA = Standard version
- 1BE = Sports version
- 1BB = Bad road version

- Can be replaced individually



Notes:

- Up to vehicle no. 8C NA 015 724 there is no running gear identification on the data sticker. In such cases all vehicles are to be adjusted as indicated in the specified value table for vehicles with standard and sports version when performing wheel alignment. On replacing dampers or coil springs determine running gear version by way of part no. of rear dampers in combination with parts list.
- As of vehicle no. 8C NA 015 725 the data sticker is provided with the above identification.



- Defective shock absorbers must always be properly prepared before being scrapped.

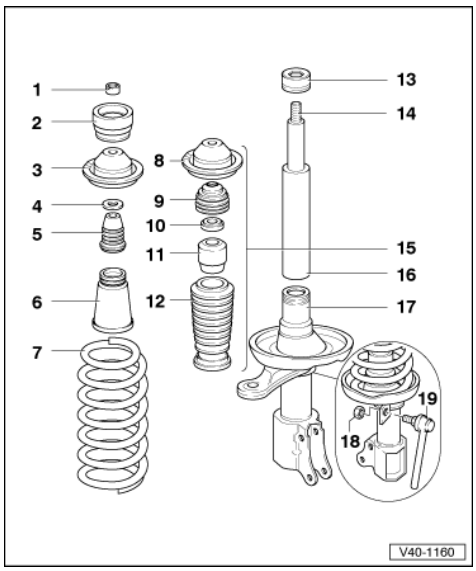
=> Special information no. 2; Edition 03.90

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

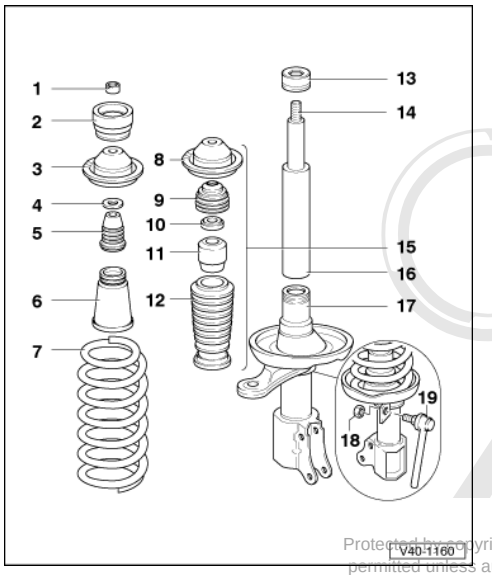
- Wet type dampers are fitted as standard
- Remove piston and piston rod when performing repairs
- Drain and dispose of oil fill from housing
- Install damper cartridges

Notes:

- Bad road version vehicles are equipped with damper cartridges.
- Sports version vehicles are fitted with damper cartridges or gas filled dampers.



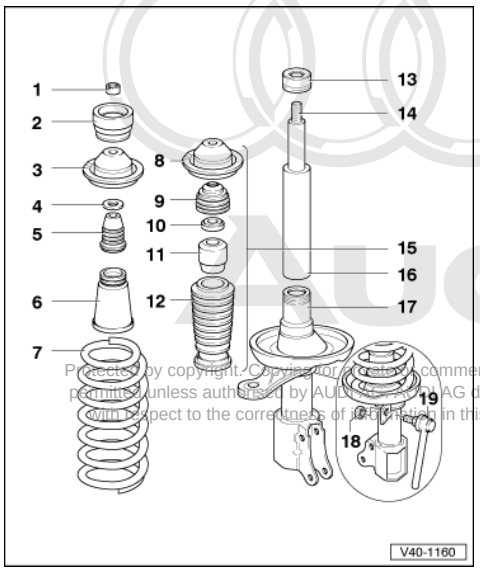
- Checking damper (removed): Check damper (hold in installation position) by hand by extending and compressing it. The damper must move evenly and smoothly over entire stroke. After lengthy storage dampers may have to be "pumped" several times. Defective dampers make a banging noise whilst driving. Given proper function slight traces of damper oil do not constitute grounds for replacement. Severe oil leakage leads to losses in the extension and compression stage.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness, completeness or currency of the data contained in this PDF file.

- Checking gas filled damper: Compress shock absorber by hand. The piston rod must move evenly and smoothly over the entire stroke. Release piston rod. If dampers have sufficient gas pressure piston rod returns automatically to initial position. If this is not the case the damper need not always be replaced. If there is no major oil leak the mode of operation corresponds to that of a conventional damper.

=> "Special service information" binder: Running Gear No. 17



Protected by copyright. Copies or distribution for commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

17 Damper housing

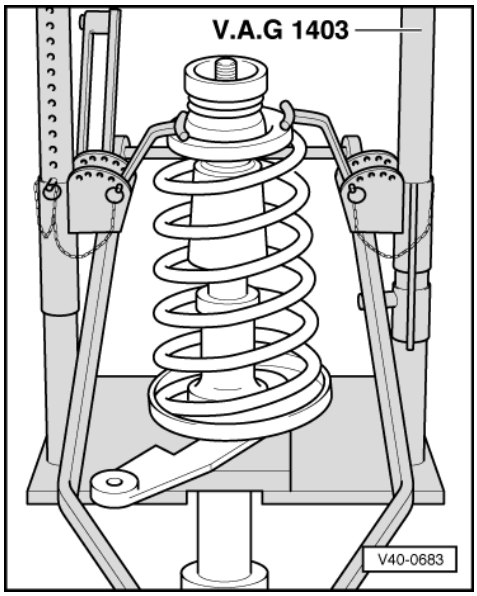
- Drain and dispose of oil fill from housing

18 Self-locking nut 40 Nm

- Always replace

19 Connecting link

- Unscrew at damper housing to remove strut

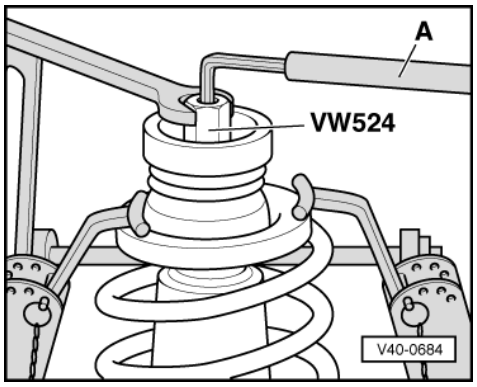


-> Fig.1 Tensioning coil spring

- Jaws engage on spring retainer

Note:

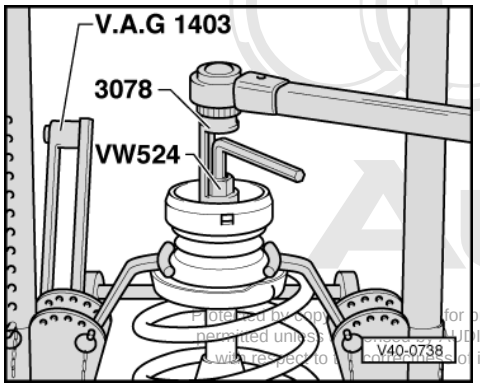
The coil springs can also be replaced using the spring tensioner -V.A.G 1752/1- in conjunction with the strut mounting -V.A.G 1752/2-.



-> Fig.2 Loosening and tightening slotted nut

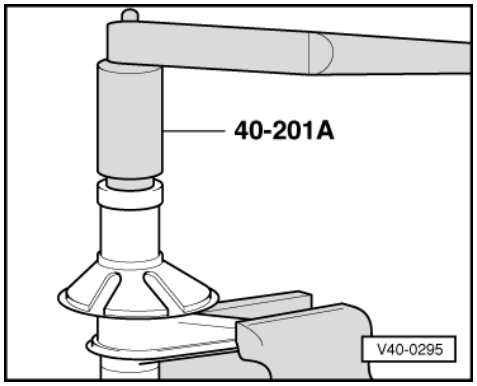
- Slacken spring
- To move the piston rod up and down the tubular end of the wrench can be screwed to the piston rod.

A = Wrench



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.3 Tightening slotted nut with torque wrench



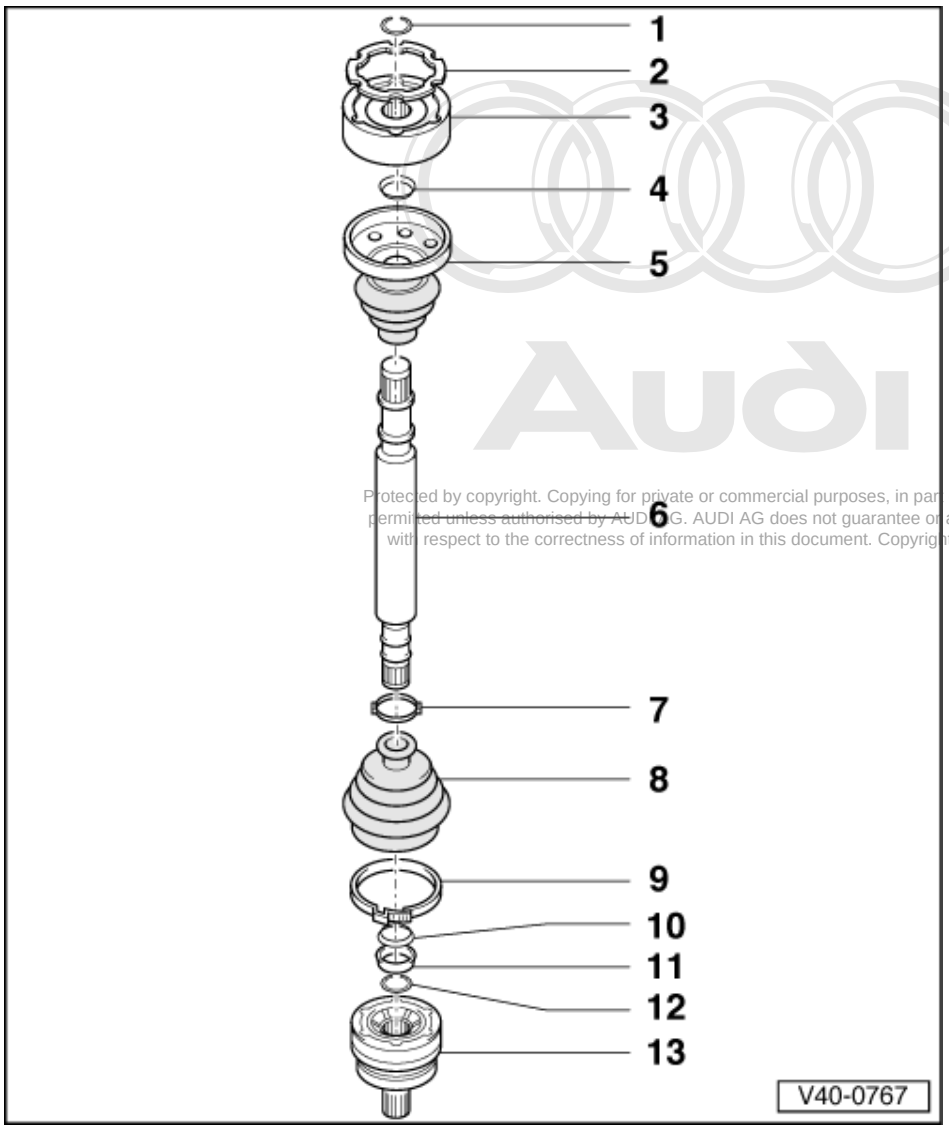
-> Fig.4 Unscrewing and screwing on screw cap

Note:

The special tool -40-201 A- is to be replaced by the tool -40-201 B-.

4 - Servicing drive shaft with constant velocity joint

4.1 - Servicing drive shaft with constant velocity joint



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

All vehicles with 4 and 5 cylinder petrol engine and manual gearbox as well as vehicles with 55 kW diesel engine

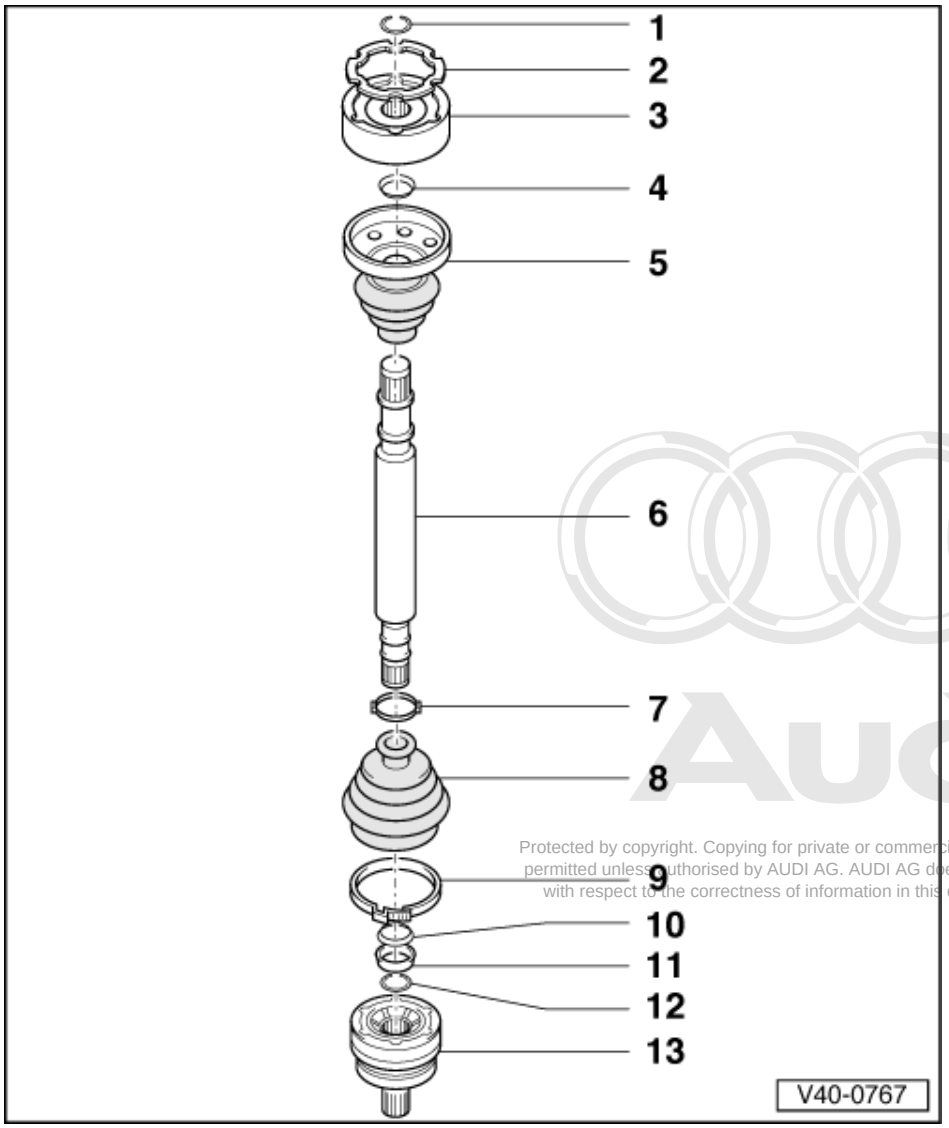
Note:

Outer constant velocity joints are packed with grease G-6:

Outer joint	Grease Total quantity	of which in: Joint	Bellows
ø mm	[g]	[g]	[g]
81/88	90	40	50
Inner joint			
ø mm			
90/100	90	40	50

Outer joint	Grease Total quantity	of which in: Joint	Bellows
108	120	35	85

Top up fill joint, if necessary, when replacing CV joint boot.

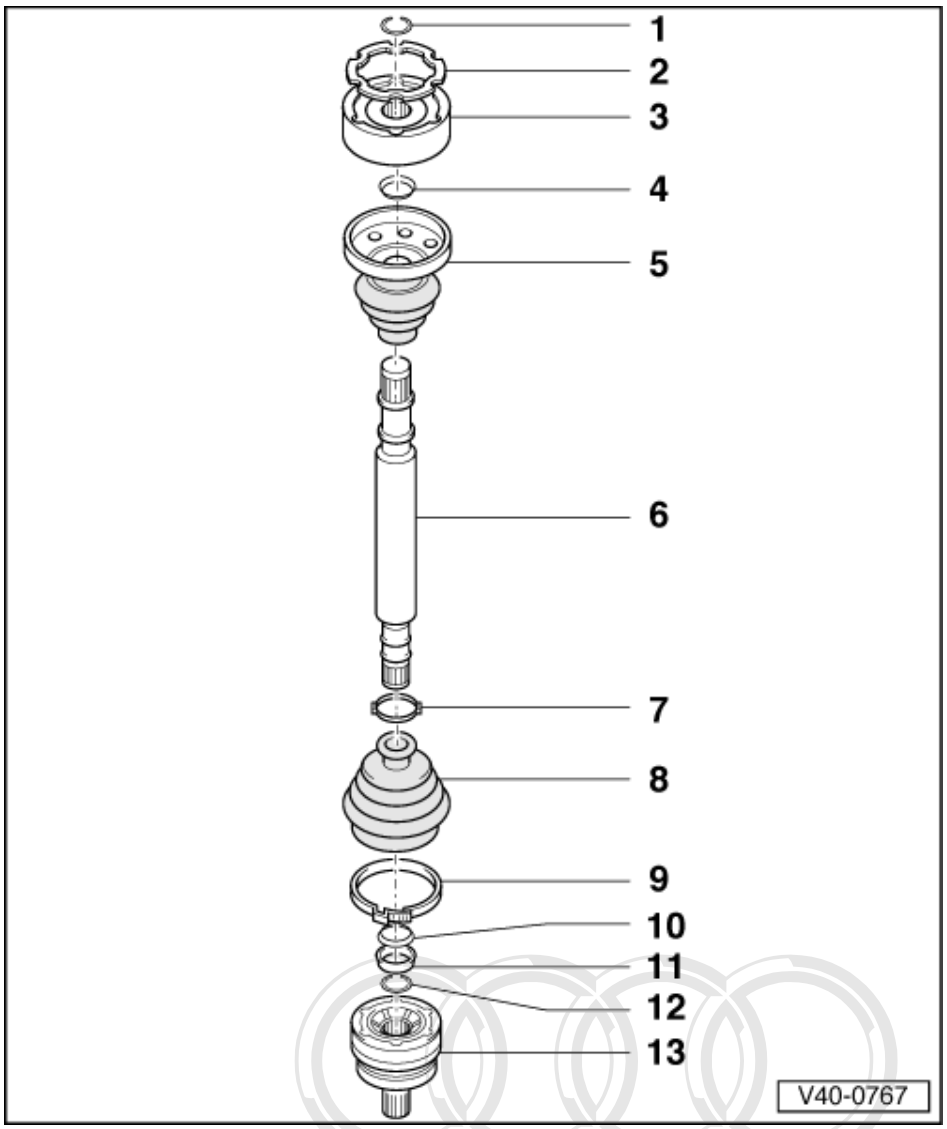


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 Circlip
- Always replace
- Depending on version remove and fit with standard circlip pliers or using -VW 161 a-, => Fig. 3

2 Gasket
- Replace; pull off protective sheet and bond into joint.
- Fitted as of 100 mm joint diameter

3 Inner constant velocity joint
- Pay attention to different joint dimensions:
- OD up to and including 66 kW engine: 90 mm
- As of vehicle no. 8C NA 136 933: 100 mm



- OD up to and including 85 kW engine: 100 mm
- OD up to and including 85 kW engine: 108 mm
- Only replace as complete unit
- Pressing off =>Fig. 4
- Pressing on =>Fig. 5
- Lubrication =>Note on Page 44

4 Dished washer

- Installation position => Fig. 6
- Not fitted as of 98 kW engine

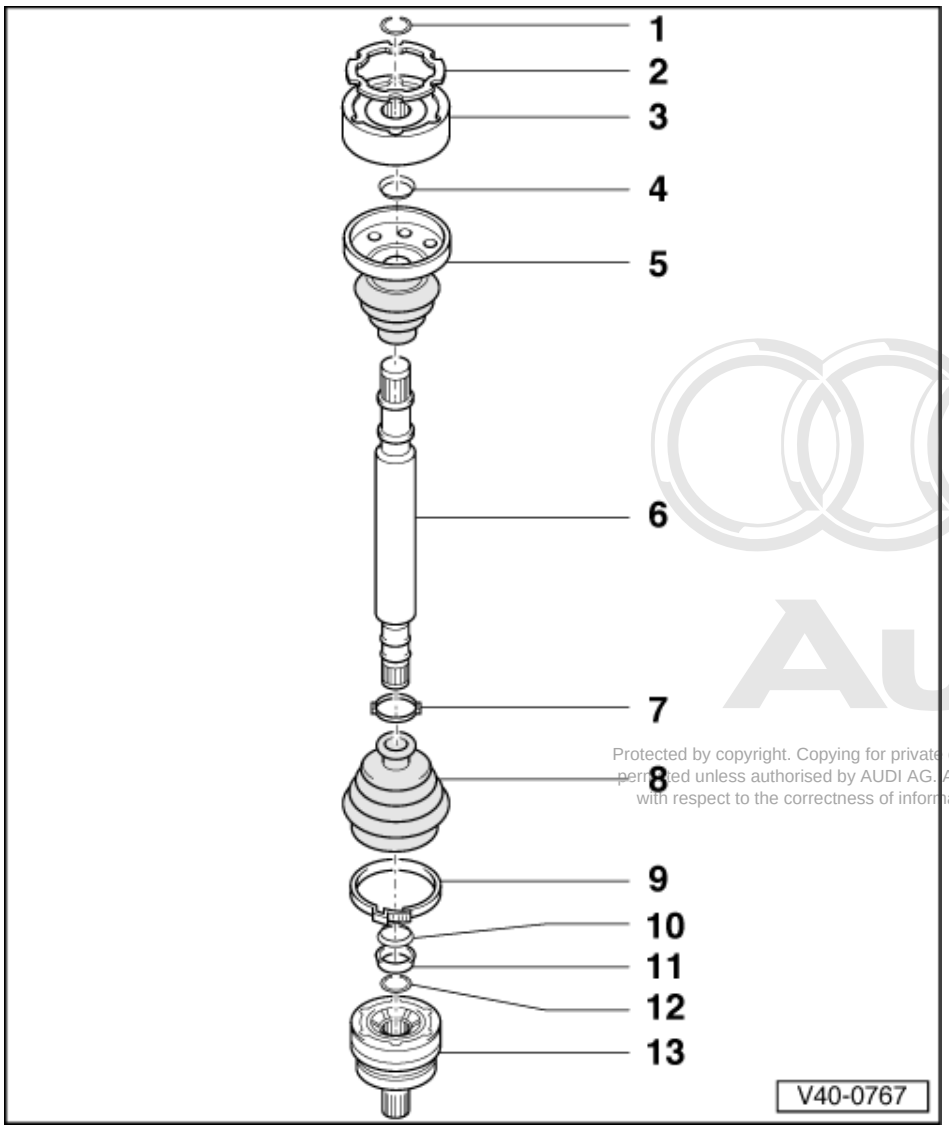
5 CV joint boot with cap

- Check for cracks and abrasions
- Drive off with drift
- Seal end face with D-3before fitting on constant velocity joint

6 Profiled shaft

- Different lengths on left and right

Audi
Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

7 Hose clip

- Always replace
- Tensioning => Fig. 1

8 Protective bellows

- Check for cracks and abrasions
- Before tensioning small clip briefly vent joint => Fig. 2

9 Hose clip

- Always replace
- Tensioning => Fig. 1

10 Dished washer

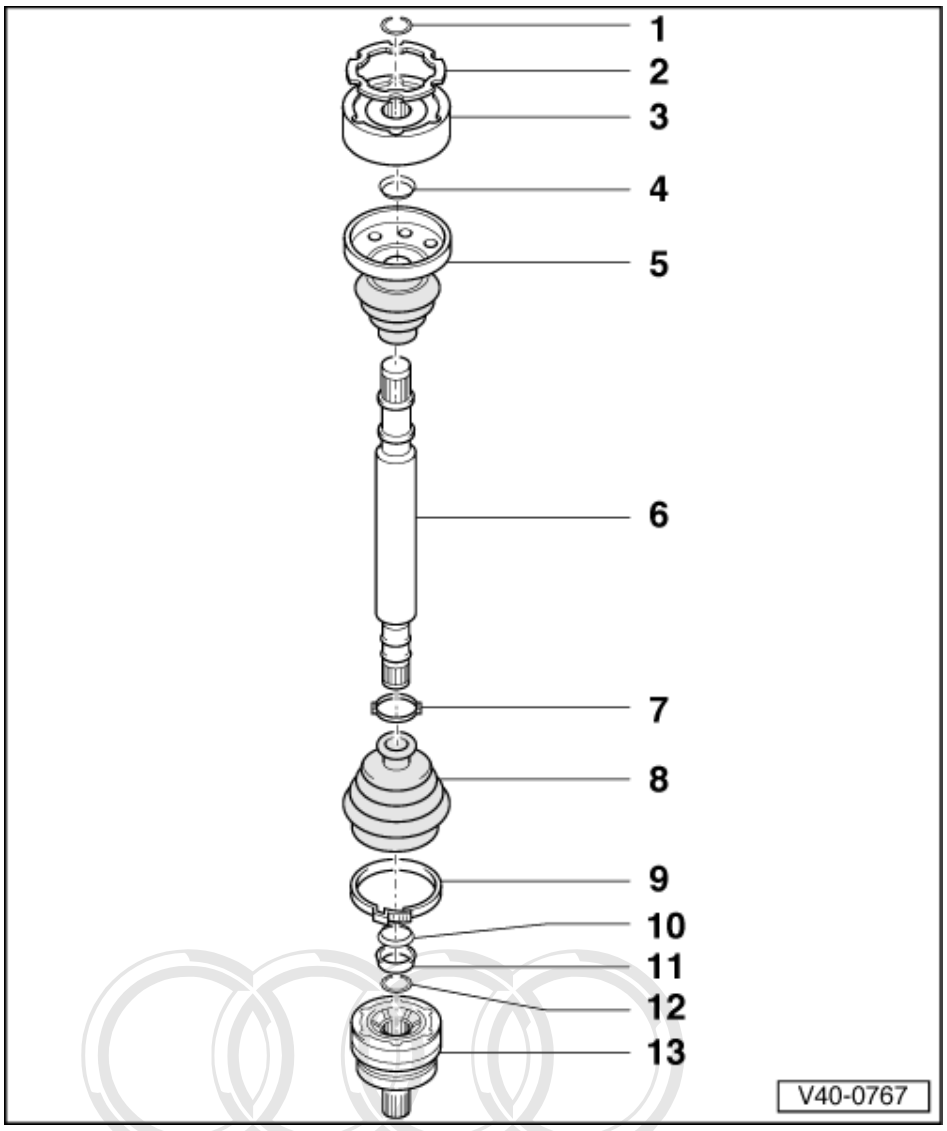
- Installation position => Fig. 8

11 Spacer

- Installation position => Fig. 8

12 Circlip

- Always replace
- Installation position => Fig. 8
- Fit into circular groove of shaft on assembly (no longer visible once joint is installed)

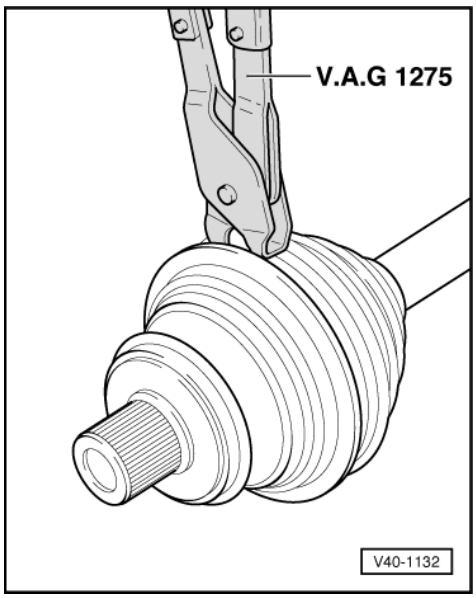


13 Outer constant velocity joint

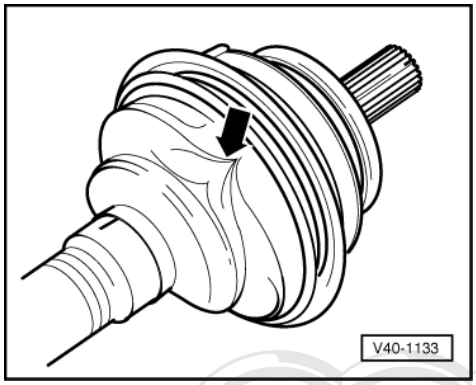
- Only replace as complete unit
- Pay attention to different joint dimensions:
- OD for 55 kW diesel engine and 52 - 66 kW petrol engine: 81 mm
- As of vehicle no. 8C NA 041 925 OD for vehicles with 55 kW diesel engine and 52 -66 kW petrol engine: 88 mm
- OD on 85 kW to 101 kW petrol engine: 88 mm
- Pressing off =>Fig. 7
- Installing: Knock joint onto shaft using plastic-headed hammer until circlip engages in annular groove of profiled shaft.
- Lubrication =>Note on Page 44
- Thread in track control arm joint:

- M16 x 1.5 for dia. ø 82 mm wheel bearing
- M14 x 1.5 for dia. ø 75 mm wheel bearing

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

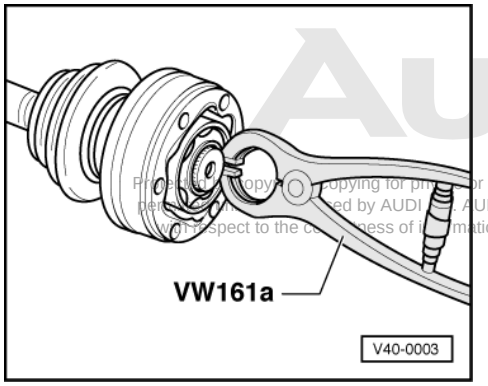


-> Fig.1 Tensioning hose clamp/circlip



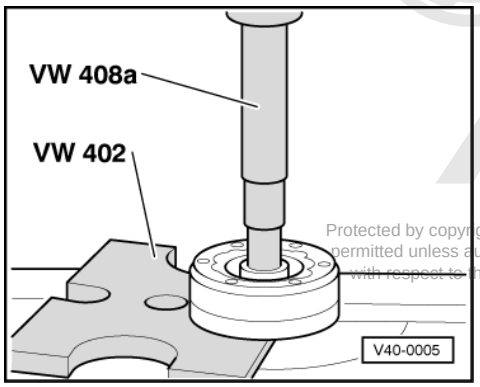
-> Fig.2 Ventilating joint protective bellows

- The bellows are often squashed when installing them on the housing. This produces a vacuum in the bellows which causes an inward fold -arrow- when driving. Therefore, briefly vent the bellows at the small diameter end after fitting to equalise pressure.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

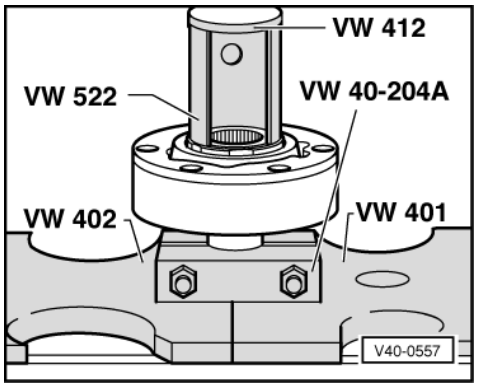
-> Fig.3 Removing and installing circlip



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.4 Pressing off inner joint

- Support ball hub whilst doing so.

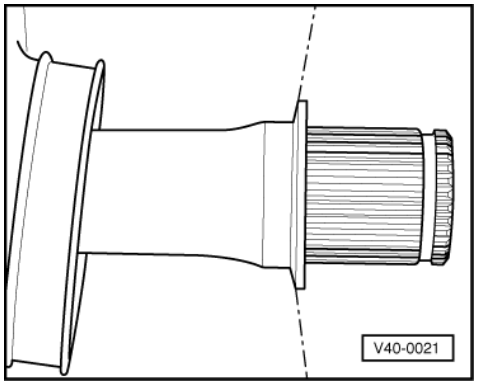


-> Fig.5 Pressing on inner joint

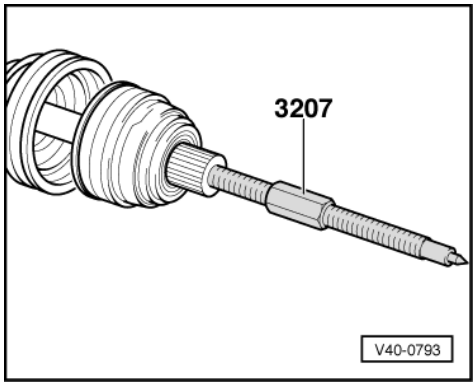
- Press home joint, fit circlip

Note:

Chamfer on ID of ball hub (toothing) must face locating collar of drive shaft.

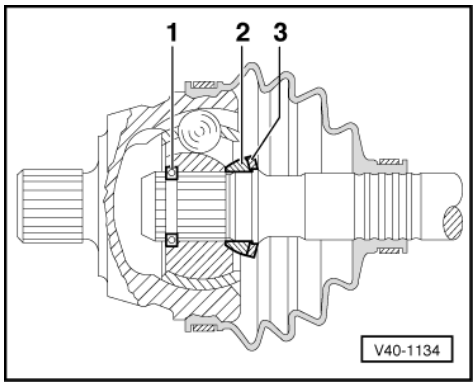


-> Fig.6 Correctly positioning dished washer



-> Fig.7 Pressing off outer constant velocity joint

- Clamp drive shaft in vice using soft jaws.
- Remove clip.
- Push back boot.
- Screw in special tool -3207- with M14 threaded end until constant velocity joint is pressed off profile shaft.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.8 Locations of dished washer, spacer and circlip

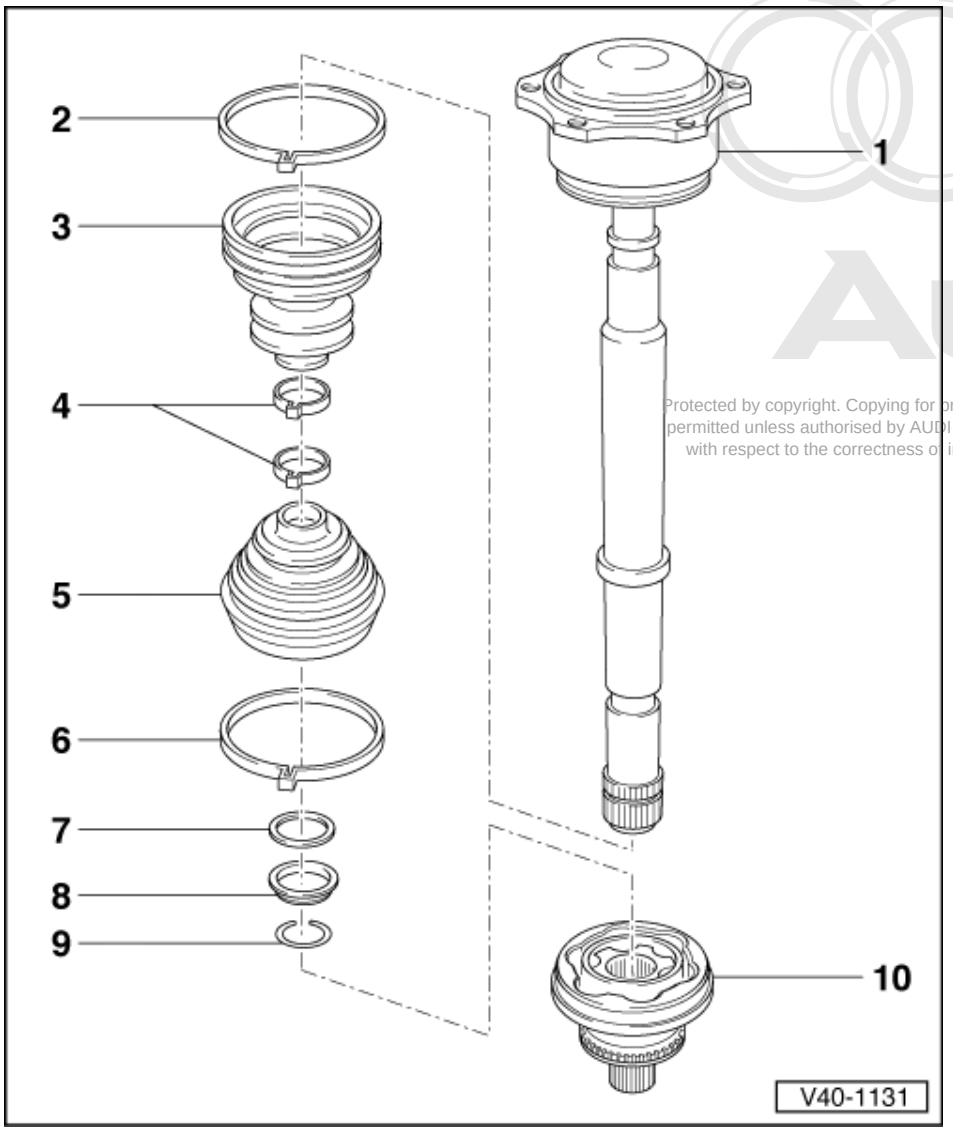
-1- Circlip

-2- Spacer

-3- Dished washer

5 - Servicing drive shaft with tripod joint

5.1 - Servicing drive shaft with tripod joint



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

All vehicles with:

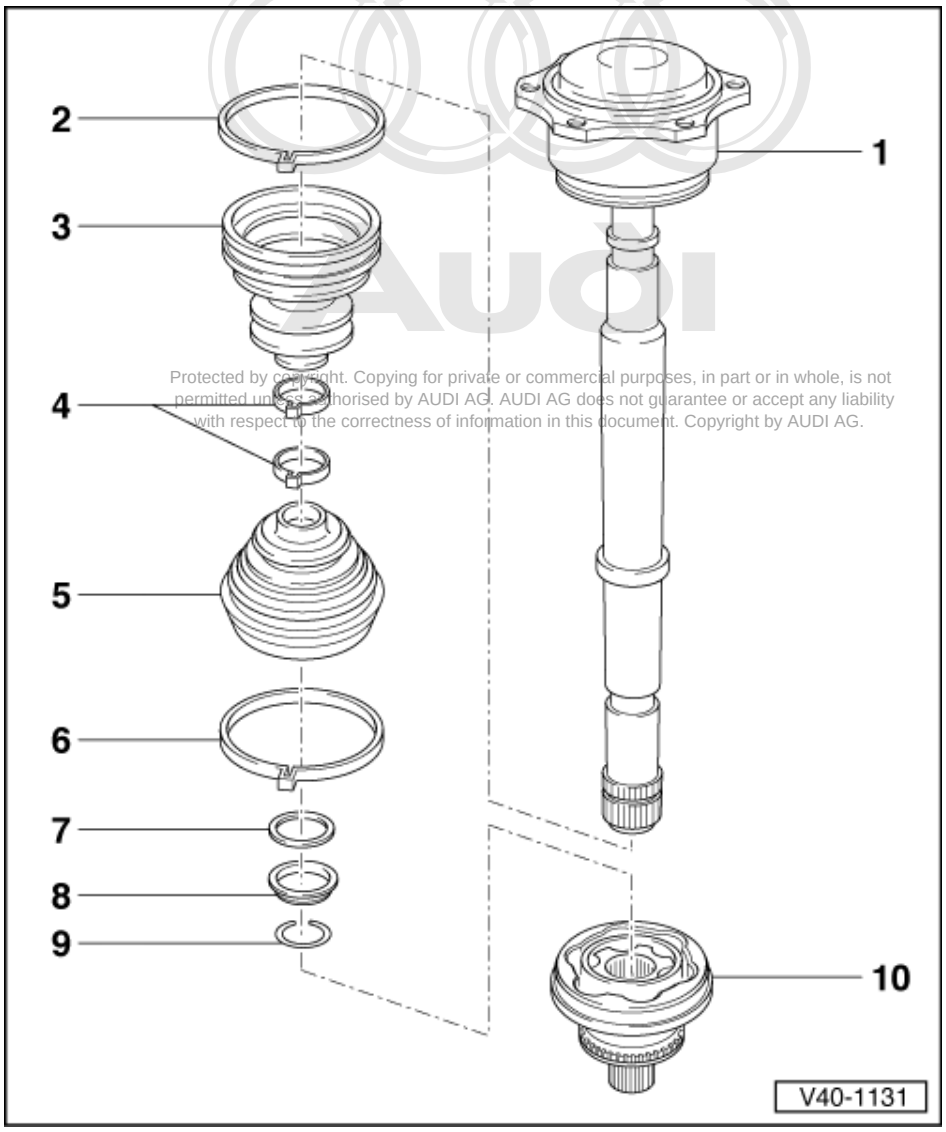
- Automatic gearbox
- 6-cylinder engine
- 66 kW turbo diesel engine with manual gearbox

Note:

Outer constant velocity joints are packed with grease G-6:

Outer joint	Grease Total quantity	of which in: Joint	Bellows
ø mm	[g]	[g]	[g]
88	90	40	50
98	120	80	40

Top up fill joint, if necessary, when replacing CV joint boot.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Grease fill for inner tripod joint:

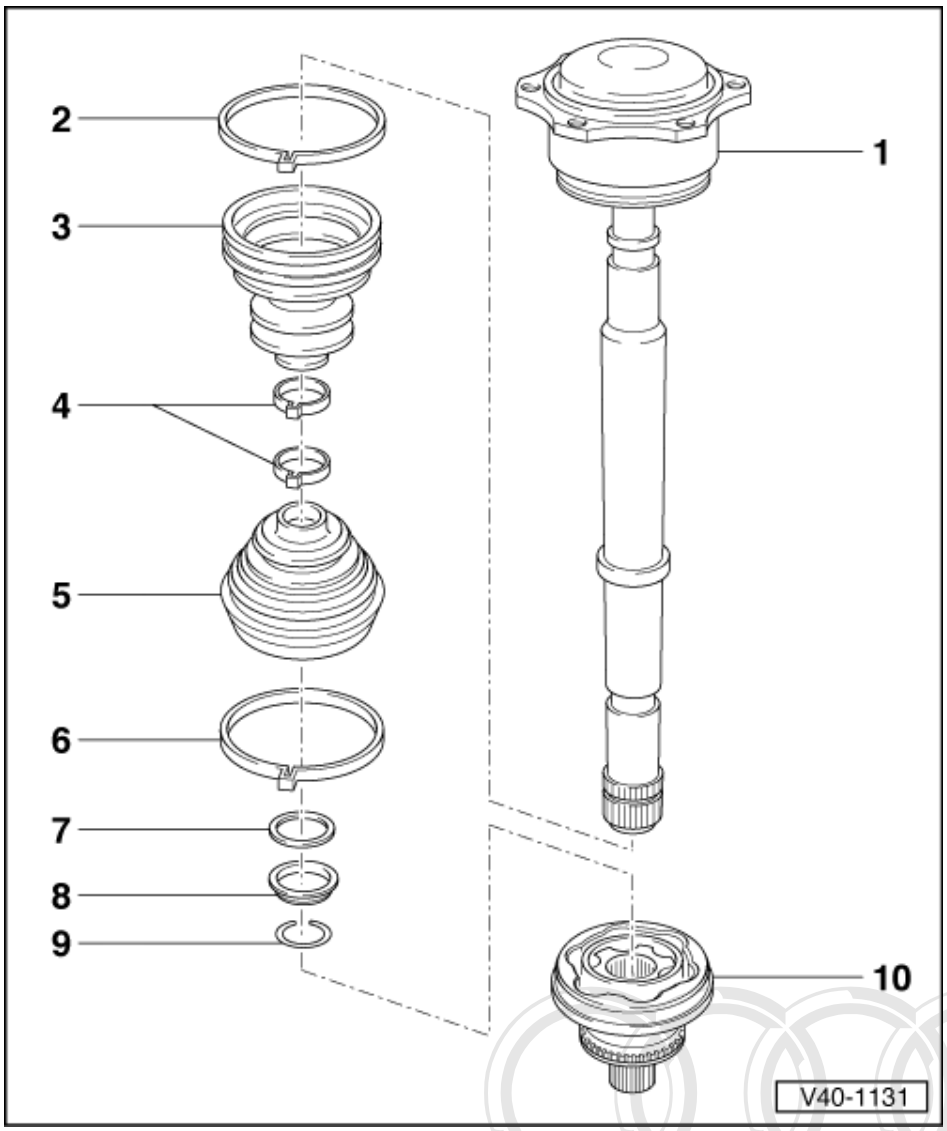
- Tripod joint is lubricated with 140 g of grease G 000 605.
- Regrease joint, if necessary, when replacing the protective bellows.

1 Drive shaft with tripod joint

- Replacement part supplied with protective bellows and packed with grease

2 Hose clip

- Always replace
- Tensioning => Fig. 1



3 Inner joint protective bellows

- Check for cracks and abrasions
- To replace, press off outer constant velocity joint
- When slipping onto profile shaft, apply a small amount of grease to bead on profiled shaft and use wedge -V.A.G 1474/5- (part of tool -V.A.G 1474-) to carefully position bellows => Fig. 4

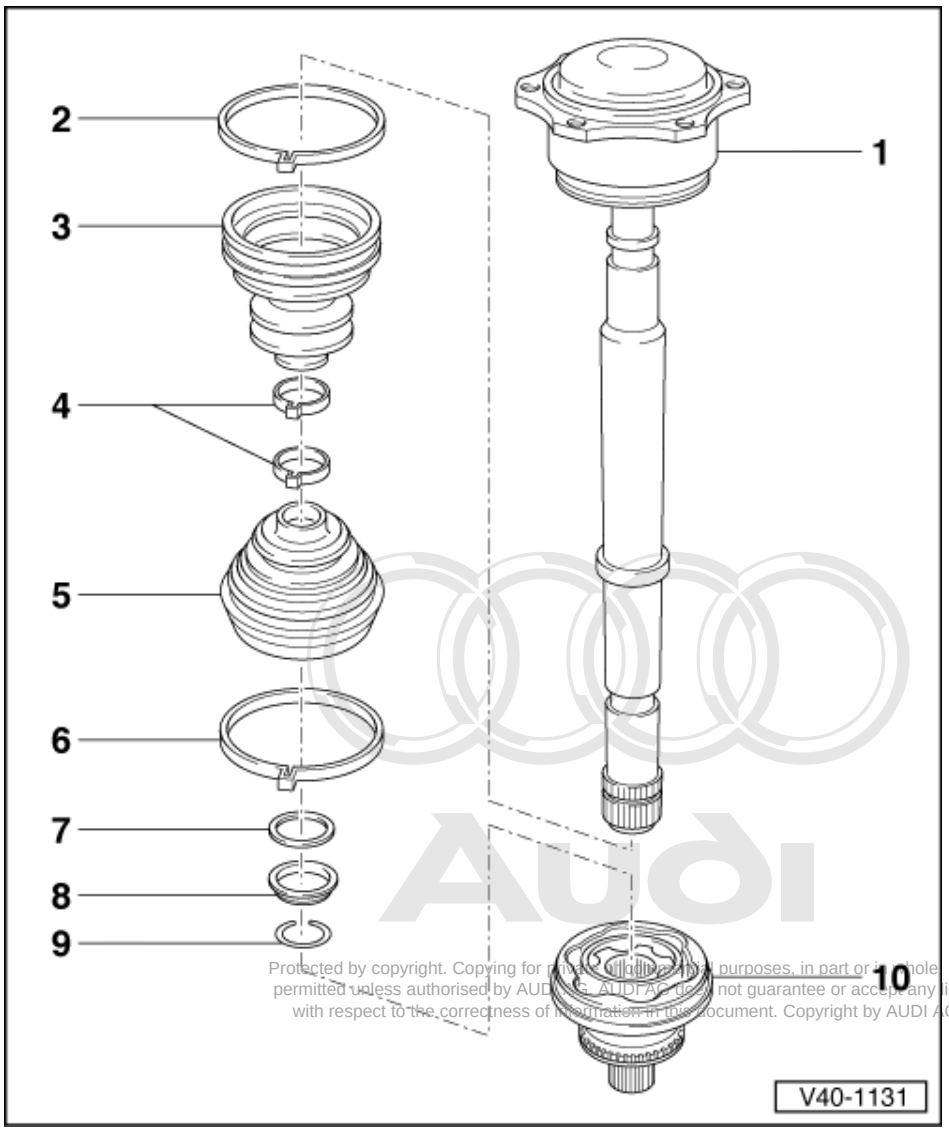
4 Clip

- Always replace
- Tensioning => Fig. 1

5 Outer CV joint boot

- Check for cracks and abrasions
- Before tensioning small clip briefly vent boot => Fig. 3

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

6 Hose clip

- Always replace
- Tensioning => Fig. 1

7 Dished washer

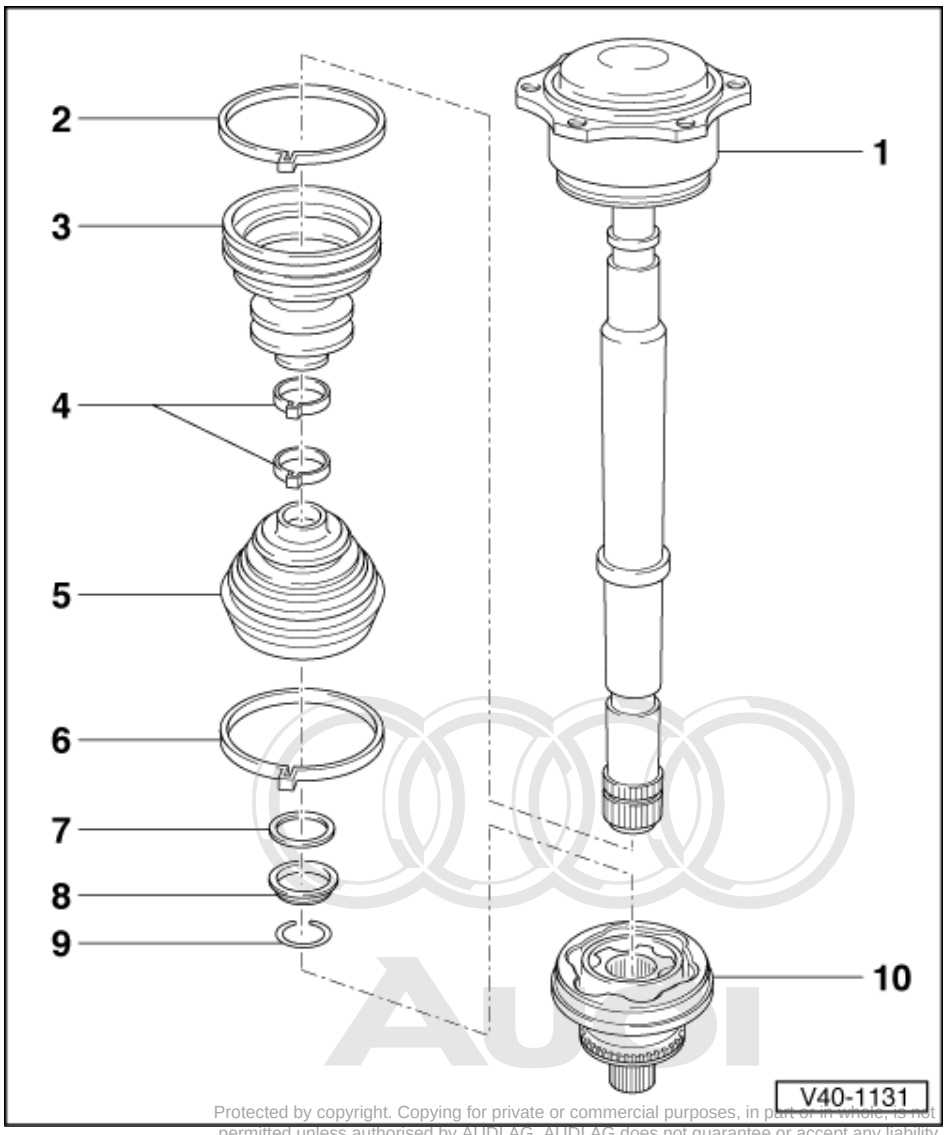
- Installation position => Fig. 5

8 Spacer

- Installation position => Fig. 5

9 Circlip

- Always replace
- Installation position => Fig. 5
- Fit into circular groove of shaft on assembly (no longer visible once joint is installed)

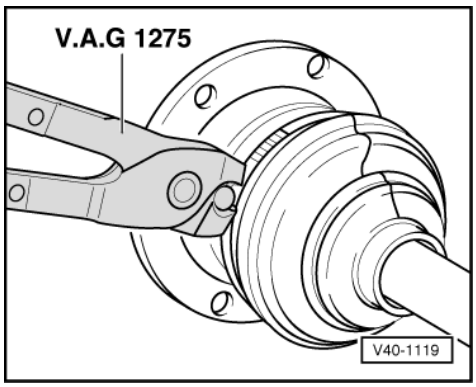


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

10 Outer constant velocity joint

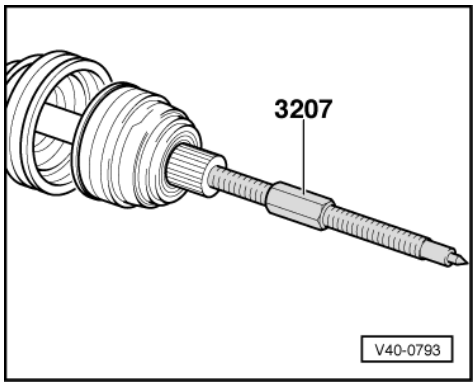
- Only replace as complete unit
- Pay attention to different joint dimensions:
- OD for 55 kW diesel engine and 66 kW turbo diesel engine as well as petrol engine up to 101 kW: 88 mm
- 110 and 128 kW petrol engine: 98 mm
- Pressing off =>Fig. 2
- Installing: Use plastic hammer to drive joint onto shaft until circlip engages.
- Lubrication => Notes on Page 53
- Thread in track control arm joint:

- M16 x 1.5 for dia. ø 82 mm wheel bearing
- M14 x 1.5 for dia. ø 75 mm wheel bearing



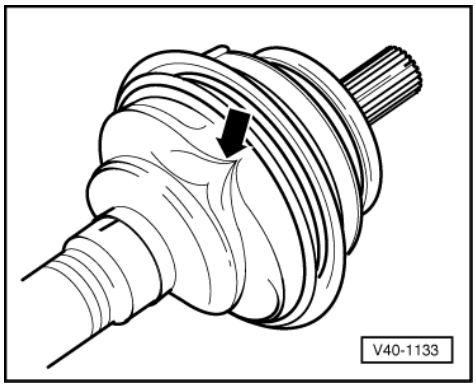
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.1 Tensioning hose clamp/circlip



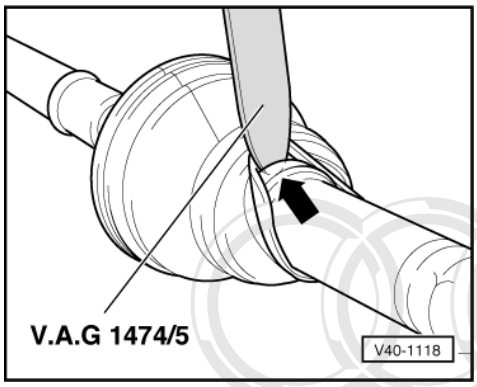
-> Fig.2 Pressing off outer constant velocity joint

- Clamp drive shaft in vice using soft jaws.
- Remove clip.
- Push back boot.
- Depending on thread of track control arm joint screw in special tool -3207- with M14 or M16 threaded end until constant velocity joint is pressed off profiled shaft.

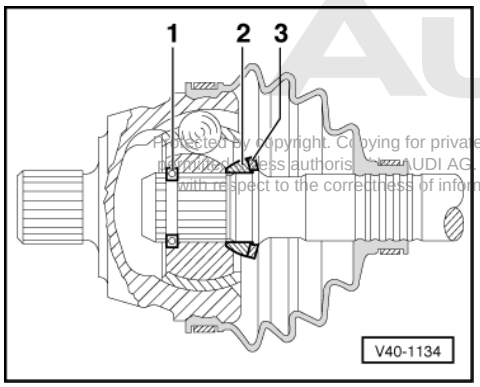


-> Fig.3 Ventilating joint protective bellows

- The bellows are often squashed when installing them on the housing. This produces a vacuum in the bellows which causes an inward fold -arrow- when driving. Therefore, briefly vent the bellows at the small diameter end after fitting to equalise pressure.



-> Fig.4 Folding joint protective bellows over bead of profiled shaft



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.5 Locations of dished washer, spacer and circlip

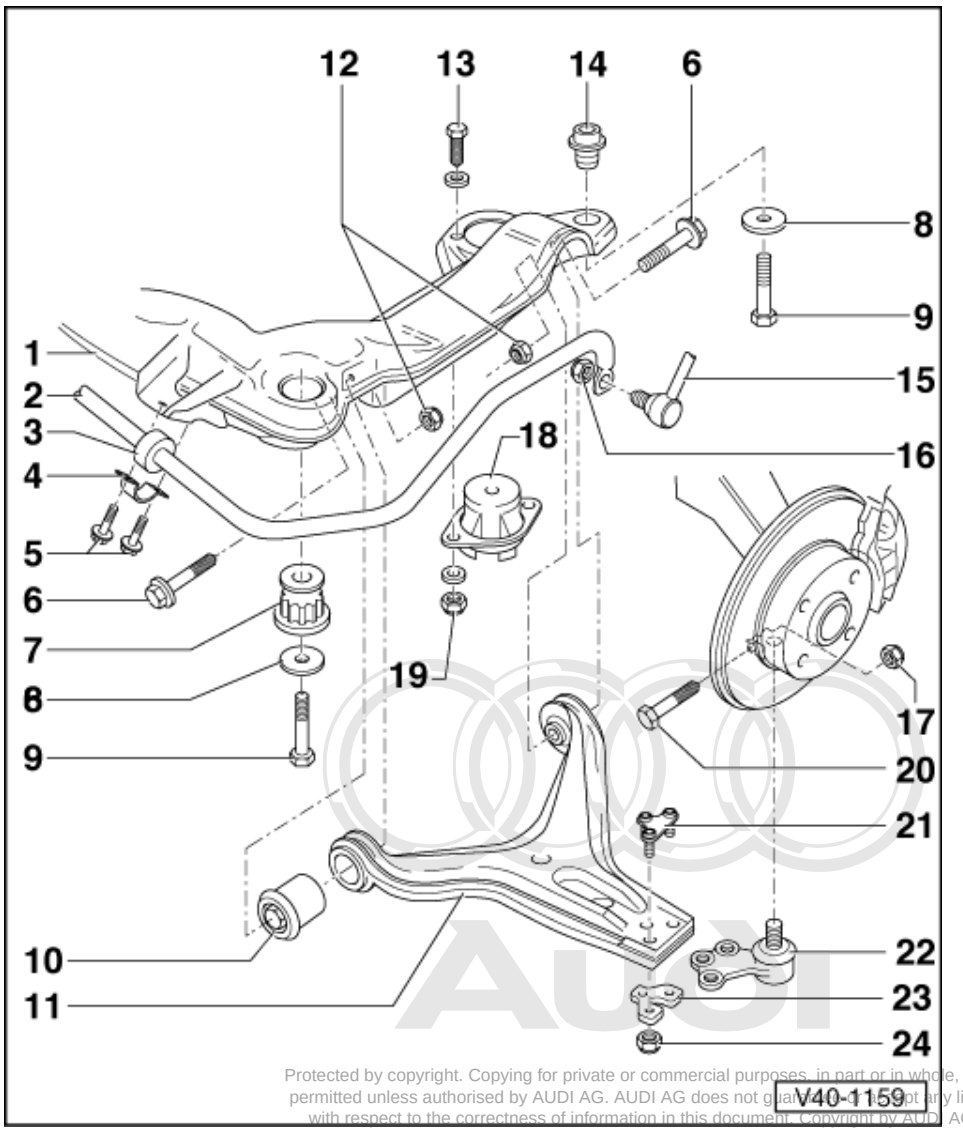
-1- Circlip

-2- Spacer

-3- Dished washer

6 - Servicing suspension

6.1 - Servicing suspension



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

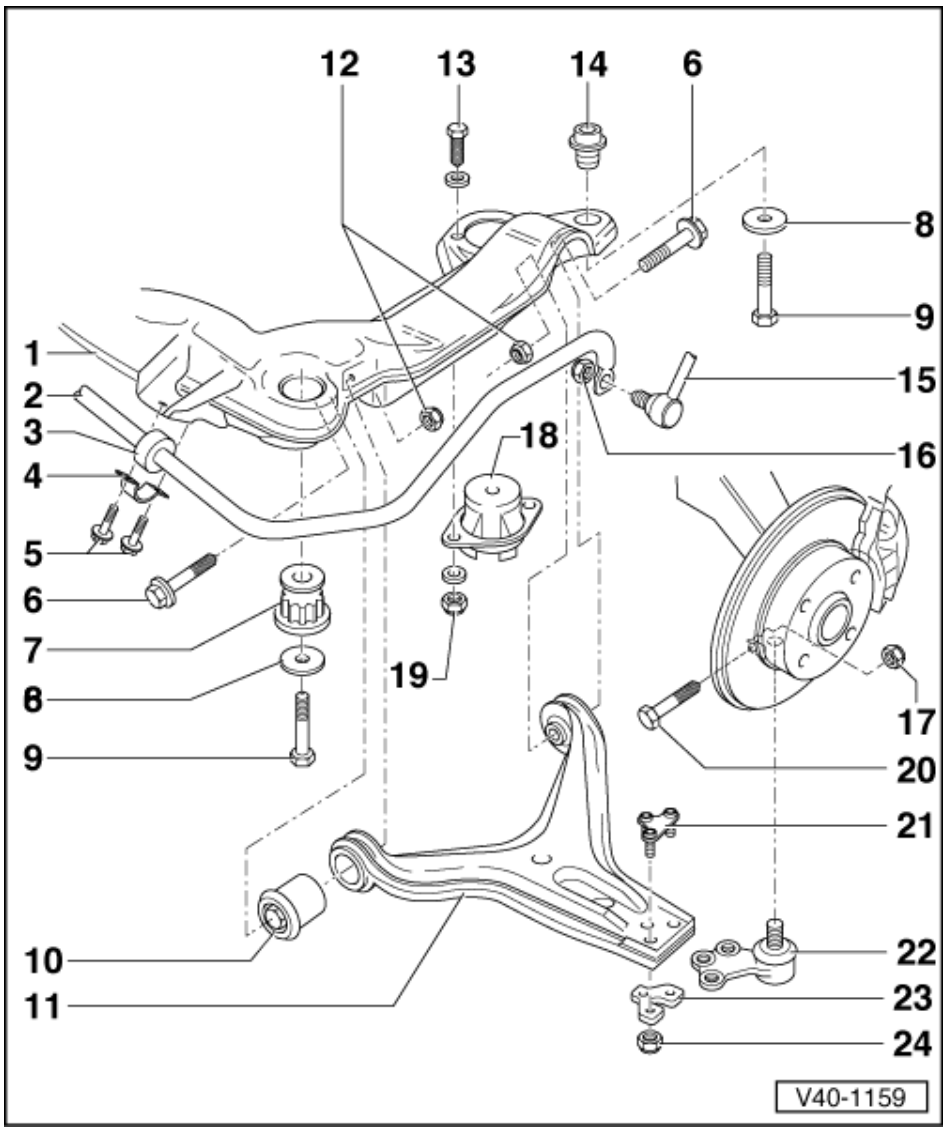
Note:

Loadbearing and suspension elements are not to be welded and straightened.

1 Subframe

- 4-, 5- and 6-cylinder engines have different versions
- Align front axle after removing and installing
- Attachment of rear subframe on vehicles with 6-cyl. engine => Page 74
- Tighten fastening screws on bodywork in following order:
  Viewed in direction of travel

- 1. Rear left
- 2. Rear right
- 3. Front left
- 4. Front right



2 Anti-rollbar

- Drive vehicle onto platform to facilitate assembly
- Before screwing to bracket make sure distance from subframe is the same on both sides
- ø 25 mm, for vehicles with 4- and 5-cylinder engine, ø 26 mm for vehicles with 6-cylinder engine and Avant

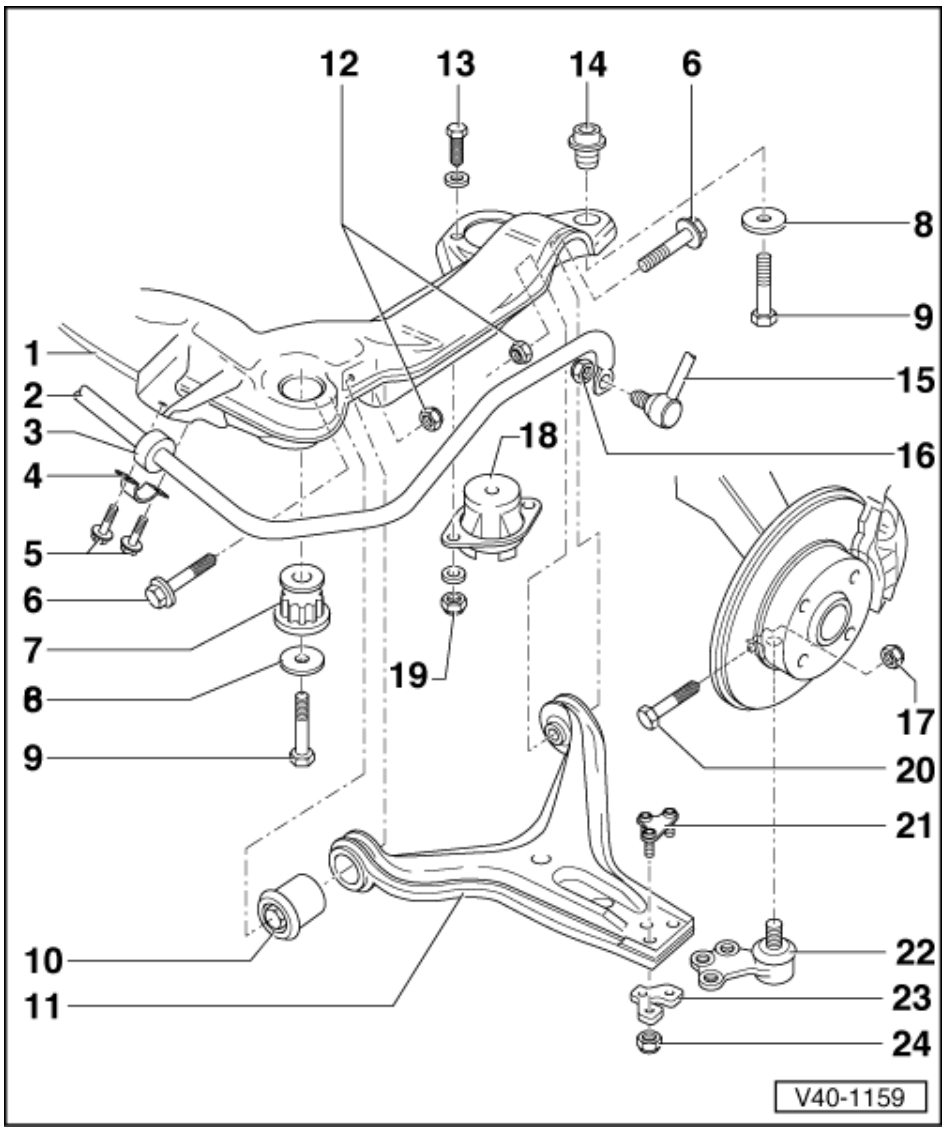
3 Mounting

- Apply talc when fitting
- Note that there are different Ids:

4 Clip

- Pay attention to proper seating of anti-roll bar bearing on attachment

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



5 Self-locking bolts, 35 Nm

- Always replace

6 Combi bolt

- Always replace

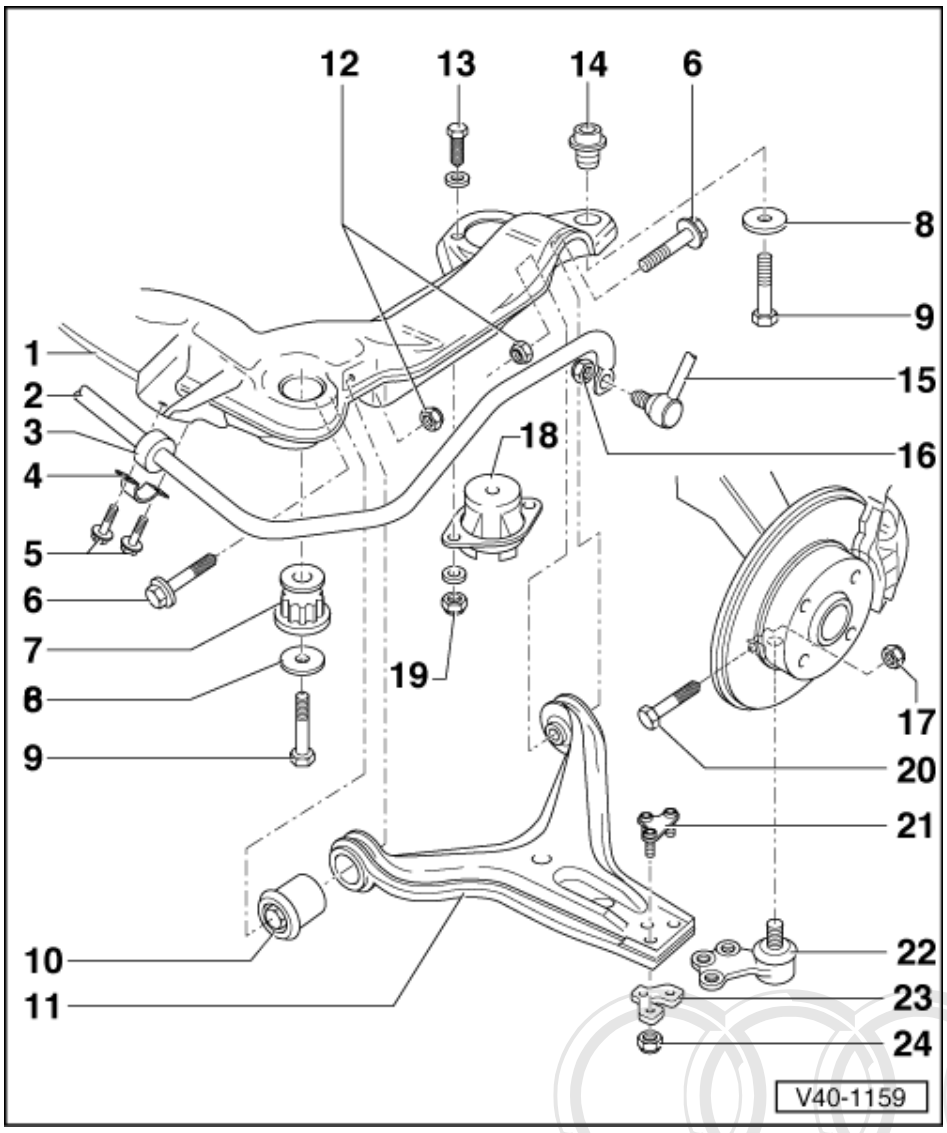
7 Front bearings for subframe

- Removing front bearing => Fig. 3
- Fitting front bearing => Fig. 4
- Apply anti- friction assembly oil G 294 421 A1 beforehand
- Note different versions depending on engine

8 Shim

- Always replace

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



9 Hexagon bolt

- Always replace
- Tighten M10 bolts to 35 Nm and then turn a further 90o
- Tighten M12 bolts to 70 Nm and then turn a further 90o
- Drill out sheared-off M10 bolts and rework with threading tool KNM 10 x 1.5 mm; drill out sheared off M12 bolts and rework with threading tool KNM 12 x 1.5 mm

=> Special information No. 3; Edition 01.91

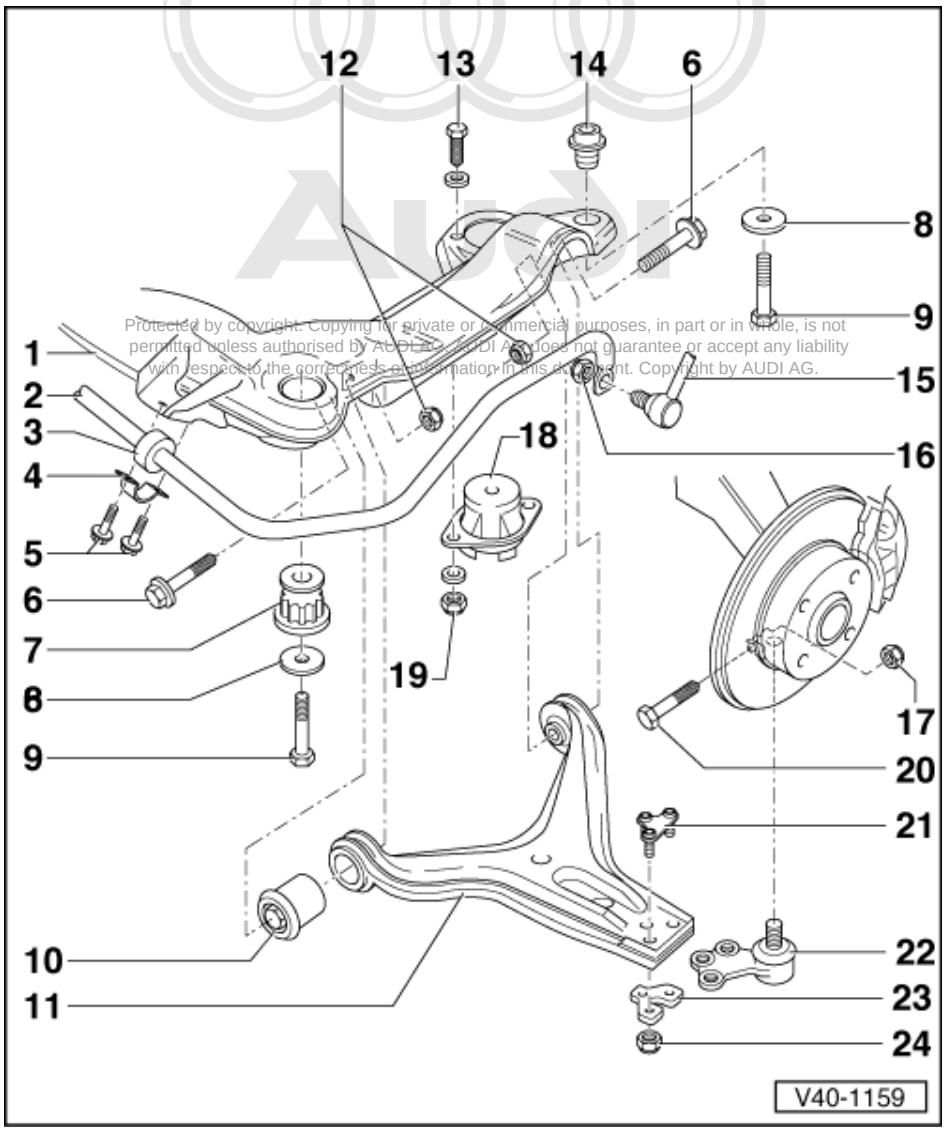
- Fit new genuine bolt

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

10 Wishbone bearing

- Pressing out => Fig. 1
- Pressing in => Fig. 2
- Sheet steel and forged wishbones have different bearings

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



11 Sheet steel wishbone

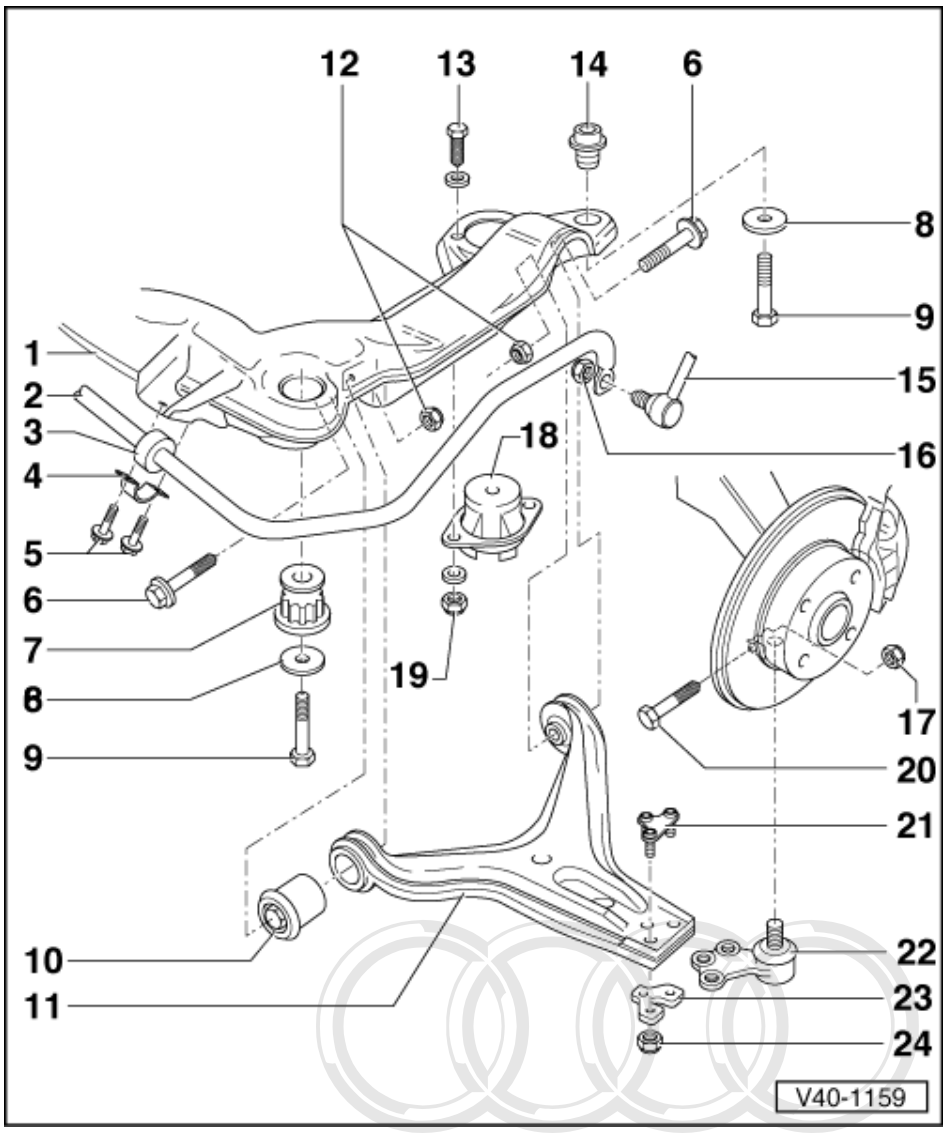
- Forged wishbone => Page 70
- Different versions on left and right

Note:

Vehicles with 6-cylinder engine with vehicle no. 8C NA 000 325 and 8C NA 175 592 feature forged wishbones. When repairing always install same wishbones on a given axle.

12 Self-locking nut

- Always replace
- Tigthen to 40 Nm and then turn through 180o
- Vehicle must be standing on wheels when tightening.



13 Hexagon bolt

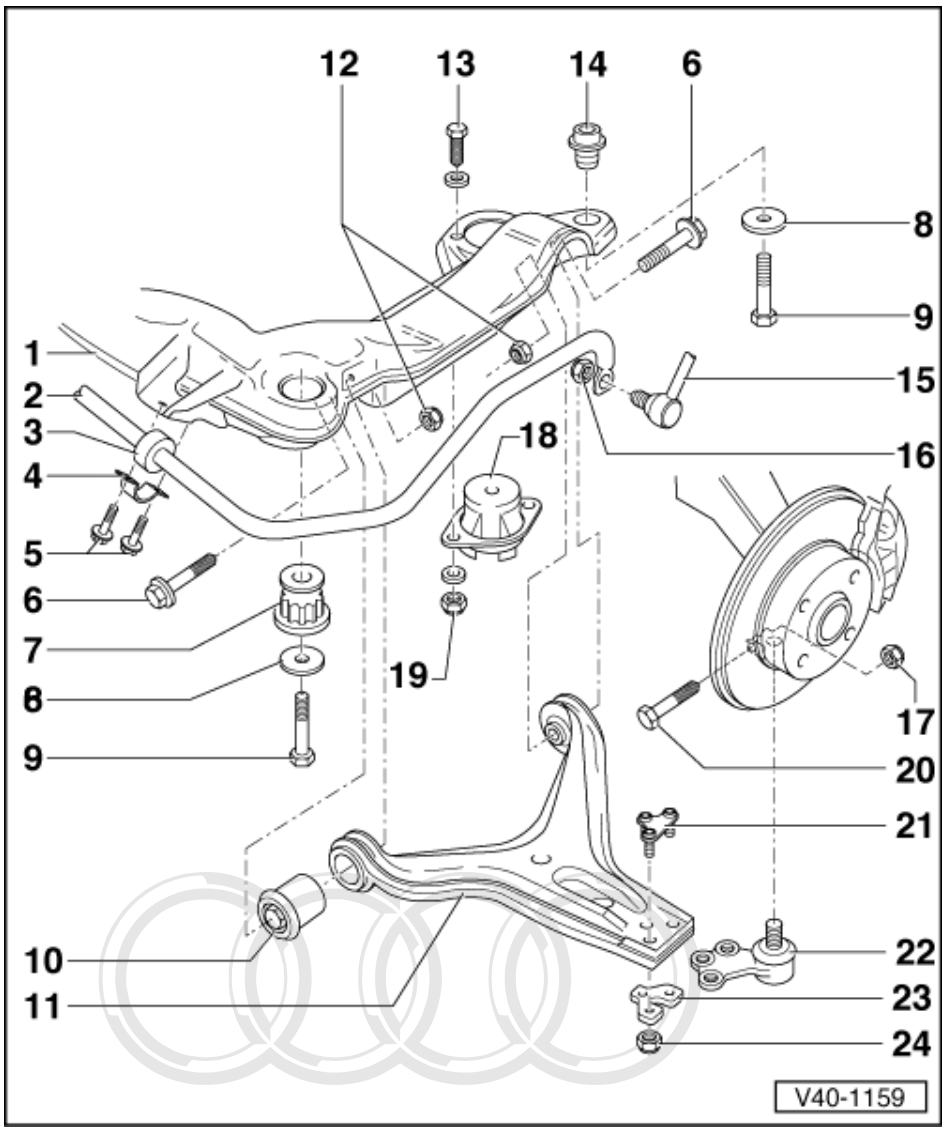
14 Rear subframe bearings

- Note different versions depending on engine
  Vehicles with 4 and 5 cylinder engine:
- Removing rear bearing => Fig. 5
- Fitting rear bearing => Fig. 6
  Vehicles with 6 cylinder engine:
- Removing rear bearing => Fig. 7
- Fitting rear bearing => Fig. 8

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

On all vehicles with 6-cylinder engine the rear bearings are inserted in the subframe from underneath asItem 7.



15 Connecting link

- Attach to anti roll bar

16 Self-locking nut 40 Nm

- Always replace

17 Self-locking nut 50 Nm

- Always replace

Printed by Audi AG (http://) for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

18 Bonded rubber bush

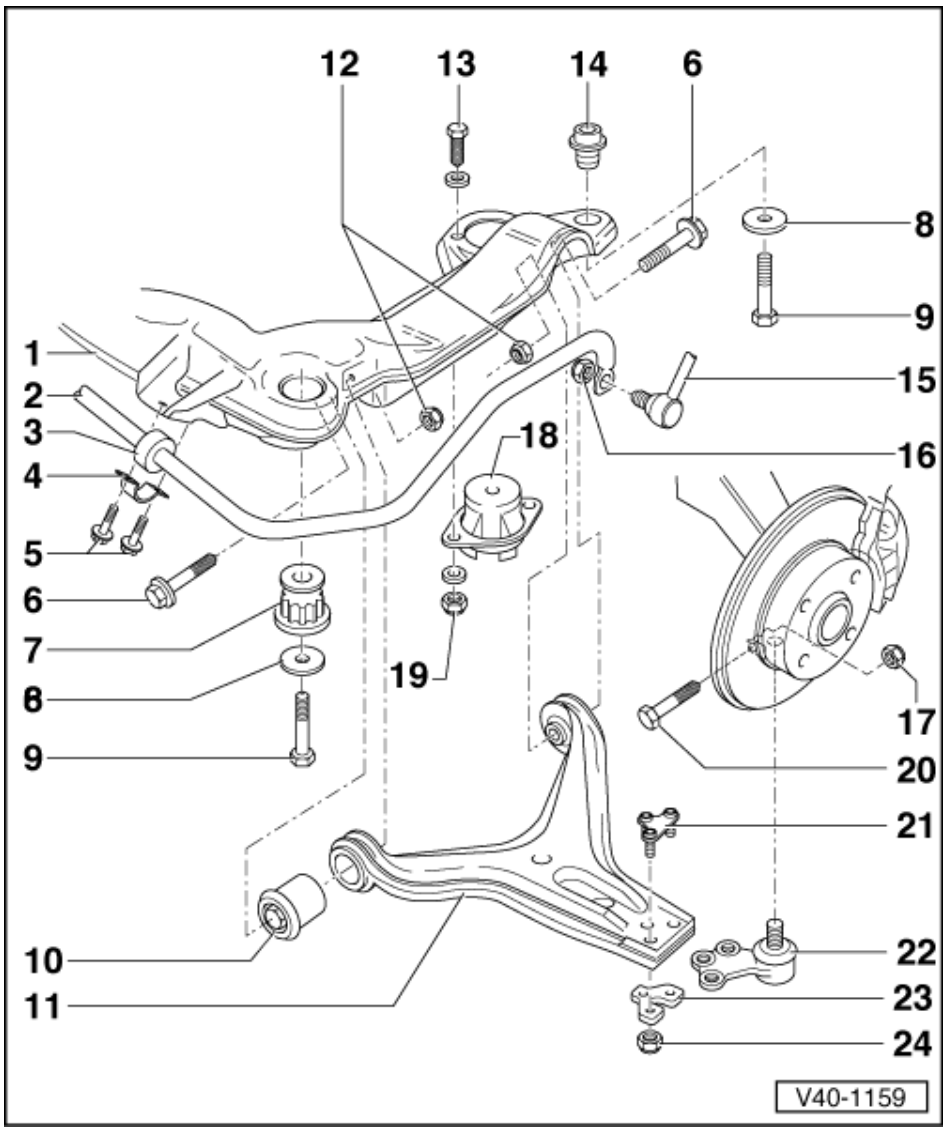
- Attach to bracket of subframe
- Note that there are different versions:
- Different attachment of right bush => Fig. 9

19 Self-locking nut 25 Nm

- Always replace

20 Hexagon bolt

- Always replace
- Head of bolt faces in direction of travel



21 Tab washer

- Replacement part is supplied with bolt

22 Lower ball joint

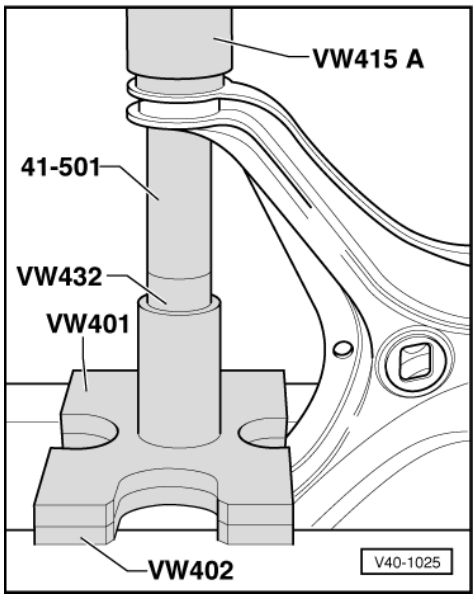
- Lower ball joint must correspond to wishbone (sheet steel or forged)
- On disassembly do not widen slot at wheel bearing housing
- Different versions on left and right
- Install joint with odd part no. on left and even part no. on right
- Diameter of track control arm joint 19 mm
- Align front axle after installing
- Setting camber => Page 118

23 Packing plate

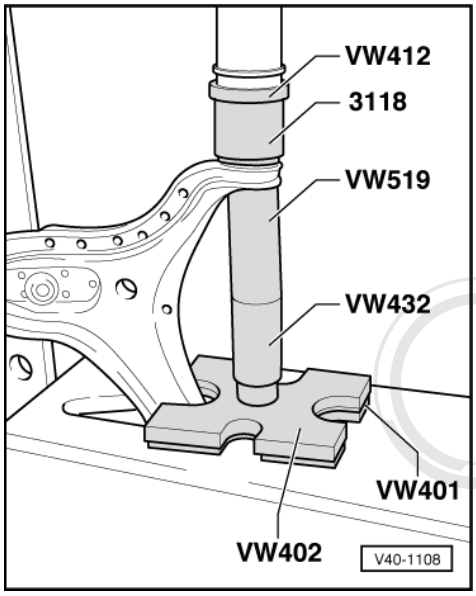
24 Self-locking nut 65 Nm

- Always replace

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



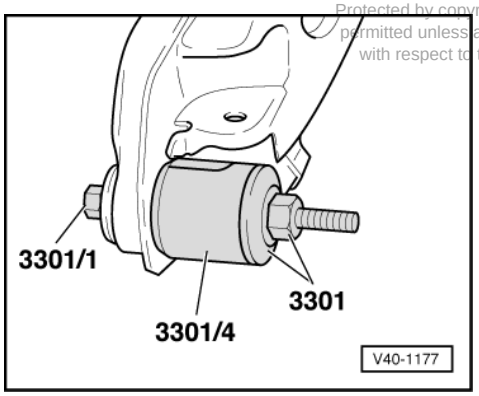
-> Fig.1 Pressing out bearing for wishbone



-> Fig.2 Pressing in bearing for wishbone

- Press mounting in to stop.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

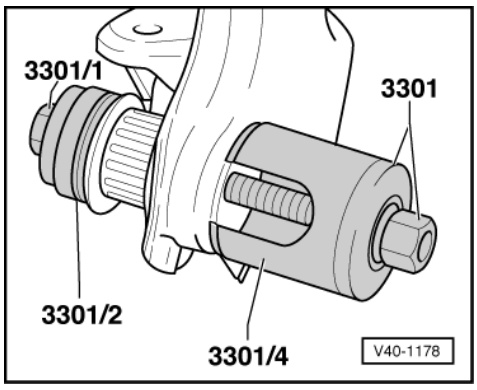


-> Fig.3 Remove front subframe bearing

Note:

Turn pipe -3301/4- such that large recess is at bracket for wishbone attachment.

Warning!
On removal bearing and tool may suddenly jump out of subframe (danger of injury).



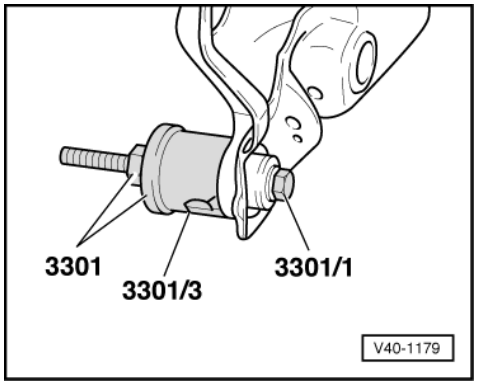
-> Fig.4 Fitting front subframe bearing

Apply anti-friction assembly oil G 294 421 A1 beforehand

Note:

Large collar of thrust piece -3301/2- faces bearing

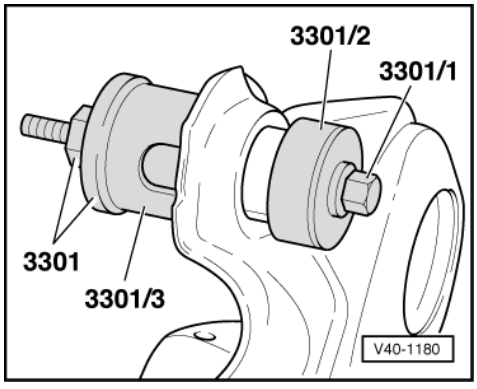
Vehicles with 4 and 5 cylinder engine:



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.5 Removing rear subframe bearing

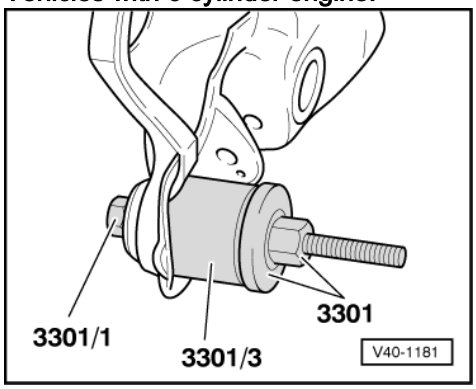
Warning!
On removal bearing and tool may suddenly jump out of subframe (danger of injury).



-> Fig.6 Fitting rear subframe bearing

Apply anti- friction assembly oil G 294 421 A1 beforehand

Vehicles with 6 cylinder engine:

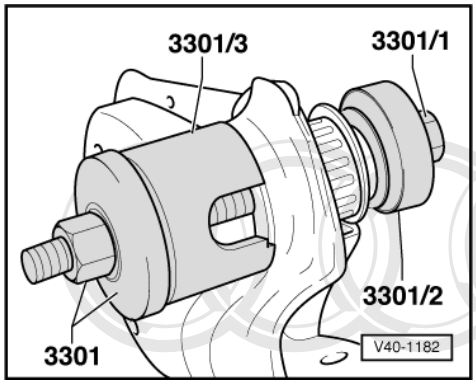


-> Fig.7 Removing rear subframe bearing

Note:

Turn pipe -3301/3- such that recess is at bracket for wishbone attachment.

Warning!
On removal bearing and tool may suddenly jump out of subframe (danger of injury).



-> Fig.8 Fitting rear subframe bearing

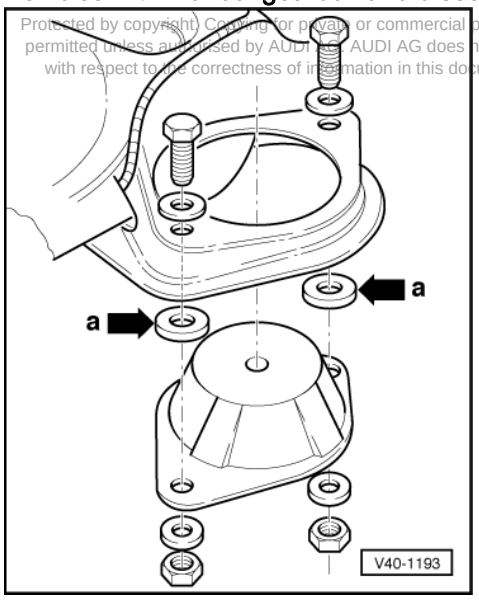
Apply anti-friction assembly oil G 294 421 A1 beforehand

Note:

Small collar of thrust piece -3301/2- faces bearing

Vehicles with manual gearbox and diesel engine as well as 85 kW petrol engine:

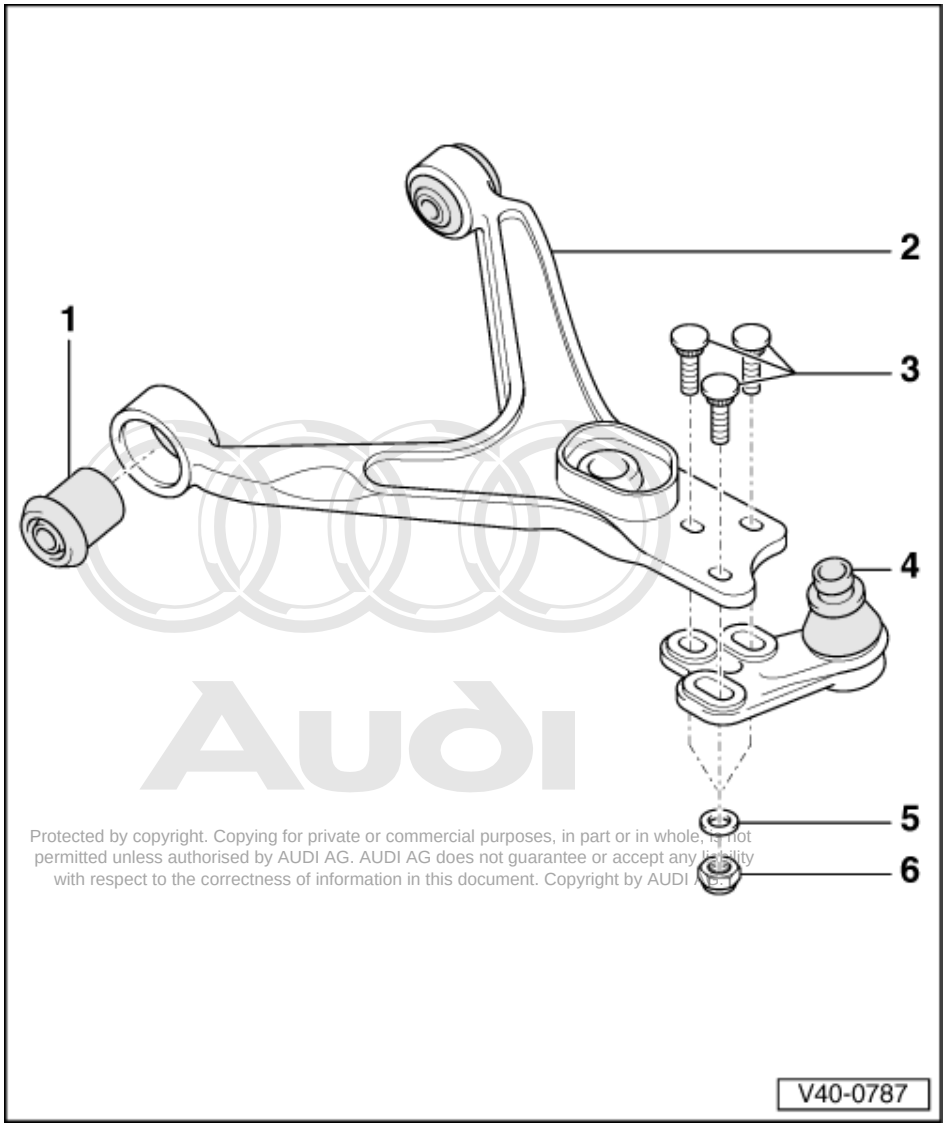
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Fig.9 Different attachment of right bonded rubber bush to subframe

- The above vehicles feature two washers (arrows a) in each case between subframe and bonded rubber bush.

6.2 - Servicing forged wishbone

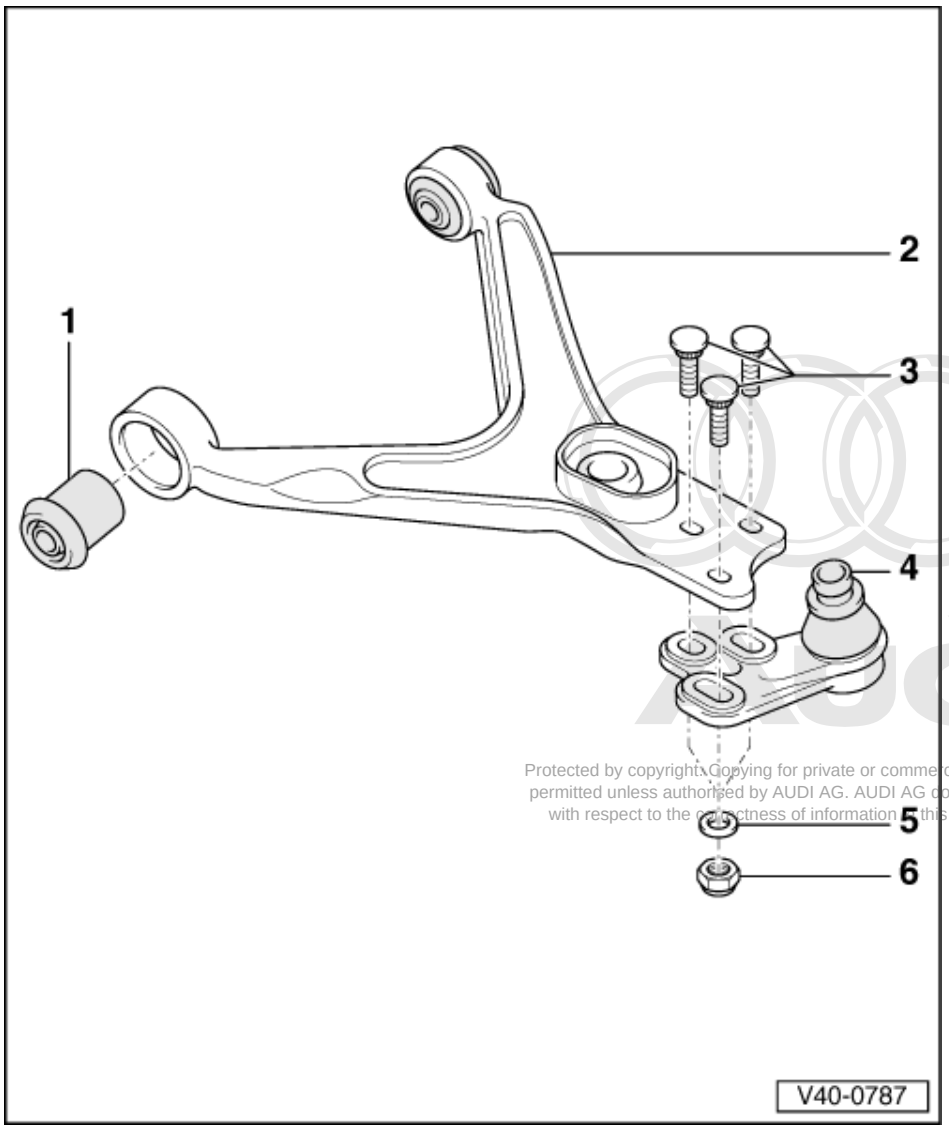


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI

1 Wishbone bearing
- Driving out => Fig. 1
- Pressing in => Fig. 2

2 Wishbone
- Different versions on left and right

3 Threaded pin
- Press home in wishbone



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

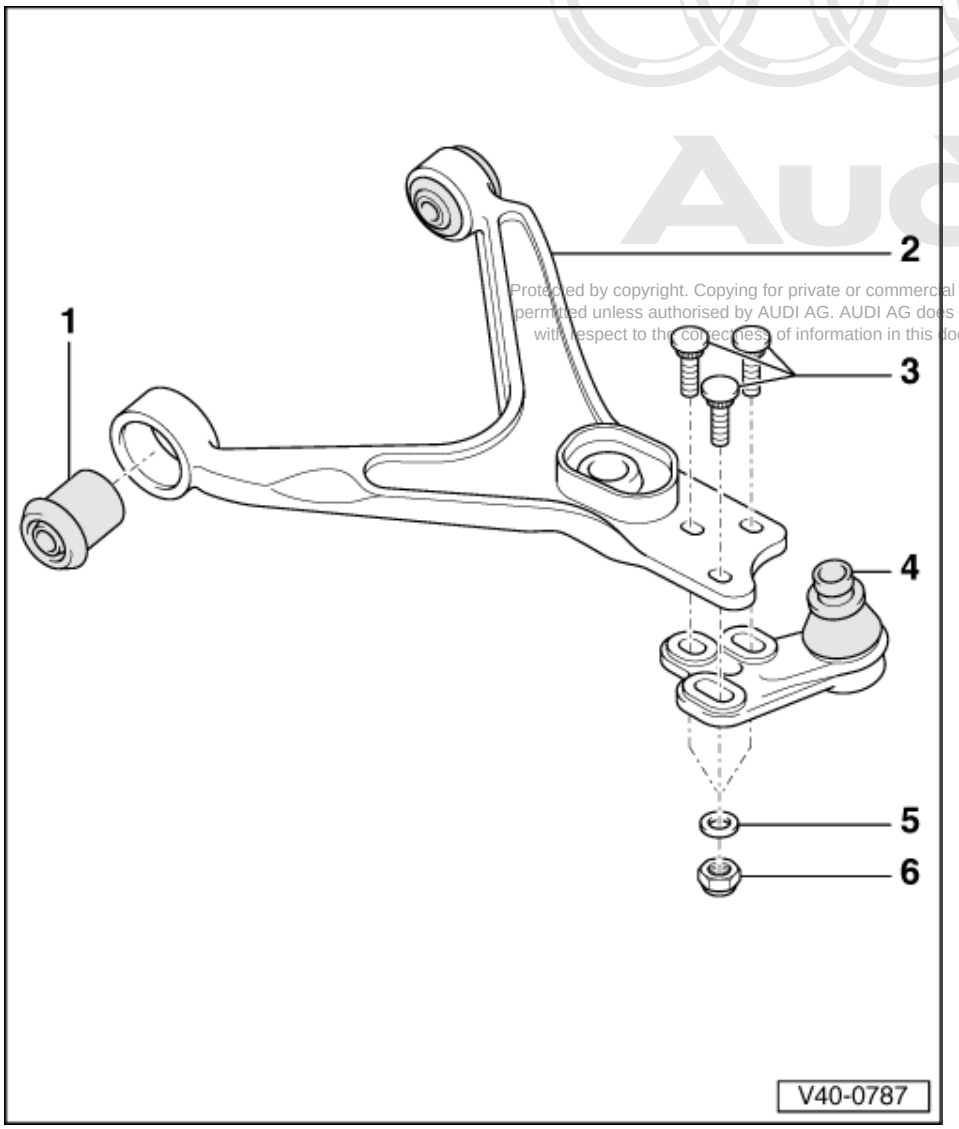
4 Lower ball joint

- On disassembly do not widen slot at wheel bearing housing
- Different versions on left and right
- Install joint with odd part no. on left and even part no. on right
- Diameter of track control arm joint 19.0 mm
- Align front axle after installing

5 Shim

- Not fitted with ribbed nut, i.e. when using a ribbed nut for repairs washer need no longer be installed.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

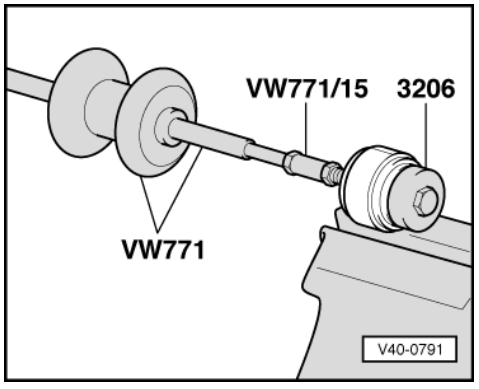


6 Self-locking nut 65 Nm

- Always replace

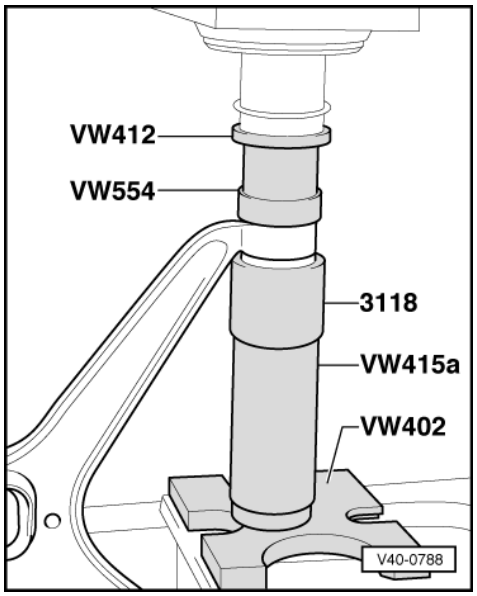
Notes:

- The self-locking nut has been discontinued and is being replaced by a self-locking ribbed nut.
- The tightening torque of the ribbed nut is 85 Nm. When screwing the lower ball joint off the wishbone the ribbed nuts are also always to be replaced. To adjust camber only loosen ribbed nuts and then retighten to 85 Nm.



-> Fig.1 Driving out bearing for wishbone

- Clamp wishbone in vice using soft jaws.
- Insert hexagon bolt M10 x 80 and driver -3206- in wishbone. Screw in with special tool as shown.
- Tighten lock nuts.

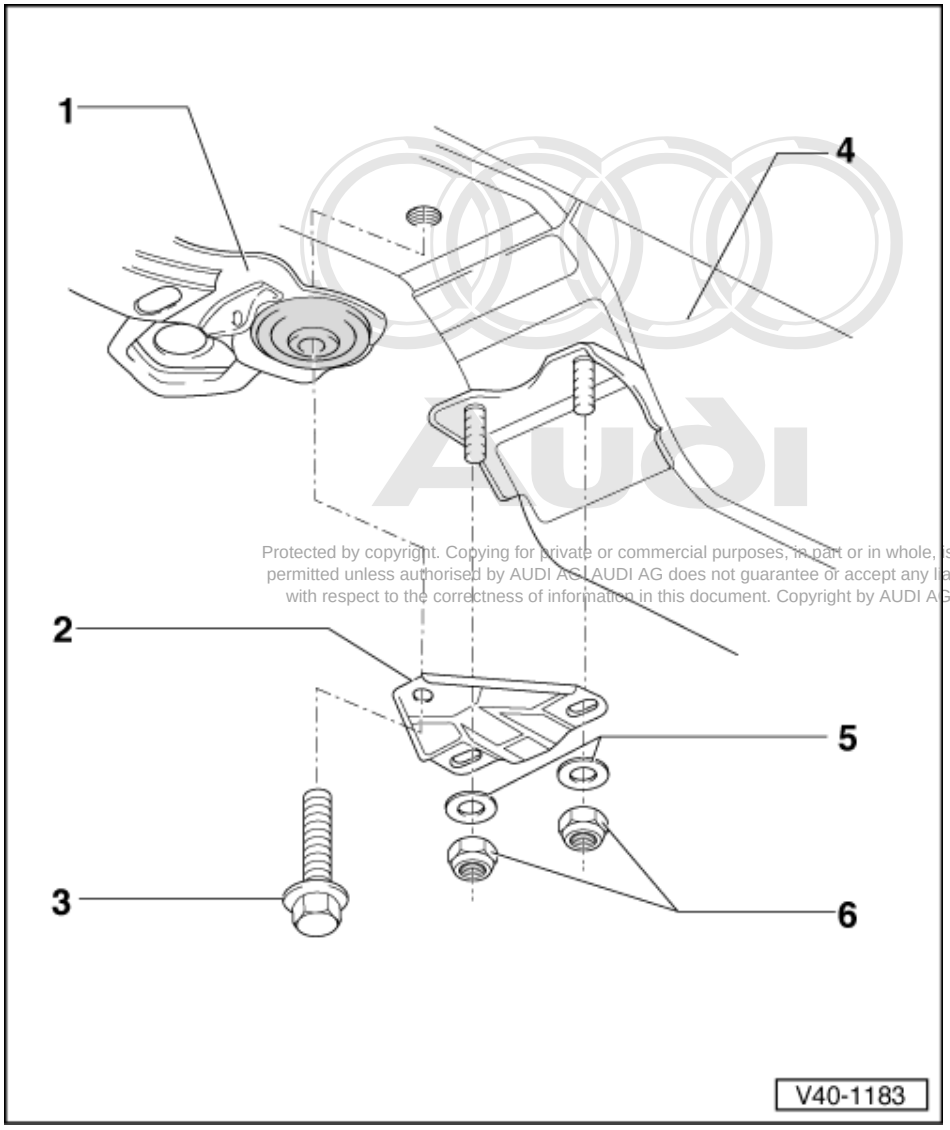


-> Fig.2 Pressing in bearing for wishbone

- Press mounting in to stop.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

6.3 - Attachment of rear subframe on vehicles with 6-cylinder engine



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

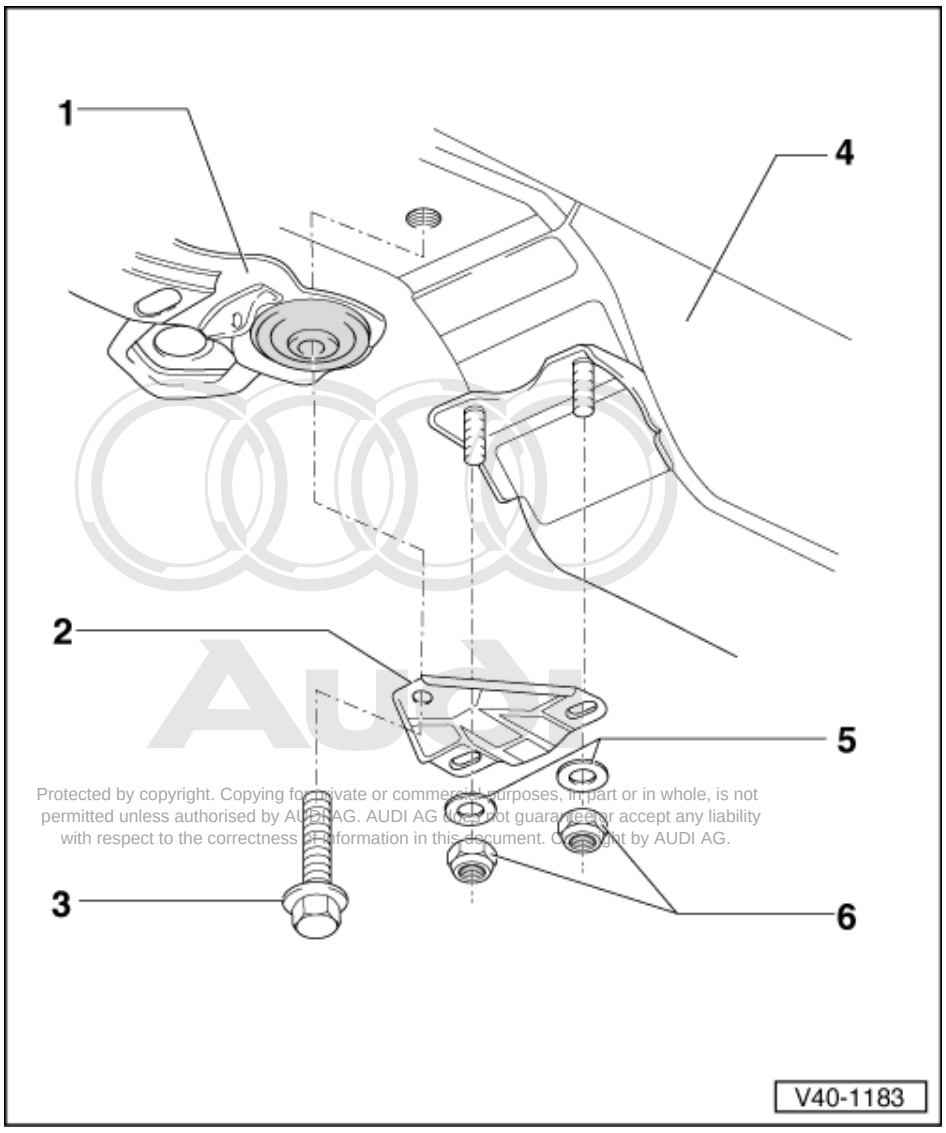
1 **Subframe**

2 **Support**

- Screw to bracket of side member
- Always replace

3 **Hexagon bolt**

- Always replace
- Tighten M10 bolts to 35 Nm and then turn a further 90o
- Tighten M12 bolts to 70 Nm and then turn a further 90o



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

4 Longitudinal bracket
- With welded on bracket for attaching support

5 Shim
- Always replace

6 Self-locking nut 25 Nm
- Always replace

Note:

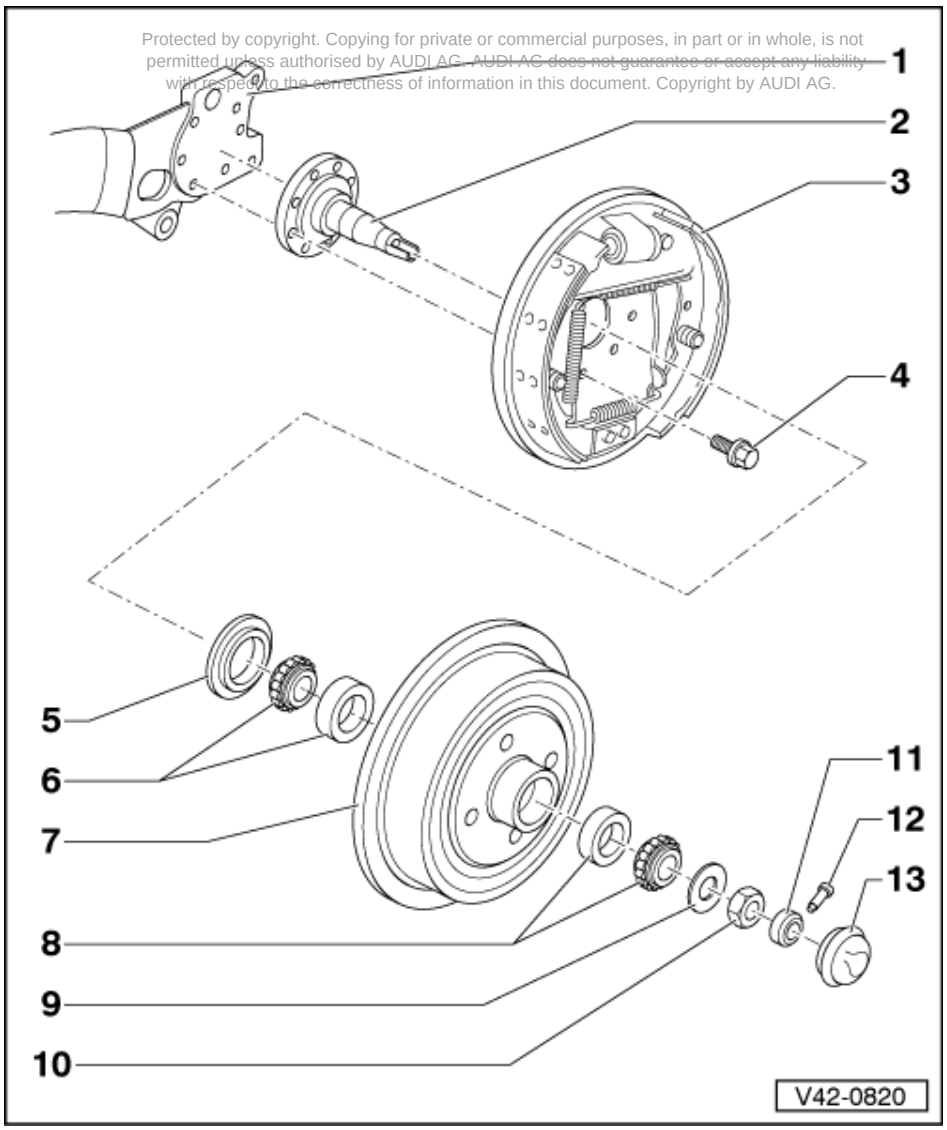
Modified attachment was introduced as of vehicle no. 8C NA 004 634.

42 - Rear suspension

1 - Servicing rear axle outer section

1.1 - Servicing rear axle outer section

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



1.2 - Drum brake

1 **Axle beam**
- Welding and straightening work must not be carried out on the axle beam

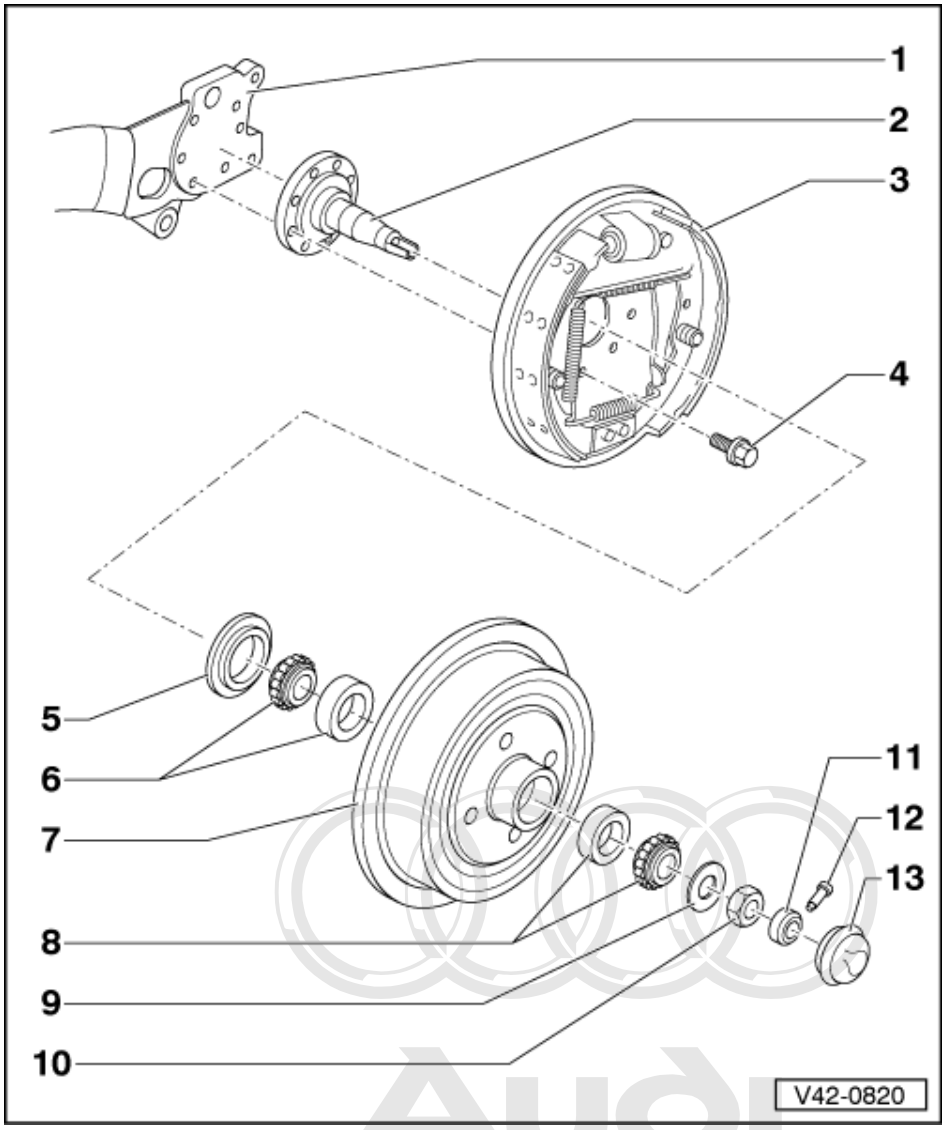
2 **Stub axle**
- Adjustments are not permitted

3 **Brake backplate**
- Screw with stub axle to rear axle

4 **Bolt with washer, 30 Nm**

5 **Oil seal**

- Fill with multi- purpose grease between sealing lips
- Drive home with plastic-headed hammer



6 Inner wheel bearing

- Drive out outer race with copper drift
- Do not wash out if bearing is to be re-used
- Driving in => Fig. 5

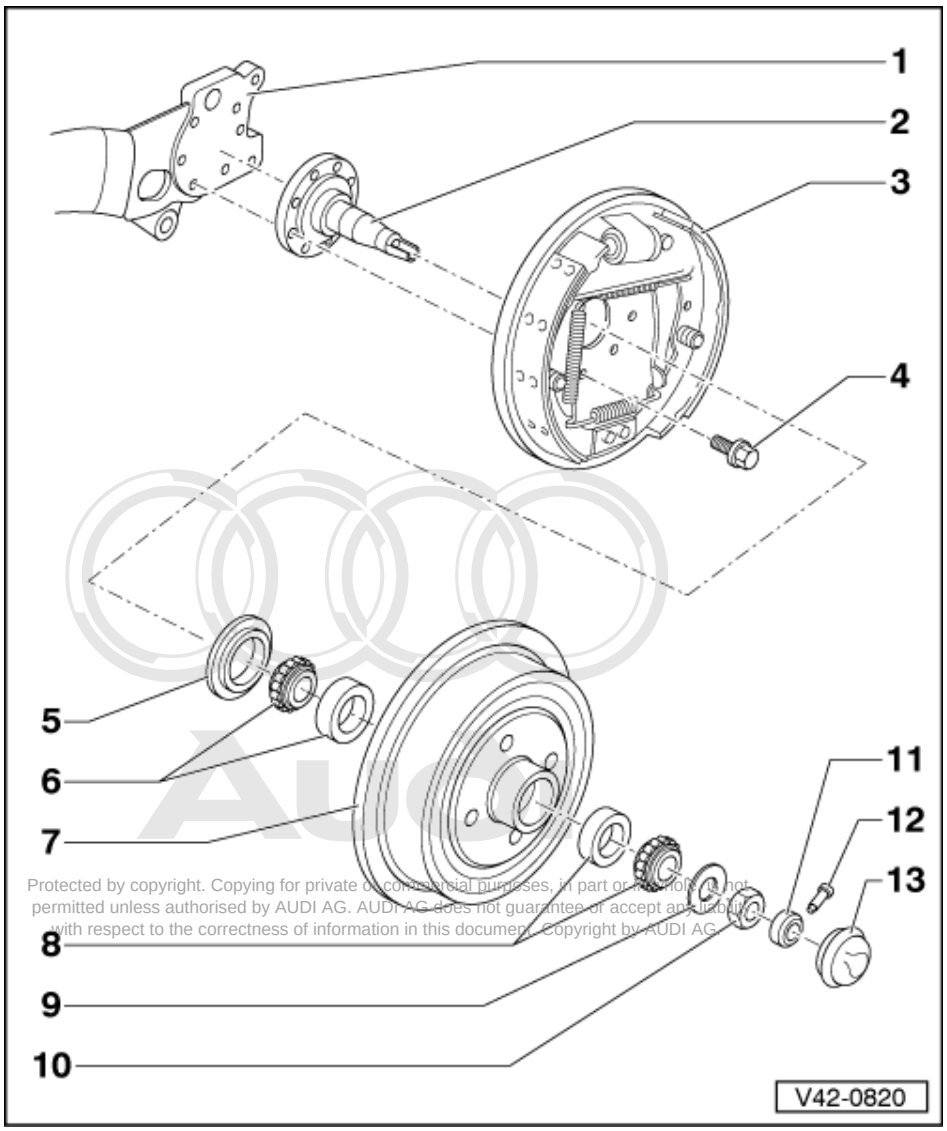
7 Brake drum

- Before removing brake drum reset brake shoes through one of the wheel bolt tapped holes. For this purpose, press sliding key upwards as far as it will go with screwdriver => Fig. 9
- Fill hub with multi-purpose grease before installing

8 Outer wheel bearing

- Drive out outer race with copper drift
- Do not wash out if bearing is to be re-used
- Driving in => Fig. 4

Reproduction or duplication of this Audi publication for commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

9 Thrust washer

10 Hexagon nut

- Adjusting wheel bearing clearance =>Fig. 3

11 Locking ring

- Attach to hexagon nut

12 Split pin

- Always replace

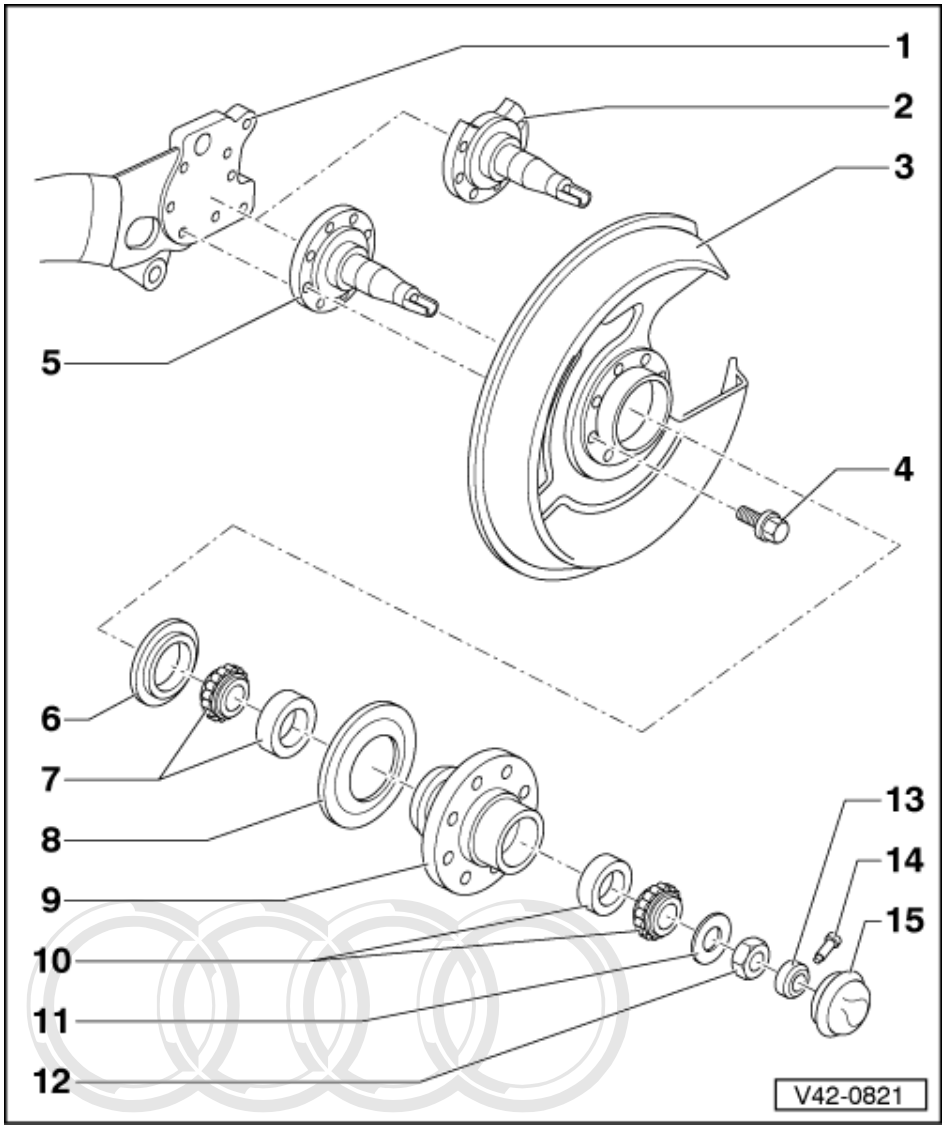
13 Grease cap

- Pressing off =>Fig. 1
- Driving in =>Fig. 2

Note:

Always replace deformed grease caps

1.3 - Disc brake



1 Axle beam
- Welding and straightening work must not be carried out on the axle beam.

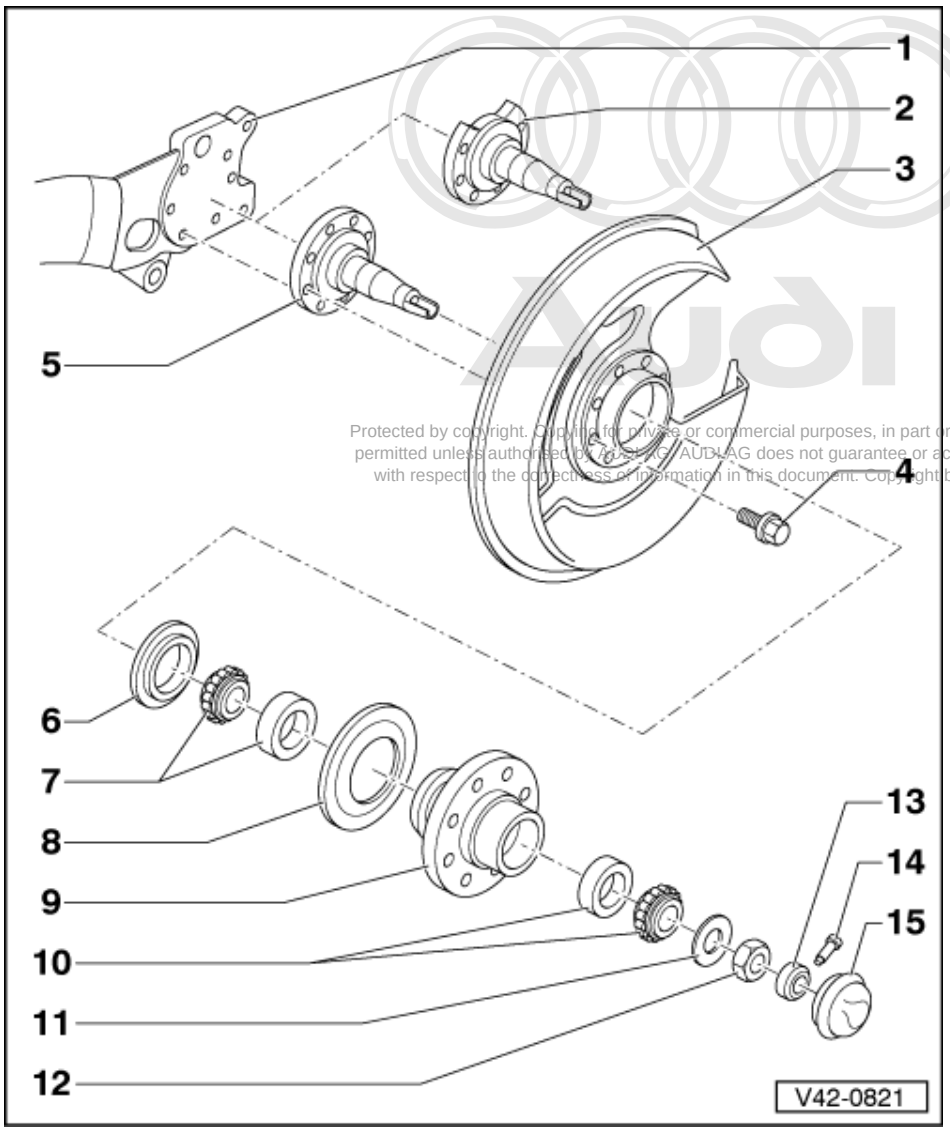
2 Stub axle
- For vehicles with ABS
- Adjustments are not permitted

3 Cover plate

4 Bolt with washer, 30 Nm

5 Stub axle
- Adjustments are not permitted

Protection of copyright. Copying for private or commercial purposes, in part or in whole, is not permitted. Unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

6 Oil seal

- Fill with multi- purpose grease between sealing lips
- Drive home with plastic-headed hammer

7 Inner wheel bearing

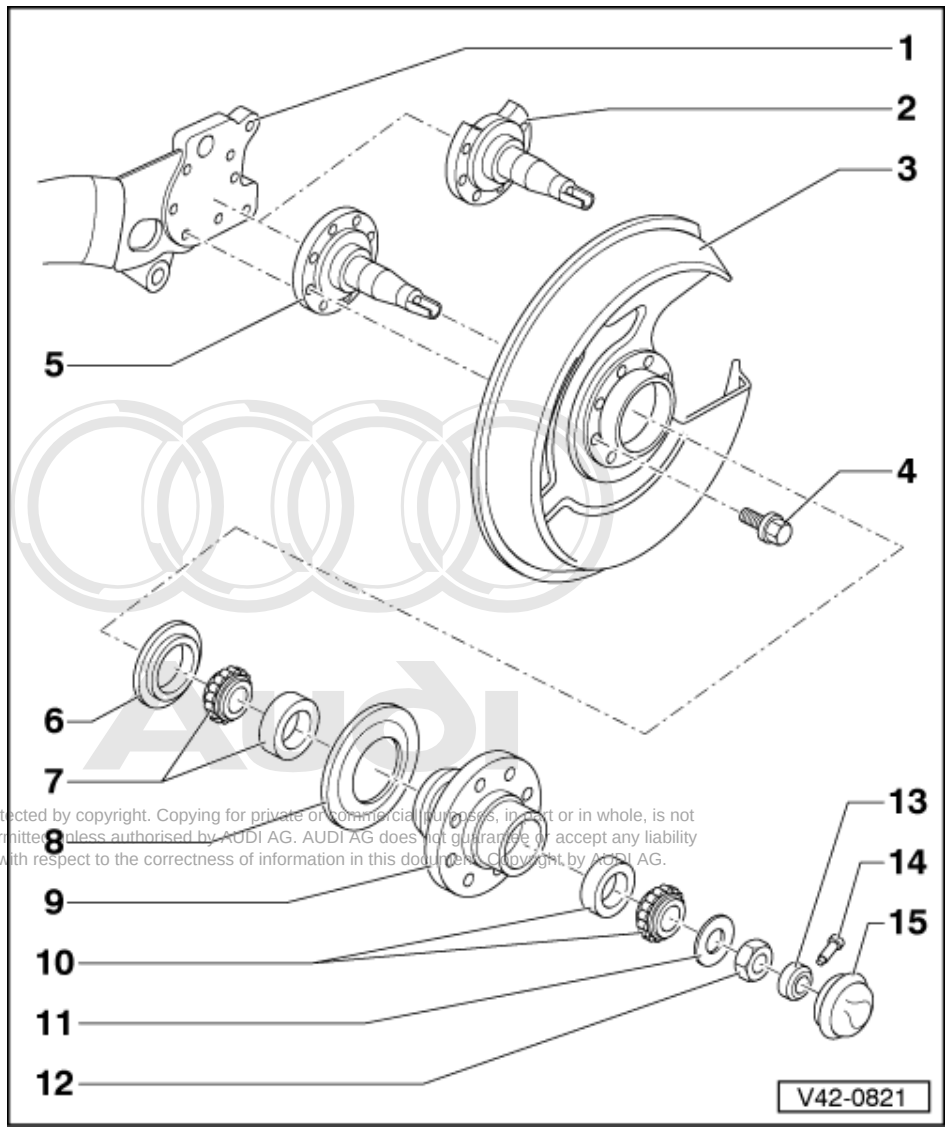
- Drive out outer race with copper drift
- Do not wash out if bearing is to be re-used
- Driving in => Fig. 7

8 Rotor

- Vehicles with ABS only
- Drive off evenly with copper drift through tapped holes in wheel hub.
- Pressing on =>Fig. 8

9 Wheel hub

- Fill with multi-purpose grease before installing



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

10 Outer wheel bearing

- Drive out outer race with copper drift
- Do not wash out if bearing is to be re-used
- Driving in => Fig. 6

11 Thrust washer

12 Hexagon nut

- Adjusting wheel bearing clearance =>Fig. 3

13 Locking ring

- Attach to hexagon nut

14 Split pin

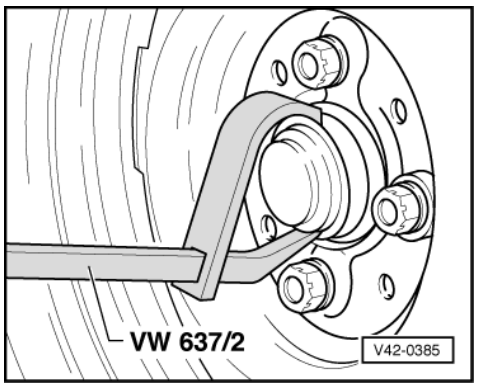
- Always replace

15 Grease cap

- Pressing off =>Fig. 1
- Driving in =>Fig. 2

Note:

Always replace deformed grease caps

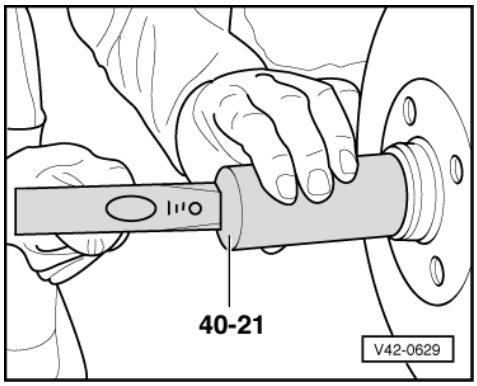


-> Fig.1 Pressing off grease cap

- Knock grease cap off wheel hub slightly beforehand by tapping gently with hammer on claw of special tool.

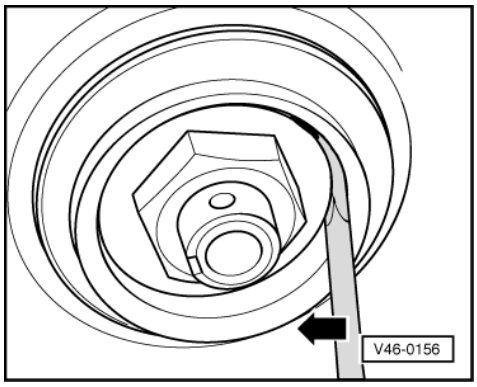
Note:

Always replace deformed grease caps



-> Fig.2 Driving the grease cap home.

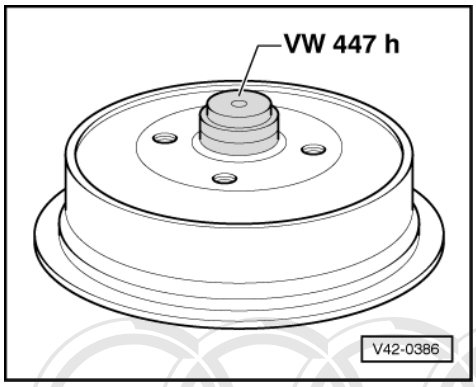
- Damaged grease caps permit the ingress of moisture. That is why it is essential to use the tool shown in the illustration. A damaged grease cap must be replaced.



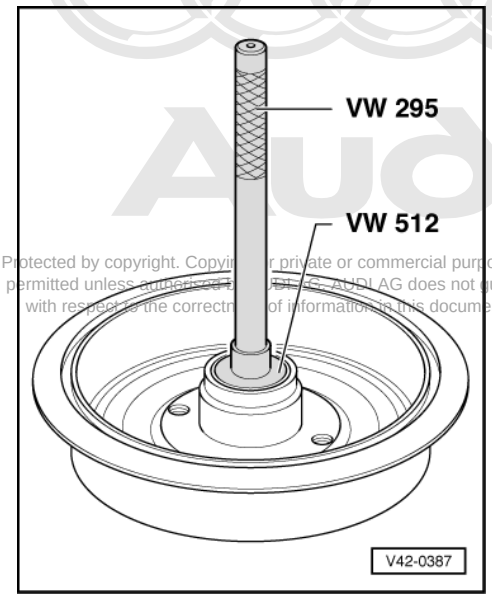
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.3 Adjusting wheel bearing play

- Wheel bearing clearance has been properly adjusted if thrust washer can still just be moved with screwdriver by applying finger pressure (never apply leverage). To re-tighten, tighten the hexagon nut, but rotate the wheel during this step to avoid tensioning the bearing. Then secure with slotted ring and new split pin.

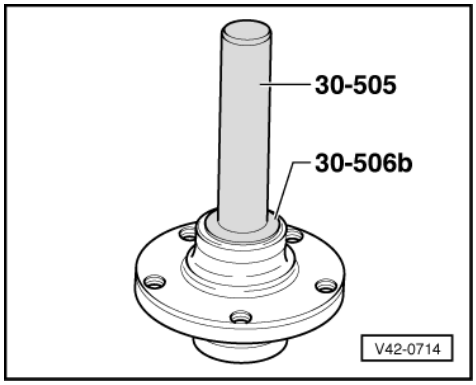


-> Fig.4 Pressing home outer race for outer wheel bearing

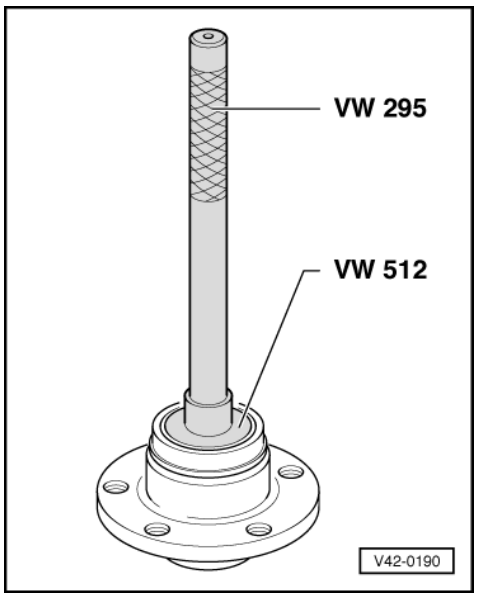


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

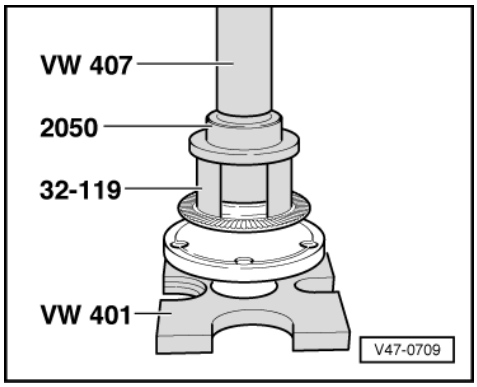
-> Fig.5 Driving home outer race of inner wheel bearing



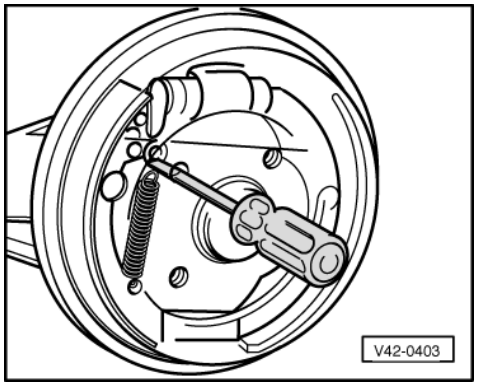
-> Fig.6 Pressing home outer race for outer wheel bearing



-> Fig.7 Driving home outer race of inner wheel bearing



-> Fig.8 Pressing on rotor



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

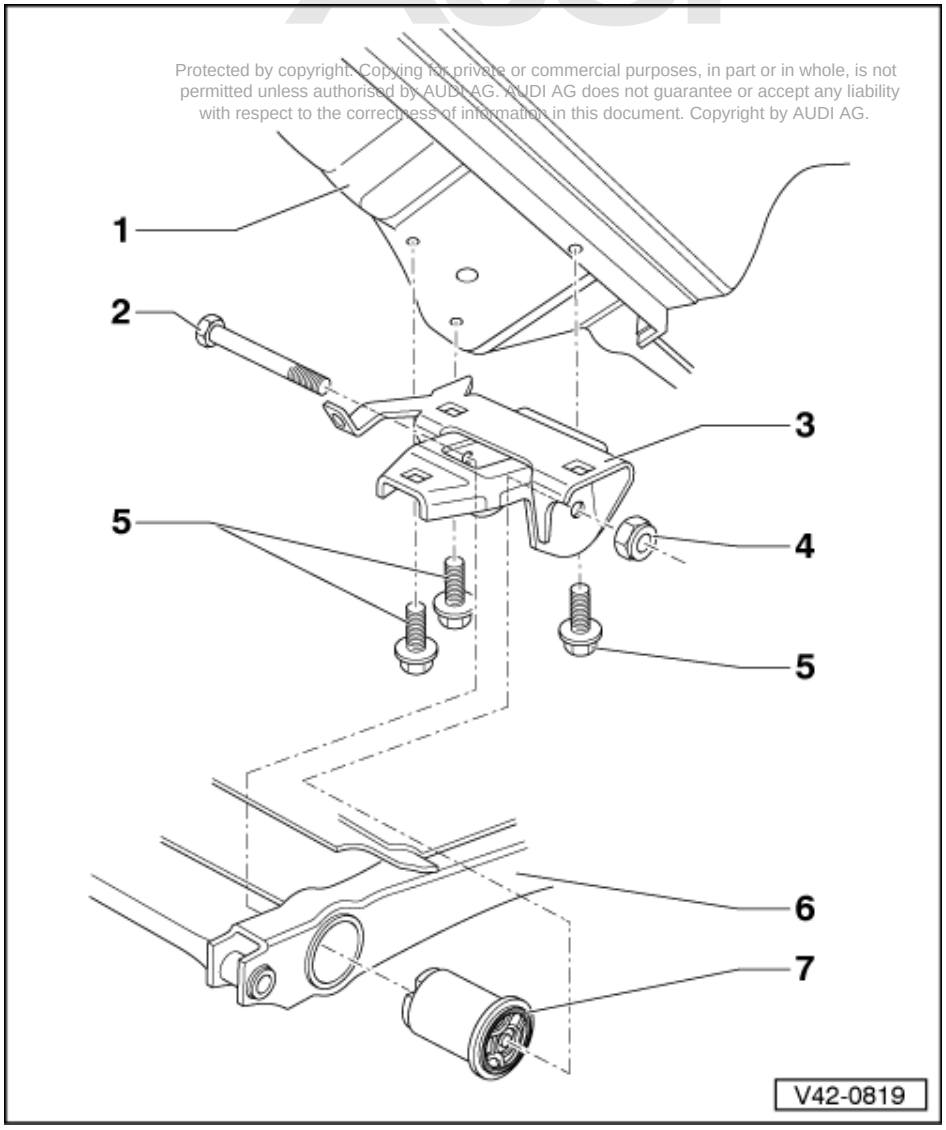
-> Fig.9 Resetting brakes

- For this purpose, press key upwards with screwdriver through holes in brake drum.

2 - Removing, installing and servicing rear axle

2.1 - Removing, installing and servicing rear axle

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



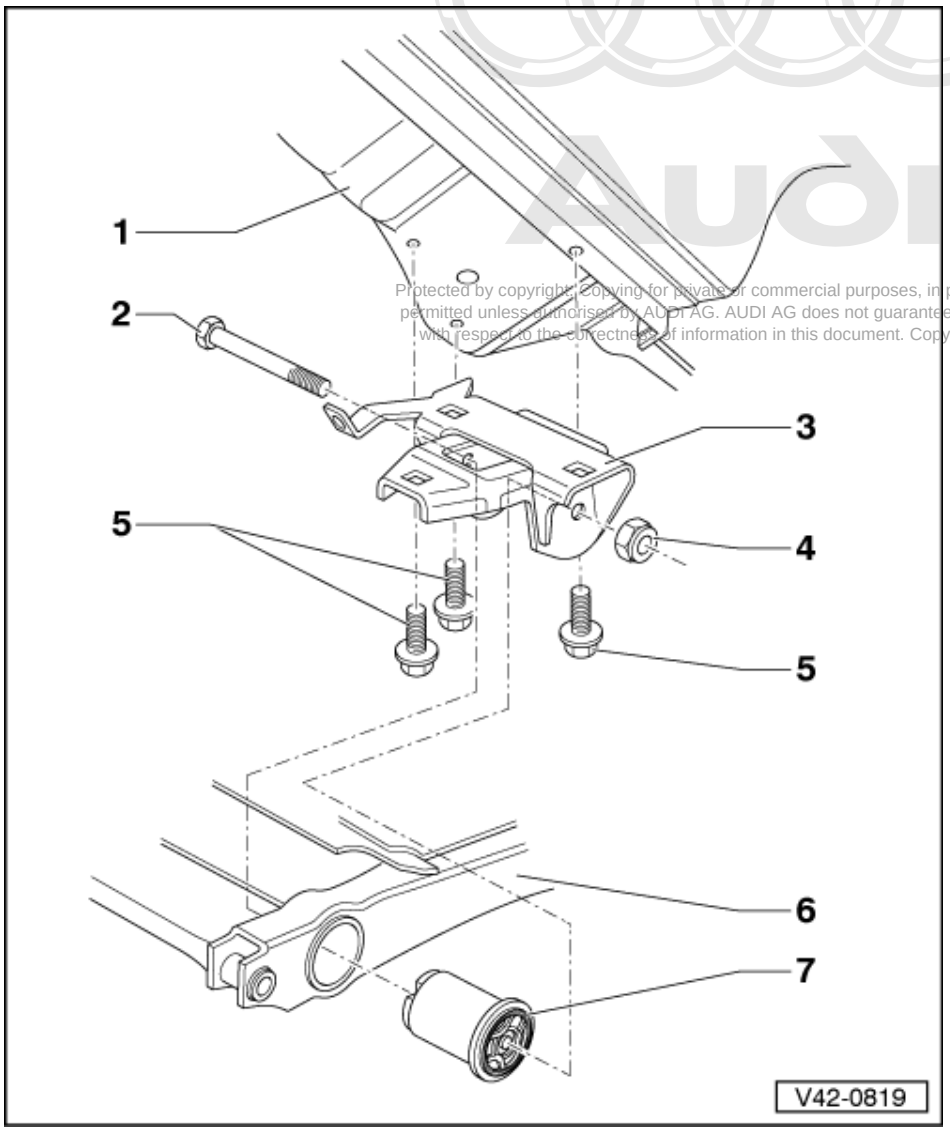
Note:

Loadbearing and suspension elements are not to be welded and straightened.

1 Floor group - body
- Screw bracket to floor group

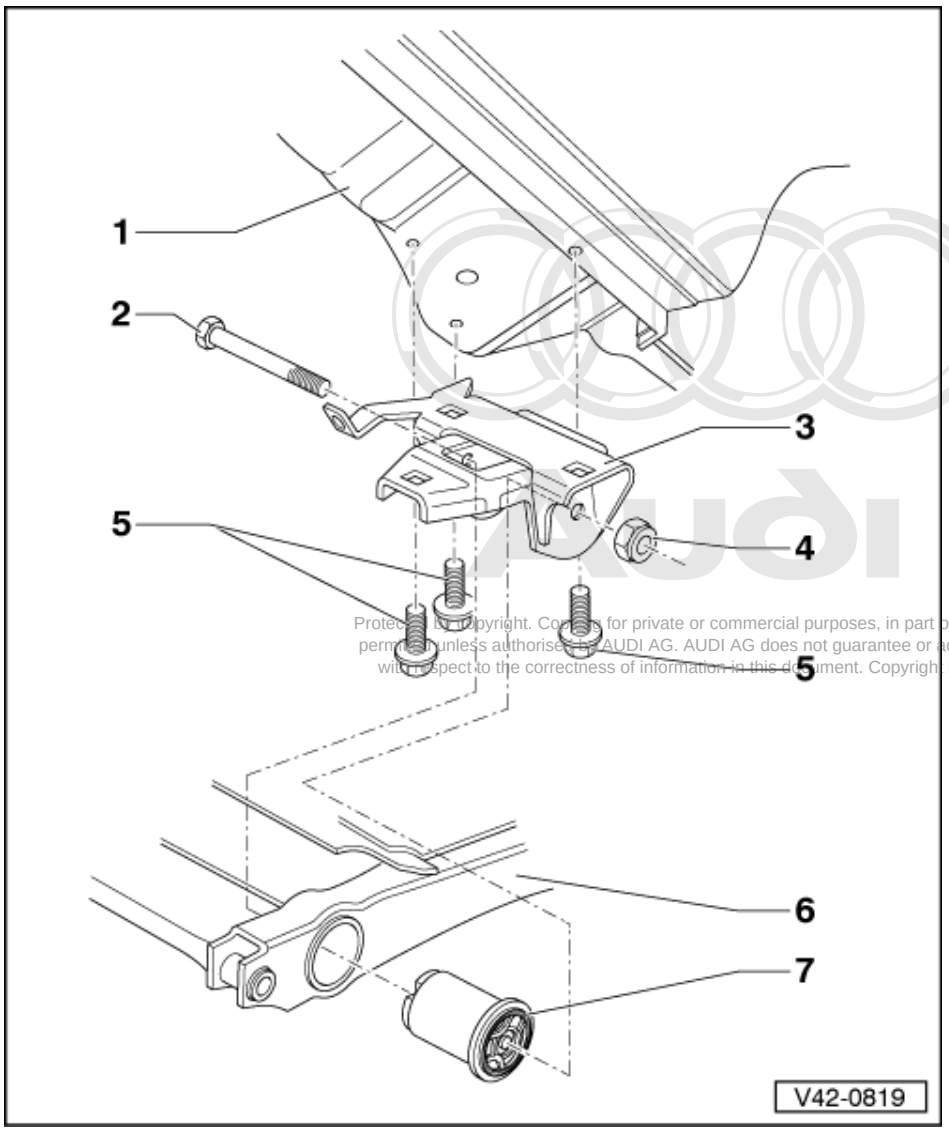
2 Hexagon bolt
- Always replace
- Screw out to remove rear axle

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



3 Mounting

- ◆ Do not release to remove rear axle
- ◆ Installing:
- - Loosely attach brackets to floor group with securing bolts
- - Move brackets axially as far as they will go in direction of travel and then screw on loosely
- - Check distance between rear axle and both wheel housings and align rear axle in transverse direction => Fig. 5
- - Tighten securing bolts for brackets to prescribed torque
- - Arrangement of brake pressure regulator => Page 220



Protected by Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

4 Self-locking nut

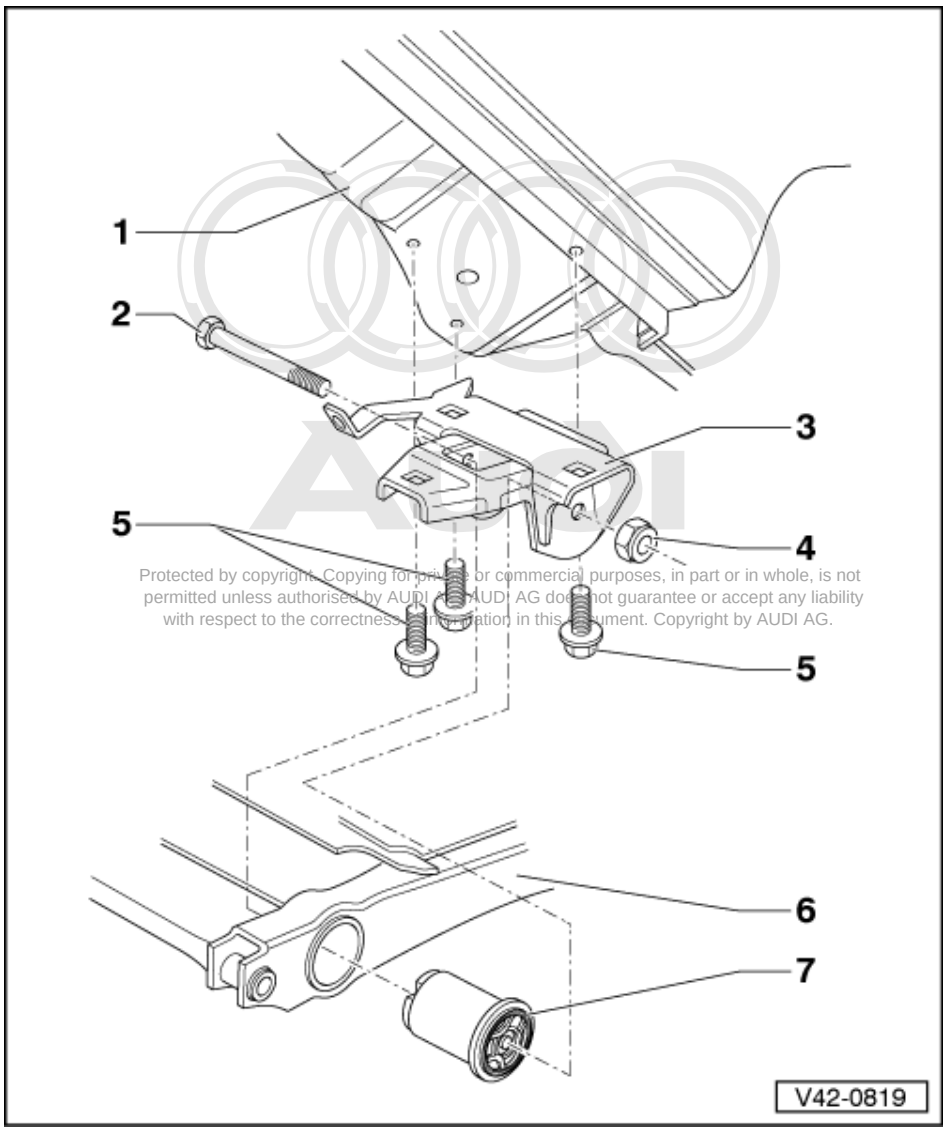
- Always replace
- Vehicle must be standing on the ground when tightening.
- Tigthen to 80 Nm and then turn a further 90o

5 Ribbed bolt, 150 Nm

- Drill out sheared off bolts and rework with threading tool KNM 10 x 1.5 mm

=> Special driving gear information no. 3; edition 01.91

- Fit new original bolt



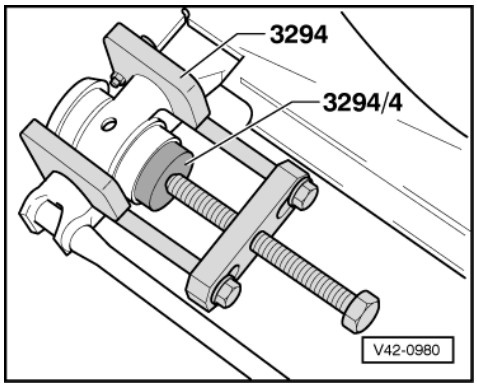
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

6 Axle beam

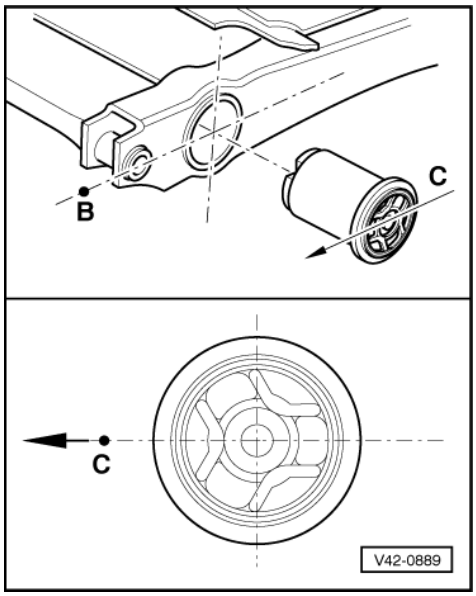
- Provided with sockets for wheel speed sensors
- When used for vehicles without ABS knock the two sockets out of the axle beam

7 Guide bearing

- Pressing out =>Fig. 1
- Installation position => Fig. 2
- Pressing in =>Fig. 3
- Replacing guide bearing with rear axle in position =>Page 90

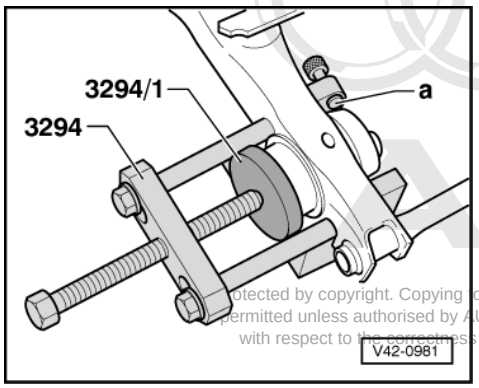


-> Fig.1 Pressing out guide bearing



-> Fig.2 Installation direction for guide bearing

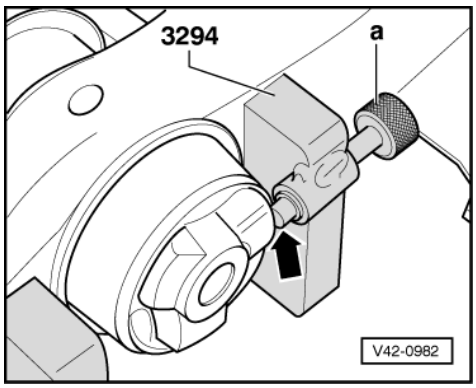
- Arrow at axis -C- indicates direction of travel. Insert bearing in axle beam such that axes -B- and -C- are in parallel.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

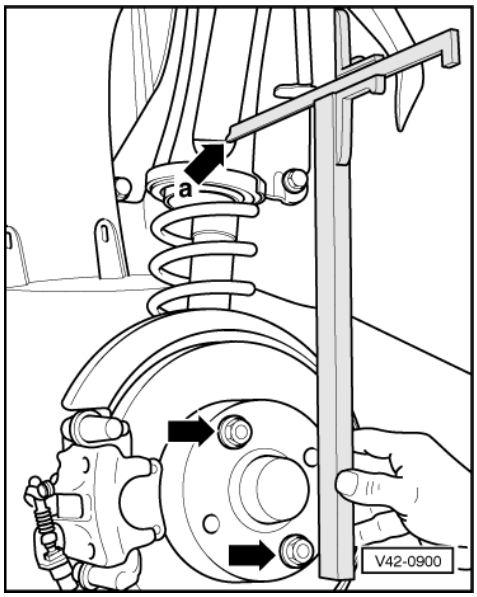
-> Fig.3 Pressing in guide bearing

With bearing pressed in locating pin -a- must make contact with end face of metal case (=> Fig. 4).



-> Fig.4 Guide bearing, locating pin contact

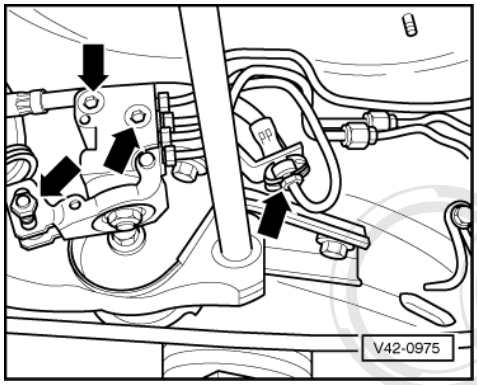
Metal case of guide bearing must make contact with end face of locating pin -a-.



-> Fig.5 Checking distance between rear axle and wheel housing

- Insert both wheel bolts and secure brake discs.
- Place straightedge against disc chamber and use depth gauge to check distance from strut adapter on left and right (checking location is bead at strut adapter -see arrow a-). If necessary, unfasten brackets and move rear axle in transverse direction until distances from strut adapters are equal. The max. difference between left and right 2.0 mm measured at strut adapter.
- Tighten securing bolts at both brackets.

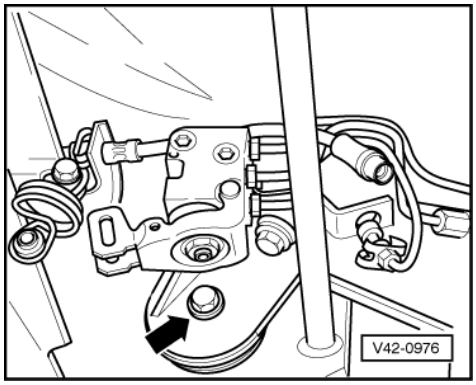
2.2 - Replacing guide bearing without removing rear axle



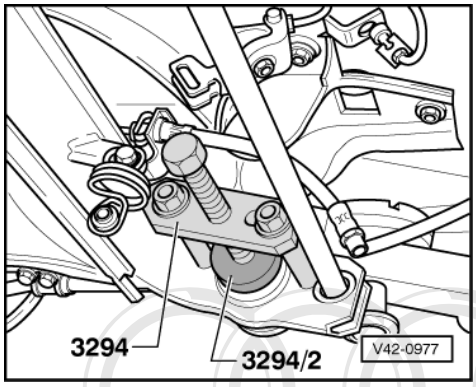
- Insert brake pedal depressor.
- -> Unscrew brake lines from bracket on either side
- Seal line connections with rubber caps of bleeder screws for brake calipers/wheel brake cylinders.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

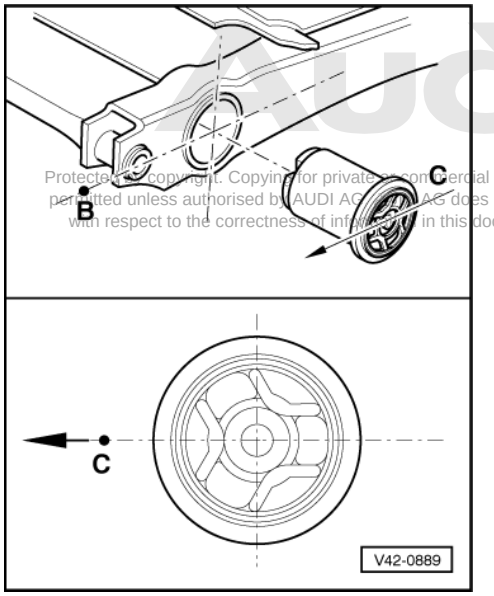
Additional work on vehicles with brake pressure regulator



- -> Unscrew brake pressure regulator from bracket.
- Remove securing bolt for regulator spring from lever of brake pressure regulator.
- Carefully press brake pressure regulator slightly towards centre of vehicle.
- Screw securing bolts for rear axle out of bracket on both sides.
- Press rear axle downwards to enable assembly tool -3294- to be fitted.



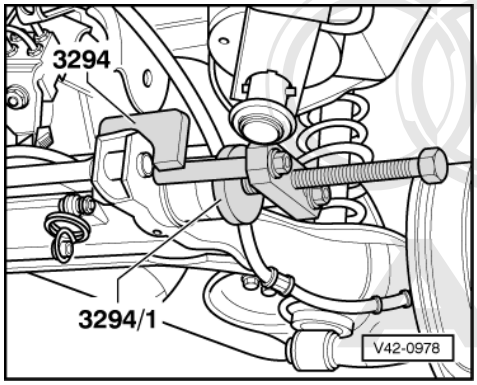
- -> Fit assembly tool -3294- as shown
- Press guide bearing out of rear axle by turning spindle
- Remove assembly tool



- -> Insert new guide bearing in rear axle.

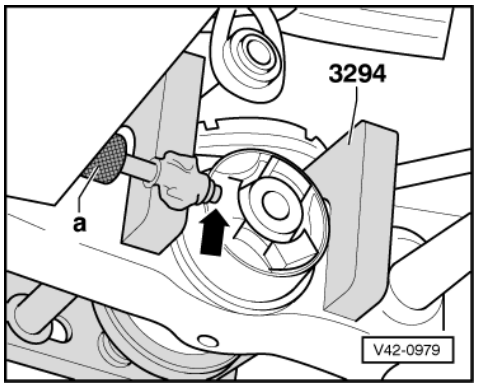
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Arrow at axis -C- indicates direction of travel. Insert bearing in axle beam such that axes -B- and -C- are in parallel.

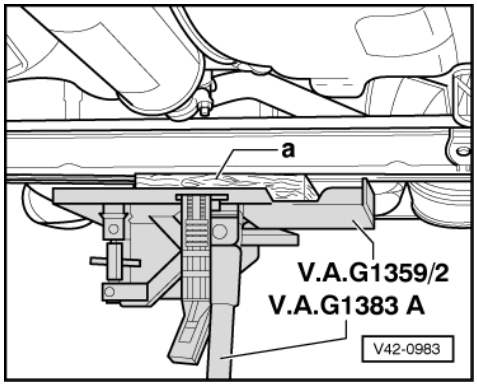


- -> Use assembly tool to press guide bearing into rear axle until ...

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> ... locating pin -a- makes contact with metal case on end face of bearing (see arrow).
- Apply small quantity of silicone grease part no. G 000 405 A2 to entire surface of projecting rubber parts of guide bearing on end face.



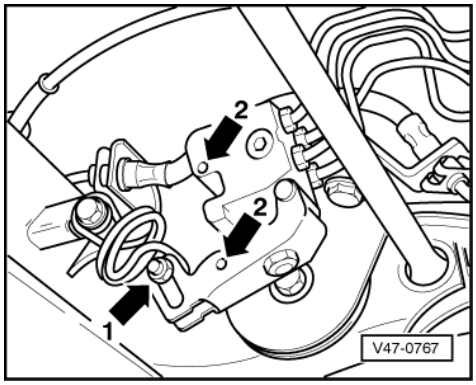
- -> Carefully raise rear axle using gearbox lifter -V.A.G 1383 A- and loosely insert both securing bolts in brackets.

a = Wooden block as support

- Screw brake pressure regulator to bracket
- Attach brake hoses to bracket on both sides
- Insert spring for brake pressure regulator in regulator lever and attach loosely with hexagon bolt.
- Remove brake pedal support.
- Bleeding brake system
- Adjusting brake pressure regulator => Page 93

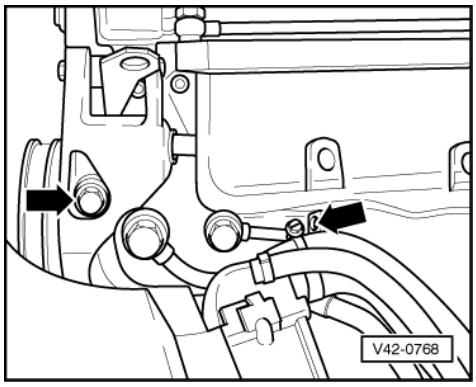
Adjustment requirements:

- Curb weight of vehicle, i.e. tank full and spare wheel, toolkit and jack fitted in specified positions.



- Braking system properly filled and bled.
- Drive vehicle onto lifting platform or over an inspection pit (vehicle must be standing on its wheels).

- -> Unfasten nut -1- (already loose)
- Insert adjuster -3284- into holes -2- provided in brake pressure regulator (see arrows).

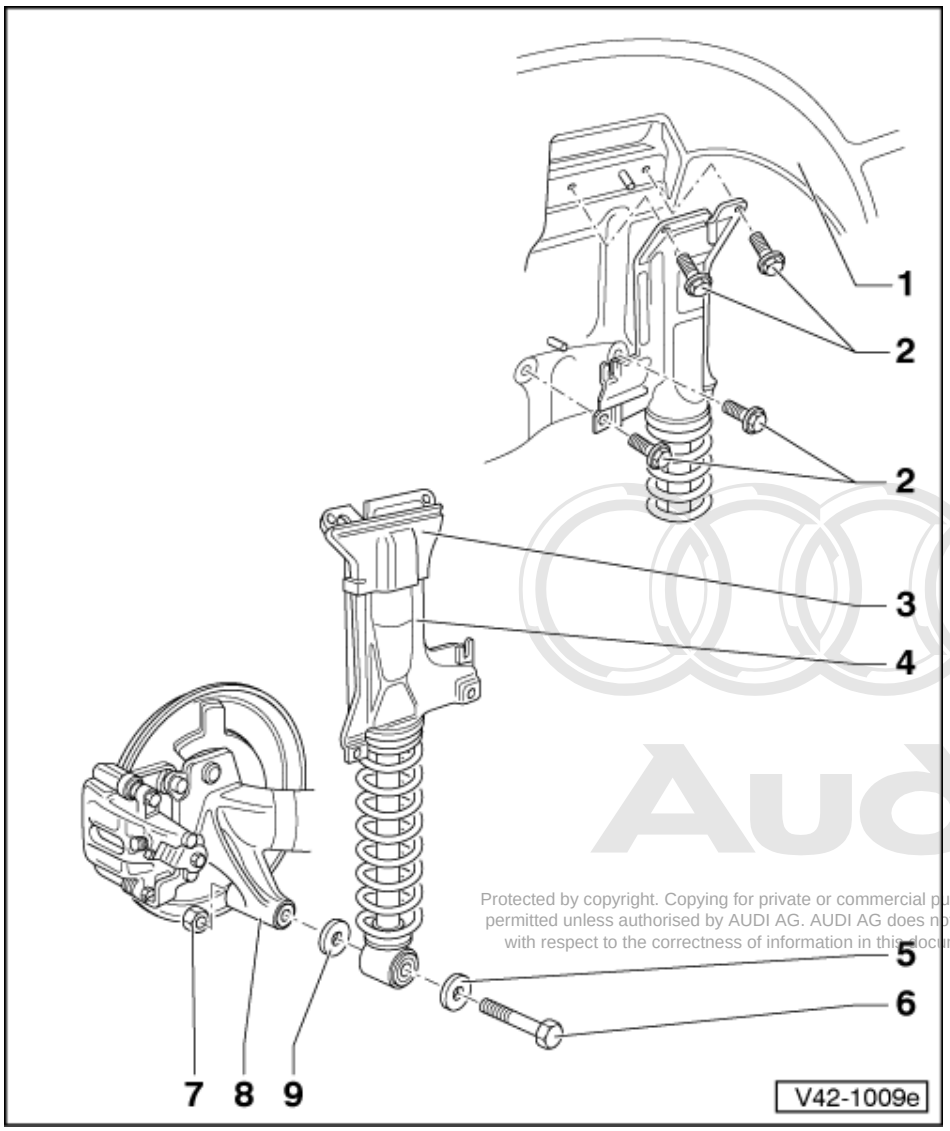


- -> Tighten nut -1- to 20 Nm.
- Remove adjuster
- Tighten securing bolts for rear axle bracket on both sides to 80 Nm with vehicle standing on its wheels and then turn a further 90o.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 - Removing and installing strut

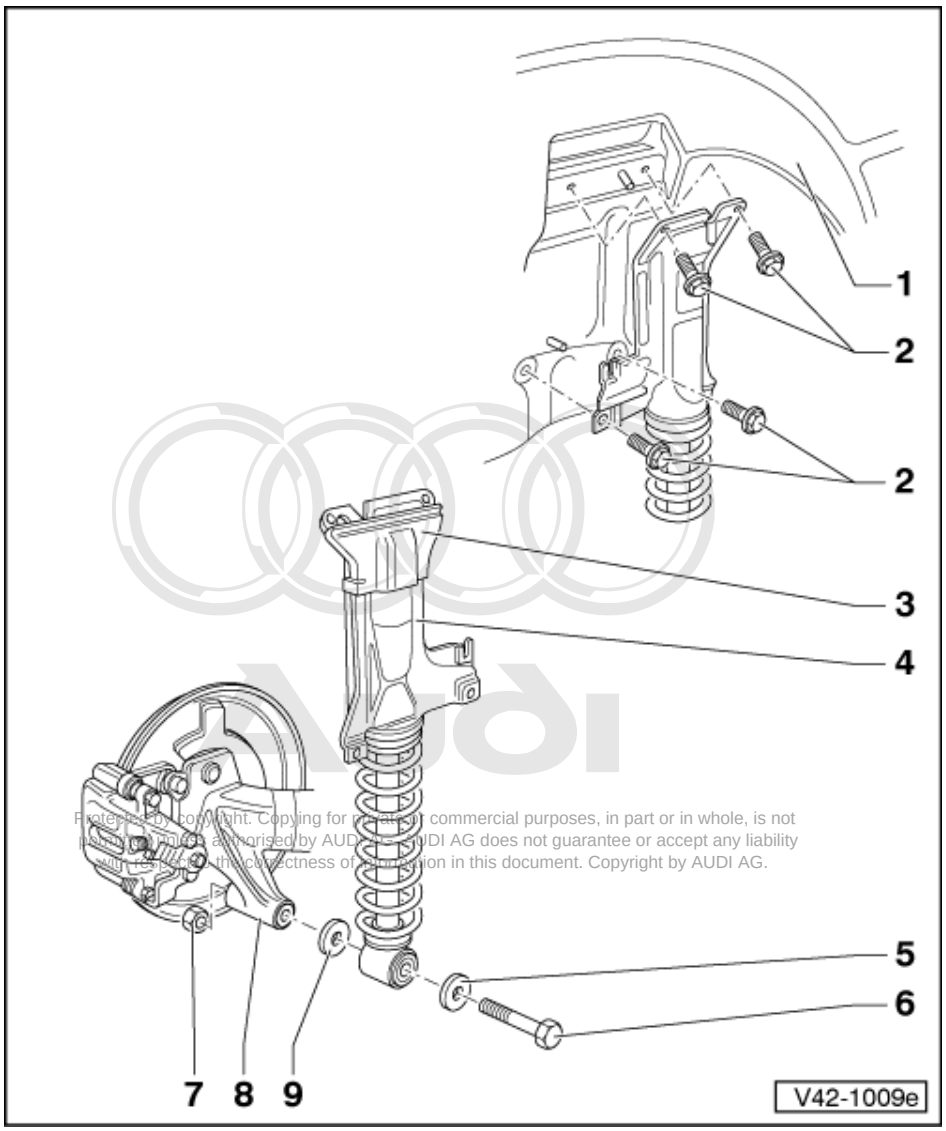
3.1 - Removing and installing strut



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 **Wheel housing**
2 **Hexagon bolt with washer 55 Nm**
3 **End cap**
- ◆ Attach to strut adapter

4 **Suspension strut**
- ◆ Removing:
- - Support rear axle with trolley jack or gearbox lifter -V.A.G 1383 A-; do not raise vehicle; remove securing bolts at top and bottom
- ◆ Installing:
- - First attach strut at top to wheel housing then screw at bottom to axle beam.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

5 Shim

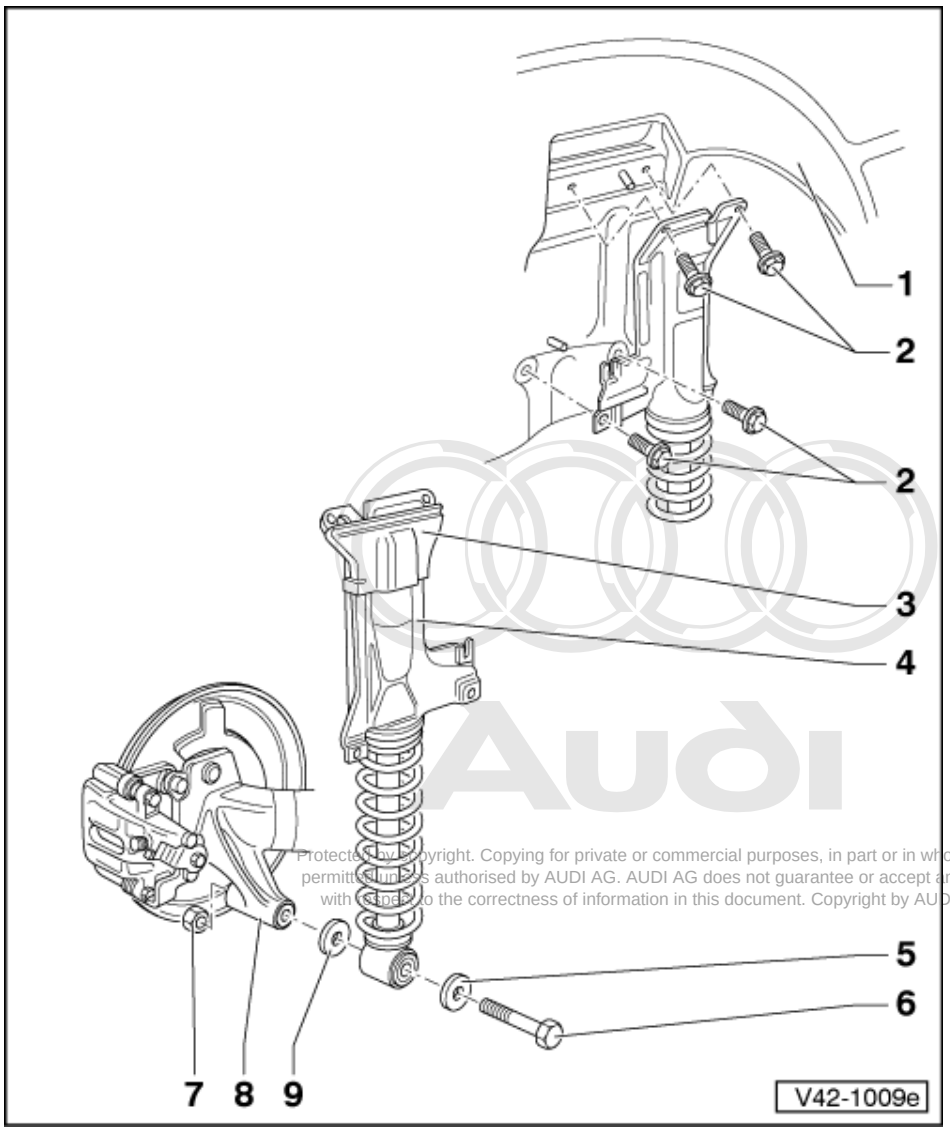
6 Hexagon bolt, 240 Nm

- Insert in rear axle beam and tighten with torque wrench
- Vehicle must be standing on the ground when tightening.

7 Self-locking nut

- Always replace

8 Axle beam



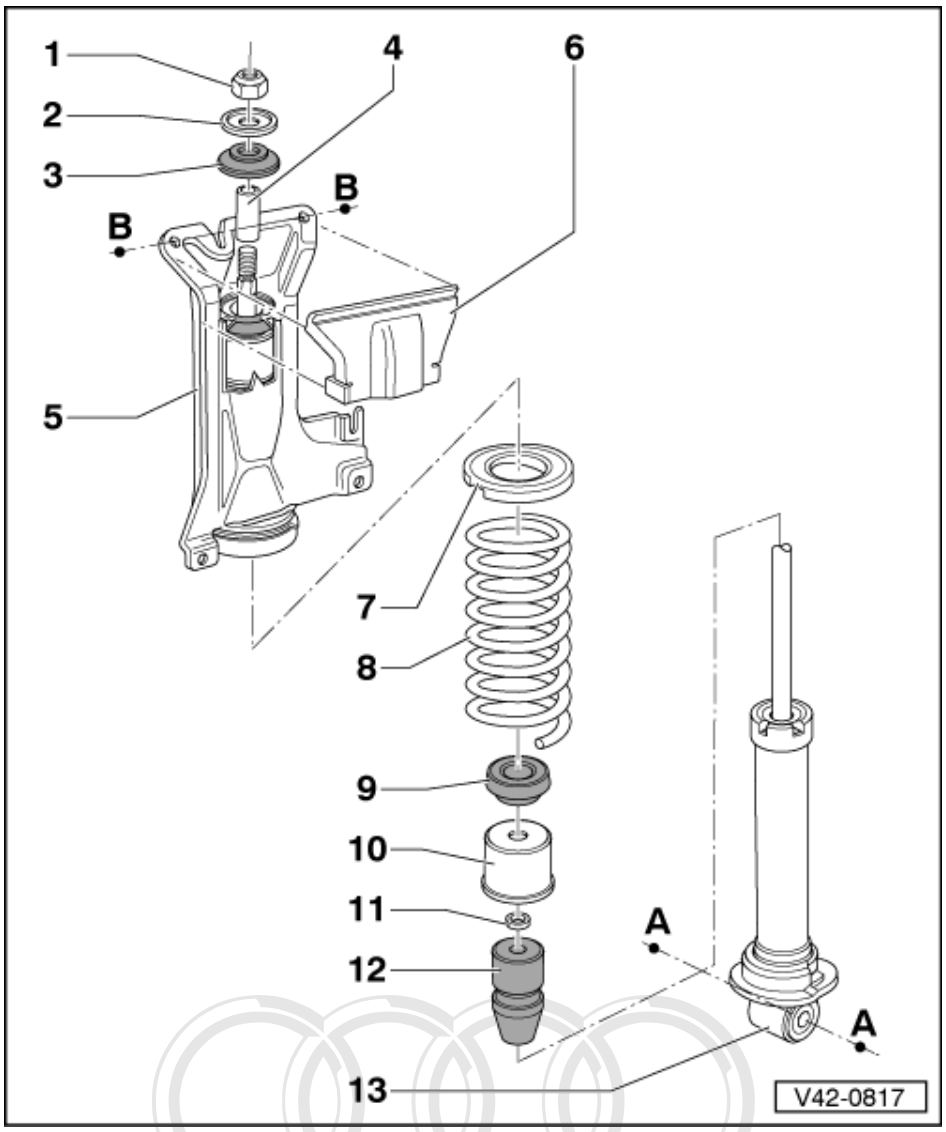
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

9 Shim

Warning!
When removing and installing strut -- some vehicles may be found to have washer -- fitted (not as standard) between axle beam -- and damper eye of strut. This washer -- is always to be reinstalled in such vehicles.

4 - Servicing suspension strut

4.1 - Servicing suspension strut



1 **Self-locking nut 25 Nm**
- Always replace
- Screwing on and unscrewing => Fig. 1
- Tightening with torque wrench => Fig. 2

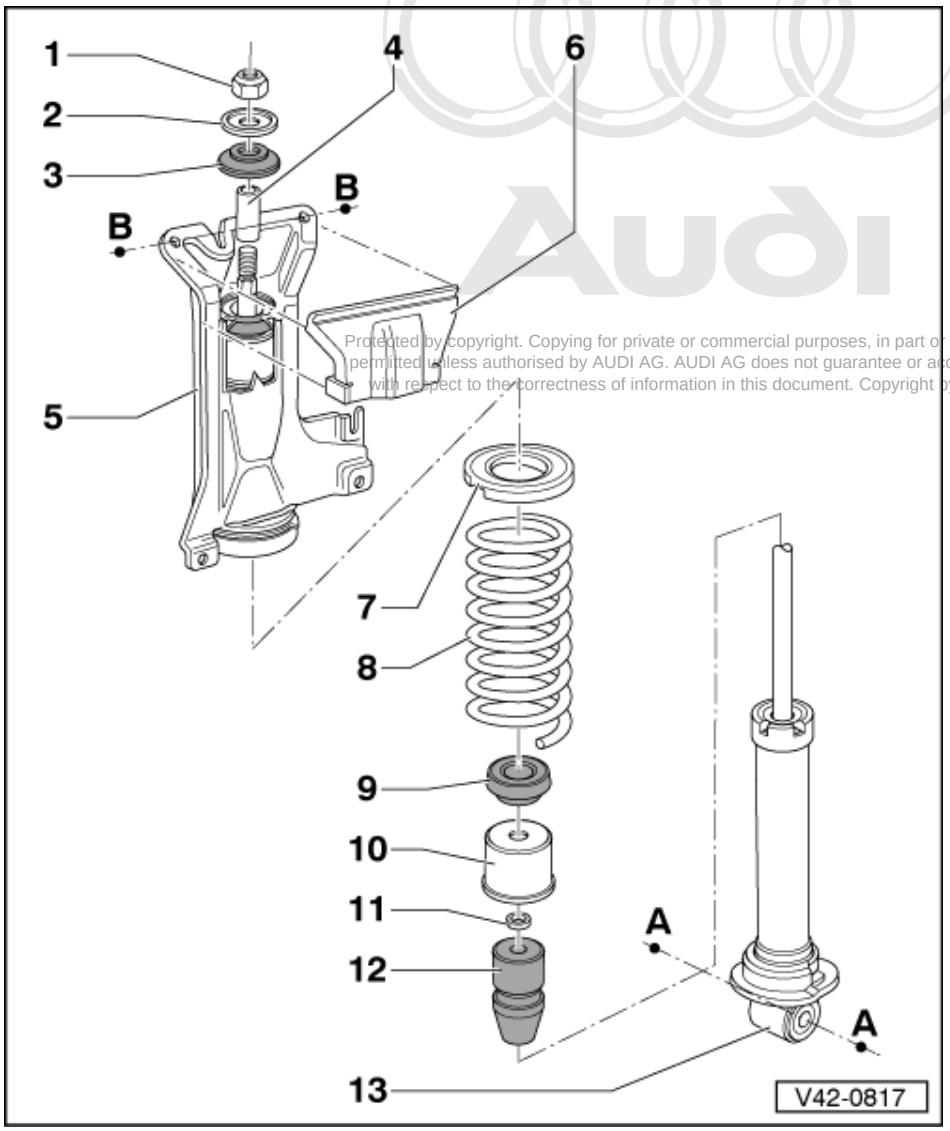
2 **Stop shell**

3 **Rubber bush**
- Apply talc when fitting

4 **Spacer tube**
- Attach to piston rod

5 **Adapter**
- Different versions on left and right
- Between axis -B- and axis -A- (Item 13) 90o± 3o on assembly

Unauthorised printing or copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

6 End cap

- Attach to adapter

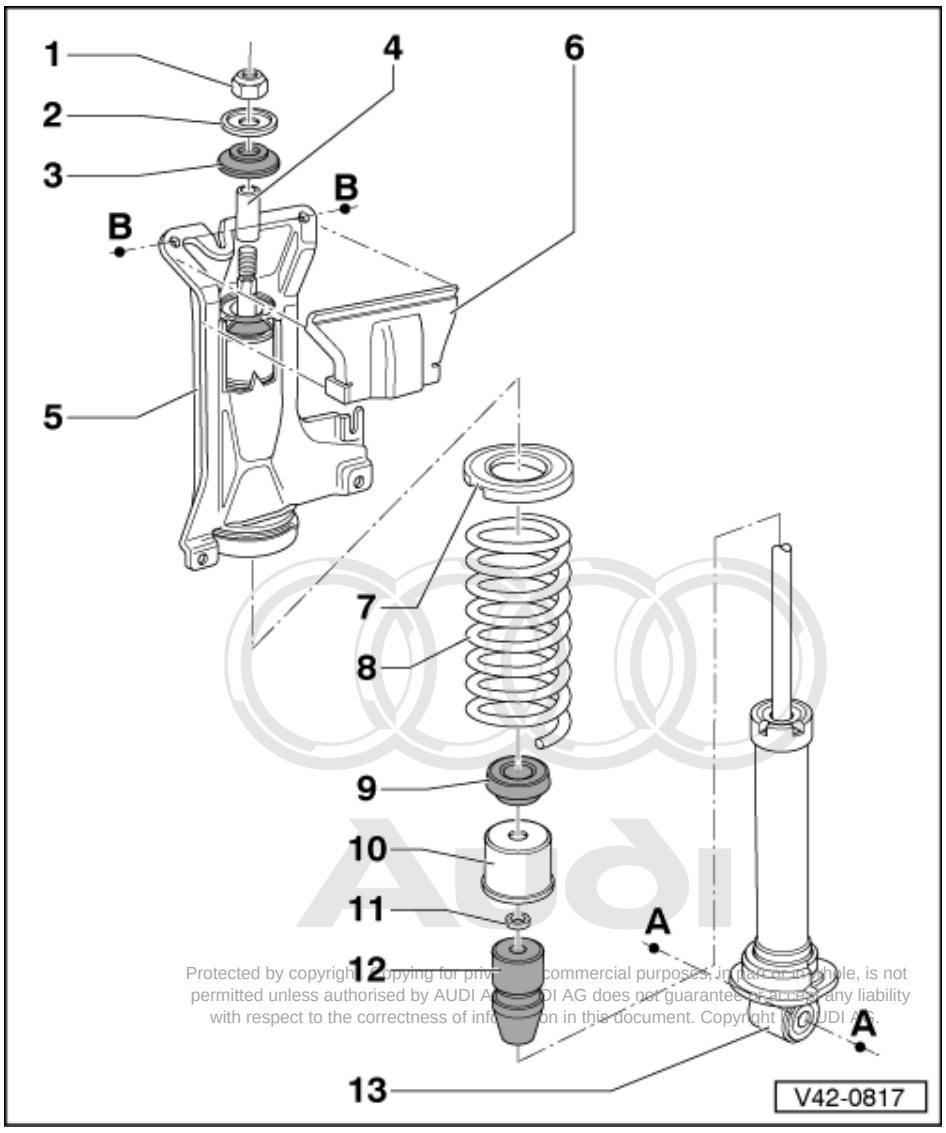
7 Damping ring

- Apply talc when fitting
- Attach to coil spring so that it touches the stop on the end of the spring

8 Coil spring

- Refer to parts list
- Prior to replacement consult vehicle data sticker to establish spring version
- The codes on the data sticker stand for:

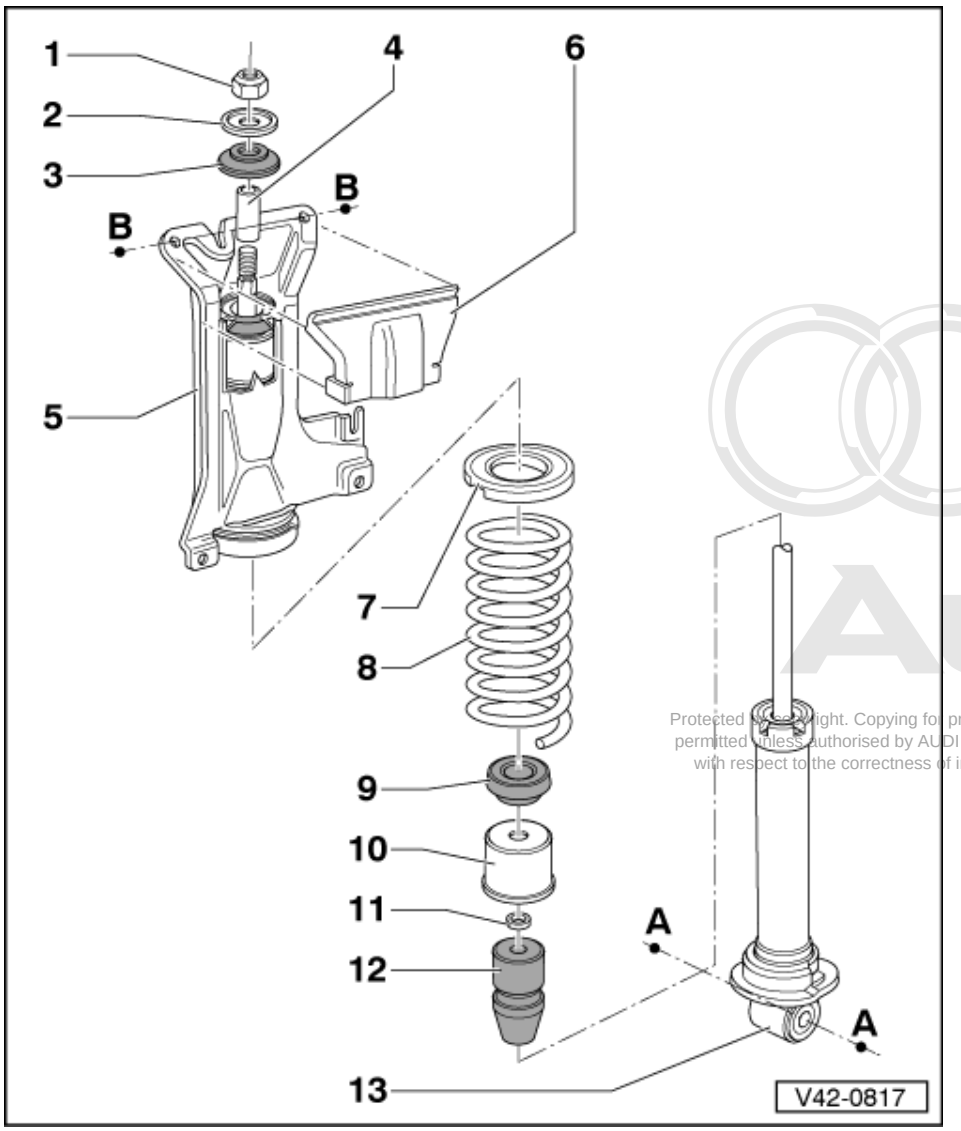
- 1BA = Standard version
- 1BE = Sports version
- 1BB = Bad road version



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

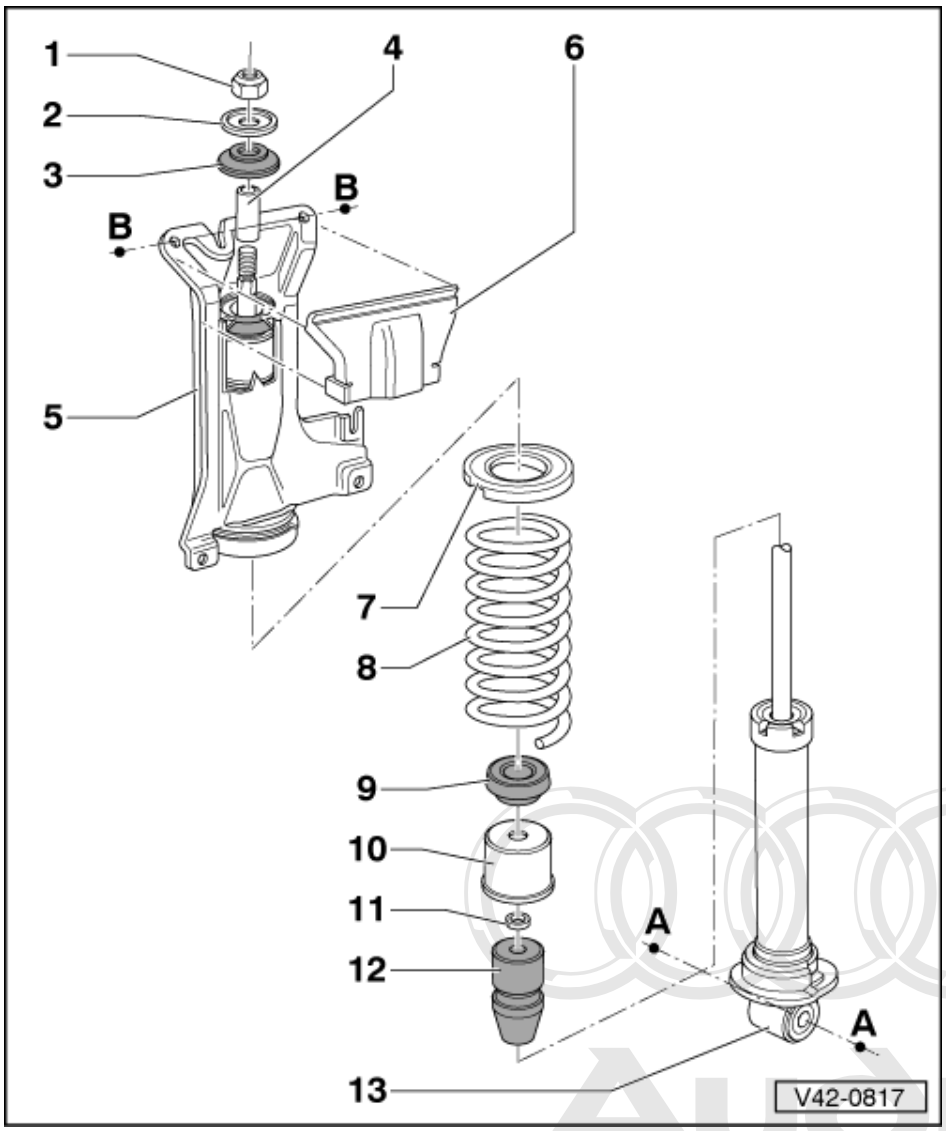
Notes:

- Up to vehicle no. 8C NA 015 724 there is no running gear identification on the data sticker. In such cases all vehicles are to be adjusted as indicated in the specified value table for vehicles with standard and sports version when performing wheel alignment. On replacing dampers or coil springs determine running gear version by way of part no. of rear dampers in combination with parts list.
- As of vehicle no. 8C NA 015 725 the data sticker is provided with the above identification.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Attach to shock absorber and turn in such a way that the end of the spring coil touches the stop of the lower spring plate
- Installation position: Colour code on spring points downwards to spring plate
- If suspension strut has been installed properly, lower end of spring faces rear on left and front on right



9 Rubber bush

- Apply talc when fitting

10 Sleeve

- Attach to piston rod

11 Ring

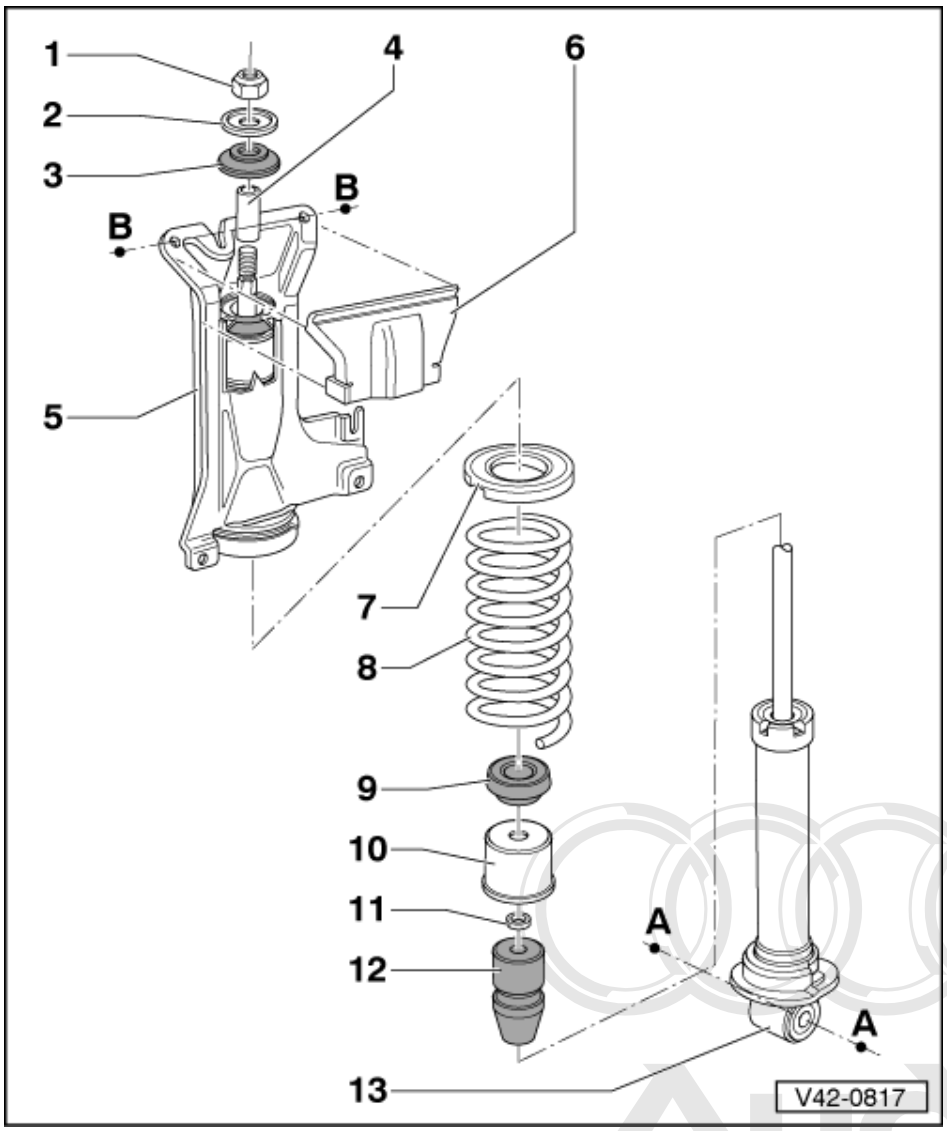
- Attach to piston rod

12 Stop buffer

- Not different versions depending on running gear design
- The codes on the data sticker stand for:

- 1BA = Standard version
- 1BE = Sports version
- 1BB = Bad road version

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



13 Shock absorber

- Refer to parts list
- Prior to replacement consult vehicle data sticker to establish spring version
- The codes on the data sticker stand for:

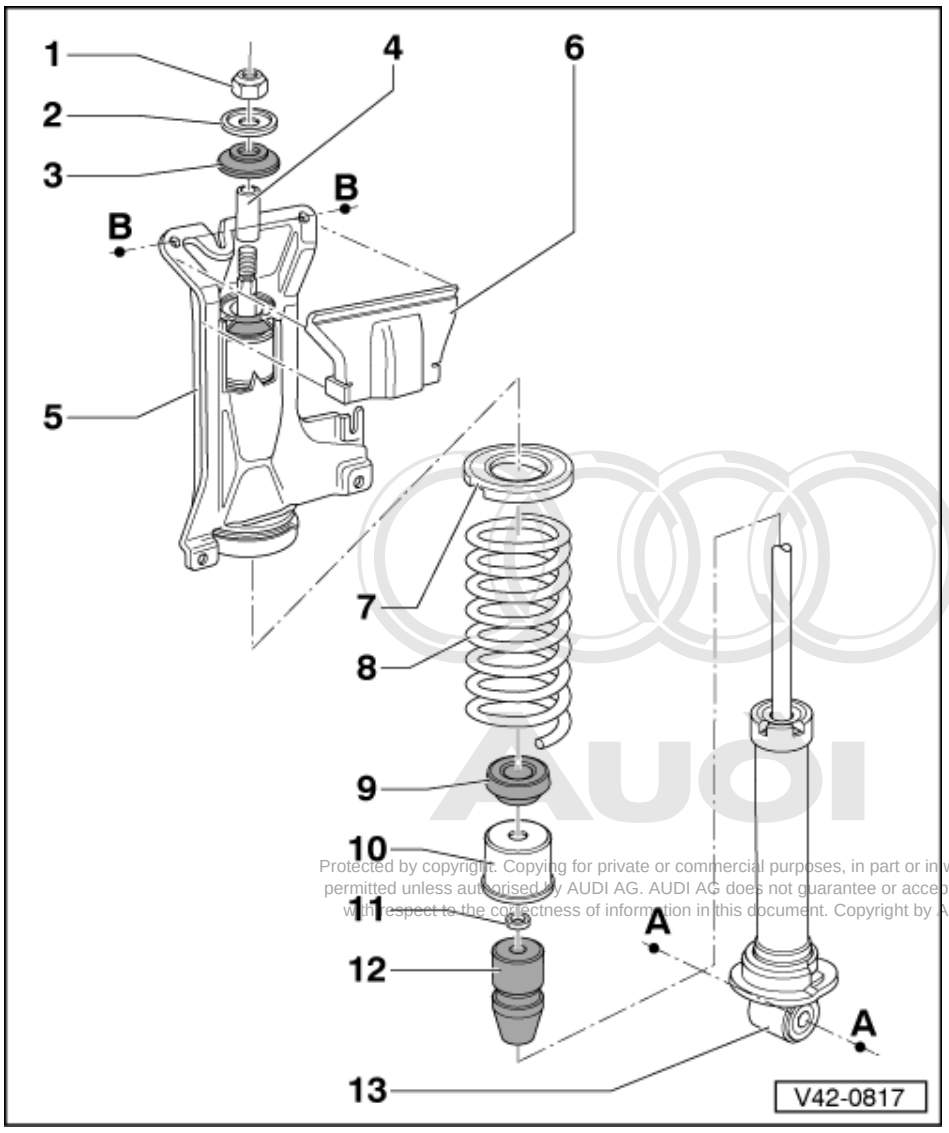
- 1BA = Standard version
- 1BE = Sports version
- 1BB = Bad road version

- =>Notes on Item - 8 -
- Can be replaced individually
- Defective shock absorbers must always be properly prepared before being scrapped.

=> Special information no. 2; Edition 03.90

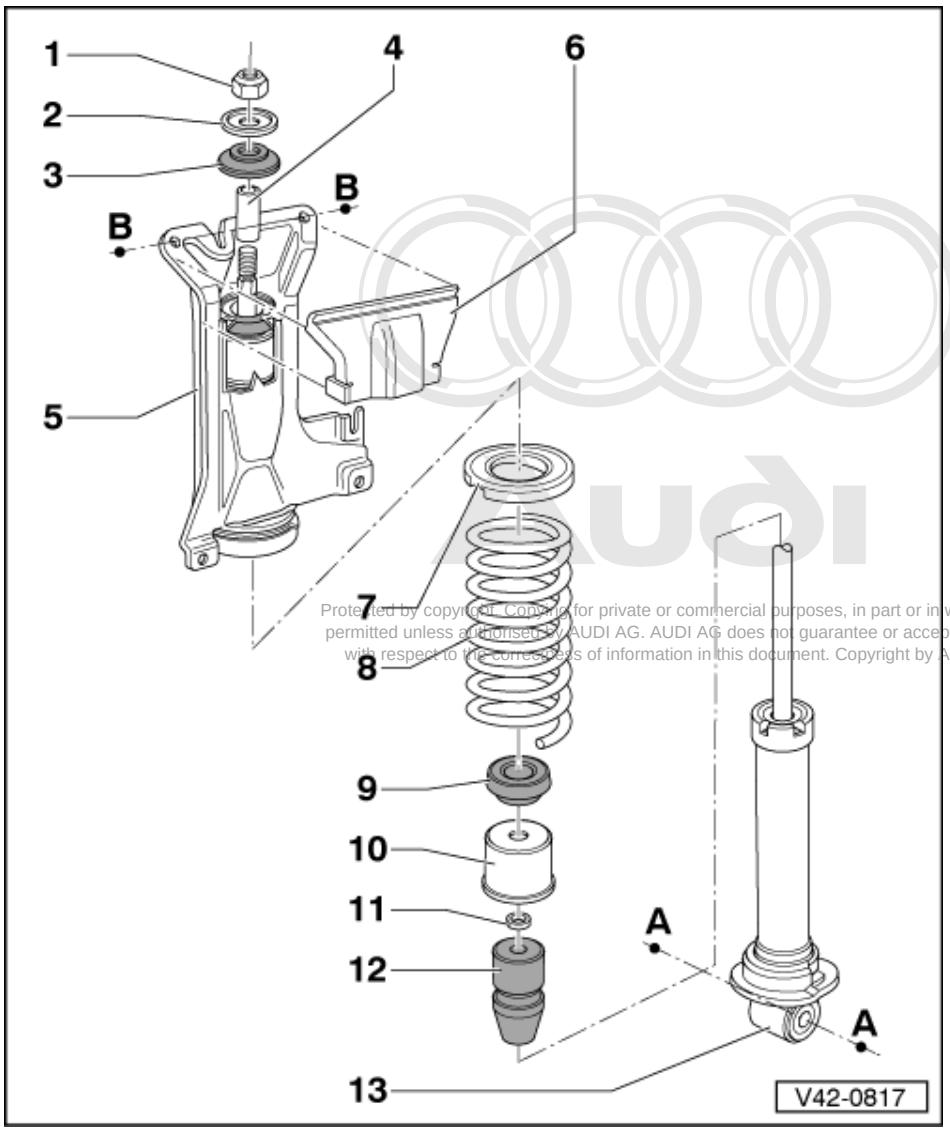
- Replacement part supplied with lower spring plate pressed on

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

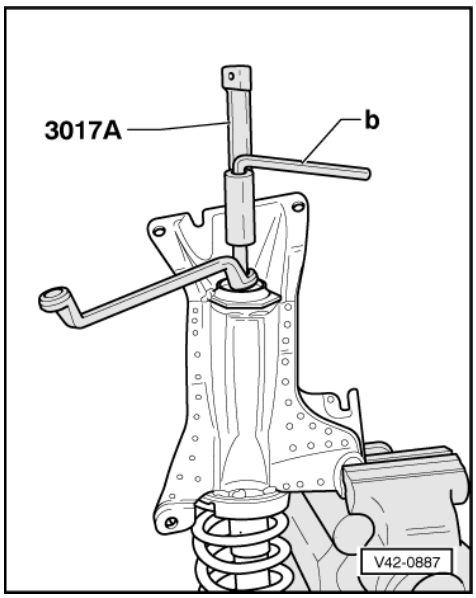
- Between axis -A- and axis -B- (Item 5) 90o ±3oon assembly
- Checking damper (removed): Check damper (hold in installation position) by hand by extending and compressing it. The damper must move evenly and smoothly over entire stroke. After length storage dampers may have to be "pumped" several times. Defective dampers make a banging noise whilst driving. Given proper function slight traces of damper oil do not constitute grounds for replacement. Severe oil leakage leads to losses in the extension and compression stage.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

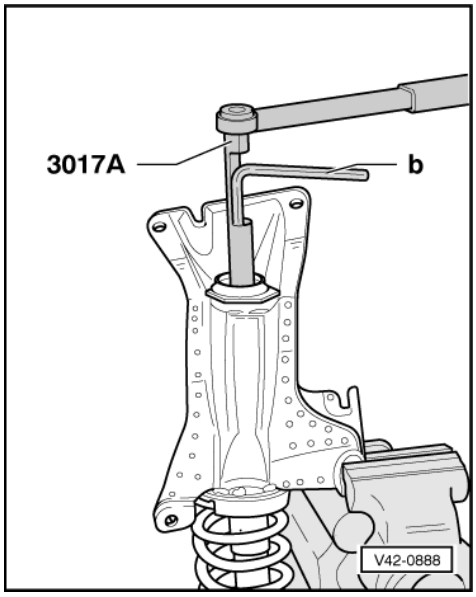
- Vehicles with sports running gear are fitted with gas filled dampers.
- Checking gas filled damper: Compress shock absorber by hand. The piston rod must move evenly and smoothly over the entire stroke. Release piston rod. If dampers have sufficient gas pressure piston rod returns automatically to initial position. If this is not the case the damper need not always be replaced. If there is no major oil leak the mode of operation corresponds to that of a conventional damper.

=> "Special service information" binder: Running gear no. 17



-> Fig.1 Dismantling strut

- Unscrew nut of piston rod; for this purpose counterhold with arm -b- of special tool -3017 A-.



-> Fig.2 Tighten nut with torque wrench

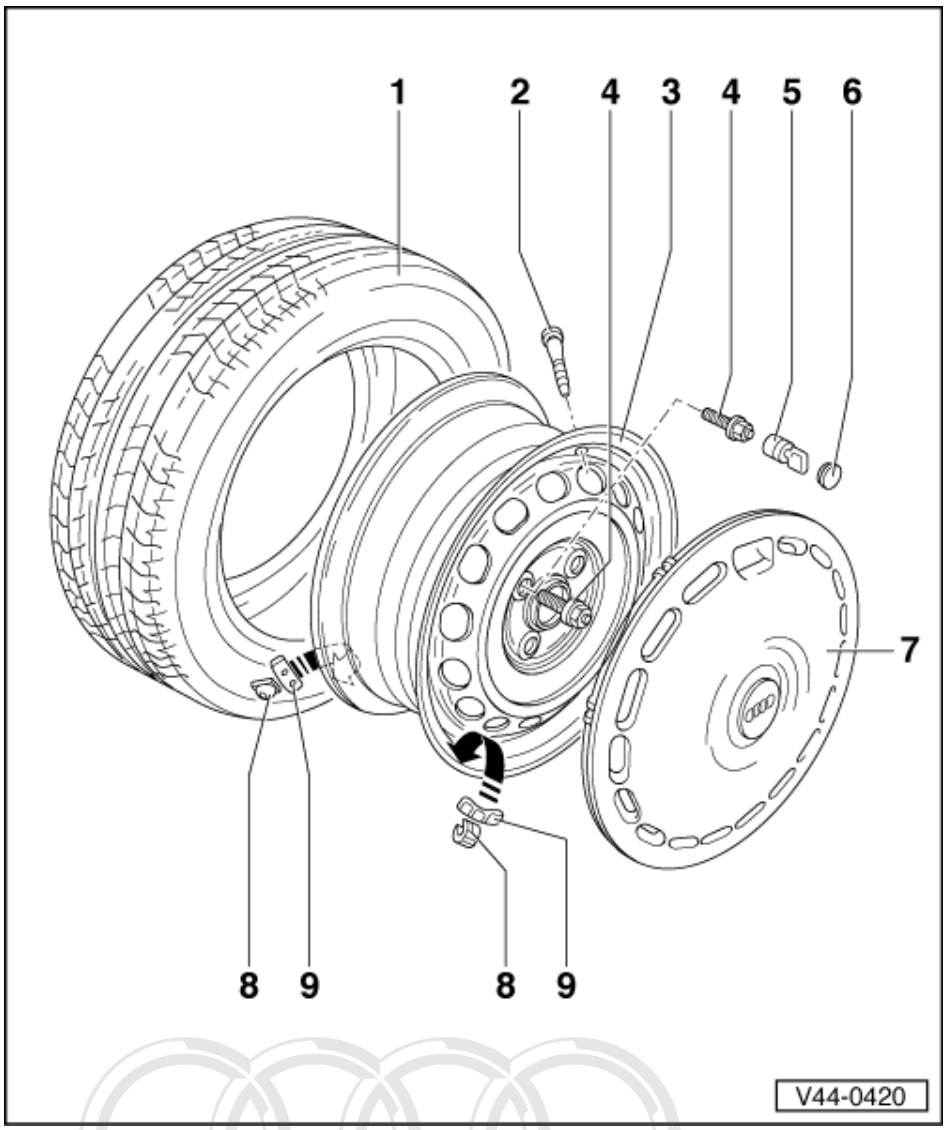
- For this purpose, counterhold piston rod with arm -b- of special tool -3017 A-.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

44 - Wheels, Tyres, Wheel alignment

1 - Wheels and tyres

1.1 - Wheels and tyres



The valid wheel/tyre combinations are indicated in:
=> Fault finding binder; wheels/tyres

1.2 - Steel disc wheel

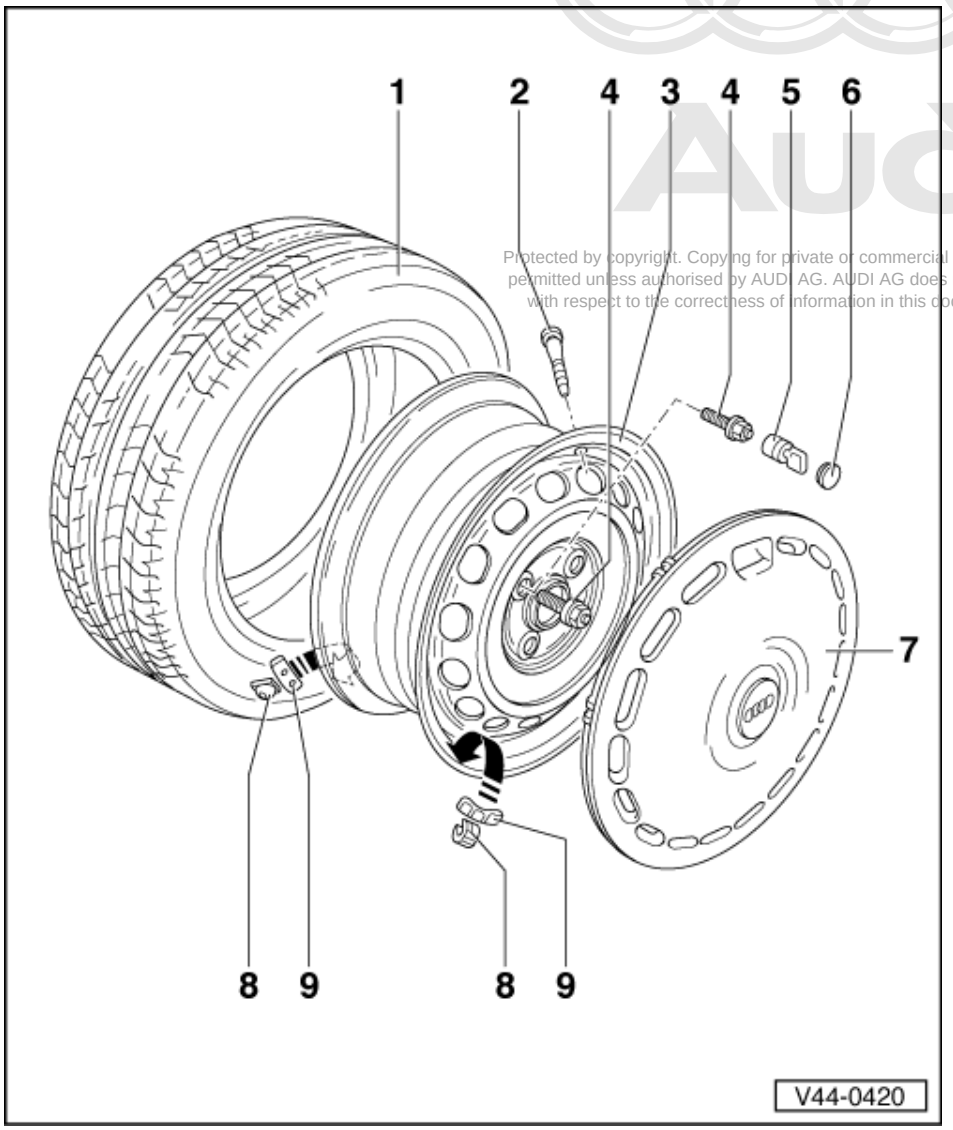
1 Tyre

- For reasons of safety, tyres should not be replaced individually but in pairs for one axle at a time or for both axles together.
- The tyres with the deeper tread should always be fitted to the front wheels.
- It is advisable to use tyres of the same make, design and tread pattern on all wheels.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2 Valve

- When replacing a new disc wheel or tyre, always replace the rubber valve.
- Only fit valve as per parts list



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 Steel disc wheel

- 6J x15, ET 37

4 Wheel bolt, 110 Nm

- M14 x 1.5 x 27.5 mm

5 Lock cylinder

- Attach to wheel bolt and lock

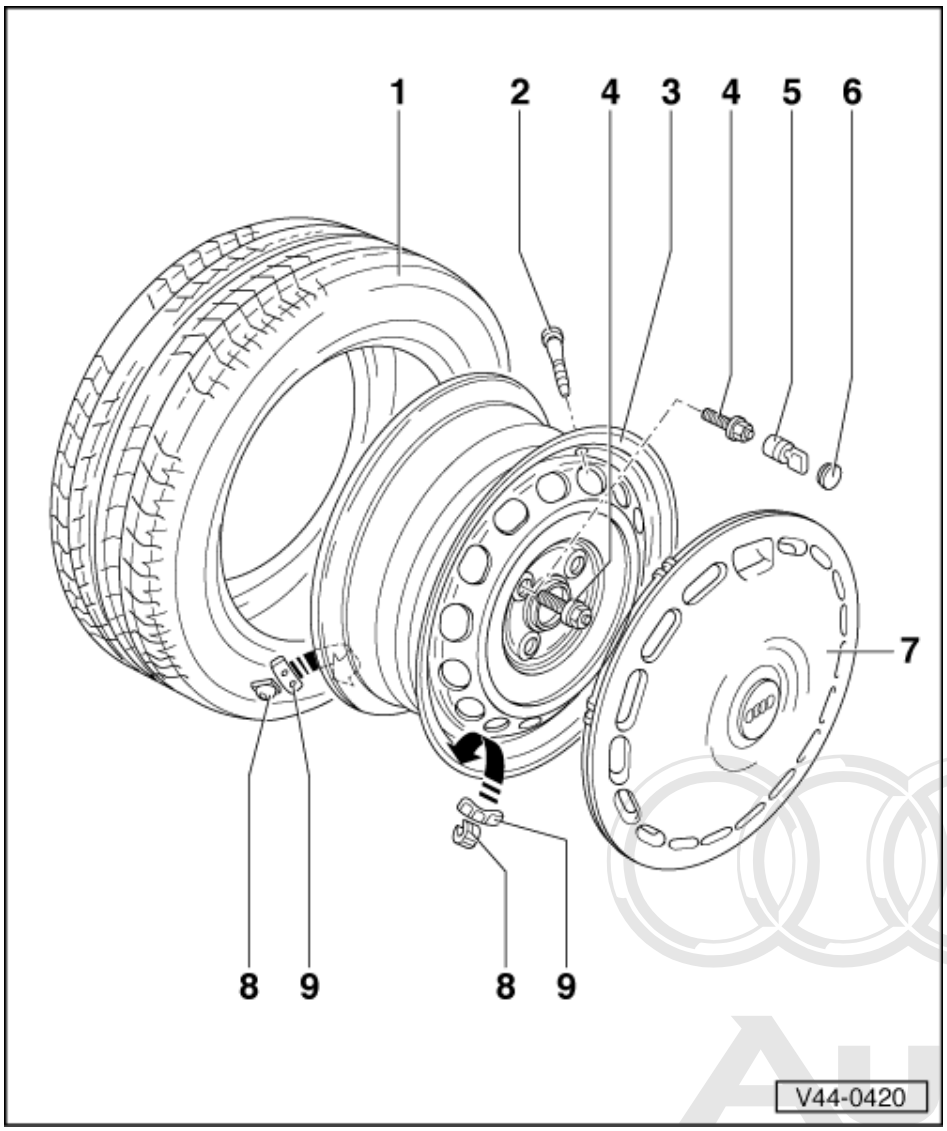
6 Trim cap

- Attach to lock cylinder

7 Full diameter hub cap

Note:

Fit enlarged penetration (marked on back with valve symbol) of full diameter hub cap over valve and then press onto disc wheel to ensure tight fit.



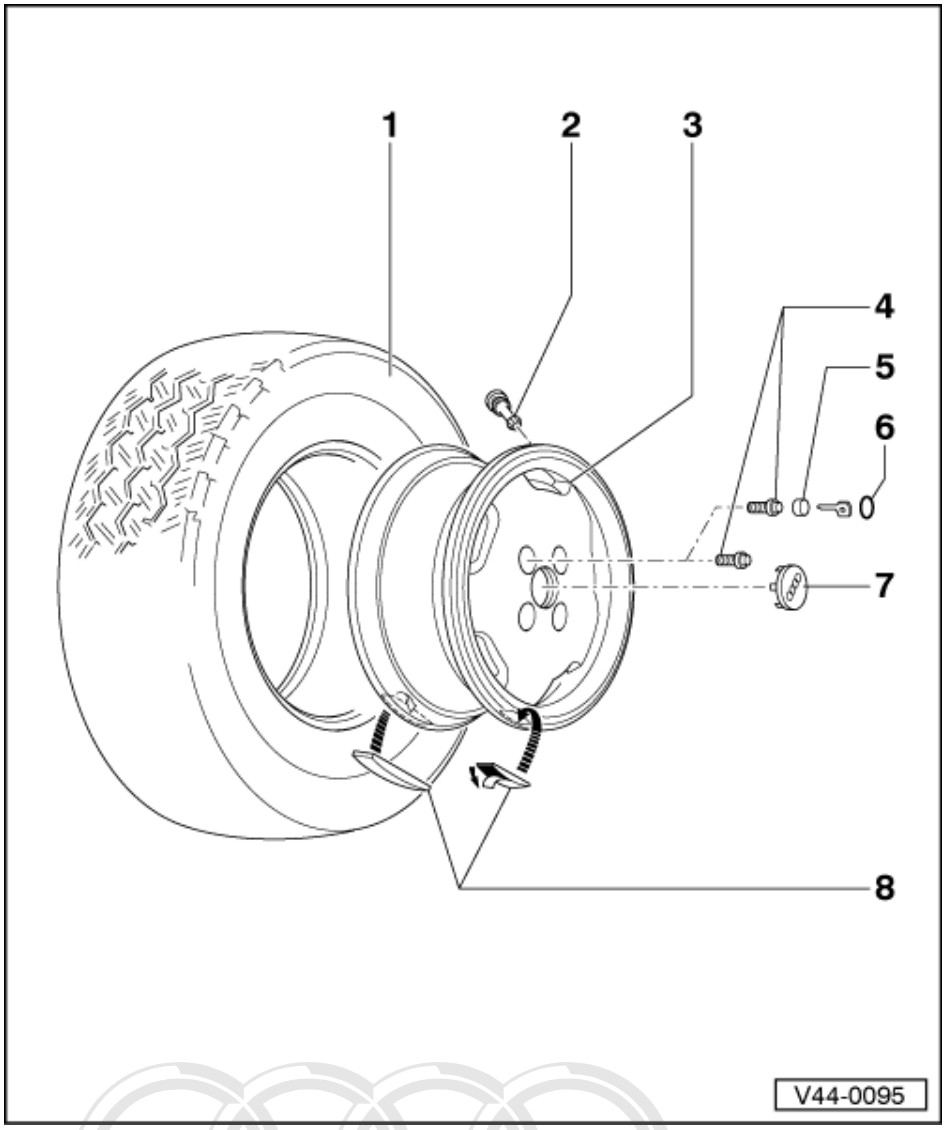
8 Retainer spring for balancing weights

9 Balancing weights

- Max 60 g permitted per rim flange

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

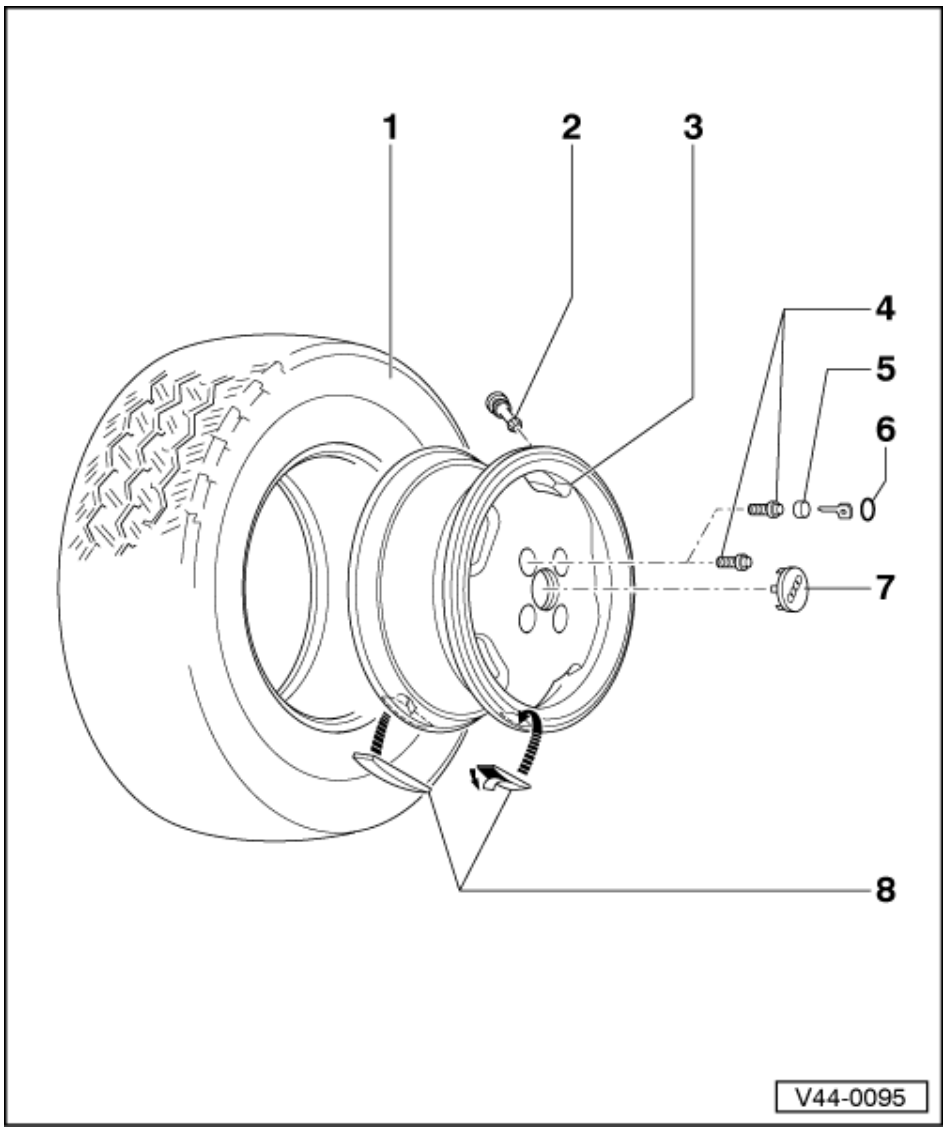
1.3 - Light alloy disc wheel, Aero design



1 Tyre

- For reasons of safety, tyres should not be replaced individually but in pairs for one axle at a time or for both axles together.
- The tyres with the deeper tread should always be fitted to the front wheels.
- It is advisable to use tyres of the same make, design and tread pattern on all wheels.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



2 Valve

- When replacing a new disc wheel or tyre, always replace the rubber valve.
- Only fit valve as per parts list

3 Light-alloy disc wheel

- 6J x15, ET 37
- 7J x15, ET 37

4 Wheel bolt, 110 Nm

- M14 x 1.5 x 27.5 mm

5 Lock cylinder

- Attach to wheel bolt and lock

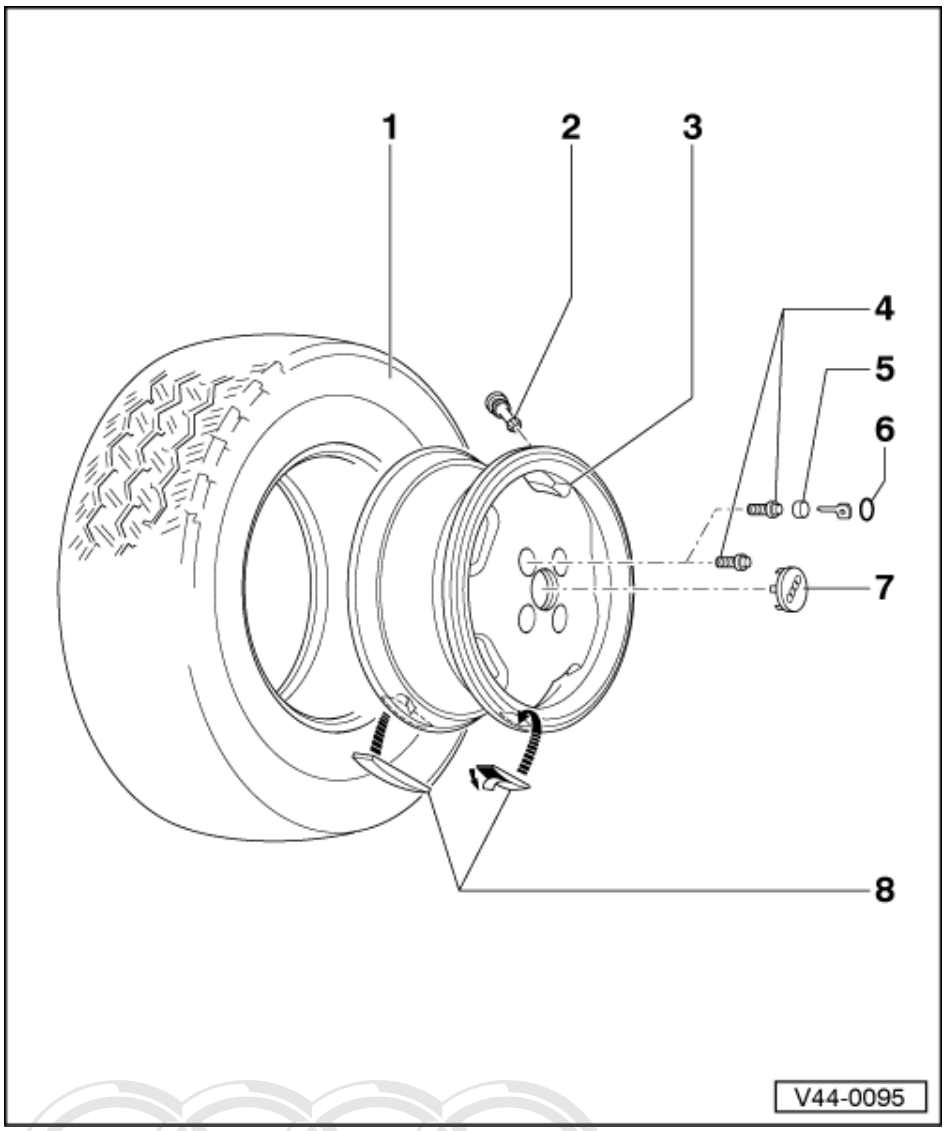
6 Trim cap

- Attach to lock cylinder

7 Trim cap

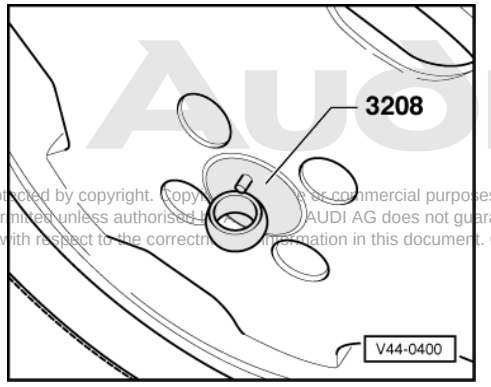
- Detaching =>Fig. 1

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



8 Adhesive balancing weights

- Max 60 g permitted per rim flange
- Clean disc wheel
- Pull off protective sheet.
- Attach balancing weight at envisaged locations



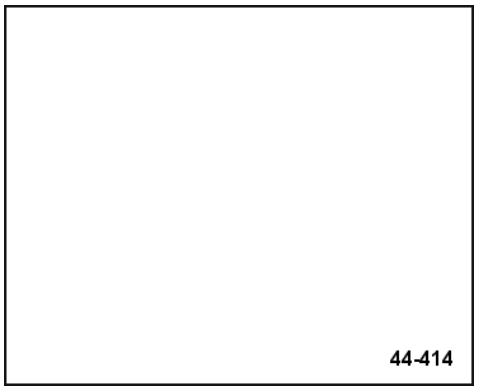
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.1 Detaching cap

- Clean cap with wet sponge.
- Attach special tool to cap and press on.
- Detach cap

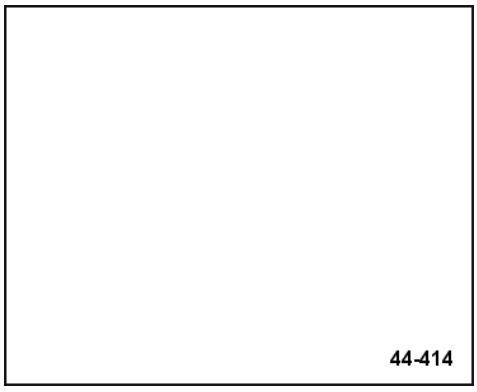
- Remove special tool from cap by moving the two rubber nipples to the side.

1.4 - Light alloy disc wheel, Speedline design



1 Tyre
- For reasons of safety, tyres should not be replaced individually but in pairs for one axle at a time or for both axles together.
- The tyres with the deeper tread should always be fitted to the front wheels.
- It is advisable to use tyres of the same make, design and tread pattern on all wheels.

2 Valve
- When replacing a new disc wheel or tyre, always replace the rubber valve.
- Only fit valve as per parts list



3 Light-alloy disc wheel
- 7J x15, ET 37

4 Wheel bolt, 110 Nm
- M14 x 1.5 x 27.5 mm

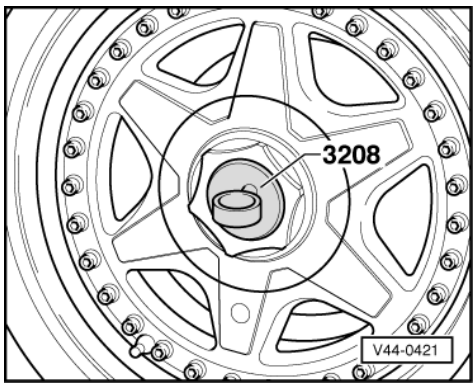
5 Lock cylinder
- Attach to wheel bolt and lock

6 Trim cap
- Attach to lock cylinder

7 Trim cap
- Detaching =>Fig. 2

8 Adhesive balancing weights
- Max 60 g permitted per rim flange
- Clean disc wheel
- Pull off protective sheet.
- Attach balancing weight at envisaged locations

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Fig.2 Detaching cap

- Clean cap with wet sponge.
- Attach special tool to cap and press on.
- Detach cap
- Remove special tool from cap by moving the two rubber nipples to the side.

2 - Vehicle alignment

2.1 - Vehicle alignment

An appropriate means of performing wheel alignment is to use an optical analyser. If no such equipment is available, the camber can also be checked with the protractor -3021-.

2.2 - Test requirements:

- Establish running gear version (1BA, 1BE or 1BB)
- Analyser properly adjusted and attached
- Curb weight of vehicle
- Same tread depth on one axle (difference max. 2 mm)
- Specified tyre inflation pressure.
- Vehicle accurately aligned, bounced several times and allowed to settle
- No impermissible play in or damage to suspension, steering and steering linkage.

Notes:

- Curb weight means: Weight of vehicle when ready for use (tank full and spare wheel, tool kit and jack fitted in specified positions).
- During adjustment operations, the relevant Specified values are to be adhered to as close as possible.
- In the event of a complaint it is only appropriate to carry out wheel alignment as of a mileage of roughly 1000 to 2000 km as beforehand the vehicle is still subject to settling.
- Following suspension repairs perform test drive with laden vehicle prior to wheel alignment. Vibrations can also be caused by excessive residual imbalance and/or vertical wheel runout. Attention is thus also to be paid to fault finding instructions if such complaints are received

=> Fault finding instructions; Running gear/front end judder and steering wheel vibration

2.3 - Specified values for wheel alignment

Applicable to all engines

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Front axle

	Standard/sports running gear (1BA and 1BE)	Heavy duty running gear (1BB)
Total toe (without load)	+15'±10'	+25'±10'
Camber (straight ahead position)	-45' ±30'	-25'±30'
Maximum permissible difference between the 2 sides	max. 30'	max. 30'
Toe difference angle with 20o steering angle from left and right	-1o± 30'	-1o± 30'
Castor (not adjustable)	+2o 10'± 30'	+2o 10'±30'
Maximum permissible difference between the 2 sides	max. 30'	max. 30'

Rear axle

	Standard/sports running gear (1BA and 1BE)	Heavy duty running gear (1BB)
Camber	-1o30' ± 20'	-1o30' ± 20'
Maximum permissible difference between the 2 sides	max. 30'	max. 30'
Toe per wheel (not adjustable with specified camber)	+15'±10'	+10'±10'
Toe per wheel (not adjustable with specified camber)	+30' ±20'	+20' ±20'
Max perm difference between the two sides	max. 20'	max. 20'

Notes:

- Up to vehicle no. 8C NA 015 724 there is no running gear identification on the data sticker. In such cases all vehicles are to be adjusted as indicated in the specified value table for vehicles with standard and sports version when performing wheel alignment.
- As of vehicle no. 8C NA 015 725 the data sticker is provided with the above identification.

2.4 - Calculation of direction of travel

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

In the case of specified values with the same sign +/+ or -/- subtract smaller value from larger one and divide by 2

Example:

Toe angle, left rear wheel	Toe angle, right rear wheel
+ 15'	+ 5'
15' - 5' = 10' 10' : 2 = 5' Perm deviation from running direction = 5'	

Values with different signs (+/-) are added together and the total divided by 2

Example:

Toe angle, left rear wheel	Toe angle, right rear wheel
+15'	-5'
15' + 5' = 20' 20' : 2 = 10' Deviation from direction of travel = 10'	

The result in each case is the actual deviation of the direction of travel from the vehicle longitudinal axis.

2.5 - Adjusting toe at front axle

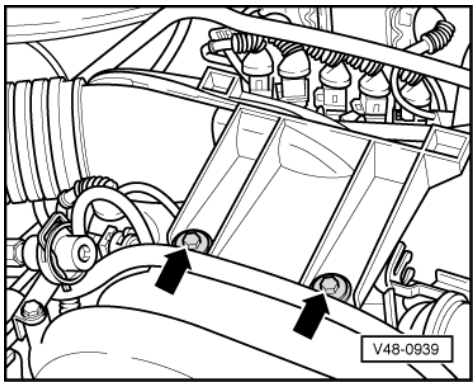
Only with optical analyser and special tool -3279- or -3075-.

Warning!
The special tool -3279- is only for use with LHD vehicles.
Use is still to be made of the old special tool -3075- for RHD vehicles.

Note:

The following work only has to be performed on vehicles with 6-cylinder engines.

- Use screwdriver to prise off cover from sound absorber.

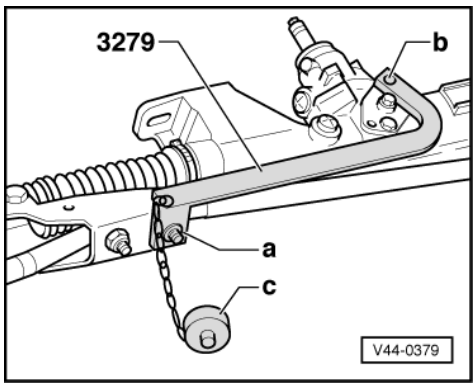


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Screw out both securing bolts for sound absorber.
- Unscrew air hose at air mass meter.
- Squeeze the two quick release couplings for the crankcase breather hoses together at the largest diameter and for this purpose pull them off the valve covers.

- Press sound absorber backwards and lift upwards.
- Pull vacuum hose off throttle housing and remove sound absorber.

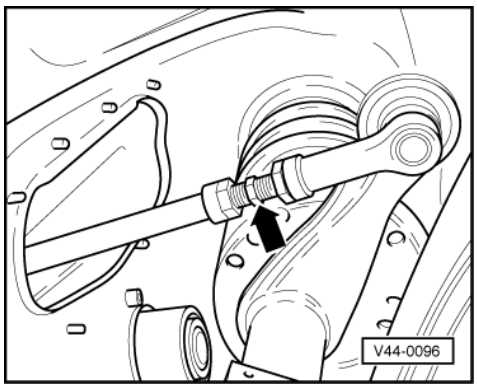
Setting toe on LHD vehicles



- Wheels set to straight-ahead position.
- -> Attach special tool -3279- to left securing nut of tie rod using hole -a- and secure with knurled nut -c- on chain
- Position special tool on rear securing bolt of thrust piece cover using hole -b- by moving steering wheel backwards and forwards (requires two people)
- Check whether steering wheel spoke is horizontal; if necessary turn and straighten up steering wheel.

Note:

The illustration shows the special tool -3279- with the steering box removed.



- -> Halve specified value for total toe and set to this position at left and right tie rod.
- Secure tie rod.
- Remove special tool -3279-.
- Perform test drive; steering wheel spoke must be horizontal.

Note:

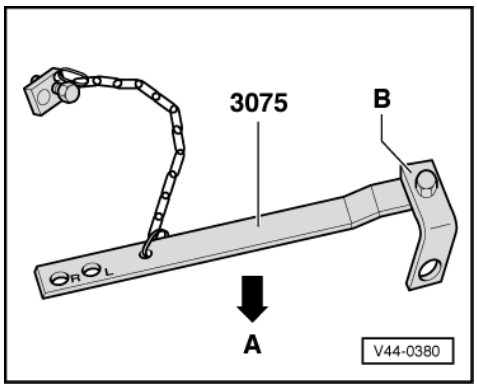
If steering wheel is slightly out of line after test drive this can be corrected by mutually adjusting the length of the two tie rods.

Example:

If steering wheel spoke drops slightly to the right lengthen right tie rod slightly and shorten left tie rod by the same amount.

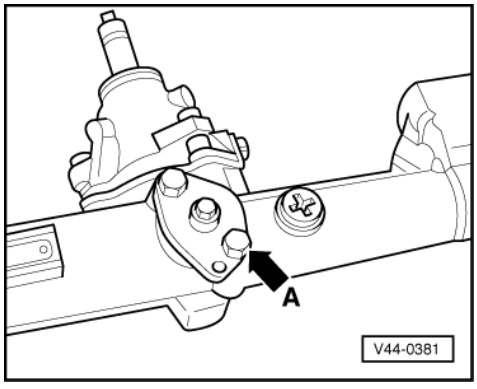
If necessary, check toe again.

Setting toe on RHD vehicles

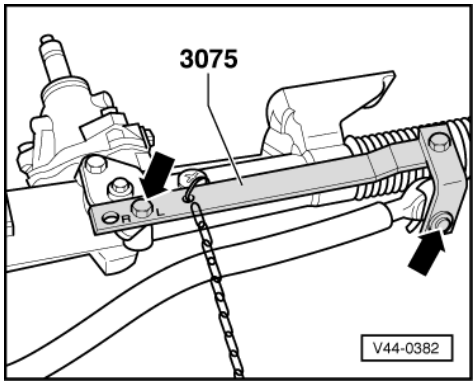


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Employ special tool -3075- as described below:
- -> Unfasten bracket -B- of special tool, turn through 180o and secure as shown.
- Arrow A = Direction of travel



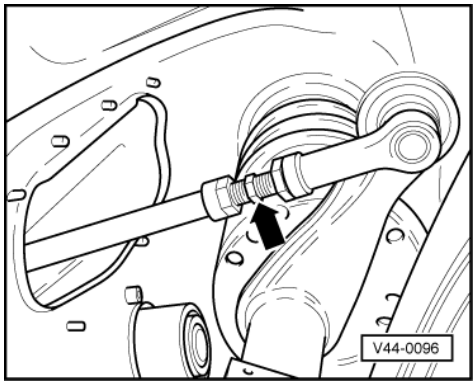
- Move steering box to centre position.
- -> Screw out bolt -A-
- Screw out bolt of spacer on chain



- -> Attach special tool to securing nut of right tie rod and fasten to steering box at hole marked -L- using the bolt previously screwed out of the spacer (two people required).
- Check whether steering wheel spoke is horizontal; if necessary turn and straighten up steering wheel.

Note:

The illustration shows the special tool -3075- with the steering box removed.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Halve specified value for total toe and set to this position at left and right tie rod.
- Secure tie rod.
- Remove special tool -3075-.
- Test drive vehicle
- Steering wheel spoke must be horizontal.

Note:

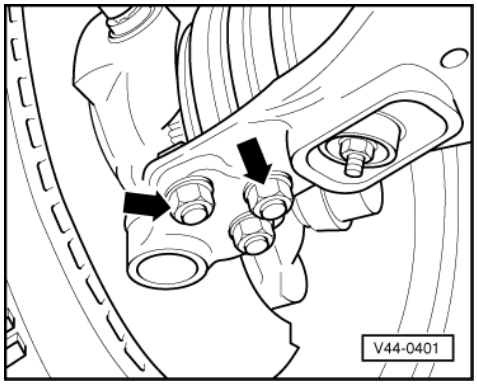
If steering wheel is slightly out of line after test drive this can be corrected by mutually adjusting the length of the two tie rods.

Example:

If steering wheel spoke drops slightly to the right lengthen right tie rod slightly and shorten left tie rod by the same amount.

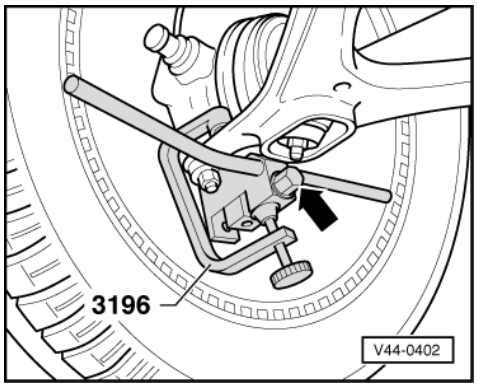
If necessary, check toe again.

2.6 - Setting camber at front axle

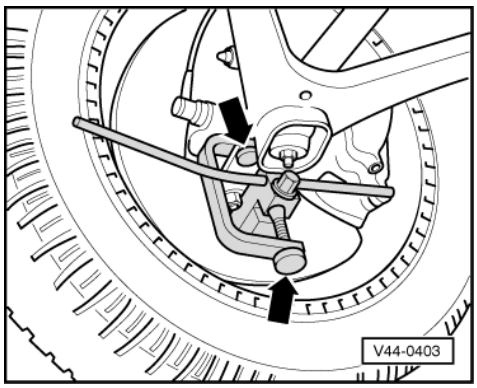


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

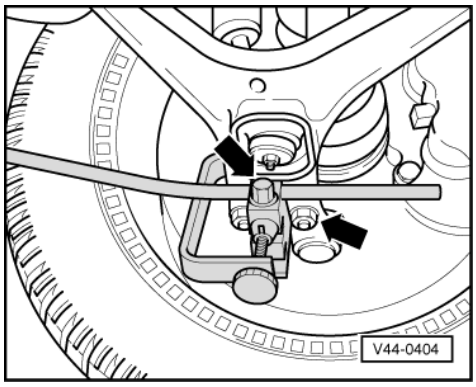
- -> Loosen front and centre securing nuts such that shim can just be moved after loosening the rear nut.



- -> Use hole in special tool to attach it to centre securing nut
- Turn spindle such that knurled pin of special tool engages in hole in lower ball joint and is thus supported by it.



- -> Then use retaining bracket to attach special tool to lower ball joint.
- Position tubular section of retaining bracket on head of centre threaded pin and establish contact between bracket and knurled screw.

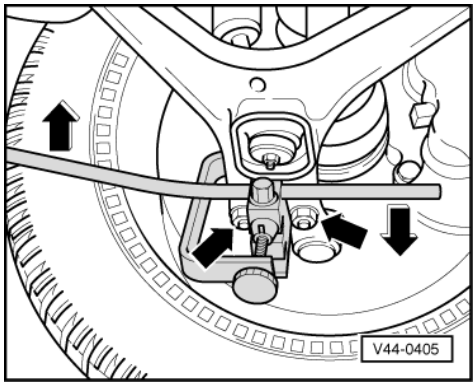


- -> Loosen rear nut until shim can just be moved.
- Turn spindle until desired camber angle is attained.

Note:

The front wheels must be standing on loose plates.

Should jamming of the lower ball joint in the wishbone become apparent on turning the spindle (no slight changes on the camber scale) use the lever to move the special tool vigorously to the left and right several times.



- -> Pull front of special tool lever vigorously inwards as far as it will go and press rear of lever vigorously outwards as far as stop.
- Tighten the two outer securing nuts in this position (two people required).
- Remove special tool
- Tighten centre securing nut
- Tighten all securing nuts
- Check, and if necessary, adjust toe

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

45 - Anti-locking brake system

1 - General repair information

1.1 - General repair information

ABS fault finding programme instructions

=> Fault finding binder; ABS

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

The ABS switch -E83- and the combi relay for ABS -J156- were discontinued as of model year 1993.

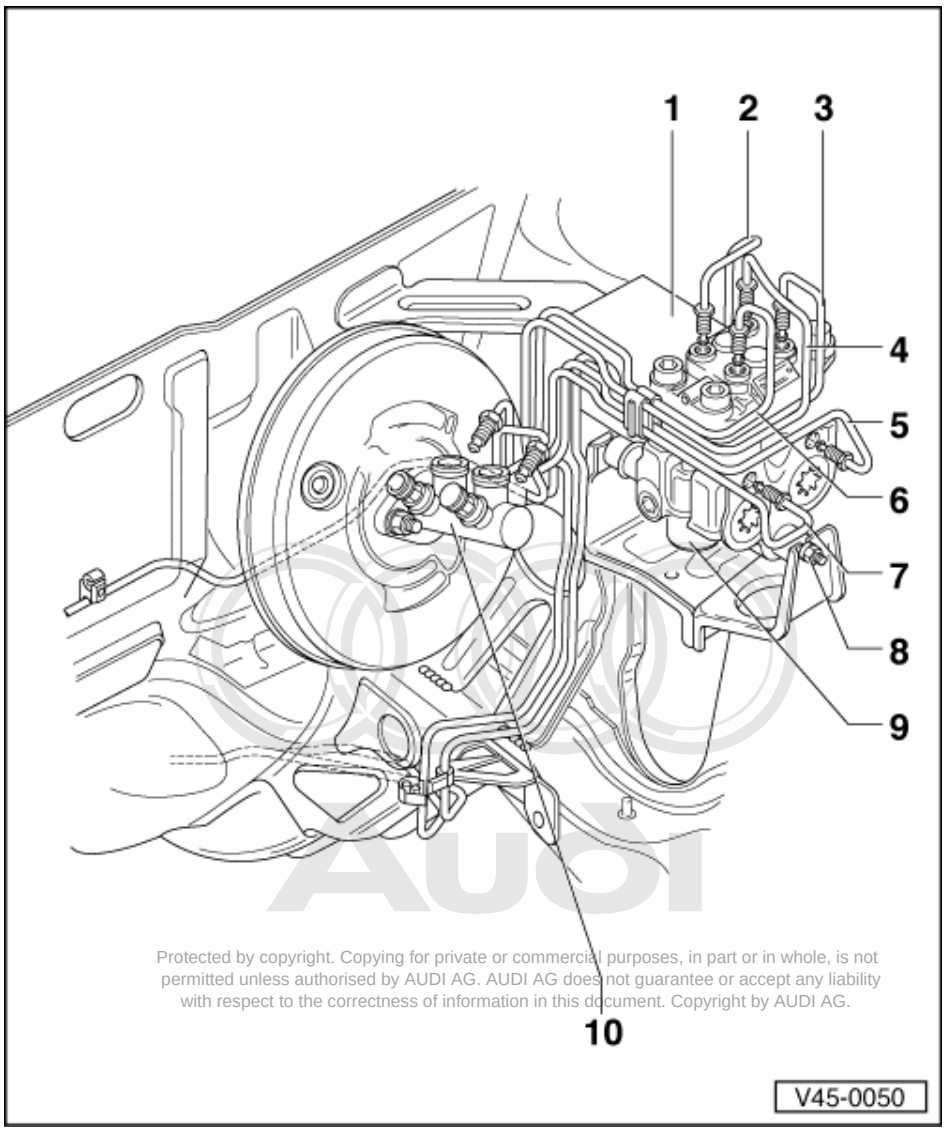
Warning!
The anti locking brake system is basically maintenance free. Work on such a system requires specialist knowledge. Failure to observe the points described in this Workshop Manual may result in damage to the system and could make the vehicle unsafe.

- Pull plug off electronic control unit before performing electrical welding
- The electronic control unit must not be exposed to temperatures in excess of 90oCwhen carrying outpainting work.
- If the battery has been removed the battery terminals must be properly retightened after reinstallation,
- Disconnect battery negative terminal before removing hydraulic unit.

- Never drive with the tester connected .
- Whenever work has been performed on the braking system which does not directly affect parts of the ABS it is sufficient to perform a simple functional check. In other words the Warning! lamp in the dash panel must not light on exceeding a vehicle speed of 6 km/h if the ABS is intact. Such work includes the replacement or renewal of brake linings, brake hoses, brake discs, brake master cylinders, brake cables and hand brake components.
- If work is performed on the hydraulic unit the electronic control unit, the wheel speed sensors and the wiring harness or if assemblies are replaced (for example brake lines after a vehicle has been involved in an accident) a check is to be performed on the entire ABS. Carry out the self- diagnosis described in Repair Group 01 and in particular the functional check which is part of electrical testing => Page 18 .
- In the course of a subsequent test drive make sure that ABS controlled braking is implemented at least once.

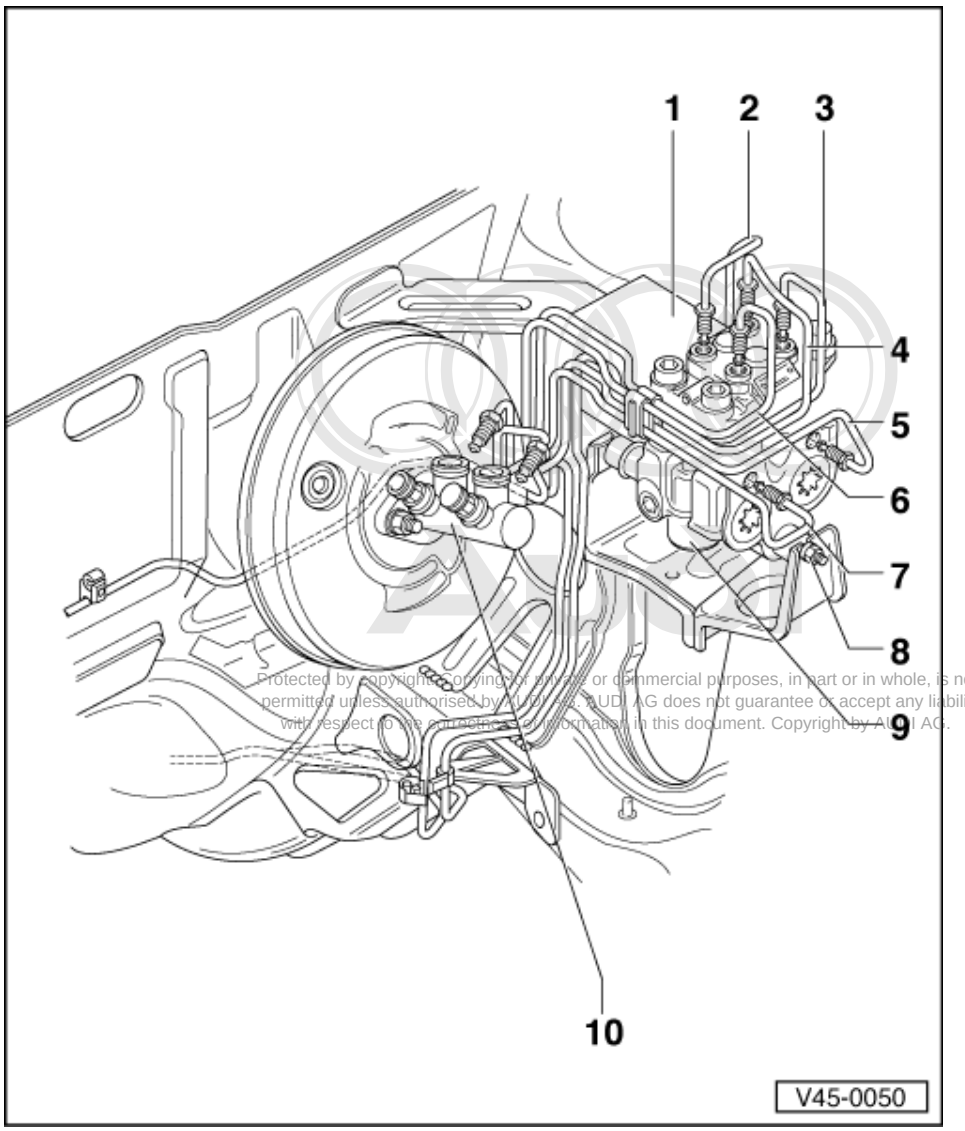
2 - Removing and installing hydraulic unit

2.1 - Removing and installing hydraulic unit



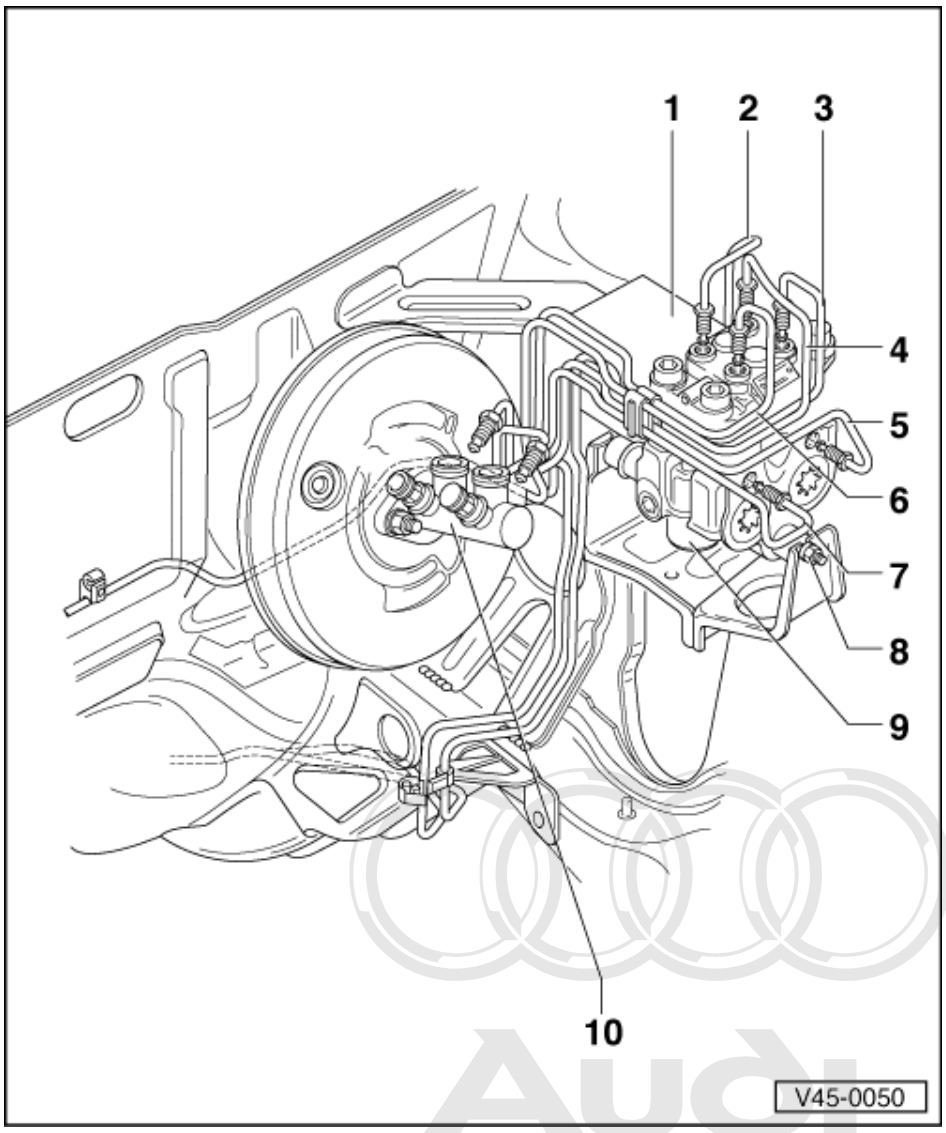
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Disconnect battery earthing strap.
- Unscrew coolant expansion tank and set it aside.
- Unscrew/remove brake lines
- Unscrew hydraulic unit from bracket



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Warning!
When removing and installing brake lines make sure that lines are marked/installed in accordance with designations on hydraulic unit. Where necessary only fit genuine brake lines (not lines sold by the metre). Seal the brake lines and connections immediately with dummy plugs. Brake line tightening torque 15 Nm. If the performance of work necessitates opening of the hydraulic system the braking system is to be bled using the brake filling and bleeding unit VW 1238-B. In addition, a high- and low pressure test should be carried out on the brake system => Page 131



Note:

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the accuracy of information in this document. Copyright by AUDI AG.

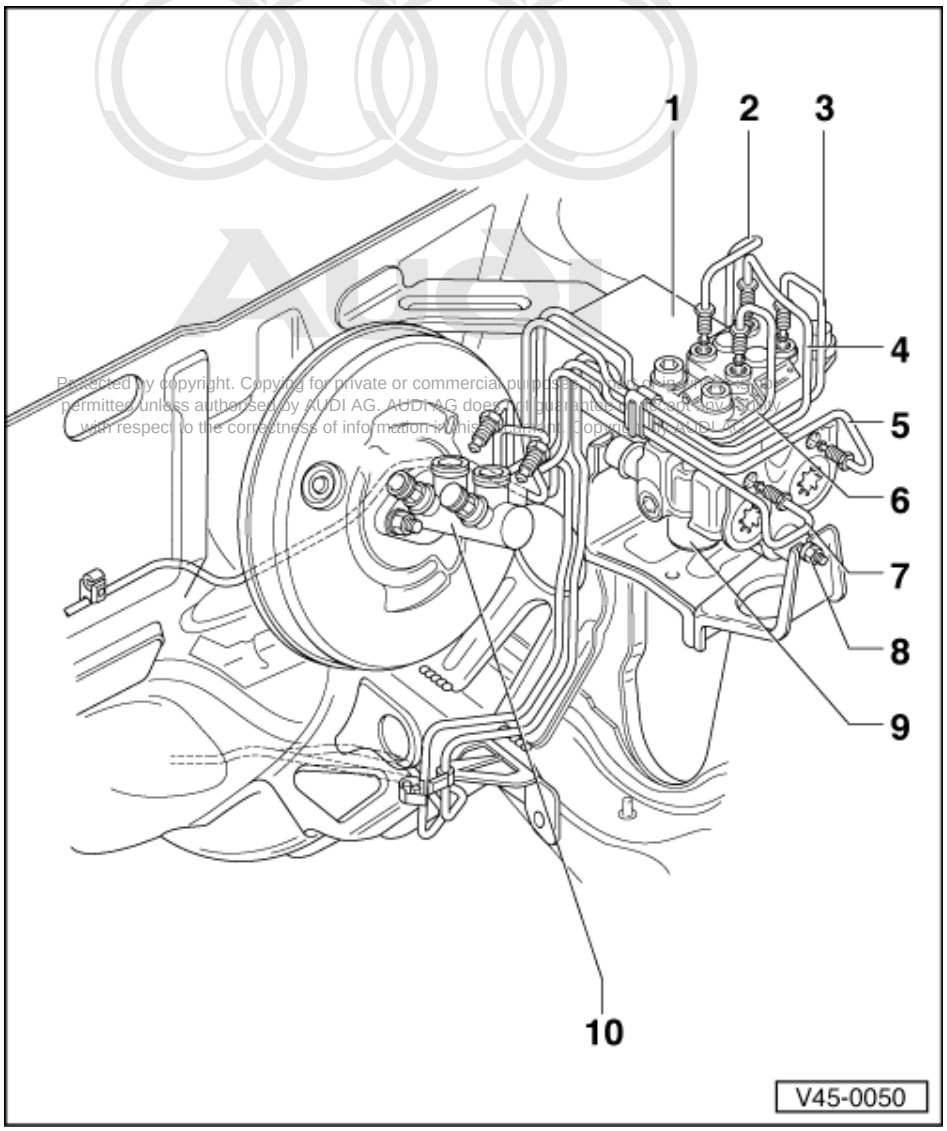
If no specially made brake lines are available they are to be produced appropriately from lines sold by the metre.

1 Cover

- Unscrew from hydraulic unit so as to provide access to relay for return flow pump and valve relay => Page 131 , Fig. 1

2 Brake pipe

- Hydraulic unit to front left brake caliper
- Marked "VL" on hydraulic unit



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 Brake pipe

- Hydraulic unit to rear left brake caliper
- Marked "HL" on hydraulic unit

4 Brake pipe

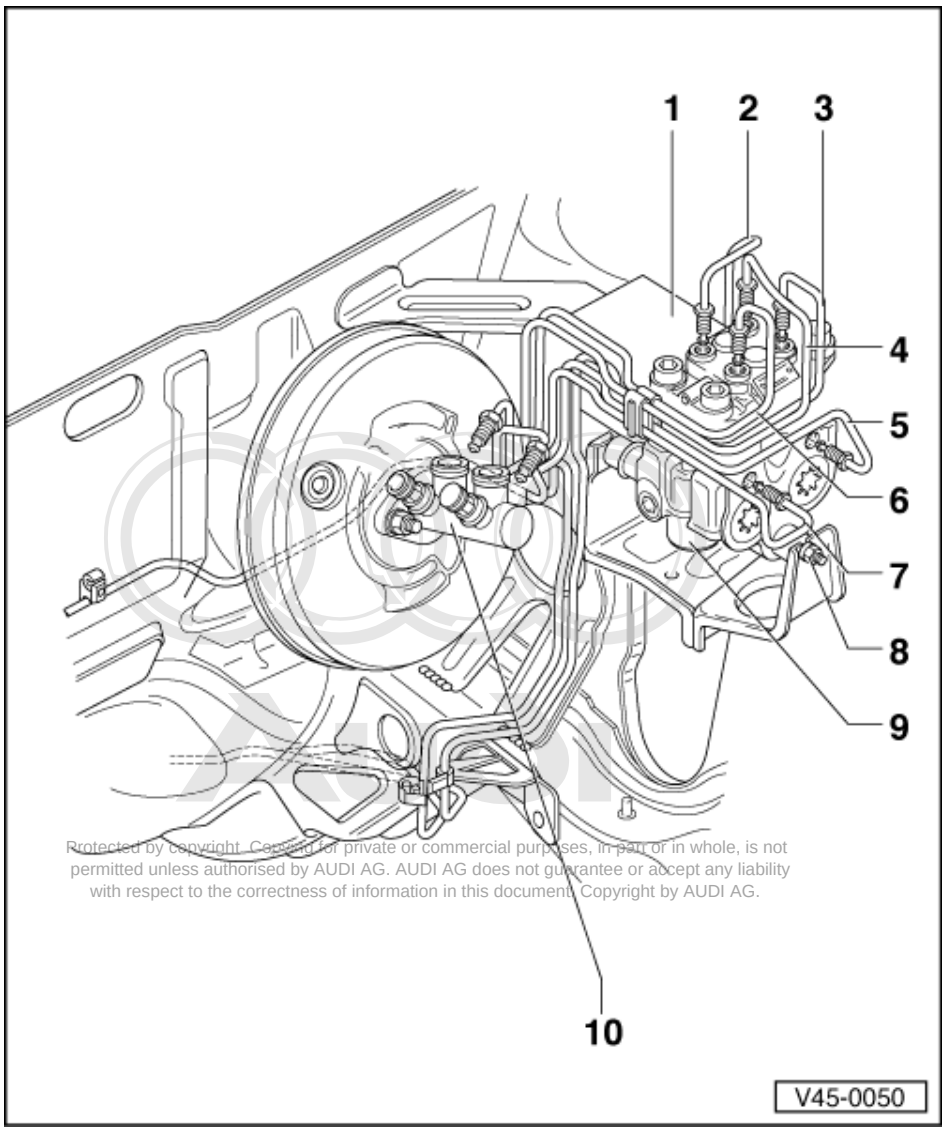
- Hydraulic unit to front right brake caliper
- Marked "VR" on hydraulic unit

5 Brake pipe

- Brake master cylinder/pushrod piston circuit - hydraulic unit

6 Brake pipe

- Hydraulic unit to rear right brake caliper
- Marked "HR" on hydraulic unit



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

7 Brake pipe

- Brake master cylinder/floating piston circuit to hydraulic unit

8 Hexagon nut, 10 Nm

- Insert hydraulic unit in bracket and secure

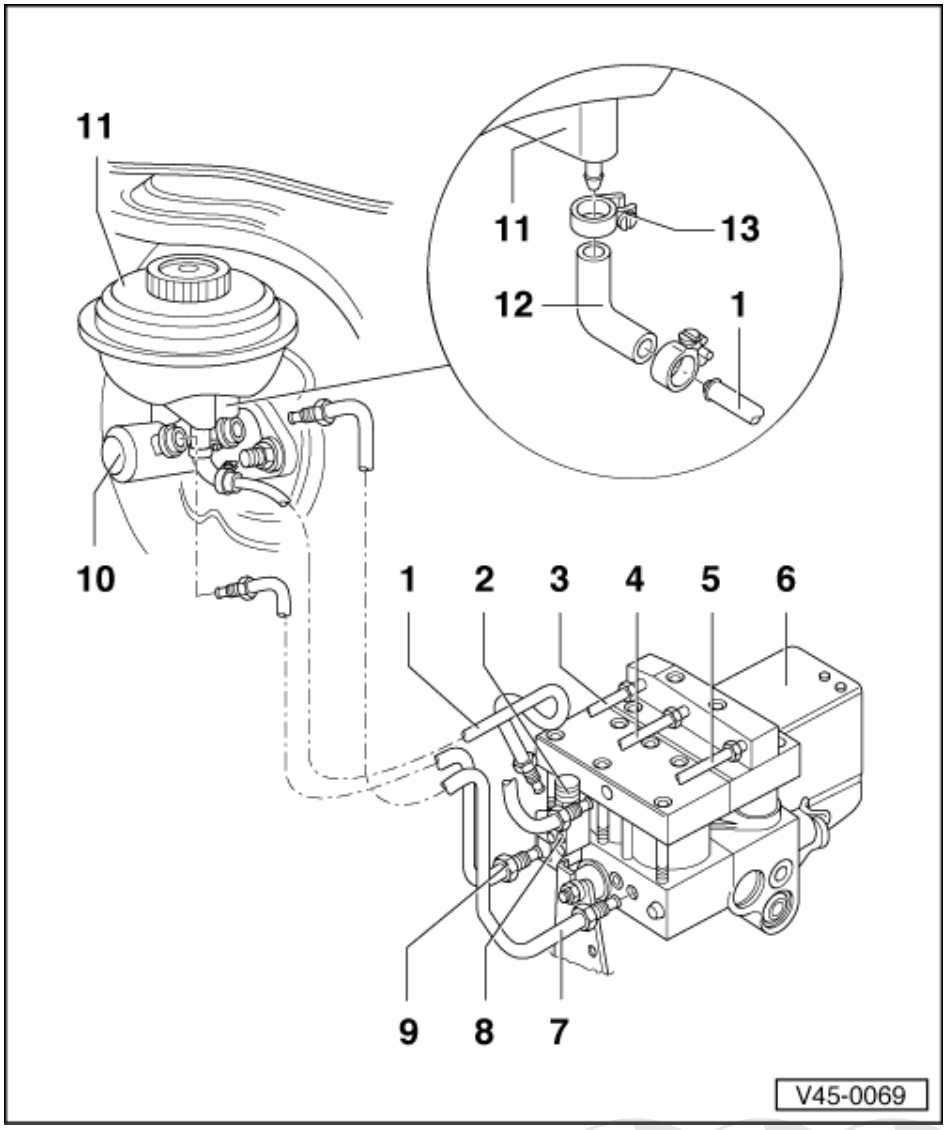
9 Hydraulic unit

Warning!

- **The hydraulic unit is not to be serviced in any way with the exception of pump and valve relay replacement. Never loosen screw connections.**
- **If necessary, replace hydraulic unit only as a complete assembly. Checking high and low pressure => Page 131**

10 Brake master cylinder with servo unit

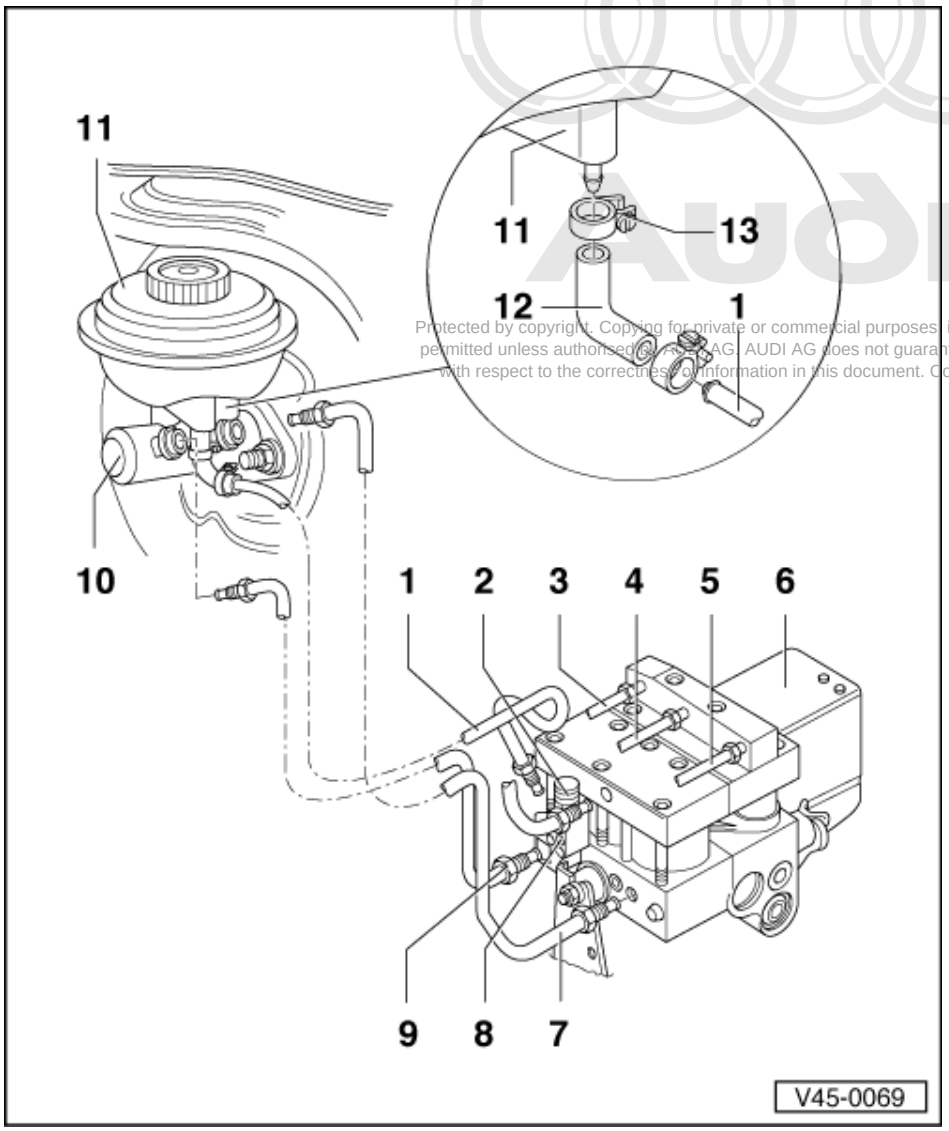
2.2 - Hydraulic line connections for vehicles with ABS/EDL



Warning!
When removing and installing brake lines make sure that lines are marked/installed in accordance with designations on hydraulic unit. Where necessary only fit genuine specially made brake lines indicated in parts list. Seal the brake lines and connections immediately with dummy plugs. Brake line tightening torque 15 Nm. If the performance of work necessitates opening of the hydraulic system the braking system is to be bled using the brake filling and bleeding unit VW 1238-B. Removal of the hydraulic unit involves disconnecting the battery earth strap.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Note:

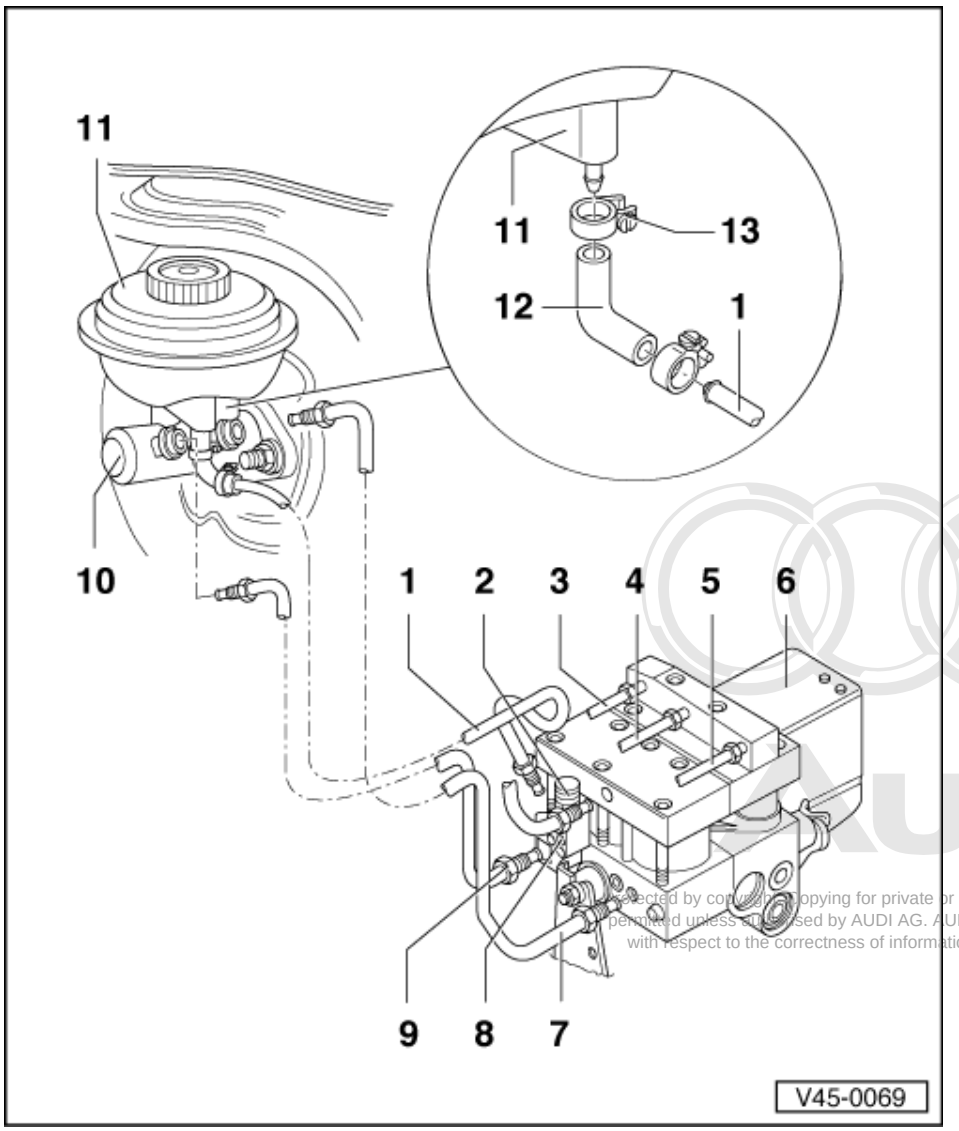
If no specially made brake lines are available they are to be produced appropriately from lines sold by the metre.

1 Suction pipe
- Hydraulic unit - brake fluid reservoir

2 Bleeder screw
- Open to bleed intake line

3 Brake pipe
- Hydraulic unit to front left brake caliper
- Marked "VL" on hydraulic unit

4 Brake pipe
- Hydraulic unit to rear right brake caliper
- Marked "HR" on hydraulic unit



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

5 Brake pipe

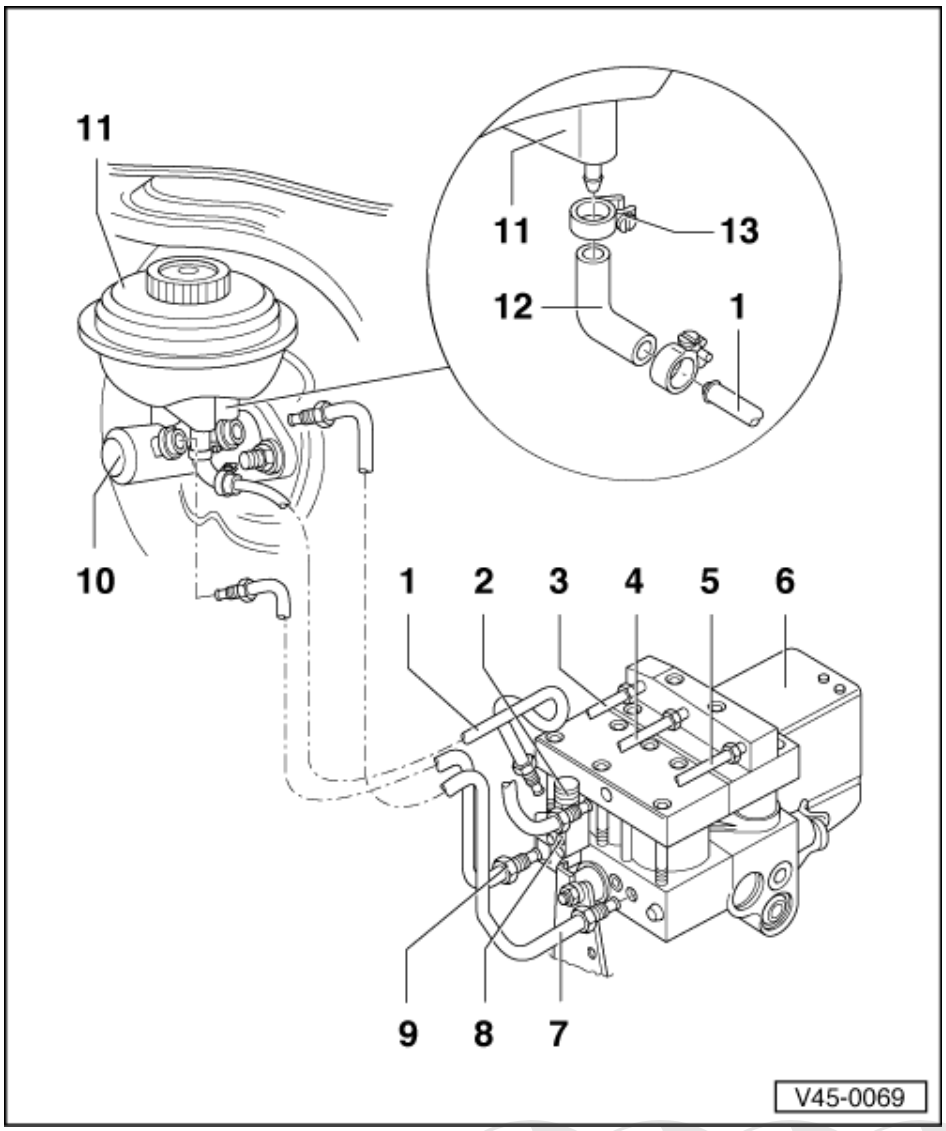
- Hydraulic unit to front right brake caliper
- Marked "VR" on hydraulic unit

6 Hydraulic unit

- Unscrew cover from hydraulic unit so as to provide access to relay for solenoid valve => Page 1 , Fig. 1

Warning!

- **No repair work may be carried out on the hydraulic unit, with the exception of replacing both relays. Never loosen screw connections.**
- **If necessary, replace hydraulic unit only as a complete assembly. Checking high and low pressure => Page 131**



7 Brake pipe

- Brake master cylinder/pushrod piston circuit - hydraulic unit

8 Brake pipe

- Hydraulic unit to rear left brake caliper
- Marked "HL" on hydraulic unit

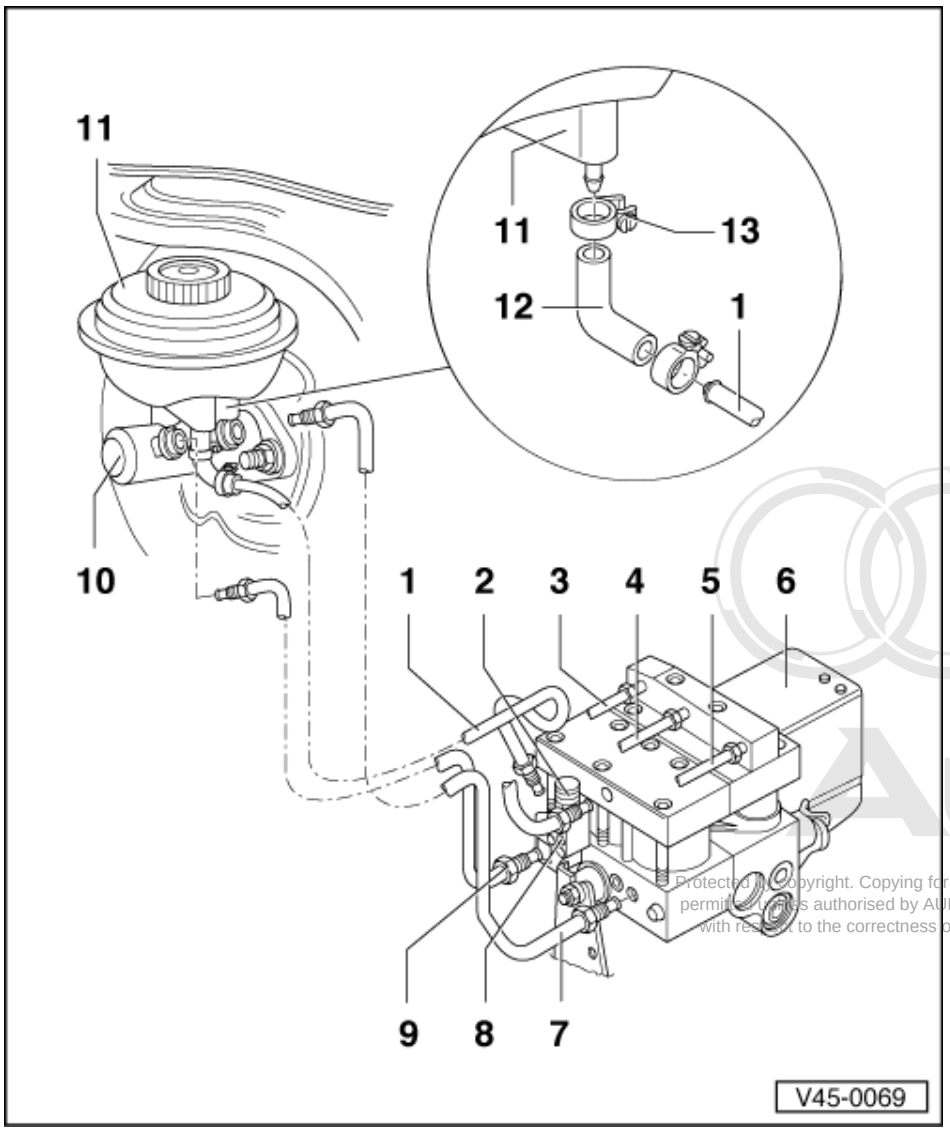
9 Brake pipe

- Brake master cylinder/floating piston circuit to hydraulic unit

10 Brake master cylinder, ø23.81 mm

- If necessary, replace as a complete assembly

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



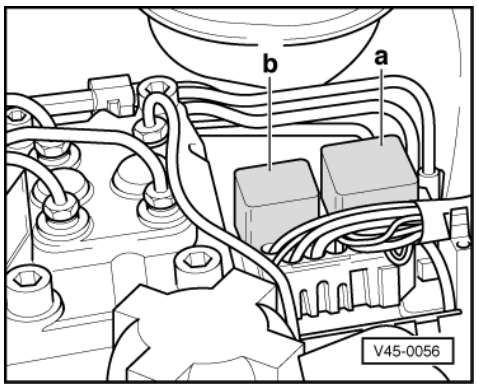
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

11 Brake fluid reservoir with float Warning! indicator

- Top up brake fluid as far as "max." mark
- Connections for hydraulic coupling and EDL intake line are on side
- Refer to label on reservoir before topping up brake fluid
- Brake fluid: Total quantity approx. 0.6 l in braking system

12 Angle hose

13 Hose clip



-> Fig.1 Relay locations
a = Relay for return pump
b = Valve relay

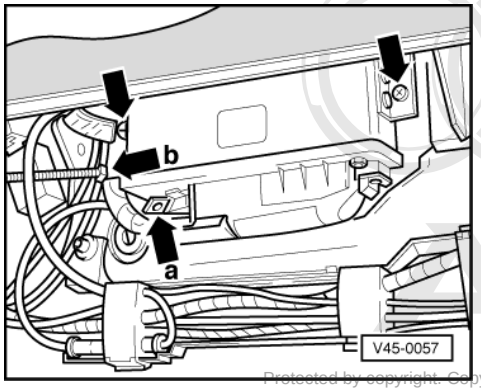
2.3 - High- and low pressure test

Test requirements:
- Conventional braking system (brake master cylinder, brake hoses, brake lines and brake calipers) are OK.

Remove bleeder screw at one of the front brake calipers. Connect pressure gauge -VW 1310- and bleed.
Insert brake pedal depressor between brake pedal and driver's seat. Apply pressure to brake pedal until the gauge indicates a pressure of 50 bar. The pressure must not drop by more than 4 barduring the test duration of 45 minutes. Replace hydraulic unit if drop in pressure exceeds the above figure.
Adjust brake pedal depressor until pressure gauge indicates a line pressure of 6 bar. The decrease in pressure during the test period of3 minutesmust not exceed1 bar. Replace hydraulic unit if drop in pressure exceeds the above figure.

3 - Removing and installing parts of electronic control system

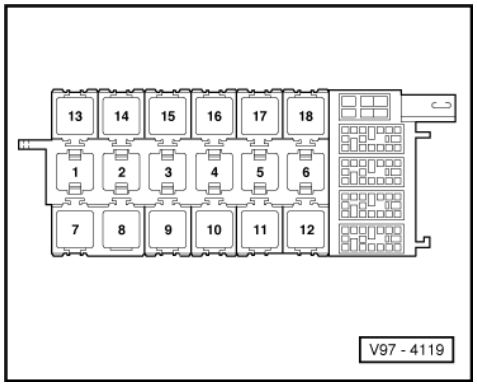
3.1 - Removing and installing parts of electronic control system



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not
allowed without written permission from AUDI AG. AUDI AG does not guarantee or accept any liability
with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.1 Removing and installing electronic control unit
Location:
On left below rear seat
Notes:
- Switch off ignition for removal and installation.
- Prior to removal on vehicles as of model year 1993 interrogate fault memory with fault reader -V.A.G 1551-.

- Cut off tie band -b-. Always reattach new tie band after installing control unit.
- Remove connector from control unit by pressing spring -a-. Screw out both fastening screws.



-> Fig.2 Removing and installing combi relay

Location:

Front left, beneath instrument panel in auxiliary relay plate

=> Current Flow Diagrams, Electrical Fault Finding; Fitting Locations

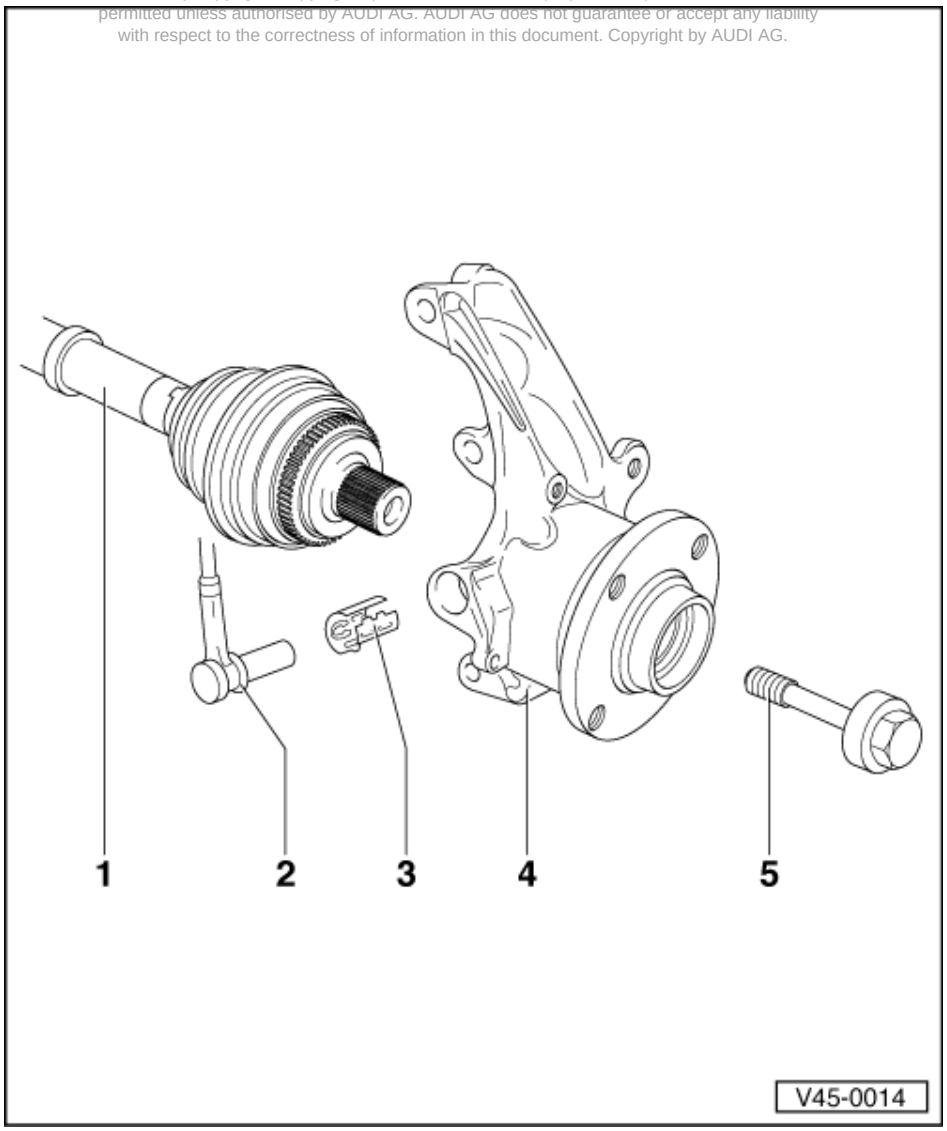
Note:

Switch off ignition for removal and installation. Not applicable as of model year 1993.

4 - Removing and installing components of ABS system

4.1 - Removing and installing components of ABS system

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



4.2 - Front axle

1 Drive shaft with rotor

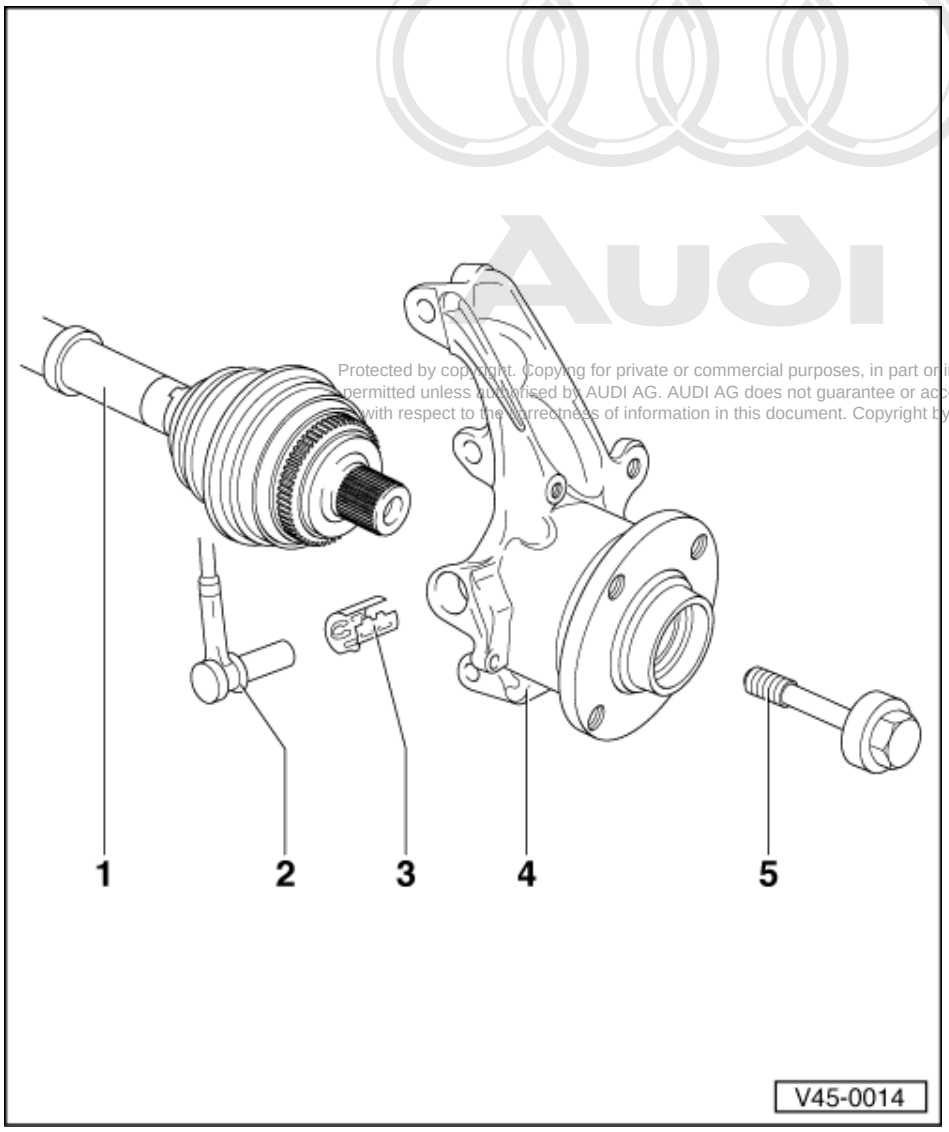
- Outer CV joint is supplied as replacement part with rotor

- Pull wheel speed sensor back slightly before removing
- After installation press home sensor by hand

2 Speed sensor

- Identical part on left and right
- To remove pull out of wheel bearing housing
- After installation press home sensor by hand
- Detaching connector for sensor, front left =>Fig. 1 , front right => Fig. 2
- Wiring => Fig. 3 and 4

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



3 Clamping sleeve

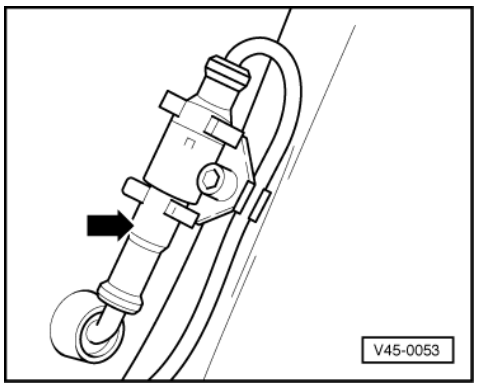
- Always replace
- Identical part on left and right
- Grease all round with brake cylinder paste before inserting in wheel bearing housing
- Press home in wheel bearing housing.

4 Wheel bearing housing

- Supplied as spare part with hole for accommodating clamping sleeve/wheel speed sensor

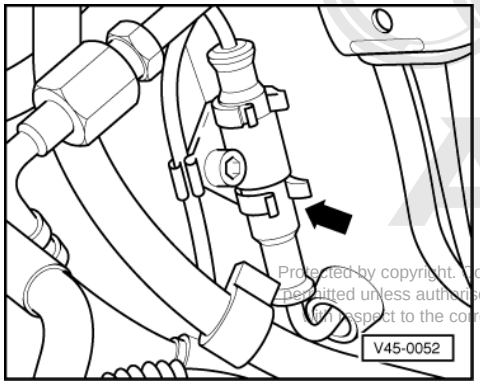
5 Hexagon bolt with washer/flange bolt

- Always replace
- Tighten M16 x 1.5 to 200 Nm and then turn a further 90o
- Tighten M14 x 1.5 to 120 Nm and then turn a further 90o
- Vehicle must be standing on its wheels for loosening and tightening (risk of accident).



-> Fig.1 Connector for front left wheel speed sensor

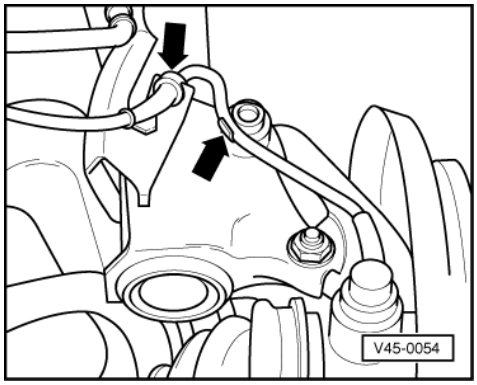
- Unscrew coolant system expansion reservoir and lay to one side.
- Disengage connector from holder and then detach



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

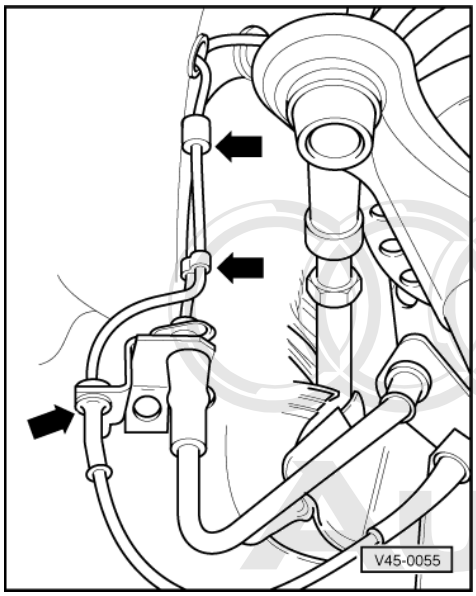
-> Fig.2 Connector for front right wheel speed sensor

- Disengage connector from holder and then detach



-> Fig.3 Wiring for wheel speed sensor at strut

- Insert lead with rubber grommet in retaining bracket at strut
- Clip lead into holder

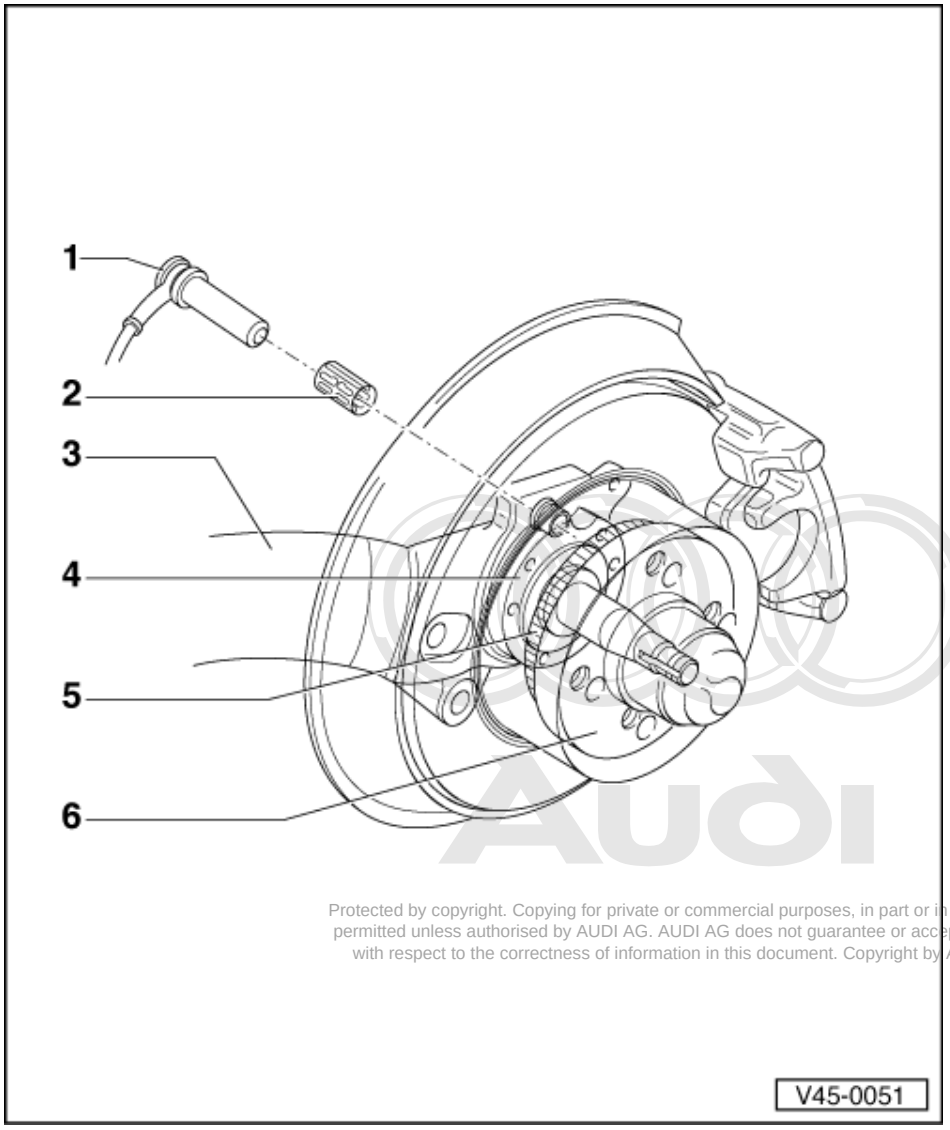


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.4 Wiring for wheel speed sensor at wheel housing

- Insert lead with rubber grommet in retaining bracket at strut
- Clip lead into holders along brake line

4.3 - Rear axle



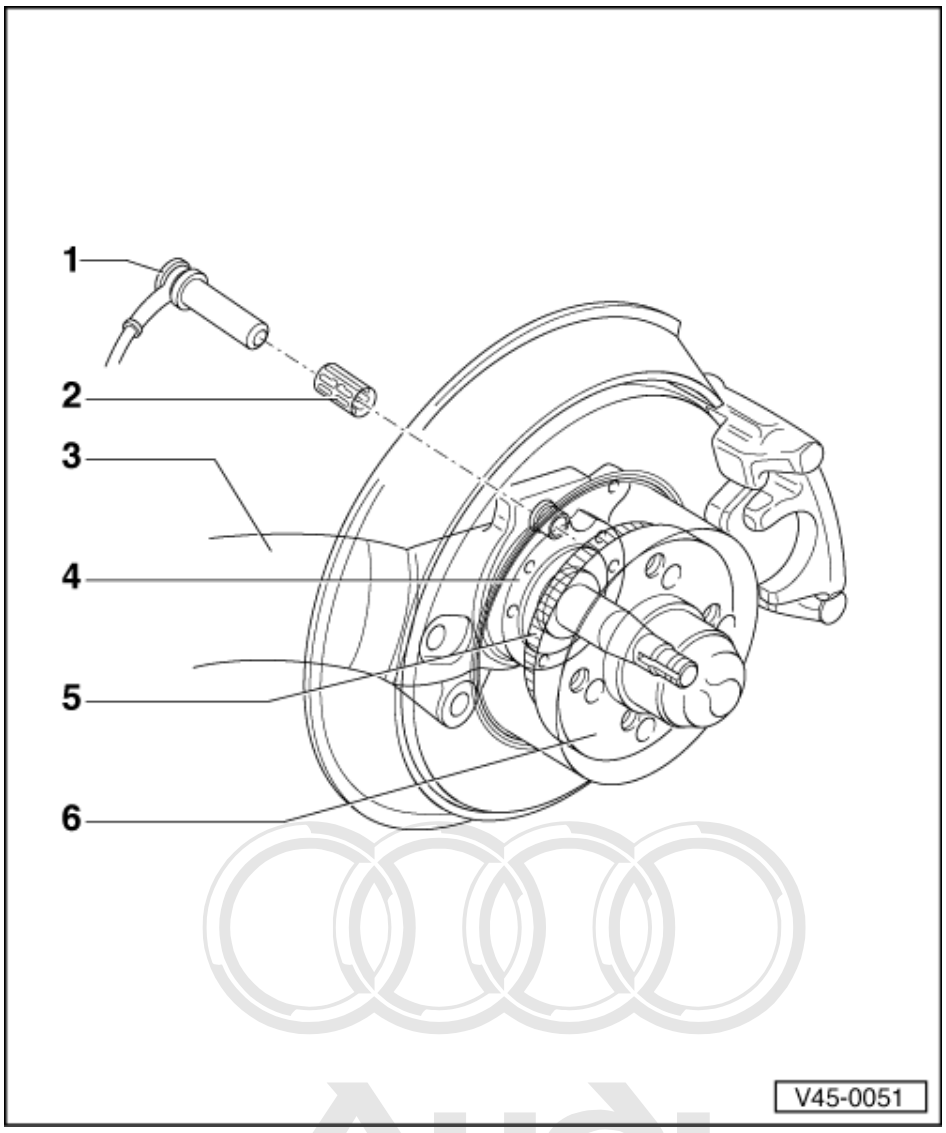
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 Speed sensor

- Identical part on left and right
- To remove pull out of axle beam
- After installation press home sensor by hand
- Check and, if necessary, adjust wheel bearing clearance before installing
- Wiring =>Fig. 1

2 Clamping sleeve

- Always replace
- Identical part on left and right
- Grease all round with brake cylinder paste before inserting in wheel bearing housing
- Press home in axle beam



3 Axle beam

- Provided with sockets for wheel speed sensors
- Grease hole all round with brake cylinder paste before inserting clamping sleeve -2-

4 Stub axle

- Removing and installing => Page 79

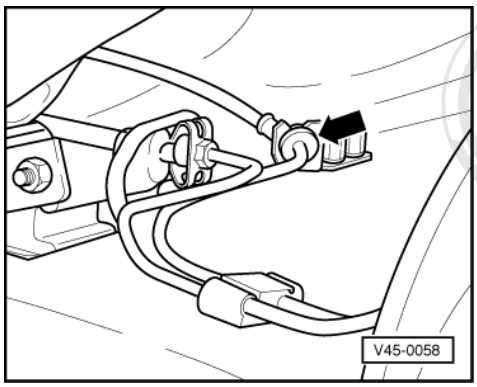
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

5 Rotor

- Drive out evenly with mandrel through tapped holes in wheel hub
- Pressing on =>Page 80

6 Wheel hub

- Removing and installing => Page 80



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.1 Wiring for wheel speed sensors

- Insert lead with rubber grommets in holders provided at rear axle and on floor group
- Then carefully insert lead with rubber grommet into floor group

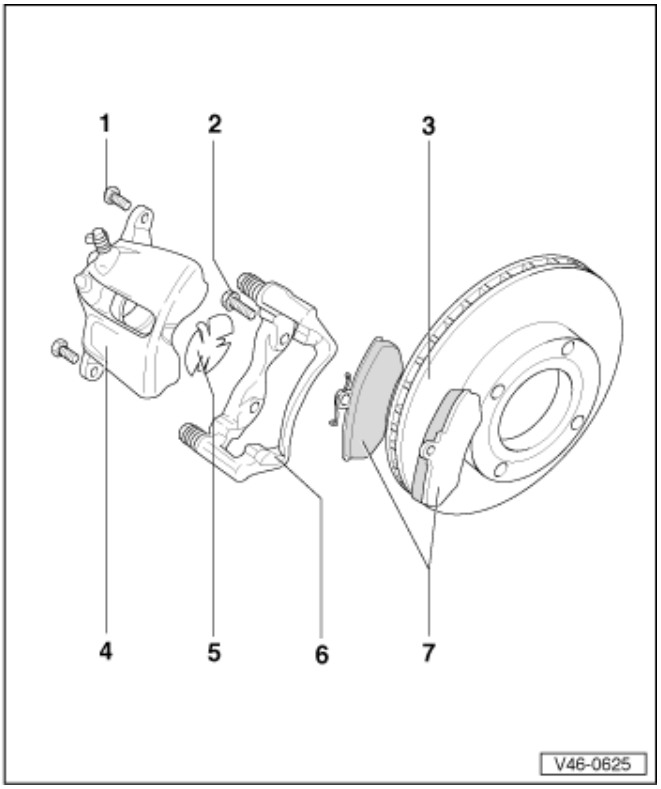
Note:

The two connectors for the rear wheel speed sensors are beneath the bench seat.

46 - Brakes, Brake mechanics

1 - Servicing front wheel brake, Girling

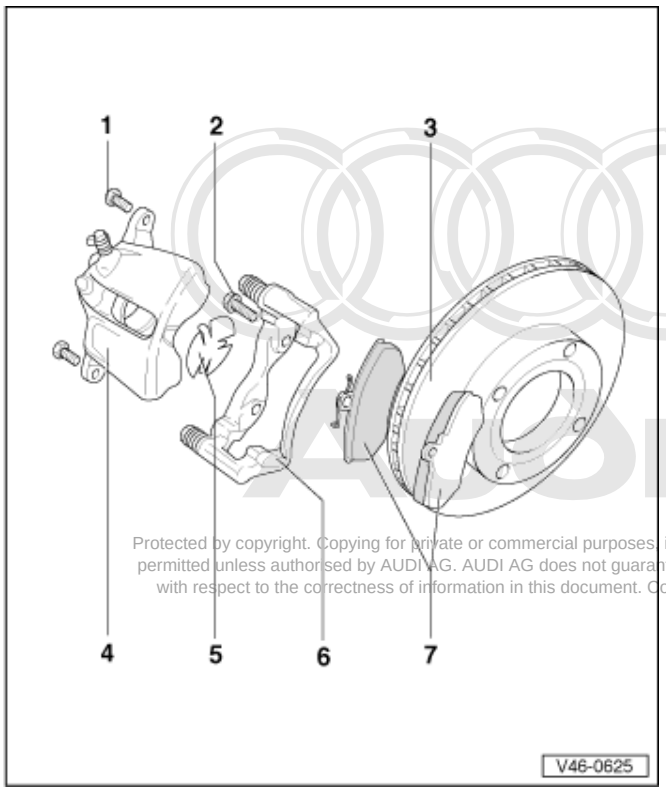
1.1 - Servicing front wheel brake, Girling



Notes:

- Always install the complete repair kit.
- Brakes can be checked on all commercially available brake test stands, provided that the driving speed of the two driving rollers of the test stand does not exceed 5.5 km/h.
- Brake linings for vehicles with ventilated and non-ventilated brake discs have the same dimensions. The brake calipers, however, are different.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 Self-locking bolt, 35 Nm

- Always replace
- When loosening and tightening counter hold on guide pin

2 Ribbed bolt, 125 Nm

- Clean ribbing if re-using

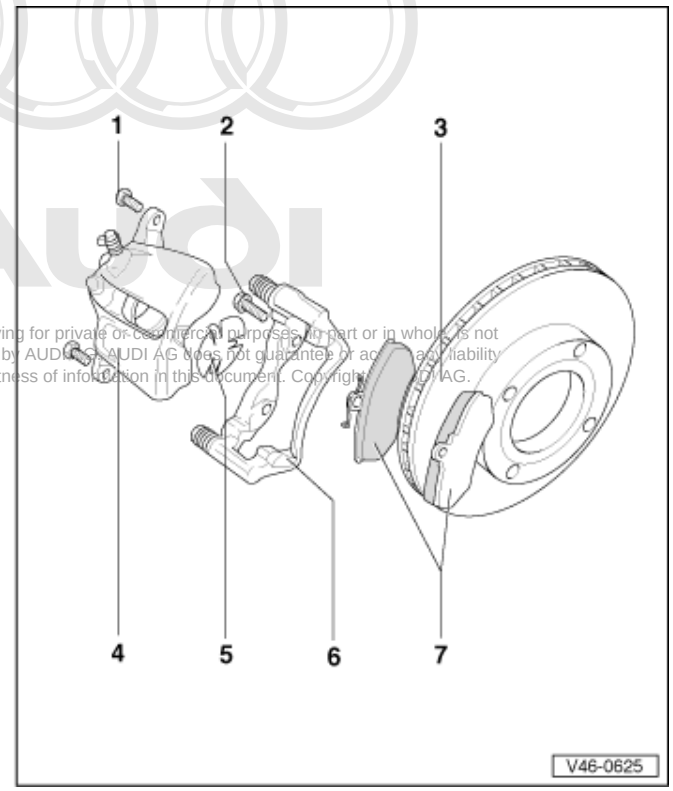
3 Brake disc

- Replace on axle basis, to remove unscrew brake caliper beforehand
- Always dress evenly, on both sides, starting from thickness when new
- Ensure adequate wear reserve
- Brake disc diameter 256 mm

Note:

As of model year 1993 brake disc diameter 280 mm

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



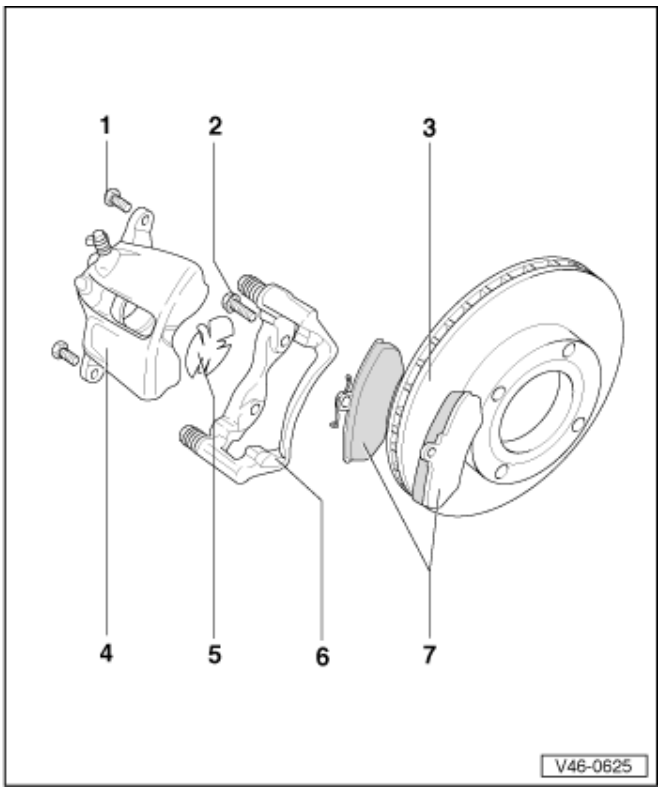
- Brake disc thickness:
- Ventilated brake disc 22 mm
- Non-ventilated brake disc 13 mm
- Wear limit:
- Ventilated brake disc 20 mm
- Non-ventilated brake disc 11 mm

4 Brake caliper housing

- Do not disconnect brake hose when changing brake pads

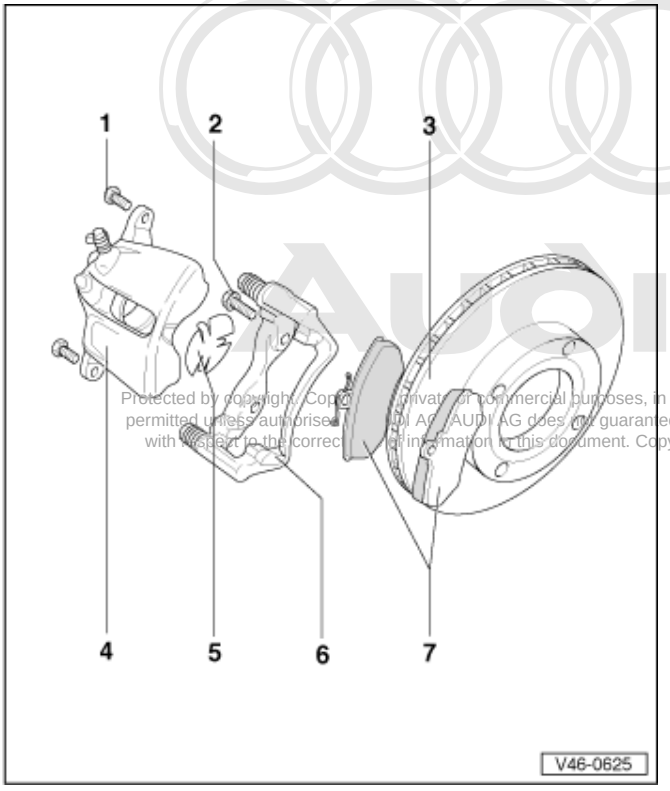
5 Heat shield

- Insert into piston



6 Brake carrier with guide pin and protective cap

- Supplied as replacement part, assembled with sufficient grease on guide pins
- If protective caps are damaged use repair kit
- Use grease sachet supplied to lubricate guide pins
- Note different versions in relation to respective brake disc diameter



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

7 Brake pads

- Replace on axle basis => Page 143
- Brake lining thickness when new 14 mm

- Check brake lining wear limit 2 mm
- Checking brake lining thickness => Page 143
- If the pad thickness is down to 7 mm (including backing plate), the brake pads have reached the wear limit and must be replaced.

1.2 - Checking brake lining thickness

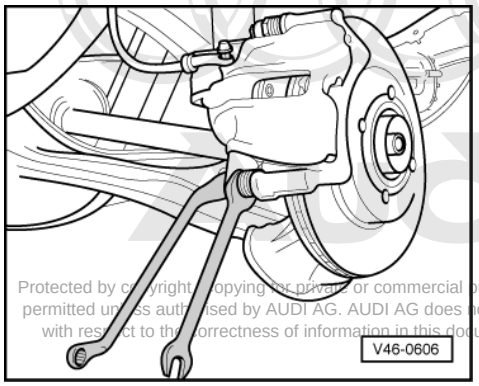
- Visually inspect thickness of outer brake linings (with torch) through penetration in disc wheel.
- If the pad thickness is down to 7 mm (including backing plate), the brake pads have reached the wear limit and must be replaced.

1.3 - Replacing brake linings (Girling)

Note:

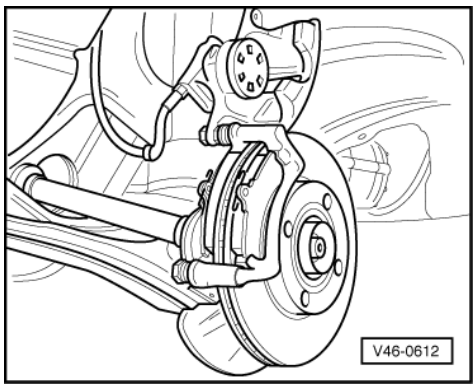
Mark brake pads to be reused on removal. Reinstall in their original position to prevent uneven braking!

- Remove wheels.

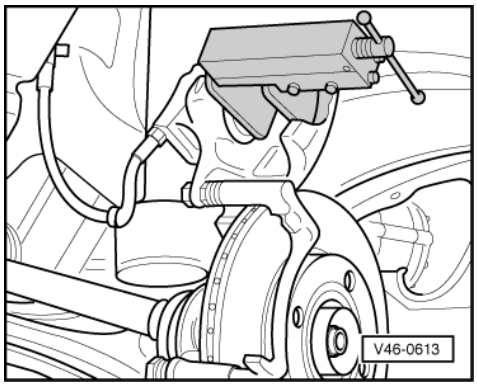


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Screw out lower securing bolt for brake caliper. Counterhold at guide pin.



- -> Swivel brake caliper housing up and take out brake pads.



- -> Press piston back into brake caliper housing.

Note:

Before pressing back pistons drain off some of the brake fluid from the reservoir. Otherwise brake fluid which was used to top up the brake fluid reservoir may run out and cause damage. Use a bleeder bottle or a plastic bottle, which is only used for brake fluid.

Warning!
Brake fluid is poisonous and must on no account be siphoned orally through a hose.

- Insert brake linings
- Swivel brake caliper housing down and tighten bolts to 35 Nm.
- Fit wheels.

Note:

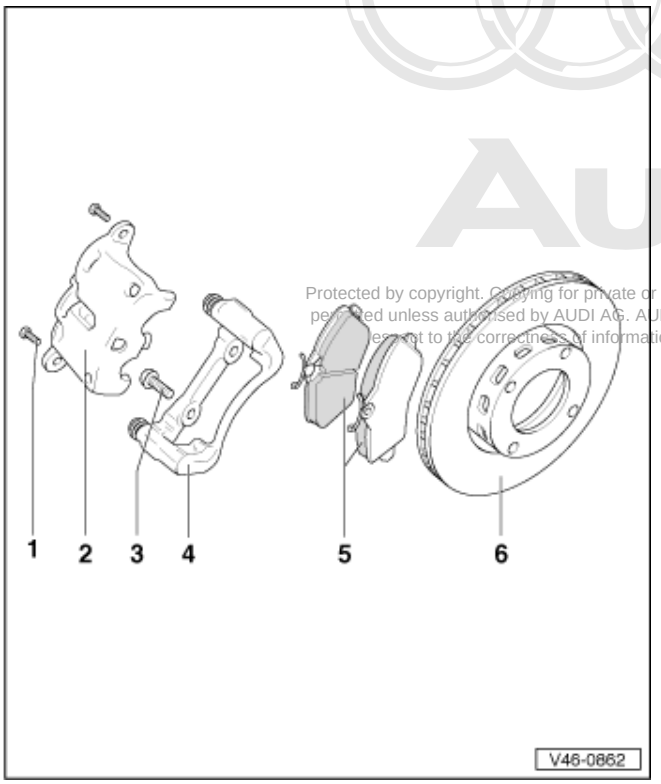
- The repair kit includes two self-locking hexagon bolts which must be installed in all cases.
- Firmly depress brake pedal several times after each change of brake pads, so that the brake pads are properly seated in their normal operating position.

- Check brake fluid level and top up, if necessary.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2 - Servicing front wheel brake, dual piston

2.1 - Servicing front wheel brake, dual piston



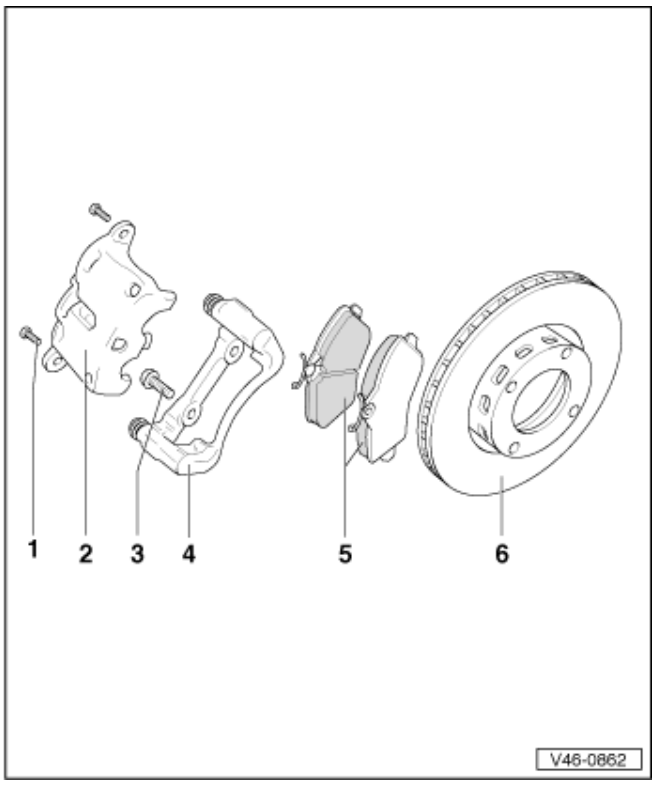
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Notes:

- Always install the complete repair kit.
- Brakes can be checked on all commercially available brake test stands, provided that the driving speed of the two driving rollers of the test stand does not exceed 5.5 km/h.

1 Self-locking bolt, 35 Nm

- Always replace
- When loosening and tightening counter hold on guide pin



2 Brake caliper housing

- Do not disconnect brake hose when changing brake pads

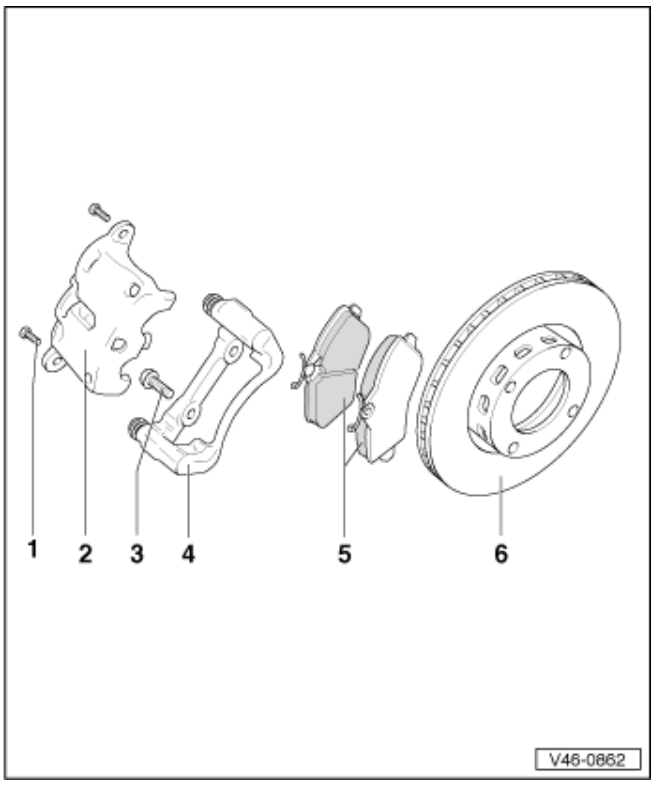
3 Ribbed bolt, 125 Nm

- Clean ribbing if reusing

4 Brake carrier with guide pin and protective cap

- Supplied as replacement part, assembled with sufficient grease on guide pins
- If protective caps are damaged use repair kit
- Use grease sachet supplied to lubricate guide pins

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



5 Brake pads

- Replace on axle basis => Page 147
- Brake lining thickness when new 13 mm
- Check brake lining wear limit 2 mm
- Checking brake lining thickness => Page 147
- If the pad thickness is down to 7 mm (including backing plate), the brake pads have reached the wear limit and must be replaced.

6 Brake disc

- Replace on axle basis, to remove unscrew brake caliper beforehand
- Always dress evenly, on both sides, starting from thickness when new
- Ensure adequate wear reserve
- Brake disc diameter 276 mm
- Brake disc thickness: 25 mm
- Wear limit: 23 mm

2.2 - Checking brake lining thickness

- Visually inspect thickness of outer brake linings (with torch) through penetration in disc wheel.
- If the pad thickness is down to 7 mm (including backing plate), the brake pads have reached the wear limit and must be replaced.

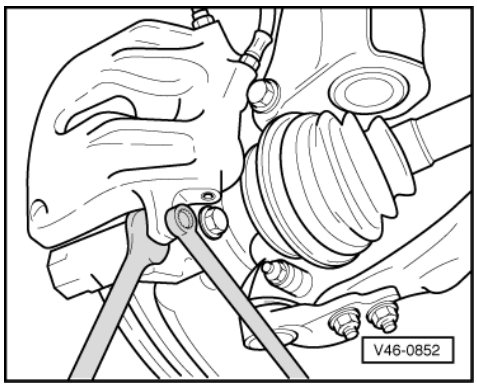
2.3 - Replacing brake linings (dual piston)

Note:

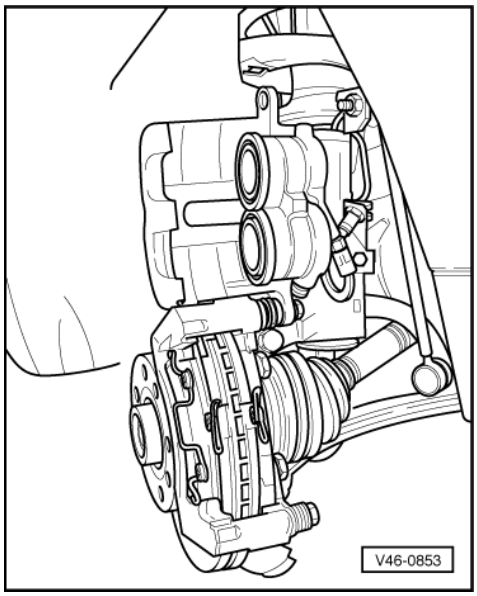
Mark brake pads to be re-used on removal. Reinstall in their original position to prevent uneven braking!

- Remove wheels.

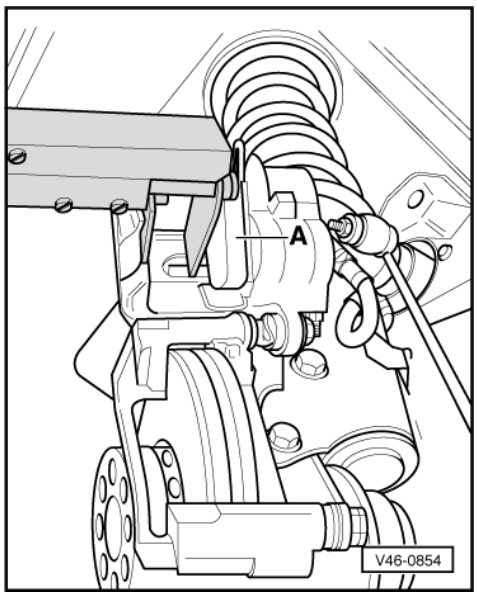
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Screw out lower securing bolt for brake caliper. Counterhold at guide pin.



- -> Swivel brake caliper housing up and take out brake pads.



- -> Press piston back into brake caliper housing.
- A = old, removed brake lining

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

Before pressing back pistons drain off some of the brake fluid from the reservoir. Otherwise brake fluid which was used to top up the brake fluid reservoir may run out and cause damage. Use a bleeder bottle or a plastic bottle, which is only used for brake fluid.

Warning!
Brake fluid is poisonous and must on no account be siphoned orally through a hose.

- Insert brake linings
- Swivel brake caliper housing down and tighten bolts to 35 Nm.
- Fit wheels.

Notes:

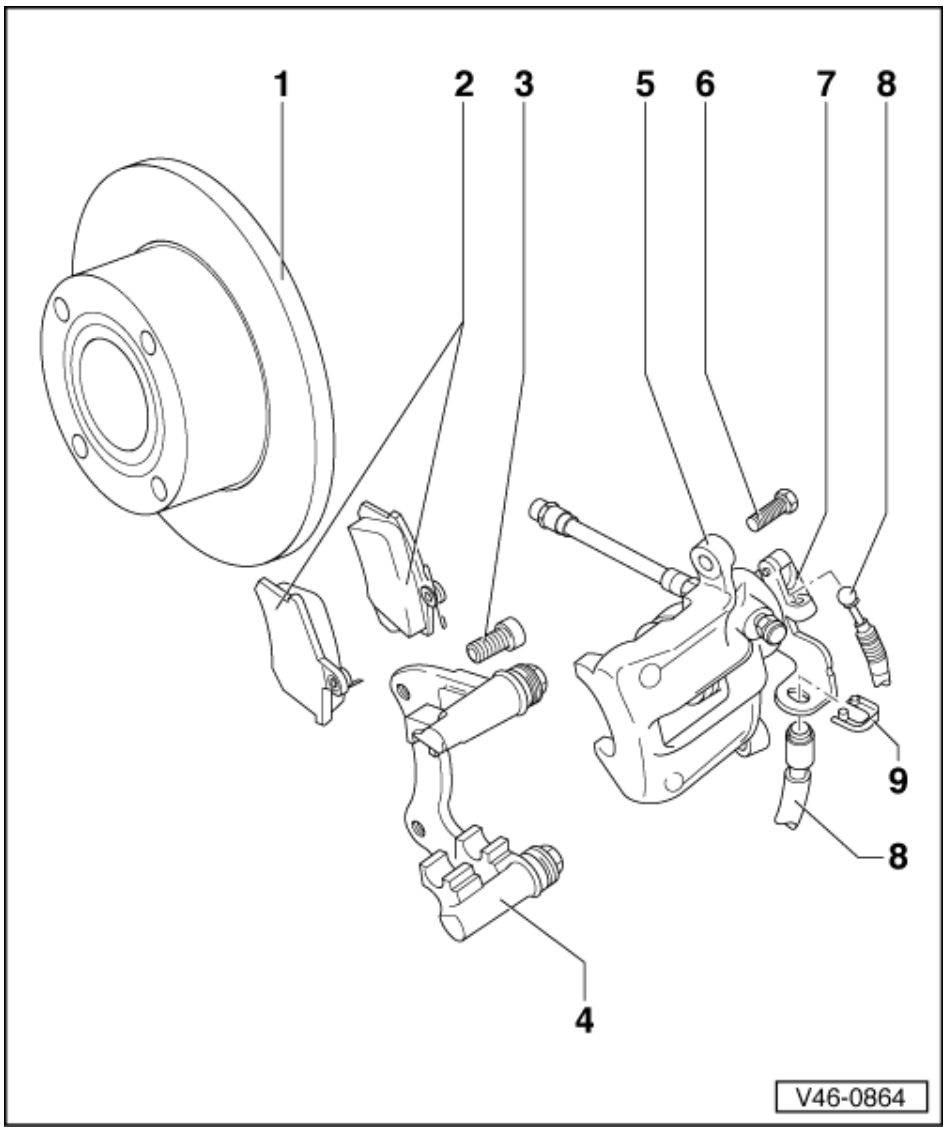
- The repair kit includes two self-locking hexagon bolts which must be installed in all cases.
- Firmly depress brake pedal several times after each change of brake pads, so that the brake pads are properly seated in their normal operating position.

- Check brake fluid level and top up, if necessary.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 - Servicing rear wheel brake, disc brake

3.1 - Servicing rear wheel brake, disc brake

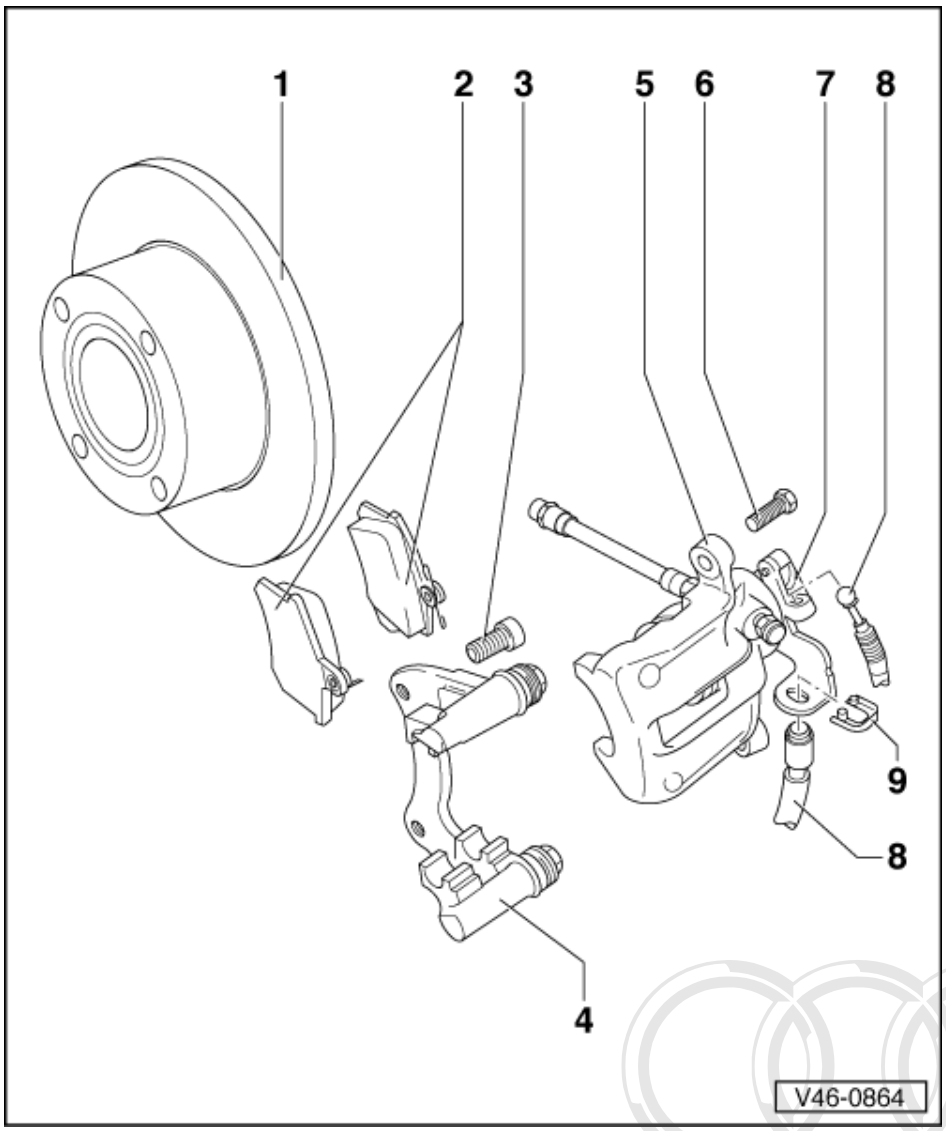


Rear brakes with automatic adjustment

Notes:

- Always install the complete repair kit.
- Brakes can be checked on all commercially available brake test stands, provided that the driving speed of the two driving rollers of the test stand does not exceed 5.5 km/h.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



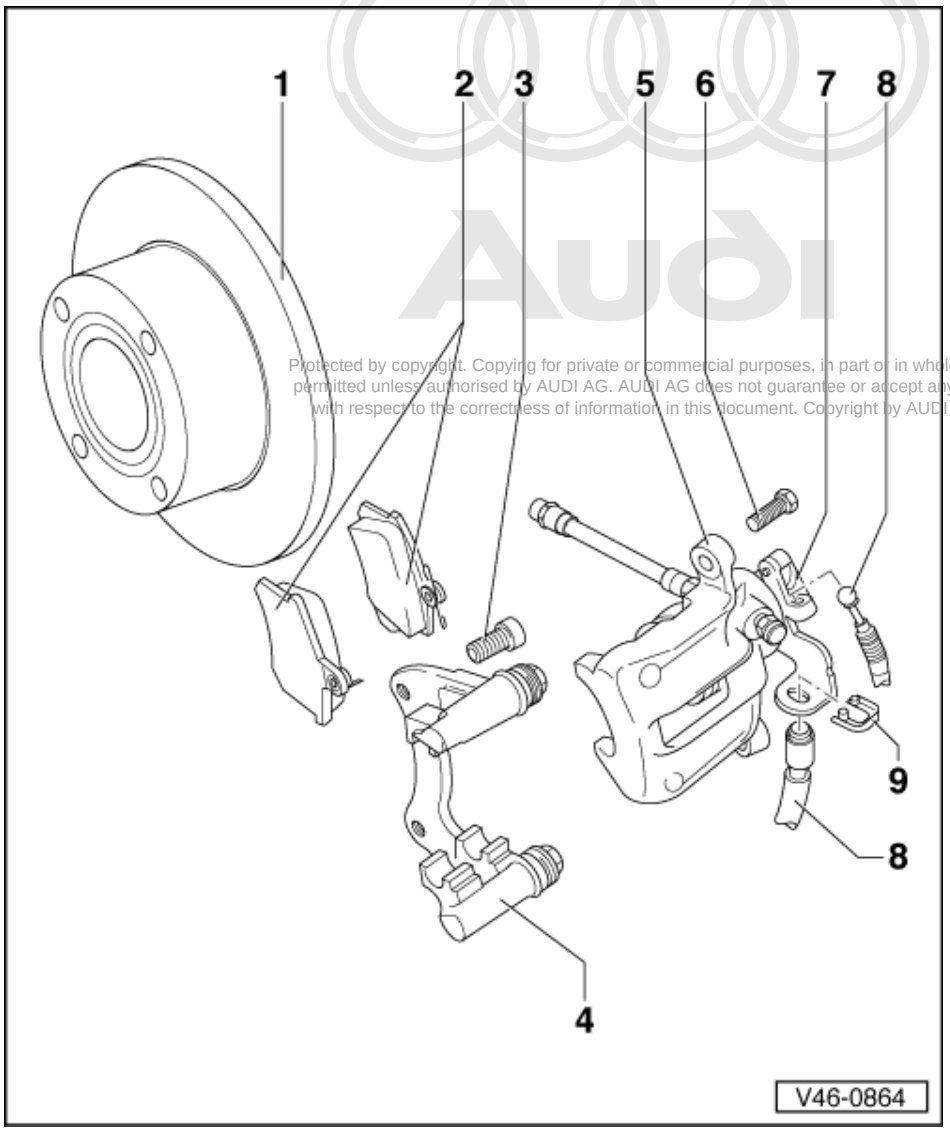
1 Brake disc

- Replace on axle basis, to remove unscrew brake caliper beforehand
- Always dress evenly, on both sides, starting from thickness when new
- Ensure adequate wear reserve
- Brake disc diameter 245 mm
- Brake disc thickness: 10 mm
- Wear limit: 8 mm

2 Brake pads

- Replace on axle basis => Page 154
- Brake lining thickness when new 12 mm
- Check brake lining wear limit 2 mm

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

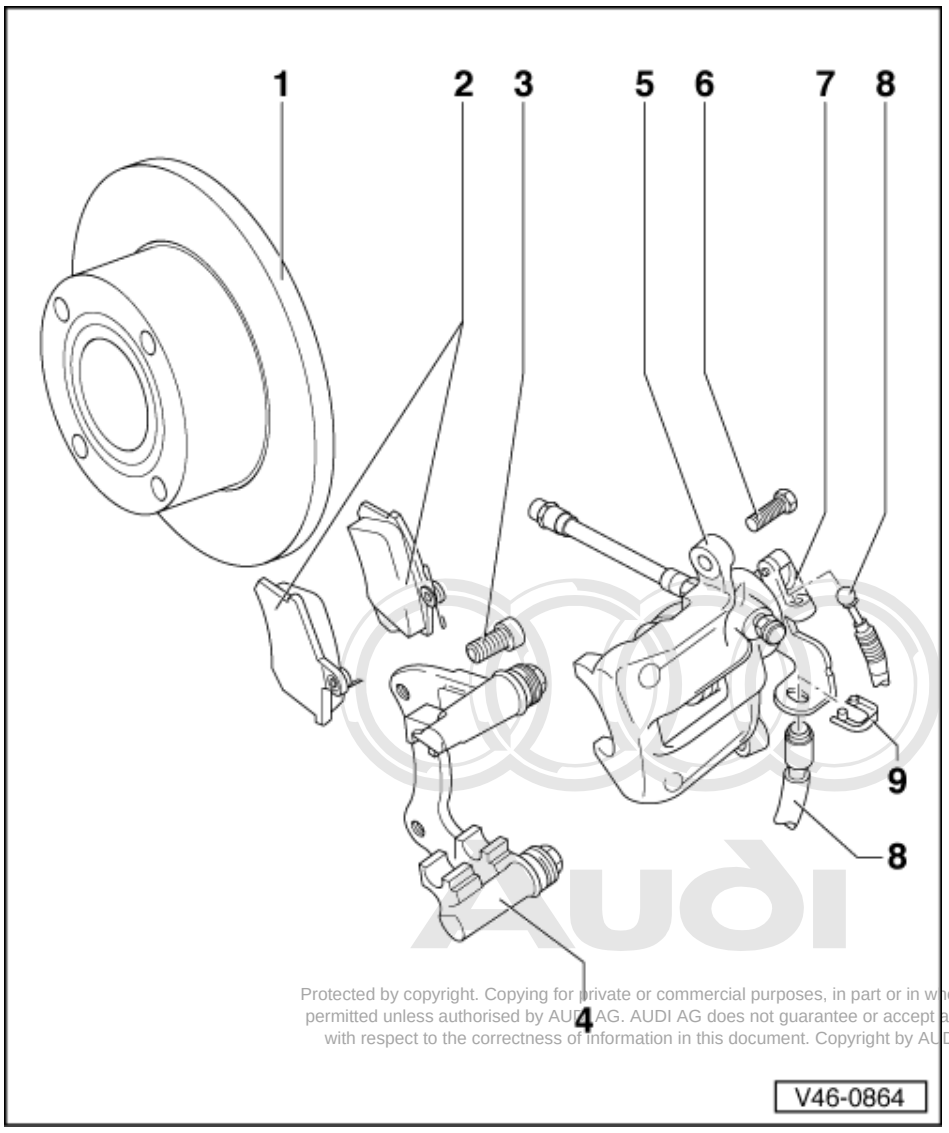
- Checking brake lining thickness => Page 153
- If the pad thickness is down to 7 mm (including backing plate), the brake pads have reached the wear limit and must be replaced.

3 Cheese-head bolt, 60 Nm

- Cheese head flange ribbed bolt, 80 Nm

4 Brake carrier with guide pin and protective cap

- Supplied as replacement part, assembled with sufficient grease on guide pins
- If protective caps are damaged use repair kit
- Use grease sachet supplied to lubricate guide pins



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

5 Brake caliper housing

- Unscrew from brake carrier to replace brake pads
- Do not unscrew brake hose

6 Self-locking bolt, 35 Nm

- Always replace
- When loosening and tightening counter hold on guide pin

7 Lever for handbrake cable

- Insert handbrake cable

8 Handbrake cable

- Adjusting handbrake => Page 171

9 Locking clip

- Attach handbrake cable to support bracket

3.2 - Checking brake lining thickness

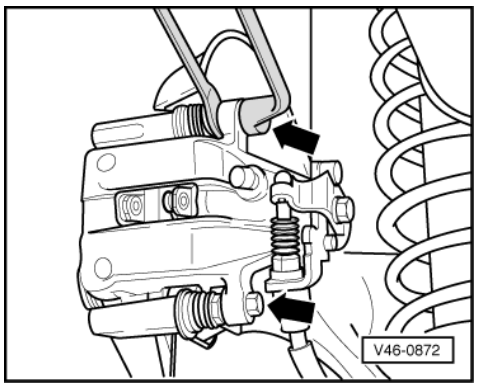
- Visually inspect thickness of outer brake linings (with torch) through penetration in disc wheel.
- If the pad thickness is down to 7 mm (including backing plate), the brake pads have reached the wear limit and must be replaced.

3.3 - Replacing rear brake linings

Note:

Mark brake pads to be reused on removal. Reinstall in their original position to prevent uneven braking!

- Remove wheels.

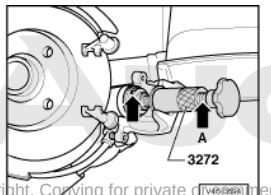


- -> Unscrew brake caliper housing.
- Remove brake pads.

Notes:

Before pressing back pistons drain off some of the brake fluid from the reservoir. Otherwise brake fluid which was used to top up the brake fluid reservoir may run out and cause damage. Use a bleeder bottle or a plastic bottle, which is only used for brake fluid.

Warning!
Brake fluid is poisonous and must on no account be siphoned orally through a hose.

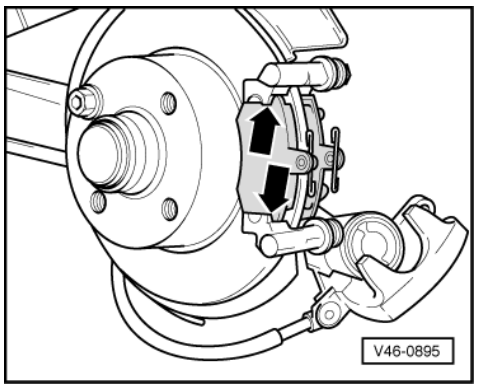


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Screw in piston by turning the threaded spindle clockwise and the knurled section anti-clockwise as far as the stop.

Note:

- If piston is difficult to move, use a 13 mm AF open jaw spanner on the flats (arrow A) provided for this purpose.
- Insert special tool -3272- so that the collar is positioned in front of the piston.

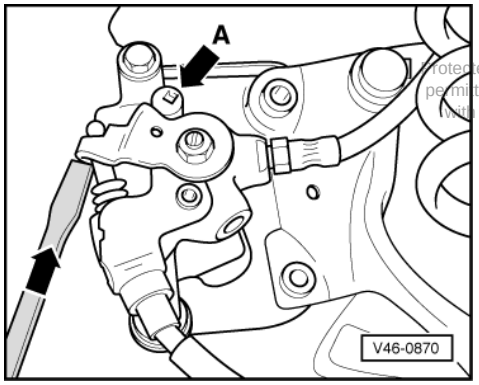


- -> Insert brake pads.
- Tighten bolts on brake caliper housing, 35 Nm.
- Check brake fluid level and top up, if necessary.

Notes:

- The repair kit includes two self-locking hexagon bolts which must be installed in all cases.
- Firmly depress brake pedal several times after each change of brake pads, so that the brake pads are properly seated in their normal operating position.
- Always perform basic setting or rear wheel brake whenever brake linings have been replaced =>Page 155

3.4 - Basic setting of rear wheel brake

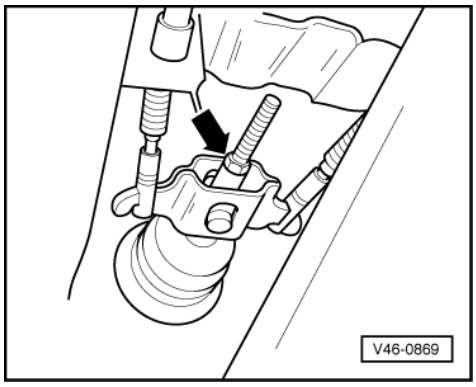


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Hand brake cable must not be pretensioned when making basic setting (handbrake off)

Check:

- -> Alternately press handbrake cable levers against stop -A- with screwdriver.
- If lever at opposite brake caliper in each case is pulled off stop handbrake cable has been excessively pretensioned.



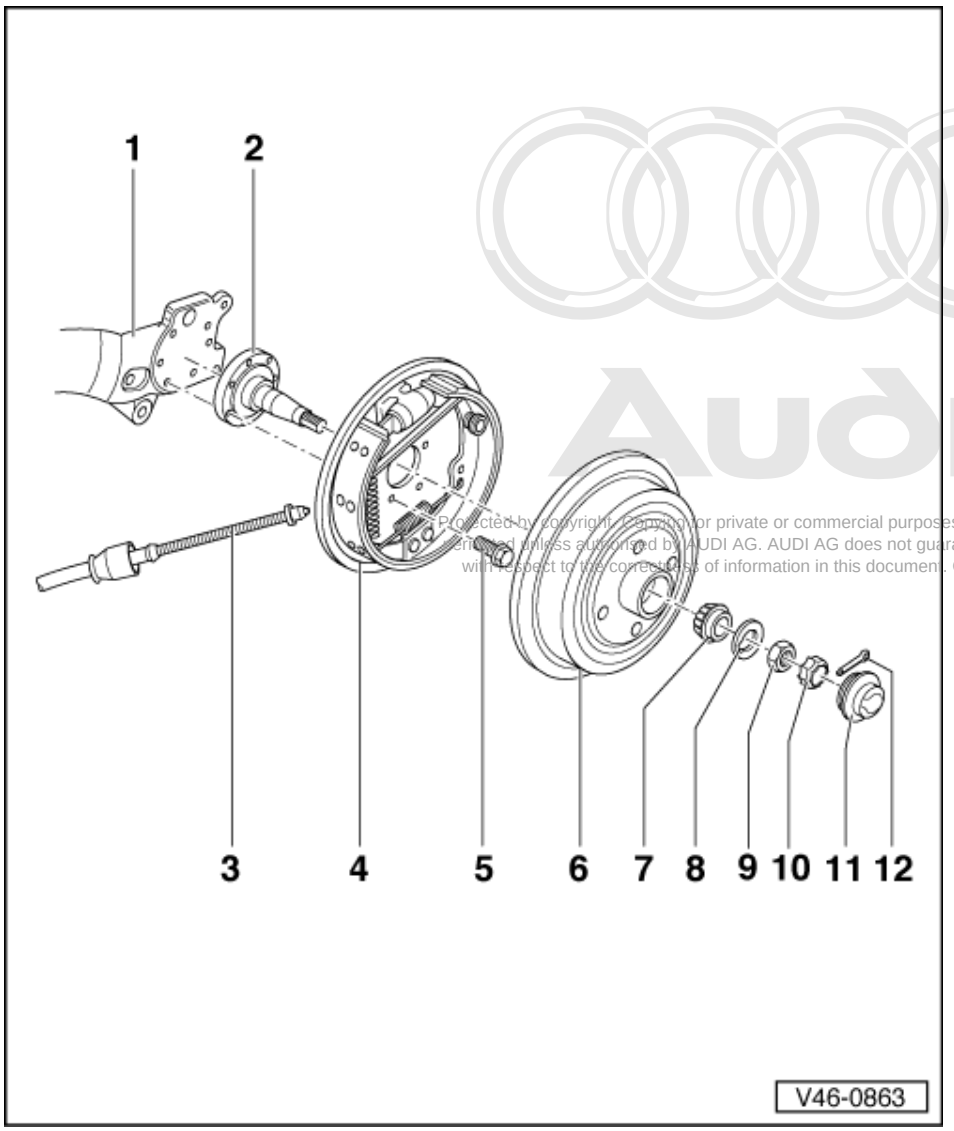
Note:

The illustration shows the adjusting nut with the guard plate for the exhaust system removed. To adjust use 10 mm lock socket wrench with flexible extension and ratchet.

- -> Appropriately loosen adjusting nut for handbrake cable until both levers make contact with stop.
- Position vehicle on its wheels and press brake pedal several times with engine stopped.
- Jack up vehicle and check whether both wheels turn freely.

4 - Servicing rear wheel brake, drum brake

4.1 - Servicing rear wheel brake, drum brake

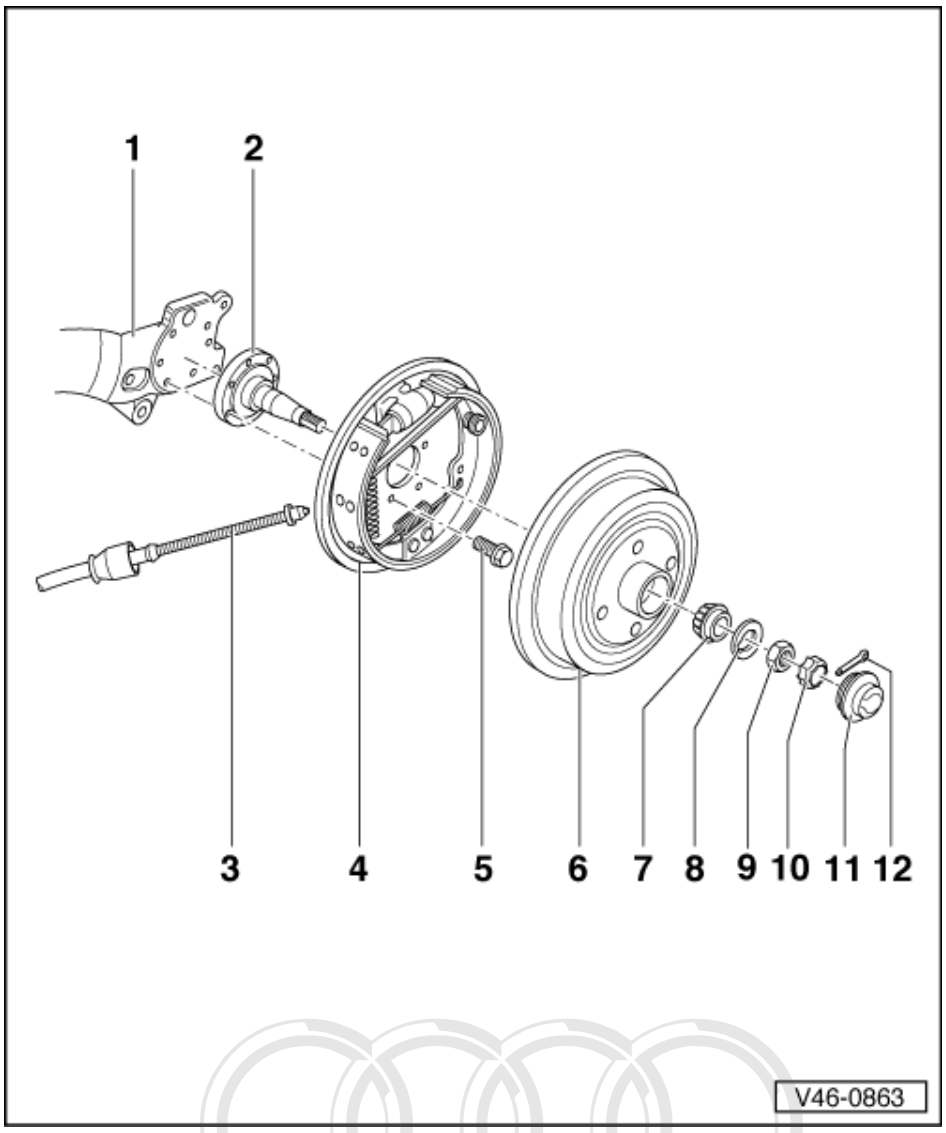


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Rear brakes with automatic adjustment

1 **Axle beam**
2 **Stub axle**
3 **Handbrake cable**
- Disengage at brake lever
- Adjusting handbrake => Page 172

4 **Brake backplate**
5 **Bolt with washer, 30 Nm**
6 **Brake drum**
- Diameter: 230 mm
- Wear limit: 231 mm



- Clean carefully, check for wear, damage, dimensional accuracy, damaged wheel bolt threads and proper braking surface
- Grease hub with multi-purpose grease
- Prior to brake drum removal reset brake shoes through tapped hole for wheel bolts => Fig. 4

7 Outer wheel bearing

8 Thrust washer

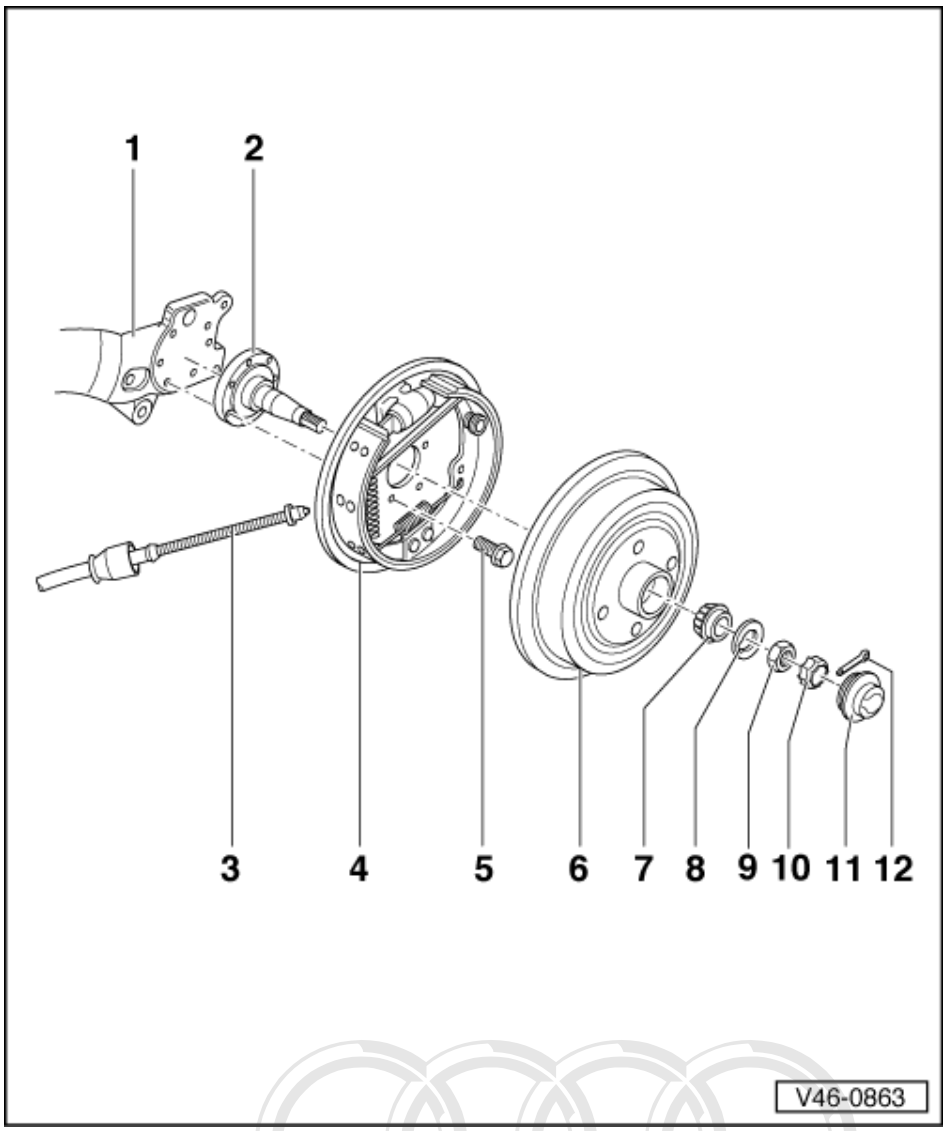
9 Hexagon nut

- Adjusting wheel bearing clearance =>Fig. 3

10 Locking ring

- Attach to hexagon nut

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



11 Grease cap

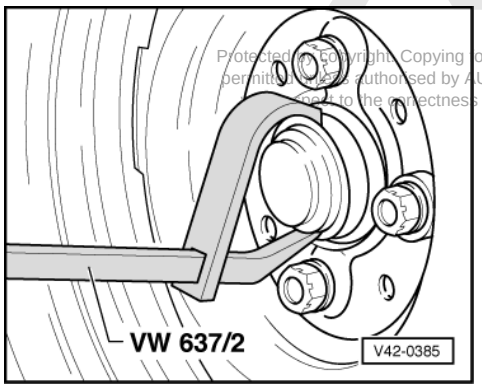
- Pressing off =>Fig. 1
- Driving in => Fig. 2

Note:

Always replace deformed grease caps

12 Split pin

- Always replace



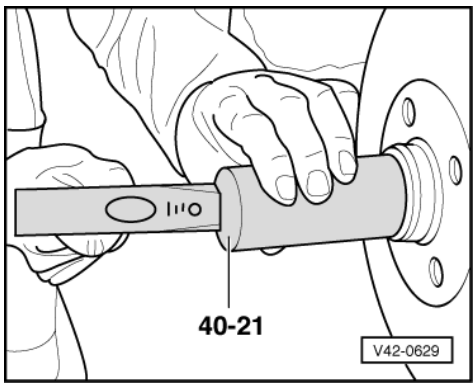
Protected by Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.1 Pressing off grease cap

- Knock grease cap off wheel hub slightly beforehand by tapping gently with hammer on claw of special tool.

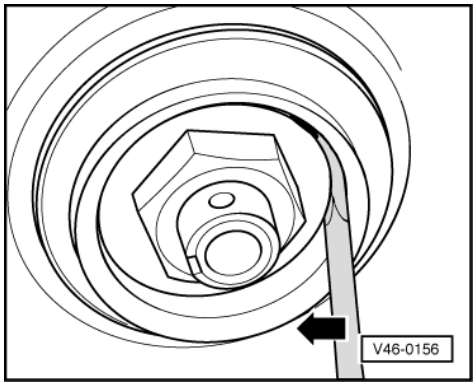
Note:

Always replace deformed grease caps



-> Fig.2 Drive the grease cap home.

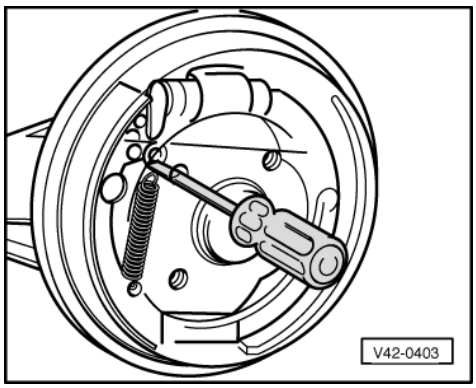
- Damaged grease caps permit the ingress of moisture. That is why it is essential to use the tool shown in the illustration. A damaged grease cap must be replaced.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.3 Adjusting wheel bearing play

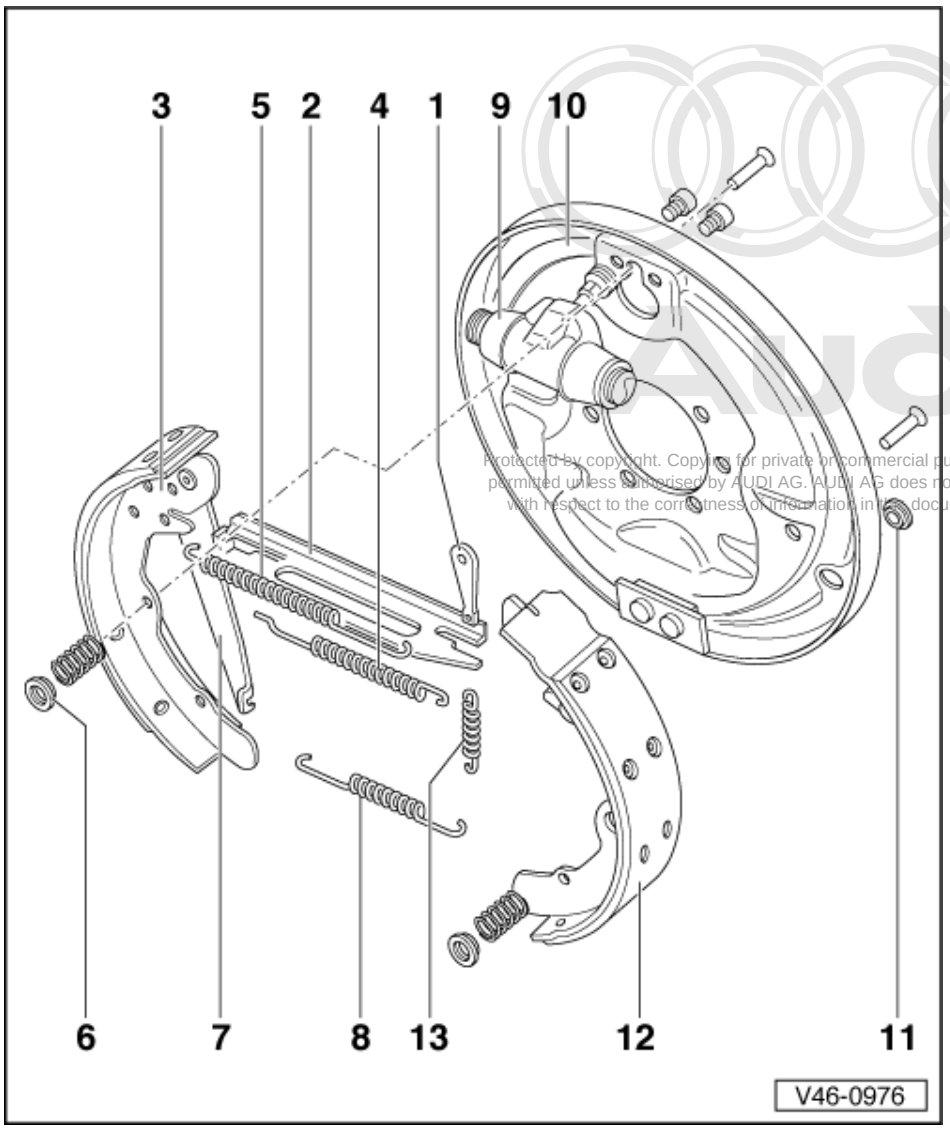
- Wheel bearing clearance has been properly adjusted if thrust washer can still just be moved with screwdriver by applying finger pressure (never apply leverage). To re-tighten, tighten the hexagon nut, but rotate the wheel during this step to avoid tensioning the bearing. Then secure with slotted ring and new split pin.



-> Fig.4 Resetting brakes

For this purpose, press key upwards with screwdriver through holes in brake drum.

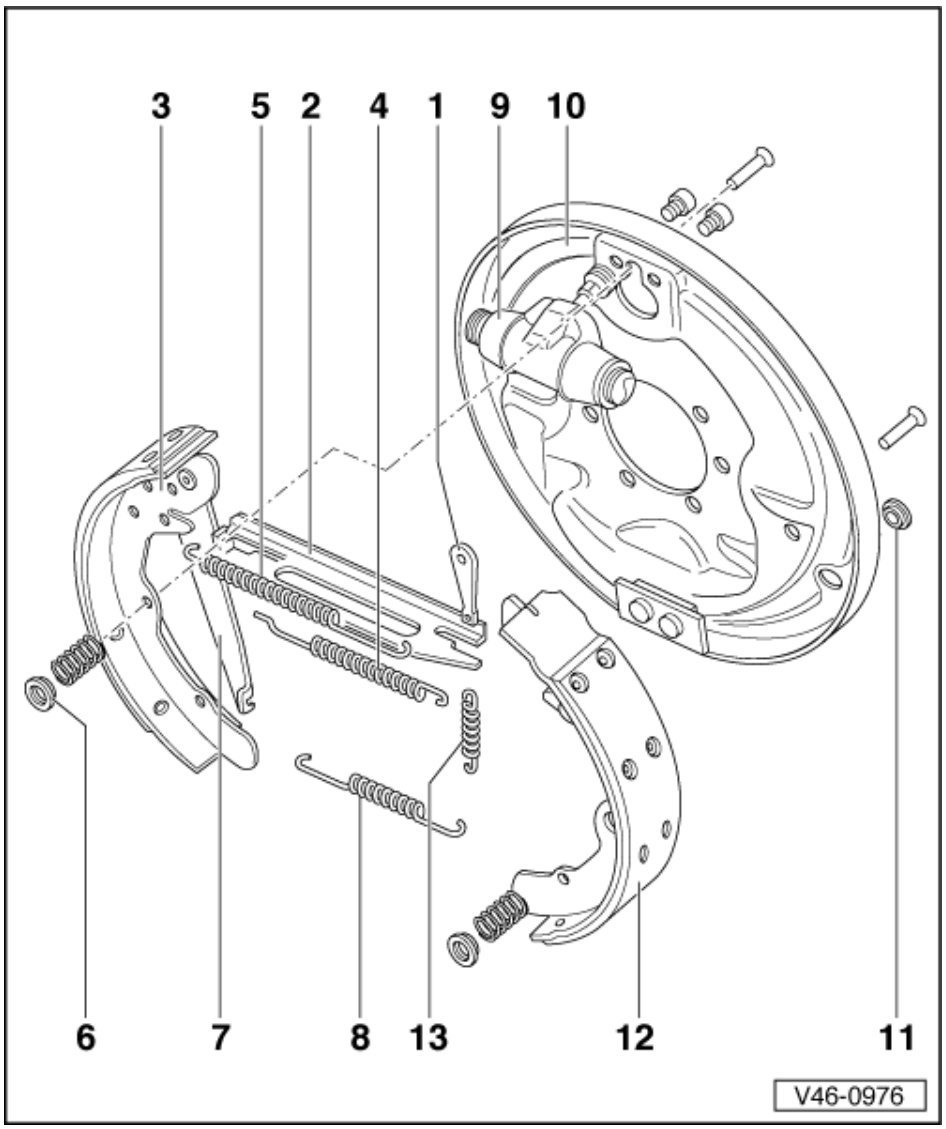
4.2 - Servicing brake backplate



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Notes:

- Always install the complete repair kit.
- Both brake shoes with riveted on brake linings and brake linings for riveting on are available for performing repairs.
- Brakes can be checked on all commercially available brake test stands, provided that the driving speed of the two driving rollers of the test stand does not exceed 5.5 km/h.



After performing work on rear wheel brake:

- Release handbrake
- Firmly depress brake pedal.

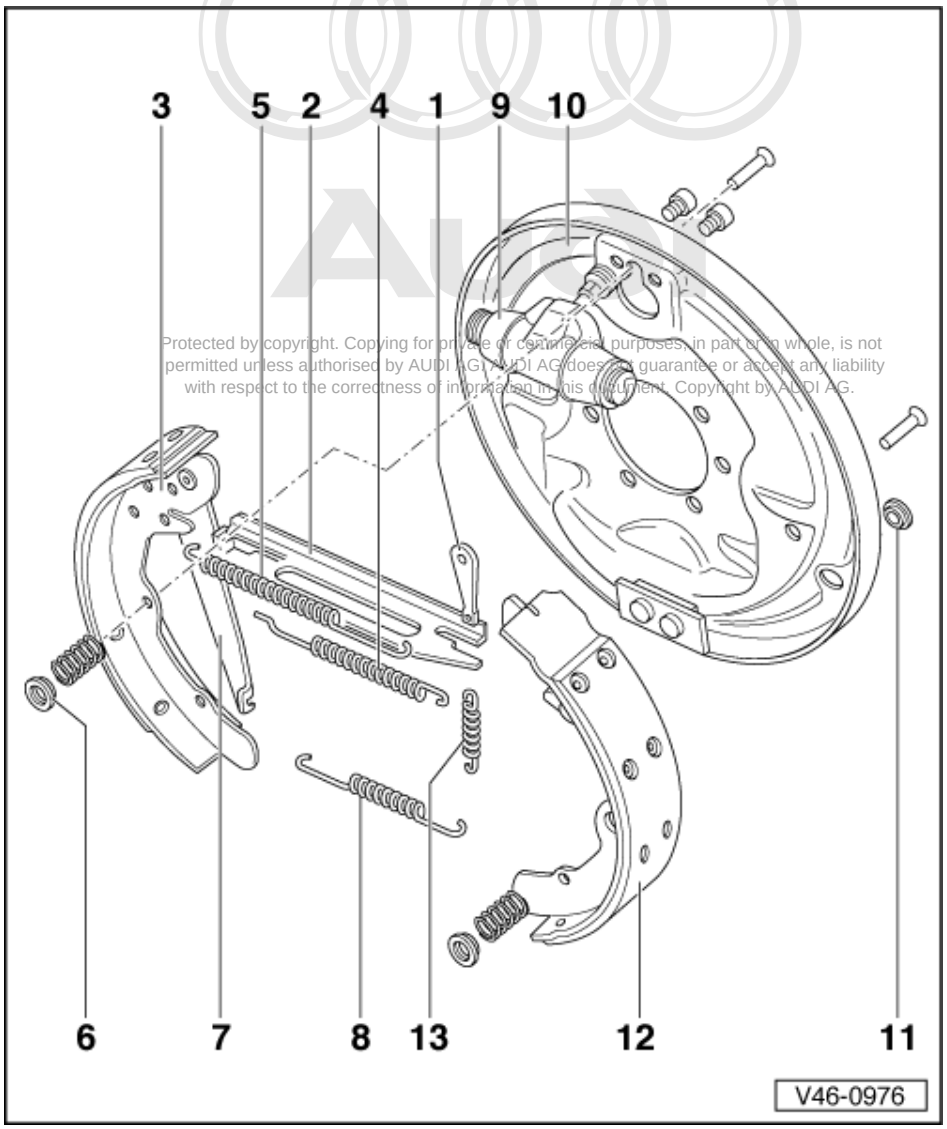
1 Sliding key

- To remove and install brake drum press sliding key upwards as far as it will go through tapped hole of wheel bolt => Page 160 , Fig. 4

2 Pushrod

- Grease contact points with G- 6

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 Brake shoes

- Removing and installing => Page 164
- Check handbrake setting on replacing brake shoes or brake linings
- Adjusting handbrake => Page 172
- Grease contact points at brake cylinder and support bracket with G-6

4 Locating spring

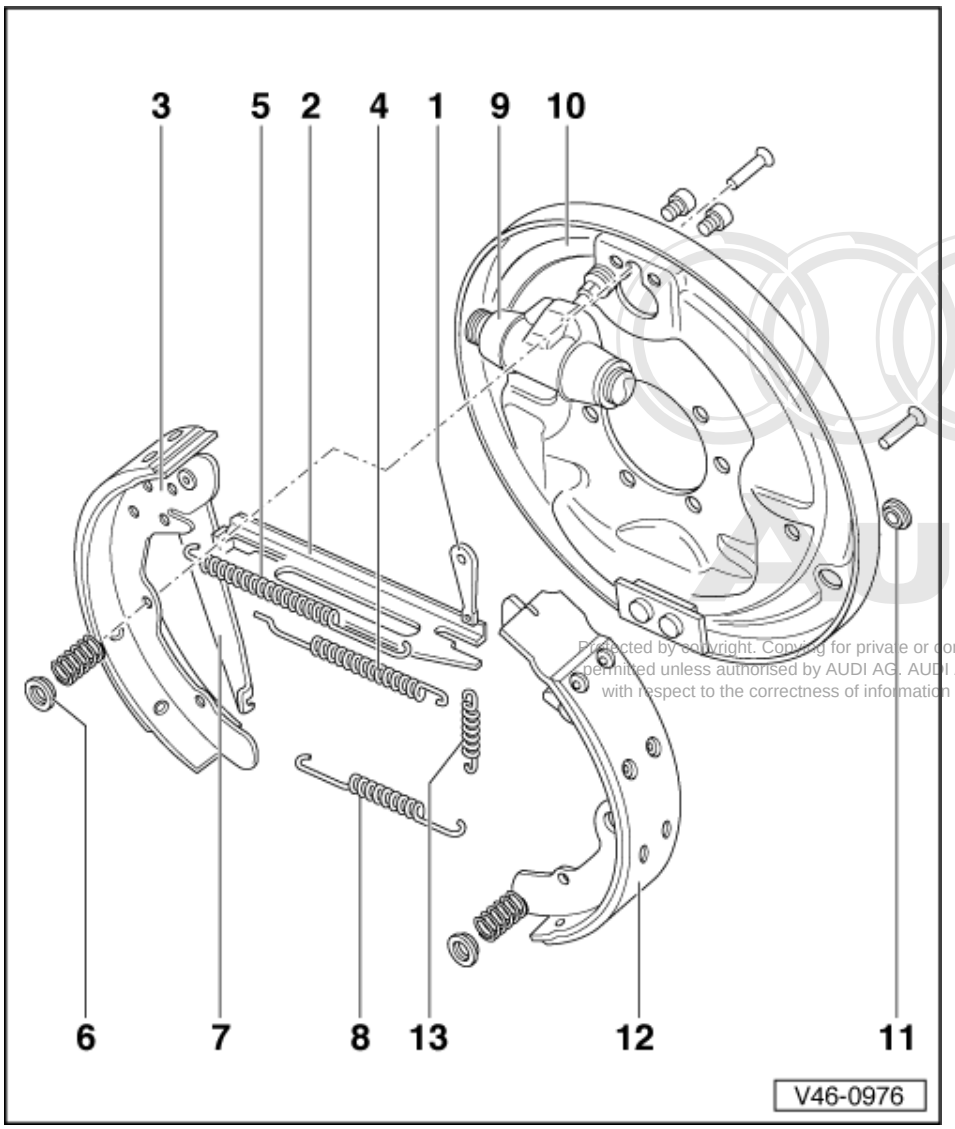
- Disengage with pincers

5 Upper return spring

- Disengage with pincers

6 Spring plate

- To remove brake shoes: Press against pressure spring and turn through 90o



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

7 Brake lever

- Grease contact points with G-6

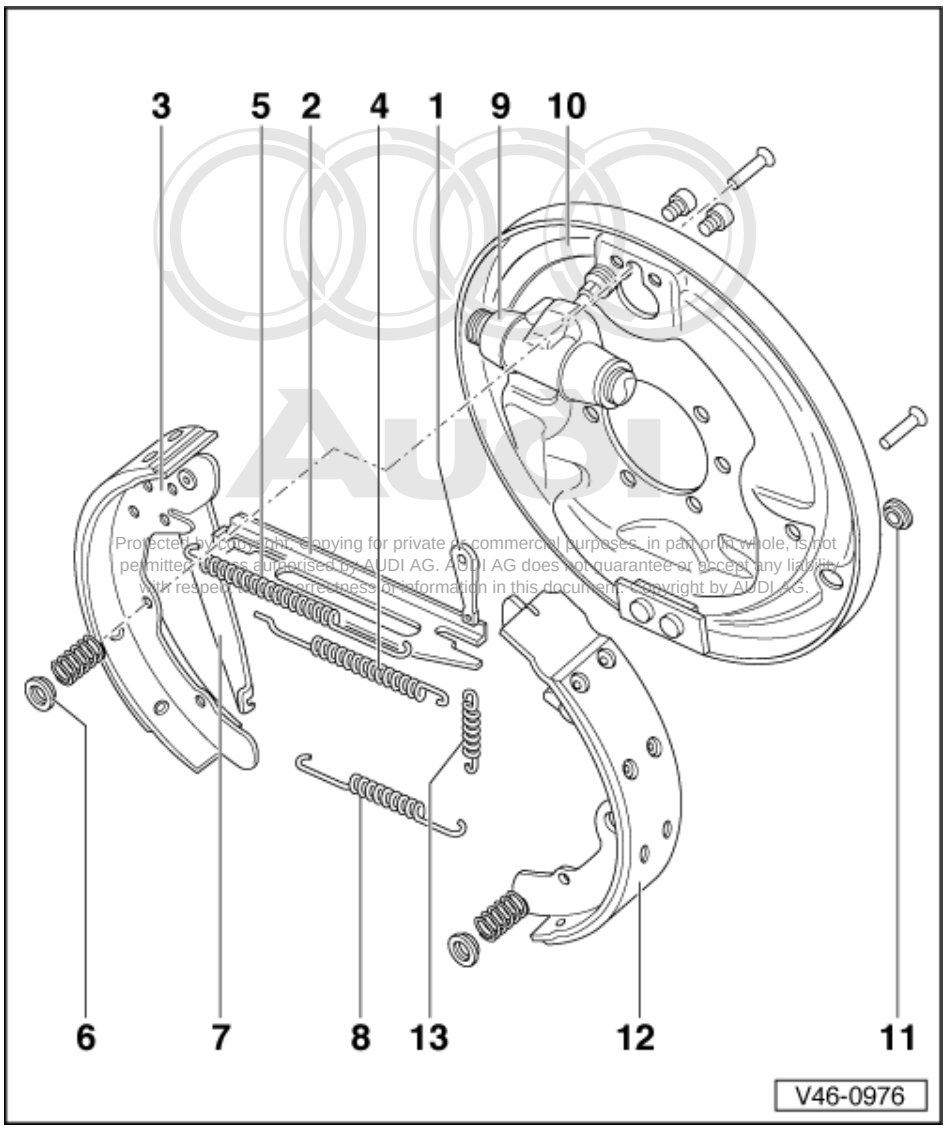
8 Lower return spring

- Disengage with pincers

9 Wheel brake cylinder

- Manual gearbox up to 55- kW-engine ø 17.46 mm
- All other vehicles ø 19.05 mm
- As of vehicle no. 8C PA 000 001 (model year 93) wheel brake cylinders with a dia. ø of 20.64 mm instead ofø 19.05 mm are installed.

10 Brake backplate



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

11 Cap

- Remove to check brake lining wear

12 Brake lining thickness

- New: 5.25 mm
- Wear limit: 2.50 mm

13 Tension spring

- Engage in sliding key and brake shoe

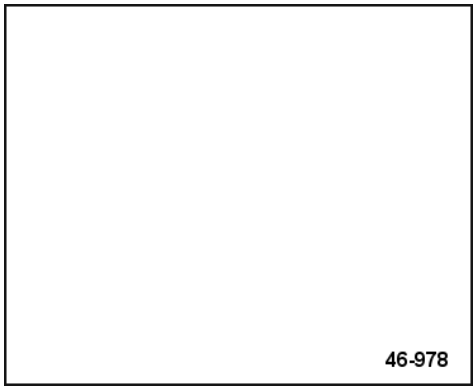
4.3 - Removing and installing brake shoes

Removing:

- Remove brake drum

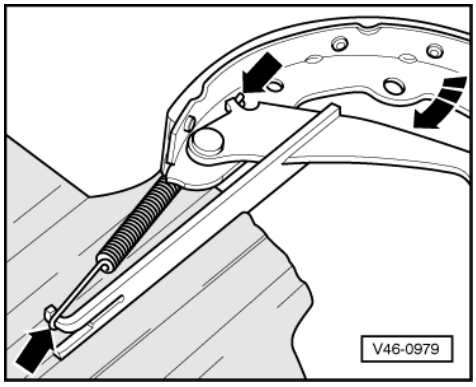
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Remove spring retainer
- Disengage lower return spring
- Remove brake shoes
- Disengage handbrake cable
- Clamp brake shoes in vice
- -> Remove tension spring for sliding key
- Remove upper return spring



- -> Disengage locating spring

Installing:



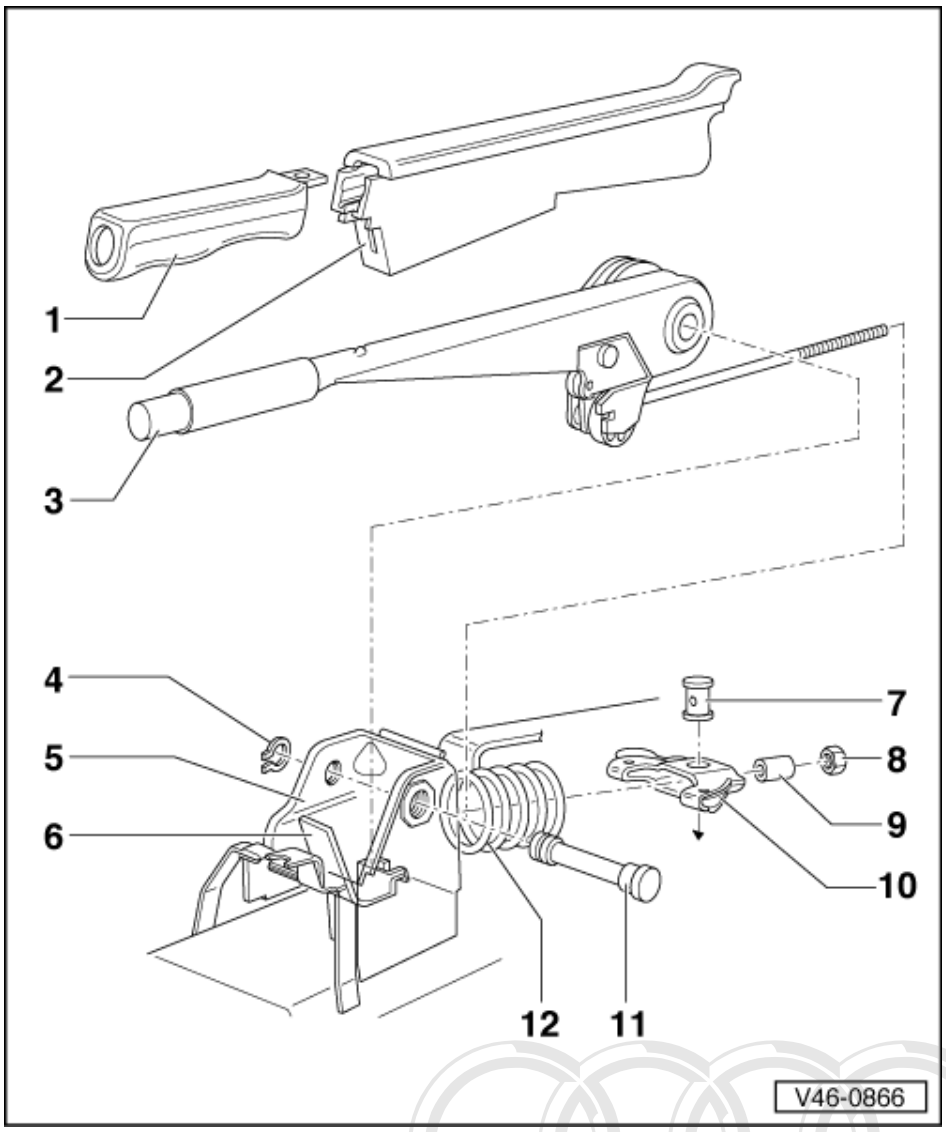
- Clamp pushrod in vice
- -> Engage locating spring in brake shoe and pushrod.
- Insert brake lever of brake shoe in slot in pushrod; move slightly in direction of arrow to pretension locating spring
- Insert sliding key in pushrod such that stop faces brake backplate
- Insert brake shoe in slot in pushrod

Reproduction by copying, copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Engage upper return spring and tension spring for sliding key
- Engage handbrake cable at brake lever
- Position brake shoes on pistons of wheel brake cylinder
- Insert lower return spring and lift brake shoes onto lower support
- Insert pressure springs with spring retainer
- Install brake drums and set wheel bearing clearance
- Firmly press foot brake once; rear wheel brake is thus set

5 - Servicing handbrake

5.1 - Servicing handbrake



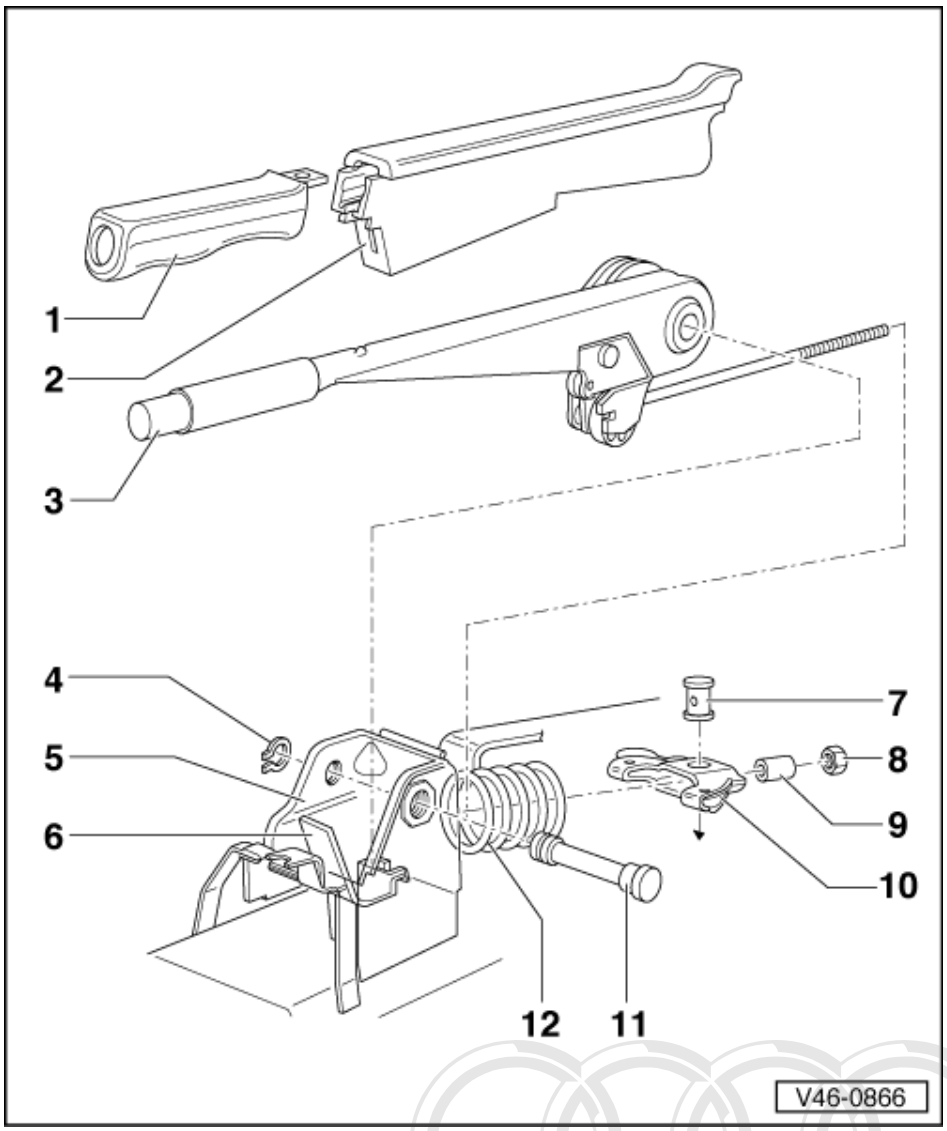
Note:

Grease all bearings prior to assembly with white solid lubricating paste, part no. AOS 126 000 05.

1 Grip
- Slip onto handbrake lever until lug on lever engages in lug on handle

2 Cover for handbrake lever
- Slip onto handbrake lever

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



3 Handbrake lever

- Available as assembled component with pull rod, locking pawl, pushrod, pushbutton, pressure spring and ratchet
- Removing and installing => Page 170

4 Circlip

- Always replace
- Ensure correct positioning

5 Mounting for handbrake lever

6 Leaf spring

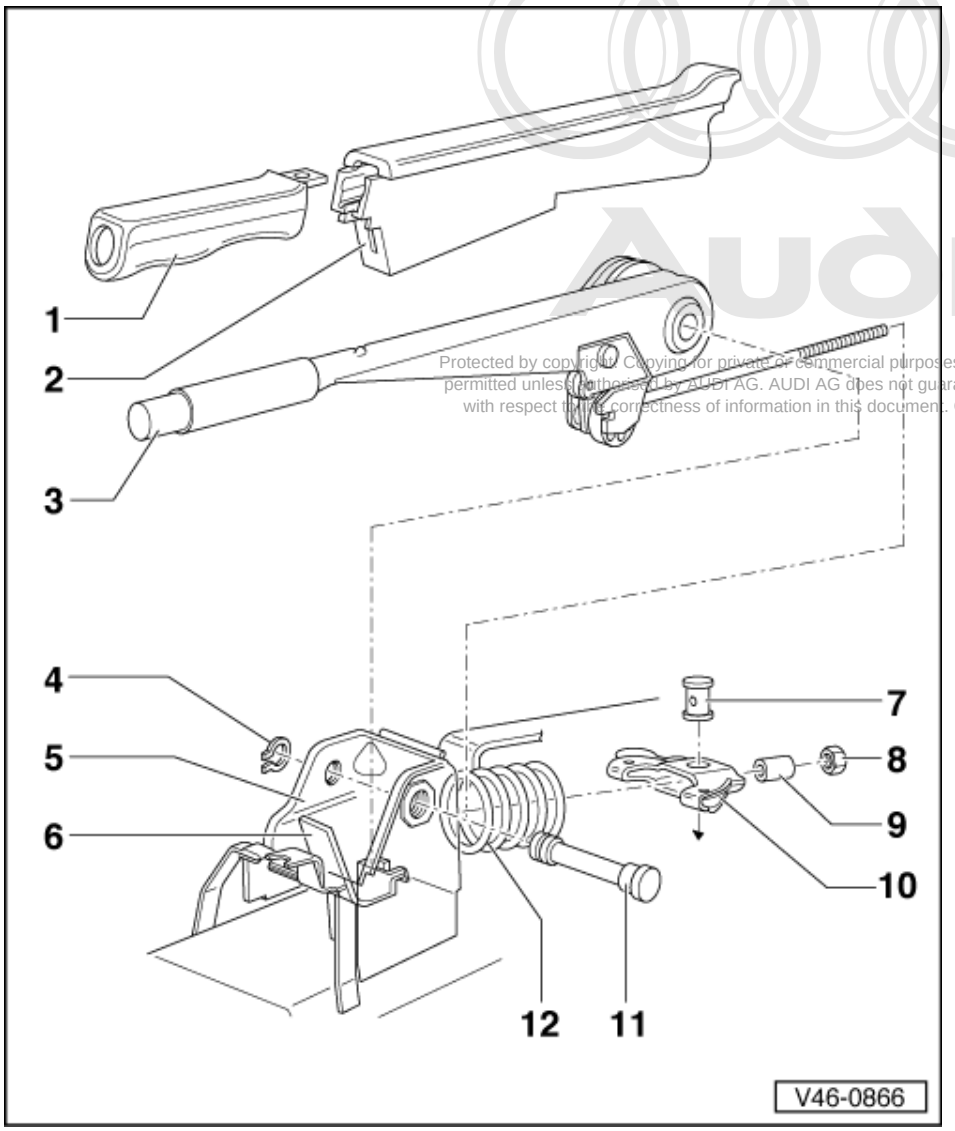
- Insert in bracket

7 Pin

- Insert in compensatory bar
- Insert pull rod in hole in pin

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



8 Adjusting nut, self-locking

- ◆ Adjusting hand brake
- \- Disc brake => Page 171
- \- Drum brake => Page 172

9 Socket

- ◆ Slip onto pull rod

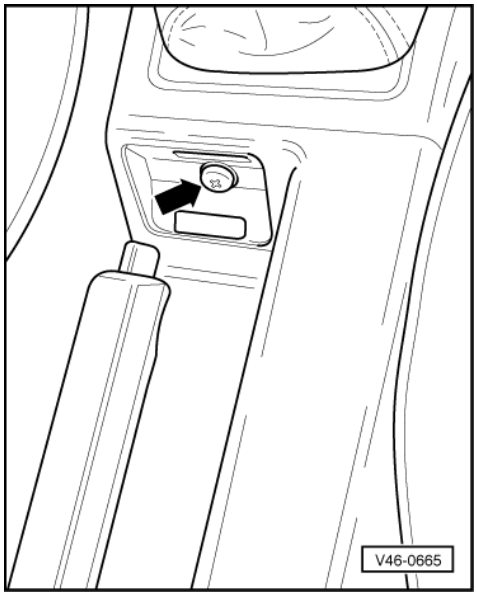
10 Compensator bar

11 Fulcrum pin

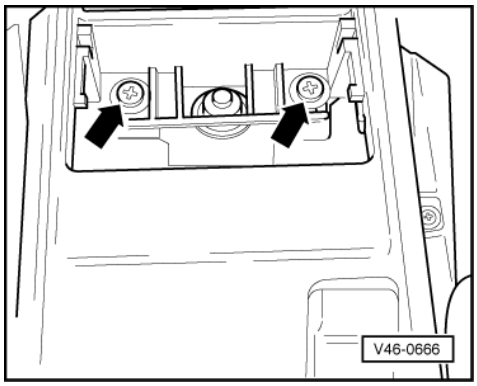
12 Bellows

- ◆ Ensure correct positioning

5.2 - Removing and installing handbrake lever



- Use screwdriver to unclip cover
- -> Screw out screw



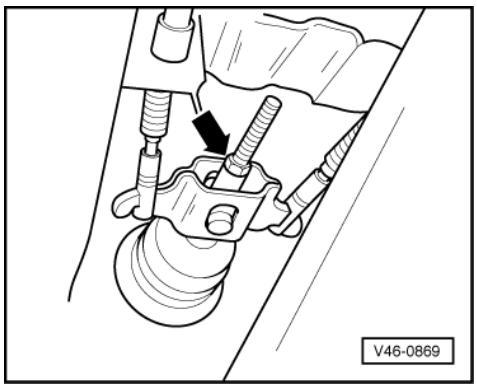
- Remove ashtray for rear compartment.

=> General body repairs; Repair Group 70;

- -> Screw out both screws
- Remove rear section of centre console.

=> General body repairs; Repair Group 70;

- Remove rear guard plate for exhaust system

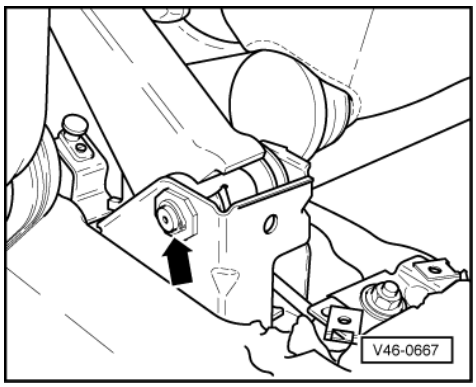


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

To adjust use 10 mm lock socket wrench with flexible extension and ratchet.

- -> Unscrew adjusting nut
- Remove compensator bar
- Remove boot



- -> Unfasten circlip
- Press out support pin
- Push handbrake lever slightly to rear and then remove

Note:

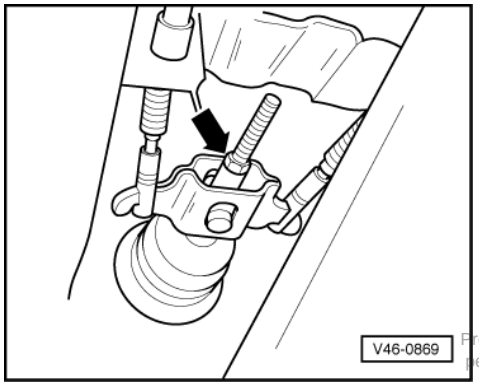
After installing handbrake lever, adjust handbrake => Page 172

5.3 - Adjusting handbrake (vehicles with disc brake)

Note:

The automatic adjustment of the rear wheel brake means that it is normally not necessary to adjust the handbrake. Readjustment is only to be performed on replacing handbrake cables, brake calipers, brake discs and brake linings.

Warning!
Always perform basic setting or rear wheel brake beforehand => Page 155

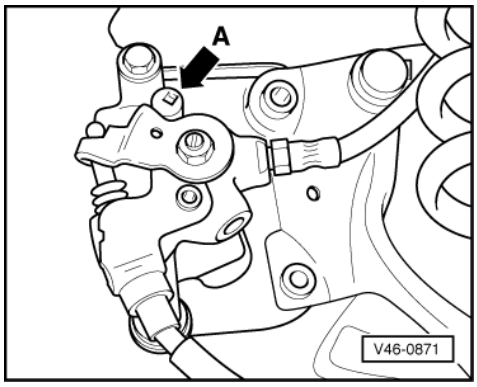


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

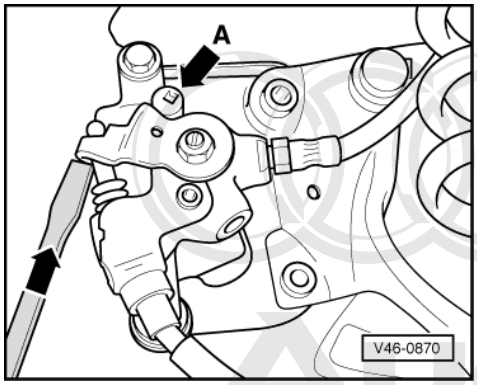
-> The illustration shows the adjusting nut with the guard plate for the exhaust system removed. To adjust use 10 mm lock socket wrench with flexible extension and ratchet.

- Turn adjusting nut for handbrake ...



- -> ... until both levers just lift off stop -A- (two people required)
- Turn back adjusting nut two turns

Check:



- -> Alternately press handbrake cable levers against stop -A- with screwdriver.
- If lever at opposite brake caliper in each case is pulled off stop handbrake cable has been excessively pretensioned.
- Appropriately loosen adjusting nut for handbrake cable until both levers make contact with stop.
- Pull on handbrake and then release again
- Check whether both wheels turn freely; if applicable check freedom of movement of handbrake mechanism

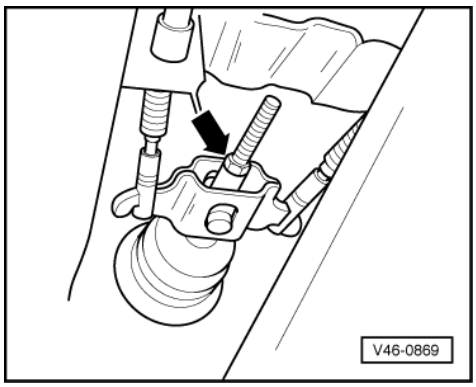
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

5.4 - Adjusting handbrake (vehicles with drum brake)

Note:

The automatic adjustment of the rear wheel brake means that it is normally not necessary to adjust the handbrake. Readjustment only to be performed on replacing handbrake cables, brake backplate and pull rod. After brake lining replacement check setting of handbrake as follows and correct as necessary.

- Handbrake lever released



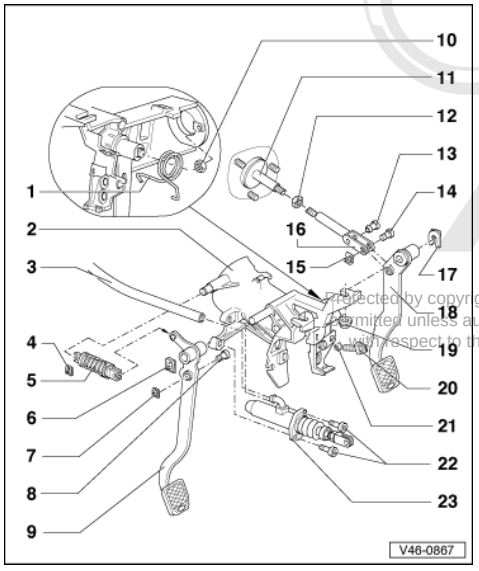
- -> Loosen adjusting nut as far as it will go.
- Firmly depress brake pedal.
- Pull handbrake lever 2 notches
- Tighten adjusting nut until the two wheels are difficult to turn by hand
- Release handbrake and check whether both wheels turn freely.

Note:

The illustration shows the adjusting nut with the guard plate for the exhaust system removed. To adjust use 10 mm lock socket wrench with flexible extension and ratchet.

6 - Removing, installing and servicing pedal cluster

6.1 - Removing, installing and servicing pedal cluster



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Warning!
The brake pedal travel must not be shortened by additional floor coverings.

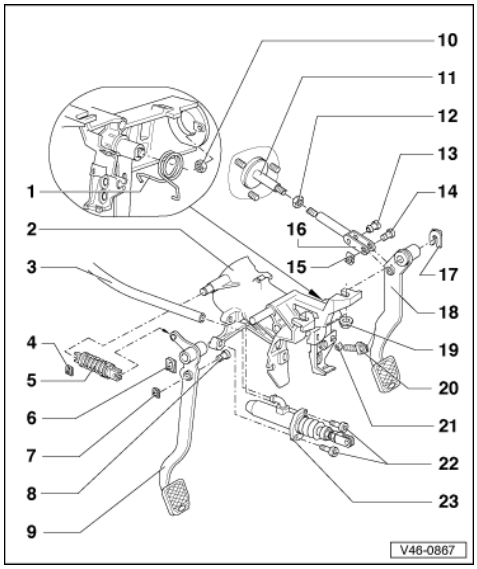
Note:

Grease all bearings prior to assembly with solid lubricating paste, part no. G 052 142 A2

1 Torsion spring

- Insert U shaped end in pedal bracket

- Insert other end in sleeve of clevis

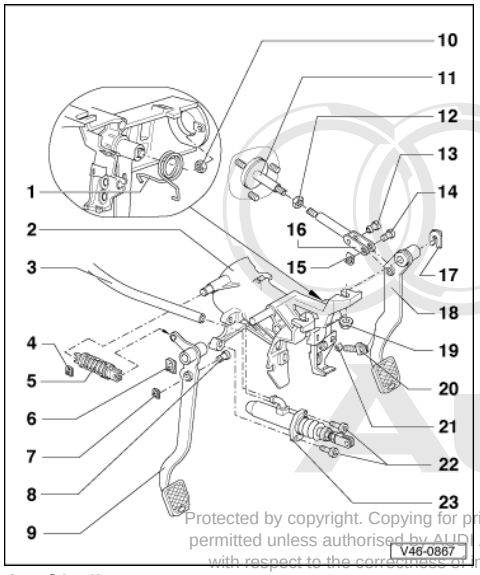


2 Pedal bracket
- Do not take out to remove brake or clutch pedal

3 Supply hose
- From brake fluid reservoir to clutch master cylinder

4 Circlip
- Replace; attach to shaft of pedal bracket

5 Over-centre spring
- Do not grease spring
- Only grease bearings at pedal/pedal bracket
- Removing and installing => Fig. 2
- Different version on 4-, 5- and 6-cylinder engines



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

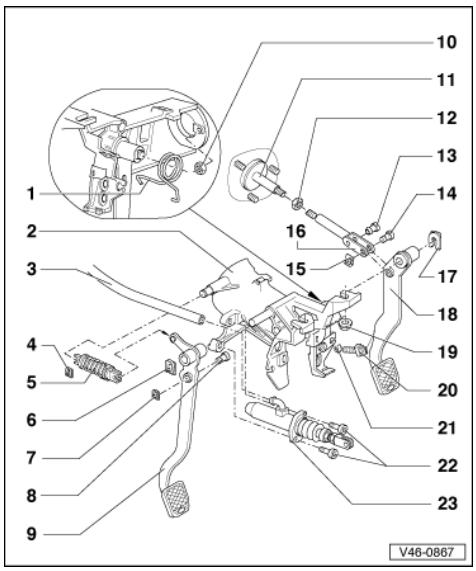
6 Circlip
- Replace; attach to shaft of pedal bracket

7 Circlip
- Always replace
- Fit onto pin

8 Pin
- Insert in clevis and clutch pedal

9 Clutch pedal

- Fixed in position by setting of clevis
- Attach to shaft of pedal bracket
- They can be removed and installed with pedal bracket installed.
- Available as replacement part with moulded bushing; bushing cannot be replaced



10 Self- locking nut 25 Nm

- Always replace
- Screw pedal bracket to bulkhead/connector plate

11 Brake servo

- If faulty replace complete.

12 Lock nut

- Tighten after adjusting clevis

13 Grommet

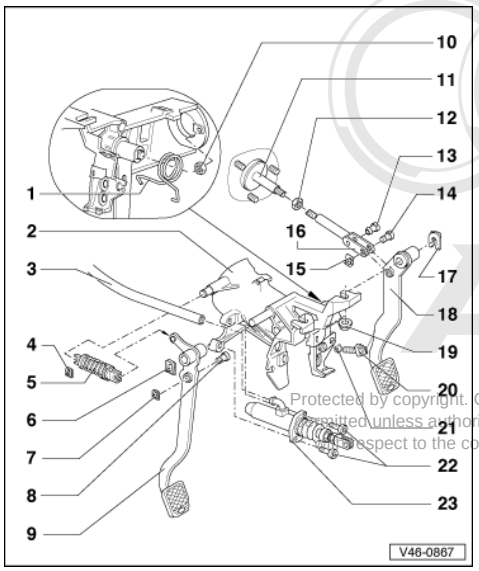
- Insert in clevis

14 Pin

- Insert in clevis and brake pedal

15 Circlip

- Always replace
- Fit onto pin



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

16 Clevis of servo unit

- Adjusting:

- Vehicles with pneumatic servo unit: => Page 218 , Fig. 1

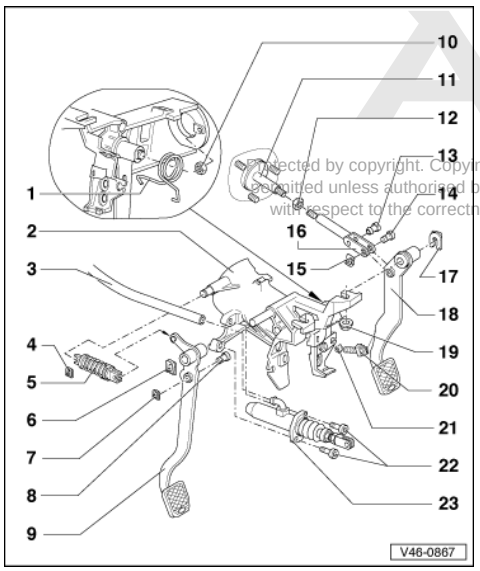
- Vehicles with hydraulic servo unit: =>Page 218 , Fig. 2

17 Circlip

- Always replace
- Attach to shaft of pedal bracket

18 Brake pedal

- Attach to shaft of pedal bracket
- They can be removed and installed with pedal bracket installed.
- Available as replacement part with moulded bushing; bushing cannot be replaced



19 Self-locking nut 25 Nm

- Always replace

20 Brake light switch

- Adjusting:
- Brake pedal operated
- Press in brake light switch as far as it will go
- Pull back brake pedal by hand as far as stop

21 Clip

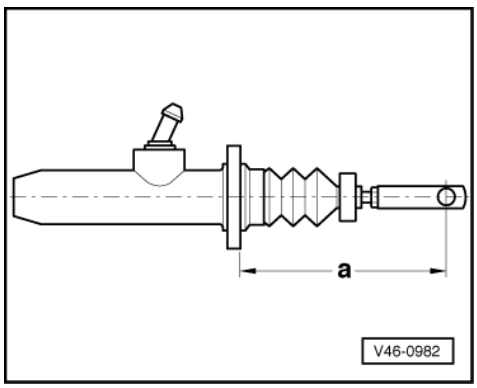
- Press home in pedal bracket

22 Cheese-head bolt, 20 Nm

- Screw master cylinder to pedal bracket

23 Clutch master cylinder

- Replace if leaking
- Adjusting clevis => Fig. 1



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

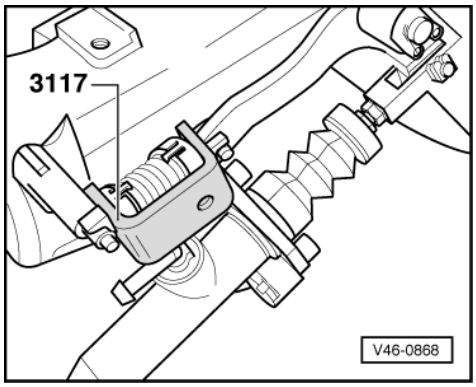
-> Fig.1 Adjusting clevis of clutch master cylinder

a = 109.5 ± 0.5 mm

- To adjust turn clevis appropriately

Notes:

- When measuring clevis must be aligned at right angles with surface of clutch master cylinder.
- If clutch pedal does not return automatically with clevis set correctly:
  - There may be air in the hydraulic system
  - The pedal may not be moving freely in the mount



-> Fig.2 Removing and installing over centre spring

- Remove retainer from support pin
- Insert clamp -3117- as shown, press clutch pedal and while doing so remove over centre spring from pedal bracket/clutch pedal.

Note:

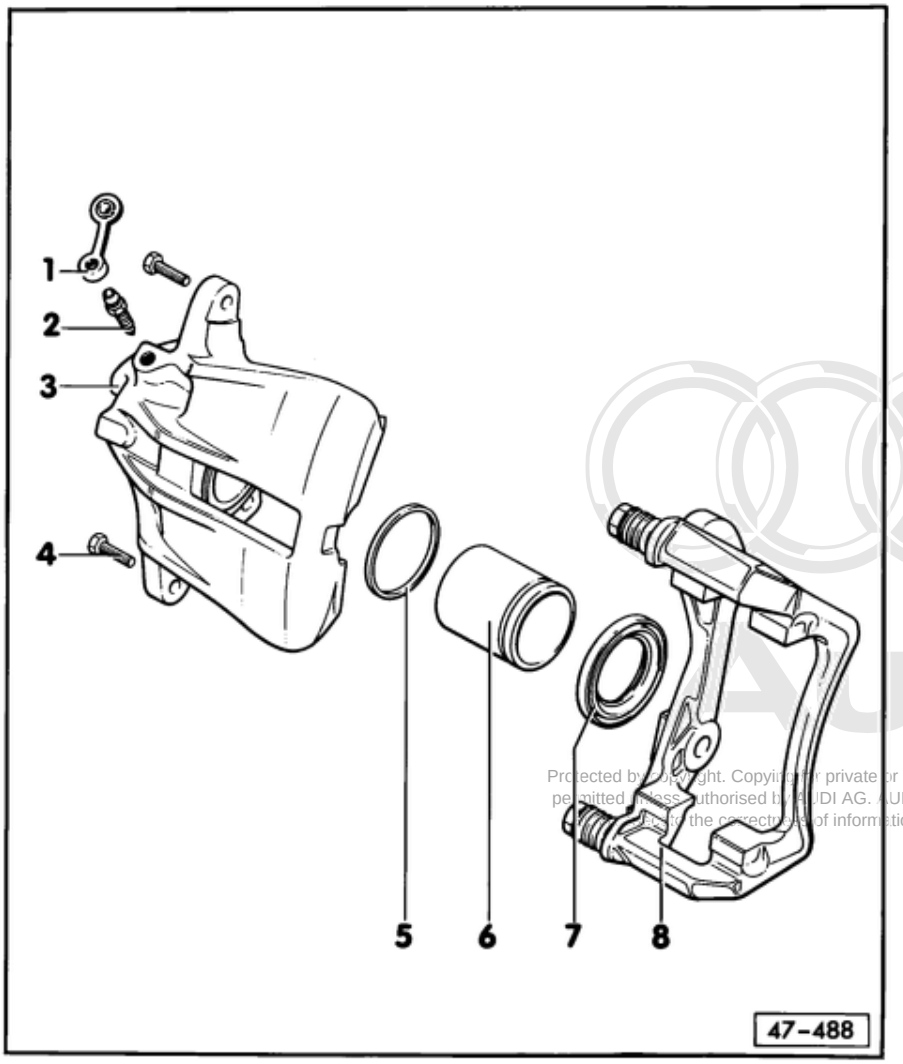
The illustration shows the clamp with the pedal bracket removed.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

47 - Brakes, Brake hydraulics

1 - Servicing front brake calipers

1.1 - Servicing front brake calipers



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1.2 - Girling brake caliper

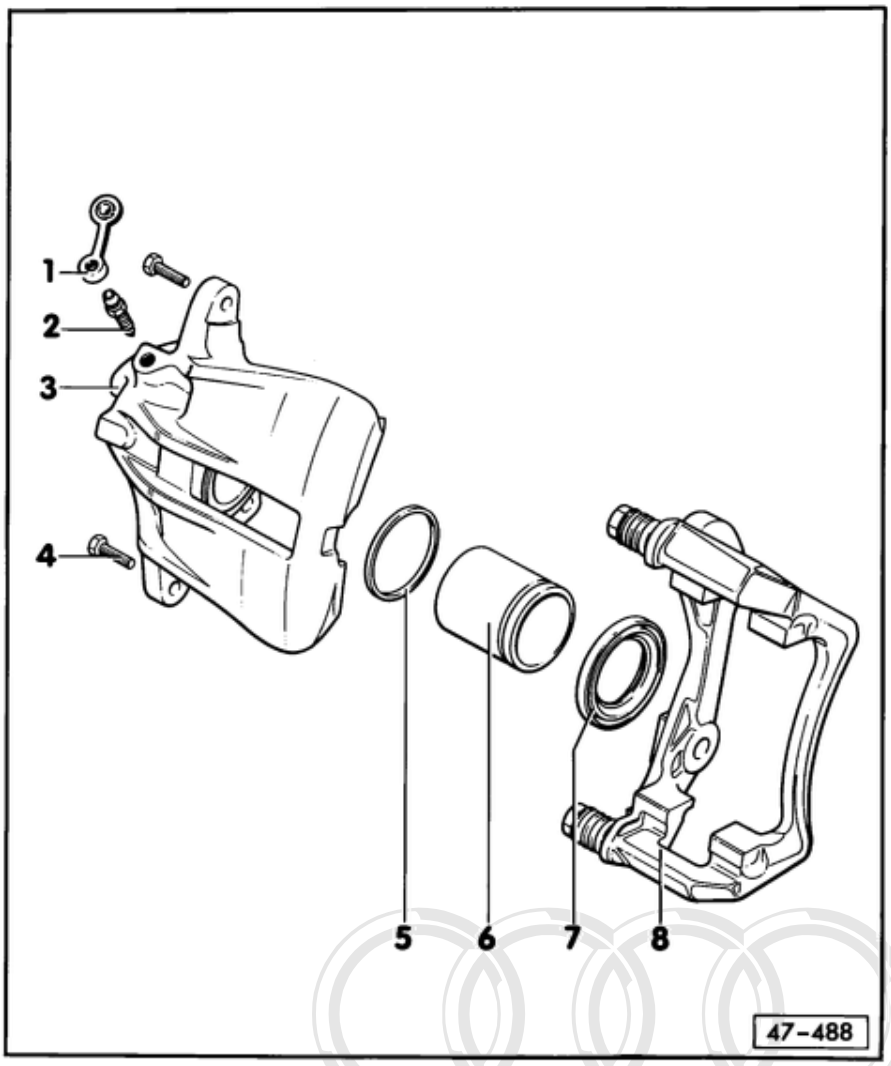
Notes:

- When servicing only install complete repair set
- Apply thin coat of brake cylinder paste B 000 100 to brake cylinders, pistons and seals.

1 **Dust cap**
- Fit onto bleeder valve

2 **Vent valve**

- Apply thin coat of brake cylinder paste before screwing in



3 Brake caliper housing

4 Self-locking bolt, 35 Nm

- Always replace
- When loosening and tightening counter hold on guide pin

5 Oil seal

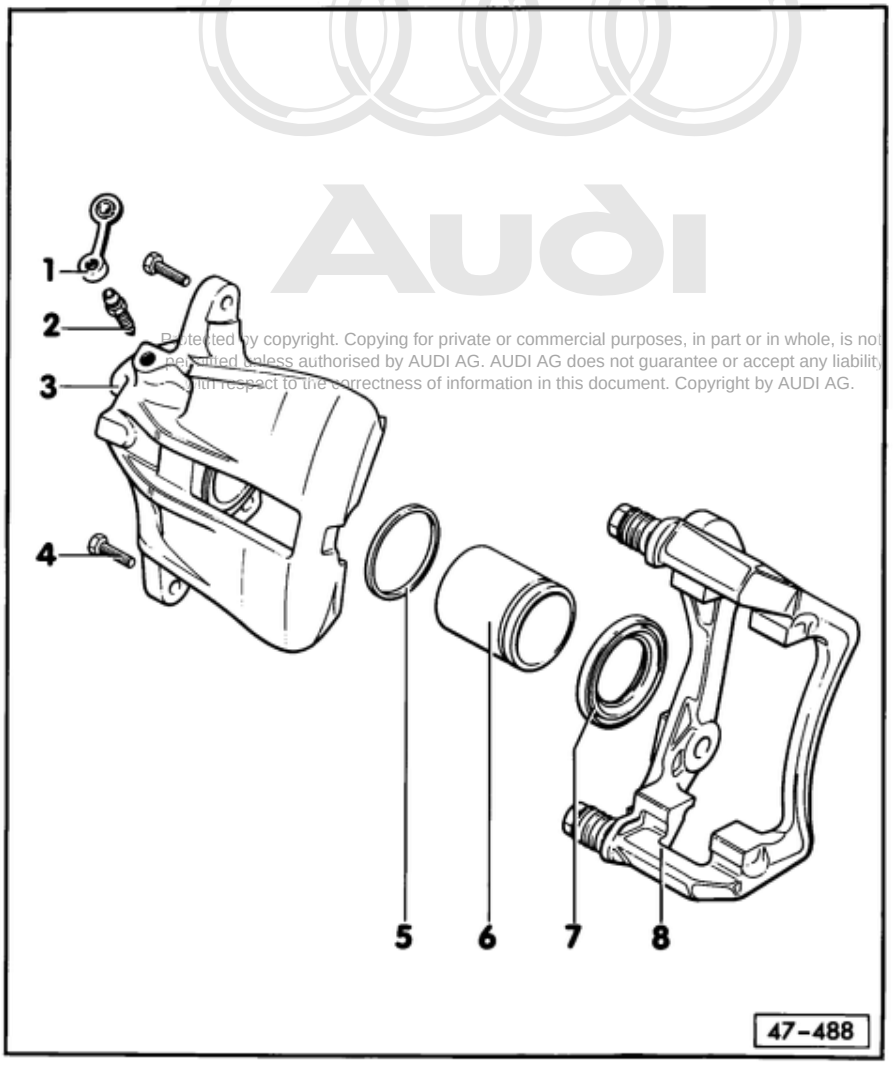
- Use screwdriver to remove => Fig. 2

6 Piston

- Use compressed air to press out of brake caliper housing => Fig. 1
- Piston diameter 54 mm

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Warning!
Place a piece of wood in the recess to prevent damaging the piston.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

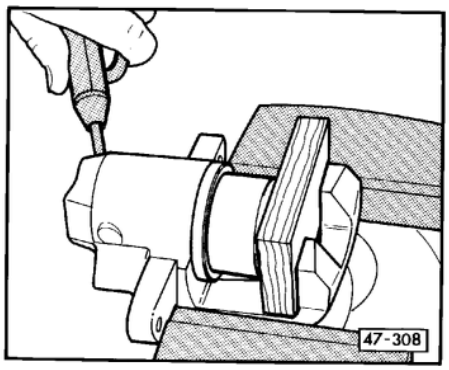
- Installing => Fig. 3 , 4 and 5
- First coat the piston lightly with brake cylinder paste.

7 End cap

- Do not damage when inserting piston

8 Brake carrier with guide pins and protective caps

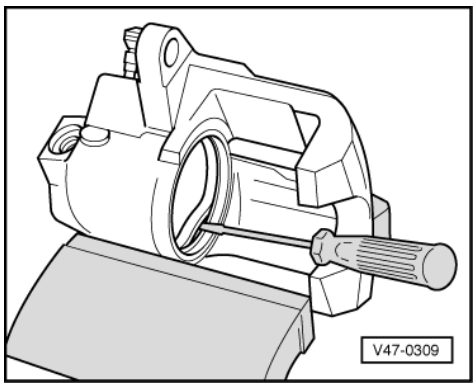
- Supplied as replacement part, assembled with sufficient grease on guide pins
- If protective caps are damaged use repair kit
- Use grease sachet supplied to lubricate guide pins



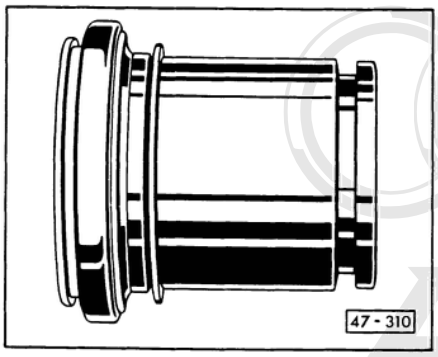
-> Fig.1 Using compressed air to press pistons individually out of brake caliper housing

Note:

Place a piece of wood in the recess to prevent damaging the piston.

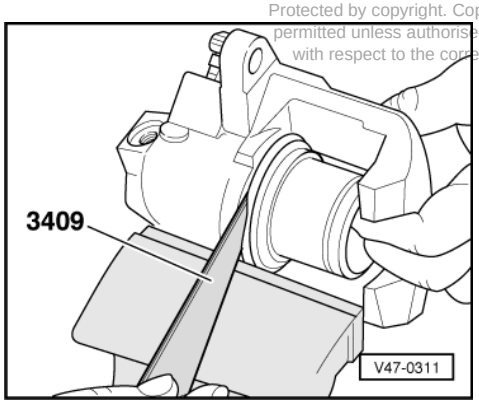


-> Fig. 2 Carefully removing seals with screwdriver



-> Fig.3 Attaching outer sealing lip of protective cap to piston.

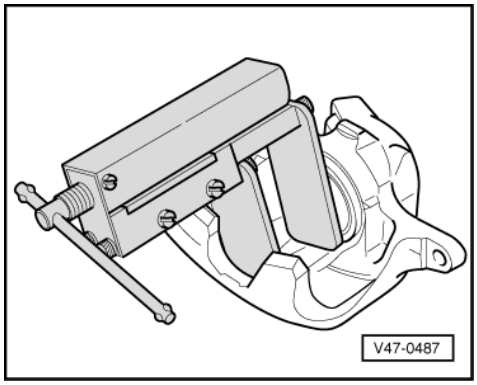
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Abb. 4 Inserting inner sealing lip of protective cap in groove in brake caliper housing with screwdriver

Note:

For this purpose, hold piston in front of brake caliper housing.



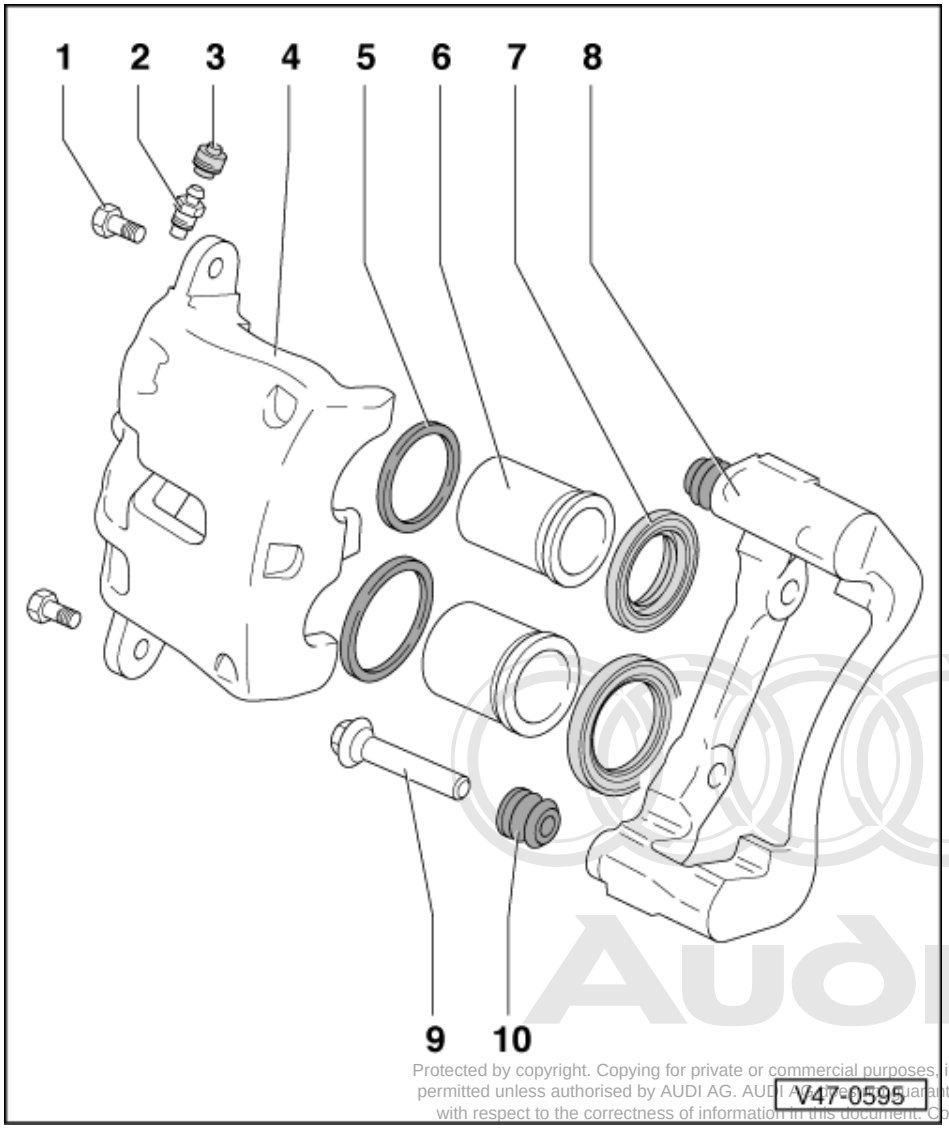
-> Fig. 5 Forcing piston into brake caliper housing with piston resetting tool

Note:

When pressing in outer sealing lip of protective cap jumps into groove in piston.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1.3 - Dual piston brake caliper



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Notes:

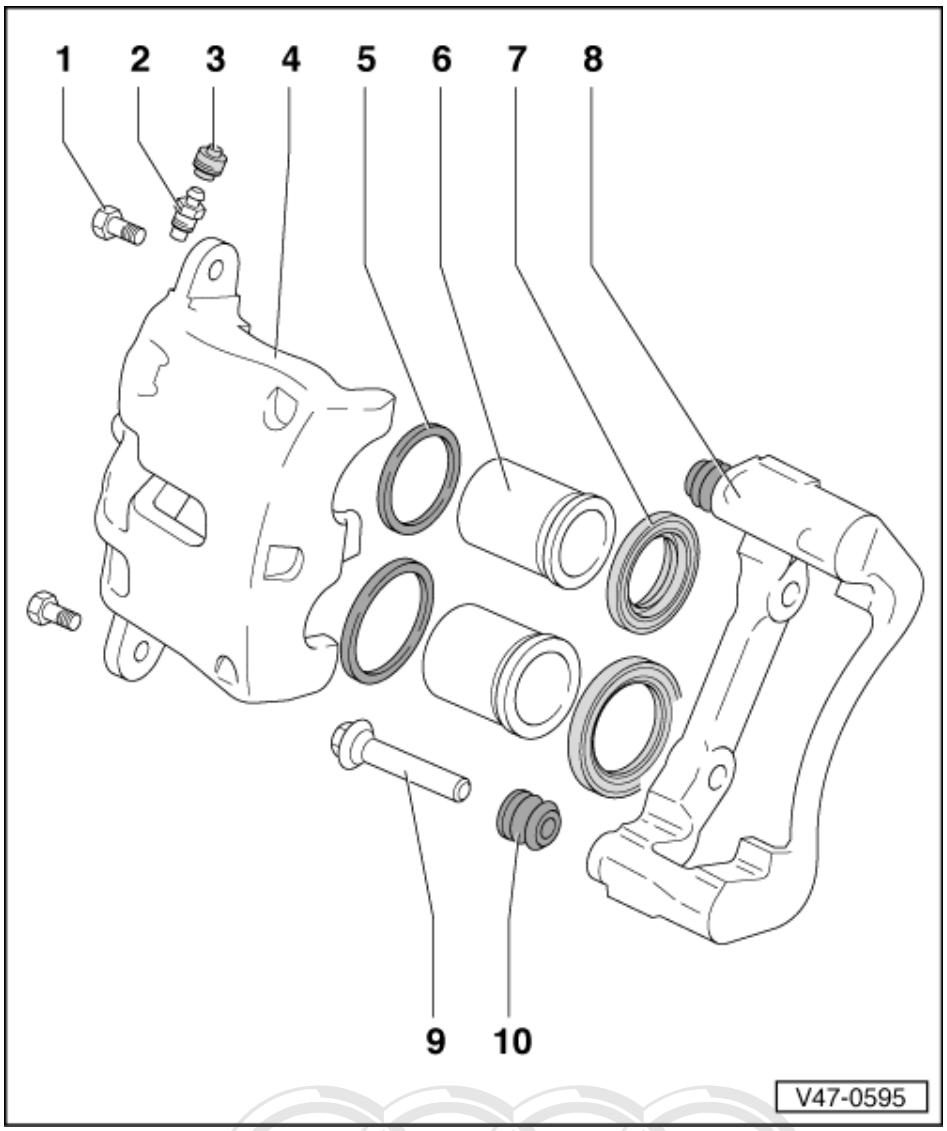
- When servicing only install complete repair set
- Apply thin coat of brake cylinder paste B 000 100 to brake cylinders, pistons and seals.

1 Self-locking bolt, 35 Nm

- Always replace
- When loosening and tightening counter hold on guide pin

2 Vent valve

- Apply thin coat of brake cylinder paste before screwing in.



3 Dust cap
- Fit onto bleeder valve

4 Brake caliper housing

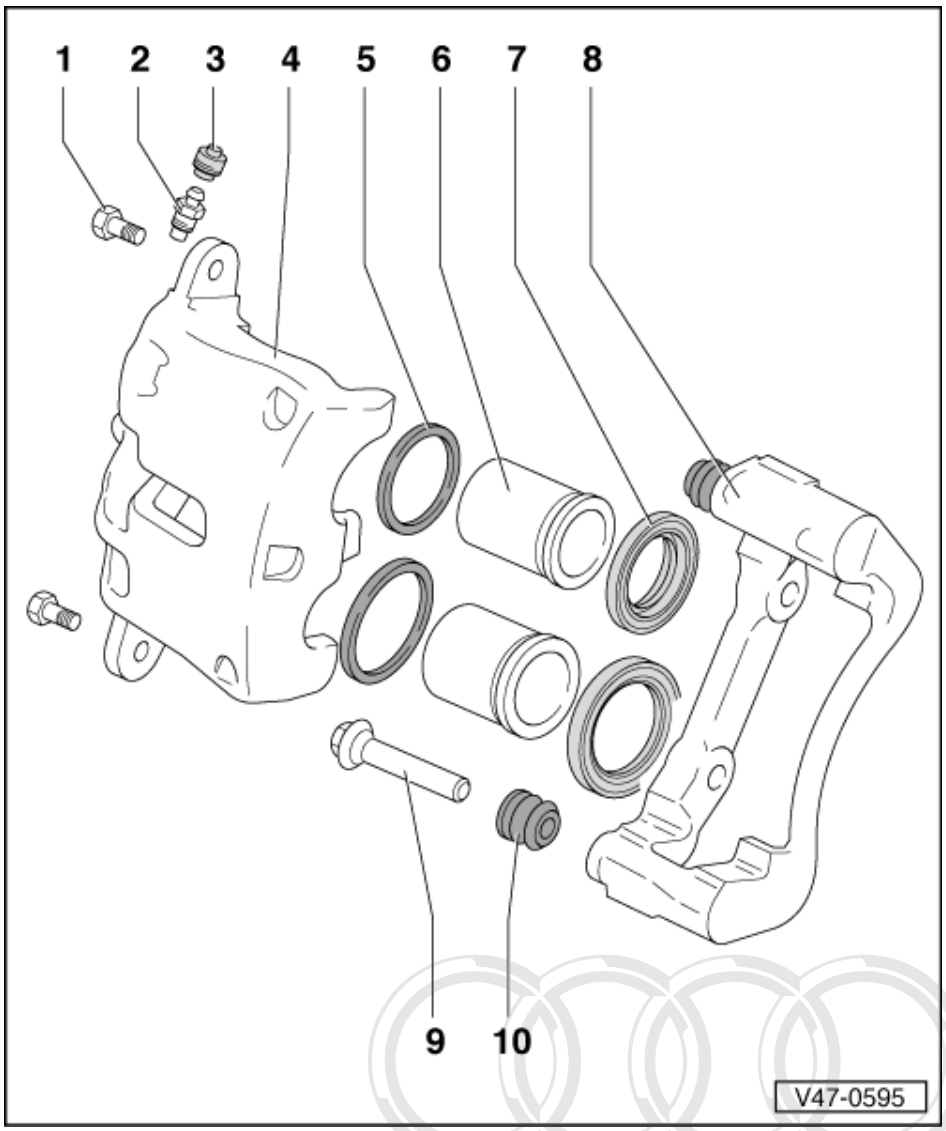
5 Oil seal
- Use screwdriver to remove => Fig. 2

6 Piston
- Use compressed air to press out of brake caliper housing =>Fig. 1

Warning!
Place a piece of wood in the recess to prevent damaging the piston. Danger of accidents!

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Piston diameter: 40/45 mm
- Installing => Fig. 3, 4 and 5
- First coat the piston lightly with brake cylinder paste.



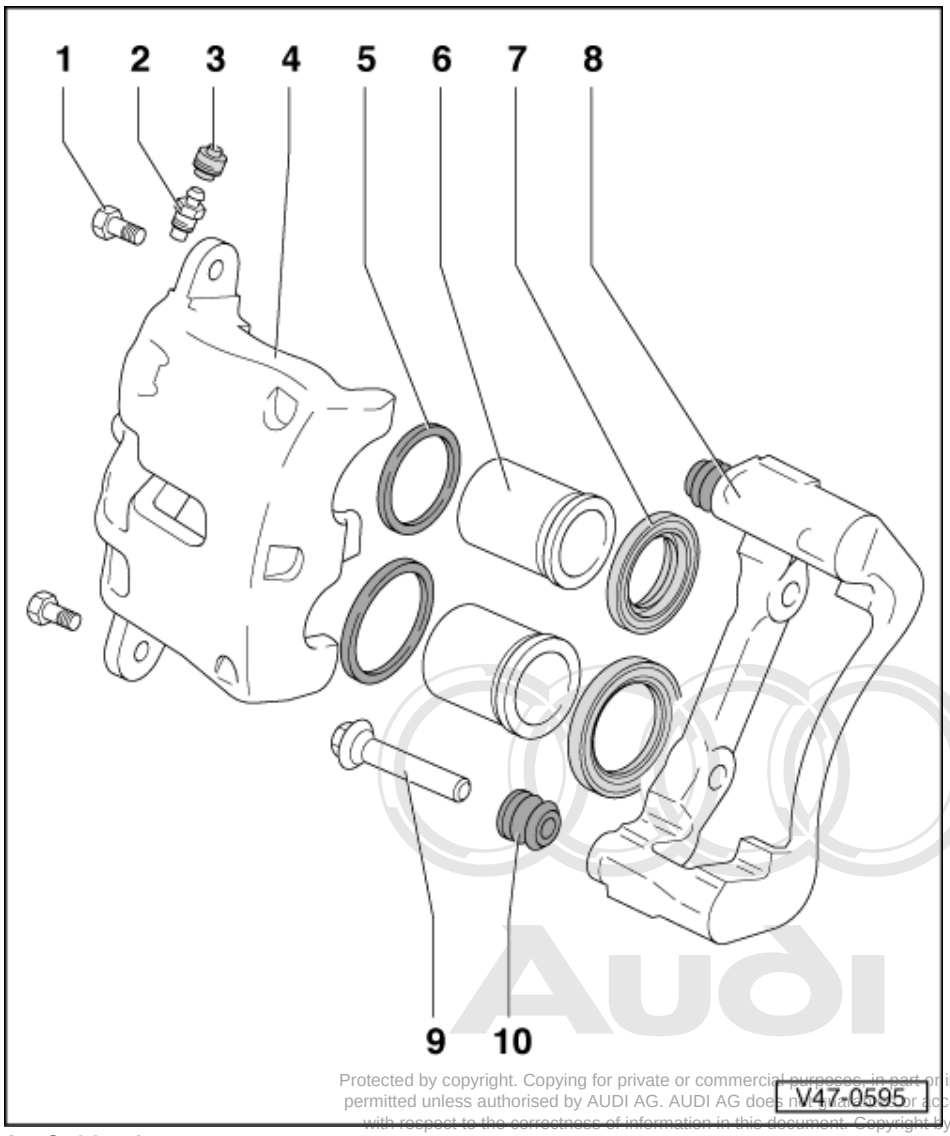
7 End cap

- Fitting outer sealing lip onto piston => Fig. 3
- Insert with inner sealing lip in groove in brake caliper housing => Fig. 4

8 Brake carrier with guide pins and protective caps

- Supplied as replacement part, assembled with sufficient grease on guide pins
- If protective caps are damaged use repair kit
- Use grease sachet supplied to lubricate guide pins

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



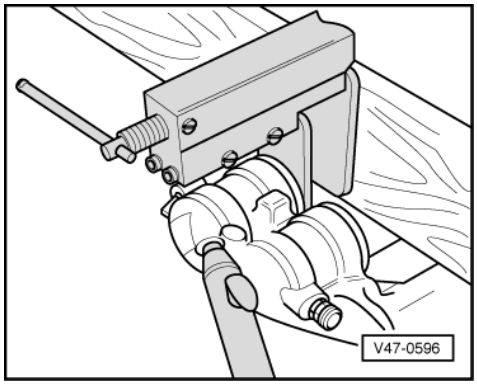
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not make any representation or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

9 Guide pin

- Grease before fitting protective cap

10 End cap

- Pull onto brake carrier and guide pin



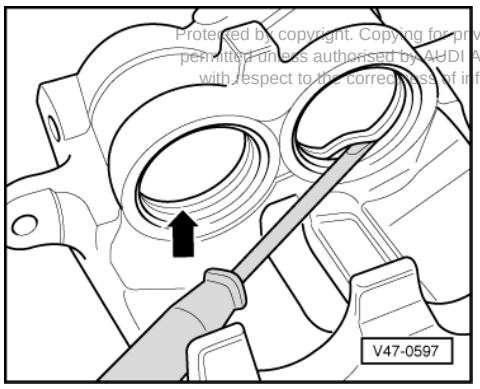
-> Fig.1 Using compressed air to press pistons individually out of brake caliper housing

Note:

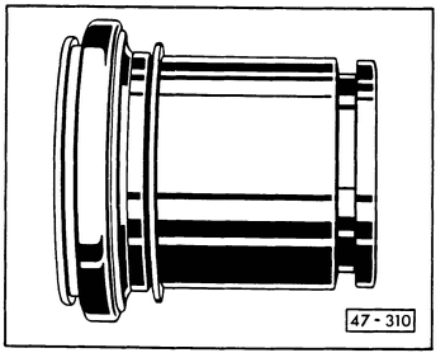
Place a piece of wood in the recess to prevent damaging the piston.

Only one piston can be pressed out at a time, when doing so, hold other piston in position in brake caliper housing using piston resetting tool.

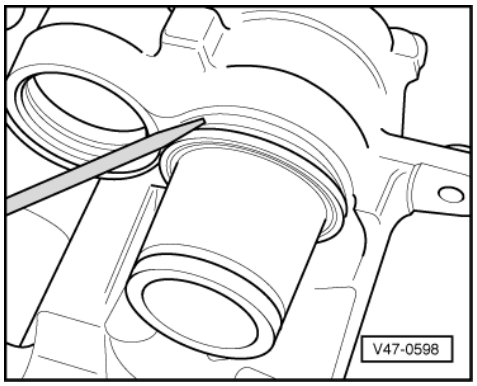
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Fig. 2 Carefully removing seals with screwdriver



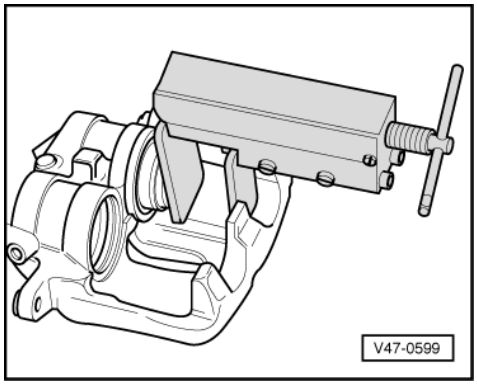
-> Fig.3 Attaching outer sealing lip of protective cap to piston.



-> Abb. 4 Inserting inner sealing lip of protective cap in groove in brake caliper housing with screwdriver

Note:

For this purpose, hold piston in front of brake caliper housing.



-> Fig. 5 Forcing piston into brake caliper housing with piston resetting tool

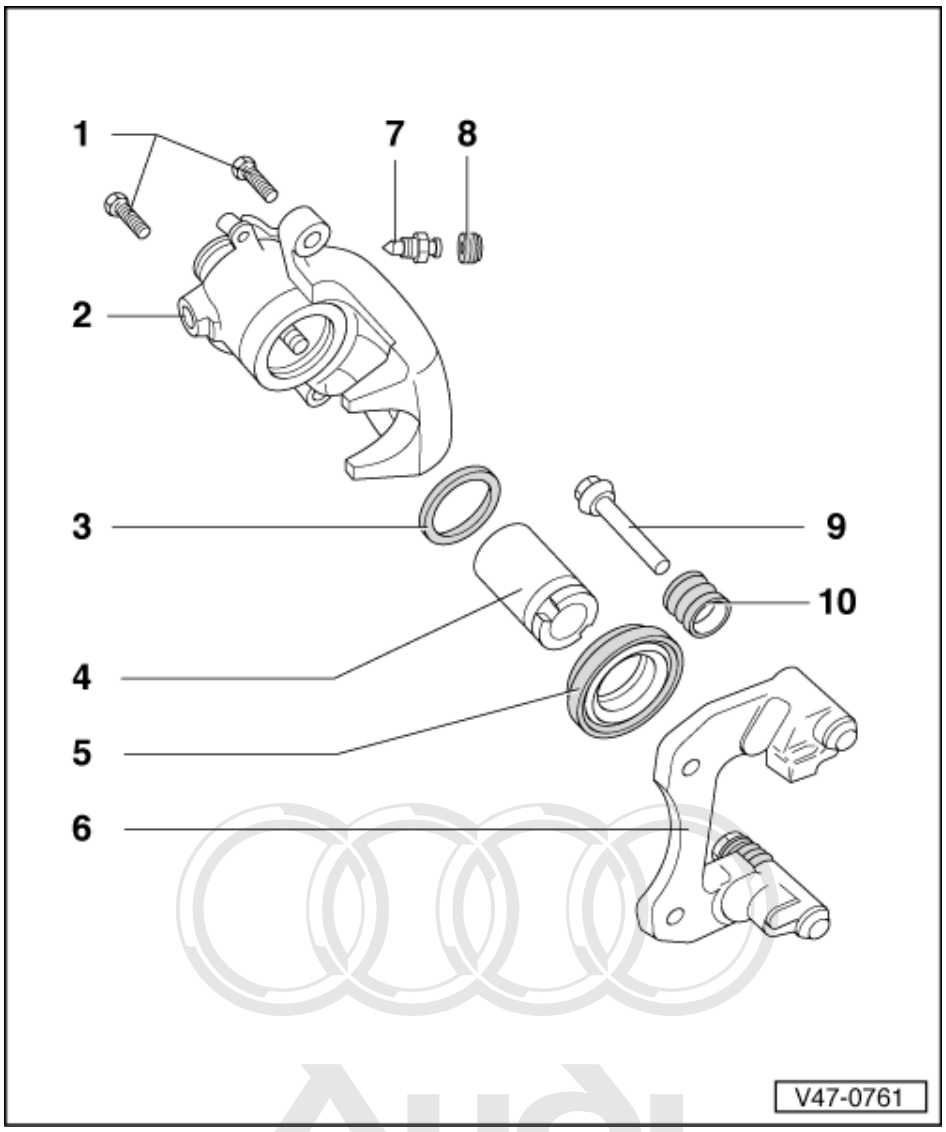
Note:

When pressing in outer sealing lip of protective cap jumps into groove in piston.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2 - Servicing rear brake calipers

2.1 - Servicing rear brake calipers



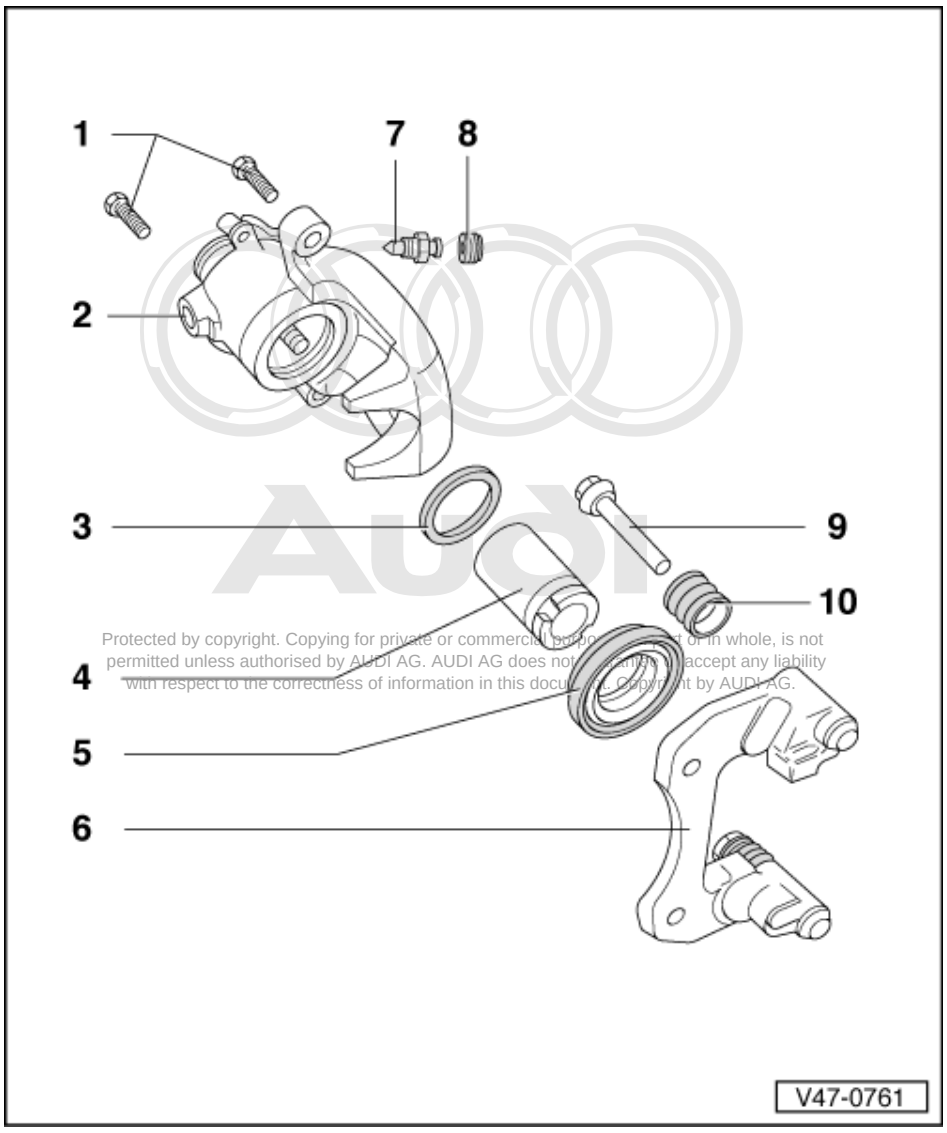
Notes:

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not
permitted unless authorised by AUDI AG. Audi AG does not guarantee or accept any liability

- When servicing only install complete repair set
- Apply thin coat of brake cylinder paste B 000 100 to brake cylinders, pistons and seals.

1 Self-locking bolt, 35 Nm

- Always replace
- When loosening and tightening counter hold on guide pin



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2 Brake caliper housing with handbrake cable lever

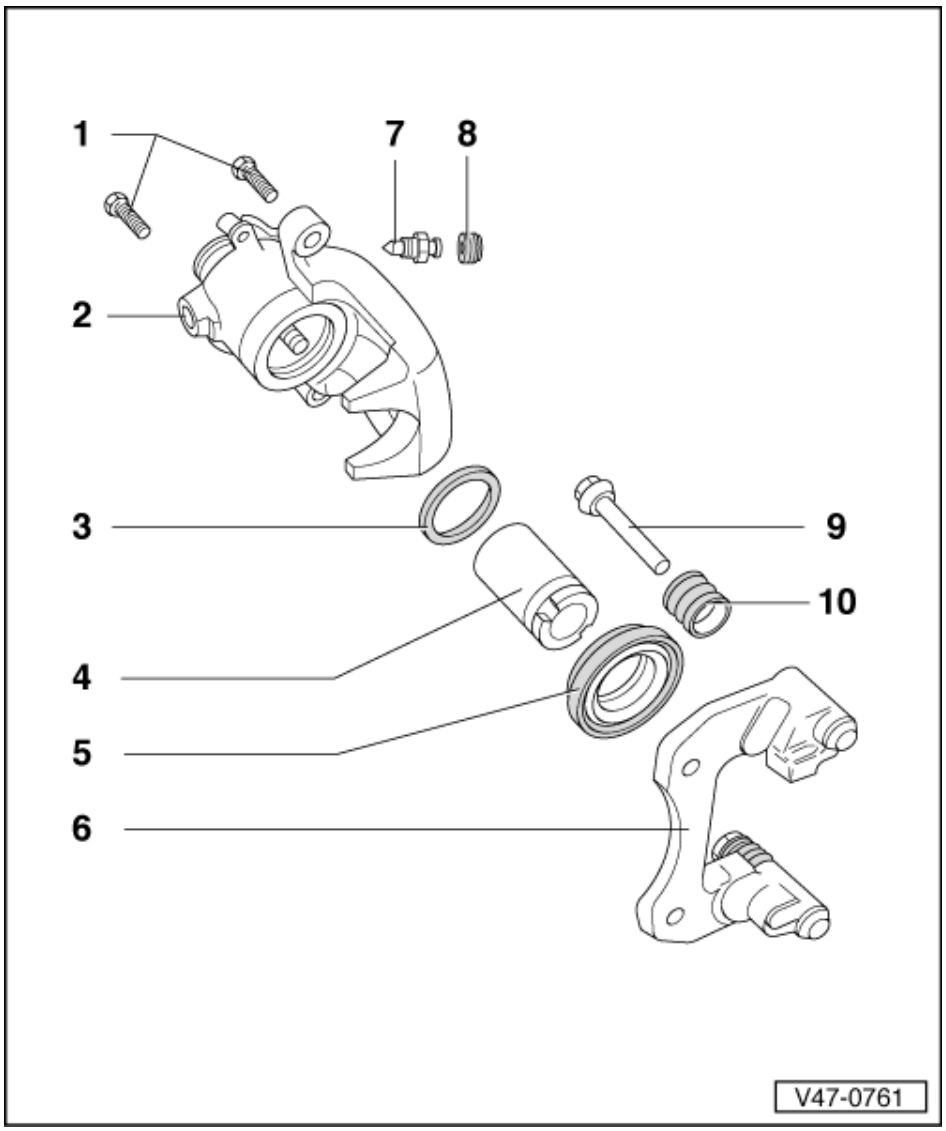
- Replace the brake caliper housing if there is a leak at the lever for the handbrake cable

3 Oil seal

- Use screwdriver to remove => Fig. 3

4 Piston with automatic adjustment

- Unscrewing from brake caliper housing =>Fig. 1
- Screwing into brake caliper housing =>Fig. 5
- Piston diameter 38 mm



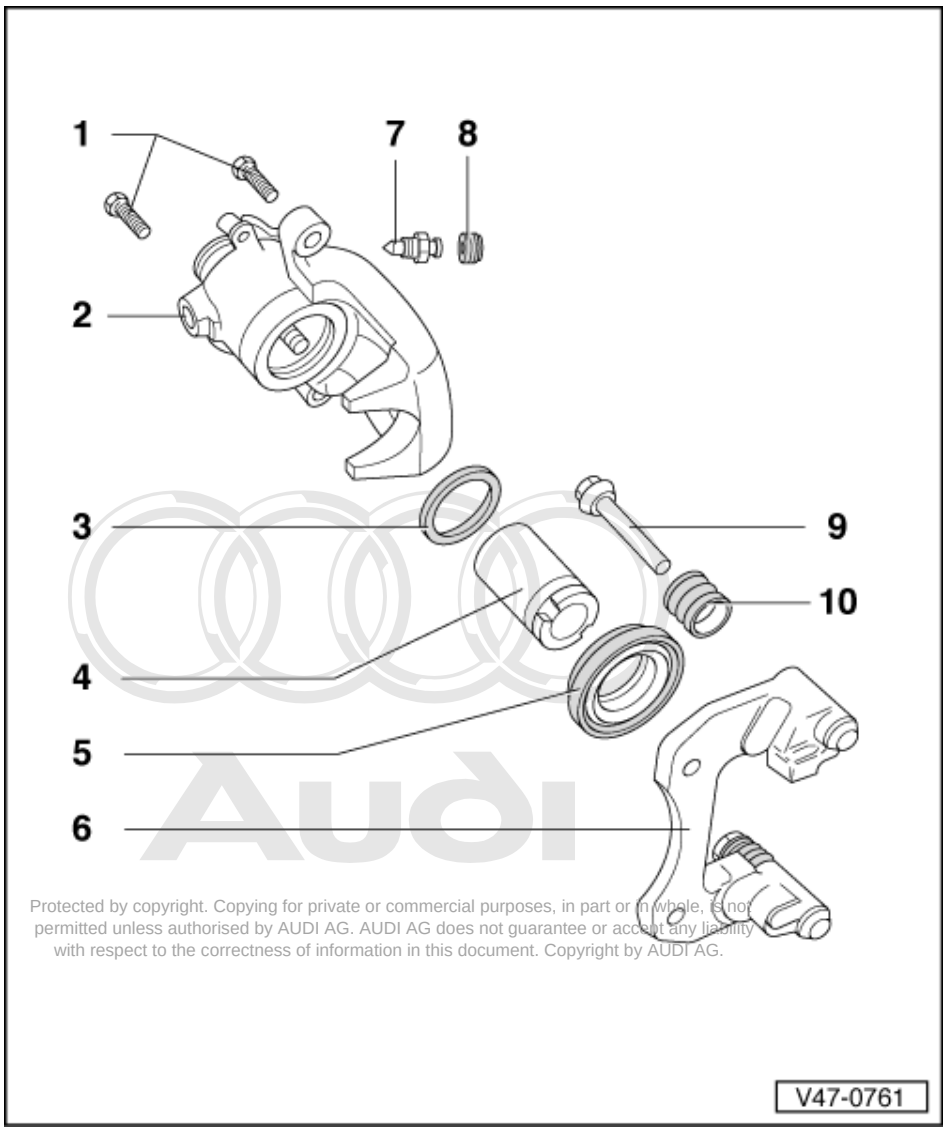
5 End cap

- Fit onto piston with outer sealing lip =>Fig. 2
- Insert with inner sealing lip in groove in brake caliper housing => Fig. 4

6 Brake carrier with guide pins and protective caps

- Supplied as replacement part, assembled with sufficient grease on guide pins
- If protective caps are damaged use repair kit
- Use grease sachet supplied to lubricate guide pins

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

7 Vent valve

- Apply thin coat of brake cylinder paste before screwing in.

8 Dust cap

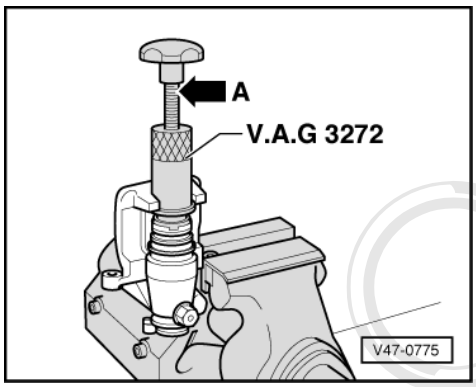
- Fit onto bleeder valve

9 Guide pin

- Grease before fitting protective cap

10 End cap

- Pull onto brake carrier and guide pin



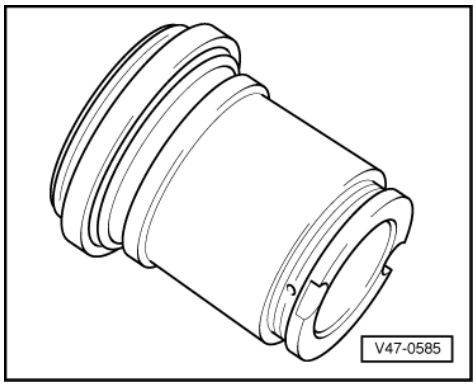
-> Fig.1 Unscrewing piston from brake caliper housing

- Screw in piston by turning threaded spindle anti-clockwise and knurled wheel clockwise. Pull out sealing lip with piston.

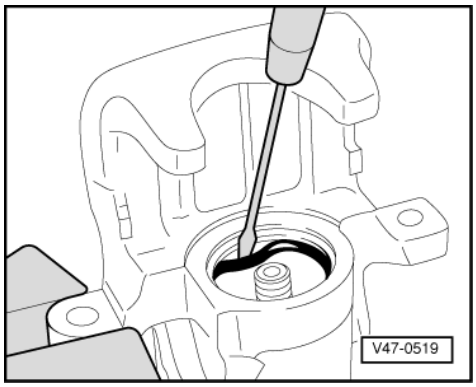
Note:

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

If piston is stiff 13 mm open ended spanner can be applied at the appropriate flat (arrow A).



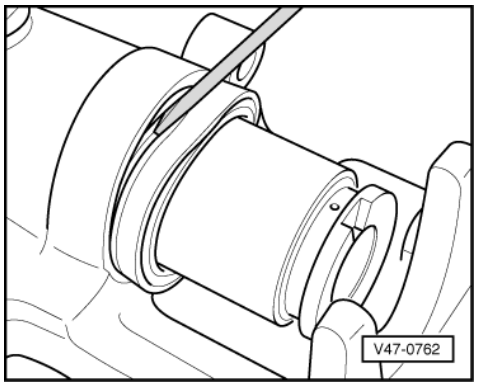
-> Fig.2 Attaching outer sealing lip of protective cap to piston.



-> Fig.3 Carefully removing seals with screwdriver

Note:

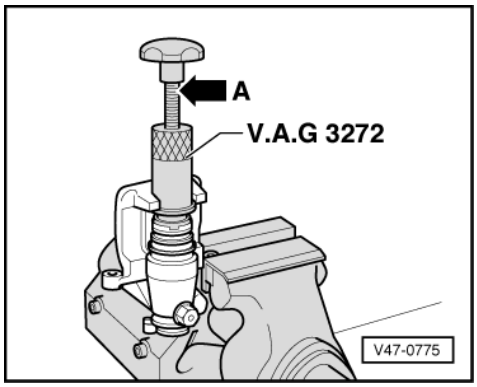
When removing take care not to damage surface of cylinder.



-> Fig.4 Inserting inner sealing lip of protective cap in groove in brake caliper housing with screwdriver

Note:

For this purpose, hold piston in front of brake caliper housing.



-> Fig. 5 Screwing piston as far as its stop into brake caliper housing

- Screw in piston by turning threaded spindle clockwise and knurled wheel anti-clockwise.

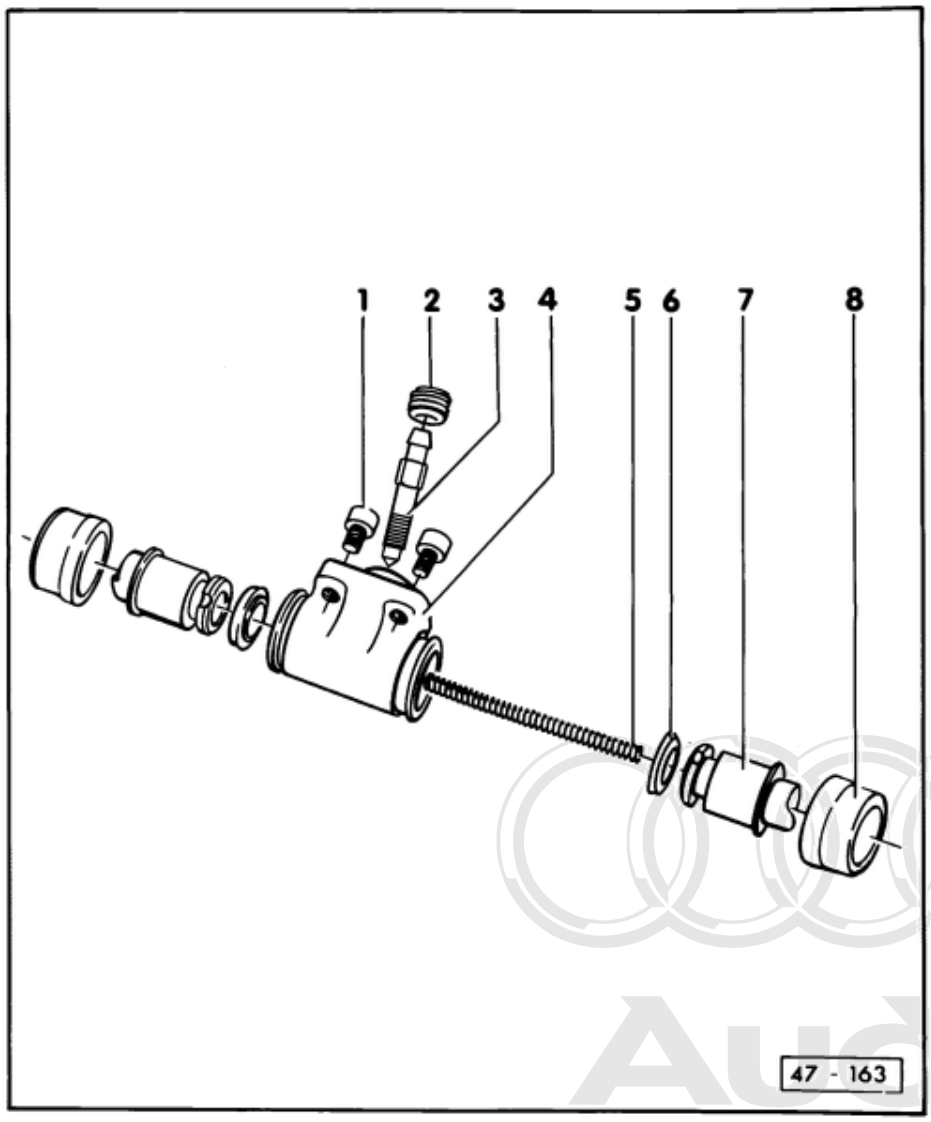
Note:

The protective seal outer sealing lip will then locate in the piston groove.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 - Servicing wheel brake cylinder

3.1 - Servicing wheel brake cylinder



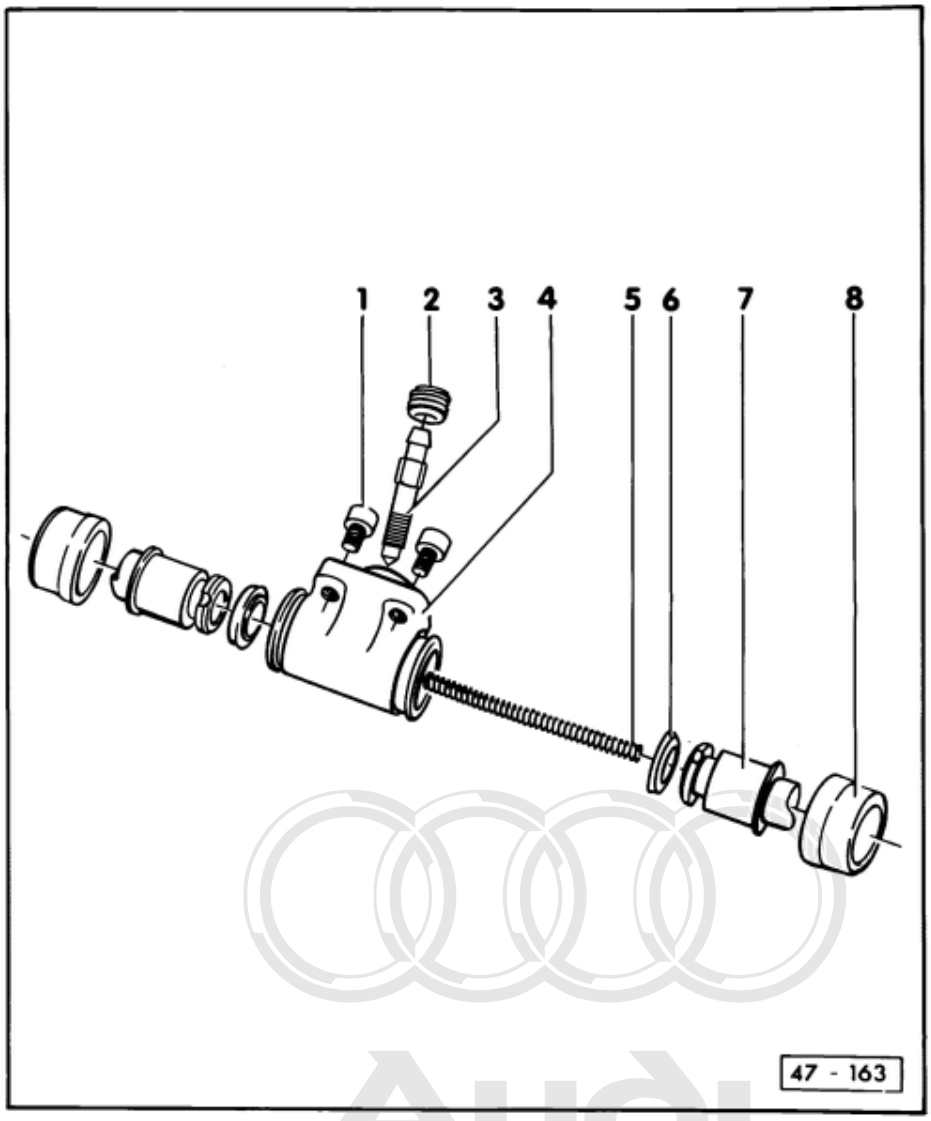
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Notes:

- When servicing only install complete repair set
- Apply thin coat of brake cylinder paste B 000 100 to brake cylinders, pistons and seals.

1 **Cheese head bolt, 10 Nm**
2 **Dust cap**
3 **Vent valve**
4 **Wheel brake cylinder housing**
- Replace complete wheel brake cylinder if scored or pitted

5 **Spring**



6 Sealing collar
- Apply brake cylinder paste when fitting
- Sealing lip faces wheel brake cylinder housing

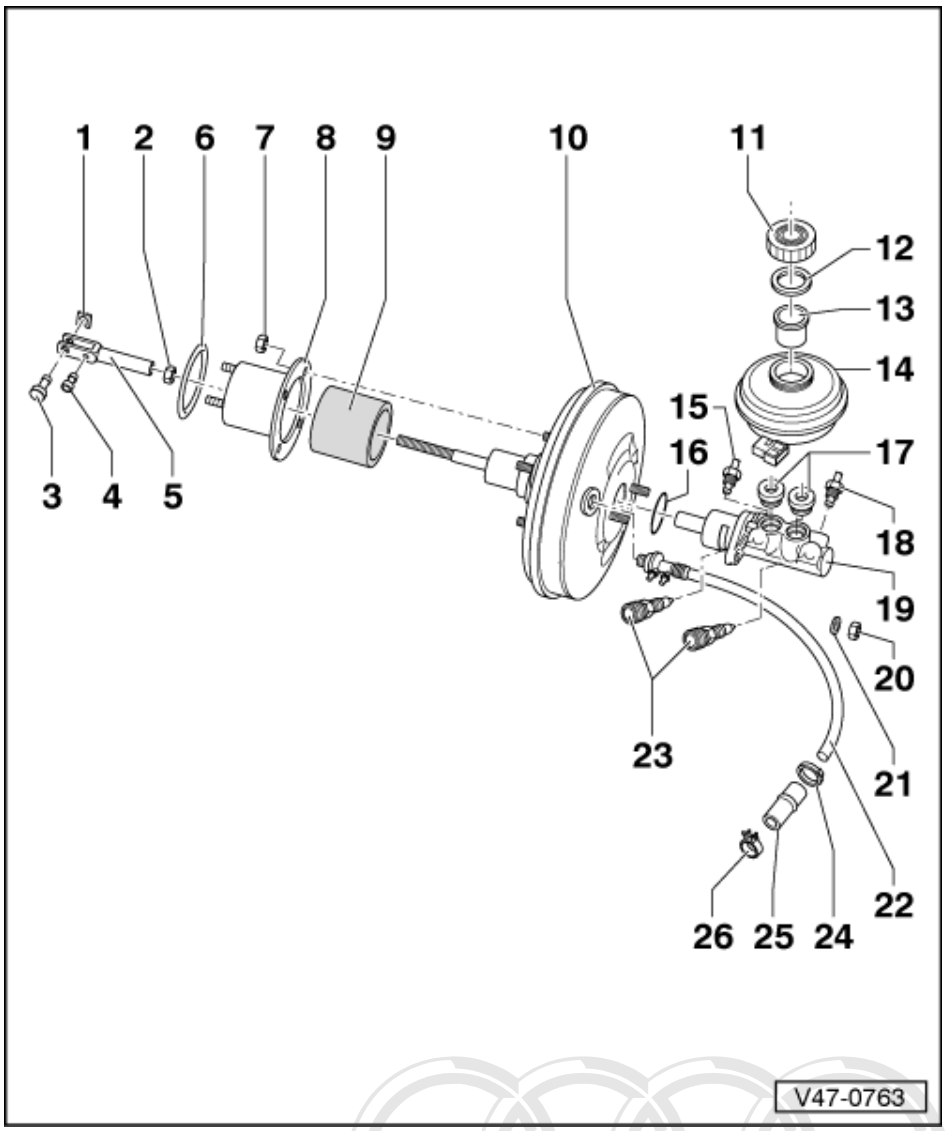
7 Piston
- Apply brake cylinder paste when fitting

8 End cap

The data copyright by AUDI AG. Distribution for commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

4 - Servicing brake master cylinder/servo unit

4.1 - Servicing brake master cylinder/servo unit

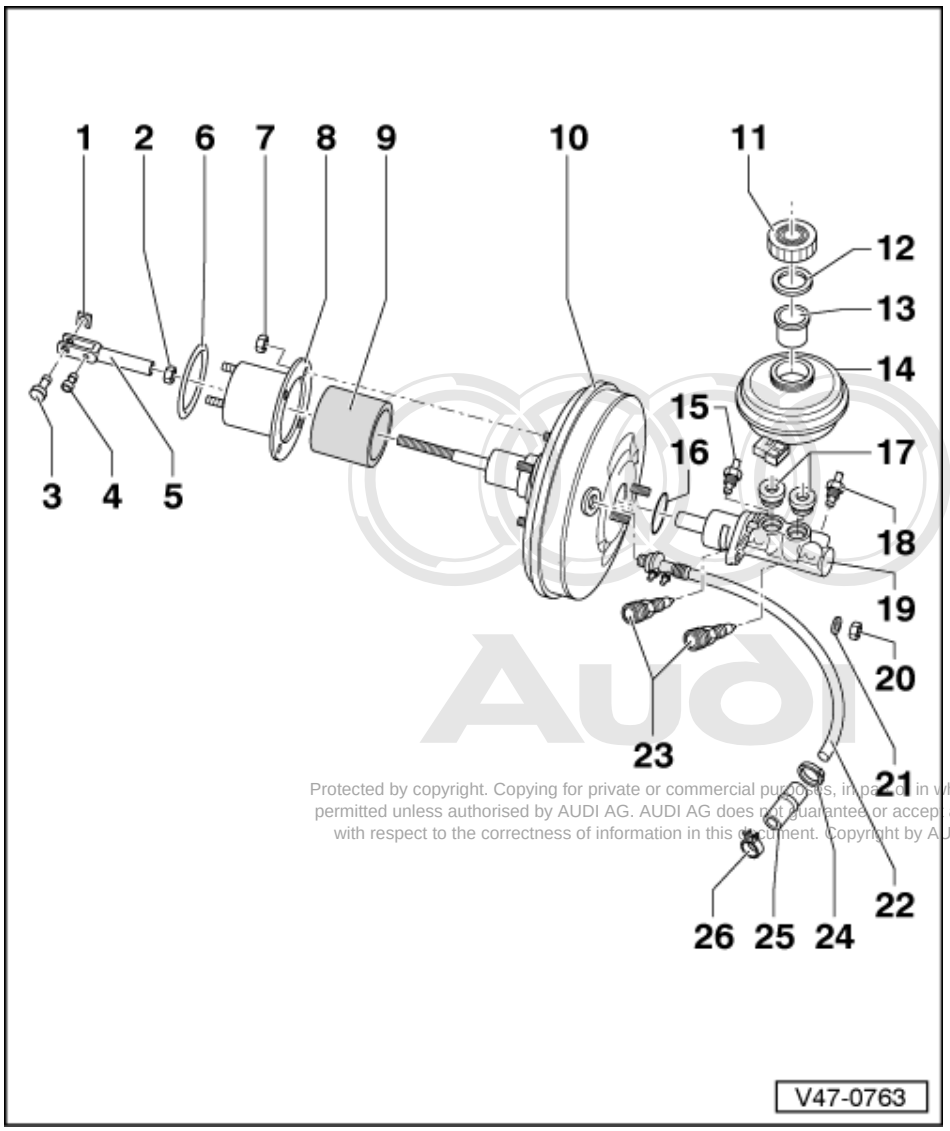


Notes:

- Brake master cylinders cannot be dismantled any further, i.e. no provision is made for servicing.
- Use only fresh brake fluid. Refer to information on brake fluid reservoir.
- Brake master cylinder and brake servo are supplied by different manufacturers. The complete brake master cylinder and brake servo can be replaced separately from each other.

1 Circlip
- Always replace
- Fit onto pin

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2 Lock nut

- Tighten after adjusting clevis

3 Pin

- Insert in clevis and brake pedal

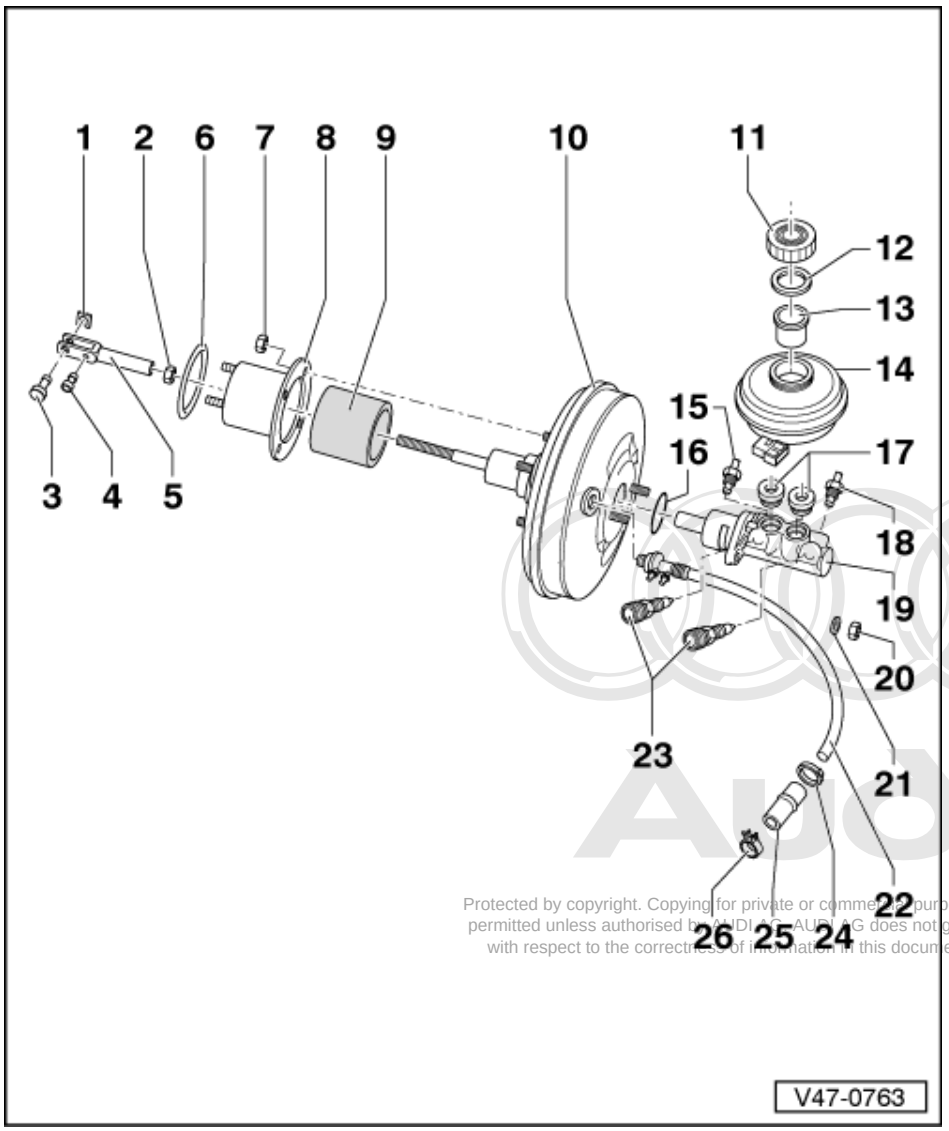
4 Grommet

- Insert in clevis
- Insert coil spring in grommet

5 Clevis

- Adjusting:

- Vehicles with pneumatic servo unit: => Fig. 1
- Vehicles with hydraulic servo unit: => Fig. 2



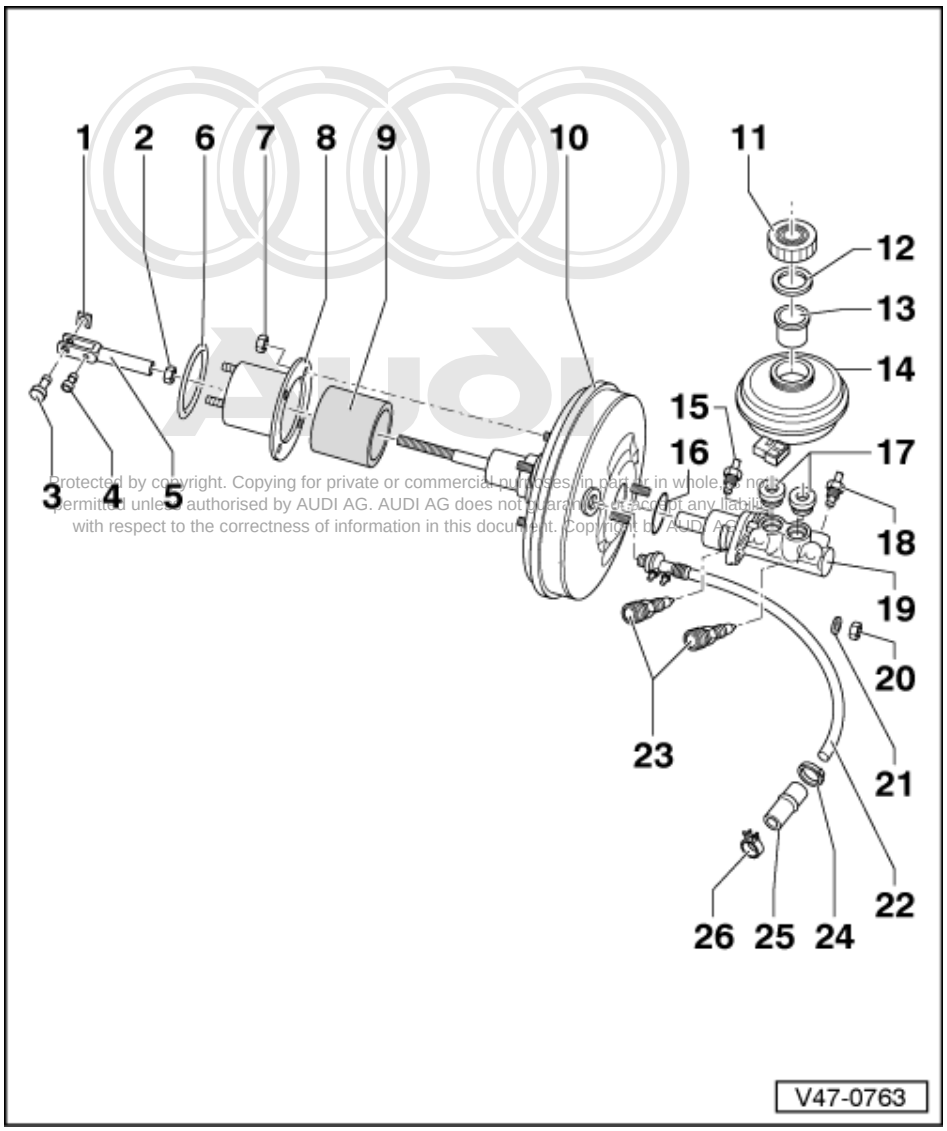
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

6 Oil seal
- Always replace
- Attach to adapter before installing servo unit
- Roll onto bulkhead after attaching servo unit

7 Hexagon nut, 20 Nm

8 Intermediate piece
- Long version for 9" servo units
- Short version for 10" servo unit

9 Oil seal
- Insert in adapter
- Note that there are different versions:



Protected by copyright. Copying for private or commercial purposes, in part, in whole or in other form, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

10 Brake servo

- On vehicles with 4- and 5-cylinder engines ø 9"
- On vehicles with 6-cylinder engines ø 10"

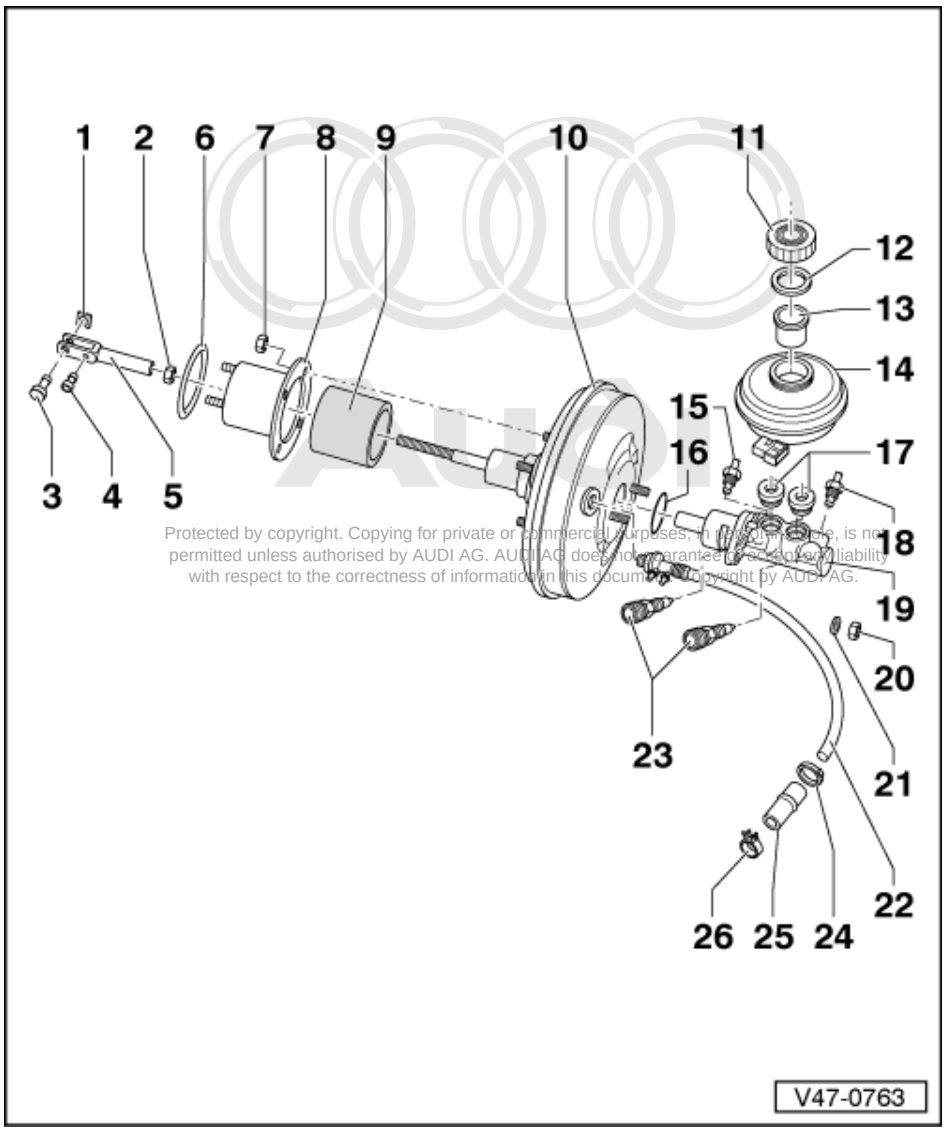
Note:

As of model year 93 gradual introduction of 10" servo unit for all vehicles.

This modification does not apply to RHD vehicles.

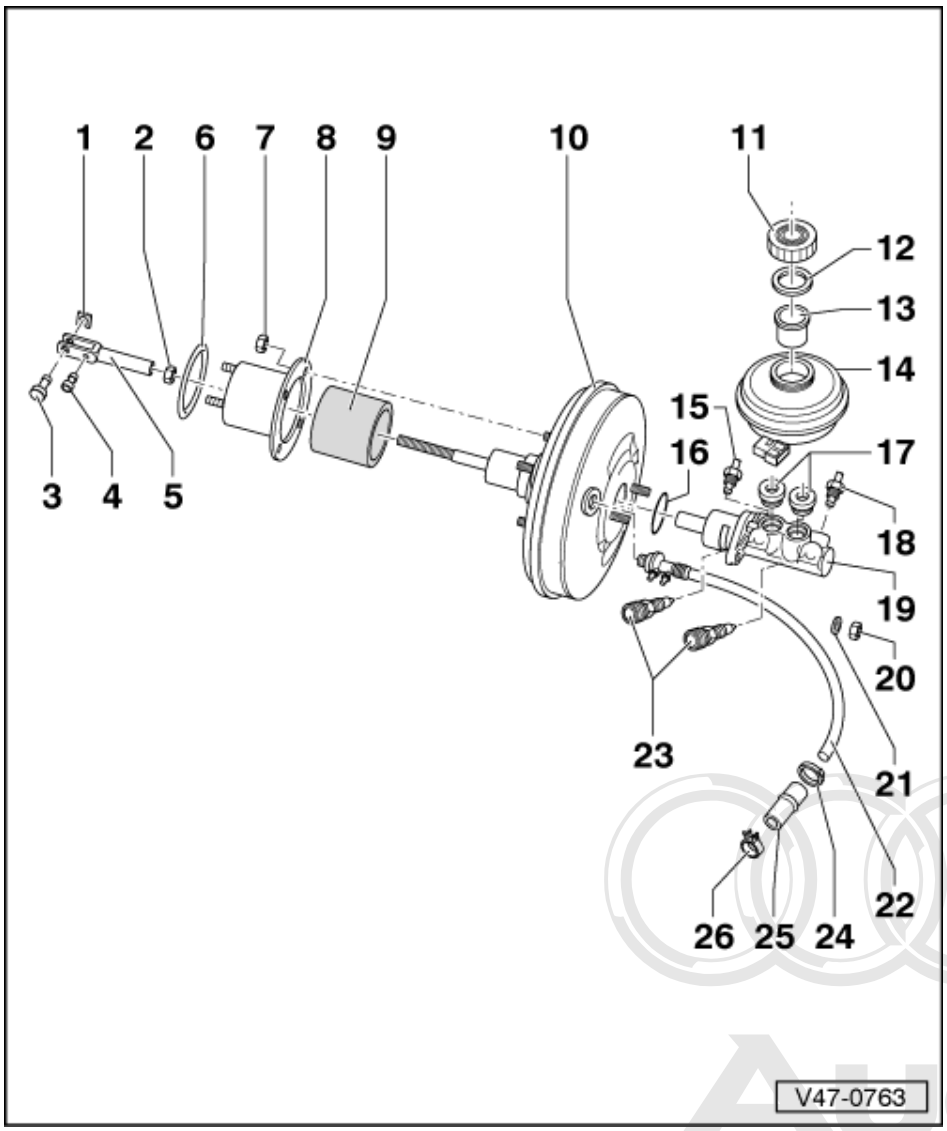
- Checking:

- Firmly depress brake pedal several times with engine stopped. This will dissipate vacuum at unit. Now depress brake pedal with moderate force, hold and start engine.
- If the servo unit is working properly, the pedal will be felt to give slightly under foot (servo assistance becomes effective).



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

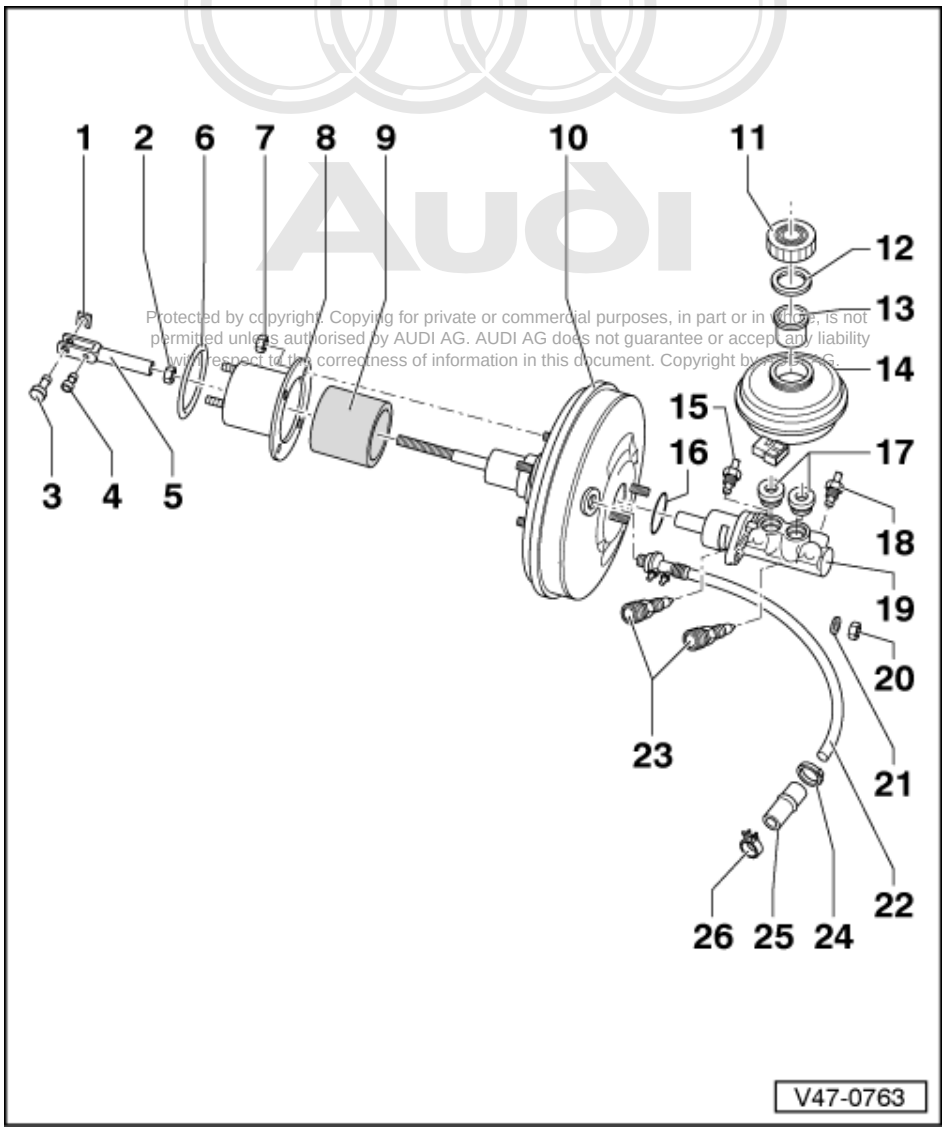
- If faulty replace complete.
- On 4-cyl. petrol engines vacuum is taken from intake manifold
- On 4-cyl. diesel engines and 5-cylinder petrol engines vacuum is generated by built-in vacuum pump
- Vacuum pump is fitted with 6-cylinder engines and automatic gearbox up to vehicle no. 8C NA 132 157.
- As of vehicle no. 8C NA 132 158 vacuum is taken from intake manifold on vehicles with manual gearbox



- ◆ Vehicles with automatic gearbox additionally feature a vacuum booster =>Page 216 , Item 28
- ◆ Boost factor:
- - 9" Brake servo 3.0 : 1
- - 10" Brake servo 3.85 : 1
- ◆ Functional check on vacuum pump:
- - Pull vacuum hose off pump and with engine idling use finger to check for suction effect at hose connection.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

11 Cap



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

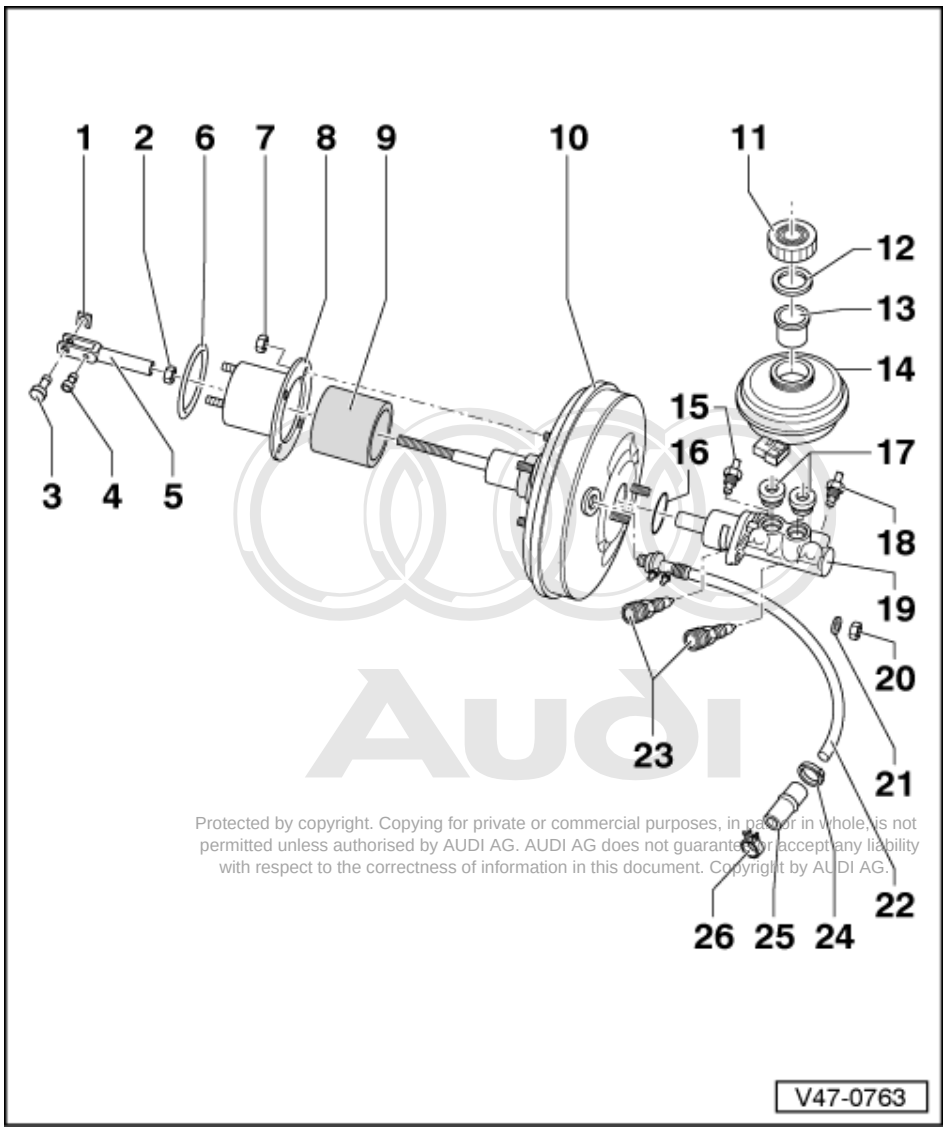
12 Gasket

- Insert in cap

13 Strainer

14 Brake fluid reservoir with float warning indicator

- Top up brake fluid as far as "max." mark
- Refer to label on reservoir before topping up brake fluid
- Brake fluid, total quantity approx. 0.6 l in braking system
- Connection for hydraulic coupling is located on side



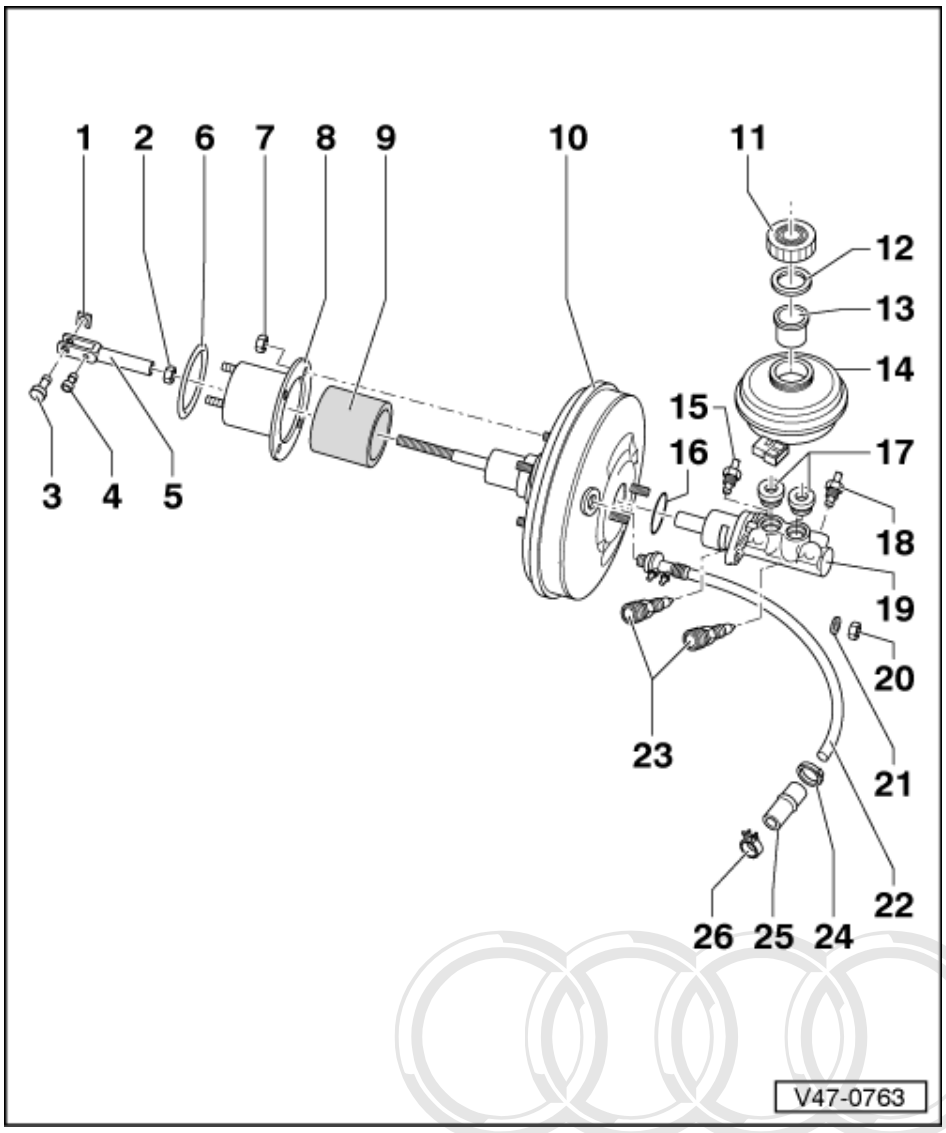
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- ◆ Functional check on indicator:
- \- With ignition on press firmly on centre of cap (diaphragm). Indicator lamp in instrument cluster lights and an acoustic warning is given.
- ◆ As of 07.92 the diaphragm was discontinued. To check indicator unscrew yellow cap with brake symbol and press by hand on visible strainer with ignition switched on.

15 Brake pipe

16 Oil seal

- ◆ Replace after removing servo unit or brake master cylinder



17 Sealing plug

- Moisten with brake fluid and insert into brake master cylinder
- Press brake fluid reservoir into sealing plugs

Note:

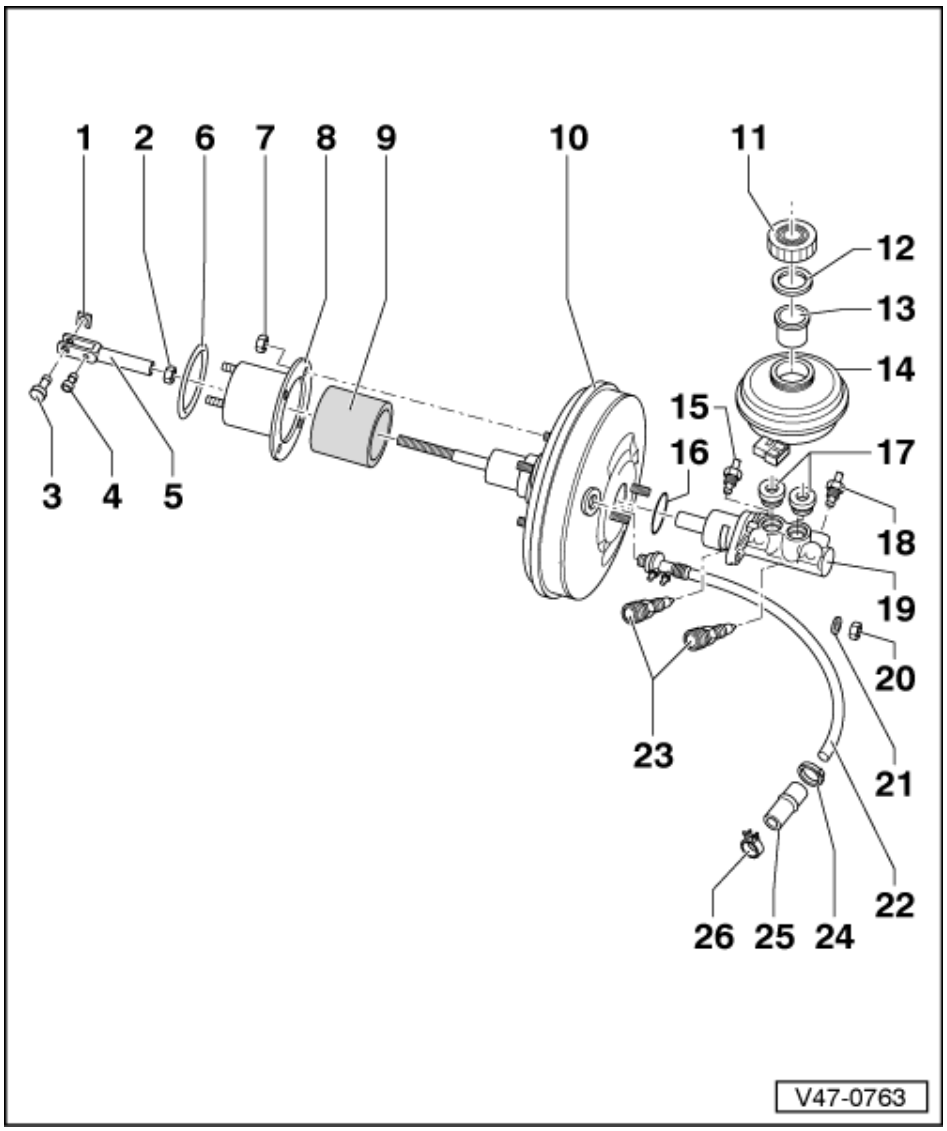
Replace plug for pushrod circuit in all Girling steel brake master cylinders => Page 218

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

18 Brake pipe

19 Brake master cylinder

- On vehicles with 4- and 5-cylinder engines ø 22.2 mm
- On vehicles with 6-cylinder engines ø 23.81 mm



Note:

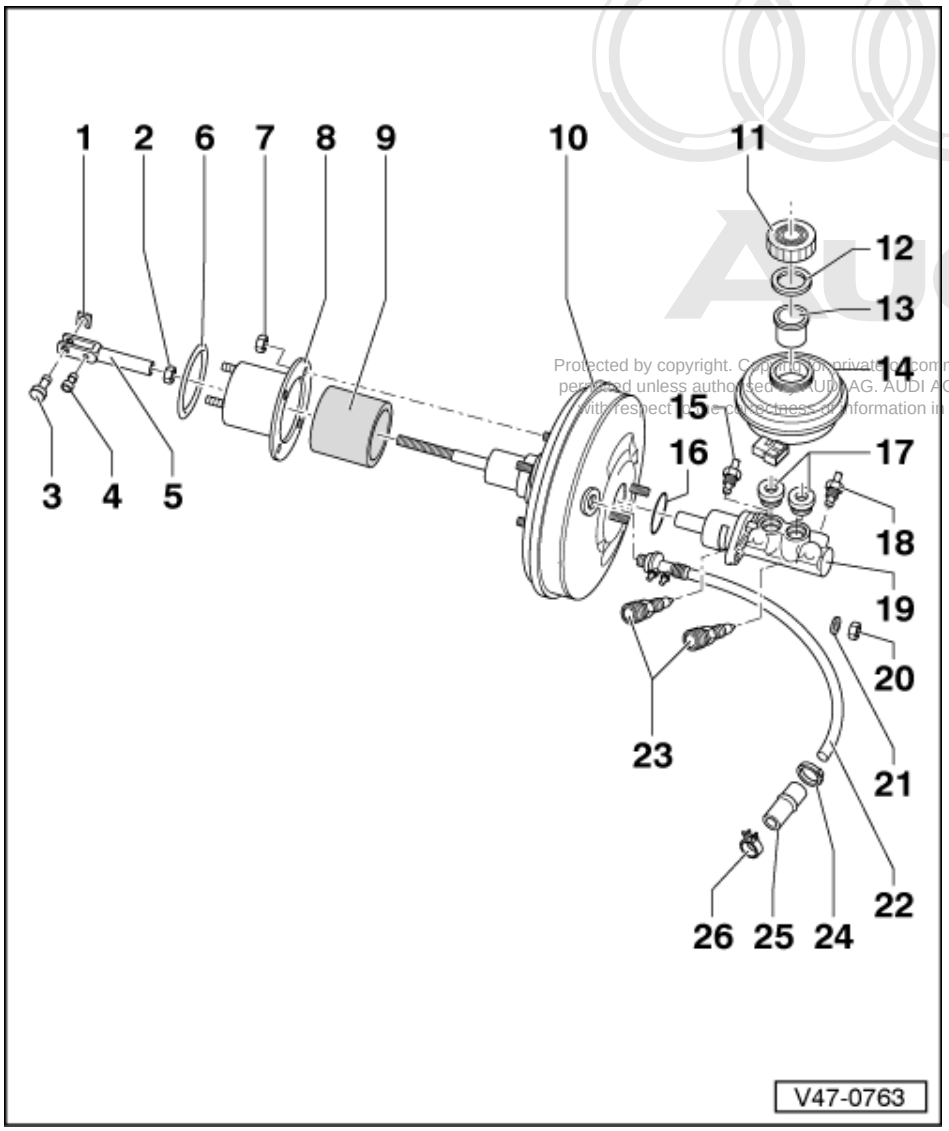
As of vehicle no. 8C PA 036 950 wheel brake cylinders with a dia. ø of 23.81 mm instead ofø 22.2 mm are installed.

This modification does not apply to RHD vehicles.

- Pull vacuum line item- 22 - off servo unit before removing
- Carefully remove from or insert in servo unit (do not tilt); non compliance will result in servo unit damage
- If necessary, replace as a complete assembly

20 Hexagon nut, 25 Nm
21 Washer

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

22 Vacuum line with check valve

- To check valve function:
- It must be possible to blow through valve in arrow direction, but not in opposite direction
- Insert into brake servo unit
- Note different versions depending on engine

23 Bleeder valves

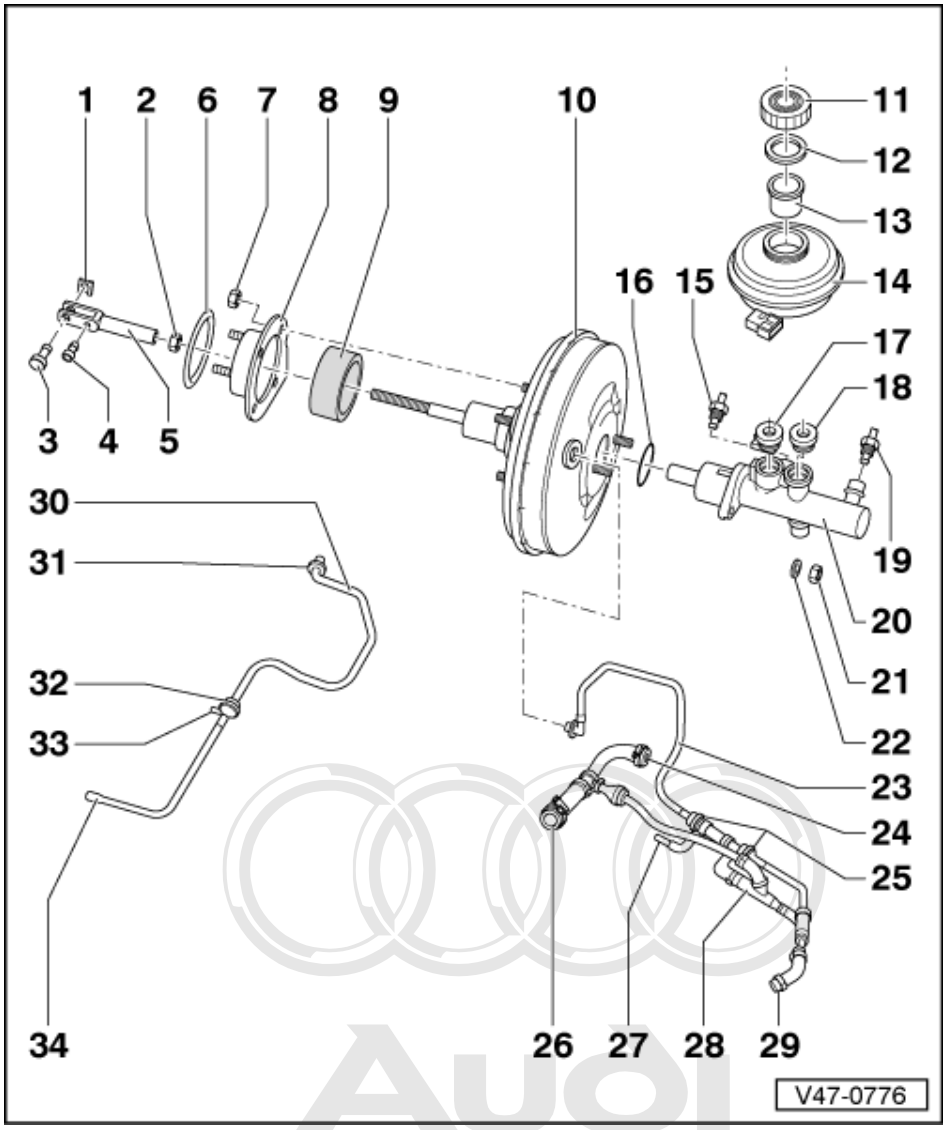
- Depending on braking system brake master cylinder has one or two valves
- Always bleed when bleeding braking system

24 Clip

25 Vacuum hose

26 Hose clip

4.2 - Vehicles with 6-cylinder engine as of vehicle no. 8C NA 132 158



Notes => see Page 197

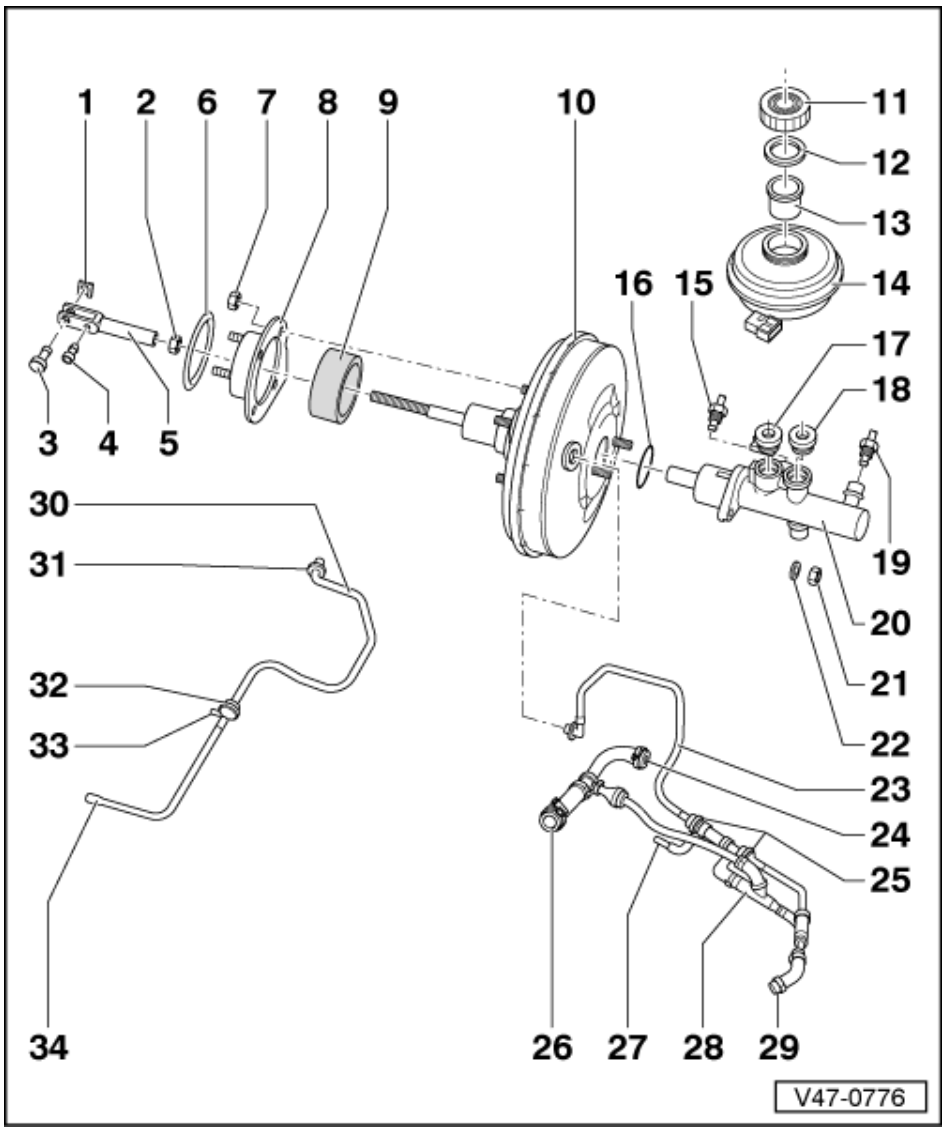
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 **Circlip**
- Always replace
- Fit onto pin

2 **Lock nut**
- Tighten after adjusting clevis

3 **Pin**
- Insert in clevis

4 **Grommet**
- Insert in clevis
- Insert coil spring in grommet



5 Clevis

- Adjusting:

- Vehicles with pneumatic servo unit: => Fig. 1
- Vehicles with hydraulic servo unit: => Fig. 2

6 Oil seal

- Always replace
- Attach to adapter before installing servo unit
- Roll onto bulkhead after attaching servo unit

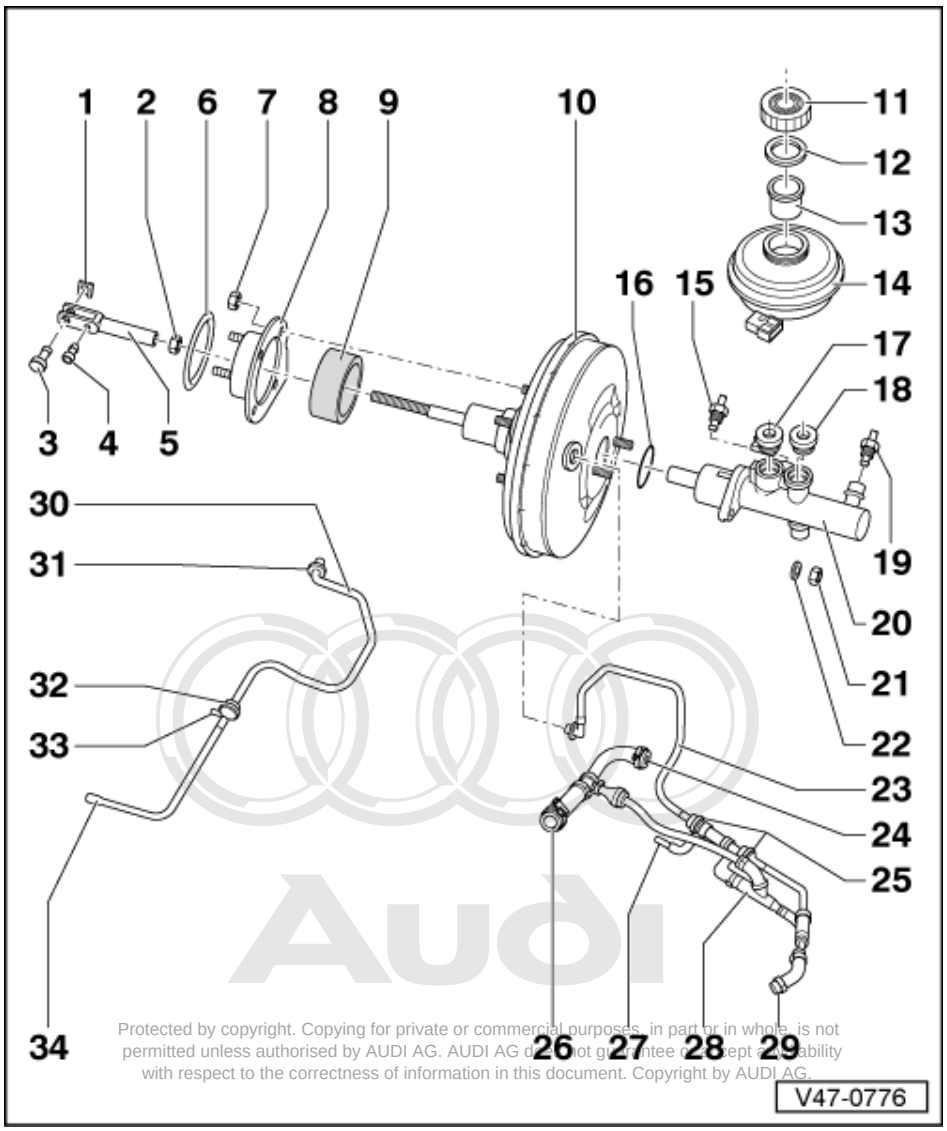
7 Hexagon nut, 20 Nm

8 Intermediate piece

9 Oil seal

- Insert in adapter

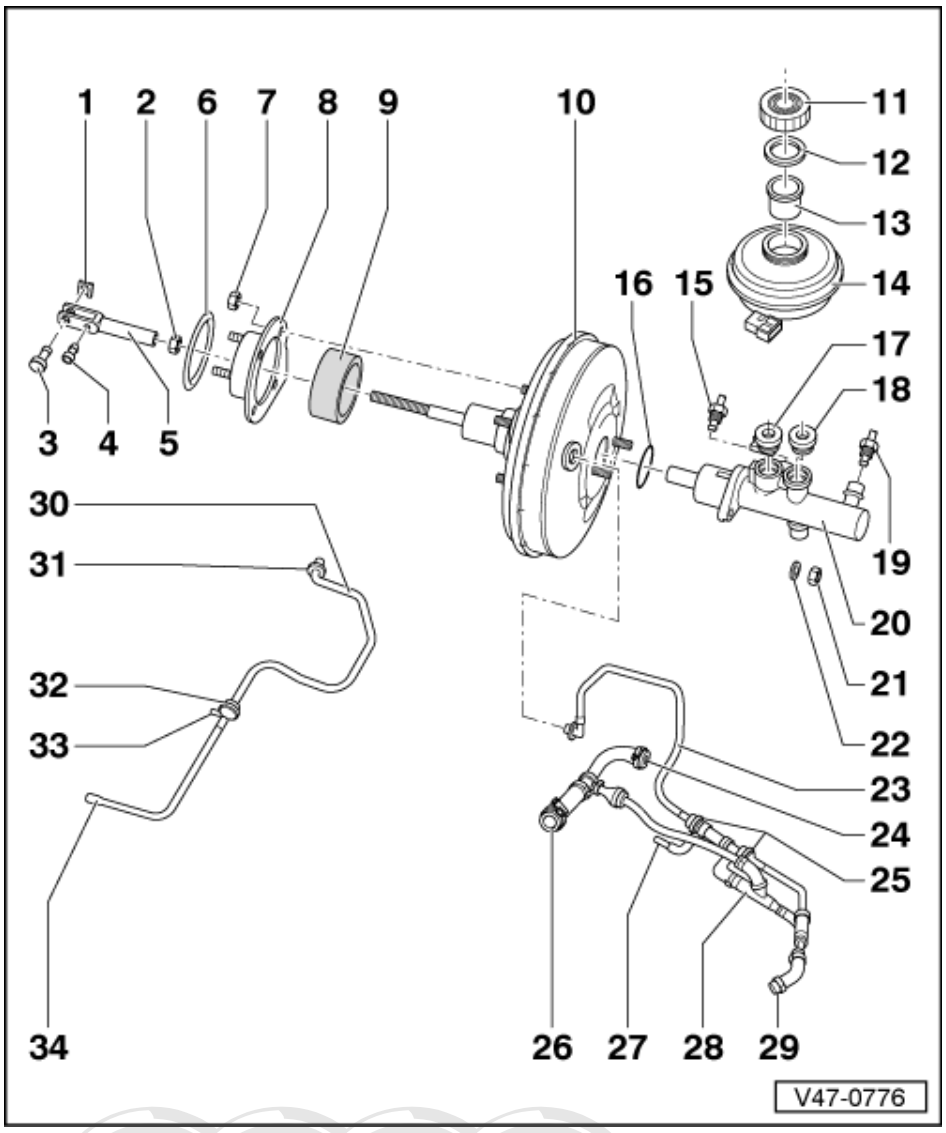
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

10 Servo unit ø 10"

- Checking:
- Firmly depress brake pedal several times with engine stopped. This will dissipate vacuum at unit. Now depress brake pedal with moderate force, hold and start engine.
- If the servo unit is working properly, the pedal will be felt to give slightly under foot (servo assistance becomes effective).
- If faulty replace complete.
- On vehicles with manual gearbox vacuum is taken from intake manifold
- Vehicles with automatic gearbox additionally feature a vacuum booster



11 Cap

12 Gasket

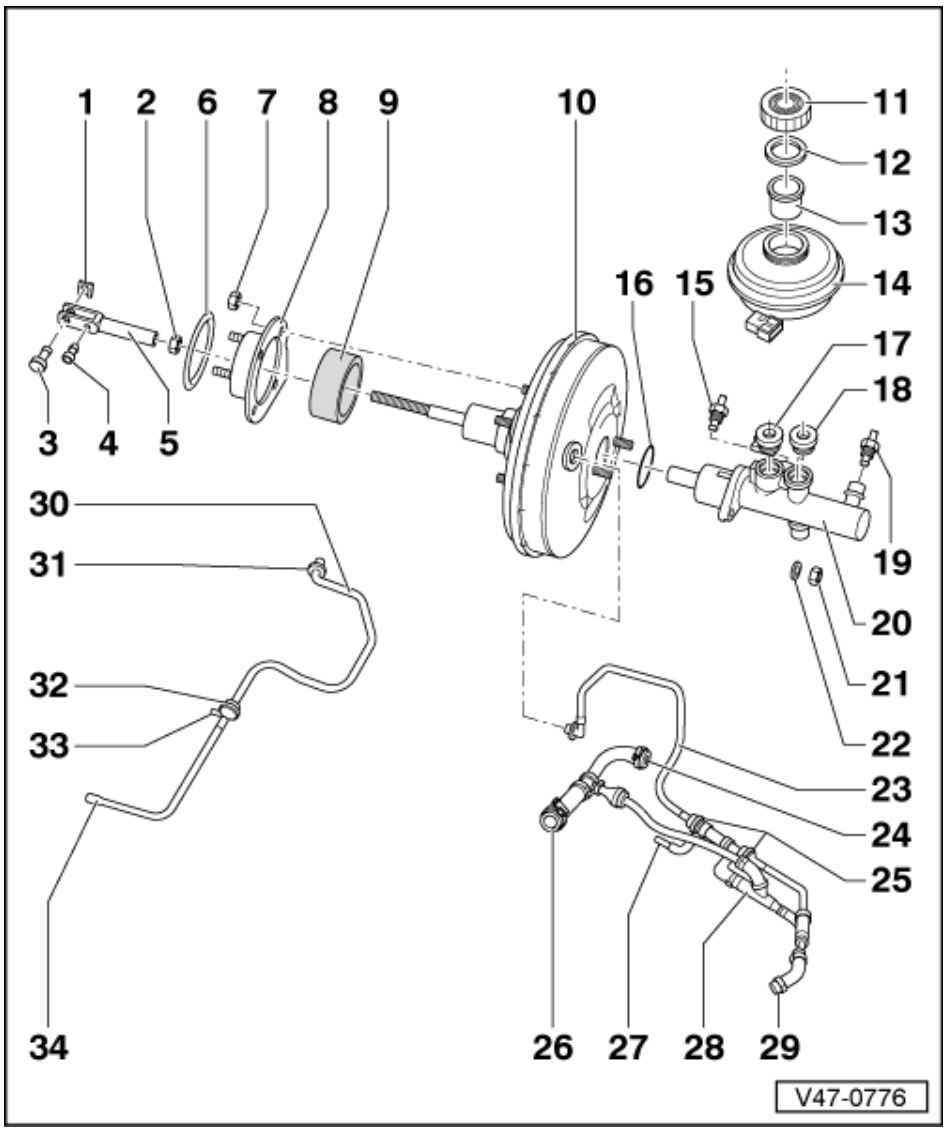
- Insert in cap

13 Strainer

14 Brake fluid reservoir with float warning indicator

- Top up brake fluid as far as "max." mark
- Refer to label on reservoir before topping up brake fluid
- Brake fluid, total quantity approx. 0.6 l in braking system
- Connection for hydraulic coupling is located on side

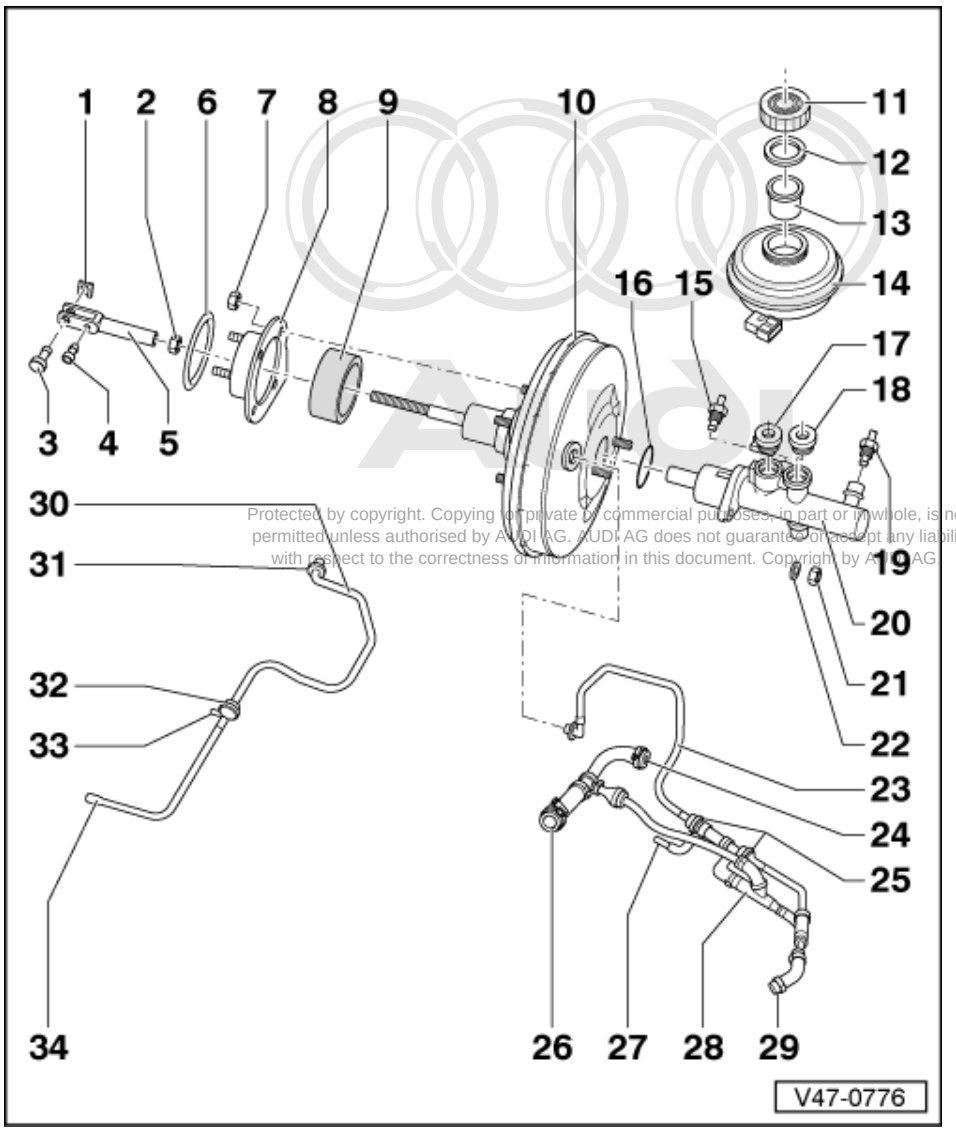
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- ◆ Functional check on indicator:
- With ignition on press firmly on centre of cap (diaphragm). Indicator lamp in instrument cluster lights and an acoustic warning is given.
- ◆ As of 07.92 the diaphragm was discontinued. To check indicator unscrew yellow cap with brake symbol and press by hand on visible strainer with ignition switched on.

15 Brake pipe

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG

16 Oil seal

- Replace after removing servo unit or brake master cylinder

17 Sealing plug

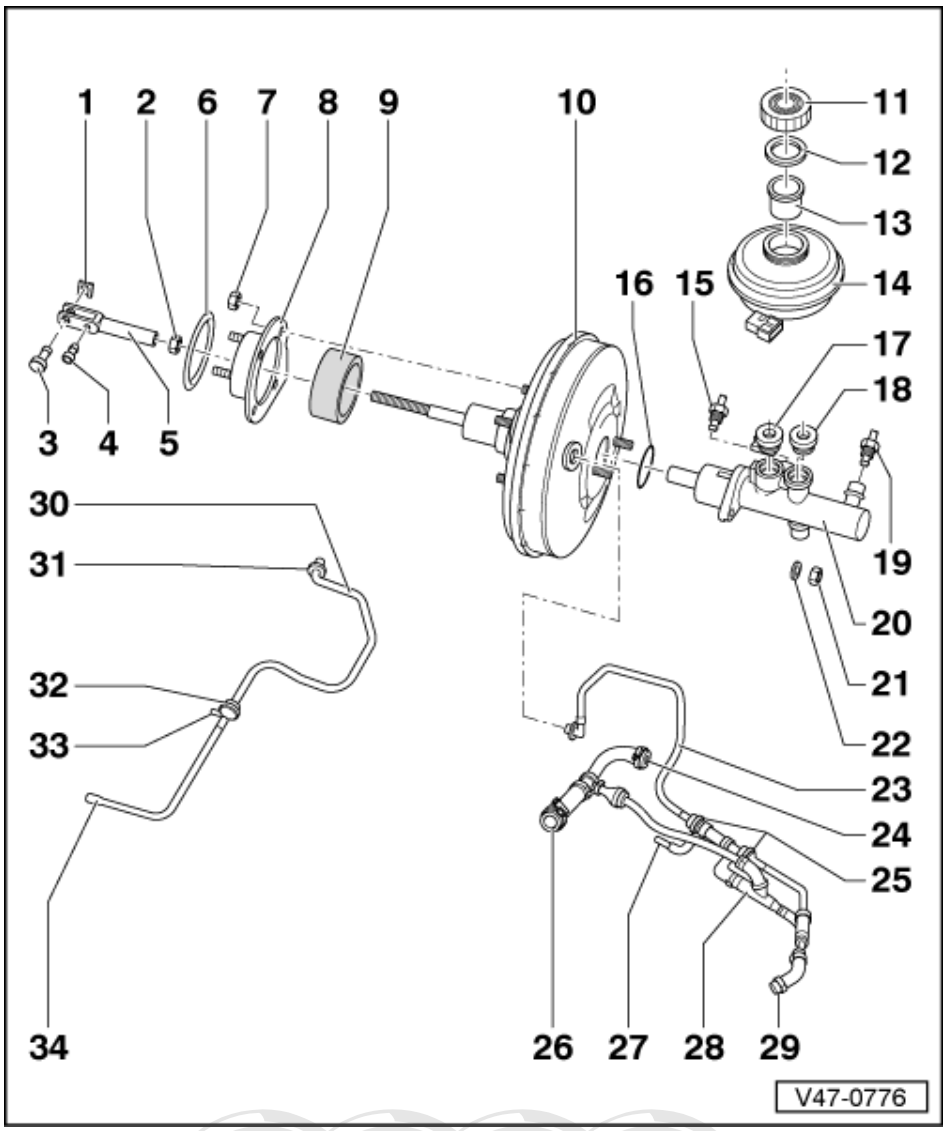
- Moisten with brake fluid and insert into brake master cylinder
- Press brake fluid reservoir into sealing plugs

Note:

Replace plug for pushrod circuit in all Girling steel brake master cylinders => Page 218

18 Sealing plug

- Moisten with brake fluid and insert into brake master cylinder
- Press brake fluid reservoir into sealing plugs



19 Brake pipe

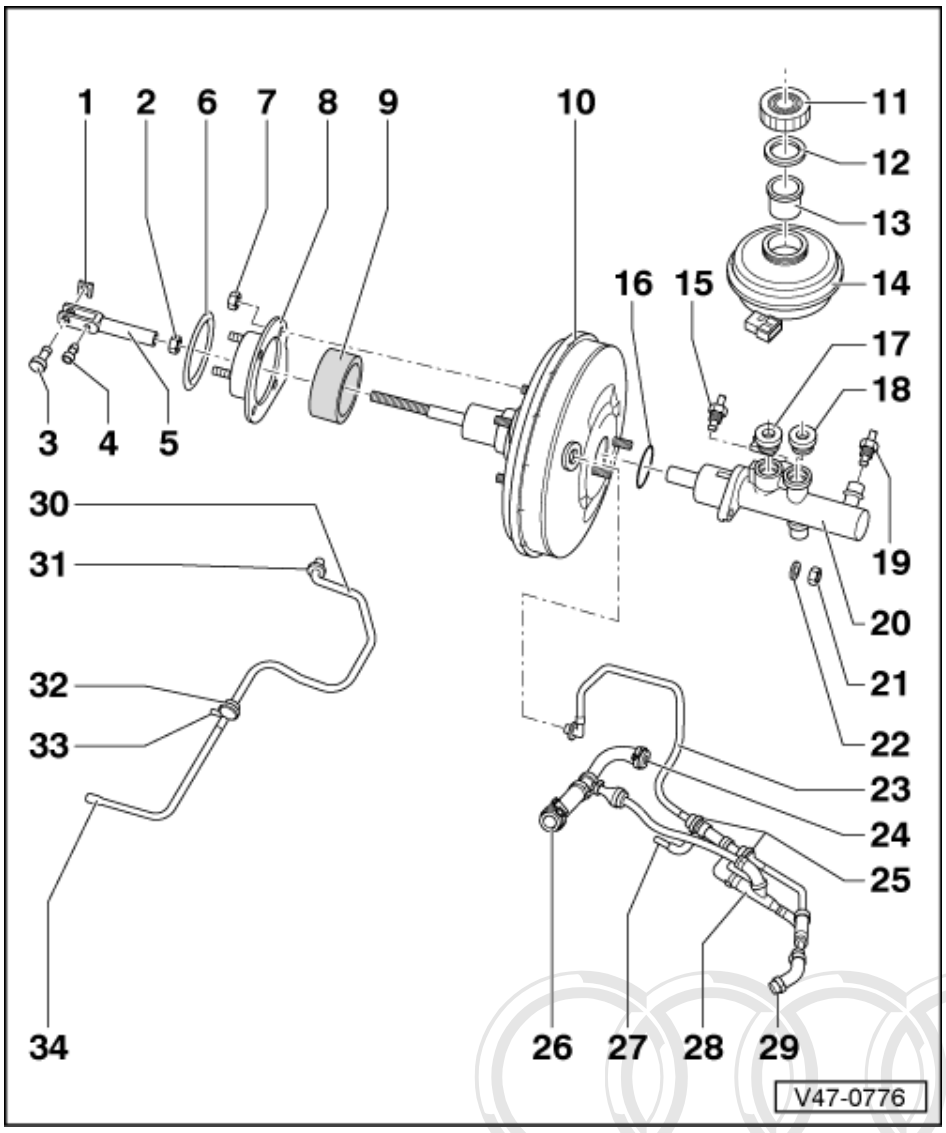
20 Brake master cylinder, ø23.81mm

- Pull vacuum line Item- 23 - or - 31 - of servo unit before removing
- Carefully remove from or insert in servo unit (do not tilt); non compliance will result in servo unit damage
- If necessary, replace as a complete assembly

21 Hexagon nut, 25 Nm

22 Washer

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



23 Vacuum line

- Only for vehicles with automatic gearbox:

24 Vacuum line

- Connection for crankcase breather

25 Check valves

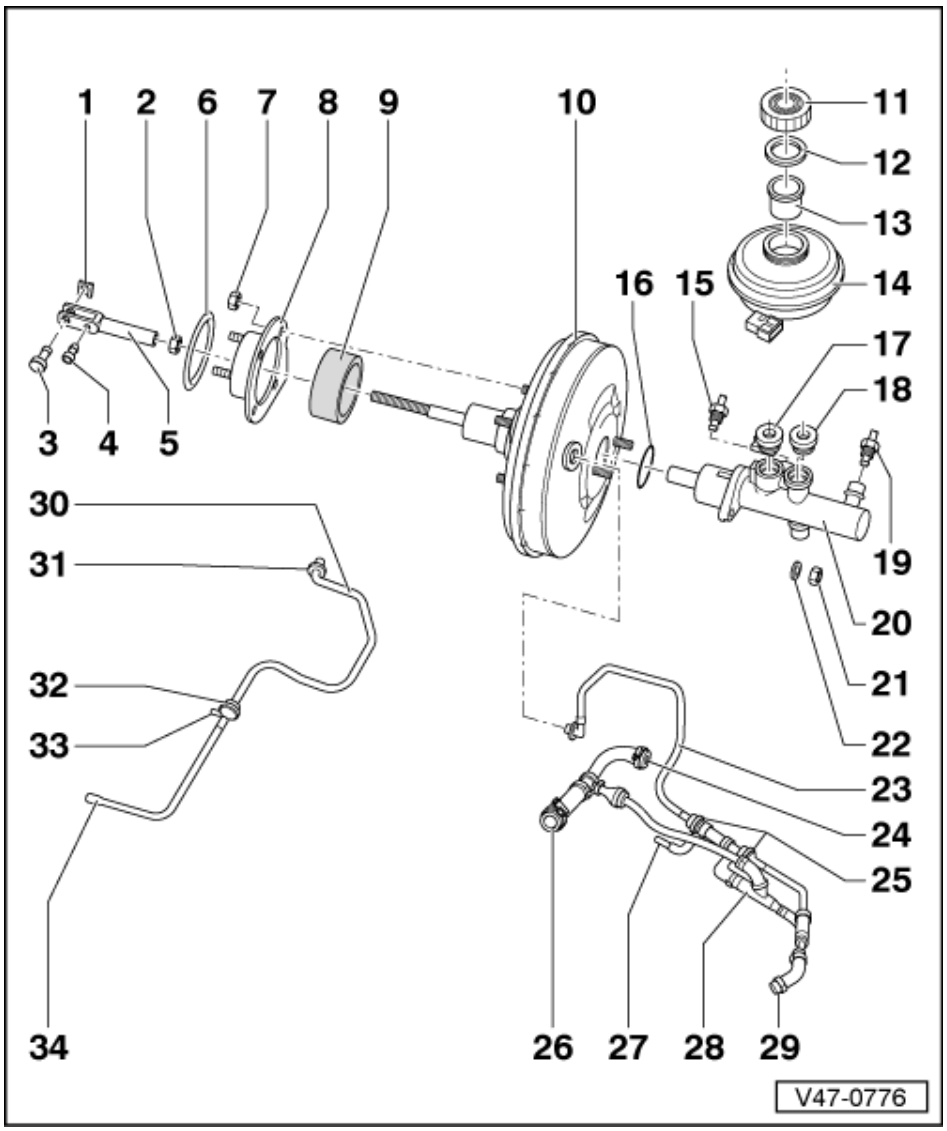
- It must be possible to blow through the valves in arrow direction, but not in opposite direction

26 Vacuum line

- Connection for throttle housing

27 Vacuum connection for AC

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



28 Suction jet pump

- Installed to boost vacuum

29 Vacuum line

- Connection for intake manifold

30 Vacuum line

- only for vehicles with manual gearbox

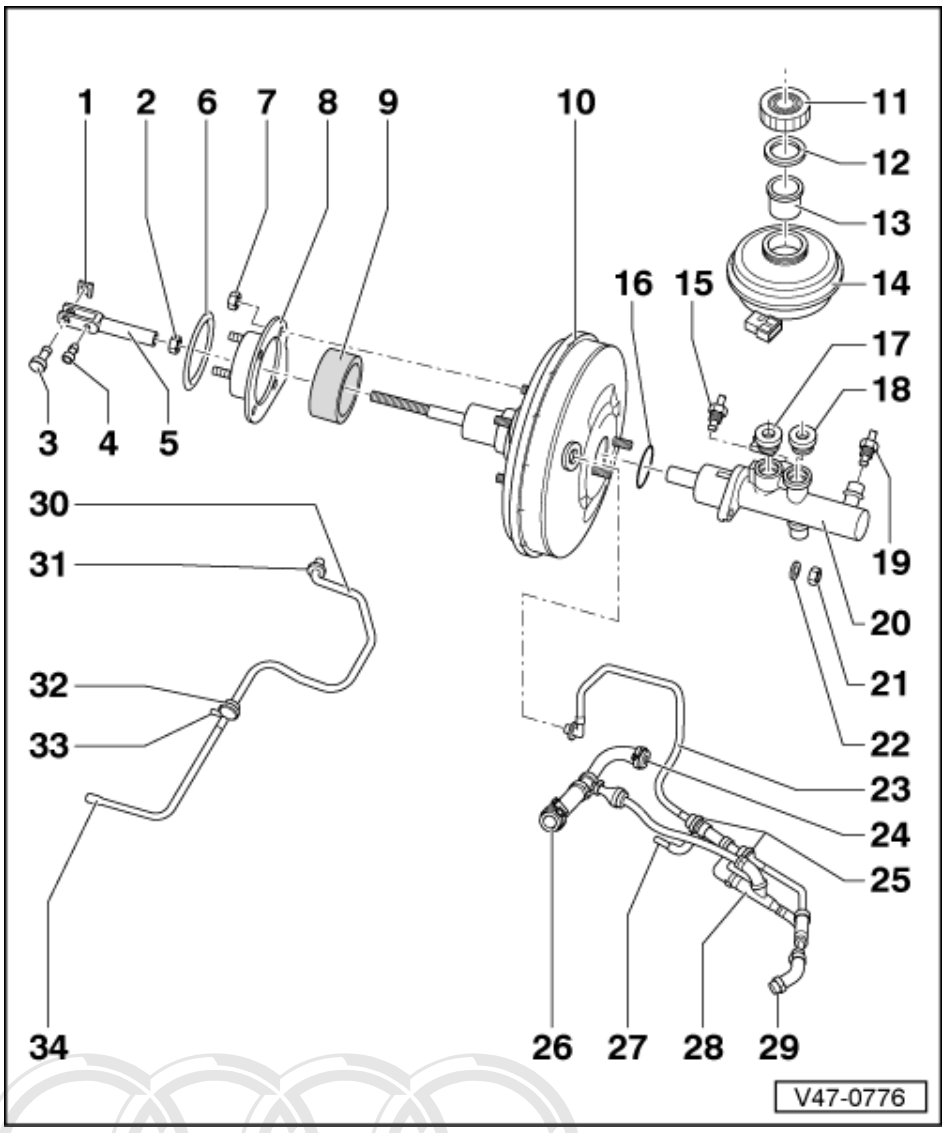
31 Vacuum line

- Connection to servo unit

32 Non-return valve

- It must be possible to blow through valve in arrow direction, but not in opposite direction

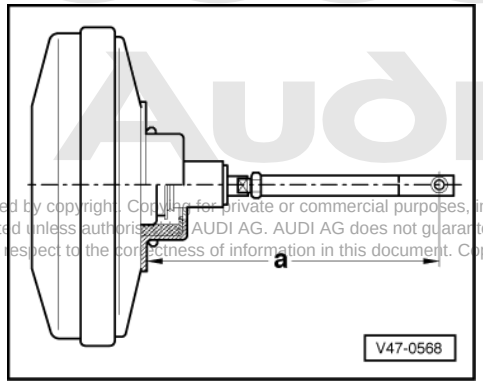
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



33 Vacuum line

- Connection for AC

34 Connection for vacuum line at intake manifold



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.1 Adjusting clevis, vehicles with pneumatic servo unit

LHD vehicles:

with 9" servo unit, a = 269.0 ± 0.5 mm

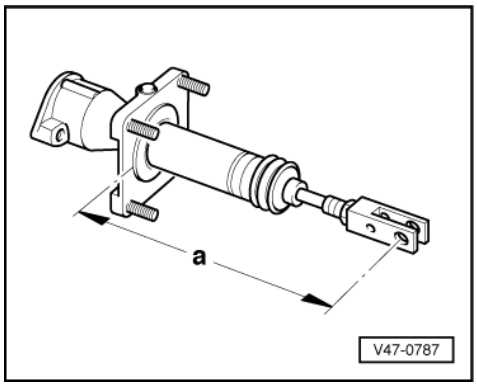
with 10" servo unit, a = 223.0 ± 0.5 mm

RHD vehicles:

only with 9" servo unit, a = 230.0 ± 0.5 mm

Notes:

- When measuring, clevis should be aligned at right angles to the surface of the brake servo unit.
- Measured without gasket as far as clevis.



-> Fig.2 Adjusting clevis, vehicles with hydraulic servo unit

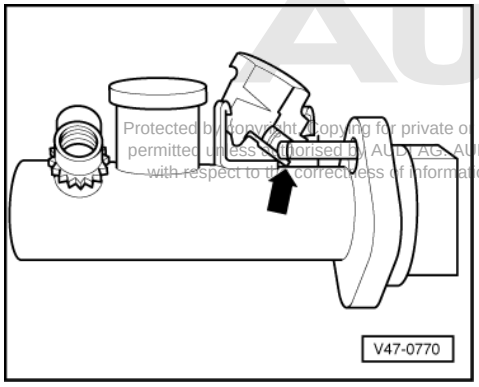
RHD vehicles only:

a = 202.0 ± 0.5 mm

Notes:

- Pull out of servo unit as far as stop prior to measurement.
- When measuring, clevis should be aligned at right angles to the surface of the brake servo unit.

4.3 - Replacing sealing plug (pushrod circuit)

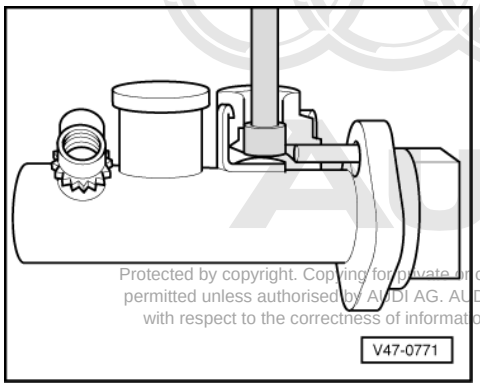


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

For the sake of simplicity this operation is illustrated on a cutaway model

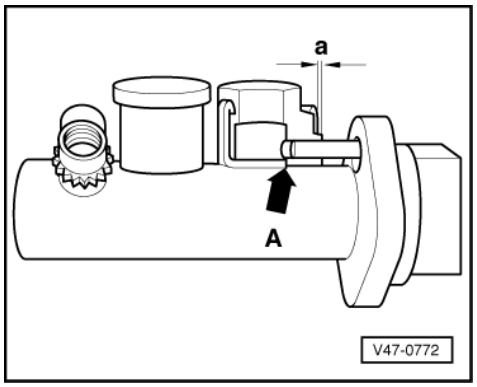
- Only moisten inside of sealing plug with brake fluid
- Insert sealing plug
- -> Make sure that bushing in sealing plug is slipped over tube of pushrod circuit (arrow).



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Use rounded pins screws or tools to press bushing of sealing plug onto tube.

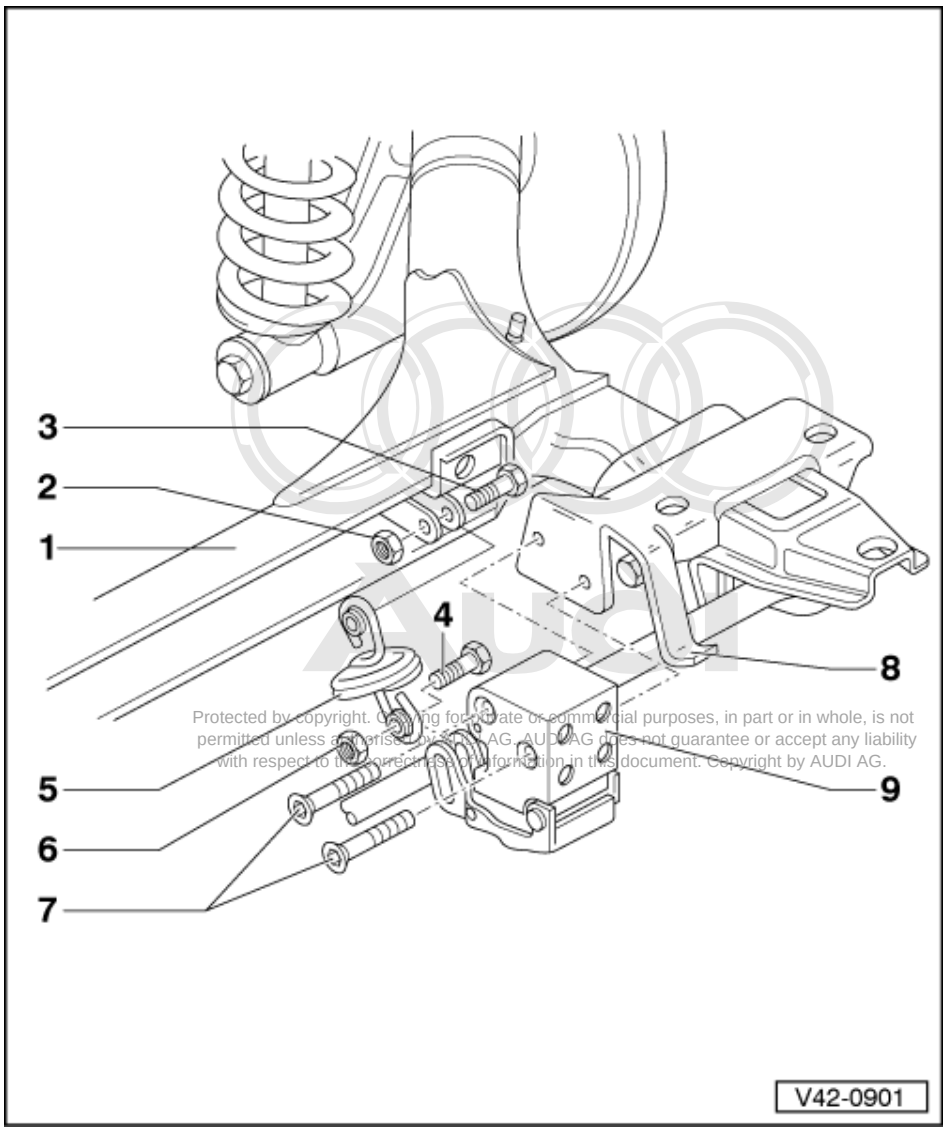
Warning!
Never use pointed objects as otherwise there is a danger of the bottom of the sealing plug being pierced.



- -> The bushing of the sealing plug must protrude roughly 1 mm (dimension "a") out of housing. This ensures that shoulder -A- engages behind housing plate.

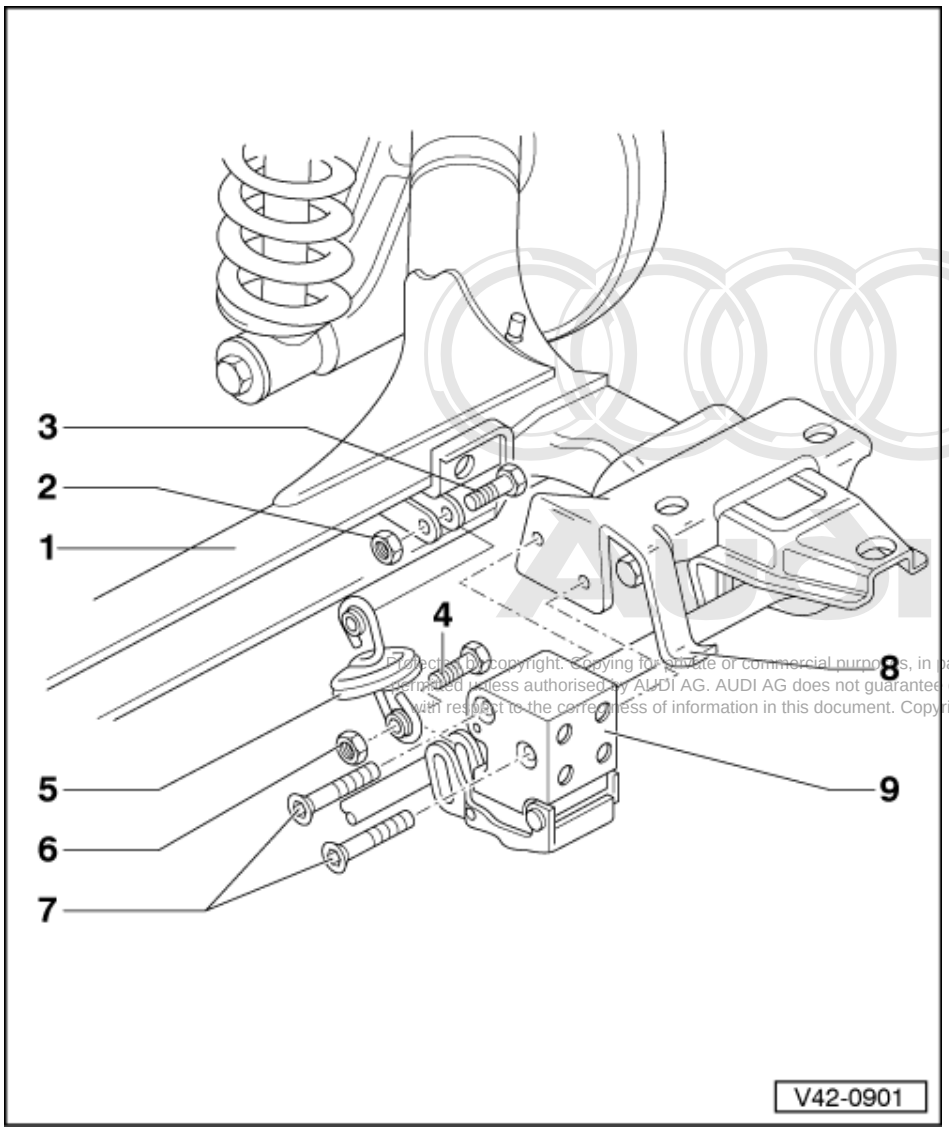
5 - Location of brake pressure regulator at rear axle

5.1 - Location of brake pressure regulator at rear axle



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 Axle beam
2 Hexagon nut, 20 Nm
3 Hexagon bolt
4 Hexagon bolt
5 Spring
- Not different versions depending on running gear design
- Standard version (ABA) and bad road version (1BB) have the same spring
- Vehicles with sports running gear (1BE) have a modified spring
- Prior to replacement consult vehicle data sticker to establish spring version



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

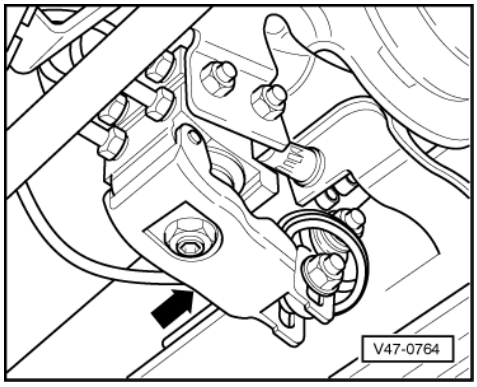
6 Hexagon nut, 20 Nm
7 Oval head countersunk bolts, 20 Nm
8 Mounting
- Attached to floor group and bolted to guide bearing of axle beam

9 Brake pressure regulator
- Screw to bracket
- Adjusting => Page 222

5.2 - Checking brake pressure regulator

The brake pressure regulator is attached to the left bracket of the rear axle and is controlled via a spring from the rear axle.

Check function:

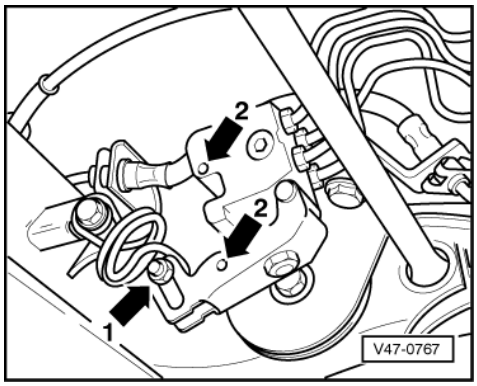


- -> Firmly depress brake pedal and release abruptly (vehicle standing on its wheels). Lever of brake pressure regulator must move.

5.3 - Adjusting brake pressure regulator

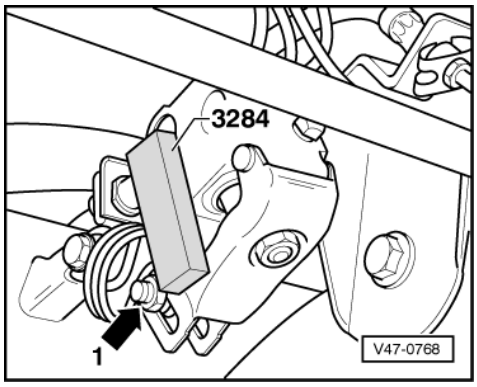
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Adjustment requirements:



- Curb weight of vehicle, i.e. tank full and spare wheel, toolkit and jack fitted in specified positions.
- Braking system properly filled and bled.
- Drive vehicle onto lifting platform or over an inspection pit (vehicle must be standing on its wheels).

- -> Unfasten nut -1-
- Insert adjuster -3284- into holes -2- provided in brake pressure regulator (see arrows).



- -> Tighten nut -1- to 20 Nm.
- Remove adjuster

6 - Bleeding braking system and brake fluid replacement

6.1 - Bleeding braking system and brake fluid replacement

Only use new genuine VW/Audi brake fluid according to US standard FMVSS 116 DOT 4.

Warning!
- **Do not under any circumstances allow brake fluid to come into contact with liquids which contain mineral oils (e.g. oil, petrol, cleaning agents). Mineral oils damage the plugs and seals in the brake system.**
- **Brake fluid is poisonous and must on no account be siphoned orally through a hose. Because of its caustic properties it must also not come into contact with paint.**
- **Brake fluid is hygroscopic, i.e. it absorbs moisture from the surrounding air, and should therefore always be stored in airtight containers.**
- **Always observe the relevant environmental regulations for disposal.**

Ensure correct handling of brake fluid, brake components and brake tools.

=> Special information No.-21;

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

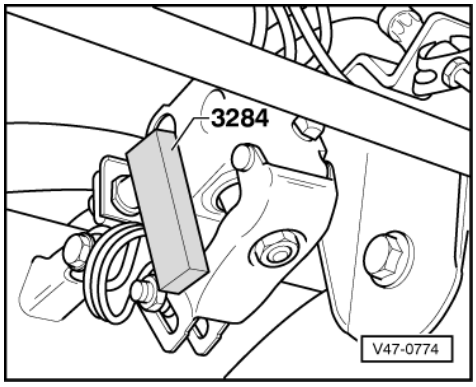
6.2 - Bleeding brake system without ABS

With brake filling and bleeding unit VW 1238/B or V.A.G 1869

- Connect VW 1238/B or V.A.G 1869.
- Attach bleeder hose of collector to bleeder screw in line with specified sequence. Open bleeder screw until there are no bubbles in brake fluid emerging from brake caliper.
- Collect old brake fluid in bleeder bottle forming part of the unit.
- Close bleed screw.

Bleeding sequence:

1 - Brake master cylinder (if bleeder screws fitted)
2 - Wheel brake cylinder/brake caliper rear right
3 - Wheel brake cylinder/brake caliper rear left
4 - Front right brake caliper
5 - Front left brake caliper



Note:

-> On vehicles with brake pressure regulator insert adjuster -3284- in holes provided in brake pressure regulator whilst bleeding rear wheel brake.

Bleeding without -VW 1238/B-

Build up pressure in braking system by pumping pedal. Open bleeder screw with hose of bleeder bottle attached. Close bleeder screw with pedal depressed. Repeat procedure until no further air emerges. Bleeding sequence => Page 223 .

6.3 - Brake fluid replacement

- Connect VW 1238/B, open bleeder screws in line with information given in table below and allow appropriate amount of brake fluid to drain out. Pumping in new brake fluid flushes the used brake fluid out of the system.

Sequence: Brake master cyl. Wheel brake cyl. Brake calipers	Amount of brake fluid, which must flow out of brake master cylinder, brake calipers or wheel brake cylinders:
Brake master cylinder	250 cm3(per bleeder screw, if fitted)
Rear right	500 cm3
Rear left	500 cm3
Front right	500 cm3
Front left	500 cm3

Brake fluid replacement without VW 1238/B

This method is only to be employed if no brake filling and bleeding unit is available:

- Use extractor bottle to draw as much brake fluid as possible out of reservoir. Pump pedal with bleeder screw open to pump brake fluid out of brake master cylinder and brake calipers. Top up with fresh brake fluid and bleed braking system in specified sequence =>Page 223 .

6.4 - Bleeding braking system with ABS and EDL

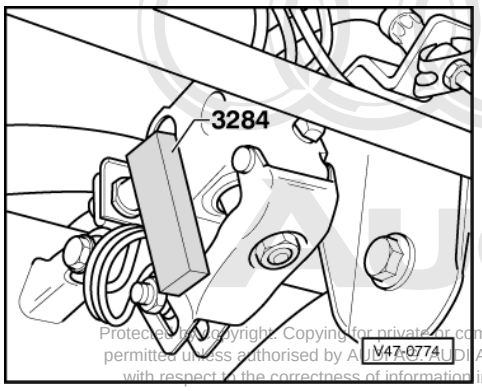
With brake filling and bleeding unit VW1238/B or V.A.G 1869 and ABS tester V.A.G 1710

Bleeding braking system, note => Page 223

- Connect VW 1238/B or V.A.G 1869.
- Bleed suction line for EDL and brake calipers => Page 224
- Open bleeder screws in specified sequence => Page 224
- Collect old brake fluid in bleeder bottle forming part of the unit.

Bleeding sequence with modified bleeding method

1 - Suction line for EDL
(bleeder screw at hydraulic unit)
2 - Rear right brake caliper
3 - Rear left brake caliper



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

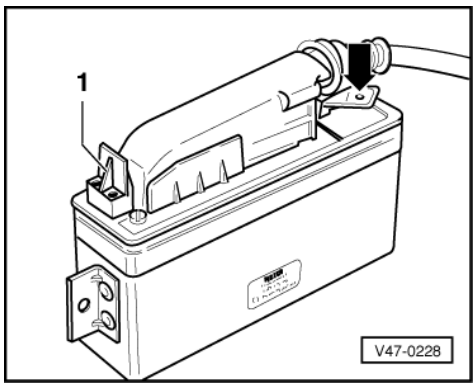
-> On vehicles with brake pressure regulator insert adjuster -3284- in holes provided in brake pressure regulator whilst bleeding rear wheel brake.

4 - Front right brake caliper
- Bleed as previously
- Additionally connect ABS tester V.A.G 1710 and bleed front right brake caliper with return flow pump in operation => Page 225

5 - Front left brake caliper

Note:

Check brake fluid level and top up, if necessary. Brake fluid replacement is to be performed as required in the same manner as described on Page 224 .

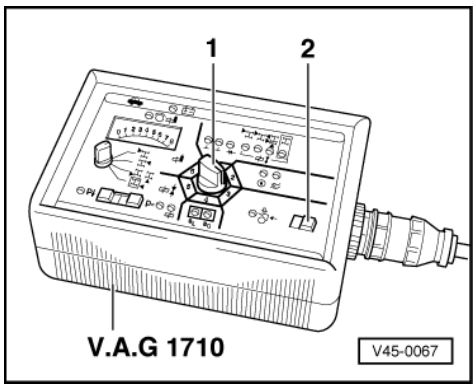


Connecting up ABS tester -V.A.G 1710-

Note:

Ignition switched off

- Remove rear bench seat
- -> Pull plug off ABS control unit -J104-; for this purpose, press spring (arrow)
- Connect plug of lead for ABS tester -V.A.G 1710- to plug of lead for ABS control unit -J104-



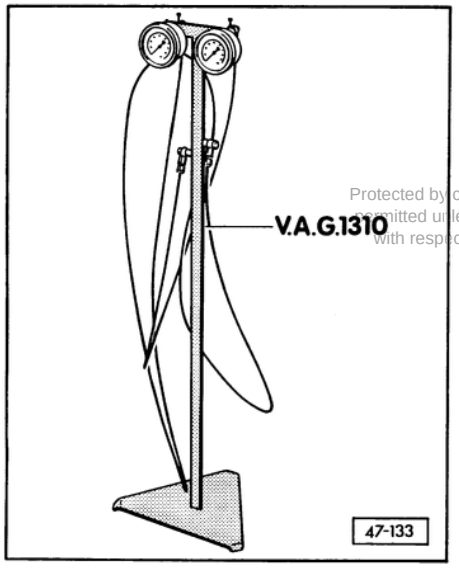
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Set program switch -1- on ABS tester -V.A.G 1710- to item -3-
- Switch on ignition.
- Press button -2- on ABS tester -V.A.G 1710- until there are no bubbles in brake fluid emerging from bleeder screw at brake caliper; ABS return flow pump -V39- must be heard to operate. This process should not take more than 60 seconds. A cooling interval of at least 5 minutes is to be allowed after 60 seconds. The procedure is to be repeated.
- Switch off ignition.
- Remove ABS tester -V.A.G 1710- and attach plug to ABS control unit -J104-

- Install rear bench seat

7 - Pressurised leak test

7.1 - Pressurised leak test



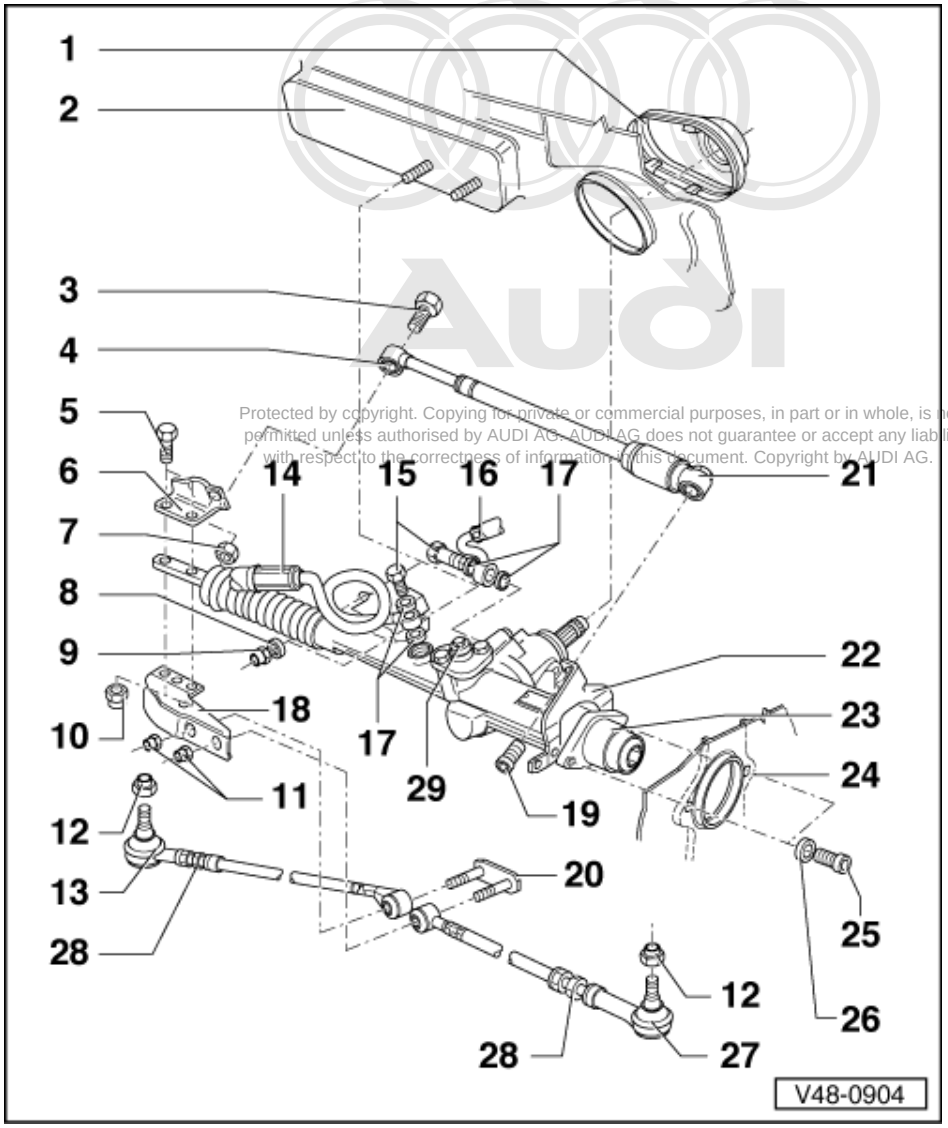
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Connect pressure gauge -VW 1310- to brake caliper (front left wheel) and to wheel brake cylinder or brake caliper (rear right wheel) and vent both pressure gauges.
- Release brake pedal until reading on pressure gauge at front axle is 100 bar. Maintain pressure of 100 bar for 5 seconds. During this period the pressure at the rear pressure gauge may change by max. 10 bar.
- Replace brake pressure regulator if specified values are not attained.

48 - Steering

1 - Steering box components

1.1 - Steering box components



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

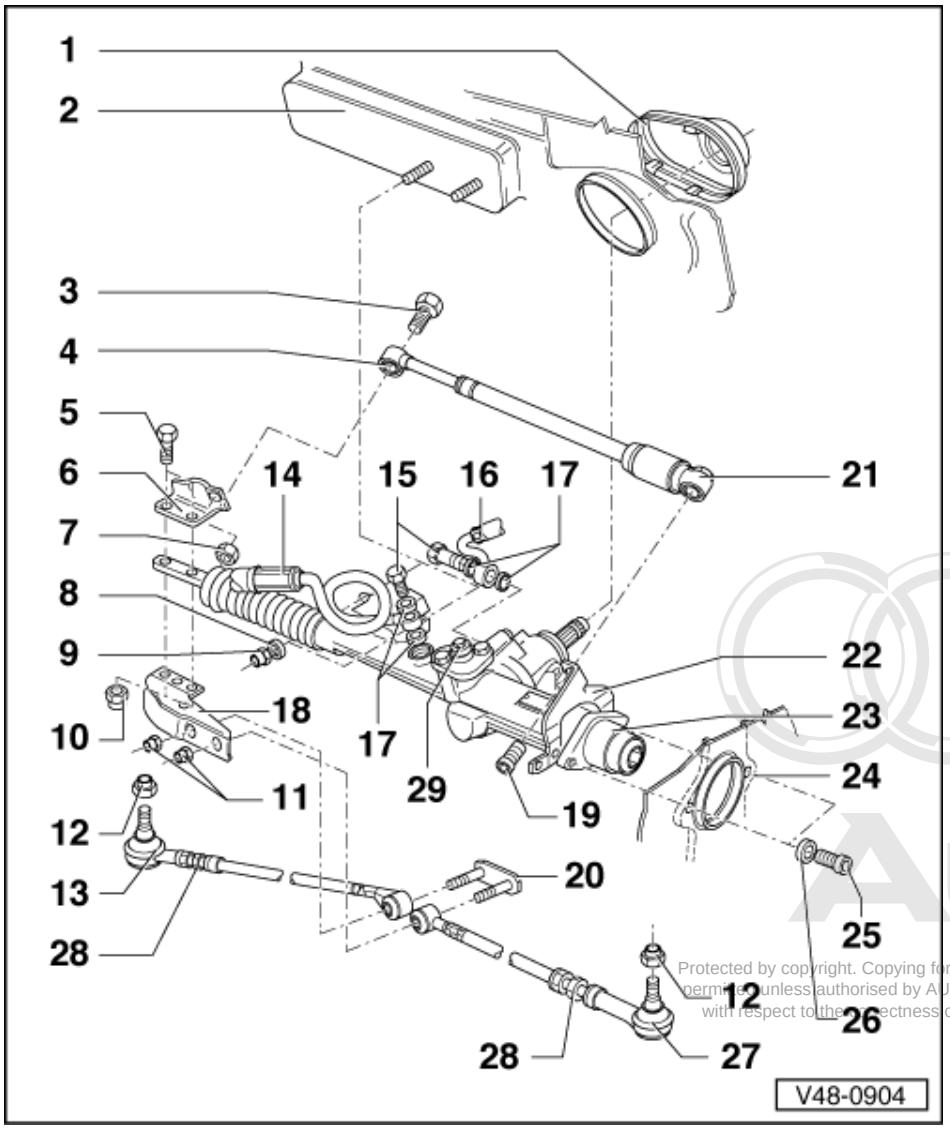
Notes:

- Welding and alignment works on the steering components are not permitted.
- Topping up hydraulic fluid bleeding steering system => Page 335
- Checking steering system for leaks =>Page 336

1 **Bulkhead seal**
- Insert carefully into annular groove of rotary valve housing and into bulkhead

2 **Bulkhead**

3 **Hexagon bolt**

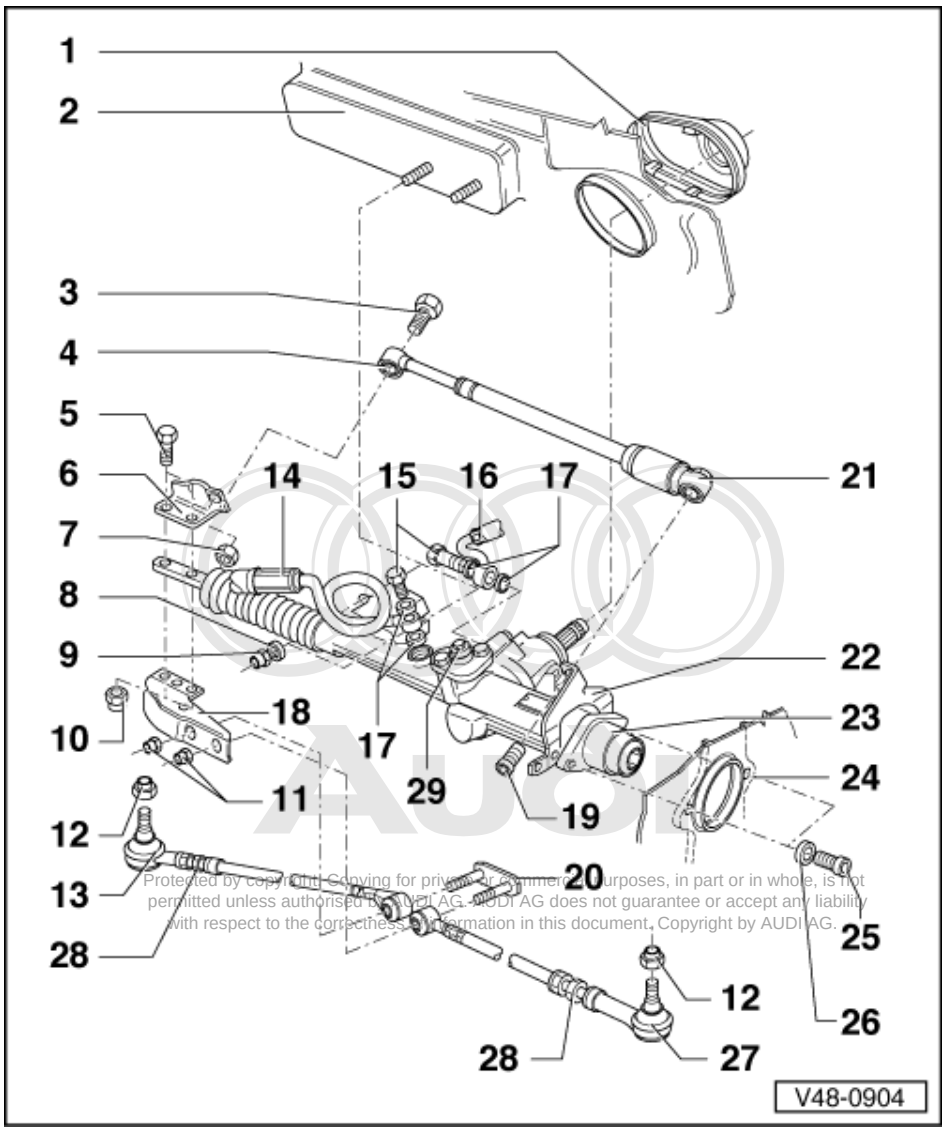


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

4 Steering damper

- Only installed on vehicles with 4 cylinder engine and sports running gear as of model year 93 as well as on vehicles with 6 cylinder engine
- Can be replaced without removing steering box; take out servo unit beforehand
- Remove with bracket before taking out steering box
- Unscrew from bracket to check
- Treat appropriately before scrapping

=> Special information no. 2; Edition 03.90



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Checking:
  Piston rod must move uniformly and smoothly over entire stroke; if appropriate compare to new damper (for this purpose, move damper over its entire stroke whilst holding it in installation position). Given proper function slight traces of damper oil do not constitute grounds for replacement.

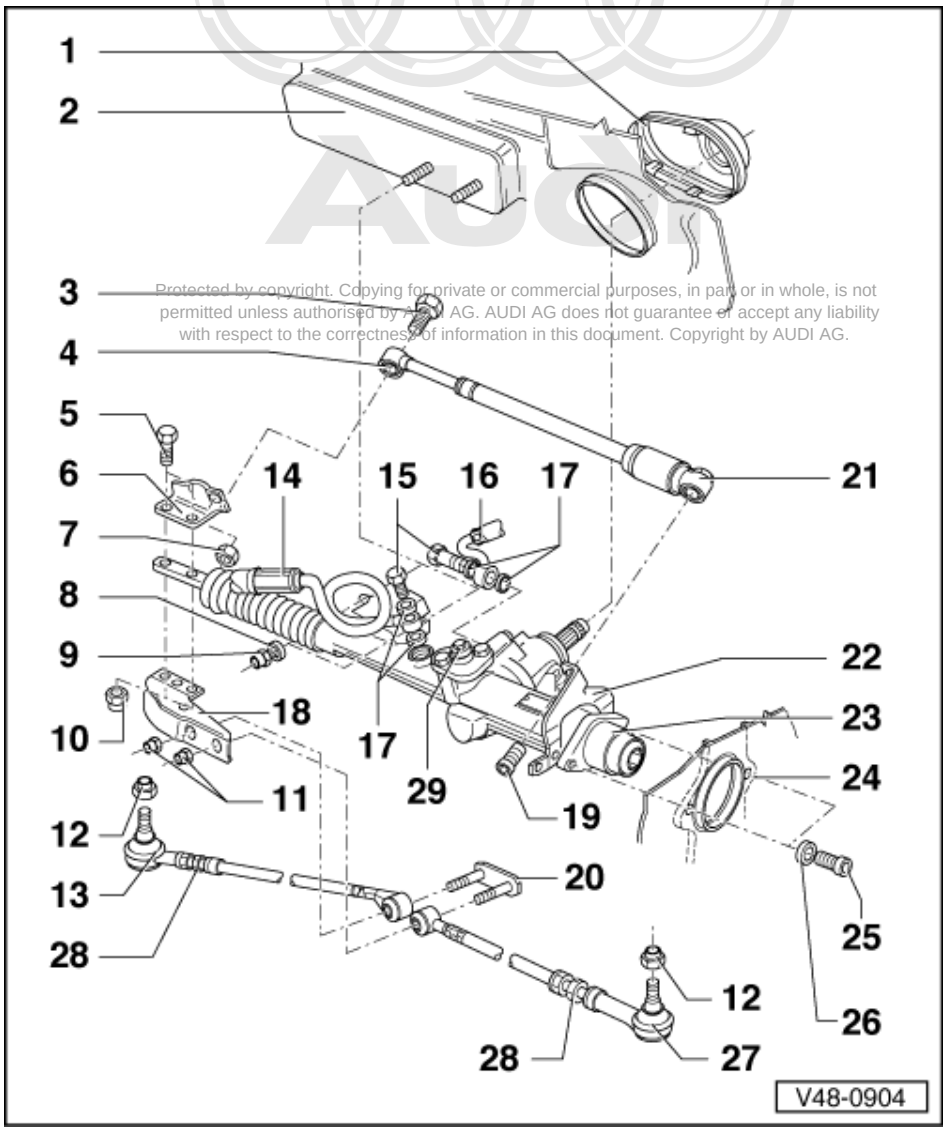
5 Hexagon bolt, 45 Nm

- Tighten these screws first then tighten - 10 - nuts.
- Note fixing sequence => Page 239

6 Steering damper bracket, tie rod side

7 Hexagon nut 35 Nm

8 Shim



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

9 Self-locking nut 45 Nm

- Always replace
- Tighten cheese head bolts at left wheel housing before fastening

10 Self-locking nut 45 Nm

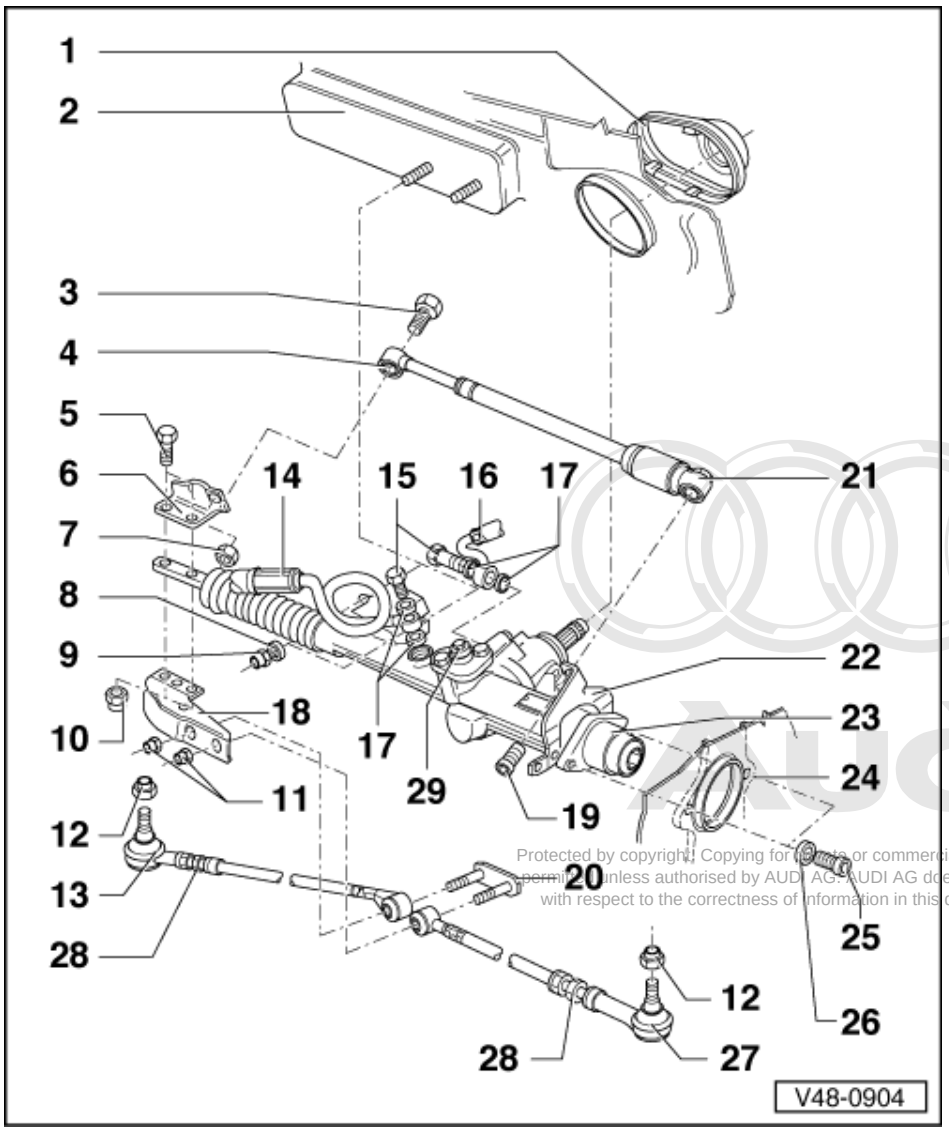
- Always replace
- Tighten screws - 5 - first.
- Note fixing sequence => Page 239

11 Self-locking nut 40 Nm

- Always replace

12 Self-locking nut 30 Nm

- Always replace



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

13 Tie rod, right

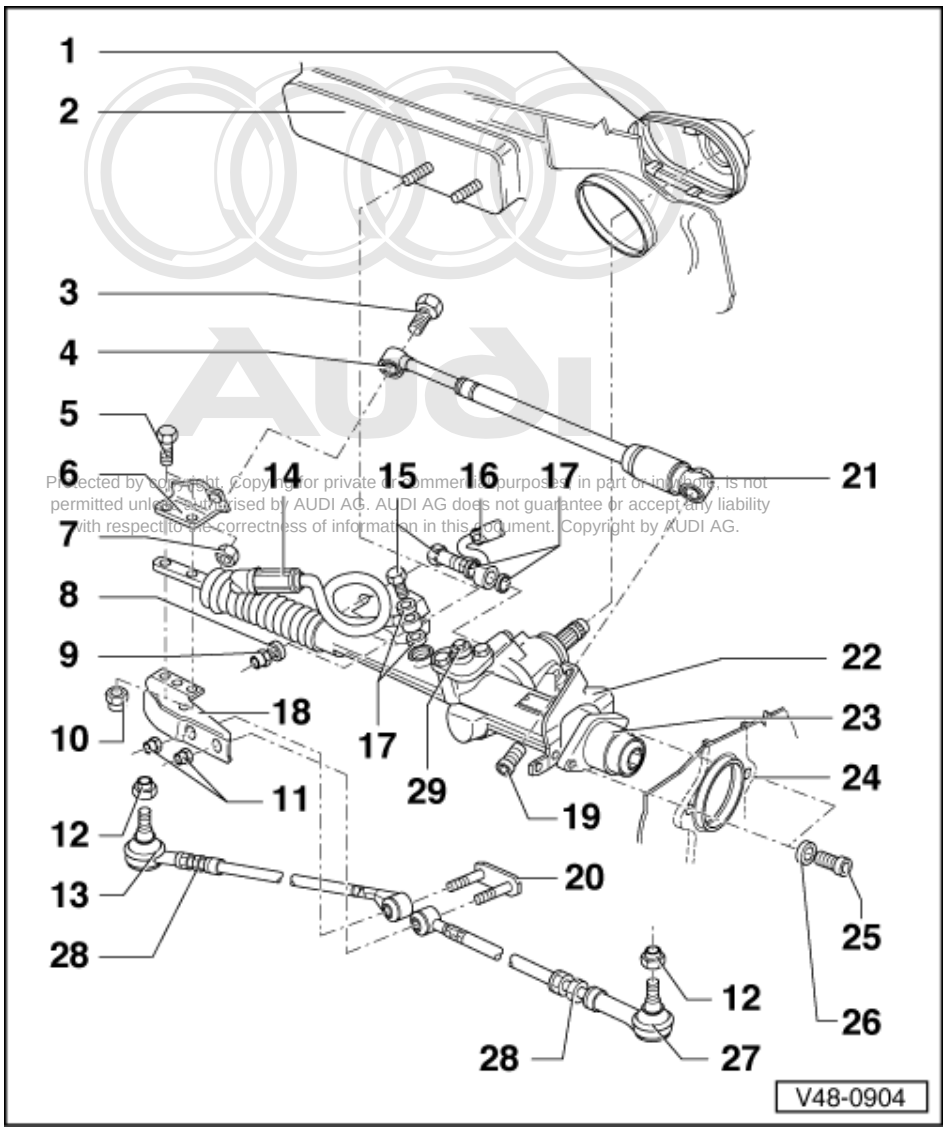
- Pressing off steering arm => Fig.3

Note:

When fitting the two tie rod ends i.e. when adjusting the toe make sure that the two swivel heads for the track control arm joints are neither tilting forwards nor backwards.

14 Expansion hose

- Note that there are different versions:
- Routing at steering box differs depending on engine version => Fig. 1 and 2
- To unscrew at steering box remove servo unit on vehicles with 6 cylinder engine

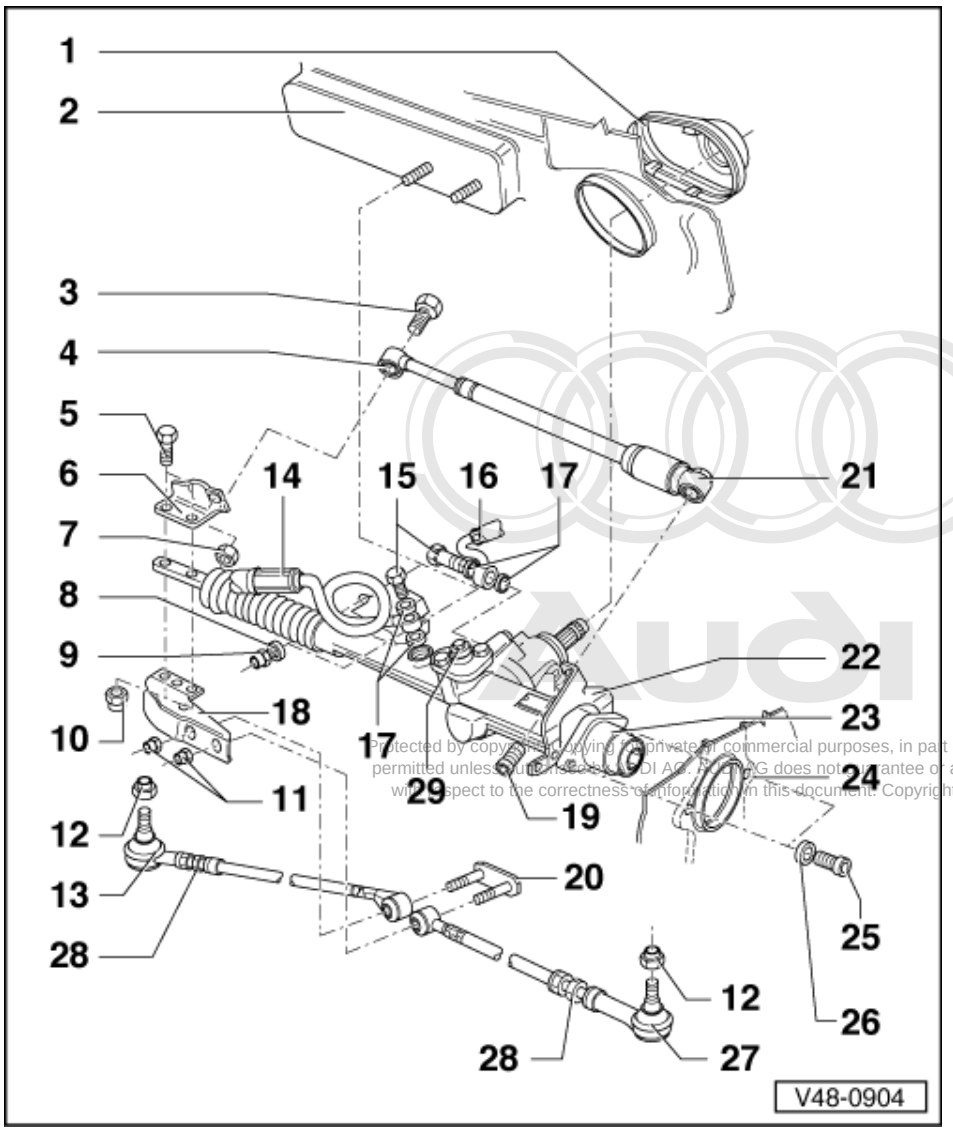


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

15 Banjo bolts, 40 Nm

16 Return hose

- Note that there are different versions:
- Routing at steering box => Fig. 1 and 2
- Before screwing out banjo bolt - 15 - insert hose clamp -3094- in return hose
- To unscrew at rotary valve housing remove servo unit on vehicles with 6 cylinder engine and unscrew steering damper at holder on wheel housing end and swivel upwards



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

17 O-rings

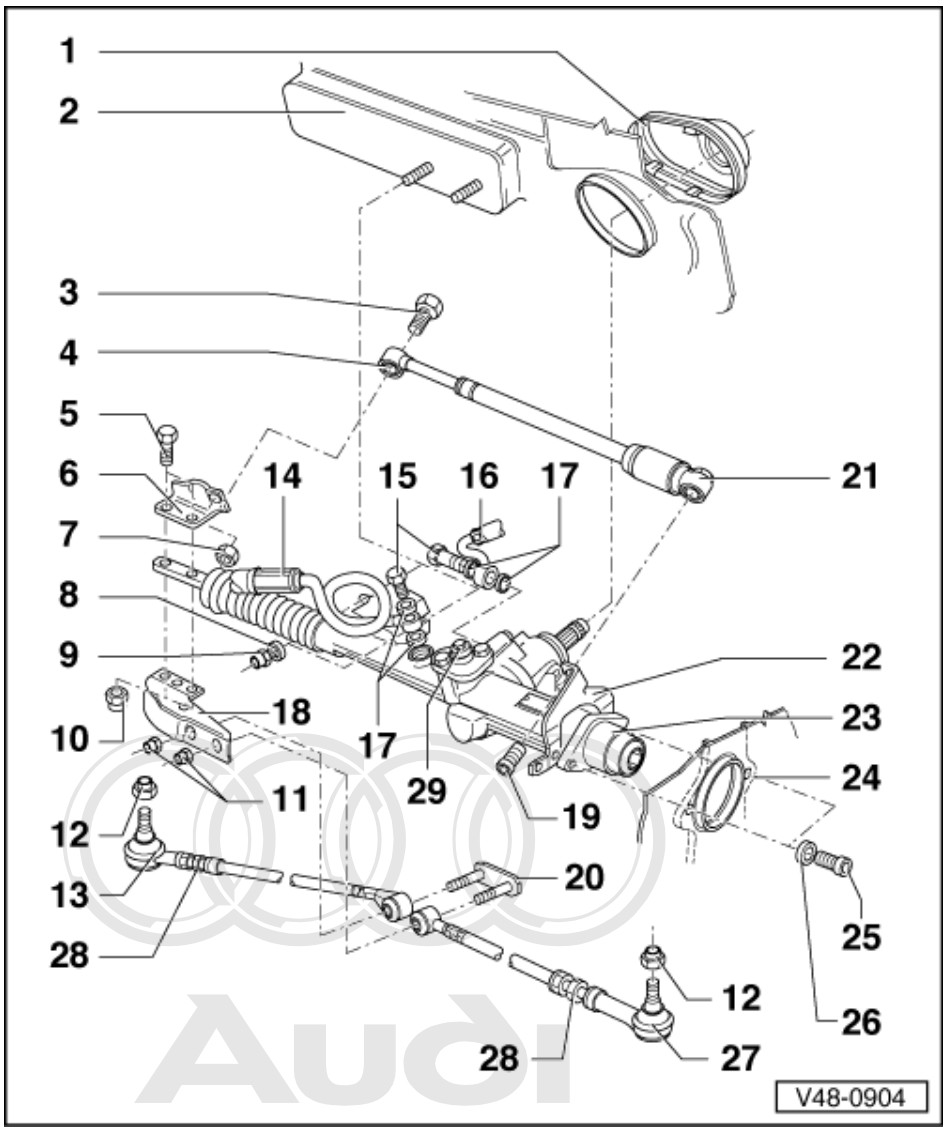
- Always replace
- Insert on either end in banjo unions of return and expansion hose

18 Actuating arm

- Unscrew from rack
- Observe fixing sequence when installing => Page 239
- Vehicle must be standing on its wheels for securing tie rods to driver
- After removing from rack check and, if necessary, adjust toe

19 Cheese-head bolt, 40 Nm

- Counterhold at hexagon of threaded bush when unscrewing and screwing in



20 Tab

- Insert in both tie rods and screw to driver with vehicle standing on its wheels

21 Threaded bushing

- Counterhold at hexagon when unscrewing and screwing in cheese head bolt

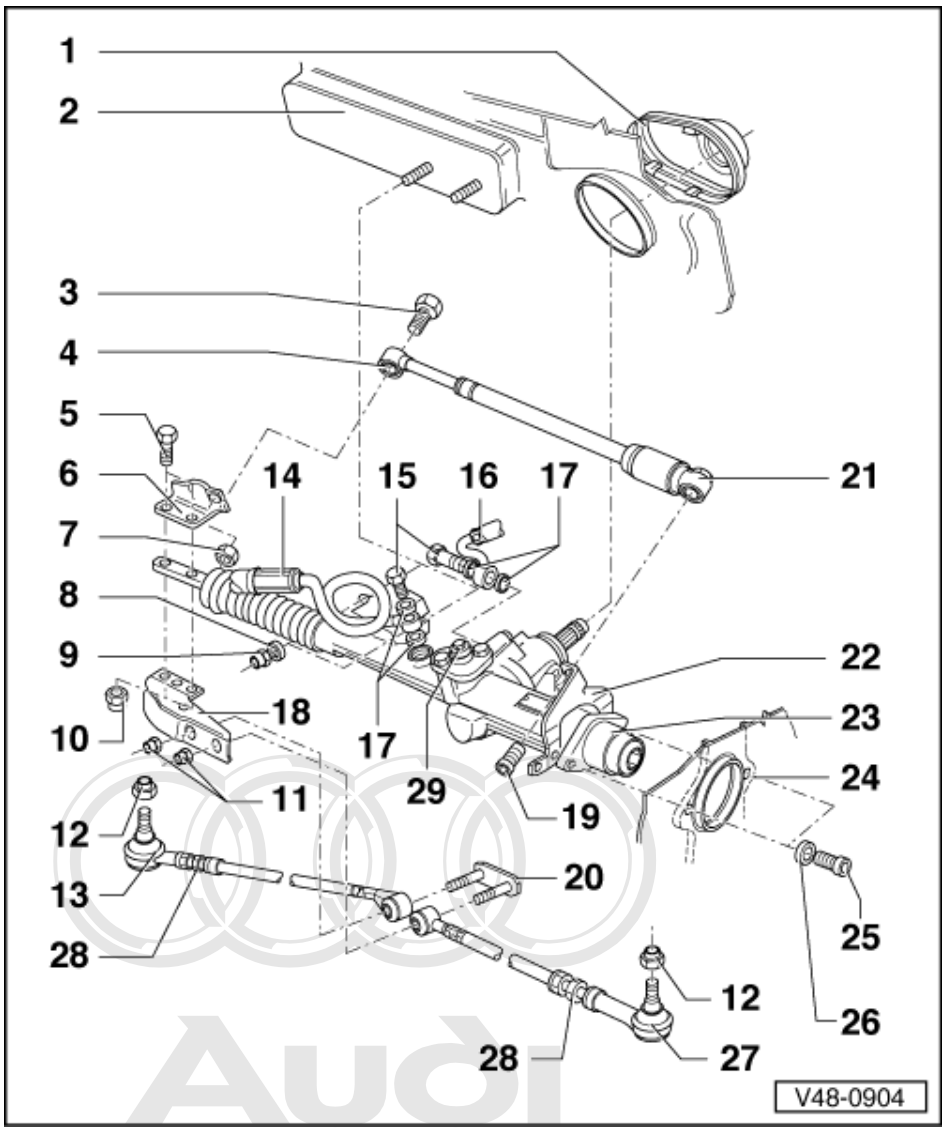
22 Holder for steering damper, wheel housing end

23 Steering box

- Overall ratio: 16.8 : 1
- Removing and installing => Page 242
- Treat appropriately before scrapping

=> Special information no. 2; Edition 03.90

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

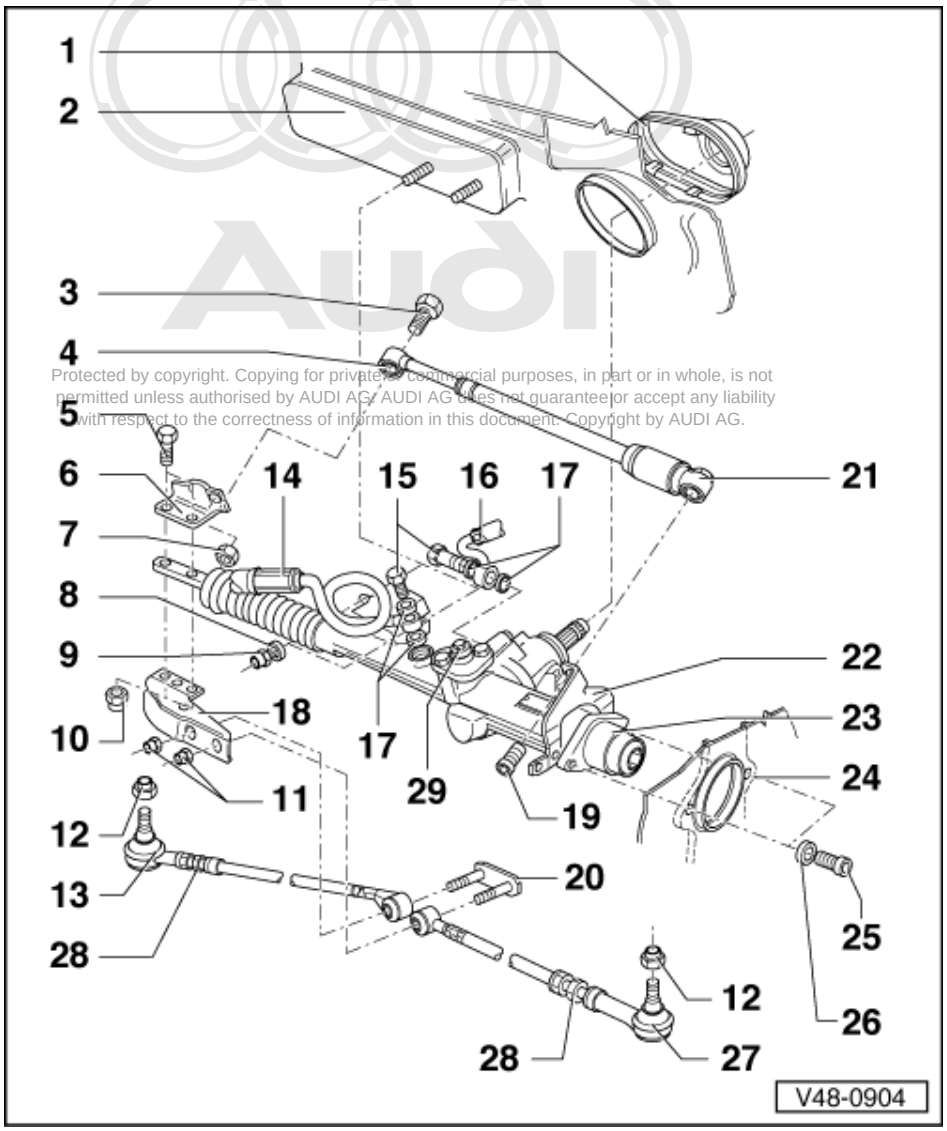


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness, completeness and currency of the data contained in this PDF file.

Warning!

Before removing steering box on vehicles with airbag disconnect battery earth strap and 1 pin red connector for airbag voltage supply to ensure that subsequent assembly work does not result in accidental actuation of airbag system. Front wheels are then to be moved to straight ahead position and the steering wheel removed (this ensures that the volute spring in the steering wheel is not damaged).

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

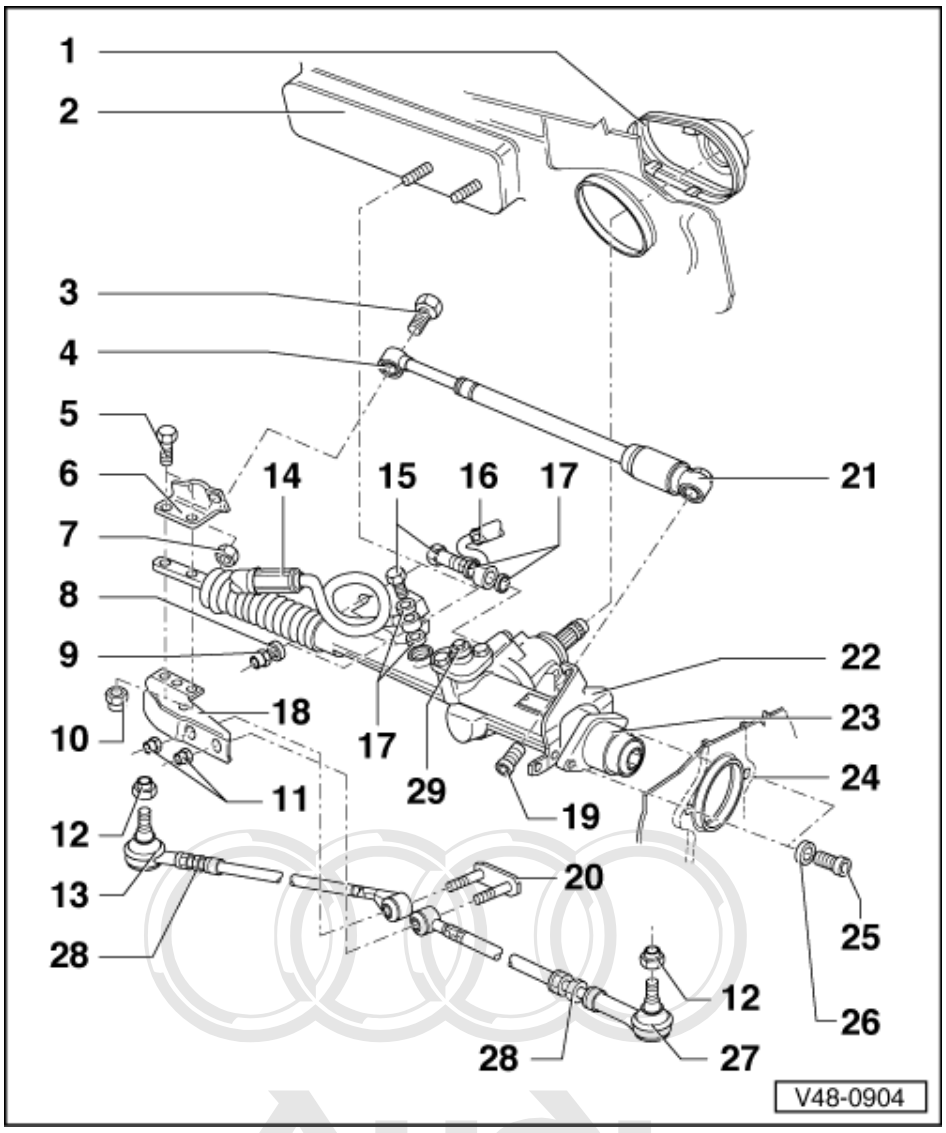


- Centre with steering wheel on installation
- Make sure that there is no steering box torsion on installation; move accordingly at securing points, if necessary
- After installation move steering box to centre position and fit and attach steering wheel in correct position (spoke horizontal)
- Servicing =>Page 248
- Servicing with Servotronic =>Page 258
- Adjusting toe => Page 115
- Attach battery earth strap

24 Wheel housing left

25 Cheese head bolt, 20 Nm

- Tighten before fastening steering box to bulkhead



26 Spring lock washer

- Always replace

Note:

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

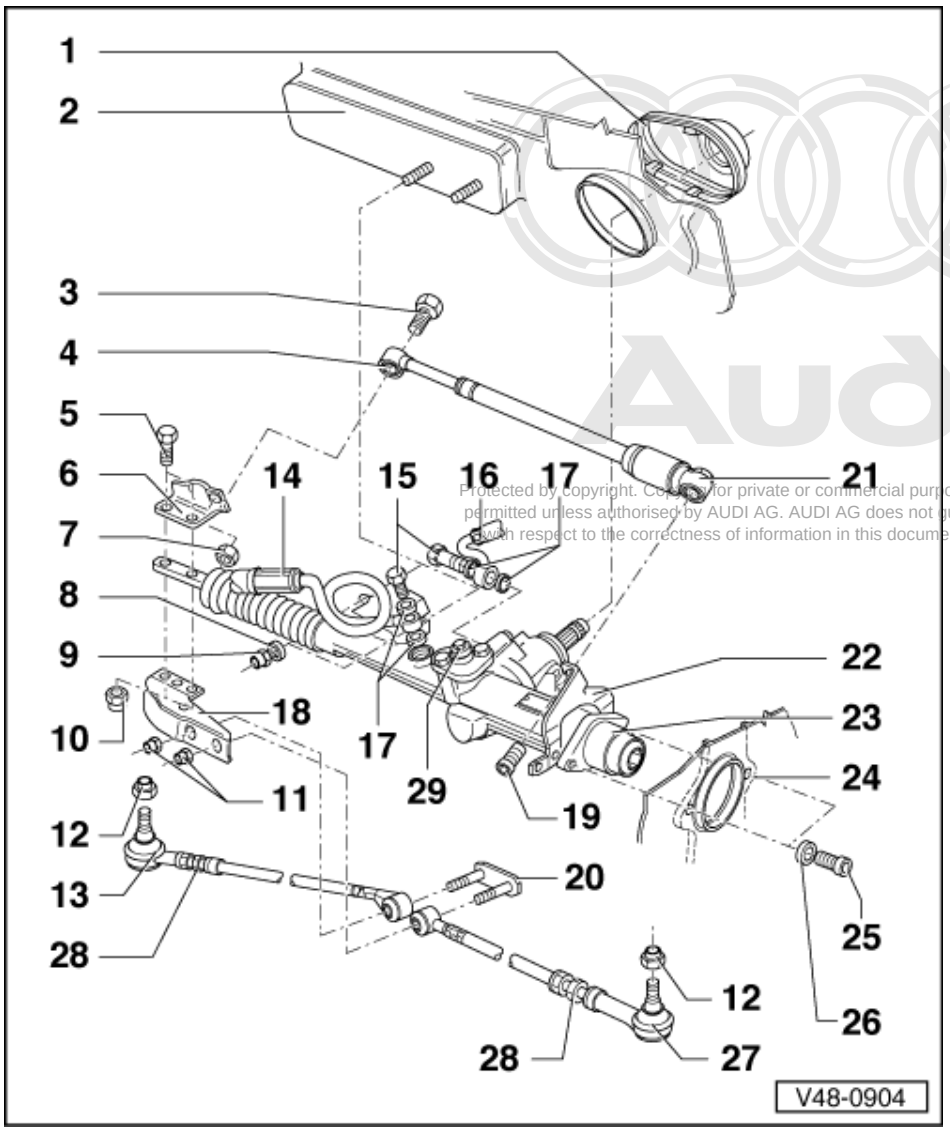
On vehicles with no steering damper steering box is attached on wheel housing end with a self-locking nut (tightening torque 20 Nm). Always replace self-locking nuts. Fit washer between steering box flange and self-locking nut.

27 Tie rod, left

- Pressing off steering arm => Fig.3

Note:

When fitting the two tie rod ends i.e. when adjusting the toe make sure that the two swivel heads for the track control arm joints are neither tilting forwards nor backwards.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

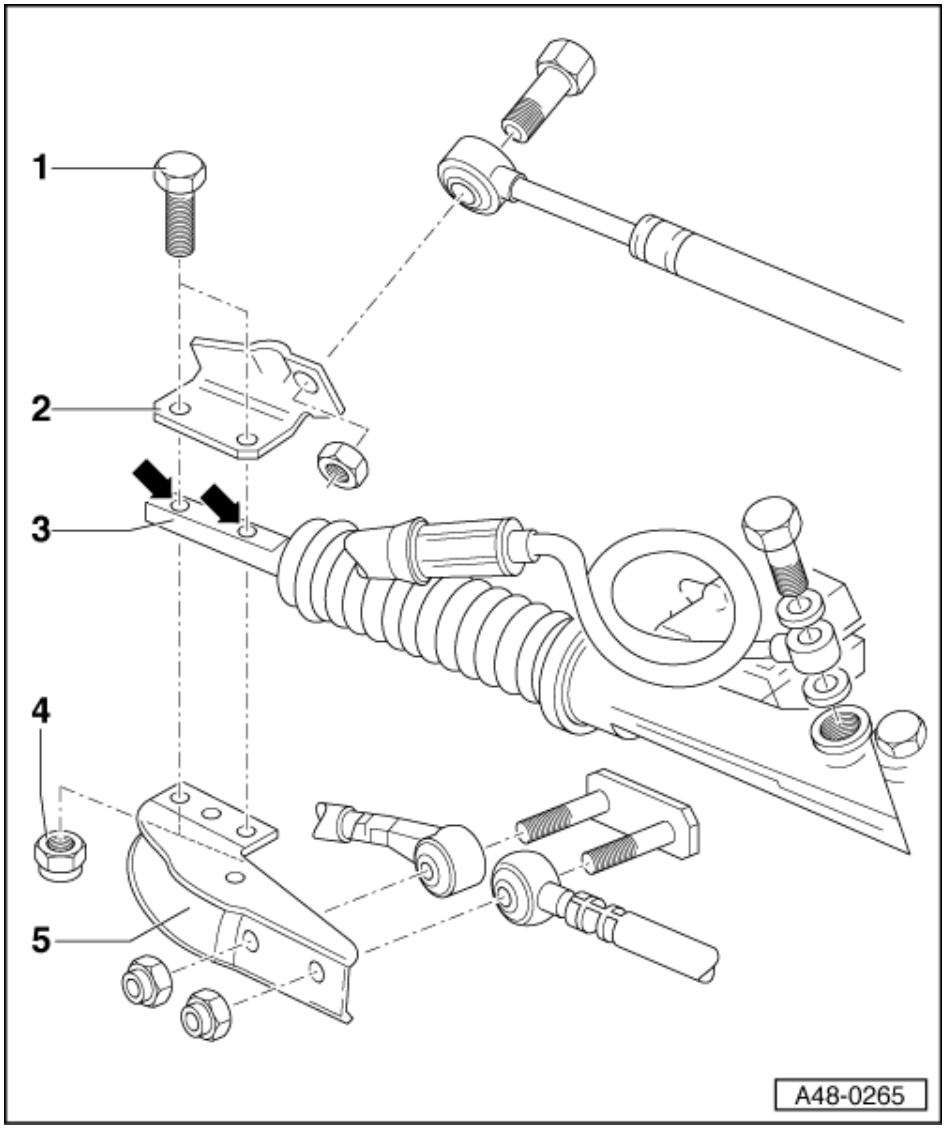
28 Threaded piece

- Always adjust toe at both tie rods => Page 115

29 Adjusting screw

- Adjusting steering wheel => Page 267 , Item 7

1.2 - Attachment sequence of screw connection steering box tie rod carrier



1 **Hexagon bolt, 45 Nm**
- Tighten these screws first then tighten nuts -4-.

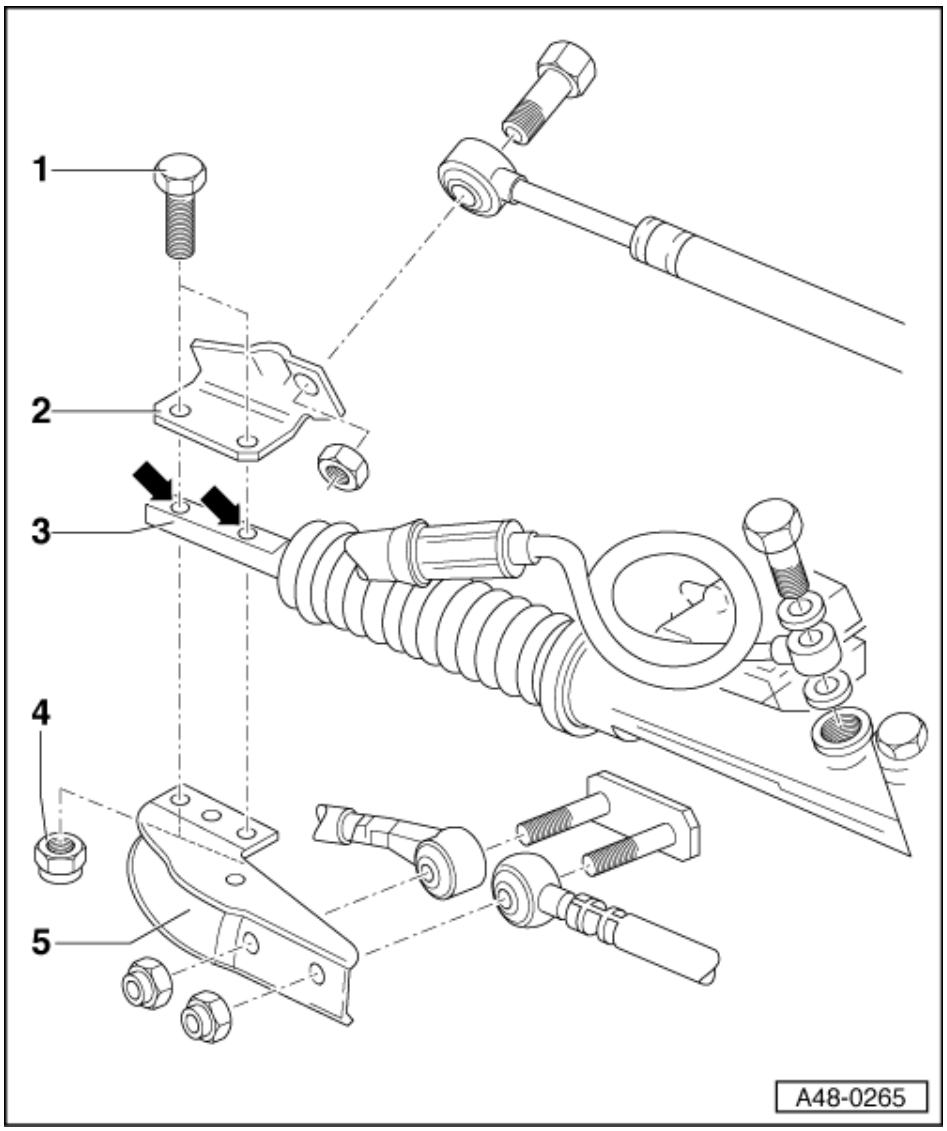
2 **Steering damper bracket, tie rod side**
- Only installed on vehicles with 4 cylinder engine and sports running gear as of model year 93 as well as on vehicles with 6 cylinder engine

3 **Tie rod**
- With internal thread M10 -arrows-

4 **Self-locking nuts, 45 Nm**
- Always replace

5 **Carrier for tie rods**

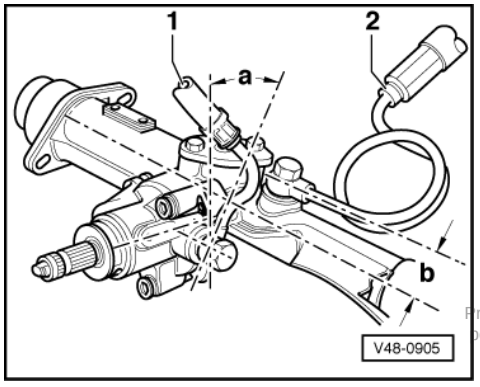
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



When installing the carrier please note:

- The thread of gear rod -3- and screws -1- must not be damaged. They must be free of dirt, oil etc.
- Attach carrier -5- and first tighten hexagon bolts -1-.
- Then screw in new self-locking nuts -4- from below and tighten.

Vehicles with 4 and 5 cylinder engine:



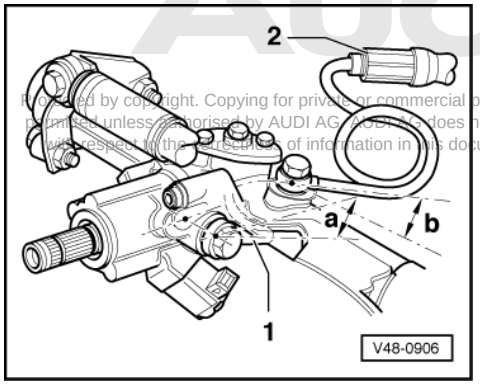
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.1 Routing at steering box

1 - Return hose
2 - Expansion hose

- Pay attention to Specified values when attaching lines to steering box
  a = ca. 30o
  b = parallel

Vehicles with 6 cylinder engine:

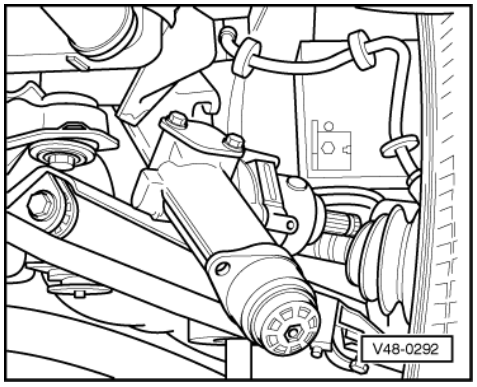


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.2 Routing at steering box

1 - Return hose
2 - Expansion hose

- Pay attention to Specified values when attaching lines to steering box
  a = ca. 30o
  b = ca. 5o



-> Fig.3 Pressing off tie rod end

2 - Removing and installing steering box

2.1 - Removing and installing steering box

Warning!
Before removing steering box on vehicles with airbag disconnect battery earth strap and 1 pin red connector for airbag voltage supply to ensure that subsequent assembly work does not result in accidental actuation of airbag system. Front wheels are then to be moved to straight ahead position and the steering wheel removed (this ensures that the volute spring in the steering wheel is not damaged).

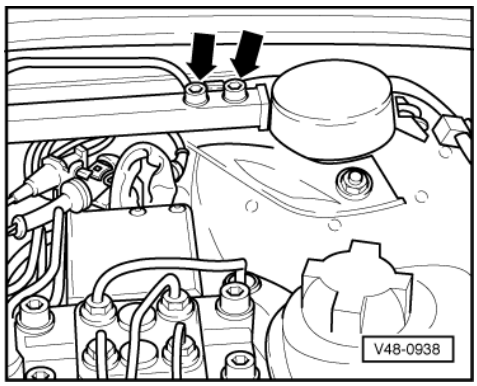
Protected by copyright. Copying for private or commercial purposes, extract or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Notes:
- As of the introduction of the 10" servo unit this has to be taken out when removing and installing the steering box.
- Removing and installing the steering box is described for a vehicle with 6 cylinder engine and ABS, as this presents the greatest difficulties.

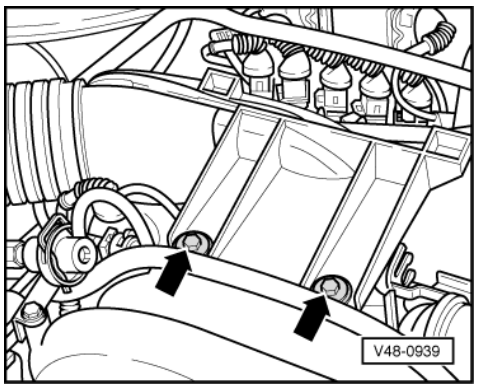
Assembly work listed below is only required on vehicles with 4 and 5 cylinder engines:
- Remove both front wheels
- Screw tie rods on both sides off steering arm and remove together with driver.
- After removing bulkhead seal unscrew return hose at rotary valve housing from footwell.
- Remove steering box through penetration (for tie rod) in right wheel housing

The following additional work is to be performed on vehicles with 4 cylinder diesel engine and AC:
- Remove battery.
- Remove cover from battery bracket to provide access to steering box attachment at bulkhead.

Removing:
- Disconnect battery earth strap

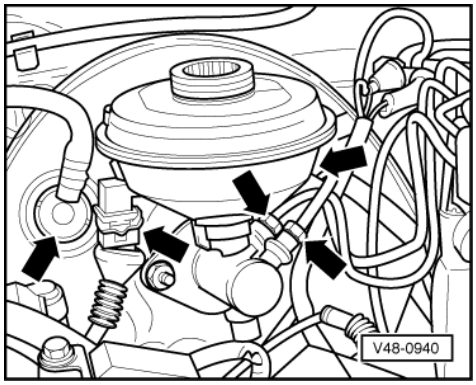


- -> Remove anti-roll bar -arrows-
- Use screwdriver to prise off cover from intake silencer.



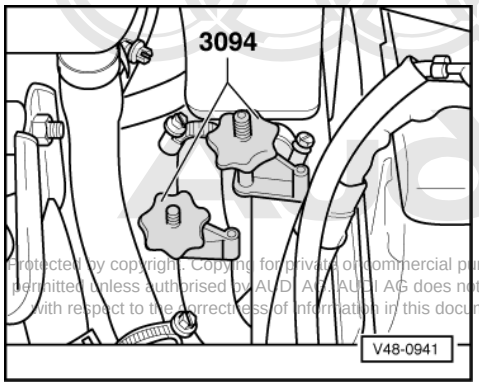
- -> Screw out both securing bolts for intake silencer.
- Unscrew air hose at air mass meter.
- Squeeze the two quick release couplings for the crankcase breather hoses together at the largest diameter and for this purpose pull them off the valve covers.
- Press intake silencer backwards and lift upwards.

- Pull vacuum hose off throttle housing and remove intake silencer.
- Draw off brake fluid; for this purpose, remove strainer from brake fluid reservoir



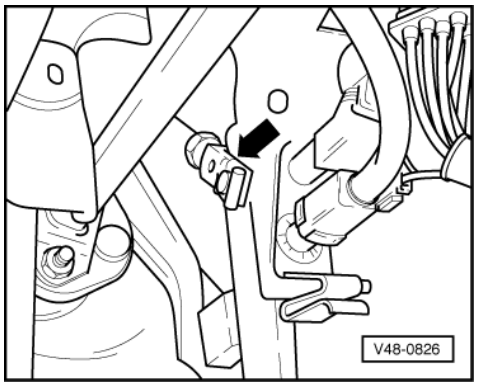
- -> Remove both brake lines from brake master cylinder to hydraulic unit
- Pull connector for float indicator off brake fluid reservoir
- Unscrew brake master cylinder from servo unit
- Screw threaded pin out of valve cover for attaching crankcase breather
- Pull off cruise control power line
- Unscrew cruise control diaphragm unit with holder from throttle housing
- Unclip connectors for knock sensor, lambda probe heating and lambda probe form holder
- Seal holes for brake lines at brake master cylinder and hydraulic unit with bleeder valves

- Pull check valve with vacuum line out of servo unit
- Pull hose for clutch master cylinder off brake fluid reservoir



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

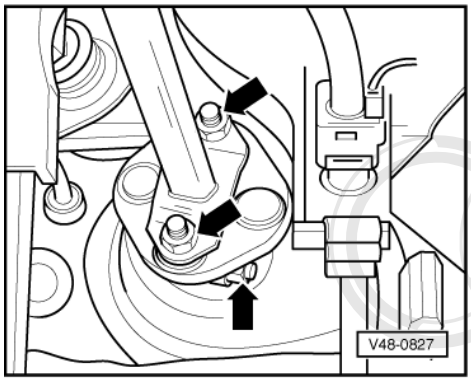
- -> Disconnect suction and return pipes with hose clamps -3094-.



- Pull off connector for thermoswitch at rear coolant pipe
- Removing driver's side compartment.

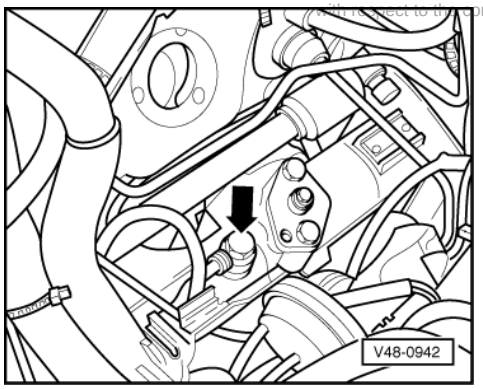
=> General body repairs; Repair

- -> Remove fastener from pin
- Remove pin from clevis
- Detach coil spring at clevis



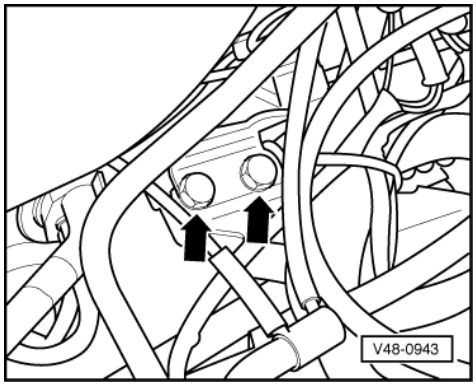
- -> Remove securing bolts for flanged tube with shackle at steering pinion and steering column
- Use screwdriver to press steering column off disc coupling
- Pull flanged tube with shackle off steering pinion then press steering column slightly to the side
- Unscrew servo unit from pedal bracket
- Carefully remove servo unit

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

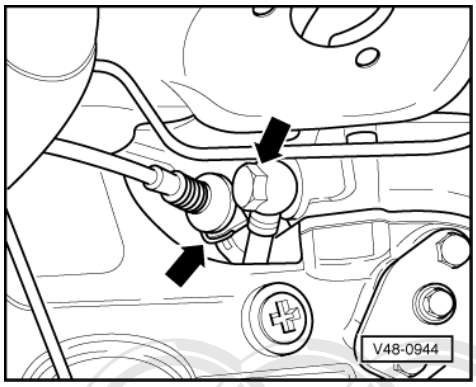


- -> Screw banjo bolt for expansion hose out of steering box
- Turn steering by moving wheels from stop to stop so that hydraulic fluid in steering can escape from connection hole for expansion hose
- Seal hole in steering box with dummy plug

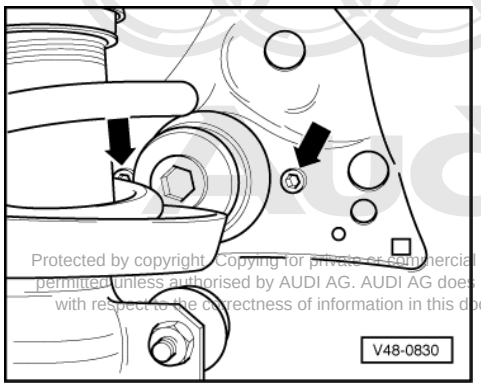
- Unscrew self-locking nuts from driver rack securing bolts



- Screw out steering damper holder securing bolts on wheel housing end
- -> Screw out both driver rack securing bolts
- Remove driver from rack
- Remove steering damper with holder

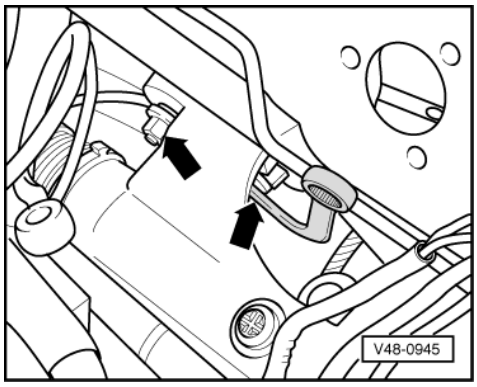


- -> Screw banjo bolt for return hose out of steering box
- Seal hole with dummy plug
- On vehicles with Servotronic, pull connector off valve for Servotronic



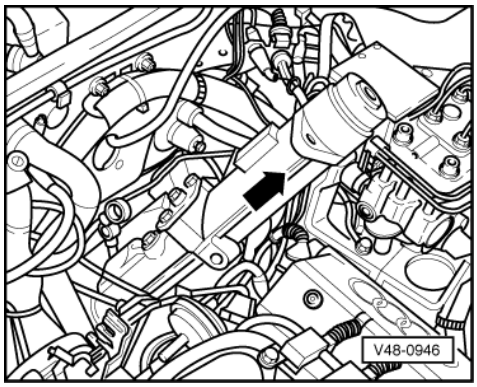
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Screw out securing bolts for steering box at left wheel housing
- Remove holder for steering damper on wheel housing end; for this purpose detach brake line from retaining clip



- Unclip bulkhead seal fasteners from bulkhead working from engine compartment
- Remove bulkhead seal from footwell
- -> Unscrew securing nuts for steering box from bulkhead with offset box spanner
- Pull steering box slightly in direction of travel so that it comes free from bulkhead

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Then lift steering box upwards by turning it appropriately and remove

Installing:

Note:

Install in reverse order, paying attention to the following:

Attachment sequence of screw connection steering box tie rod driver => Page 239

- Insert steering box and screw to bulkhead by hand
- Screw steering box to left wheel housing with holder for steering damper (two people required)
- Screw steering box to bulkhead with offset box wrench
- Carefully insert bulkhead seal
- Insert brake line in retaining clip at holder for steering damper on wheel housing end
- Attach return hose to rotary valve housing and expansion hose to steering box such that pipes have not contact => Page 241 , Fig. 1 and 2
- Attach connector to valve for Servotronic.

- Insert servo unit in bulkhead and screw on; then roll sealing ring for bulkhead seal onto bulkhead
- Attach connector for thermoswitch at rear coolant pipe
- Insert threaded pin
- Screw cruise control diaphragm unit with holder to throttle housing
- Attach cruise control vacuum line
- Clip in connectors
- Detach coil spring at clevis
- Insert pin in clevis/brake pedal and fit with new fastener
- Attach connector for float indicator to brake fluid reservoir
- Attach hose for clutch master cylinder to brake fluid reservoir

- Remove hose clamps -3094- from suction and return hose

- Attach vacuum hose to throttle housing
- Attach both crankcase breather hoses to valve cover
- Install anti-roll bar, (tightening torque 20 Nm)
- With engine switched off turn steering wheel several times from stop to stop to bleed steering box

Note:

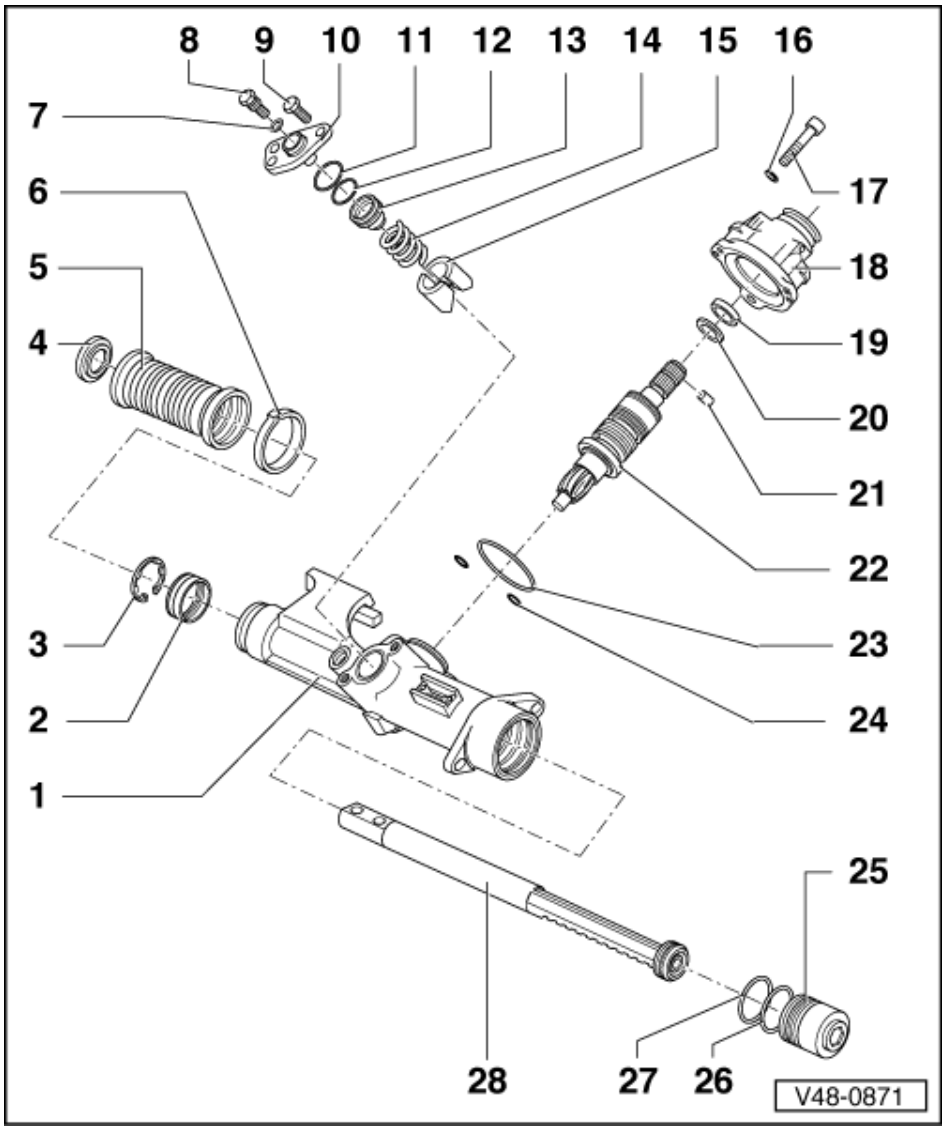
This process must be repeated if noise is heard during test drive

- Bleed braking system and test for leaks
- Bleed slave cylinder for hydraulic clutch controls
- Connect battery earthing strap.
- Check hydraulic fluid level and top up, if necessary. Check return hose at rotary valve housing for leaks.
- Check expansion hose at steering box for leaks
- Adjust toe

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 - Servicing power-assisted steering

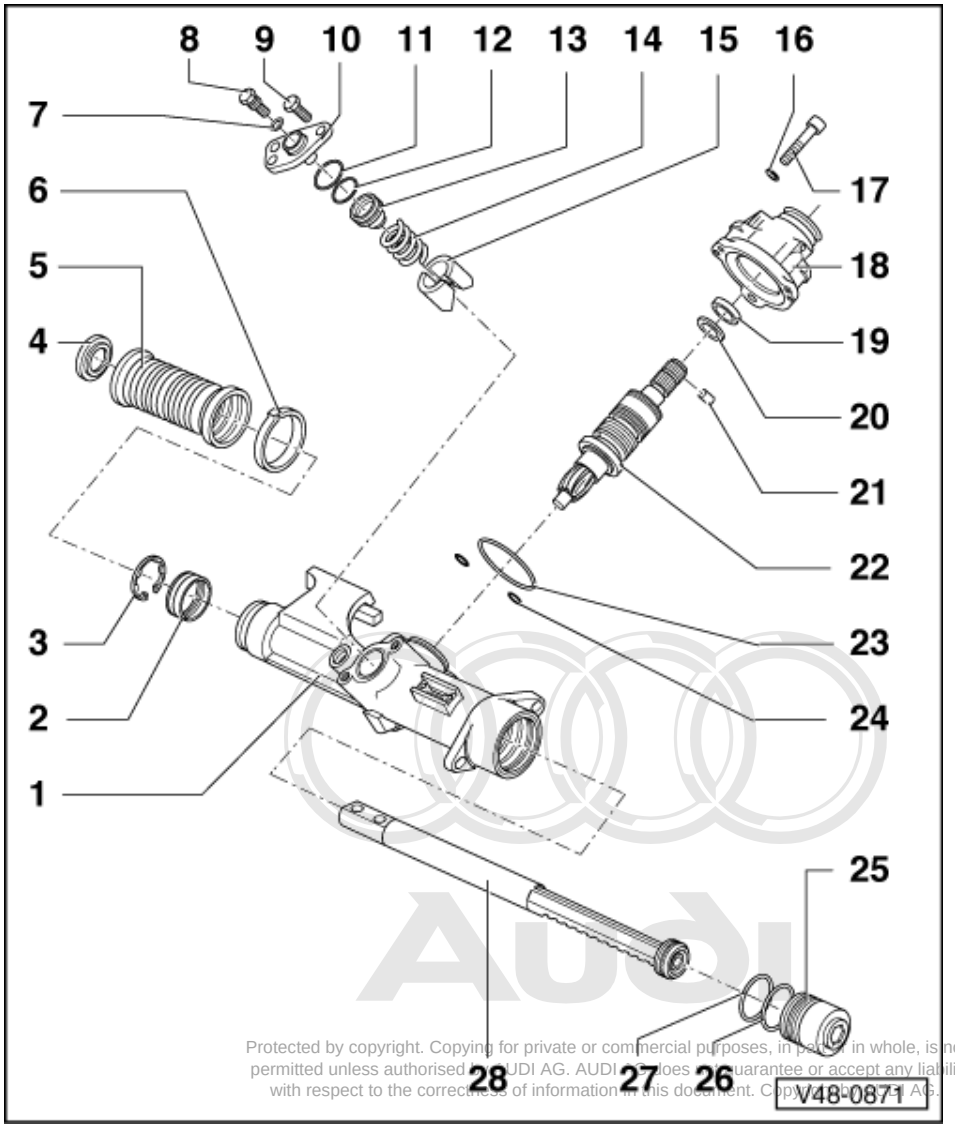
3.1 - Servicing power-assisted steering



Warning!
Keep workplace and components spotlessly clean.

Notes:

- The power assisted steering uses hydraulic oil, part no. G 002 000
- All parts marked with an asterisk are contained in the repair set and are to be replaced when servicing
- Moisten all sealing elements with hydraulic fluid prior to installation
- Welding and alignment works on the steering components are not permitted.
- Instead of wing hose clamps use can also be made of screw clamps.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 **Steering box**
- Removing and installing => Page 227
- Adjust toe after removing and installing

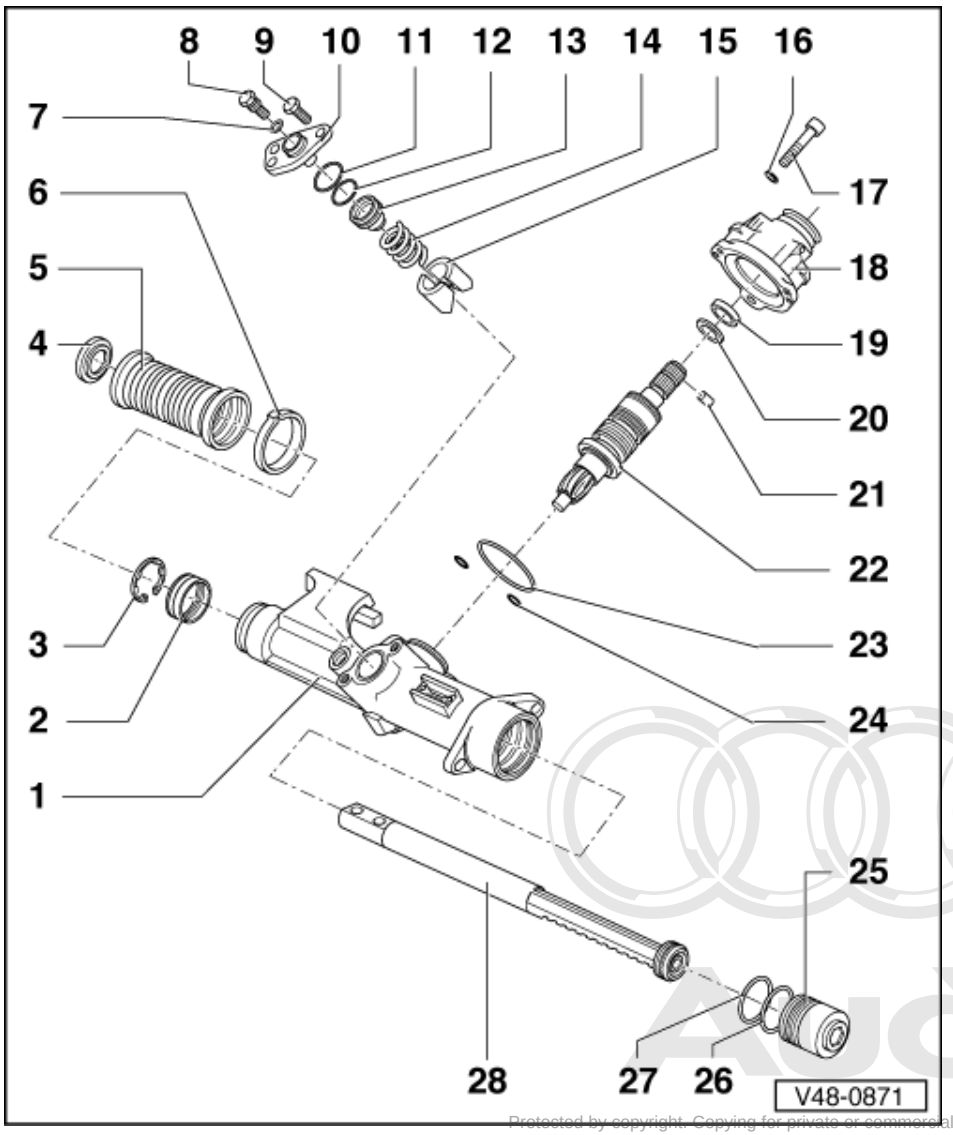
2 **Rack seal ***
- Always replace
- Pulling out => Fig. 1 and 2

3 **Circlip**
- Can only be removed and fitted after taking out rack

4 **Retaining ring**
- Slip onto rack as far as it will go
- Insert gaiter into annular groove

5 Bellows

- Can be replaced with steering box installed
- Adjust toe after replacement



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

6 Clamp

- Use screw clamps when performing repairs
- Screw connection faces bulkhead

7 O-ring *

- Always replace

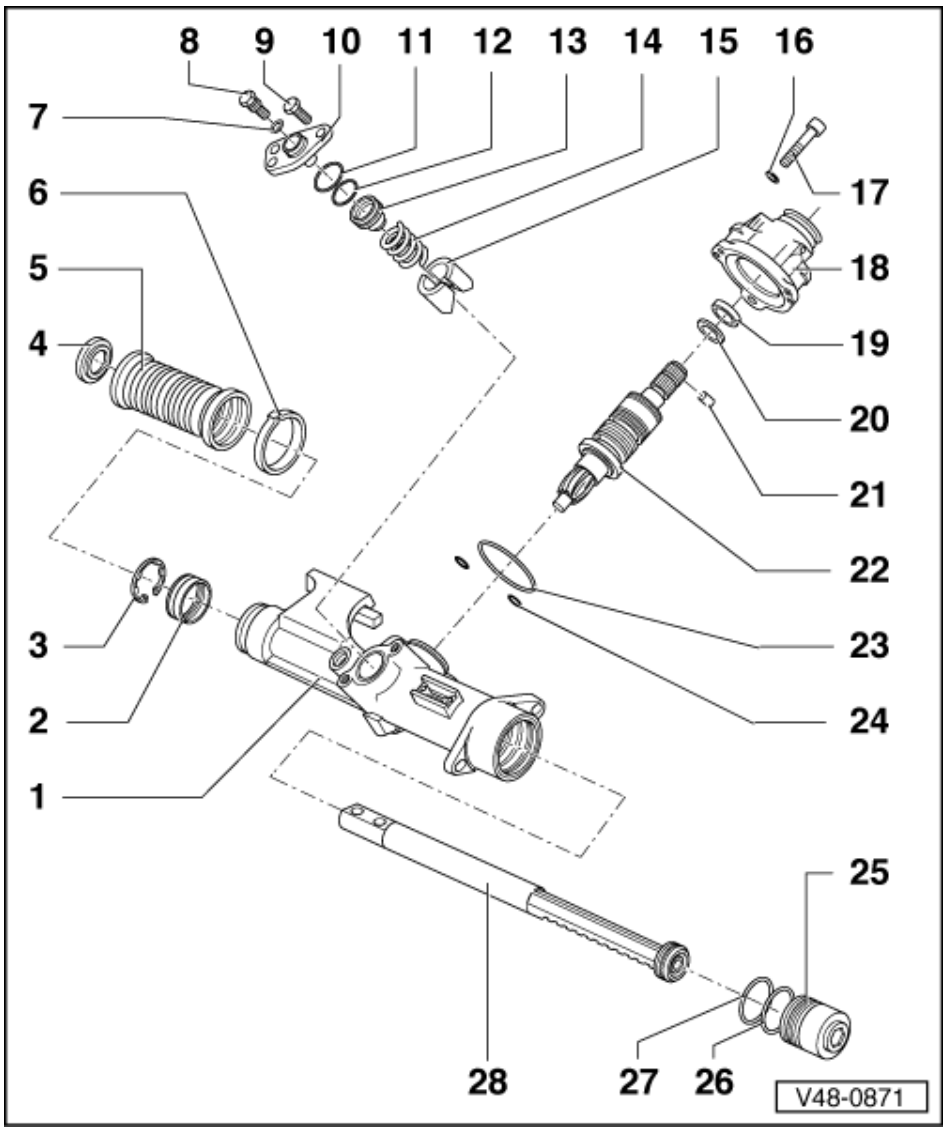
8 Adjusting screw

- Adjusting steering play => Fig. 5

9 Hexagon bolt, 20 Nm

10 Cap

- Screw onto steering box
- The two adjacent holes must face forwards when viewed in direction of travel



11 O-ring 35 x 2 mm *

- Always replace
- Insert in annular groove in steering box

12 O-ring 27 x 2.5 mm *

- Always replace
- Insert in annular groove in gasket holder

13 Gasket holder

- Disassembling => Fig. 3

14 Spring

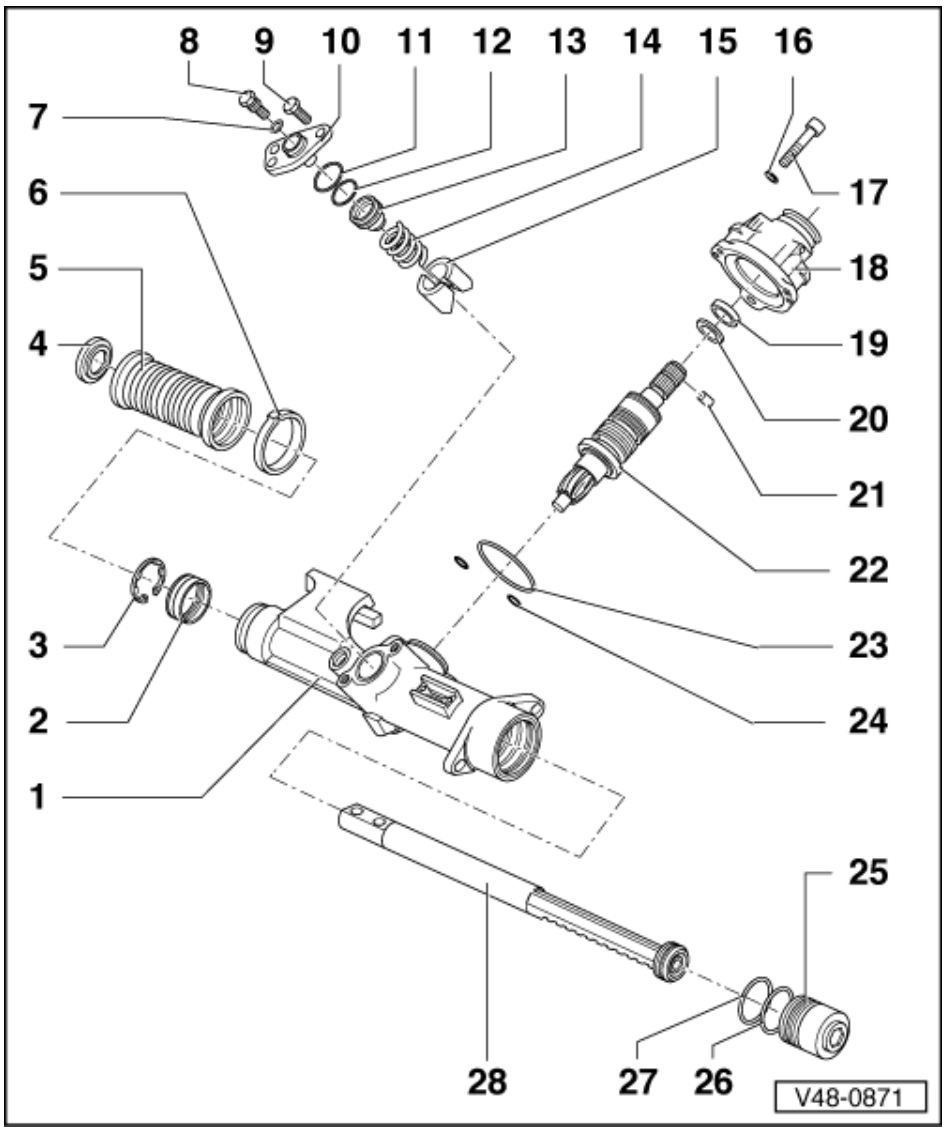
- Insert in thrust piece

15 Thrust piece

16 Shim

17 Cheese-head bolt, 20 Nm

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



18 Valve housing

19 Seal *

- Replacing =>Page 255

20 Backing ring

21 Straight pin 2.5 x 6 mm *

- Always replace
- Pull out with universal pliers before removing valve housing

22 Rotary valve/steering pinion

- Knocking out of steering box => Fig. 4

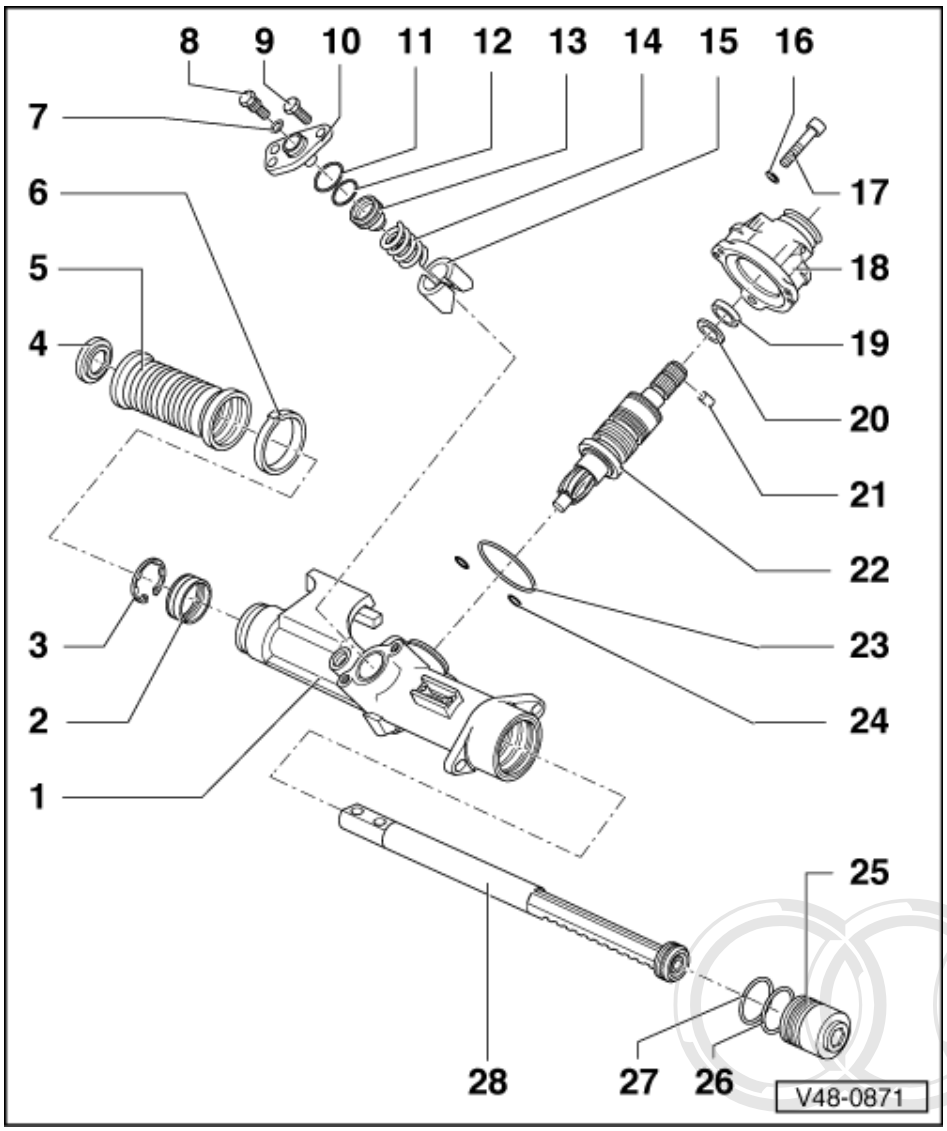
23 O-ring 60 x 2 mm *

- Always replace

24 O-ring 9 x 2 mm *

- Always replace

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



25 Cover plate, 50 Nm

- Secure with two centre punch marks offset by 180o

26 Thrust ring *

- Always replace
- Attach to cap
- Installation position =>Fig. 6

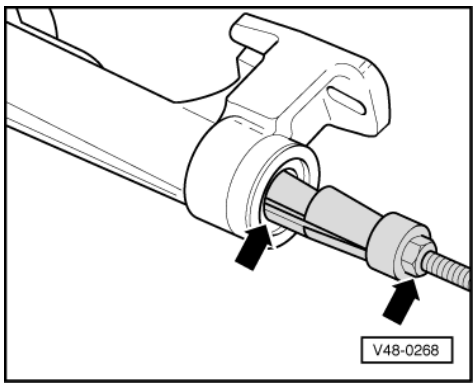
27 O-ring 44 x 2.5 mm *

- Always replace
- Attach to cap
- Installation position =>Fig. 6

28 Rack

- Unscrew cap and push rack to left out of steering box
- Watch out for scoring around rack seal
- Fitting => Page 256

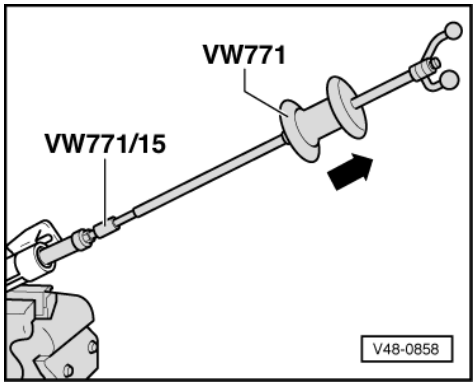
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Fig.1 Pulling out rack seal

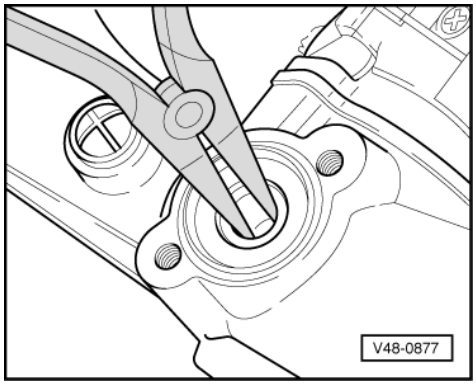
- Insert commercially available inside extractor (e.g. -KUKKO 21/4-) in sealing lip

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



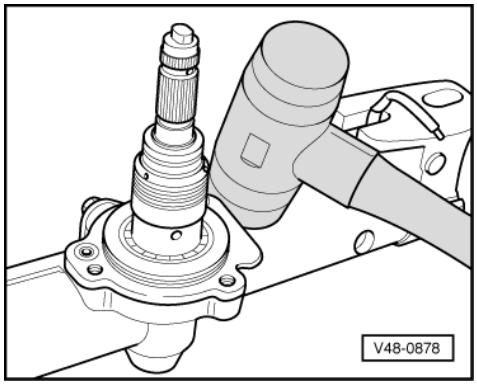
-> Fig.2 Screwing multi-purpose tool to inside extractor

- Clamp steering box in vice using soft jaws.
- Screw -VW 771- with -VW 771/15- to inside extractor and knock out rack seal



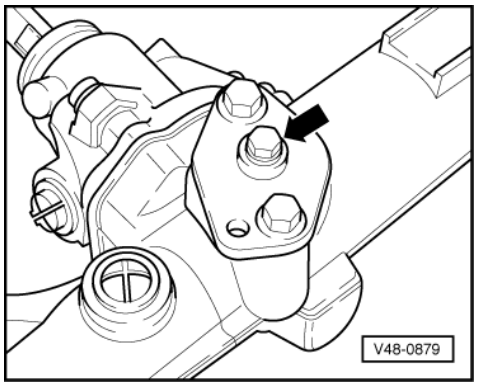
-> Fig.3 Disassembling gasket holder

- Pull out using commercially available outer circlip pliers



-> Fig.4 Knocking out steering pinion

- Hold steering pinion by hand and knock out by hammering on steering box with commercially available rubber hammer



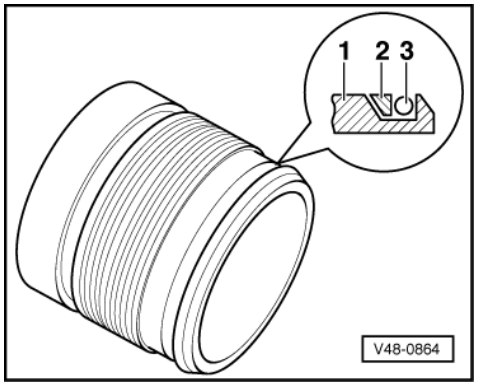
-> Fig.5 Adjusting steering play

Note:

Two mechanics are required to perform adjustment. Adjustment is to be carried out with engine stopped and vehicle standing on its wheels. The illustration shows the steering box removed.

- Wheels set to straight-ahead position.
- Moving steering wheel back and forth (roughly 30oabout centre axis) produces a chattering and clicking noise.
- If this is the case the second mechanic carefully screws in adjusting screw (arrow) into the cover until rattling noise can no longer be heard inside the vehicle.
- Perform test drive and, if necessary, correct adjustment

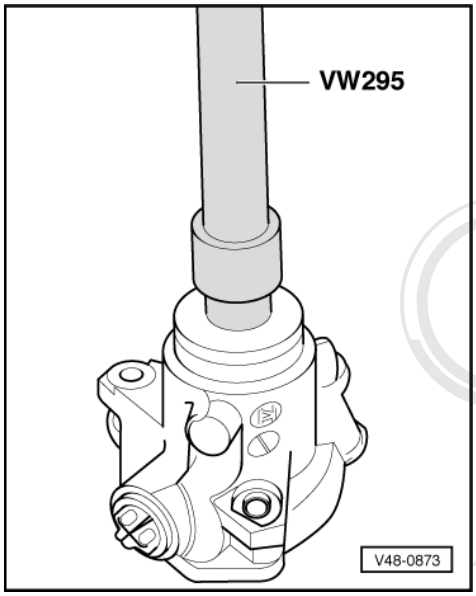
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Fig.6 Location of thrust ring

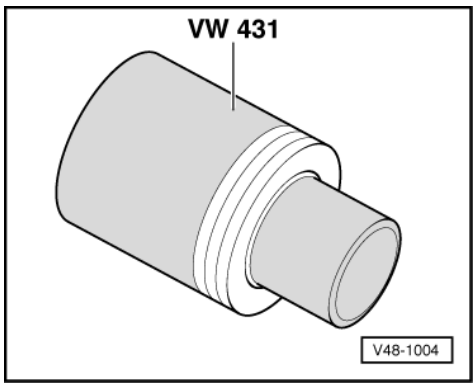
1 - Screw cap
2 - Thrust ring
3 - O-ring

3.2 - Replacing seal in valve housing

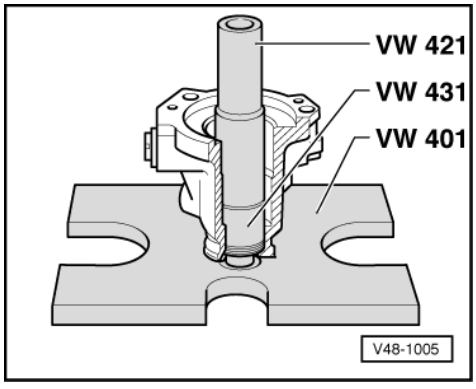


- -> Knock seal out of valve housing

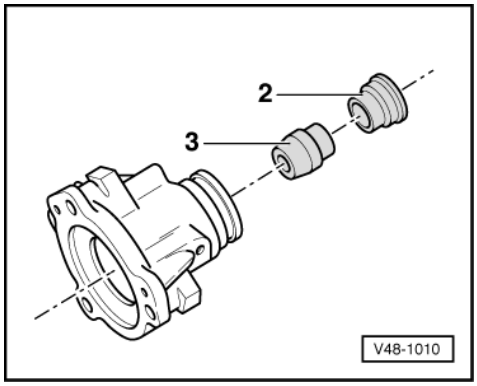
This document is copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Attach new seal to special tool with sealing lip facing special tool -VW 431-
- Insert special tool -VW 431- with seal in valve housing

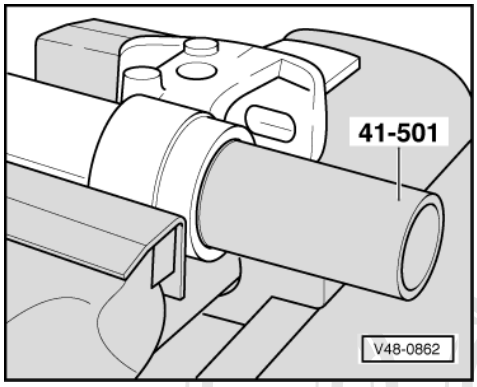


- -> Attach special tool -VW 421- to special tool -VW 431- and drive seal home
- Fill space between sealing and dust lips with multi- purpose grease.



- -> Slip assembled positioning bush (contained in repair set and consisting of protective sleeve -2- and fitting sleeve -3- into seal
- Press fitting sleeve -3- out of protective sleeve

3.3 - Fitting rack

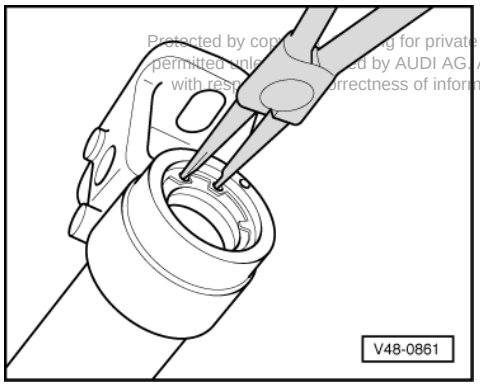


Note:

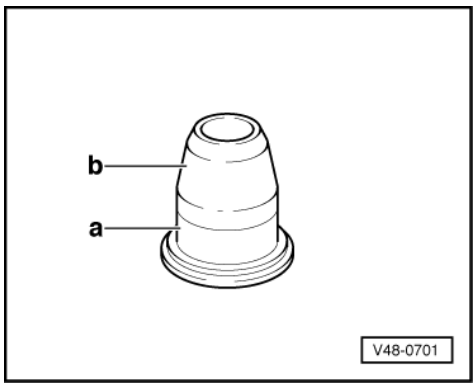
Before fitting rack wash out steering box with white spirit, blow it out with compressed air and thoroughly clean rack. Prior to assembly use hydraulic fluid to moisten parts of fitting sleeve, rack and rack seal. All new repair sets contain a fitting sleeve.

- -> Insert rack seal by hand in steering box and drive home

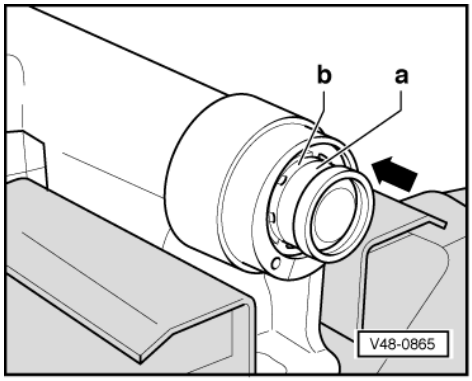
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



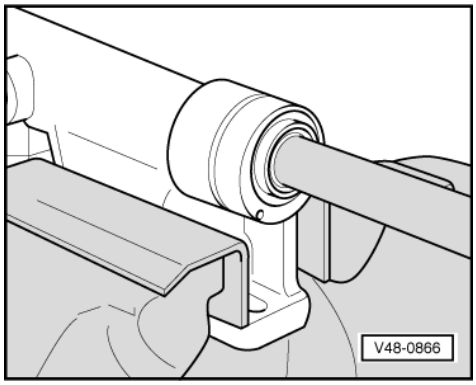
- -> Use commercially available circlip pliers to fit circlips



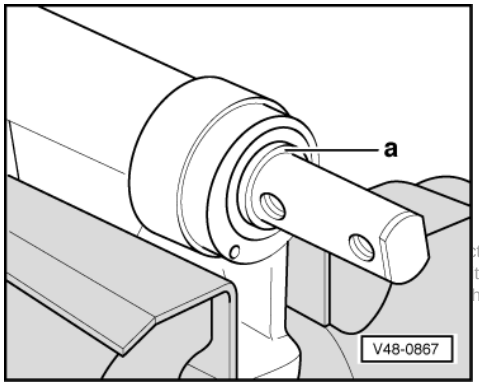
- -> Insert fitting sleeve -b- in fitting sleeve -a-; for this purpose place both parts on a flat surface as shown



- -> Press home fitting sleeve -a- with fitting sleeve part -b- in steering box by hand



- -> Use commercially available mandrel to drive fitting sleeve part into steering box and remove on opposite end

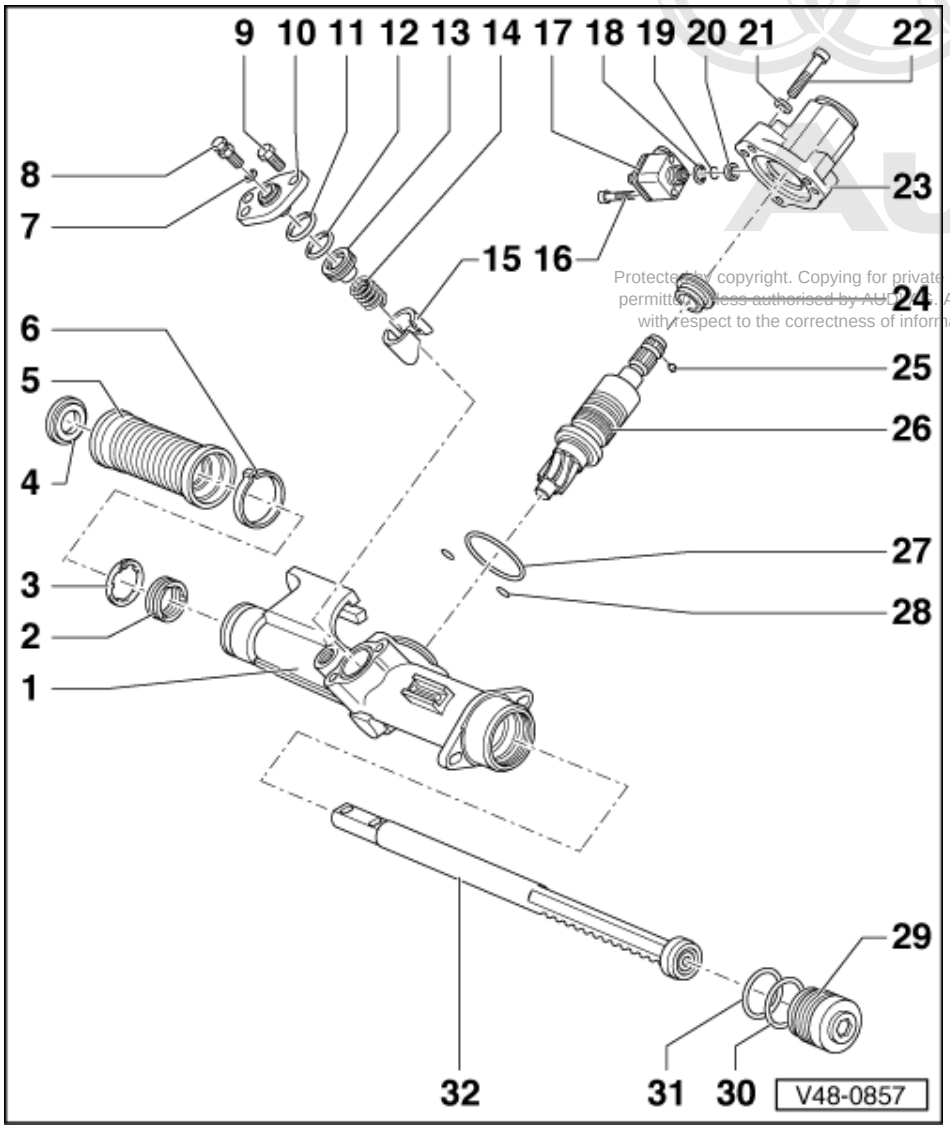


cted by copyright. Copying for private or commercial purposes, in part or in whole, is not
tted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
n respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Push rack through steering box and fitting sleeve -a- from opposite end of fitting sleeve; for this purpose counterhold fitting sleeve -a- by hand until flattened end of rack is past fitting sleeve -a-.
- Remove fitting sleeve -a- from rack
- Screw on cap by hand so that rack can no longer fall out (seal could otherwise be damaged)

4 - Servicing power assisted steering with Servotronic

4.1 - Servicing power assisted steering with Servotronic



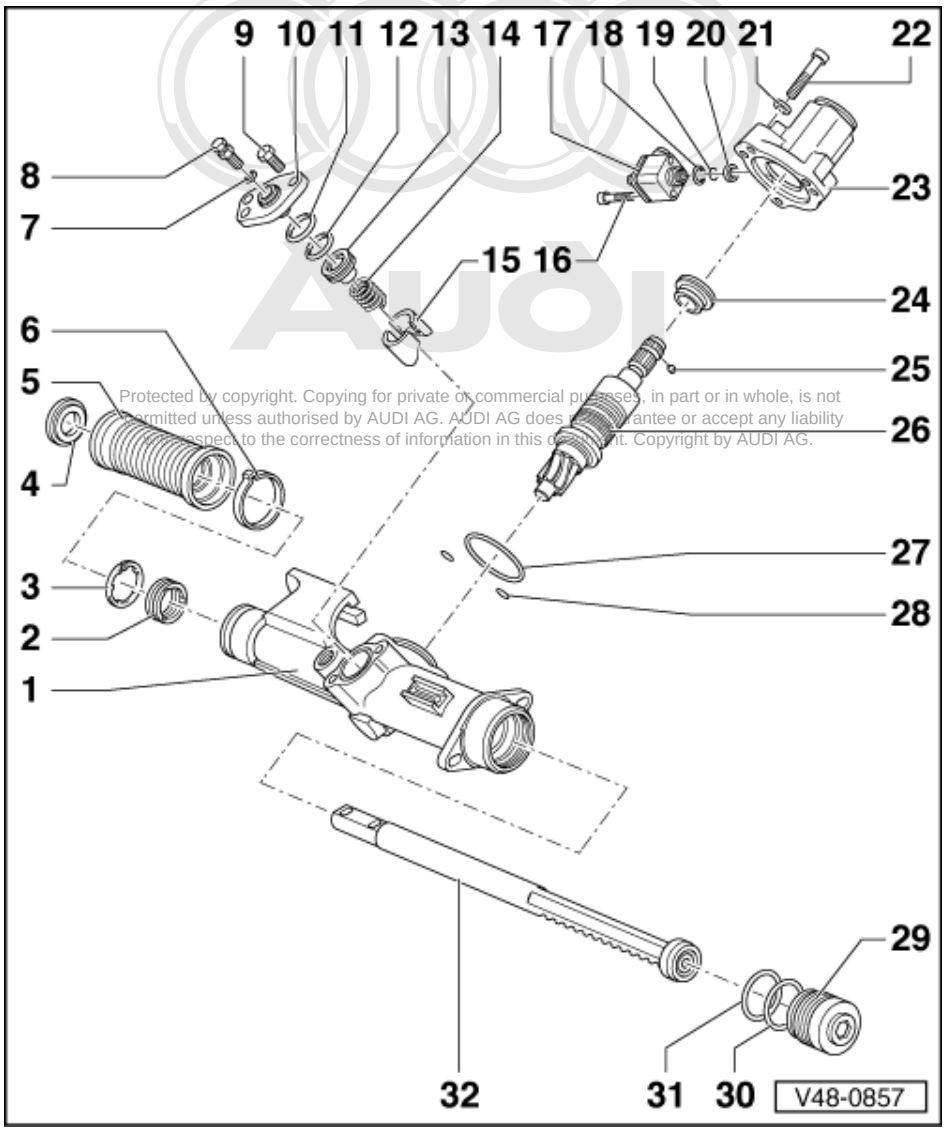
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Warning!
Keep workplace and components spotlessly clean.

Notes:

- The power assisted steering uses hydraulic oil, part no. G 002 000
- All parts marked with an asterisk are contained in the repair set and are to be replaced when servicing
- Moisten all sealing elements with hydraulic fluid prior to installation
- Welding and alignment works on the steering components are not permitted.

- Instead of wing hose clamps use can also be made of screw clamps.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

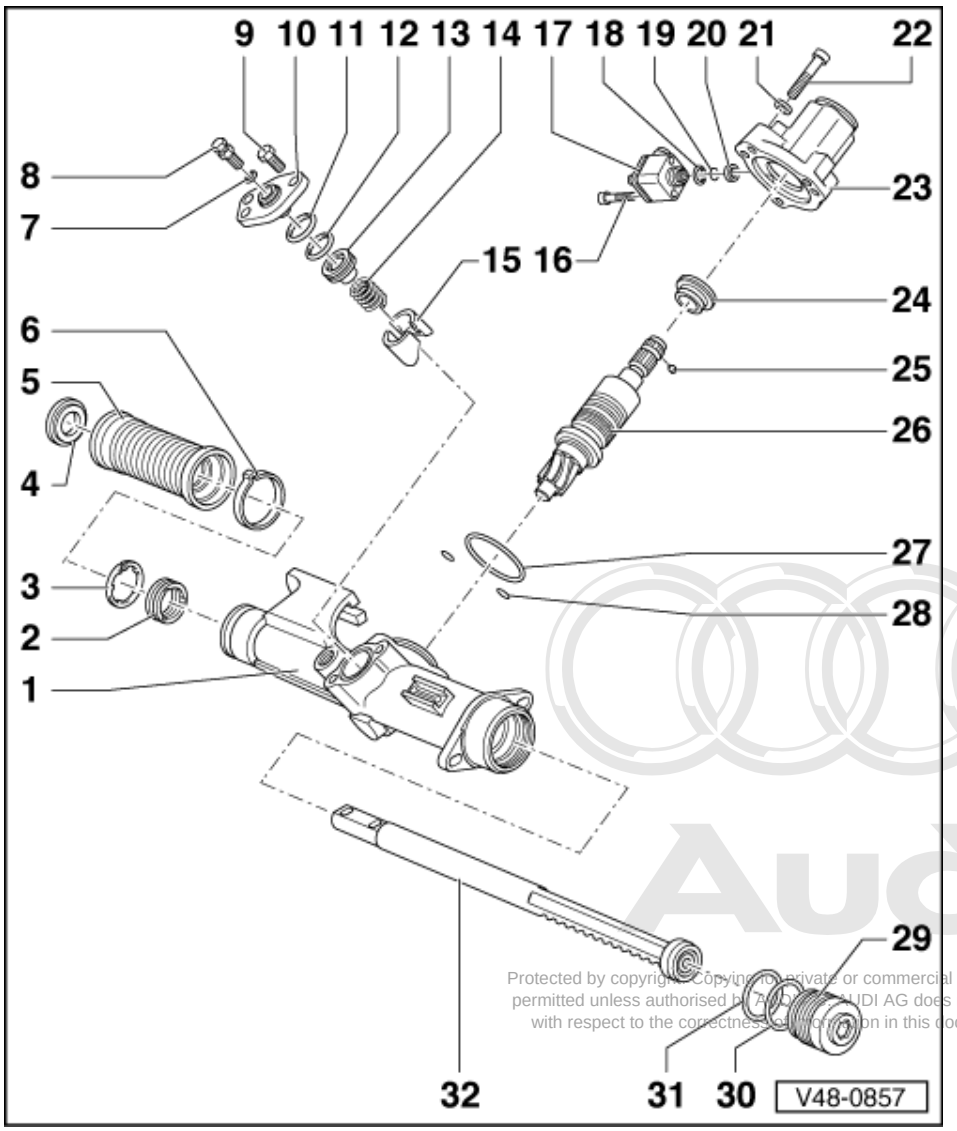
1 **Steering box**
- Removing and installing => Page 227
- Adjust toe after removing and installing

2 **Rack seal ***
- Always replace
- Pulling out => Fig. 3 and 4

3 **Circlip**
- Can only be removed and fitted after taking out rack

4 **Retaining ring**
- Slip onto rack as far as it will go
- Insert gaiter into annular groove

5 **Bellows**
- Can only be replaced with steering box installed
- Adjust toe after replacement



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

6 Clamp

- Use screw clamps when performing repairs
- Screw connection faces bulkhead

7 O-ring *

- Always replace

8 Adjusting screw

- Adjusting steering play => Fig. 7

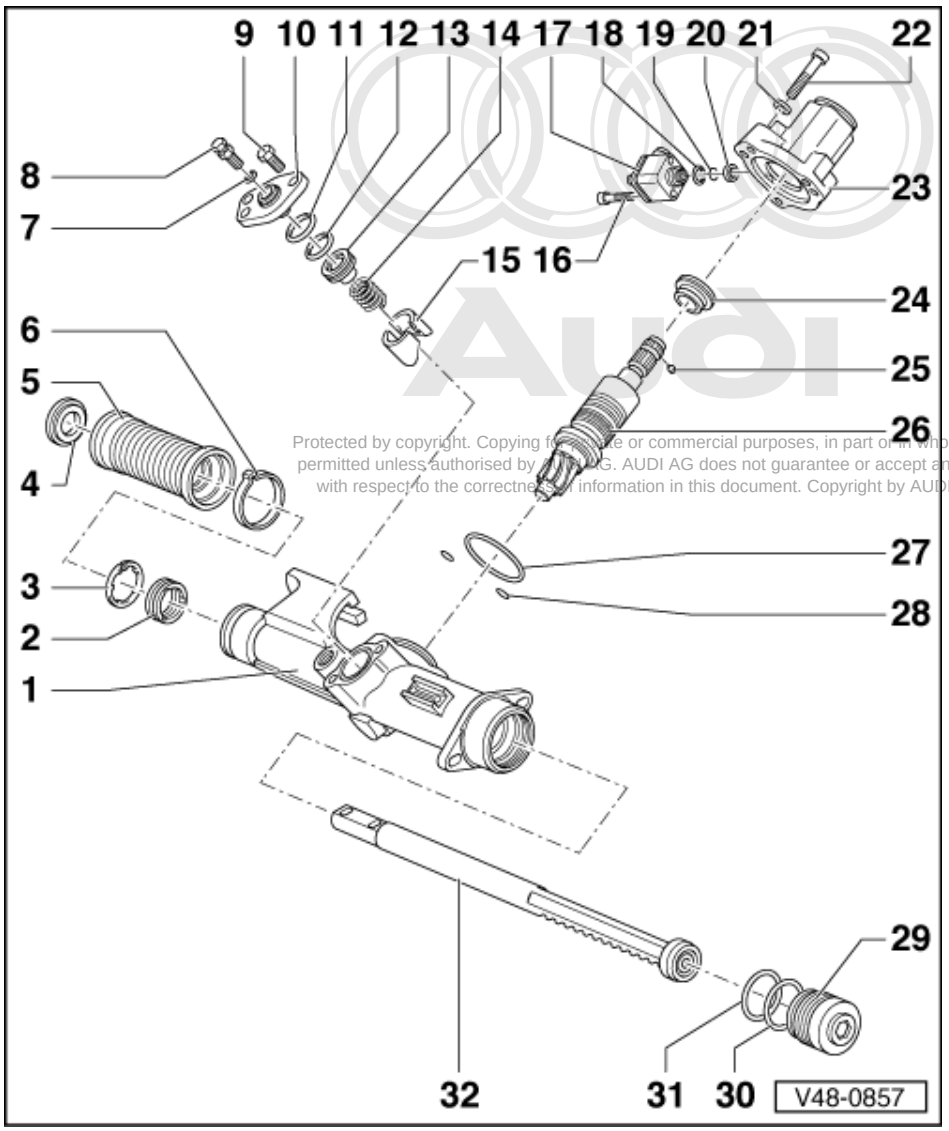
9 Hexagon bolt, 20 Nm

10 Cap

- Screw onto steering box
- The two adjacent holes must face forwards when viewed in direction of travel

11 O-ring 35 x 2 mm *

- Always replace
- Insert in annular groove in steering box



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

12 O-ring 27 x 2.5 mm *

- Always replace
- Insert in annular groove in gasket holder

13 Gasket holder

- Disassembling => Fig. 5

14 Spring

- Insert in thrust piece

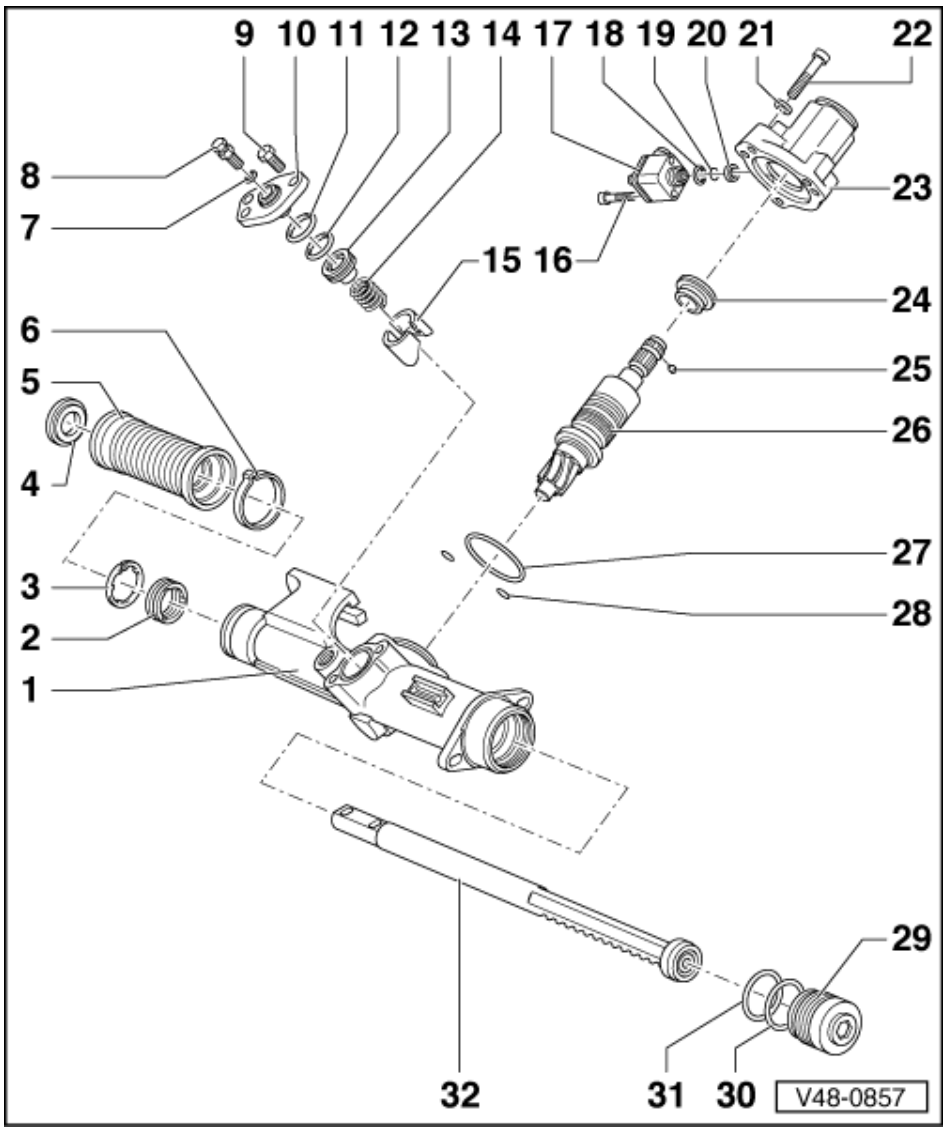
15 Thrust piece

16 Cheese-head bolt, 3 Nm

- For attaching valve for Servotronic to valve housing
- Not marked with locking compound

17 Valve for Servotronic

- Cannot be installed and removed with steering box in position



18 O-ring 12 x 1.5 mm *

- Always replace

19 O-ring 7 x 1 mm *

- Always replace

20 Strainer *

- Always replace

21 Shim

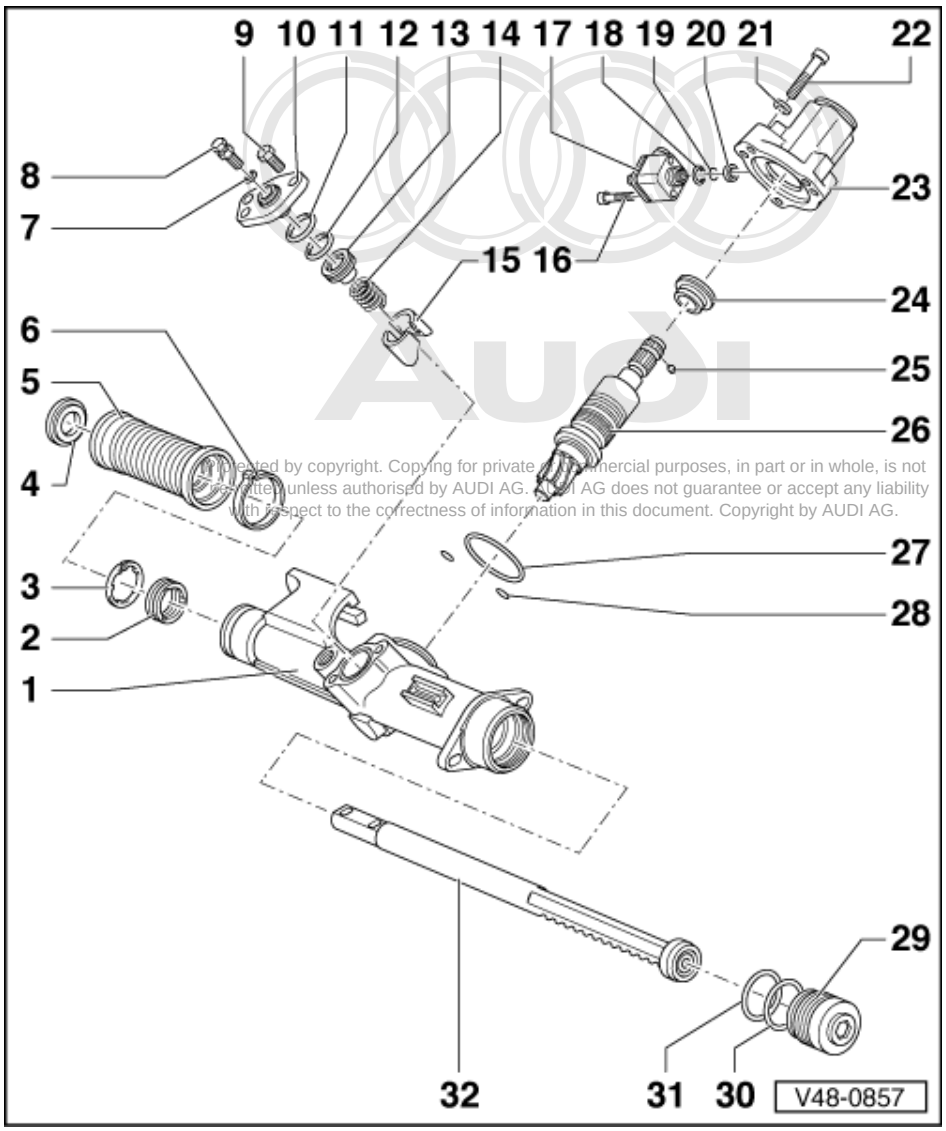
22 Cheese-head bolt, 20 Nm

23 Valve housing

24 Gasket holder *

- Always replace
- Knocking out => Fig. 1
- Driving in => Fig. 2
- Fill space between sealing and dust lips with multi- purpose grease.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

25 Straight pin 2.5 x 6 mm *

- Always replace
- Pull out with universal pliers before removing valve housing

26 Rotary valve/steering pinion

- Knocking out of steering box => Fig. 6

27 O-ring 60 x 2 mm *

- Always replace

28 O-ring 9 x 2 mm *

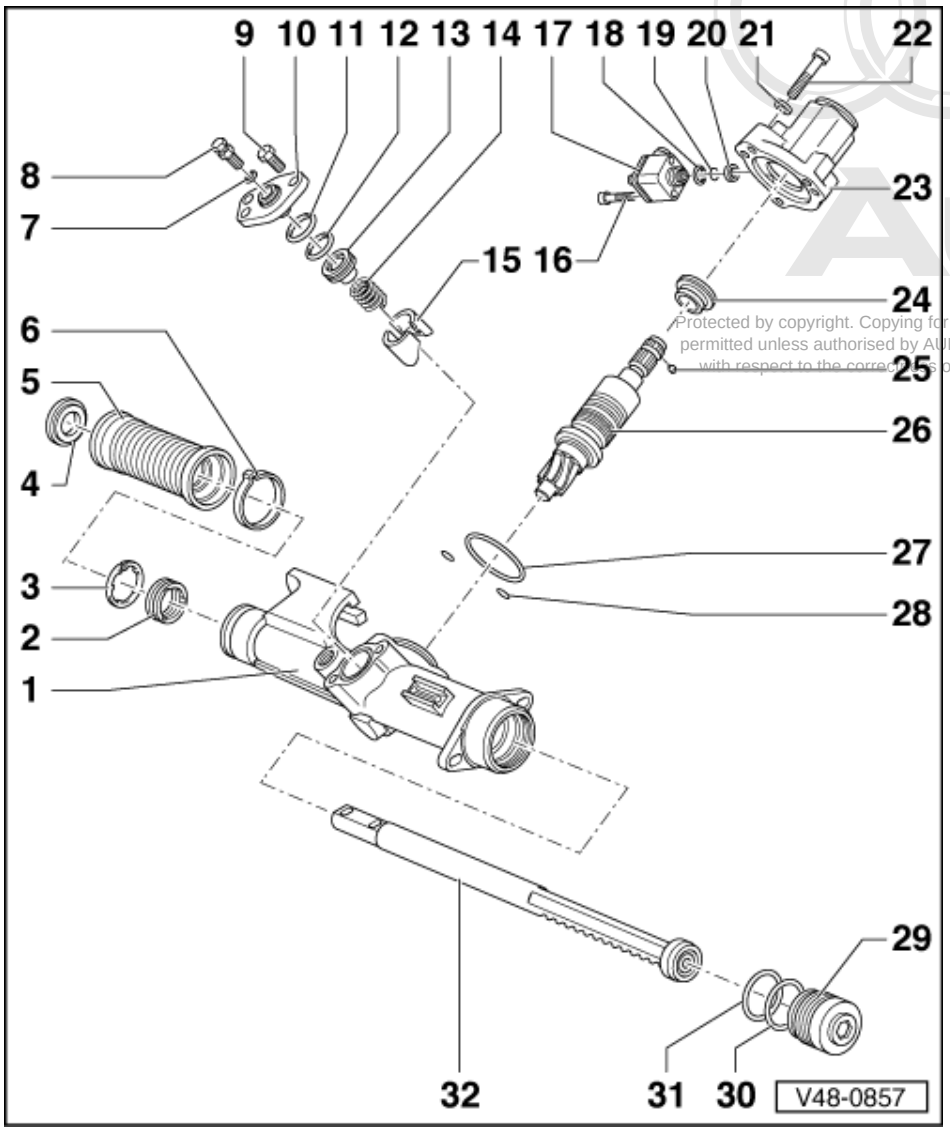
- Always replace

29 Cover plate, 50 Nm

- Secure with two centre punch marks offset by 180o

30 Thrust ring *

- Always replace
- Attach to cap
- Installation position =>Fig. 8



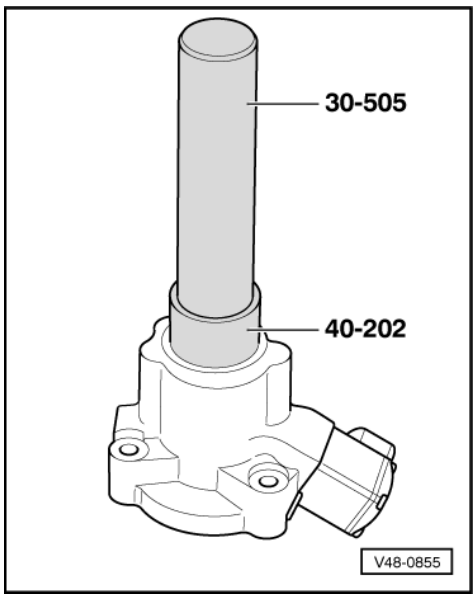
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

31 O-ring 44 x 2.5 mm *

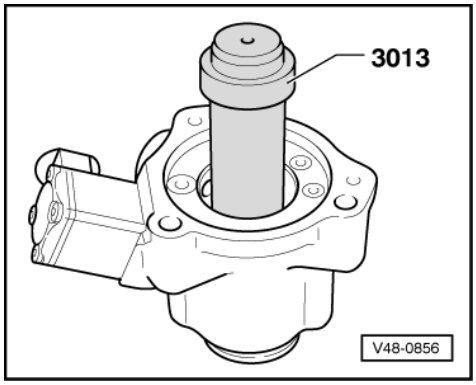
- Always replace
- Attach to cap

32 Rack

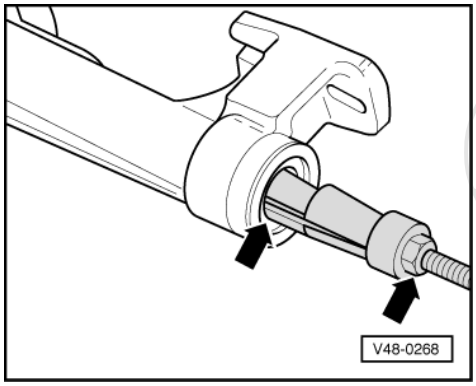
- Unscrew cap and push rack to left out of steering box
- Watch out for scoring around rack seal
- Fitting => Page 267



-> Fig.1 Knocking out gasket holder, valve housing



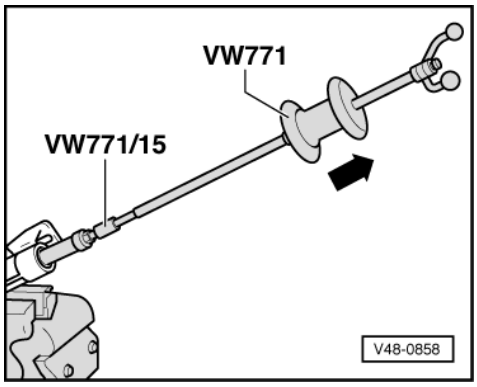
-> Fig.2 Driving home gasket holder, valve housing



-> Fig.3 Pulling out rack seal

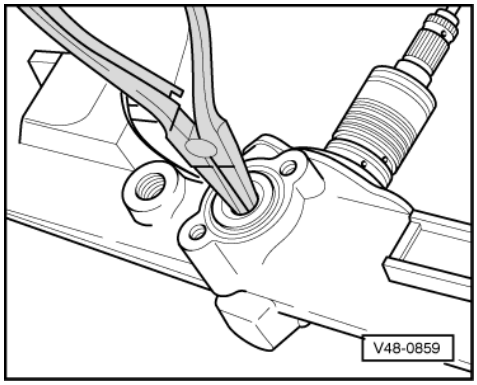
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Insert commercially available inside extractor (e.g. KUKKO 21/4) in sealing lip



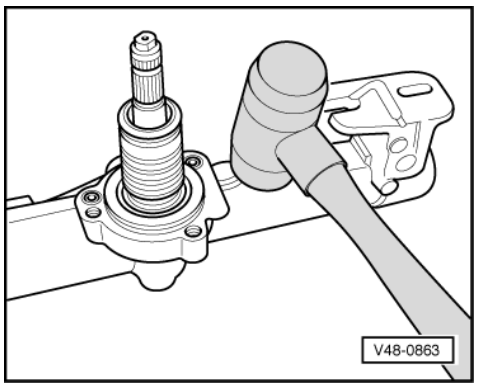
-> Fig.4 Screwing multi-purpose tool to inside extractor

- Clamp steering box in vice using soft jaws.
- Screw -VW 771- with -VW 771/15- to inside extractor and knock out rack seal



-> Fig.5 Disassembling gasket holder

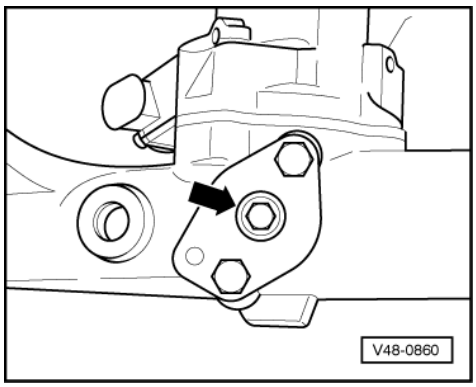
- Pull out using commercially available outer circlip pliers



-> Fig.6 Knocking out steering pinion

- Hold steering pinion by hand and knock out by hammering on steering box with commercially available rubber hammer

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

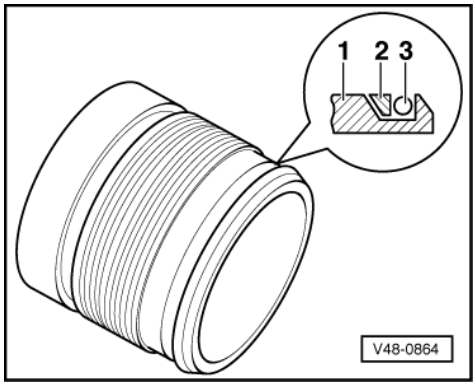


-> Fig.7 Adjusting steering play

Note:

Two mechanics are required to perform adjustment. Adjustment is to be carried out with engine stopped and vehicle standing on its wheels. The illustration shows the steering box removed.

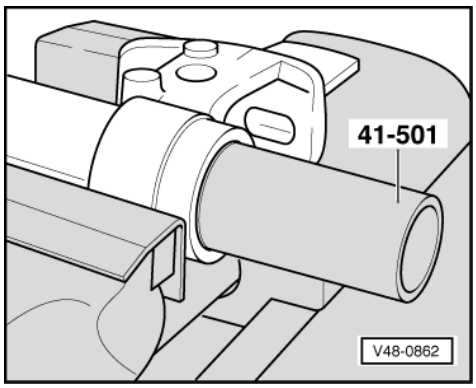
- Wheels set to straight-ahead position.
- Moving steering wheel back and forth (roughly 30oabout centre axis) produces a chattering and clicking noise.
- If this is the case the second mechanic carefully screws in adjusting screw -arrow- into the cover until rattling noise can no longer be heard inside the vehicle.
- Perform test drive and, if necessary, correct adjustment



-> Fig.8 Location of thrust ring

1 - Screw cap
2 - Thrust ring
3 - O-ring

4.2 - Fitting rack

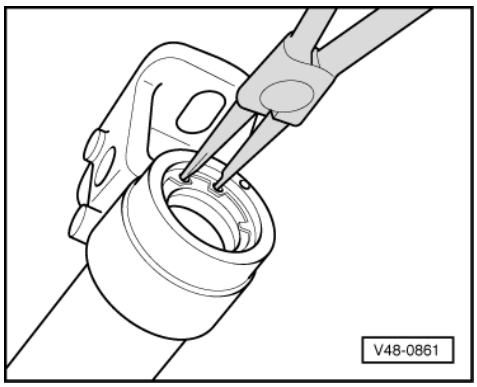


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

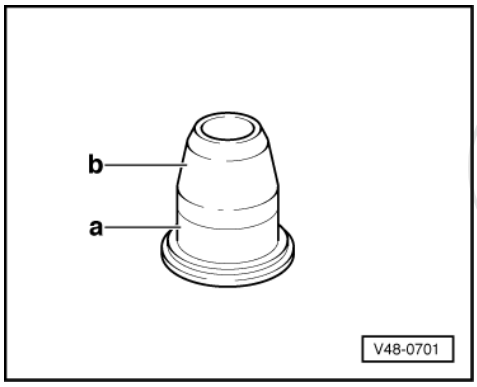
Note:

Before fitting rack wash out steering box with white spirit, blow it out with compressed air and thoroughly clean rack. Prior to assembly use hydraulic fluid to moisten parts of fitting sleeve, rack and rack seal. All new repair sets contain a fitting sleeve.

- -> Insert rack seal by hand in steering box and drive home

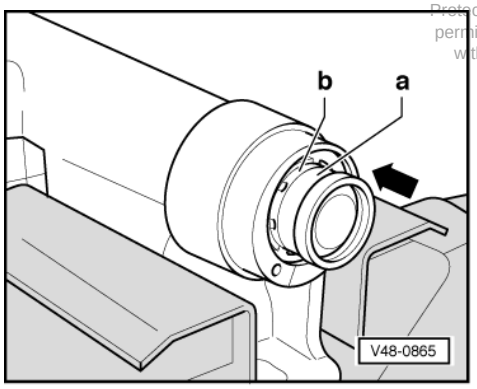


- -> Use commercially available circlip pliers to fit circlips

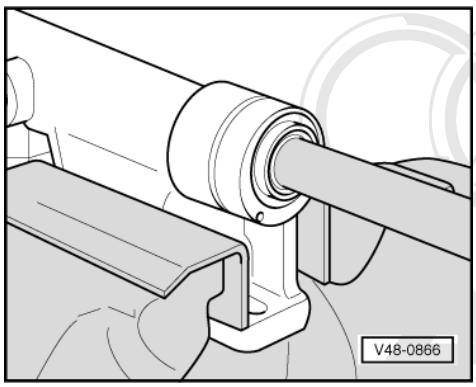


- -> Insert fitting sleeve -b- in fitting sleeve -a-; for this purpose place both parts on a flat surface as shown

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

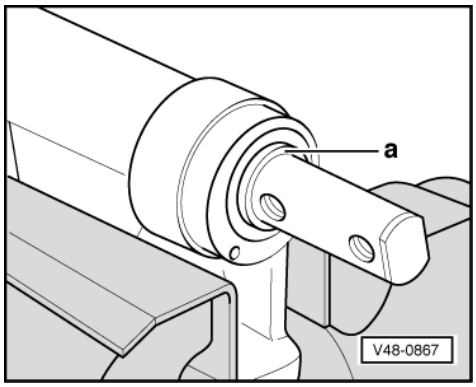


- -> Press home fitting sleeve -a- with fitting sleeve part -a- in steering box by hand



- -> Use commercially available mandrel to drive fitting sleeve part into steering box and remove on opposite end

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



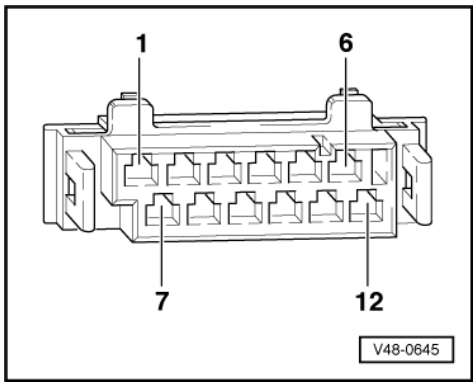
- -> Push rack through steering box and fitting sleeve -a- from opposite end of fitting sleeve; for this purpose counterhold fitting sleeve -a- by hand until flattened end of rack is past fitting sleeve -a-.
- Remove fitting sleeve -a- from rack
- Screw on cap by hand so that rack can no longer fall out (seal could otherwise be damaged)

4.3 - Checking power supply for Servotronic control unit

Note:

The Servotronic control unit -J236- is installed on the right beneath the rear bench seat.

- Remove rear bench seat
- Pull connector off Servotronic control unit -J236-.
- Switch on ignition.

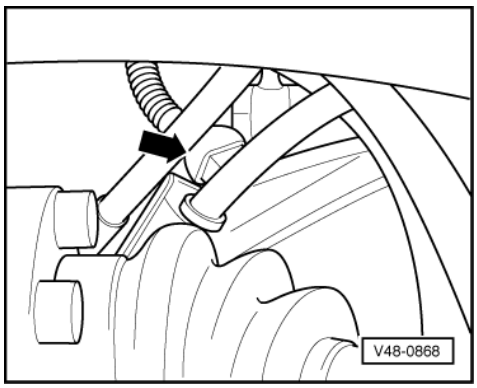


- -> Set 20 V measuring range on digital multimeter -V.A.G 1526- and insert between contacts 2 and 7 or 3 and 7 at connector of Servotronic control unit -J236-. Specified value: approx. 12 V.

- If specified value is not attained use current flow diagram to check for and, if necessary, eliminate open circuit.

4.4 - Checking wiring between plug at Servotronic control unit and plug at Servotronic valve

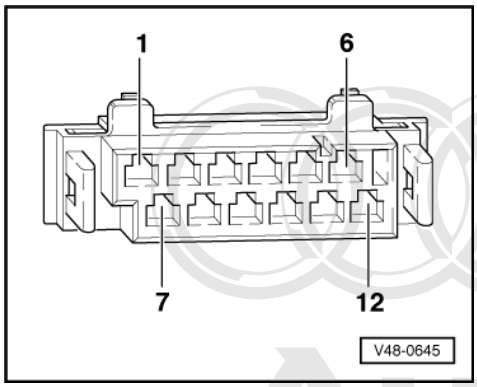
This test involves driving the vehicle onto a lifting platform as the plug for the Servotronic solenoid valve -N119- is only accessible from underneath.



Note:

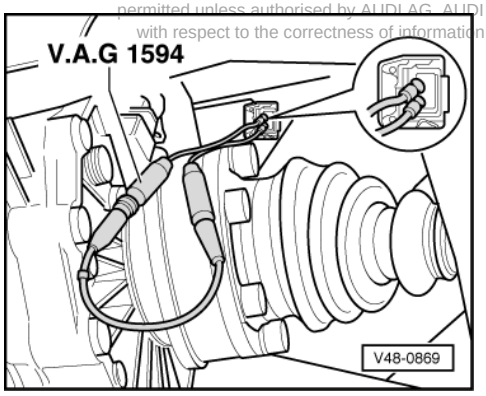
The Servotronic control unit -J236- is installed on the right beneath the rear bench seat.

- Remove rear bench seat
- Pull connector off Servotronic control unit -J236-.
- -> Pull plug off Servotronic solenoid valve -N119-



- -> Set ohm range at digital multimeter -V.A.G 1526- and insert between contacts 8 and 11 at plug of Servotronic control unit -J236-. Specified value: ∞Ohm
- If specified value is not attained use current flow diagram to check for and, if necessary, eliminate short in wiring

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

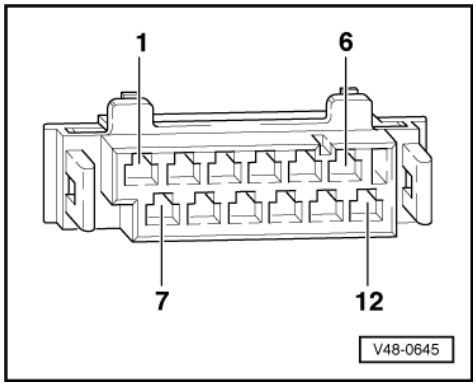


- -> If specified value is attained jumper contact at plug of Servotronic solenoid valve -N119- using adapter cable set V.A.G 1594
- Specified value: > 0 Ohm
- If specified value is not attained use current flow diagram to check for and, if necessary, eliminate short in wiring

4.5 - Checking valve for Servotronic

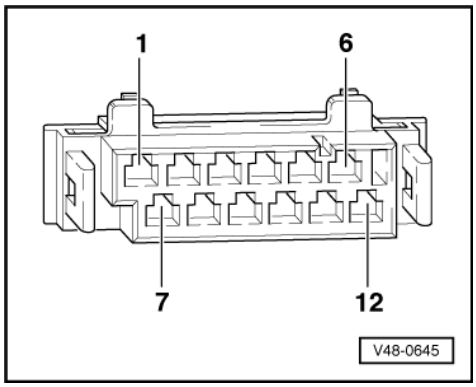
Note:

The Servotronic control unit -J236- is installed on the right beneath the rear bench seat.



- Remove rear bench seat
- Pull connector off Servotronic control unit -J236-.
- -> Set ohm range at digital multimeter -V.A.G- 1526- and insert between contacts 8 and 11 at plug of Servotronic control unit -J236- . Specified value: approx. 6 to 12 Ohm
- If specified value is not attained replace Servotronic solenoid valve -N119-; for this purpose, remove steering box => Page 227

4.6 - Checking valve lead for short to earth



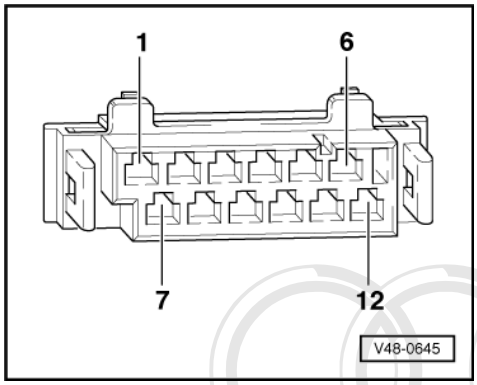
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

The Servotronic control unit -J236- is installed on the right beneath the rear bench seat.

- Remove rear bench seat
- Pull connector off Servotronic control unit -J236-.
- -> Set ohm range on digital multimeter -V.A.G 1526- and insert between contacts -2- and -11-, -3- and -11-, -2- and -8- or -3- and -8- at plug of Servotronic control unit -J236-. Specified value: ∞ Ohm
- If specified value is not attained check wiring and replace defective lead, if necessary

4.7 - Checking valve lead for open circuit



Note:

The Servotronic control unit -J236- is installed on the right beneath the rear bench seat.

- Remove rear bench seat
- Pull connector off Servotronic control unit -J236-.
- -> Set ohm range on digital multimeter -V.A.G 1526- and insert between contacts -7- and -8- or -7- and -11- at plug of Servotronic control unit -J236-. Specified value: ∞ Ohm
- If specified value is not attained check wiring and replace defective lead, if necessary

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

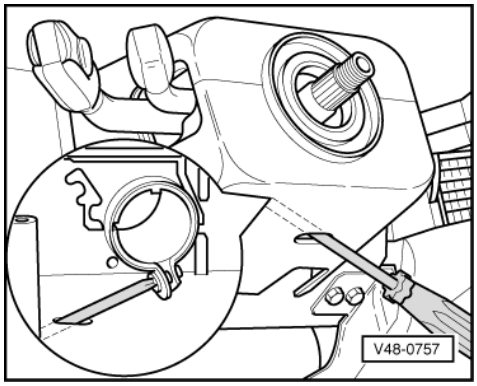
5 - Removing and installing steering column with column tube

5.1 - Removing and installing steering column with column tube

Removing:

Vehicles without airbag

- Disconnect battery earth strap
- Remove steering wheel =>Page 285 (tightening torque for hexagon nut: 40 Nm)



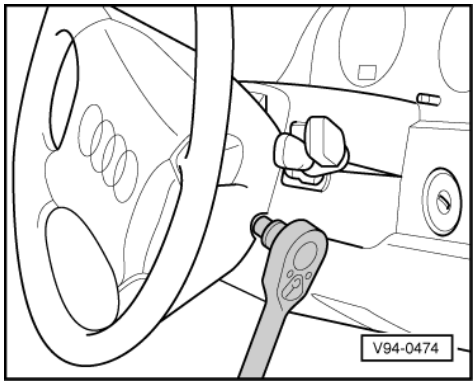
- -> Loosen clamp of steering column switch
- Removing steering column switch

Vehicles with airbag

Note:

Before performing any work on the airbag system disconnect battery earth strap and 1 pin red connector for airbag voltage supply to ensure that subsequent assembly work does not result in accidental actuation of airbag

system. Before removing steering column wheels are to be moved to straight ahead position and the steering wheel then removed (this ensures that the volute spring in the steering wheel is not damaged).



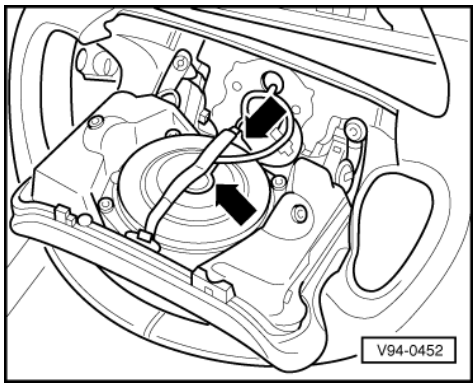
- Disconnect battery earth strap
- -> Unscrew airbag unit on left and right of steering wheel from rear with Torx insert (e.g. Hazet T 30 H)
- Fold airbag unit to rear

Installation note:

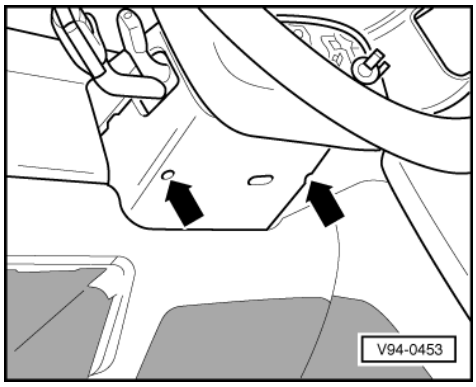
Screw in securing bolts for airbag unit by hand; then consecutively tighten right and left bolt to 6 Nm.

Warning!
Make sure there is nobody in the vehicle when connecting battery earth strap/cable.

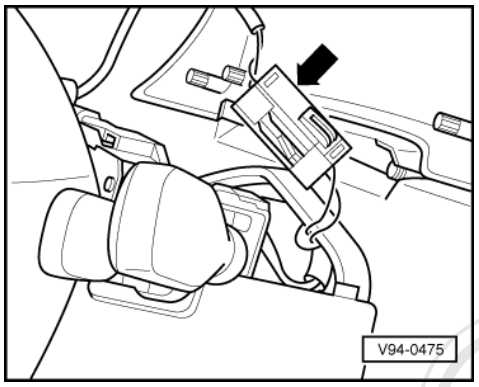
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Detach fastener for plug of airbag unit.
- Unplug airbag unit connector.
- Set down airbag unit such that the Audi rings on airbag unit are visible (safety Specified value)



- -> Remove top part of trim for steering column switch

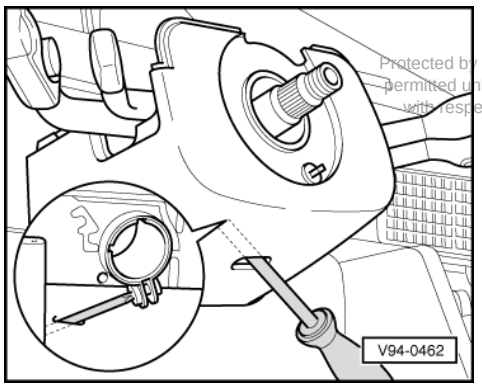


- -> Pull connector of lead for airbag unit out of bottom part of trim; for this purpose press in lug in centre of lower part of plug slightly using a screwdriver and pull out
- Detach connector
- Remove steering wheel

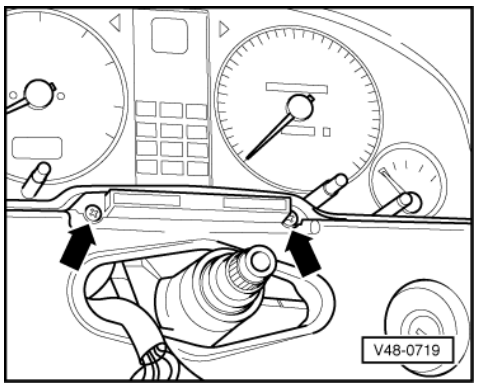
Installation note:

Before installing steering wheel move wheels into straight ahead position. Steering wheel spoke must be horizontal with wheels in straight ahead position.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Loosen clamp of steering column switch
- Removing steering column switch

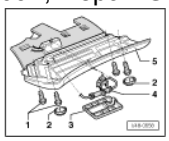


- -> Remove dash panel centre
- Pull off plug housing at ignition/starting lock

Note:

Detach locking piece at ignition/starter switch on vehicles with automatic gearbox.

=> Automatic gearbox 097; Repair Group 37

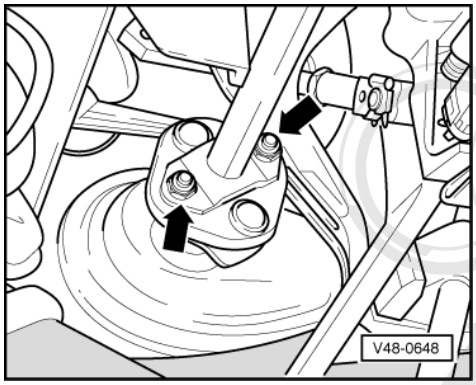


- -> Screw out fastening screws for tray on driver's side

Vehicles with airbag:

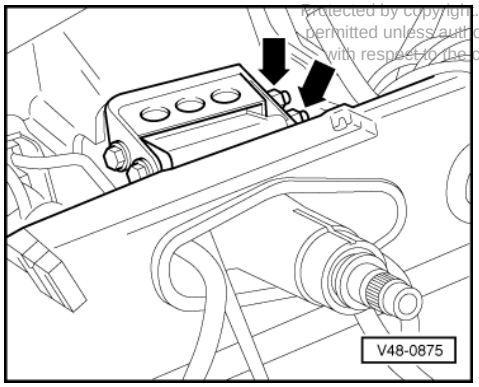
Lever cover -3- for airbag connector out of knee cushion and unclip and detach connector -4-
Lever caps -2- out of knee cushion. Unscrew hexagon bolt -1-.

- Remove driver's side tray/knee cushion -5-.



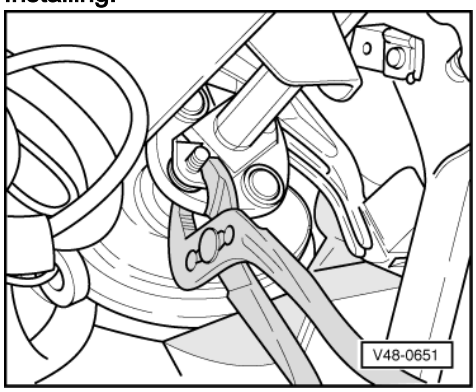
- -> Unscrew steering column from shackle
- Use screwdriver to press steering column approx. 15 mm off disc coupling.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

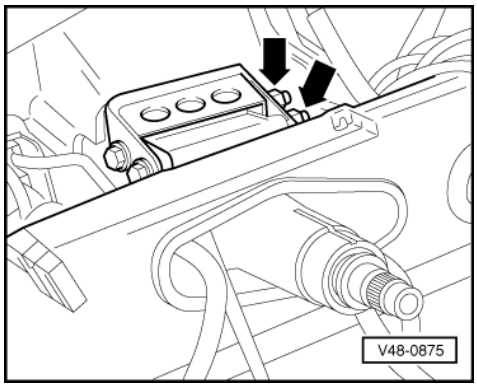


- -> Unscrew column tube from bracket
- Remove screws from bracket
- Push steering column with column tube downwards and turn appropriately to enable it to be removed beneath instrument panel.

Installing:



- Push steering column from underneath into cutout in steering panel
- Insert column tube in bracket
- Insert screws in bracket and column tube
- Insert ignition key in steering lock
- Release steering lock so that steering column can be turned as required
- -> Use pipe wrench to press steering column onto disc coupling
- Insert shackle in steering column and screw the two together



- Insert cable in column tube
- By moving it upwards or downwards in the bracket align column tube such that there is no disc coupling torsion on turning steering wheel
- -> Fasten column tube to bracket
- Attach plug housing to ignition/starter switch

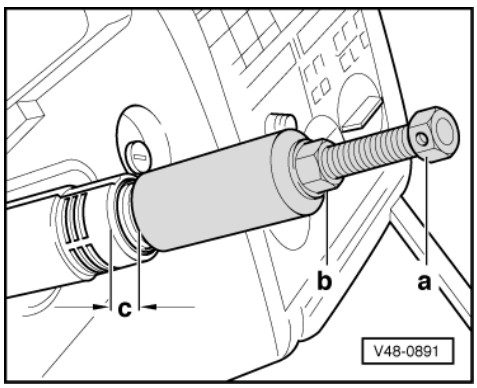
Warning!
Should it not be possible to effect alignment as described above loosen steering box at its attachment points and move appropriately until stress free alignment of steering mechanism becomes possible.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

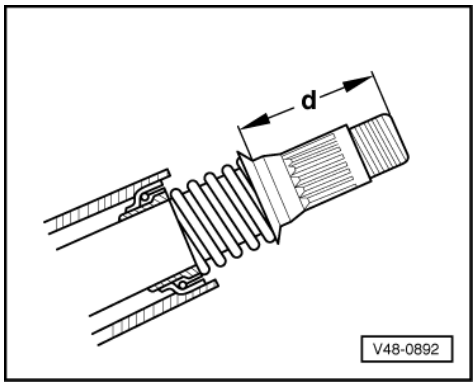
Note:

If steering column and column tube have been separated fit spring on steering column with the two clamp washers as described below:

- Attach spring to steering column
- Attach clamp washers



- -> Screw special tool with spindle -a- onto steering column as far as it will go (screw back nut -b-)
- Counterhold spindle -a-. Tighten hexagon nut -b- until dimension -c- between end face of column tube and end face of special tool is between 10 and 12 mm.
- Loosen nut-b-.
- Unscrew spindle -a- from steering column



- -> Perform check measurement on dimension -d-.
  d = 54.5 mm to 55.5 mm

Note:

If dimension -d- is not attained reinstall fitting tool -3168- and correct dimension -d-.

- Install dash panel insert
- Install steering column switch.
- Install steering wheel =>Page 285

Note:

Vehicles with airbag: Attach connector for airbag unit.

- Install driver's side tray
- Fit self-diagnosis plug in tray

Note:

Vehicles with airbag: 1-pin plug (labelled airbag) for power supply of airbag system.

- Connect battery earthing strap.

Warning!
Make sure there is nobody in the vehicle when connecting battery earth strap/cable.

- Check function of steering column switch

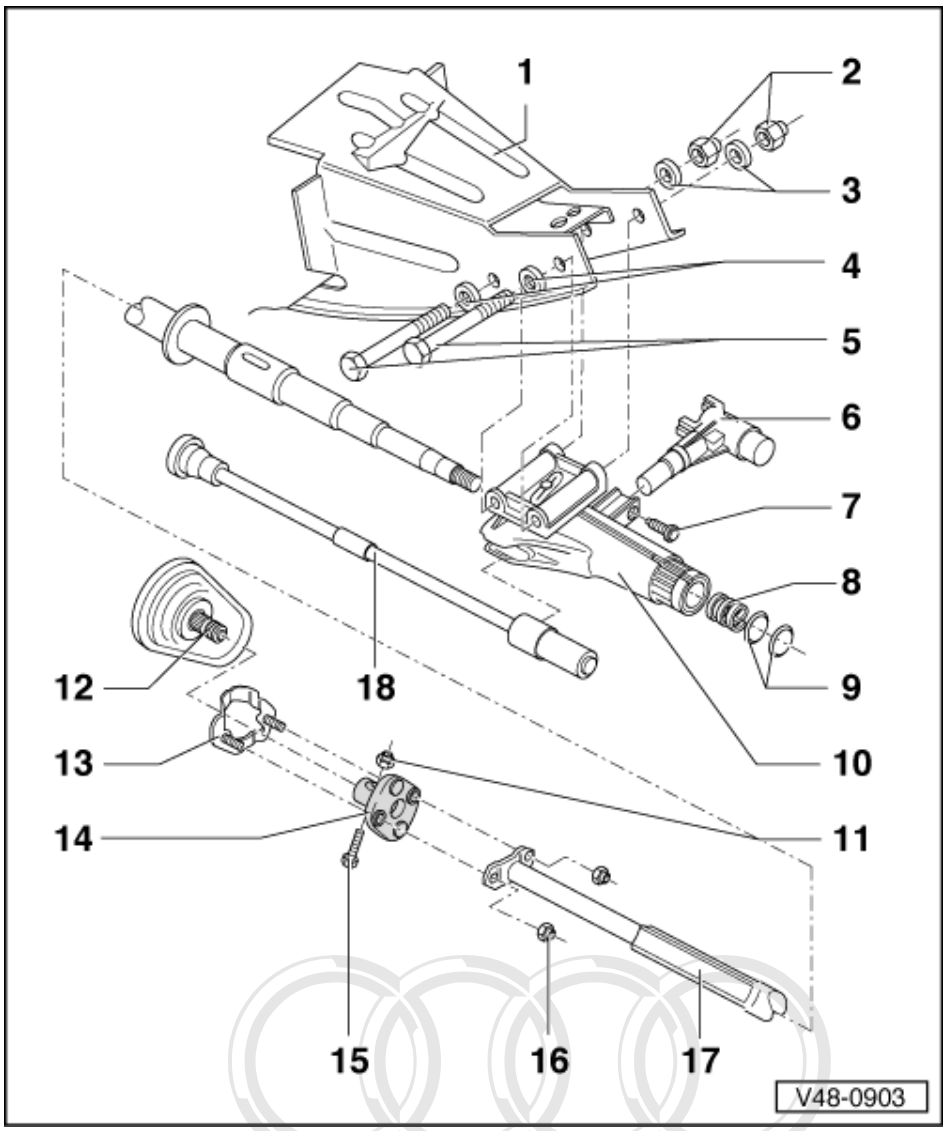
Note:

Steering wheel spoke must be horizontal with wheels in straight-ahead position

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

6 - Servicing steering column with column tube

6.1 - Servicing steering column with column tube



Note:

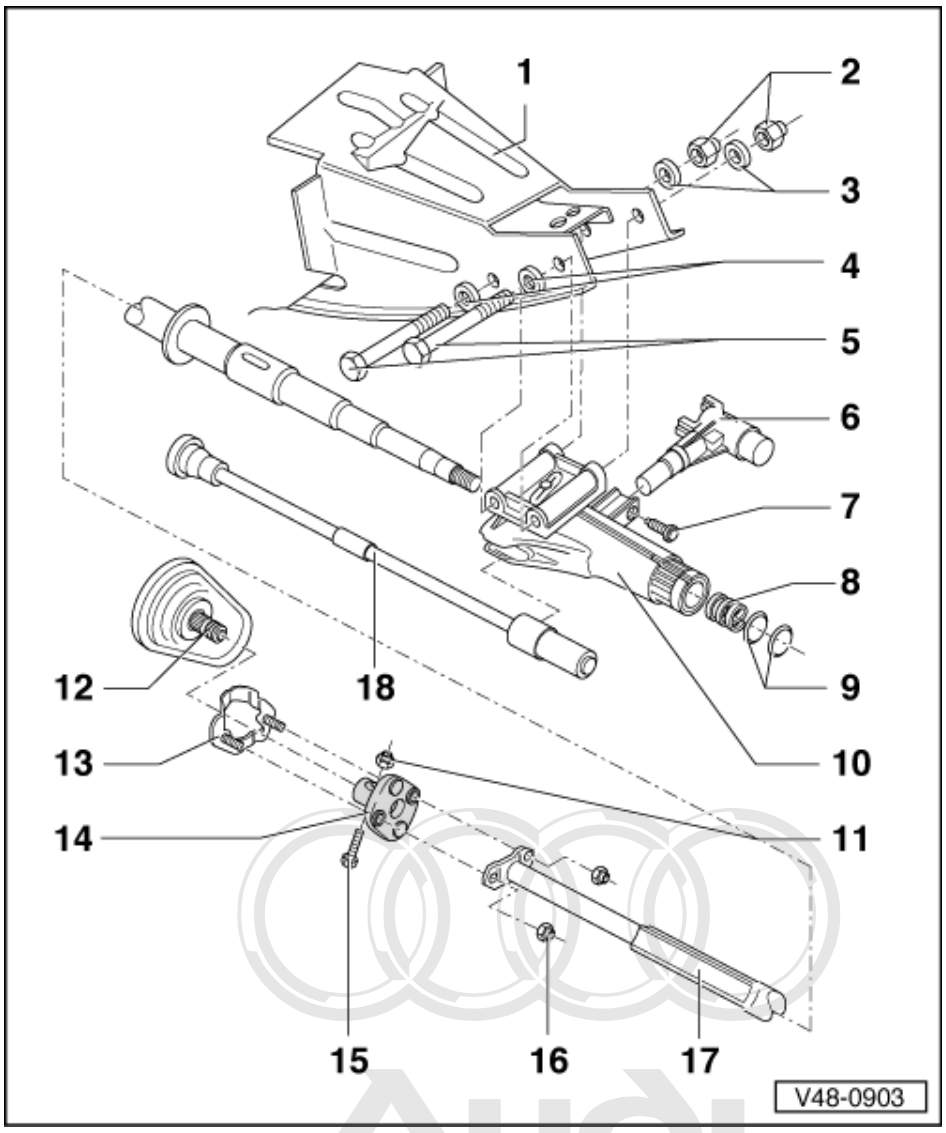
Procon cable routing

=> General body repairs; Repair Group 68

1 Console
2 Self-locking nut 35 Nm
- Always replace

3 Shim
4 Shim
5 Hexagon bolt

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



6 Steering lock housing

- Insert in column tube and secure
- Attach plug housing for ignition/starting lock

7 Torx bolt, 7 Nm

- Unscrew and screw in with commercially available Torx insert with end face hole (e.g. Hazet T 30 H)

8 Spring

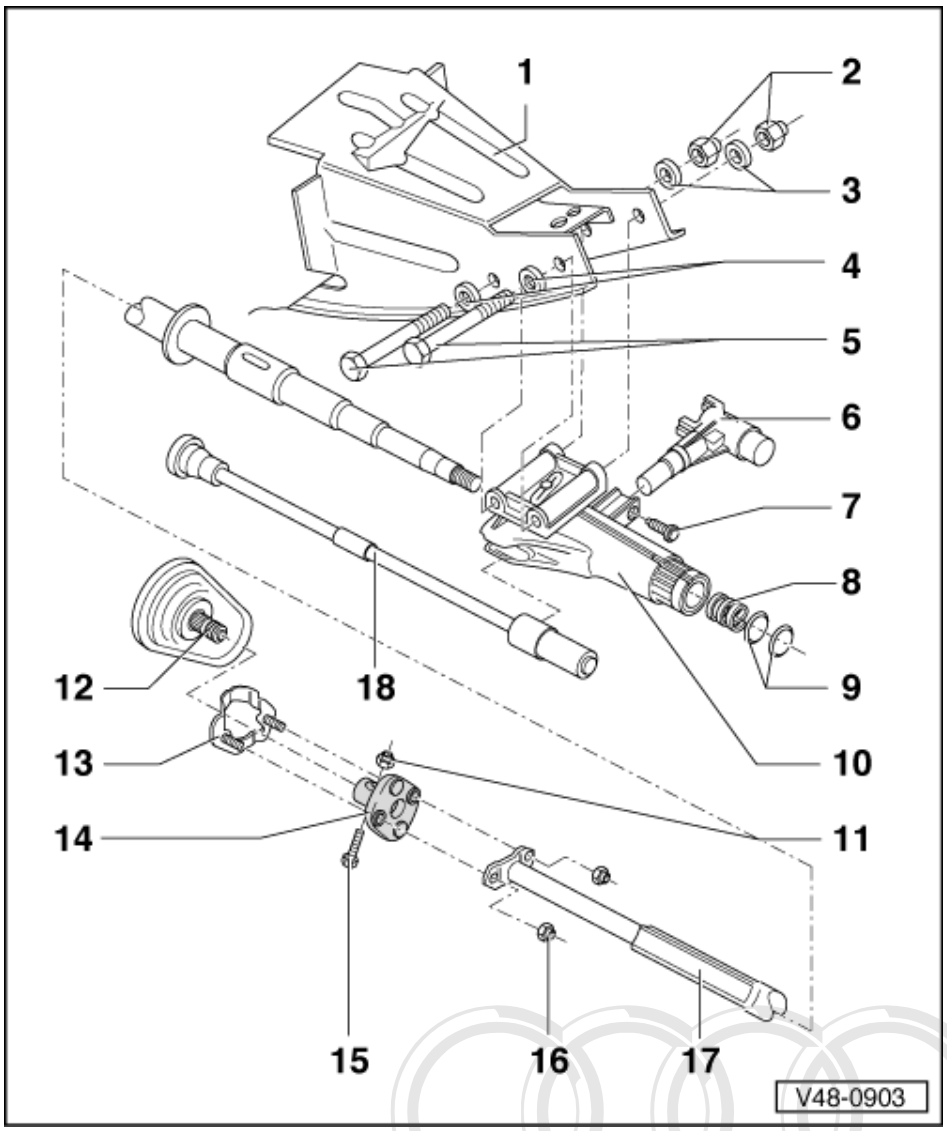
- Attaching to steering column

9 Clamping washers

- Always replace
- Grind carefully with small parting off wheel, then lever off with screwdriver

Warning! Washers are pretensioned

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

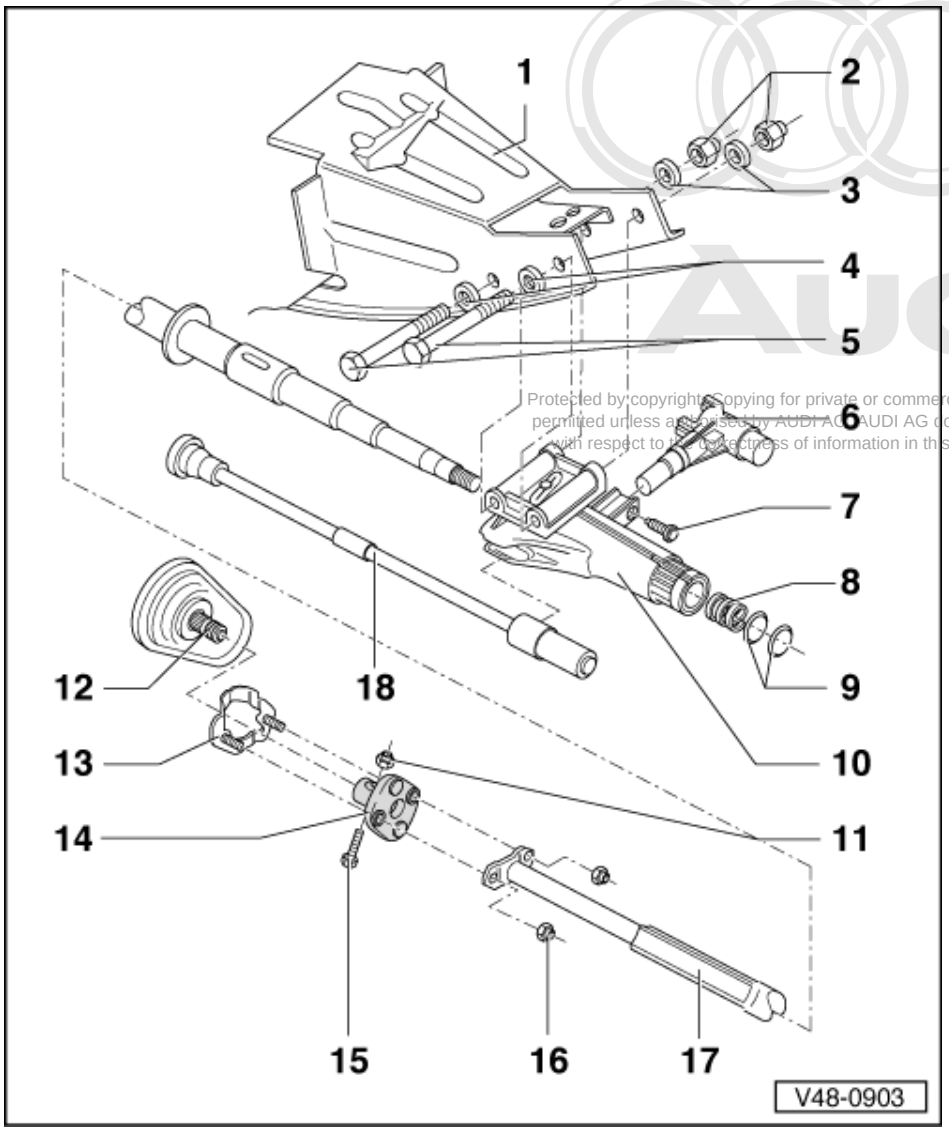


- Caution: Sparks if appropriate cover instrument panel and windscreen
- Press on using special tool => Page 276

10 Column tube

- Consists of top and bottom section
- Supplied as replacement part with bearing
- Top and bottom section are lined with plastic
- Do not exert radial and axial force in the form of hammering on the steering column

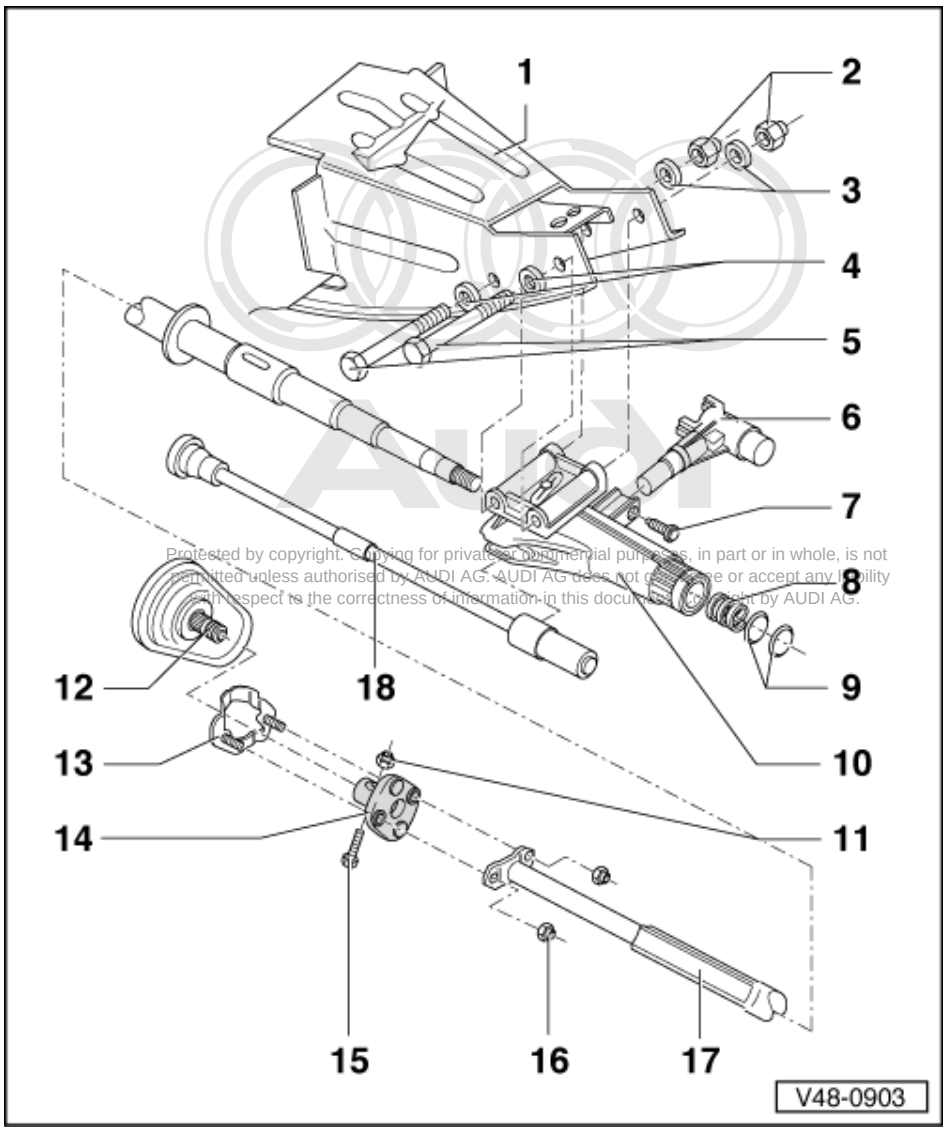
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Avoid temperatures in excess of 100 oC (connection between top and bottom section may work loose)
- Never use cleaning agents (e.g. white spirit or similar)
- Never employ lubricants or solvents (connection between top and bottom section may work loose)

Warning!
If the slightest misalignment is found in axial direction between top and bottom section (accident) always replace column tube.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

Top and bottom sections of column tube are marked with a red dot (locking compound), Should this dot shear off always replace column tube

11 Self-locking nut 25 Nm

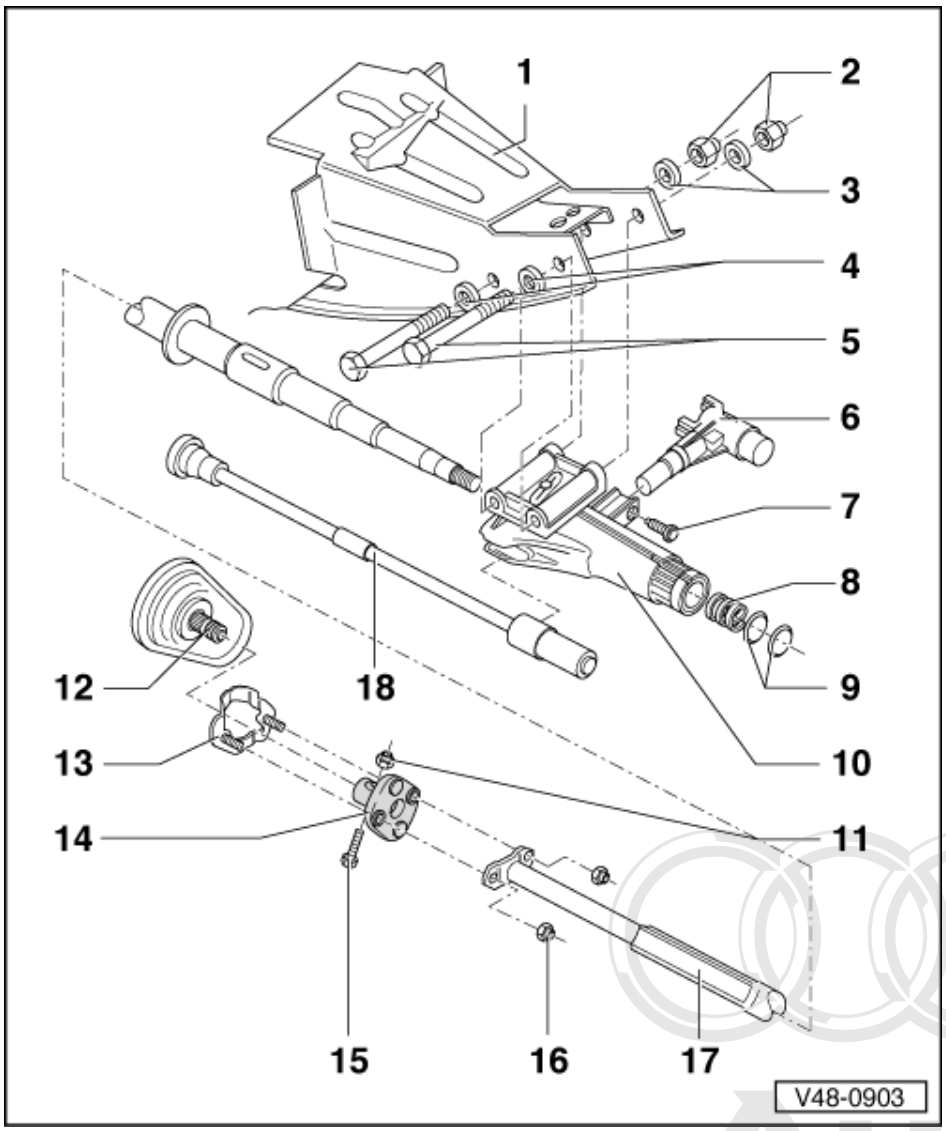
- Always replace

12 Steering pinion

- Attach flanged tube to steering pinion

13 Shackle

- Screw to flanged tube and steering column



14 Flanged tube

- Replacement part is supplied with riveted on disc coupling
- Move appropriately on steering pinion; screw to steering column and shackle

15 Clamping bolt

- Always replace

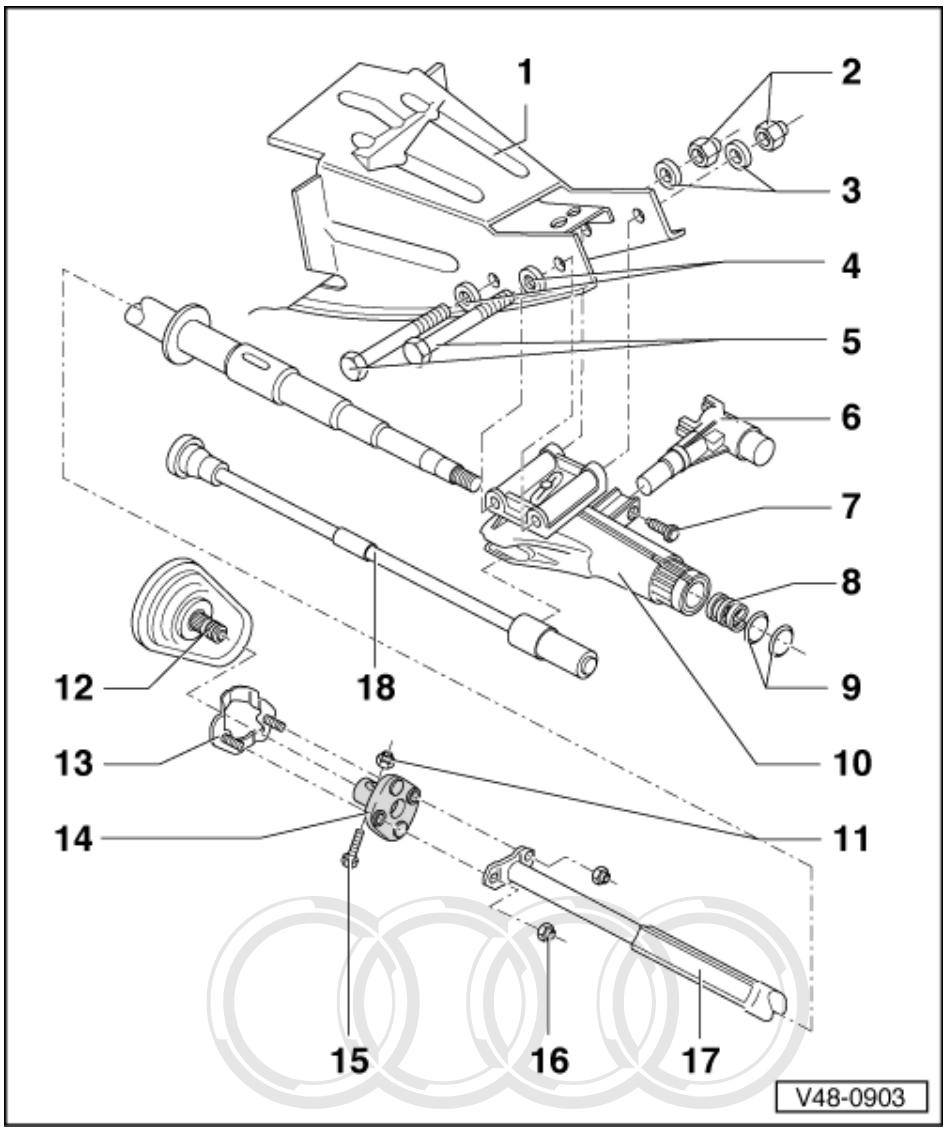
16 Self-locking nut 25 Nm

- Always replace

17 Steering column

- Removing and installing => Page 272
- Insert in column tube as far as it will go
- Avoid torsion on installation

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



18 Cable

- Insert in top of column tube
- Insert in bulkhead at bottom with rubber grommet
- Further cable routing

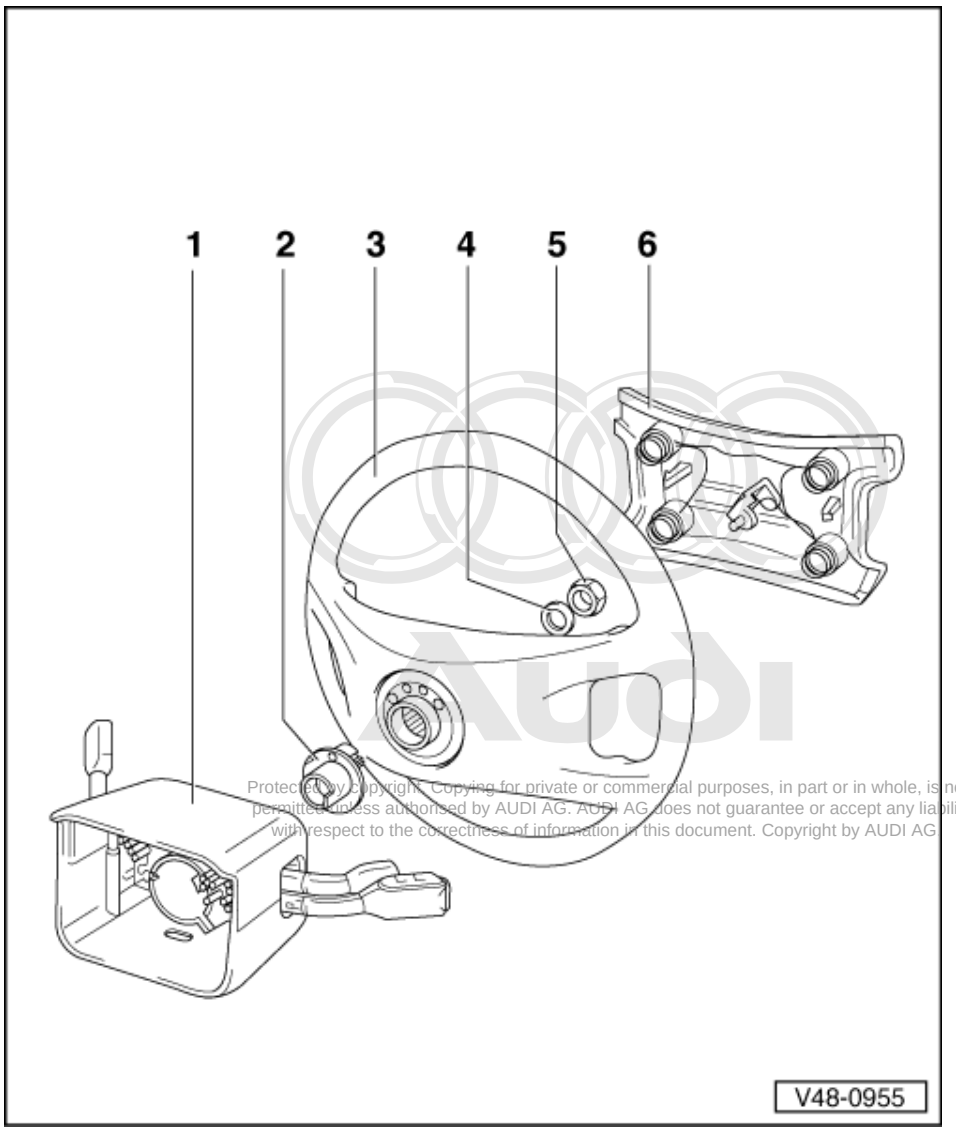
=> General body repairs; Repair Group 68

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Warning!
Replace cable if slightest misalignment is found (accident) between top and bottom section of column tube or if paint mark (locking compound) on column tube has sheared off.

7 - Removing and installing steering wheel

7.1 - Removing and installing steering wheel



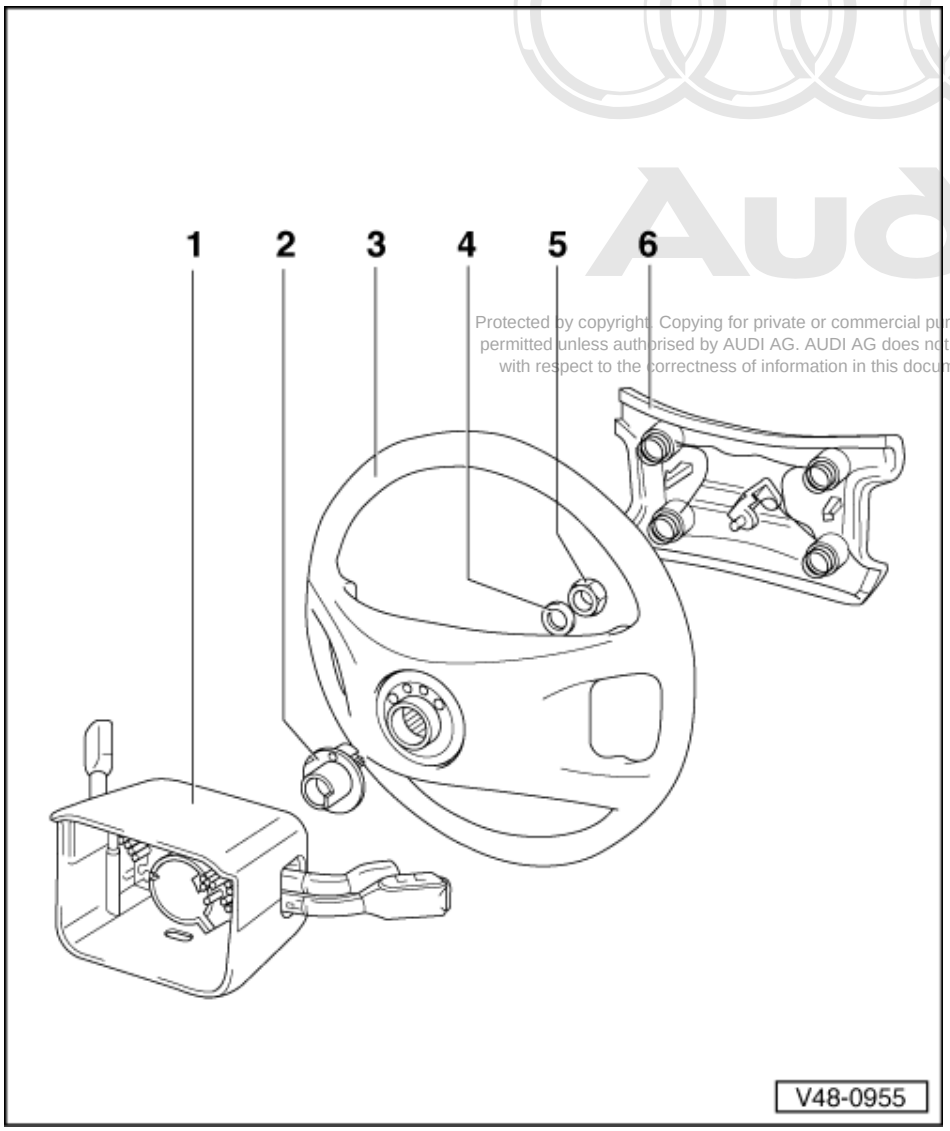
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

7.2 - Standard version

1 **Steering column switch with bracket**
- Lightly grease slip ring

2 **Driver with carbon brush**
- Insert into steering wheel
- Can be replaced separately if necessary

3 **Steering wheel**
- Attach to steering column with wheels in straight ahead position
- Turn signal stalk must be in centre position when attaching
- Only install factory approved steering wheels



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

4 Spring lock washer

5 Hexagon nut, 40 Nm

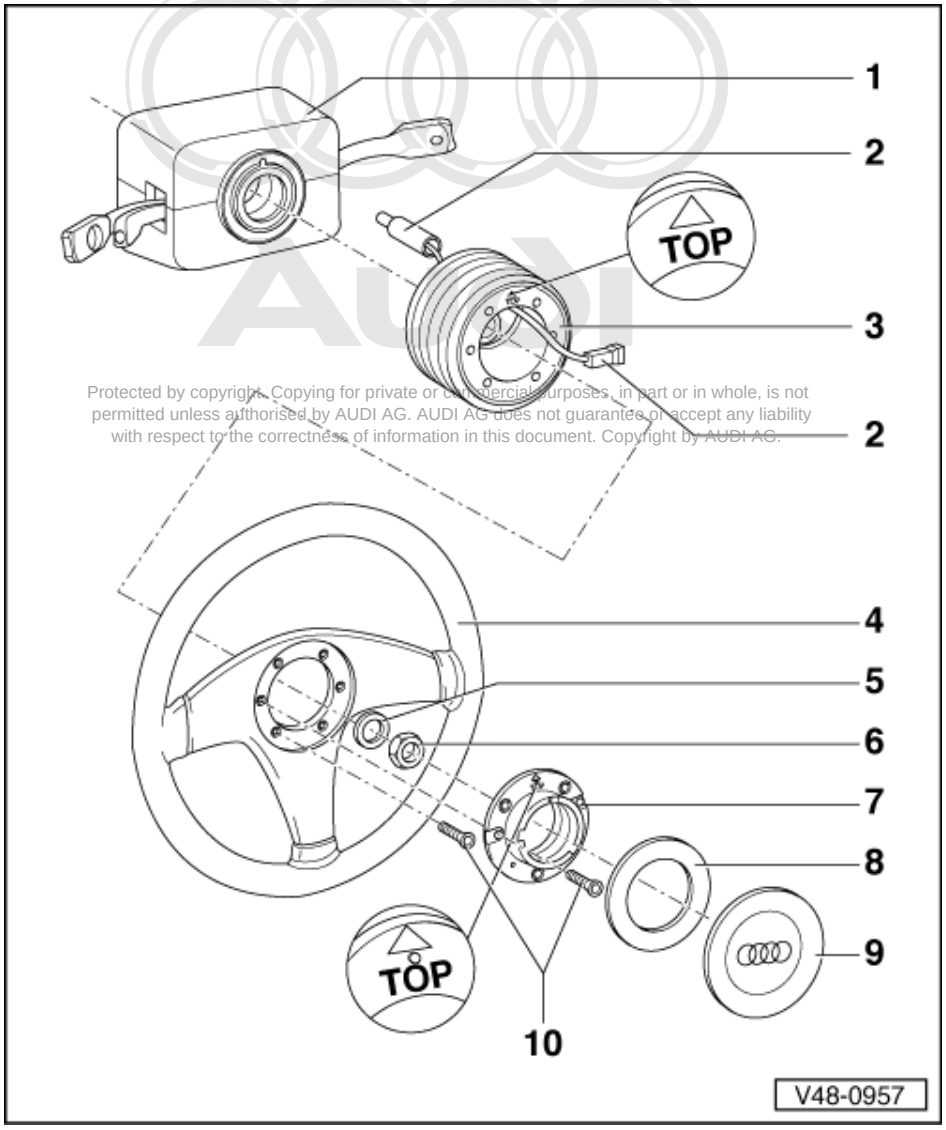
6 Trim cap

- ◆ Removing:
- Through pulling firmly but carefully by hand on upper half of trim panel.
- Proceed in the same manner at lower half
- Then push panel to one side and remove.

Note:

Non compliance with the above will cause the fasteners to brake on the trim panel.

7.3 - Sports version



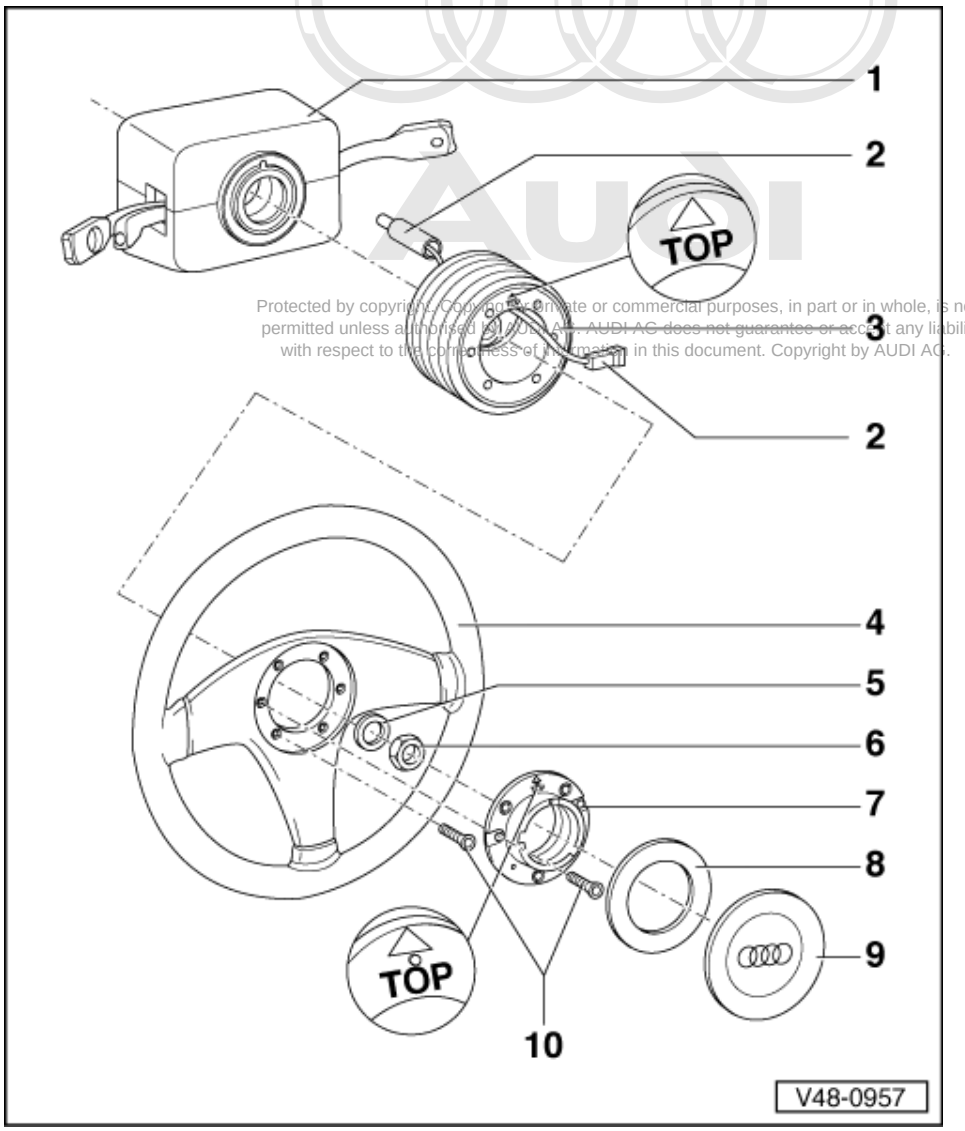
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 Steering column switch with bracket

- Lightly grease slip ring

2 Carbon brush

- Removing:
- Press out of hub
- Installing:
- Press home
- Attach flat connector to lug of horn actuator
- Can be replaced separately, if necessary



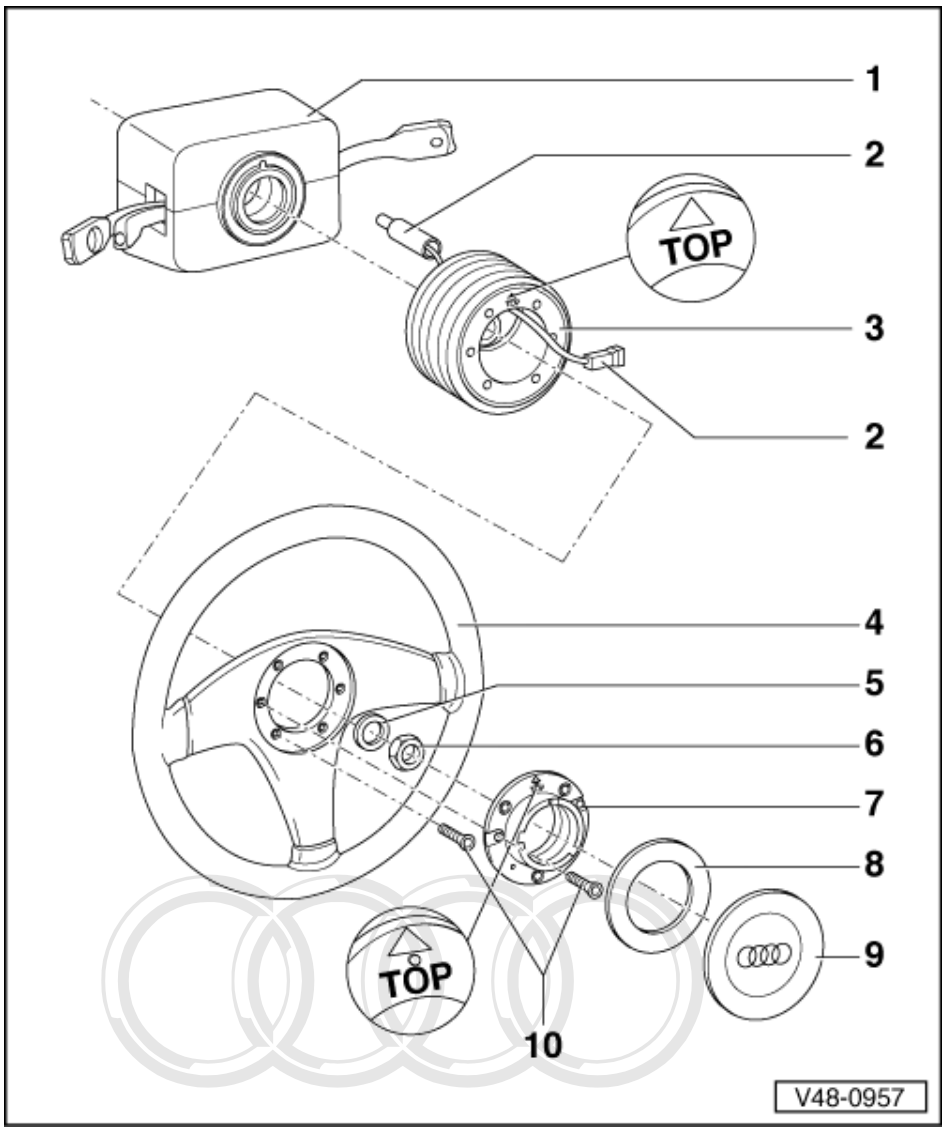
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 Hub

- Attached to steering wheel with countersunk bolts which are fitted with locking compound -D6-
- Can be replaced separately, if necessary

Installation note:

The hub features an arrow and is labelled "TOP". On insertion in steering wheel make sure that arrow on hub is facing upwards. Initially attach hub with the two upper and lower bolts. Then insert horn actuator in steering wheel such that location marked with arrow and designated "TOP" is also pointing upwards and coincides with arrow on hub. Screw horn actuator to steering wheel and hub.



4 Steering wheel

- Attach to steering column with wheels in straight ahead position
- Turn signal stalk must be in centre position when attaching
- Only install factory approved steering wheels

5 Spring lock washer

6 Hexagon nut, 40 Nm

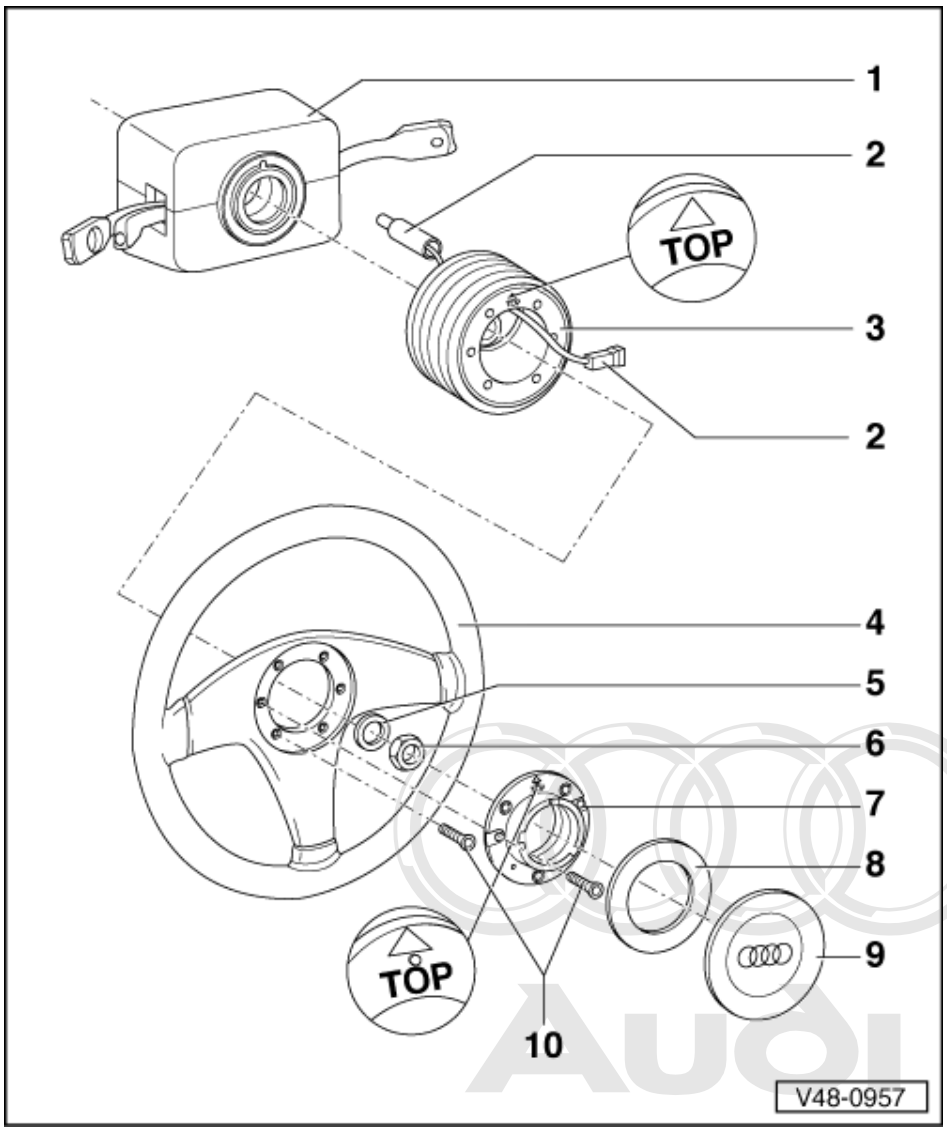
7 Horn actuator

- Insert in steering wheel with location marked with arrows and designated "TOP" facing upwards and then screw to hub

8 Oil seal

- Insert into steering wheel

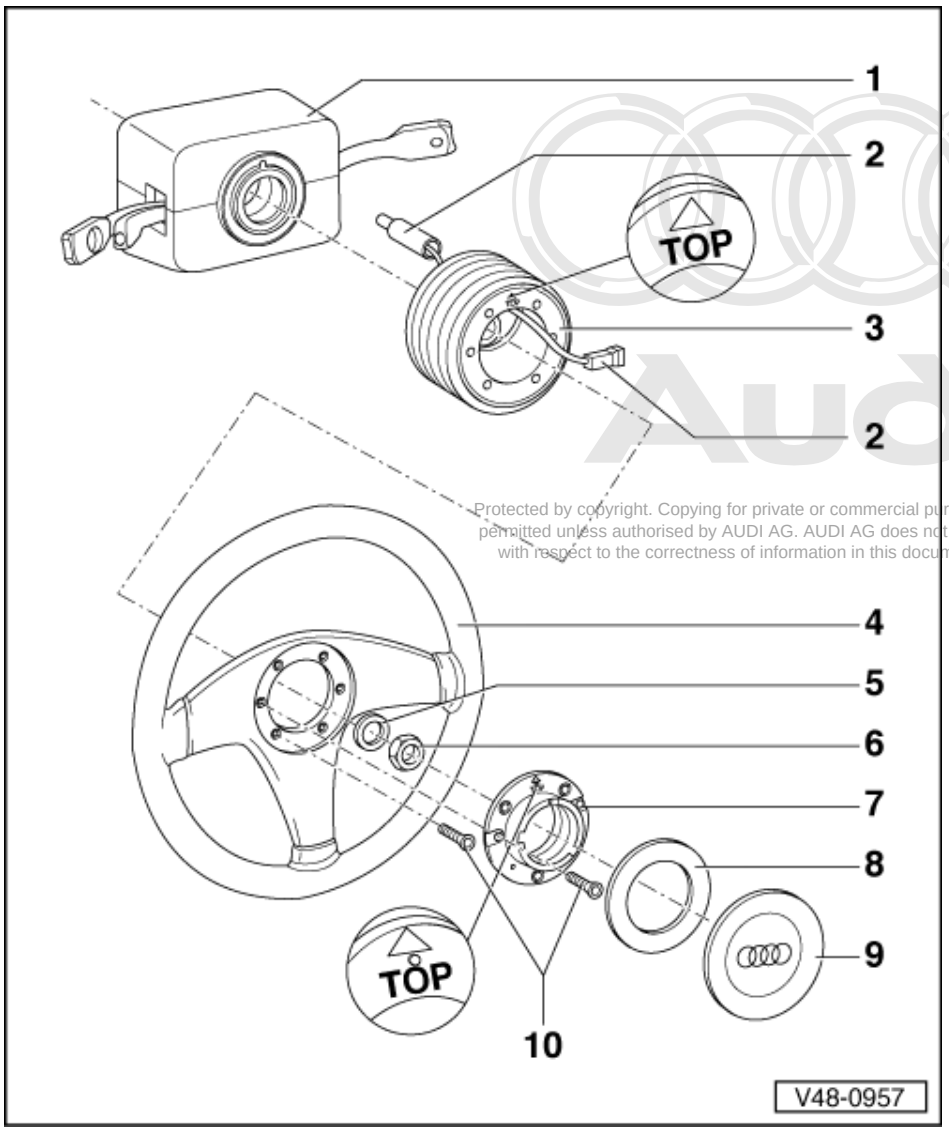
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

9 Horn actuator trim

- Removing:
- Press on horn actuator and turn anti-clockwise as far as stop (bayonet lock)
- Remove horn actuator from steering wheel
- Installing:
- Insert horn actuator with bracket into horn actuator recesses provided press on and turn clockwise as far as stop



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

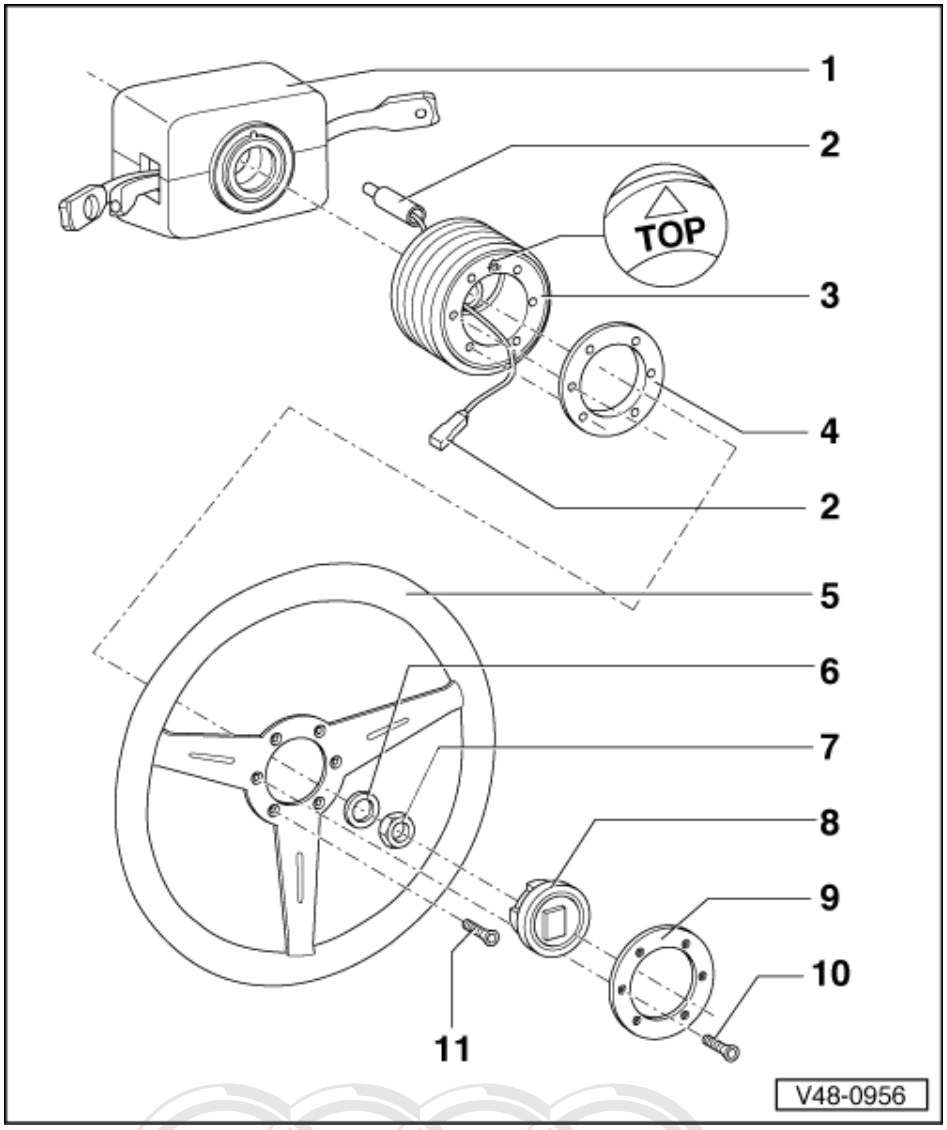
10 Countersunk bolt, 7 Nm

- Fitted using locking compound
- Apply -D6- before fitting
- Can be replaced separately, if necessary

Note:

Due to the use of locking compound the hexagon socket head of the bolts may be damaged when screwing them out. In this case carefully drill bolt heads taking care not to damage the countersunk holes in the steering wheel/horn actuator.

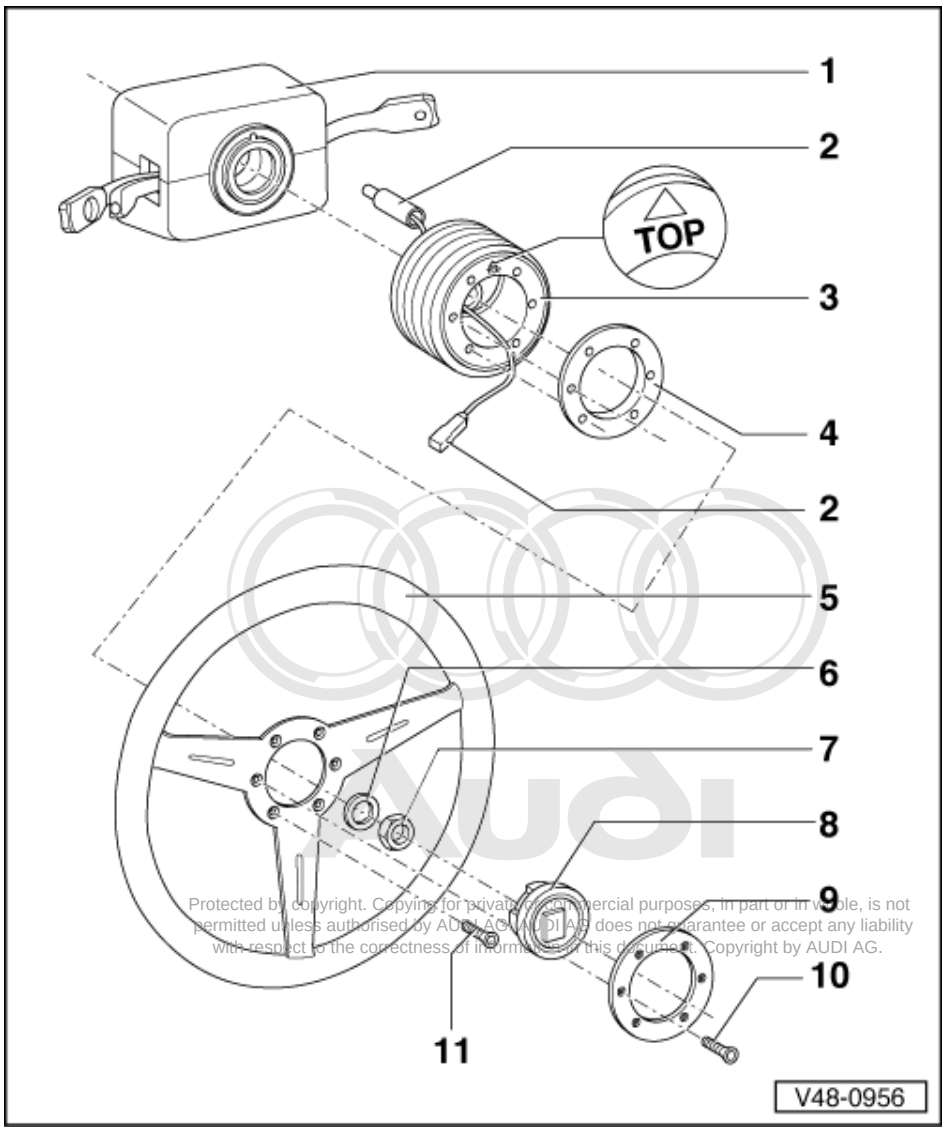
7.4 - Solid wood version



1 Steering column switch with bracket
- Lightly grease slip ring

2 Carbon brush
- Removing:
- Press out of hub
- Installing:
- Press home
- Attach flat connector to lug of horn actuator
- Can be replaced separately, if necessary

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 Hub

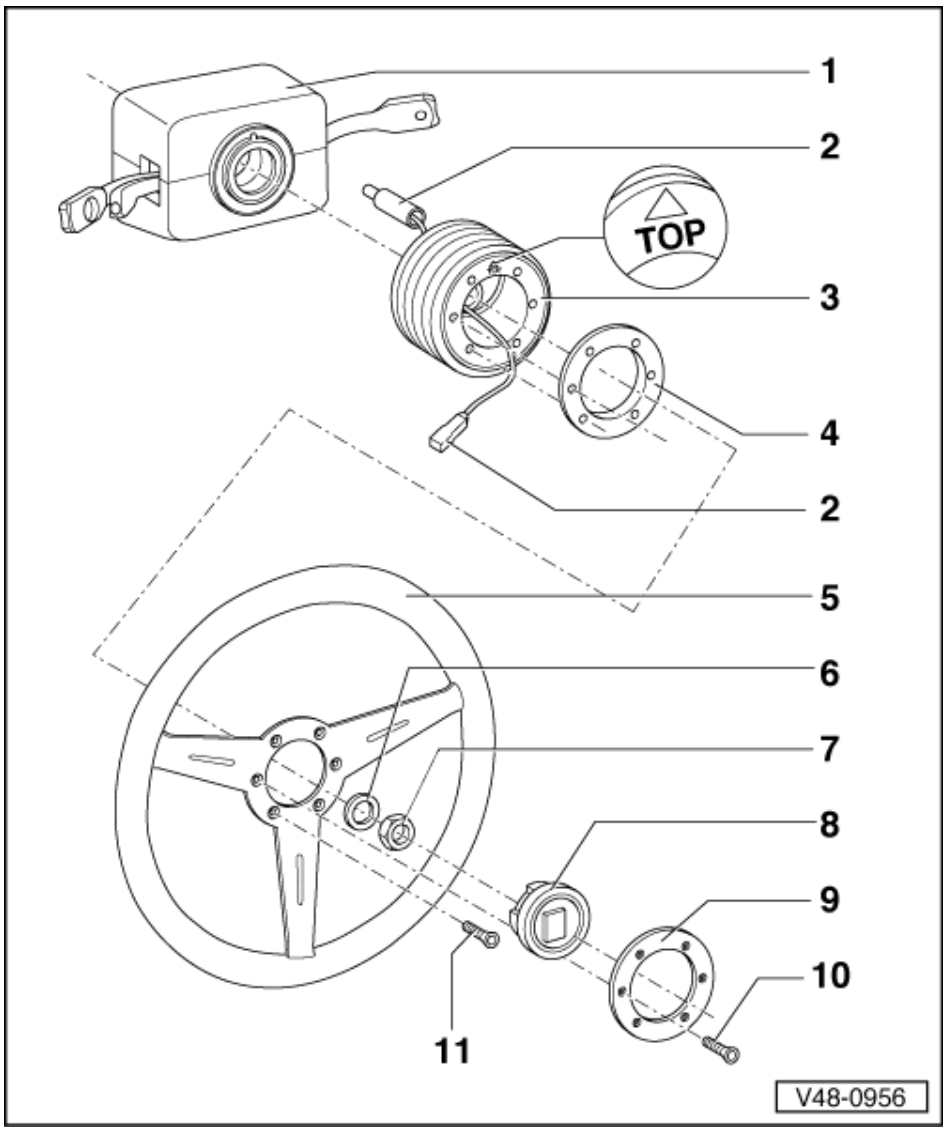
- Attached to steering wheel with countersunk bolts which are fitted with locking compound -D6-
- Can be replaced separately, if necessary

Installation note:

The hub features an arrow and is labelled "TOP". On insertion in steering wheel make sure that arrow on hub is facing upwards.

4 Retaining ring

- The two lugs on the retaining ring are centred with the arrow direction "TOP" on hub) on insertion
- Initially attach hub to steering wheel with the two upper and lower bolts.



5 Steering wheel

- Attach to steering column with wheels in straight ahead position
- Turn signal stalk must be in centre position when attaching
- Only install factory approved steering wheels

6 Spring lock washer

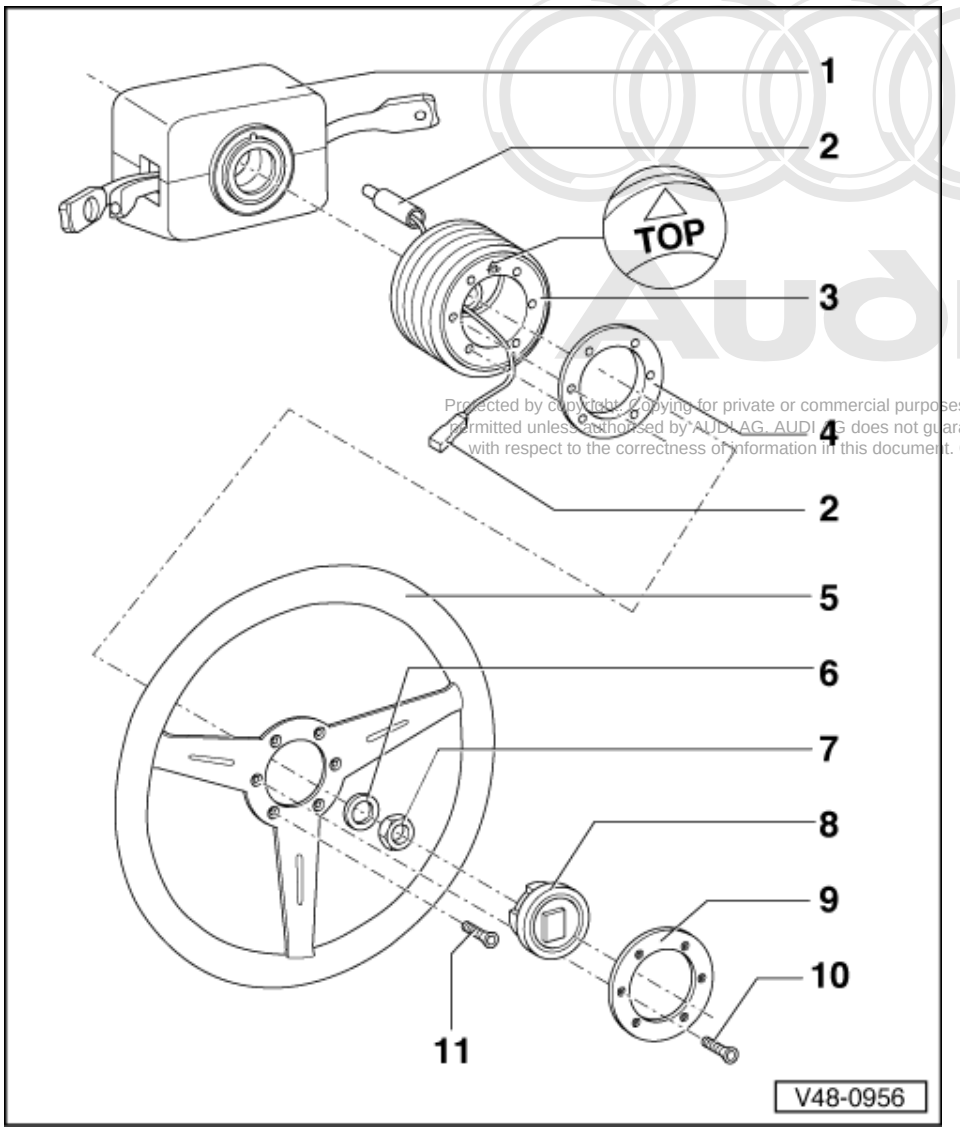
7 Hexagon nut, 40 Nm

8 Horn actuator

9 Cover ring

- To unscrew set wheels in straight ahead position and screw in and screw out screws which are in position 3 and 9 o'clock

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

10 Countersunk bolt M5 x 17.7 Nm

- Attach cover ring
- Can be replaced separately if necessary

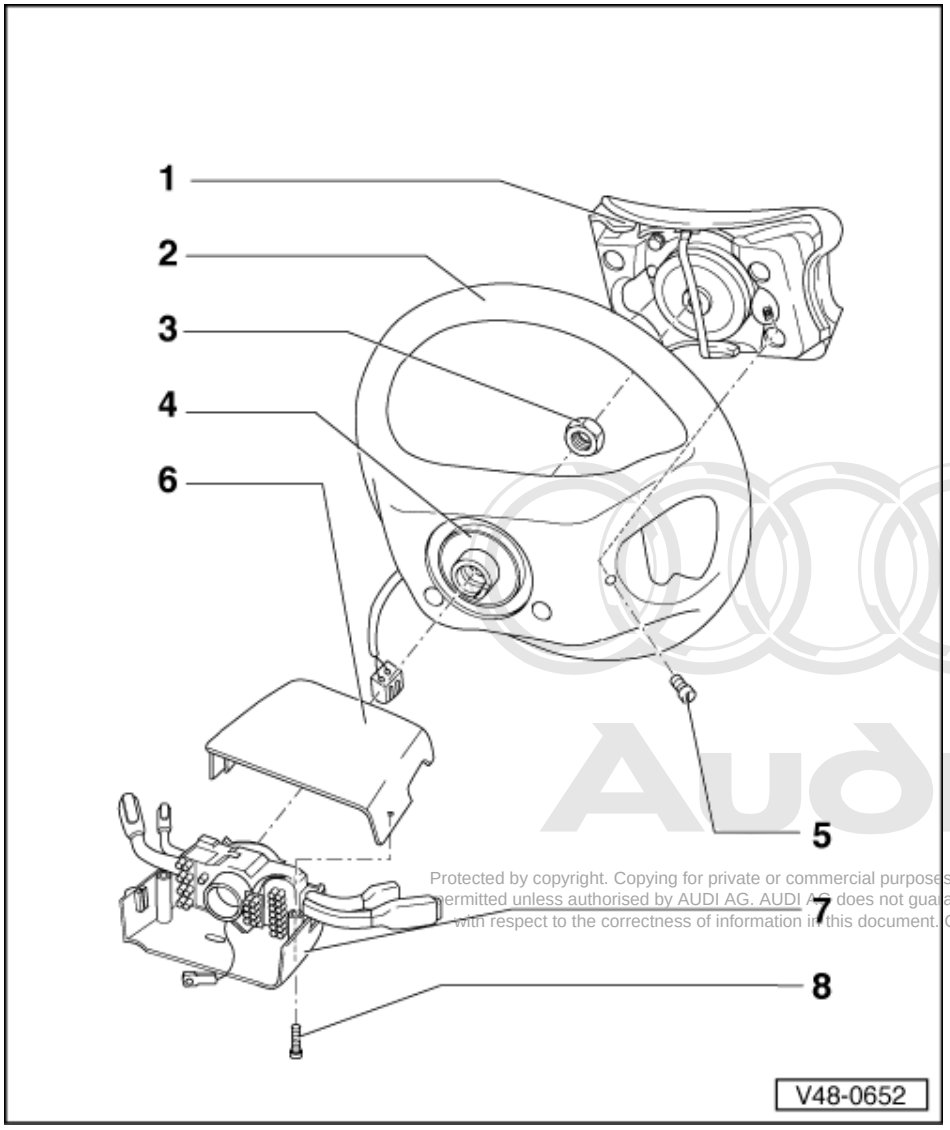
11 Countersunk bolt M5 x 10.7 Nm

- Fitted using locking compound
- Apply -D6- before fitting
- Can be replaced separately if necessary

Note:

Due to the use of locking compound the hexagon socket head of the bolts may be damaged when screwing them out. In this case carefully drill bolt heads taking care not to damage the countersunk holes in the steering wheel/horn actuator.

7.5 - Airbag version



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

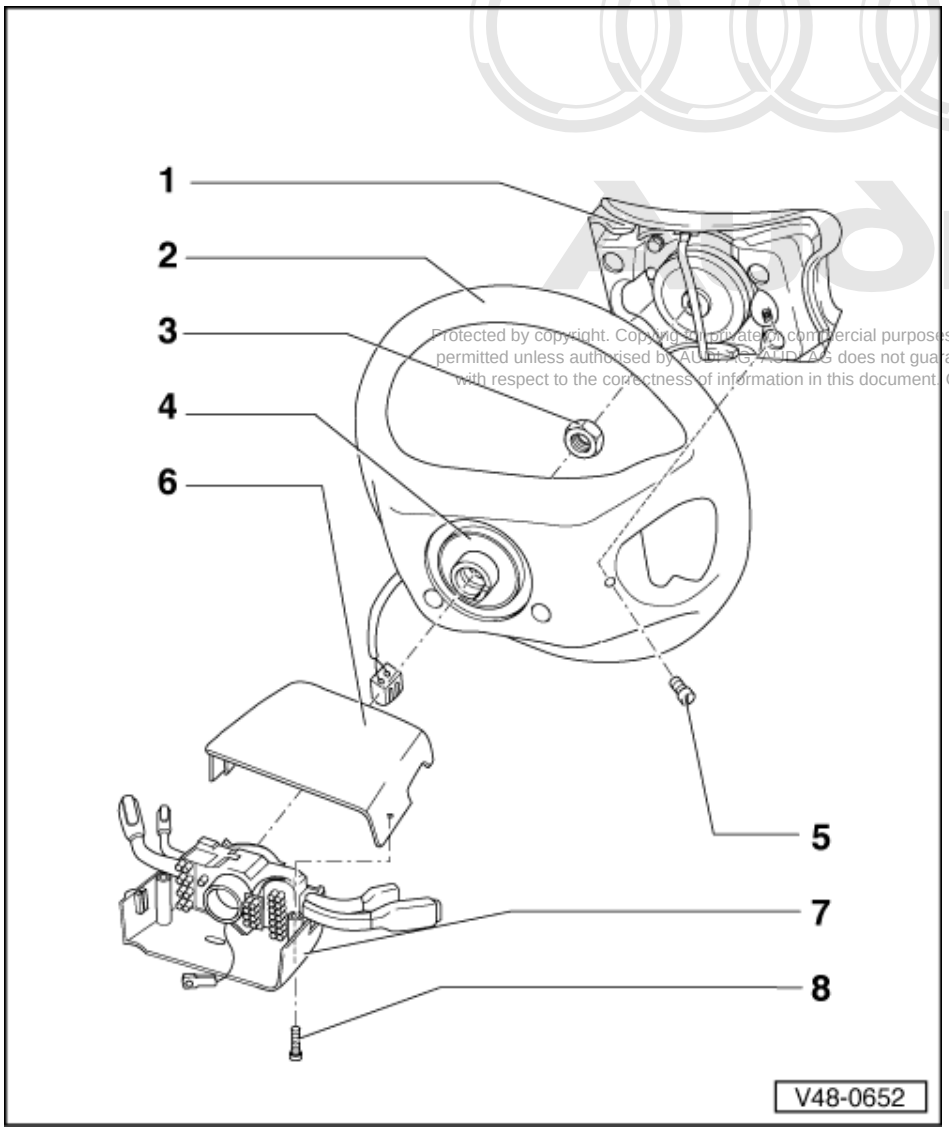
1 Airbag unit

Note:

- Before performing any work on the airbag system disconnect battery earth strap and 1 pin red connector for airbag voltage supply to ensure that subsequent assembly work does not result in accidental actuation of airbag system. Before removing steering column wheels are to be moved to straight ahead position and the steering wheel then removed (this ensures that the volute spring in the steering wheel is not damaged).
- Pay attention to safety precautions

=> Electrical System; Repair Group 96; Servicing airbag; safety precautions Servicing airbag safety precautions

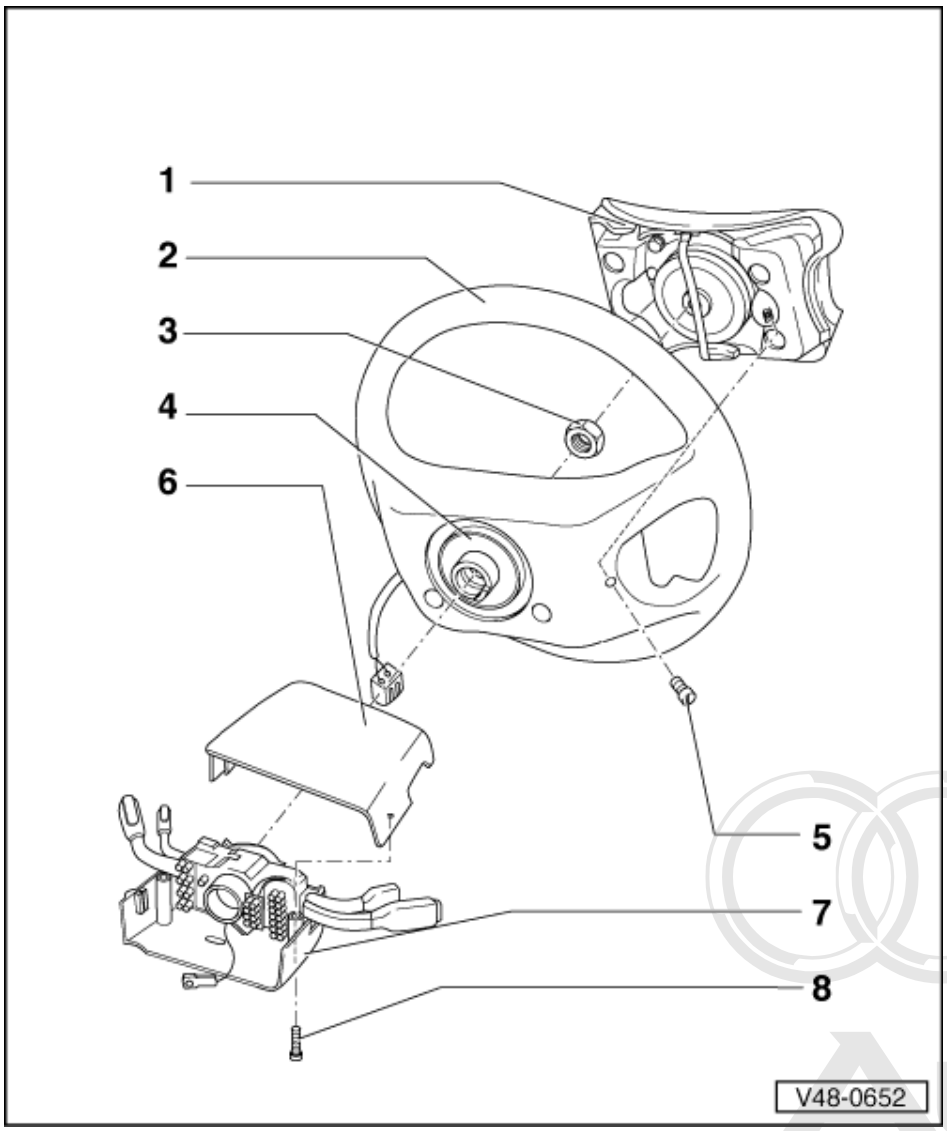
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



2 Steering wheel

- Removing and installing => Page 272
- Attach to steering column with wheels in straight ahead position
- Turn signal stalk must be in centre position when attaching
- Only install factory approved steering wheels
- Supplied as replacement part with self centring ring and slip ring

3 Hexagon nut, 40 Nm



4 Self-cancelling ring with slip ring

- Available as replacement part
- Replace

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

=> Electrical System; Repair Group 96; Servicing airbag Servicing airbag

5 Securing bolt for airbag unit, 6 Nm

- Notes => see Page 273

6 Cover for steering column switch

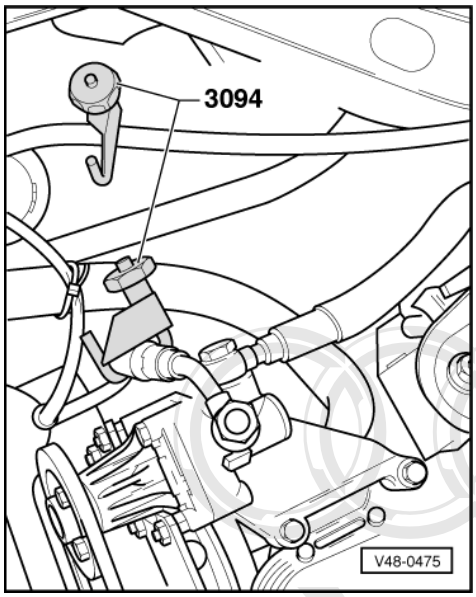
7 Steering column switch with bracket

8 Self-tapping screw

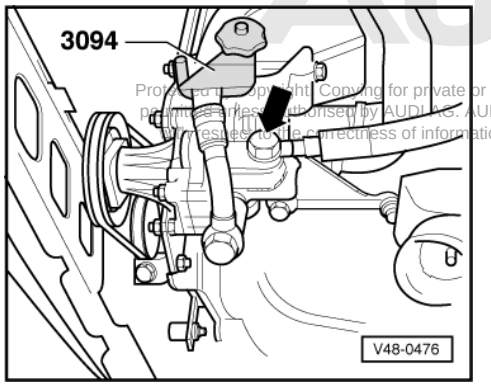
8 - Checking supply pressure of vane pump

8.1 - Checking supply pressure of vane pump

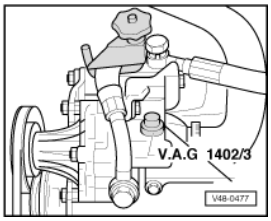
8.2 - Vehicles with 4 cylinder engine:



- -> Disconnect suction and return pipes with hose clamps -3094-.

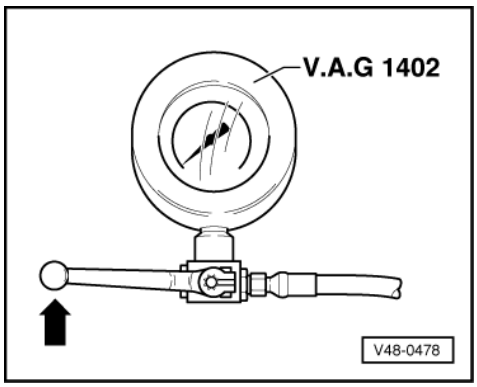


- -> Unscrew expansion hose -arrow- from vane pump.

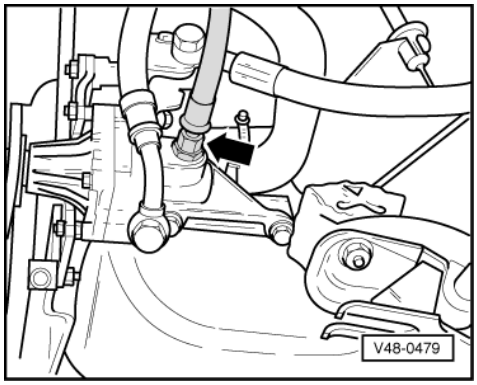


- -> Remove copper seal from banjo bolt and attach to adapter -V.A.G 1402/3-
- Screw adapter -V.A.G 1402/3- into vane pump in place of hollow bolt.

Protected by Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Close pressure gauge shut-off valve (lever set to left).
- Route hose of pressure gauge -V.A.G 1402- downwards to vane pump

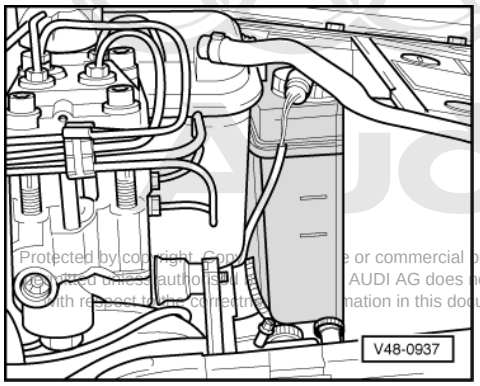


- -> Screw hose for pressure gauge -V.A.G 1402- to adapter -V.A.G 1402/3-.
- Remove hose clamps and start engine.
- Take pressure reading from pressure gauge at idling speed (measurement not longer than 10 seconds). Specified value: 110 - 110 bar excess pressure.
- Switch off engine.

Note:

If specified value is not attained check pressure and current limiting valve =>Page 320

- Disconnect suction and return pipes with hose clamps -3094-.
- Unscrew hose of pressure gauge from adapter and set pressure gauge aside
- Unscrew hose of pressure gauge -V.A.G 1402- from adapter -V.A.G 1402/3-.
- Unscrew adapter from pump
- Reattach expansion hose with banjo bolt and new seals to pump
- Remove hose clamps and start engine.
- Run engine at idle for approx. 2 minutes with front wheels set to straight ahead position

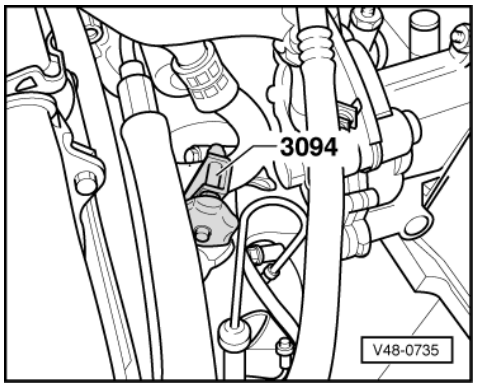


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

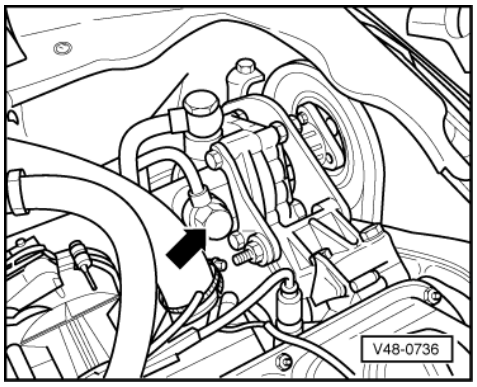
- -> Switch off engine and immediately check hydraulic fluid, paying attention to mark on reservoir/dipstick; top up to "MAX" mark, if necessary

- Checking steering system for leaks

8.3 - Vehicles with 5-cylinder engine:

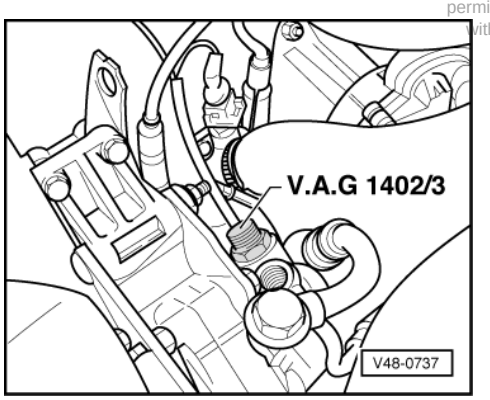


- -> Attach hose clamp -3094- to suction hose.

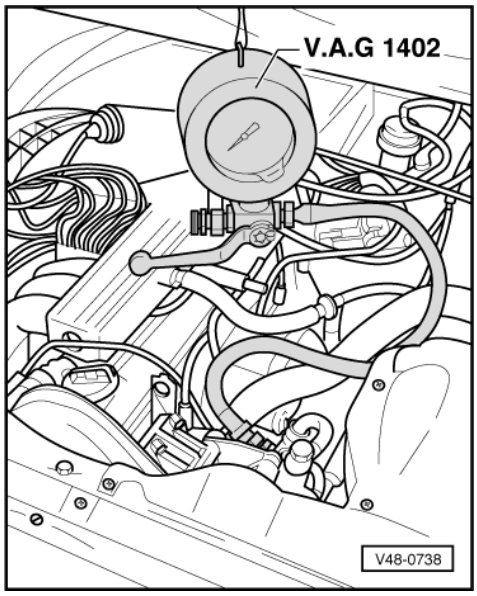


- -> Unscrew expansion hose -arrow- from vane pump.
- Remove copper seal from banjo bolt and attach to adapter -V.A.G 1402/3-

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Screw adapter -V.A.G 1402/3- into vane pump in place of banjo bolt.



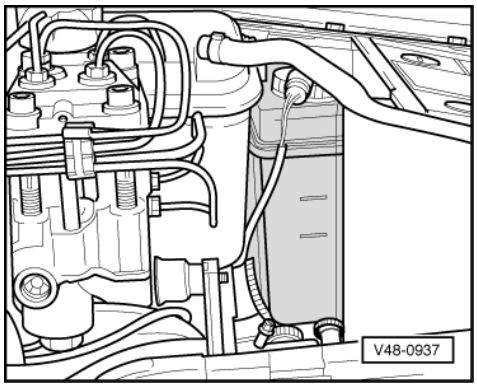
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Close pressure gauge shutoff valve (lever set to left).
- Screw hose for pressure gauge -V.A.G 1402- to adapter -V.A.G 1402/3-.
- Remove hose clamps and start engine.
- Take pressure reading from pressure gauge at idling speed (measurement not longer than 10 seconds). Specified value: 110 - 110 bar excess pressure.
- Switch off engine.

Note:

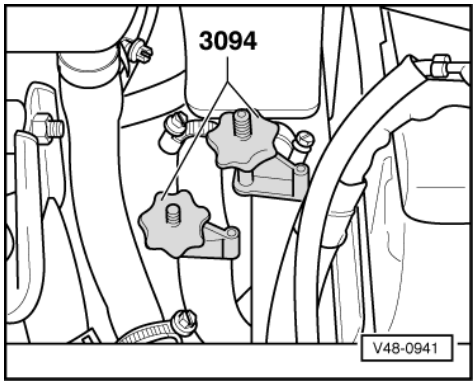
If specified value is not attained check pressure and current limiting valve =>Page 320

- Disconnect suction hose with hose clamp -3094-.
- Unscrew hose of pressure gauge -V.A.G 1402- from adapter -V.A.G 1402/3-.
- Unscrew adapter from pump
- Reattach expansion hose with banjo bolt and new seals to pump
- Remove hose clamps and start engine.
- Run engine at idle for approx. 2 minutes with front wheels set to straight ahead position

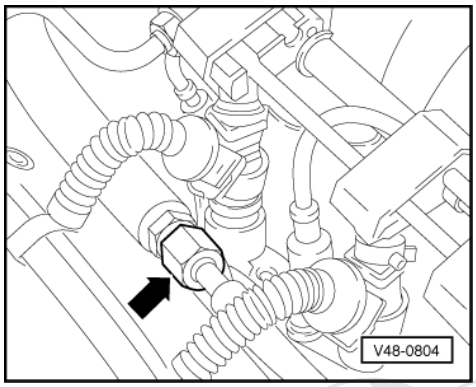


- -> Switch off engine and immediately check hydraulic fluid level, paying attention to mark on reservoir/ dipstick; top up to "MAX" mark, if necessary
- Checking steering system for leaks

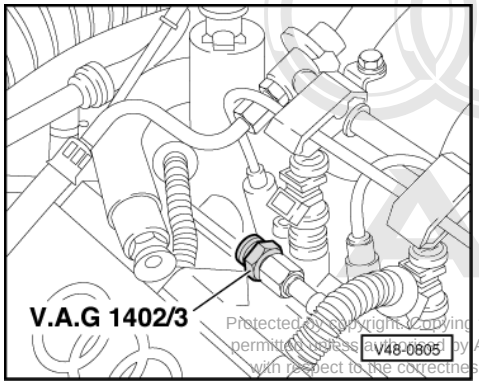
8.4 - Vehicles with 6-cylinder engine



- -> Disconnect suction and return pipes with hose clamps -3094-.

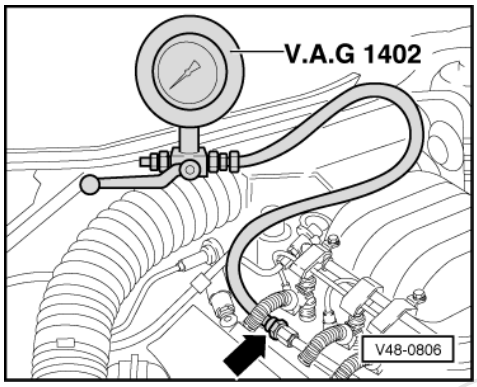


- -> Press spring clip and pull off plug from injector.
- Unscrew pipe from expansion hose (arrow); counterhold on hexagon of expansion hose.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Screw adapter V.A.G 1402/3 into pipe instead of expansion hose.



- -> Screw hose of pressure gauge onto adapter V.A.G 1402/3.
- Close pressure gauge shutoff valve (lever set to left).
- Attach plug to injector.

- Remove hose clamps and start engine.
- Take pressure reading from pressure gauge at idling speed (measurement not longer than 10 seconds). Specified value: 110 - 110 bar excess pressure.
- Switch off engine.

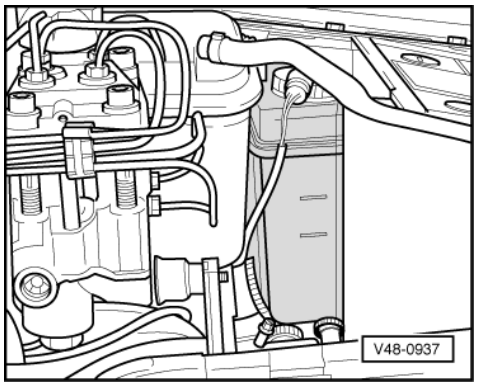
Note:

If specified value is not attained replace vane pump =>Page 326 .

- Disconnect suction and return pipes with hose clamps -3094-.
- Press spring clip and pull off plug from injector.
- Unscrew hose of pressure gauge -V.A.G 1402- from adapter -V.A.G 1402/3-.
- Unscrew adapter from pipe
- Unscrew pipe from expansion hose; counterhold on hexagon of expansion hose.
- Attach plug to injector.

Reproduction or copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

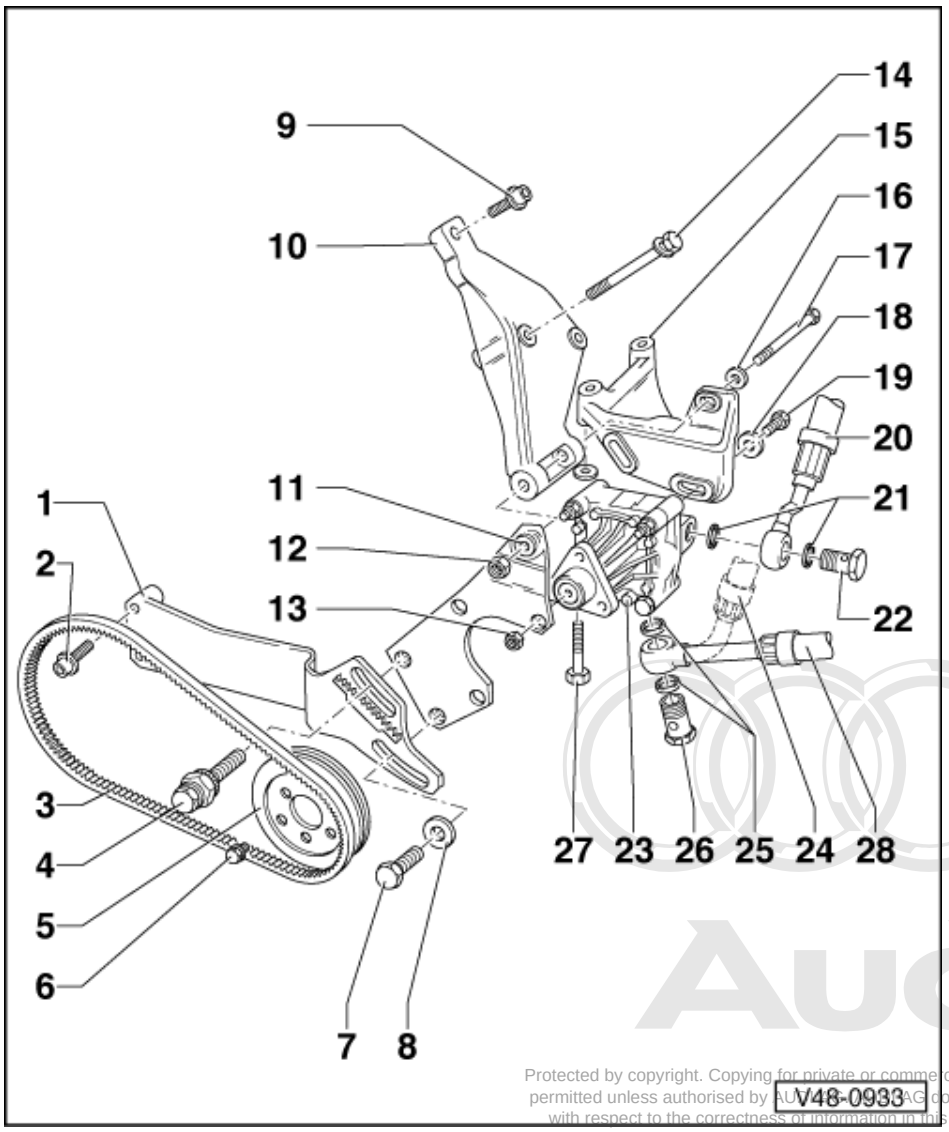
- Remove hose clamps and start engine.
- Run engine at idle for approx. 2 minutes with front wheels set to straight ahead position



- -> Switch off engine and immediately check hydraulic fluid level, paying attention to mark on reservoir/ dipstick; top up to "MAX" mark, if necessary
- Checking steering system for leaks

9 - Removing and installing impeller pump (vehicles with 4-cylinder engine)

9.1 - Removing and installing impeller pump (vehicles with 4-cylinder engine)



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

The power assisted steering uses hydraulic oil, part no. G 002 000

1 Retainer

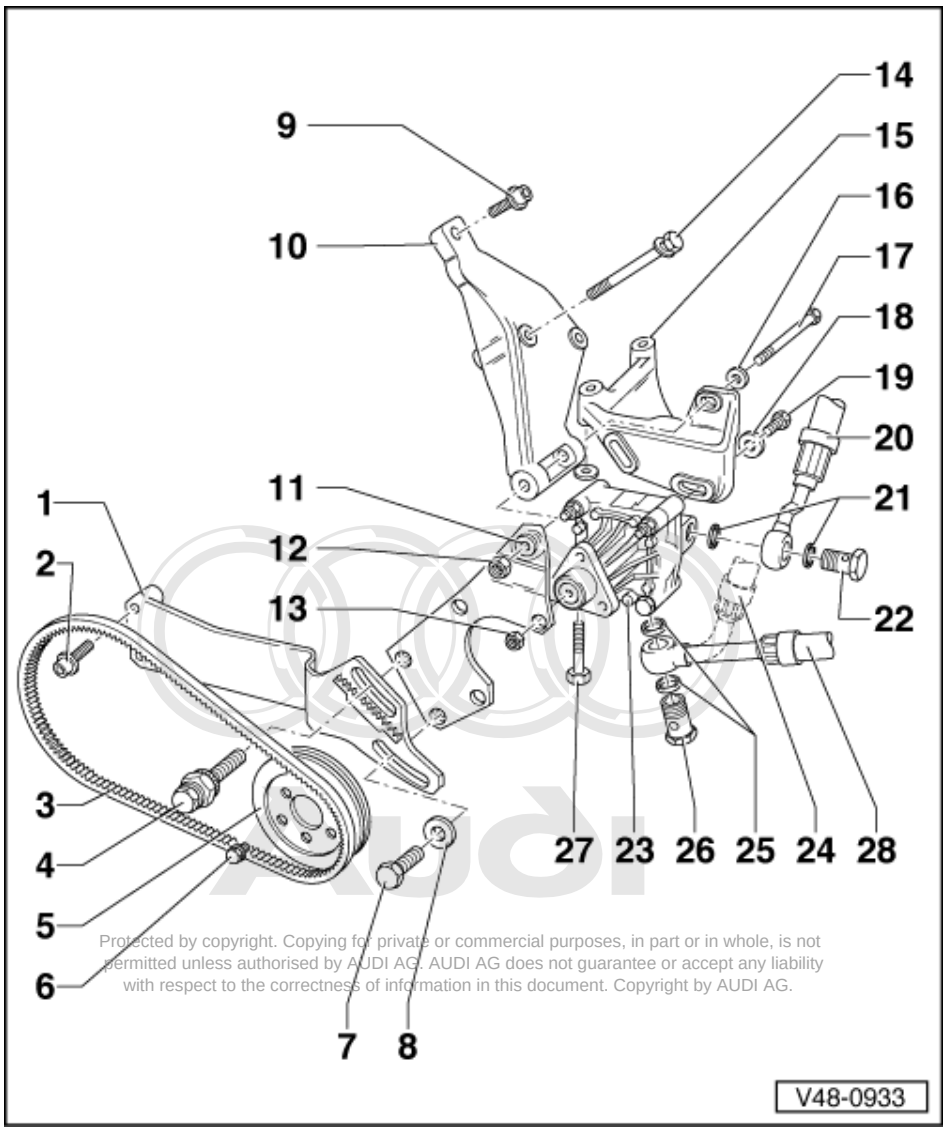
2 Cheese head bolt, 20 Nm

3 V-belt

- 2 valve petrol engines: 9.5 x 910 mm
- 4 valve engines: 9.5 x 880 mm
- Diesel and turbodiesel engines 11.9 x 903 mm

4 Bolt with tensioning nut

- Tension or replace V-belt => Page 310



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

5 V-belt pulley

- V-belt pulley of crankshaft and vane pump must be in alignment
- 2 and 4-cylinder engines have different versions

6 Hexagon bolt, 20 Nm

7 Hexagon bolt, 25 Nm

8 Shim

9 Cheese head bolt, 20 Nm

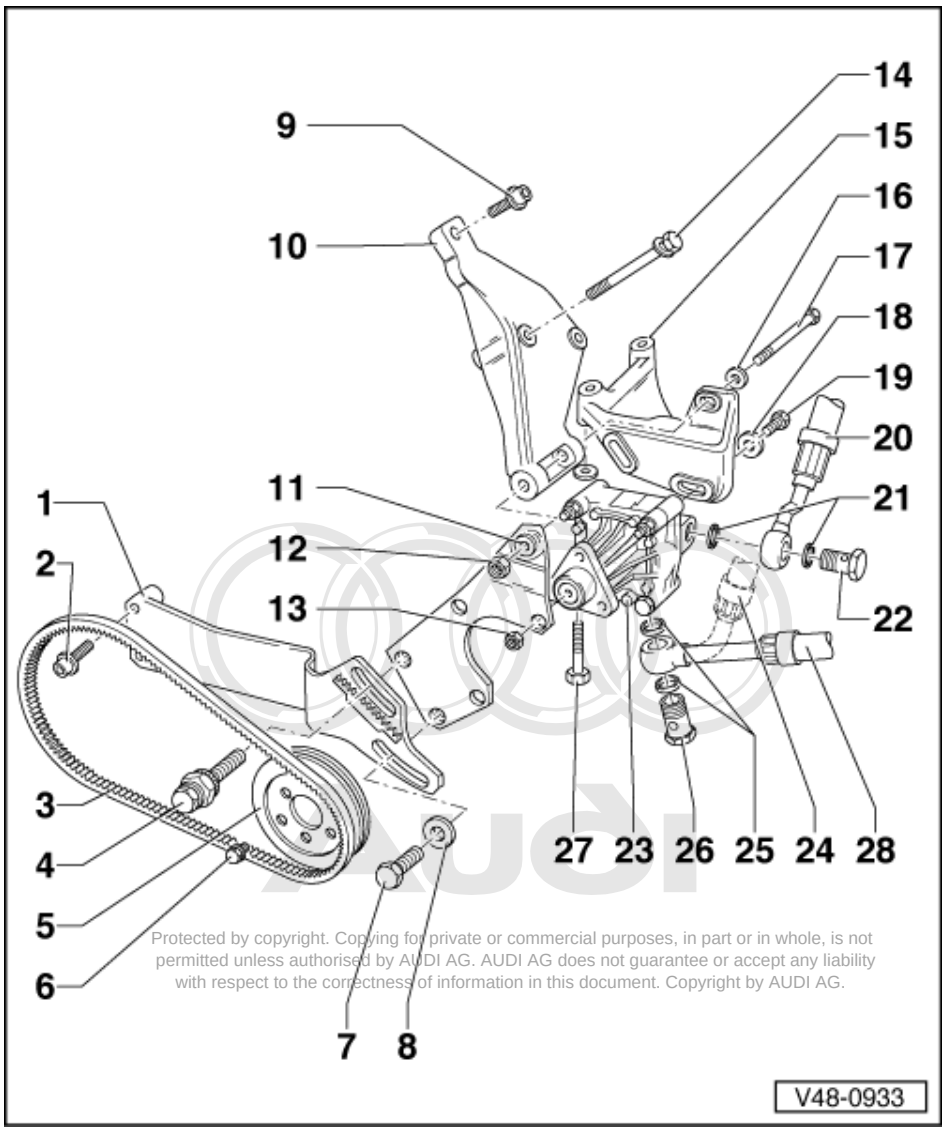
10 Bracket

11 Swivel bracket, front

12 Self-locking nut 20 Nm

- Always replace

13 Hexagon nut, 20 Nm

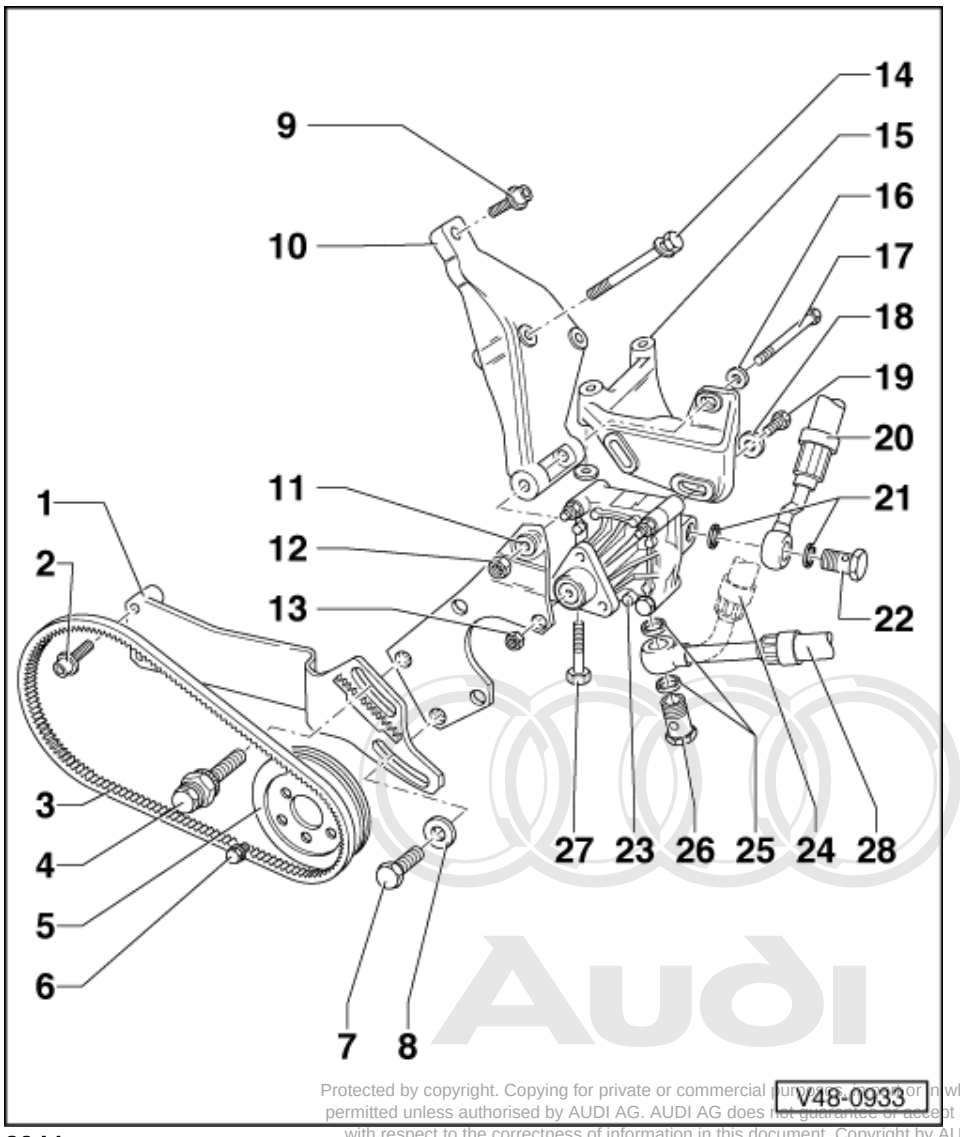


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

14 Hexagon bolt, 20 Nm
15 Swivel bracket, rear
16 Shim
17 Hexagon bolt
18 Shim
19 Hexagon bolt
20 Expansion hose
- Note that there are different versions for LHD and RHD models.

21 Oil seal
- Always replace

22 Union screw, 50 Nm



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

23 Vane pump

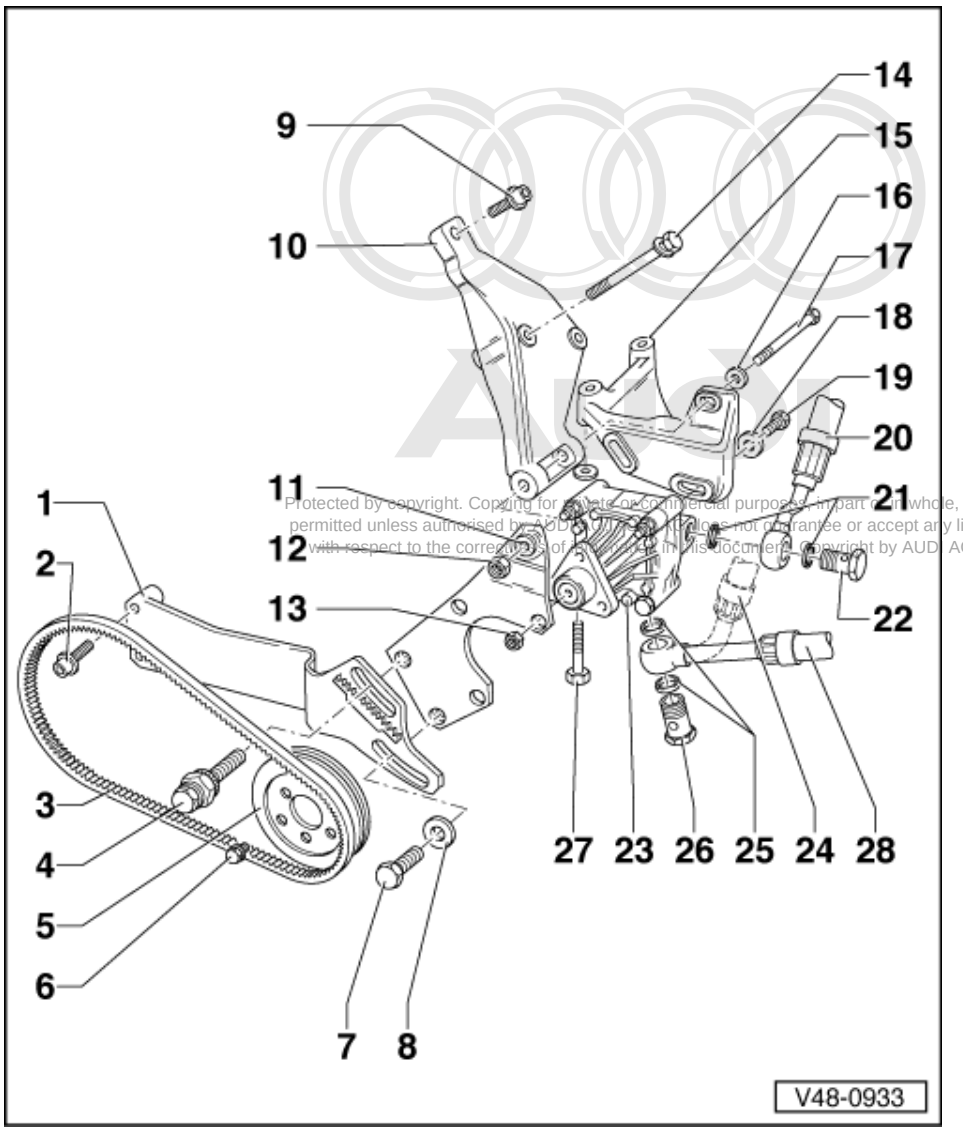
- Checking supply pressure => Page 299
- Servicing => Page 315
- Before installation fill with hydraulic fluid on suction end and turn by hand until fluid emerges from discharge end

24 Suction hose

- For vehicles with 2 valve engine

25 Oil seal

- Always replace



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

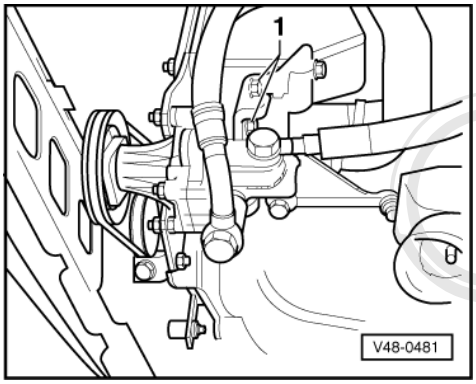
26 Union screw, 50 Nm

27 Hexagon bolt, 20 Nm

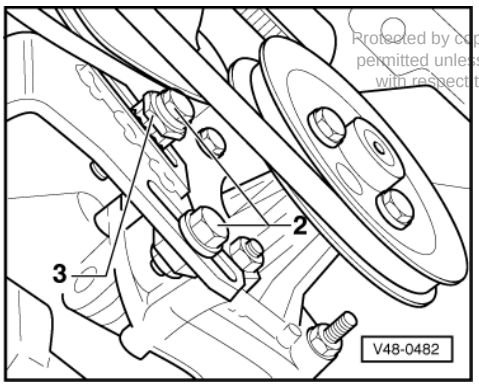
28 Suction hose

- For vehicles with 4 valve engine
- If vane pump is provided with threaded connection suction hose is secured by a hose clip => Page 330 , Item 16 .

9.2 - Tensioning or replacing V-belt for vane pump



- -> Loosen bolts -1- (second bolt not visible)



- -> Loosen bolt -2-
- Turn tensioning nut -3- appropriately

Note:

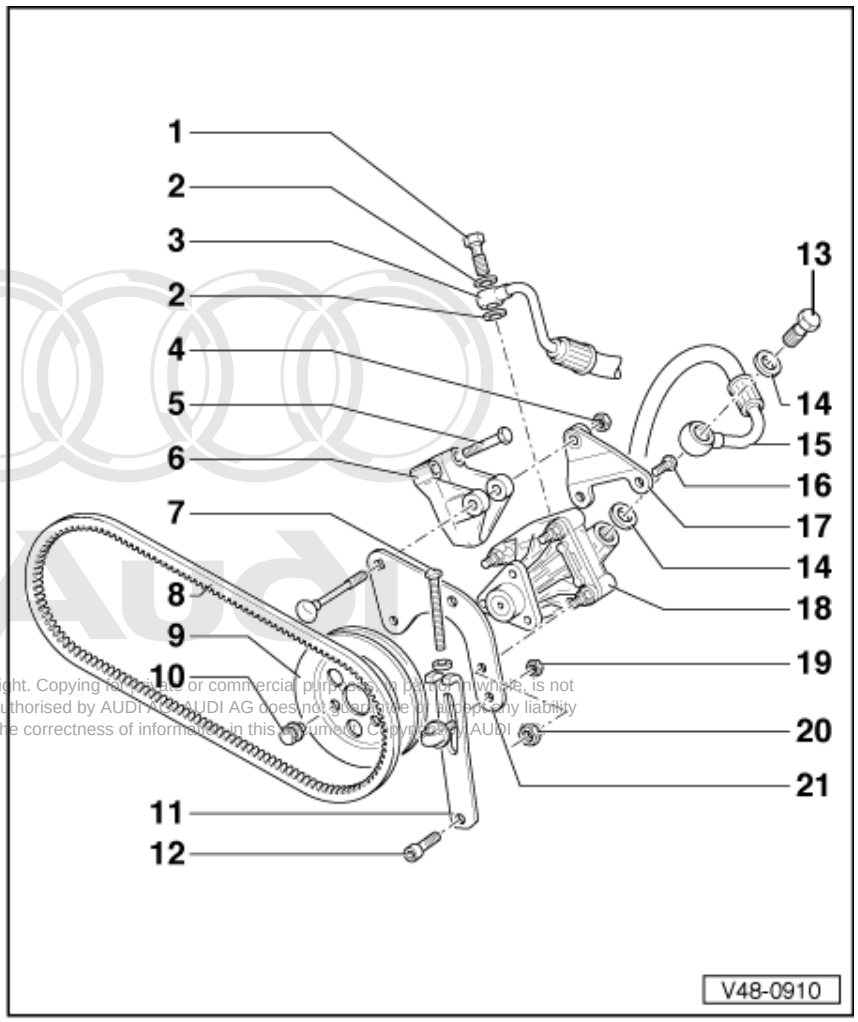
The V-belt is properly tensioned if it can be deflected approx. 10 mm with thumb between two pulleys

- Retighten loosened bolts

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

10 - Removing and installing ZF vane pump, 5-cylinder engine

10.1 - Removing and installing ZF vane pump, 5-cylinder engine



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

The power assisted steering uses hydraulic oil, part no. G 002 000

1 Union screw, 50 Nm

2 Oil seal

- Always replace

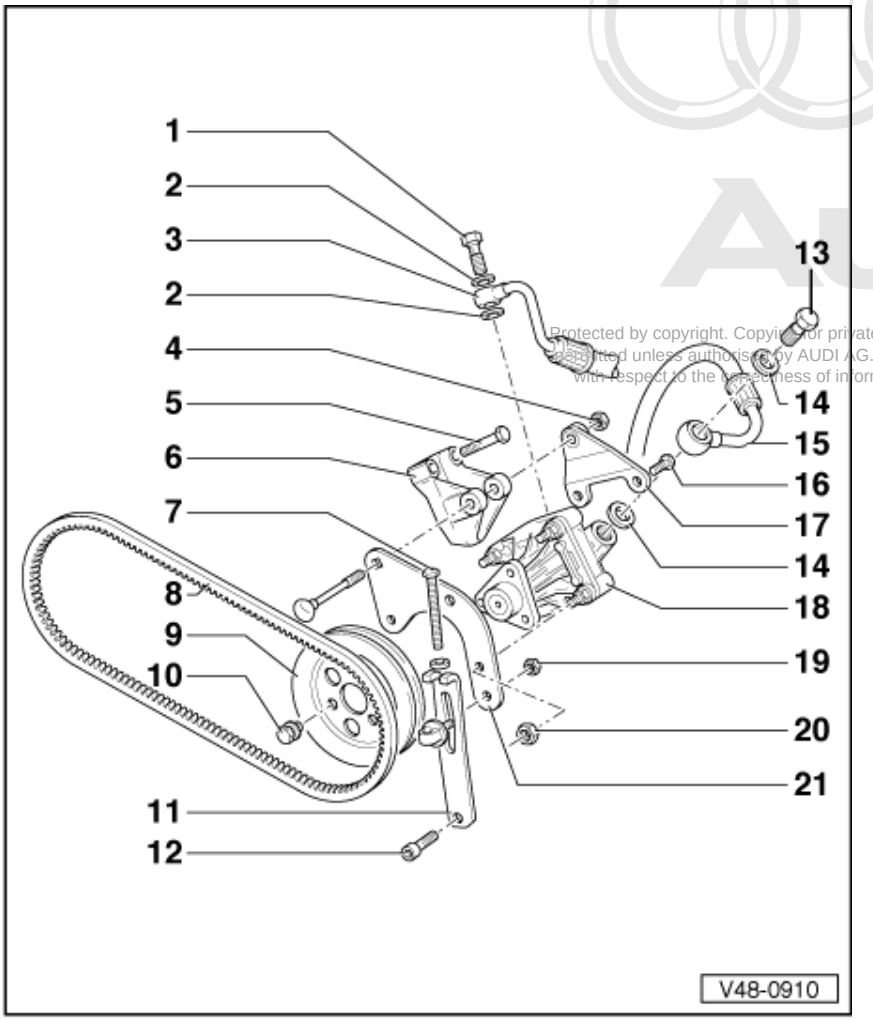
3 Expansion hose

- Note that there are different versions:

4 Self-locking nut 20 Nm
- Always replace

5 Hexagon bolt, 20 Nm

6 Bracket



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

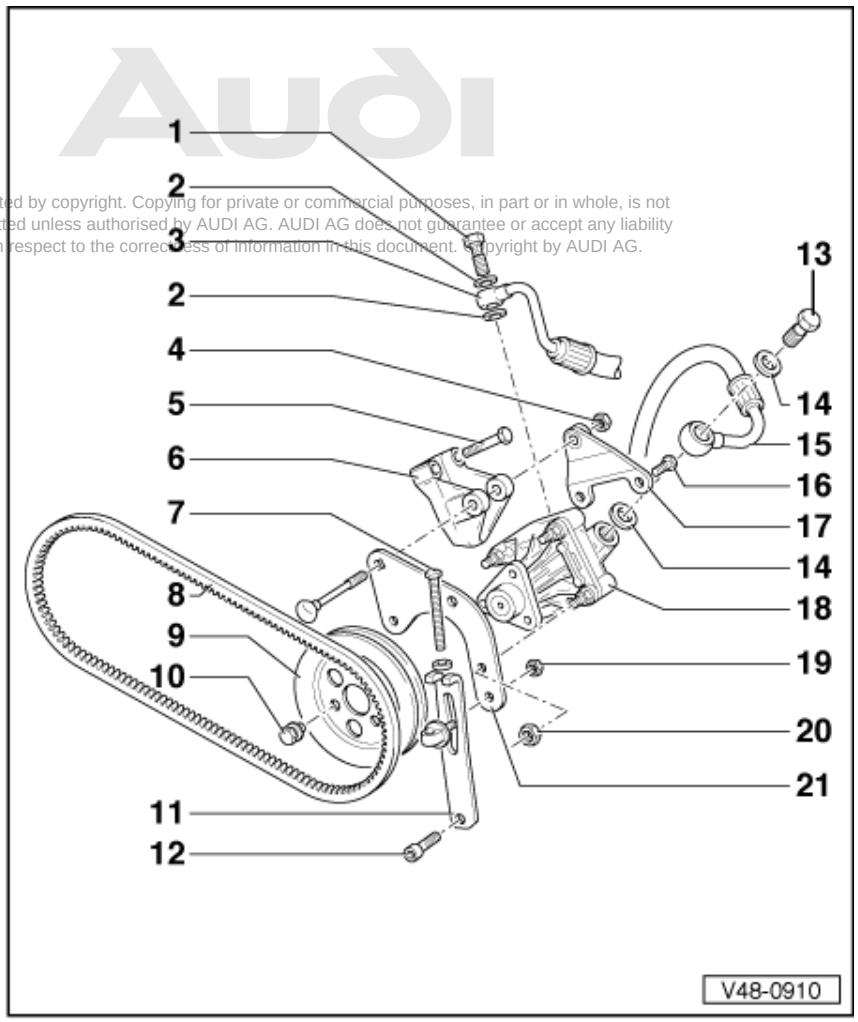
7 Tensioning bolt
- Tension or replace V-belt => Page 314

8 V-belt
- Size: 12.5 x 992 mm

9 V-belt pulley
- V-belt pulley of crankshaft and vane pump must be in alignment
- Installation position: With pulley fitted "4Z" must be visible from front

10 Hexagon bolt, 20 Nm

11 Retainer
12 Cheese-head bolt, 20 Nm
13 Union screw, 50 Nm



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

14 Oil seal
- Always replace

15 Suction hose
16 Hexagon bolt, 20 Nm
17 Swivel bracket, rear
18 Vane pump
- Checking supply pressure => Page 301
- Servicing => Page 315
- Before installation fill with hydraulic fluid on suction end and turn by hand until fluid emerges from discharge end

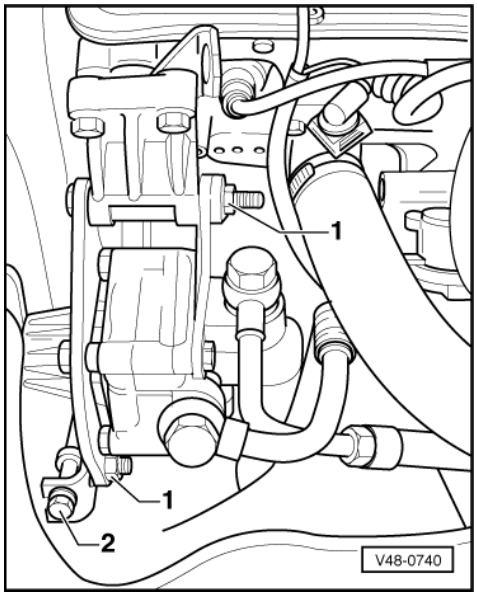
19 Self-locking nut 20 Nm

- Always replace

20 Hexagon nut, 20 Nm

21 Swivel bracket, front

10.2 - Tensioning or replacing V-belt for ZF vane pump



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Unfasten nut -1-
- Turn bolt -2- of tensioner appropriately

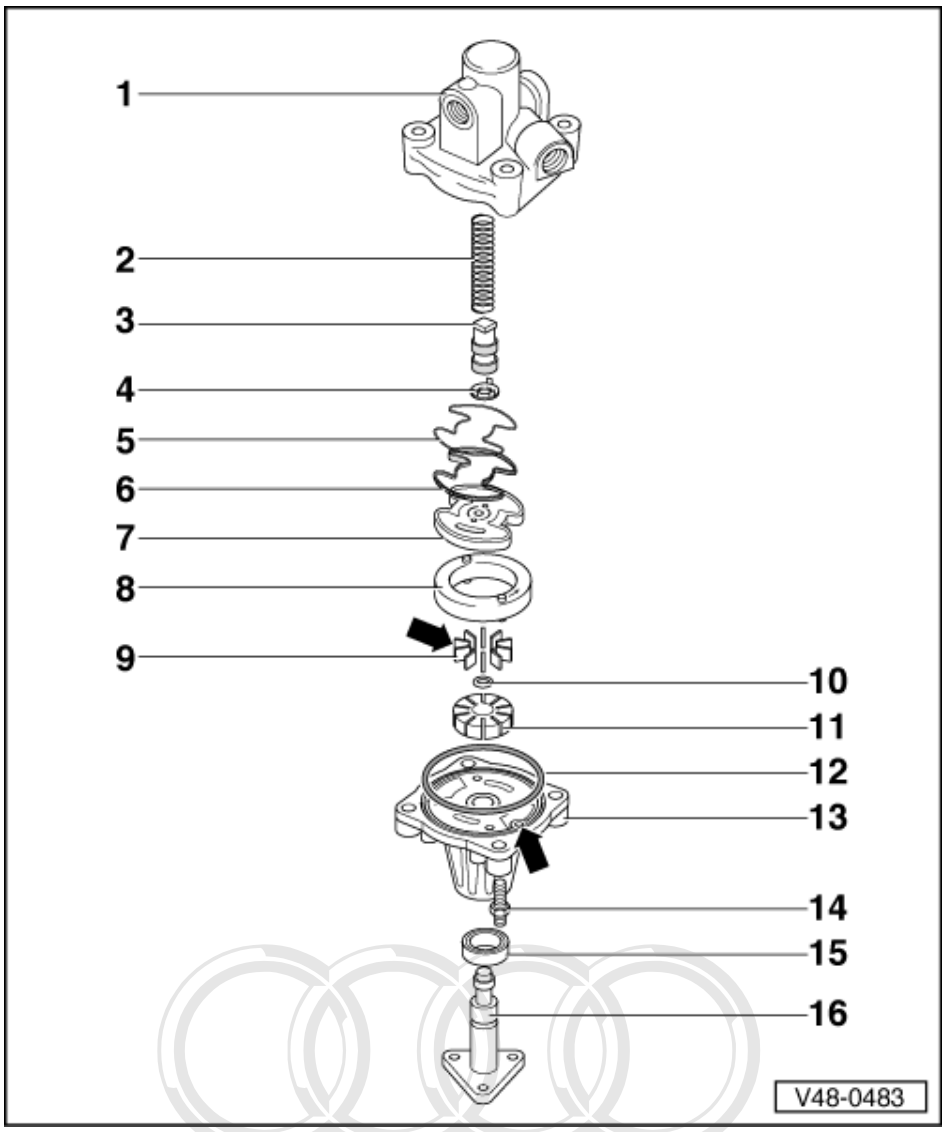
Note:

The V-belt is properly tensioned if it can be deflected approx. 10 mm with thumb between two pulleys

- Tighten nut -1-.

11 - Servicing vane pump, ZF pump

11.1 - Servicing vane pump, ZF pump



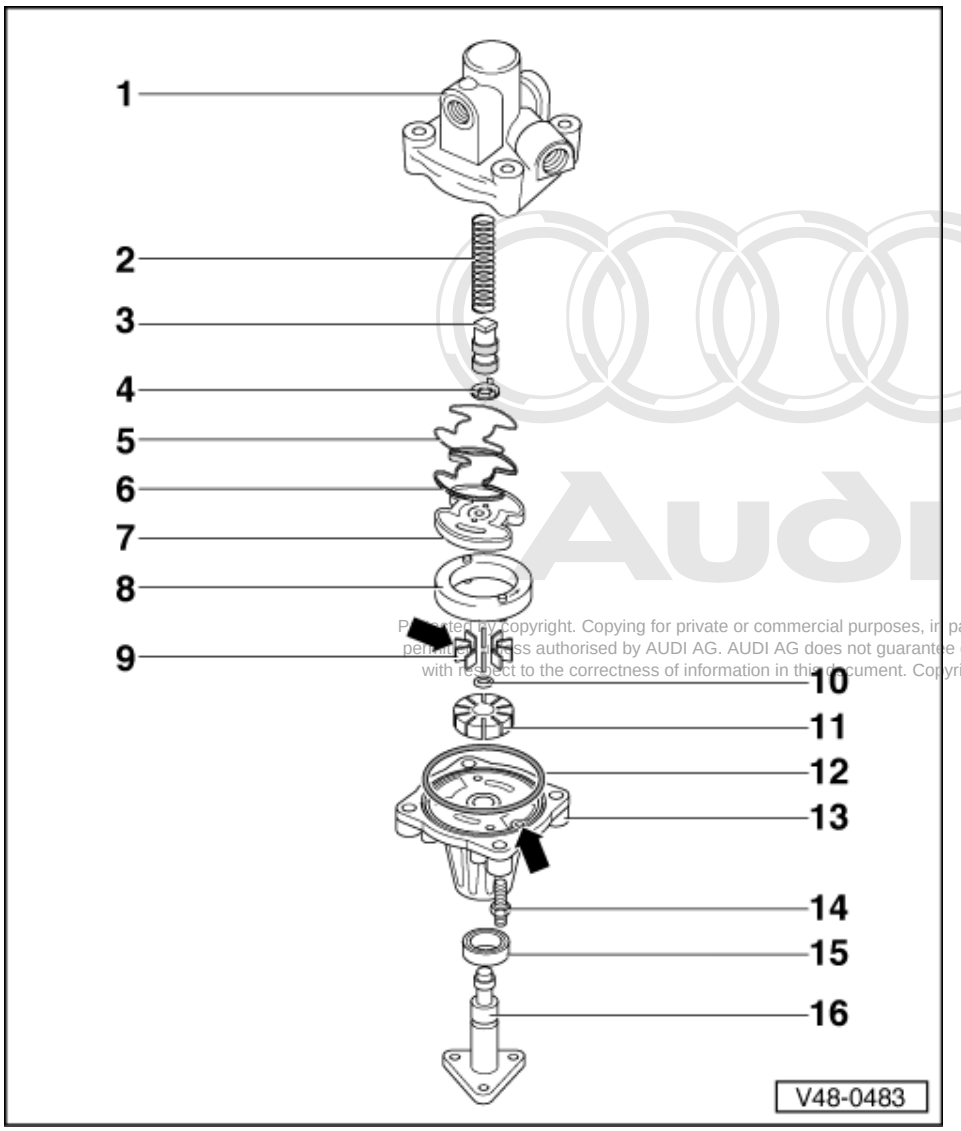
Notes:

- Vane pump uses hydraulic fluid, part no. G 002 000
- All parts marked with an asterisk are contained in the repair set and are to be replaced when servicing
- Moisten all sealing elements with hydraulic fluid prior to installation

1 Housing
- Blow through ducts

2 Spring

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 Pressure and current limiting valve

- Insert in housing
- Checking => Page 320 , do not disassemble

4 Assembly fastener for pressure and current limiting valve

- Carefully lever out with small screwdriver

Note:

Assembly fastener is pretensioned with pressure spring

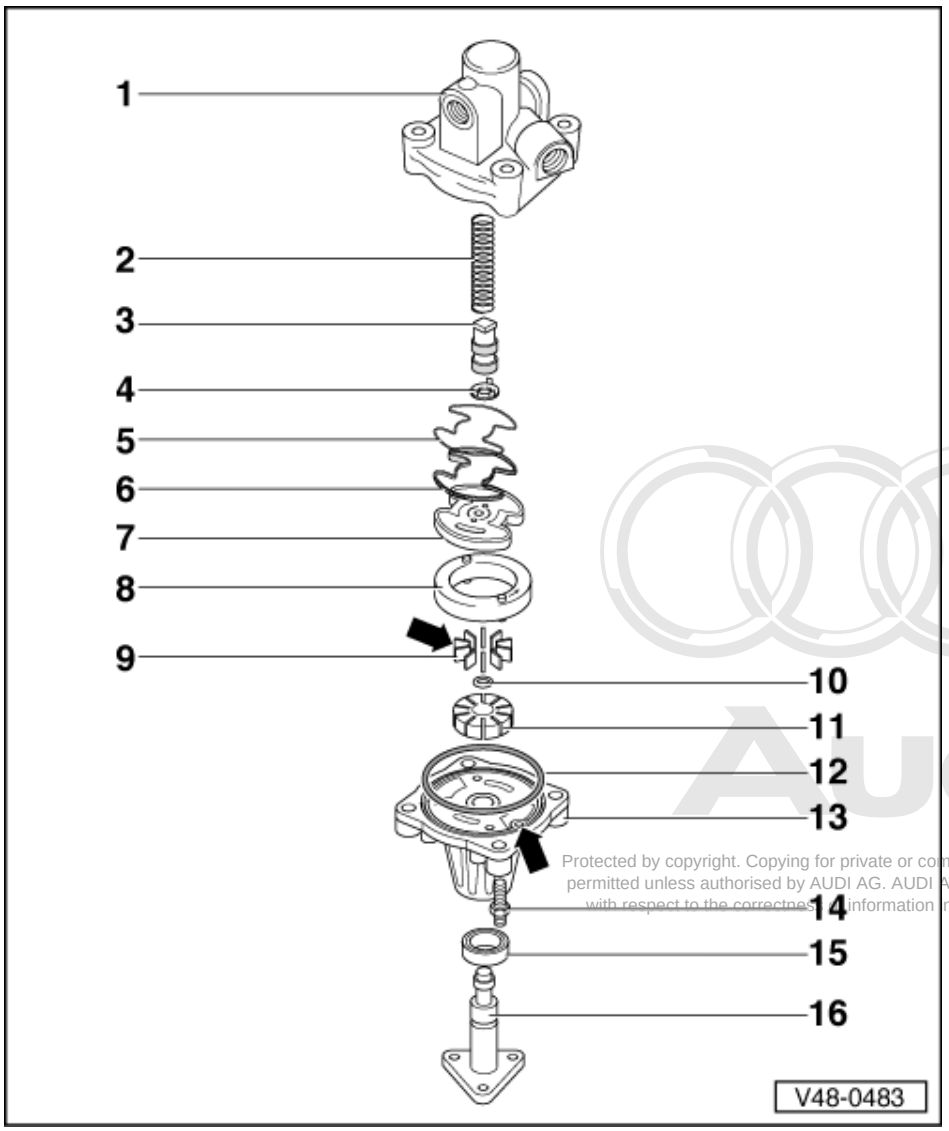
- Inserting => Fig. 1

5 Moulded support for seal *

- Position on seal

6 Seal *

7 Transfer plate



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

8 Stator

- Installation position: Arrow on stator must be visible after assembly

9 Vanes

- Ground (bright) end face -arrow- faces outwards

10 Circlip *

- Removing and installing => Fig. 4

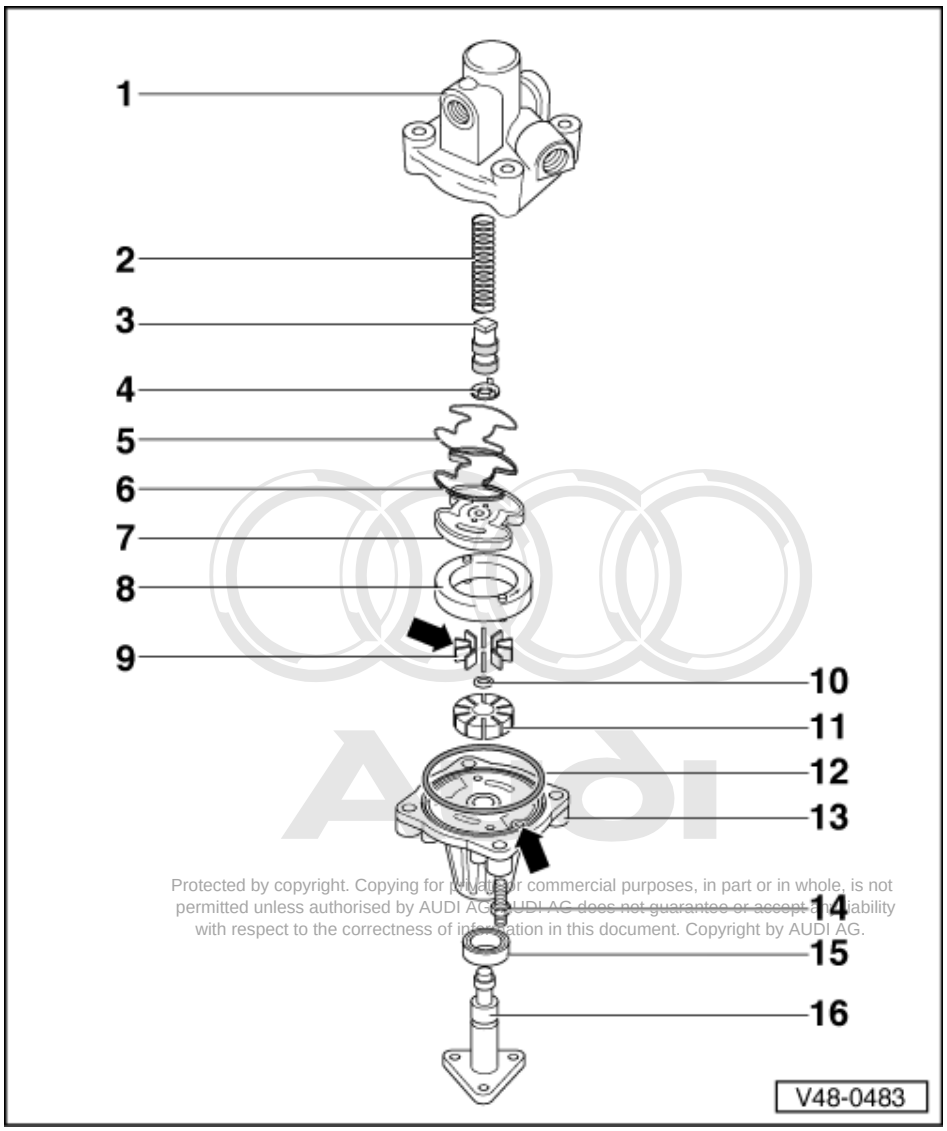
Note:

The repair set contains two different circlips. The same type of new circlip is always to be installed

11 Rotor

- Removing and installing => Fig. 4

12 O-rings *



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

13 Housing

- Fluid duct in both housing halves -arrow- must coincide on assembly

14 Bolt 15 Nm

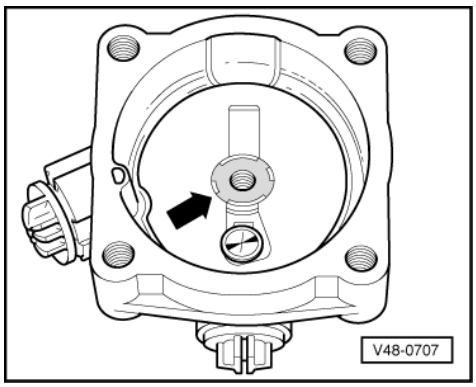
- Apply -D6- when fitting; screw long end into pump housing

15 Seal *

- Disassemble pump to replace
- Pulling out => Fig. 2
- Driving home => Fig. 3

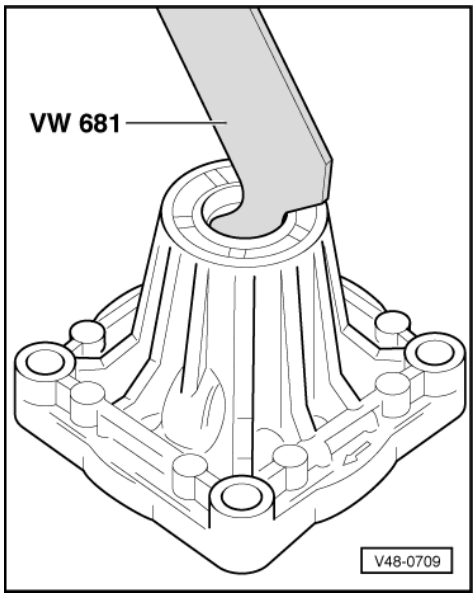
16 Pump shaft with flange

- Check for scoring and running marks; if applicable, replace entire pump
- Remove rotor and pump shaft to replace seal

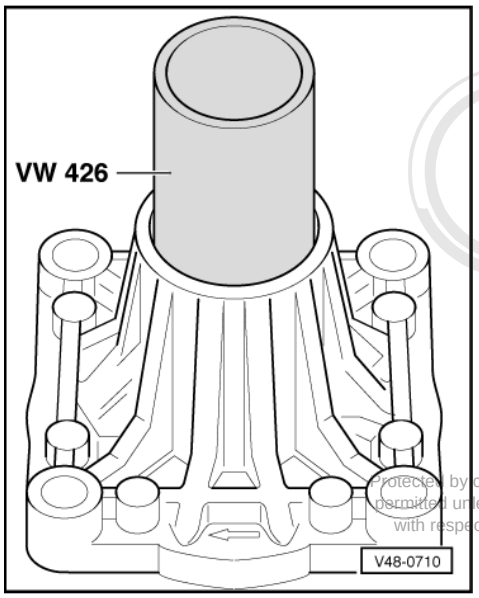


-> Fig.1 Inserting assembly fastener for pressure and current limiting valve in hole in housing

- The fastener holds the valve in position. Press in fastener flush with hole in housing.



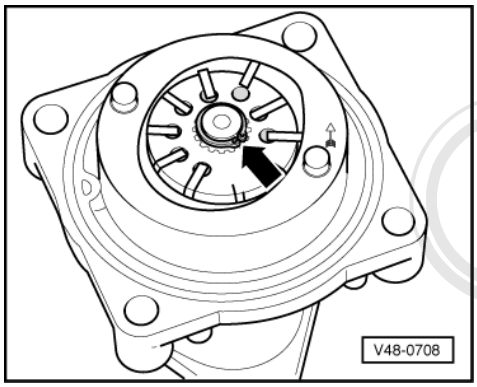
-> Fig.2 Pulling out seal.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.3 Driving seal home

- Before installing, fill space between sealing lips with multi-purpose grease



-> Fig.4 Removing and installing circlip

- Use pointed pliers to remove circlip -arrow- from groove; remove rotor.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

11.2 - Checking pressure and current limiting valve

Warning!
If pressure and current limiting valve is not functioning properly this will result in sporadic failure of power steering.

- Check valve piston and hole in pump housing for wear.

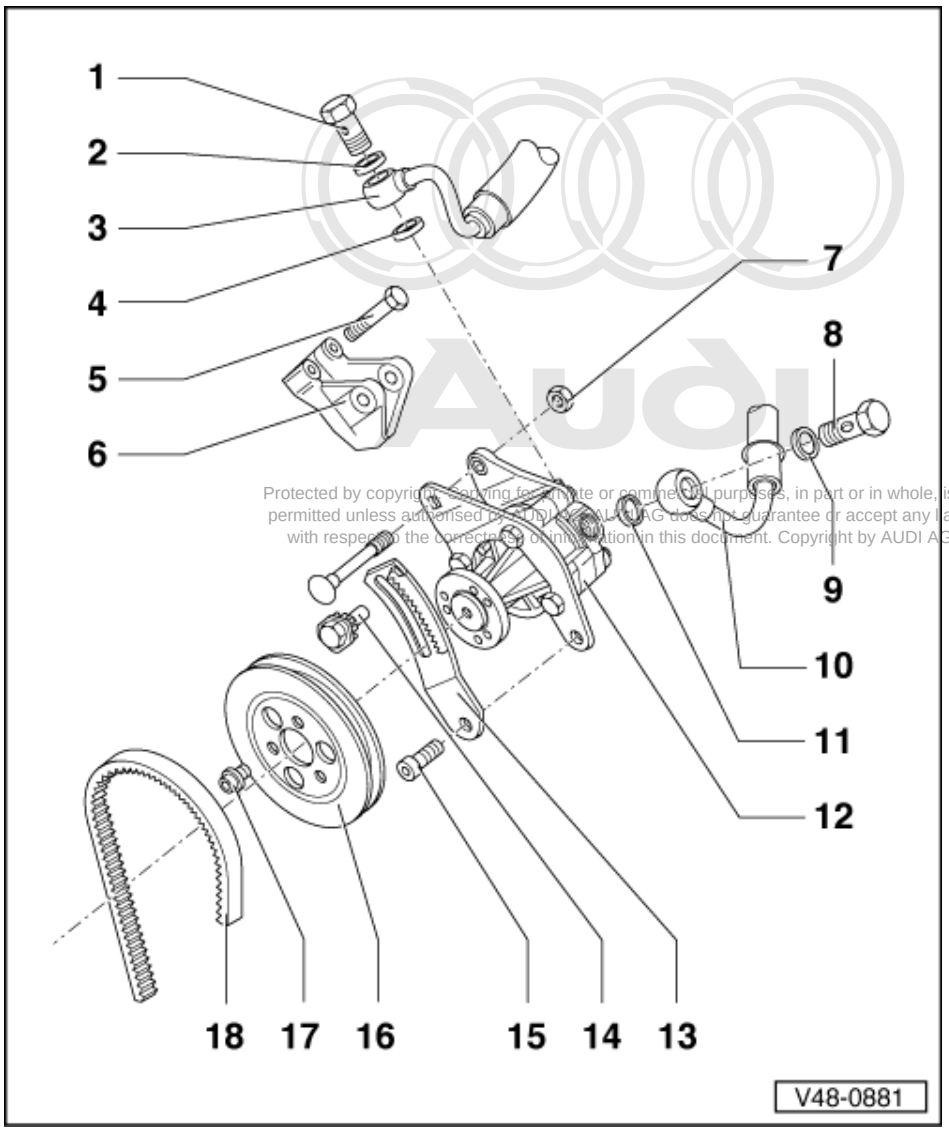
Note:

There must not be any dirt in the holes in the valve piston; furthermore, the piston must move freely in the hole in the housing.

- Replace vane pump if maximum pump pressure is not attained after performing this check.

12 - Removing and installing Vickers vane pump, 5-cylinder engine

12.1 - Removing and installing Vickers vane pump, 5-cylinder engine

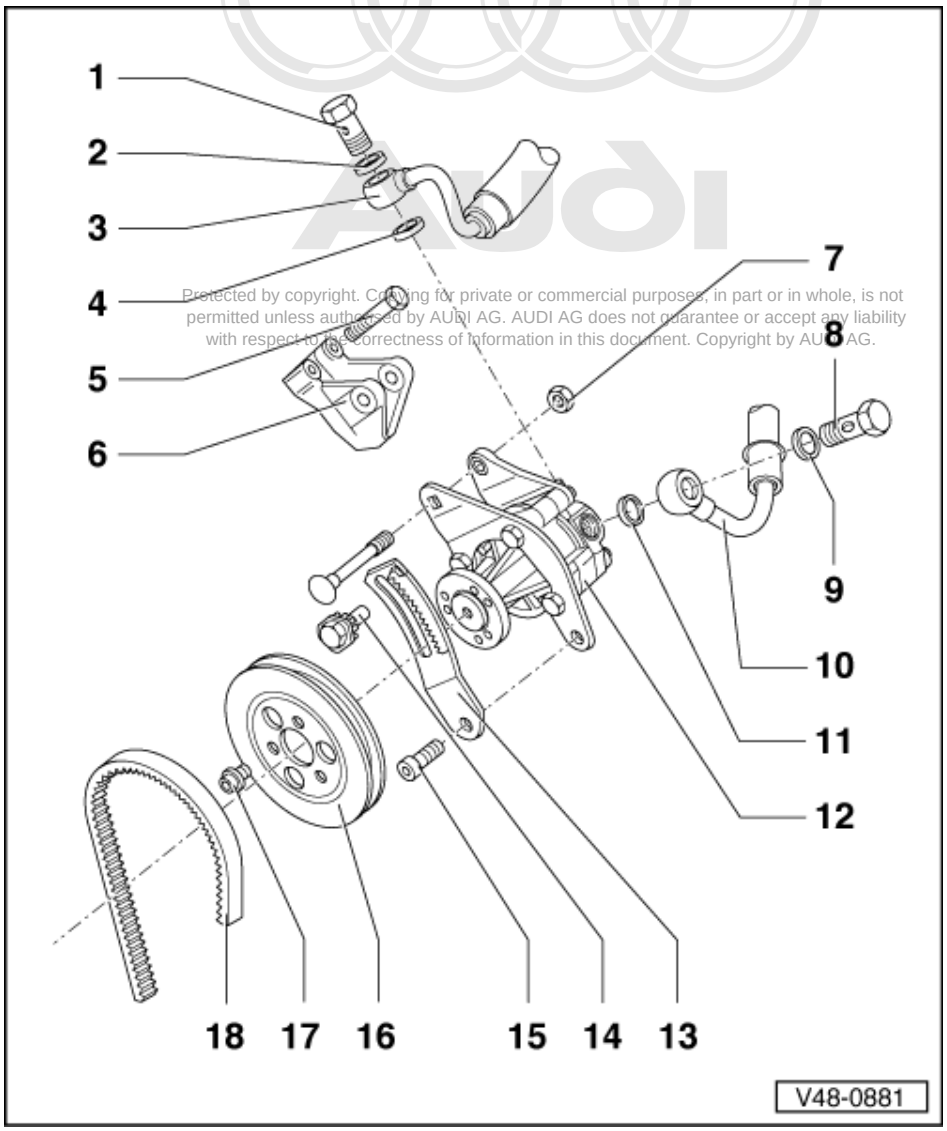


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Notes:

- The power assisted steering uses hydraulic oil, part no. G 002 000
- The Vickers pump is supplied as replacement part complete with fitted V-belt pulley and front and rear swivel brackets. Vickers pump servicing is not envisaged. If a ZF pump is installed instead of a Vickers pump the front and rear swivel brackets must be ordered for and fitted on the ZF pump. For cost reasons the same make should thus always be fitted if at all possible when performing repairs.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



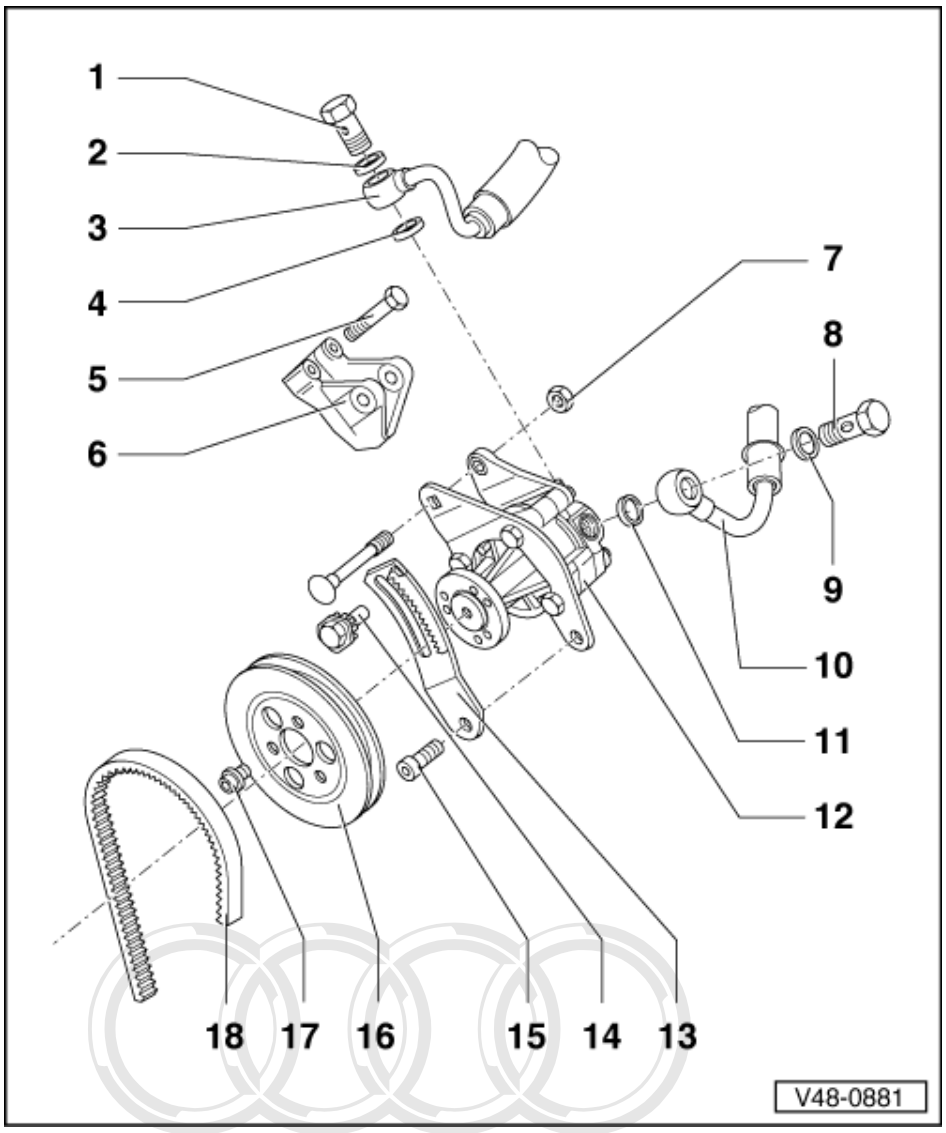
1 Union screw, 50 Nm
2 Oil seal
- Always replace

3 Expansion hose
- Note that there are different versions:

4 Oil seal
- Always replace

5 Hexagon bolt, 20 Nm
6 Bracket
7 Self-locking nut 20 Nm
- Always replace

8 Union screw, 50 Nm
9 Oil seal
- Always replace



10 Suction hose

11 Oil seal

- Always replace

12 Vane pump

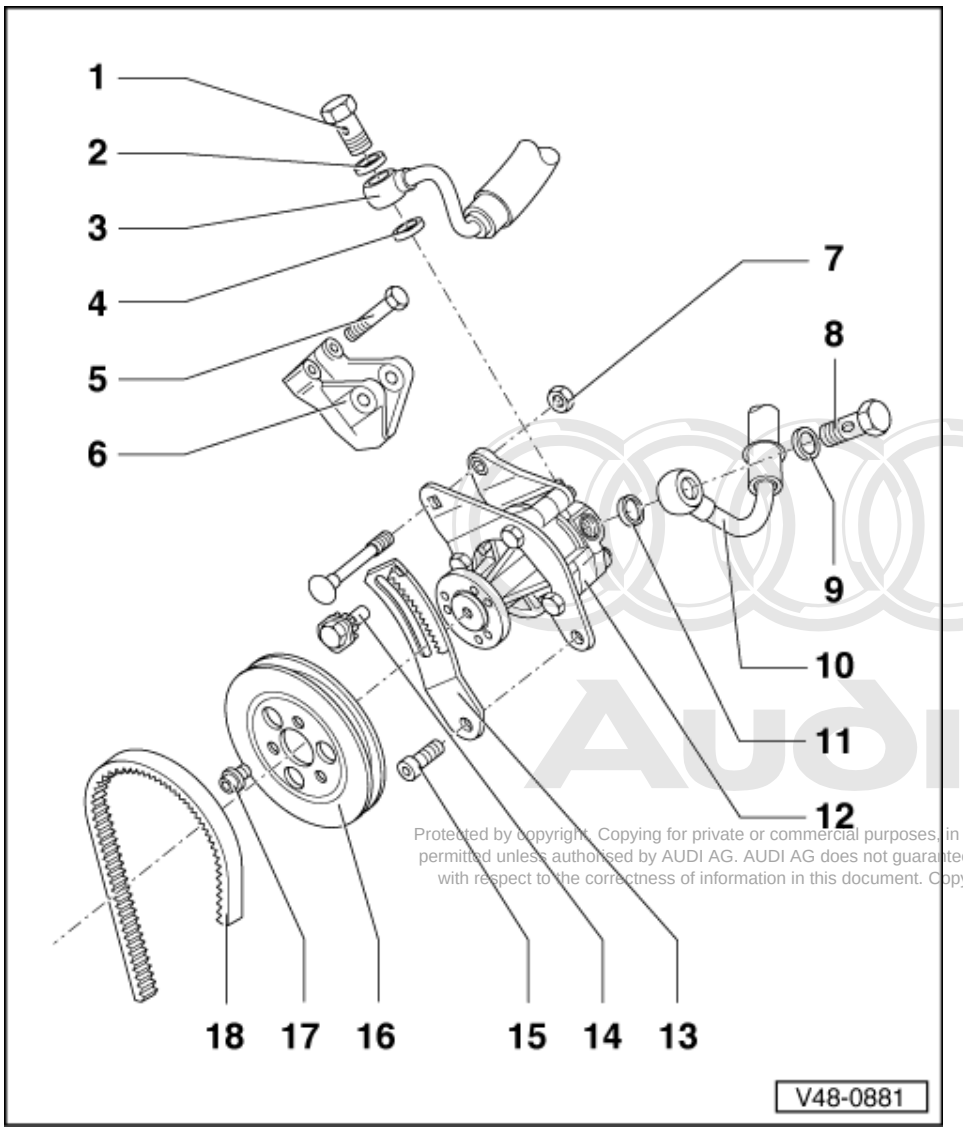
- Supplied as replacement part with fitted V-belt pulley and front and rear swivel brackets
- Checking supply pressure => Page 301
- Before installation fill with hydraulic fluid on suction end and turn by hand until fluid emerges from discharge end

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

13 Retainer

14 Bolt with tensioning nut

- Tension or replace V-belt => Page 325



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

15 Cheese head bolt, 20 Nm

16 V-belt pulley

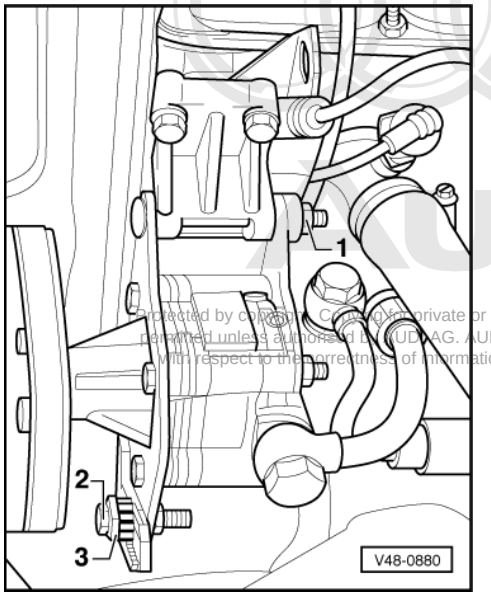
- With pulley fitted "4Z" must be visible from front
- V-belt pulley of crankshaft and vane pump must be in alignment

17 Cheese head bolt, 25 Nm

18 V-belt

- Size: 12.5 x 992 mm

12.2 - Tensioning or replacing V-belt for Vickers vane pump



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Unfasten nut -1-
- Loosen bolt -2-
- Turn tensioning nut -3- appropriately

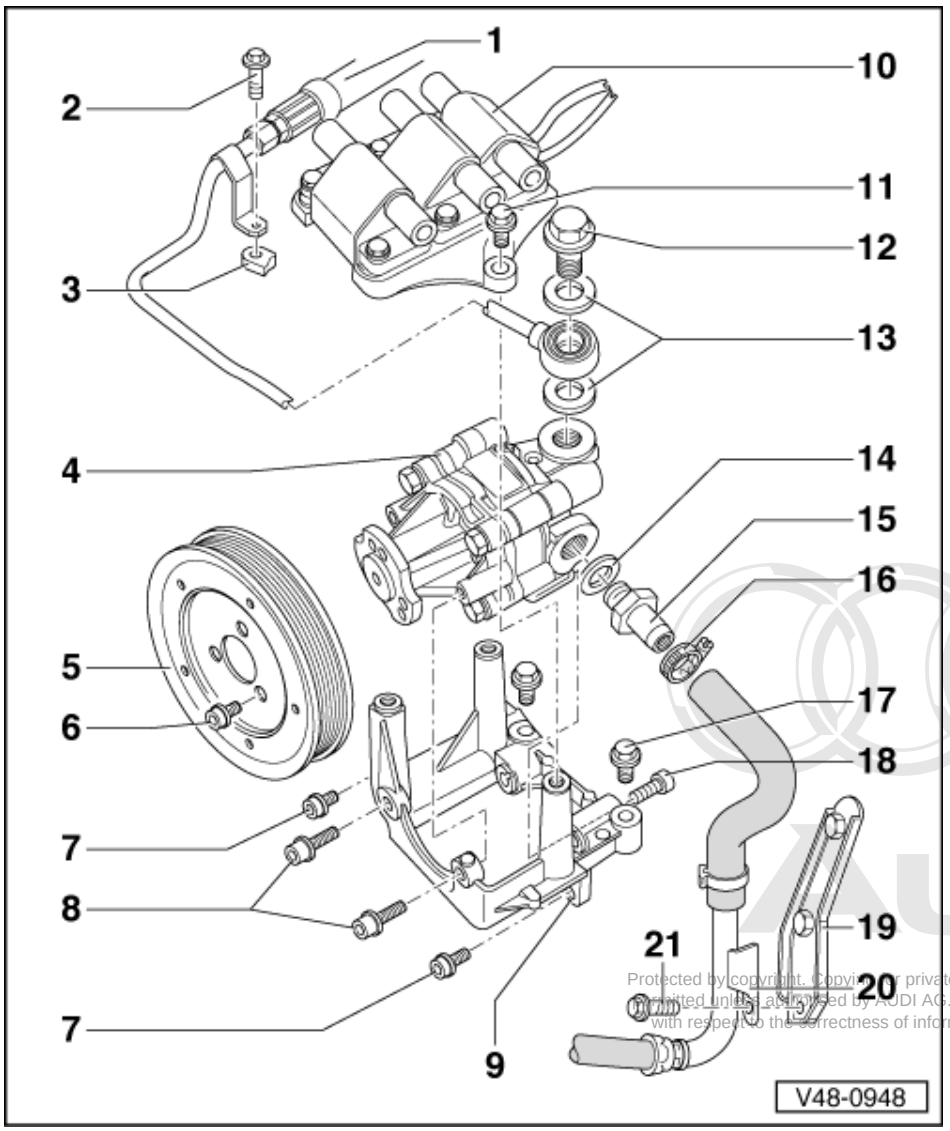
Note:

The V-belt is properly tensioned if it can be deflected approx. 10 mm with thumb between two pulleys

- Tighten bolt -2-
- Tighten nut -1-

13 - Removing and installing impeller pump (vehicles with 6-cylinder engine)

13.1 - Removing and installing impeller pump (vehicles with 6-cylinder engine)



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

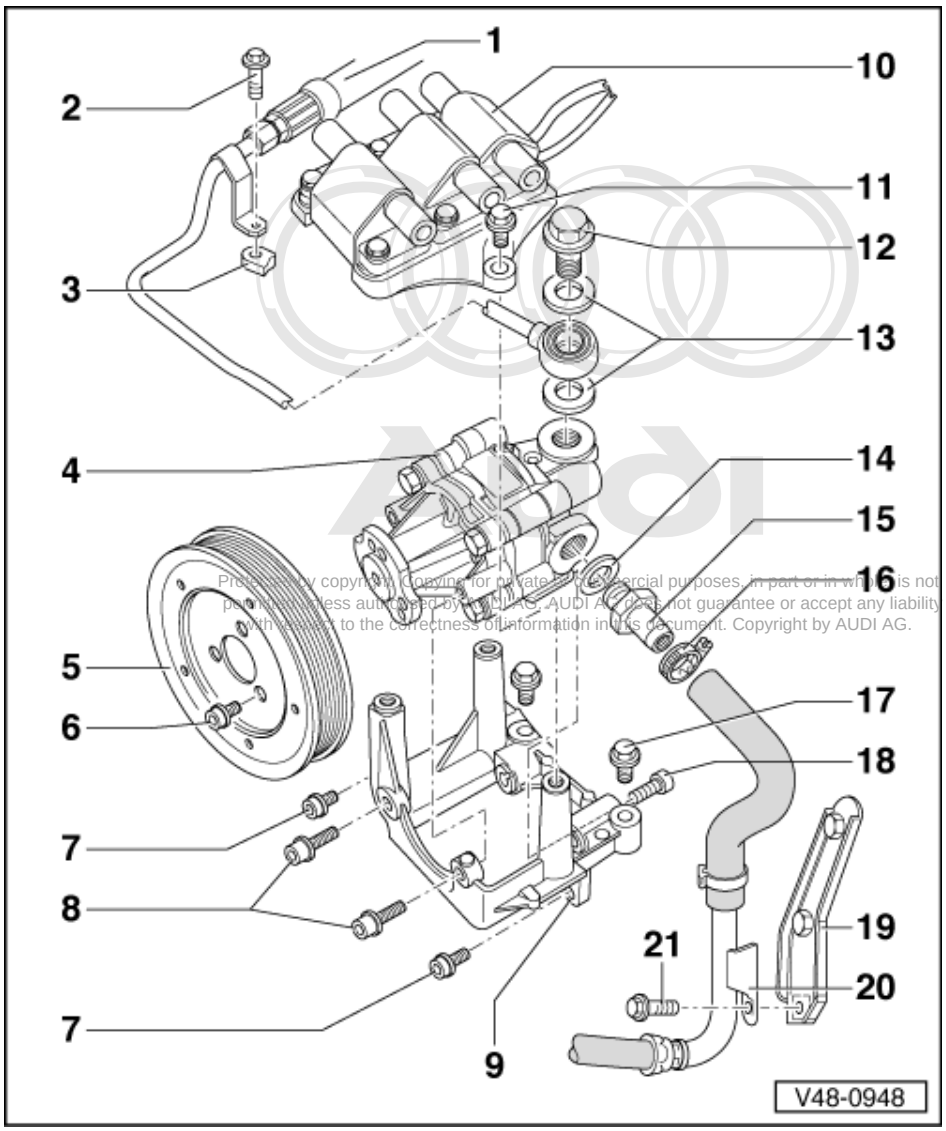
Vane pump uses hydraulic fluid, part no. G 002 000

Sequence of operations for attaching vane pump to holder:

- Screw in cheese head bolts - 8 - and - 18 - loosely; then tighten cheese head bolts - 8 - then tighten cheese head bolts - 18 - to specified torque

Sequence of operations for attaching vane pump to holder on engine block:

- Screw in cheese head bolts with washer - 7 - and bolts with washer - 17 - loosely; then tighten cheese head bolts with washers - 7 - to specified torque before employing the same procedure for bolts with washer - 17 -.



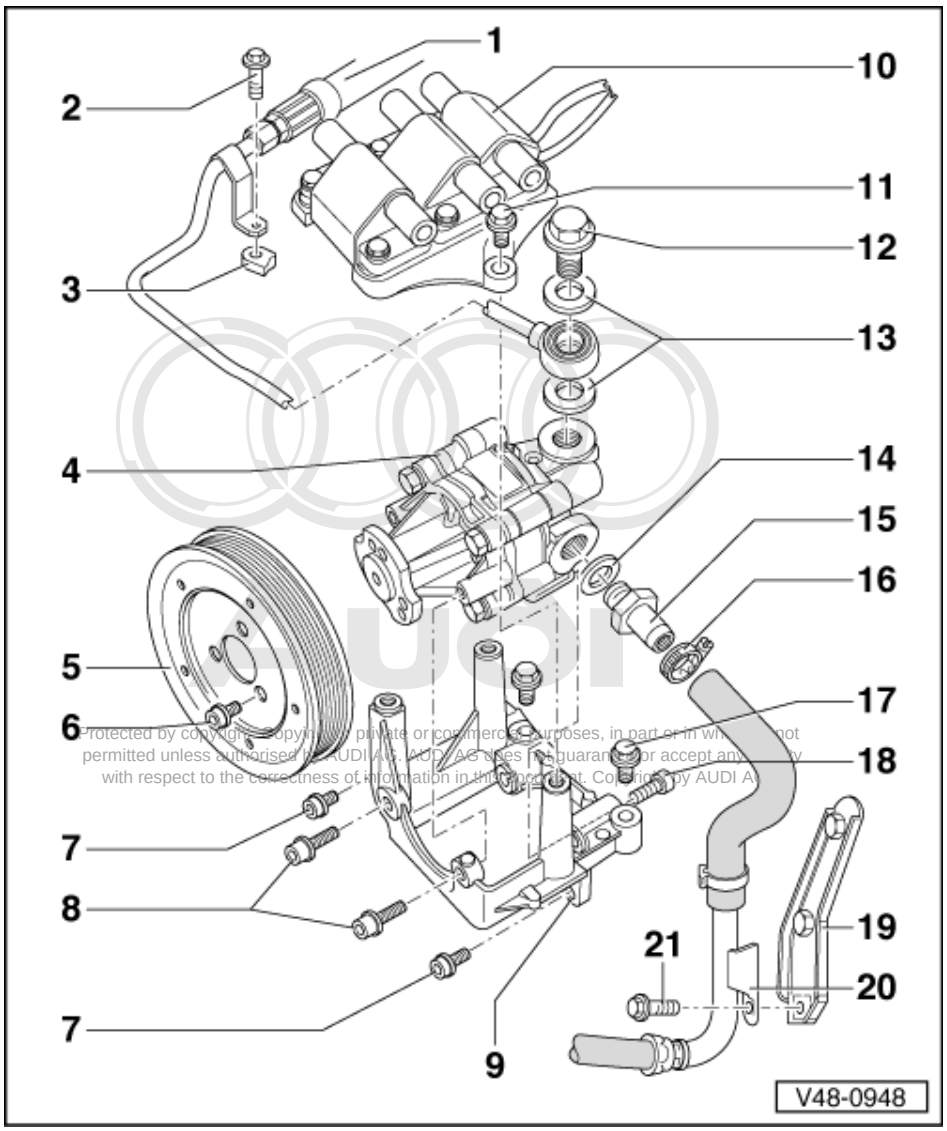
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 **Expansion hose with pressure pipe**
- Unscrew from pipe to check pump pressure
- Remove servo unit to replace
- Note that there are different versions for LHD and RHD models.

2 **Combi bolt, 10 Nm**

3 **Connecting piece with hole at intake manifold**
- For attaching pipe

4 **Vane pump**
- Checking supply pressure => Page 303
- Servicing is not envisaged
- Before unscrewing suction hose pinch it off with hose clamp -3094-



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG

- Before installation fill vane pump with hydraulic fluid on suction end and turn by hand until fluid emerges from discharge end

5 Pulley

- Unscrew to remove vane pump; this involves slackening ribbed belt => Fig 1 and 2

6 Cheese-head bolt, 25 Nm

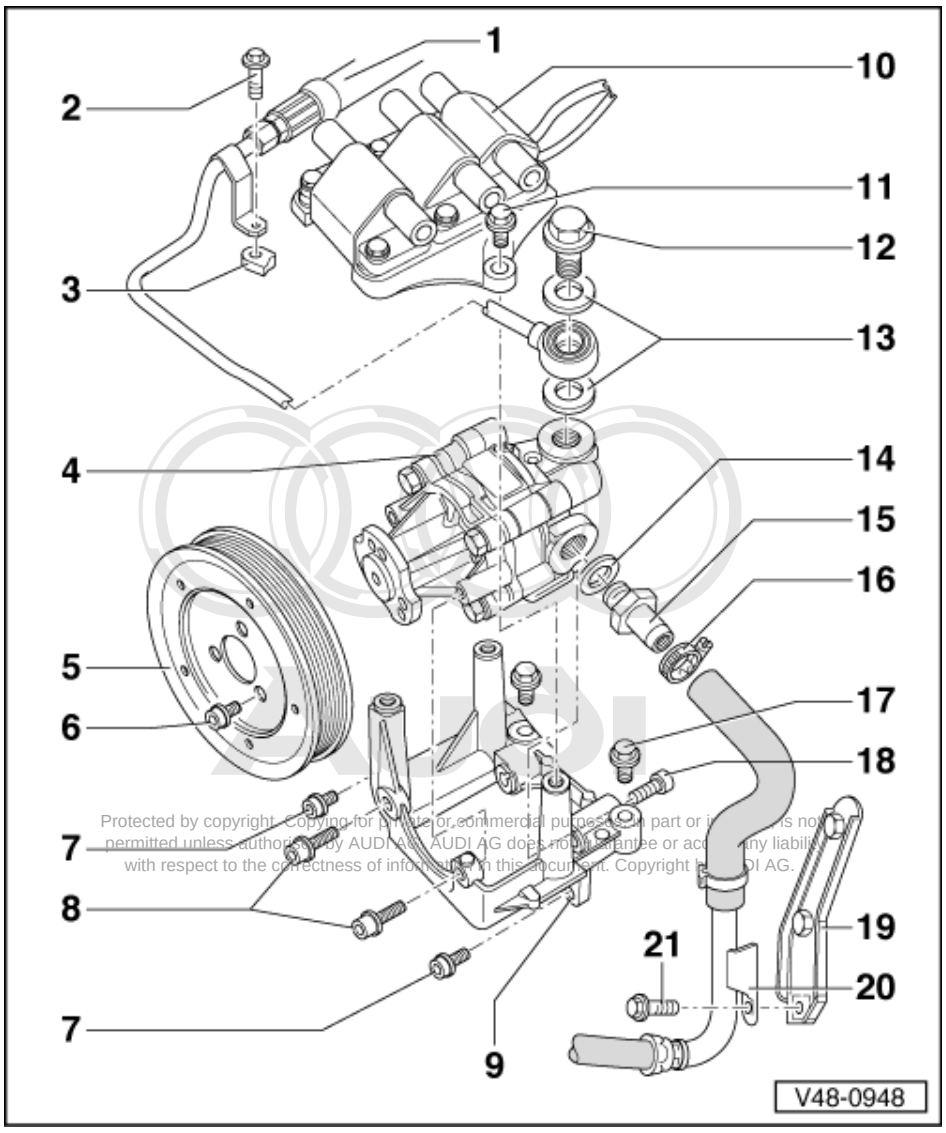
- Loosen bolts with belt tensioned

7 Combi screw, 25 Nm

8 Cheese-head bolt, 25 Nm

9 Holder for vane pump

- To remove vane pump screw out bolts with washers -Item 7 - and -Item 17 - so that vane pump with holder can be taken out



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Slip bushing on left in direction of travel discontinued together with cheese head bolt, Item 18

10 Ignition coils with bracket

- Pull ignition cables out of ignition coils and unscrew from bracket for vane pump

11 Hexagon bolt, 25 Nm

- Screw out and remove holder with ignition coils

12 Banjo bolt, 40 Nm

13 Oil seal

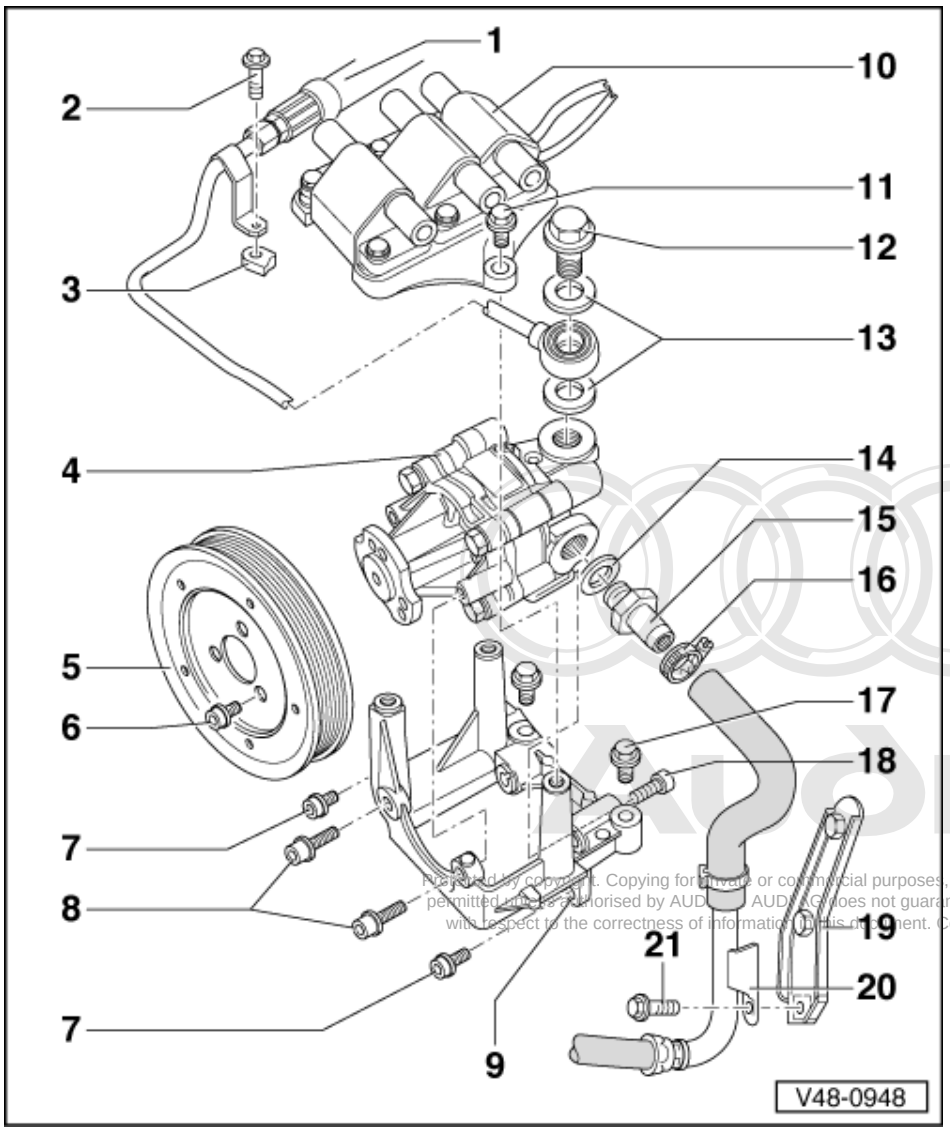
- Always replace

14 Oil seal

- Always replace
- Attach to threaded bolt

15 Threaded connection, 50 Nm

- Screw into vane pump



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

16 Clamp

- Tension using V.A.G 1275
- Can also be replaced by screw type hose clamp

17 Combi screw, 25 Nm

18 Cheese-head bolt, 25 Nm

- Discontinued on left in direction of travel together with slip bushing

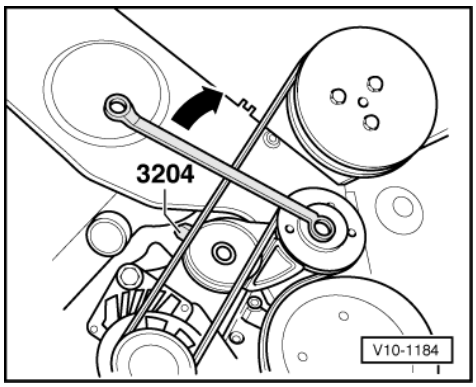
19 Bracket

- Attached to cylinder head

20 Suction hose

- Attached to holder -Item 19 -

21 Bolt with washer, 10 Nm



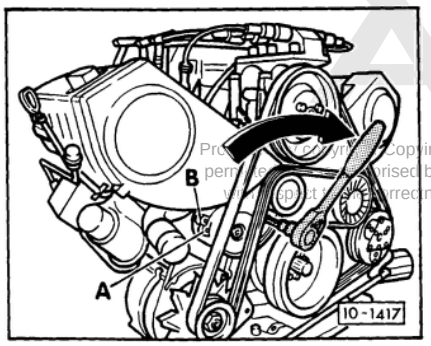
-> Fig.1 Slackening off ribbed belt

- Unscrew ignition coils with holder, remove top belt guard
- Press box wrench in arrow direction and insert setting mandrel -3204-

Note:

Mark direction of ribbed belt. The belt may break if it runs in opposite direction when refitted.

- Remove ribbed belt from belt pulley.



Audi
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

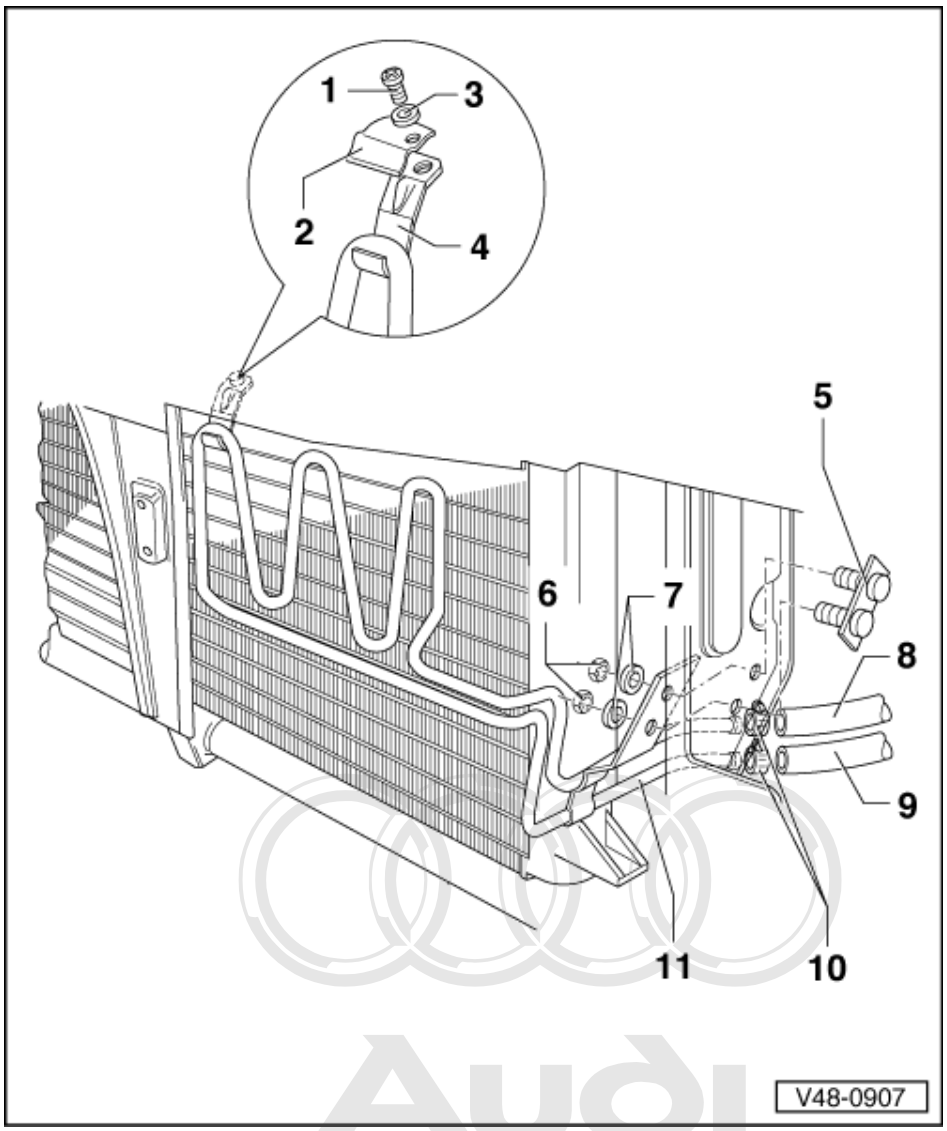
-> Fig.2 Slackening off ribbed belt

New version

- Unscrew ignition coils with holder, remove top belt guard
- Press ratchet with Allen wrench in arrow direction and insert setting mandrel -3204 -through holes -A- and -B-
- Pay attention to note above
- Remove ribbed belt from belt pulley.

14 - Removing and installing hydraulic fluid cooler for vane pump

14.1 - Removing and installing hydraulic fluid cooler for vane pump

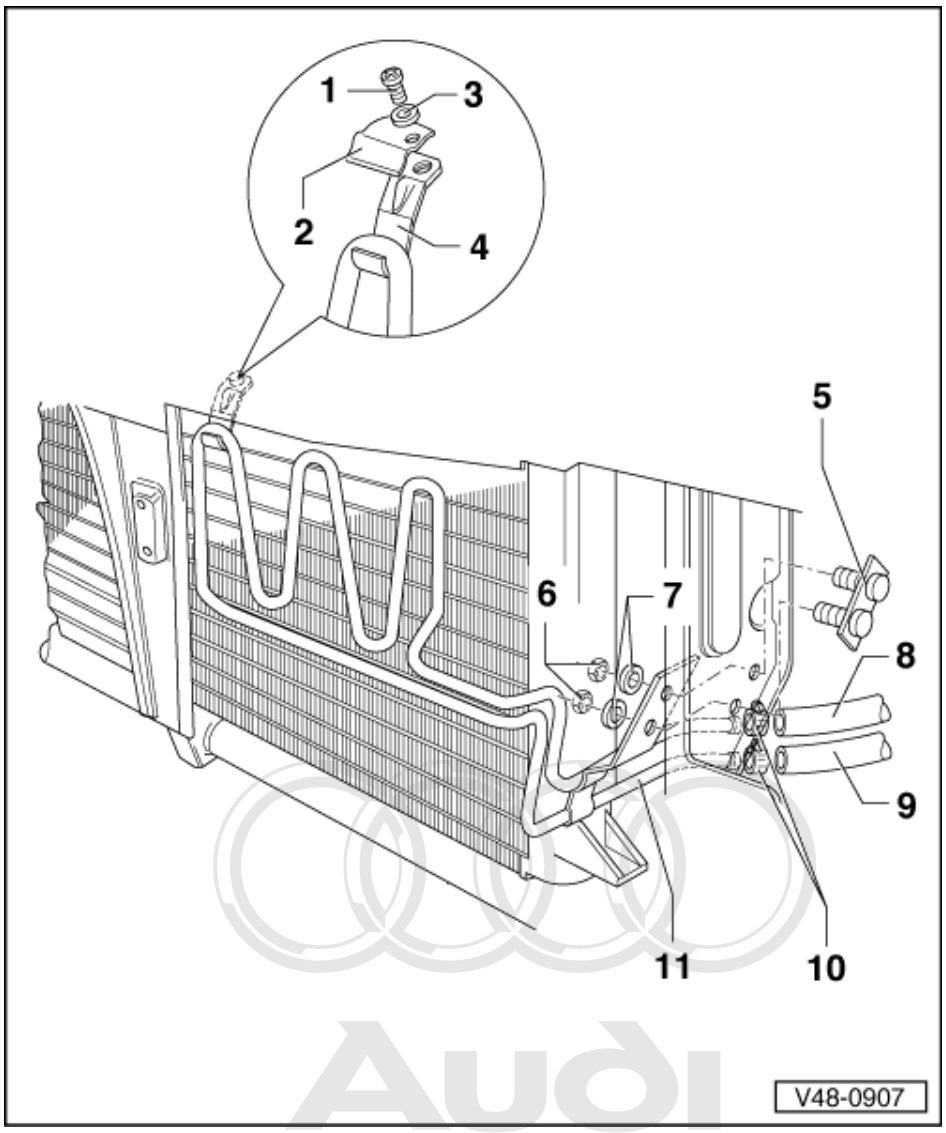


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

14.2 - Vehicles with 4-cylinder and 4-valve engine as well as vehicles with 6-cylinder engine

1 Oval-head bolt, 10 Nm
2 Lock support
3 Shim
4 Bracket
5 Tab
6 Self-locking nut 10 Nm
- ◆ Always replace

7 Shim



8 Return hose

- Rotary valve housing - oil cooler

9 Return hose

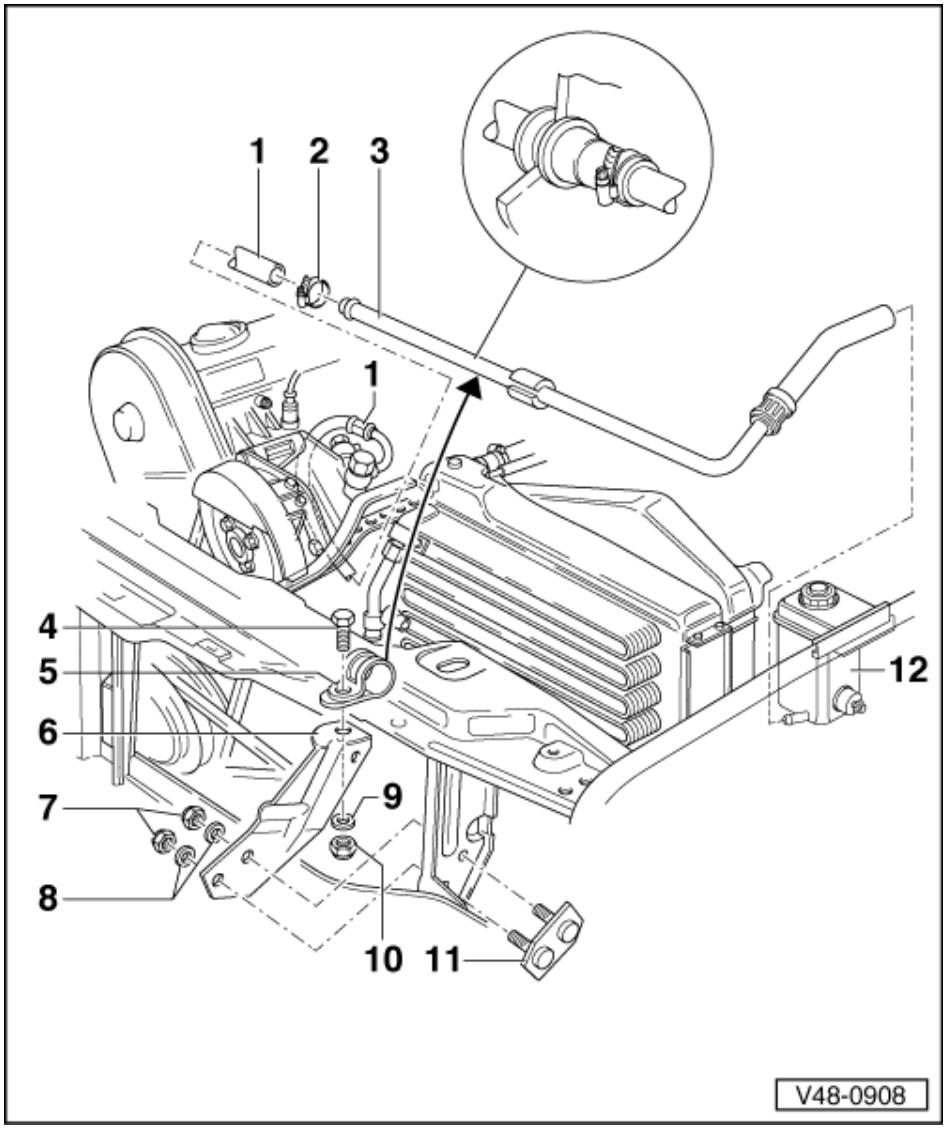
- Oil cooler - reservoir

10 Clamp

11 Hydraulic fluid cooler

Provided by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

14.3 - Vehicles with 5-cylinder engine



1 Suction hose
- Route wiring harness so that it cannot be abraded

2 Clamp

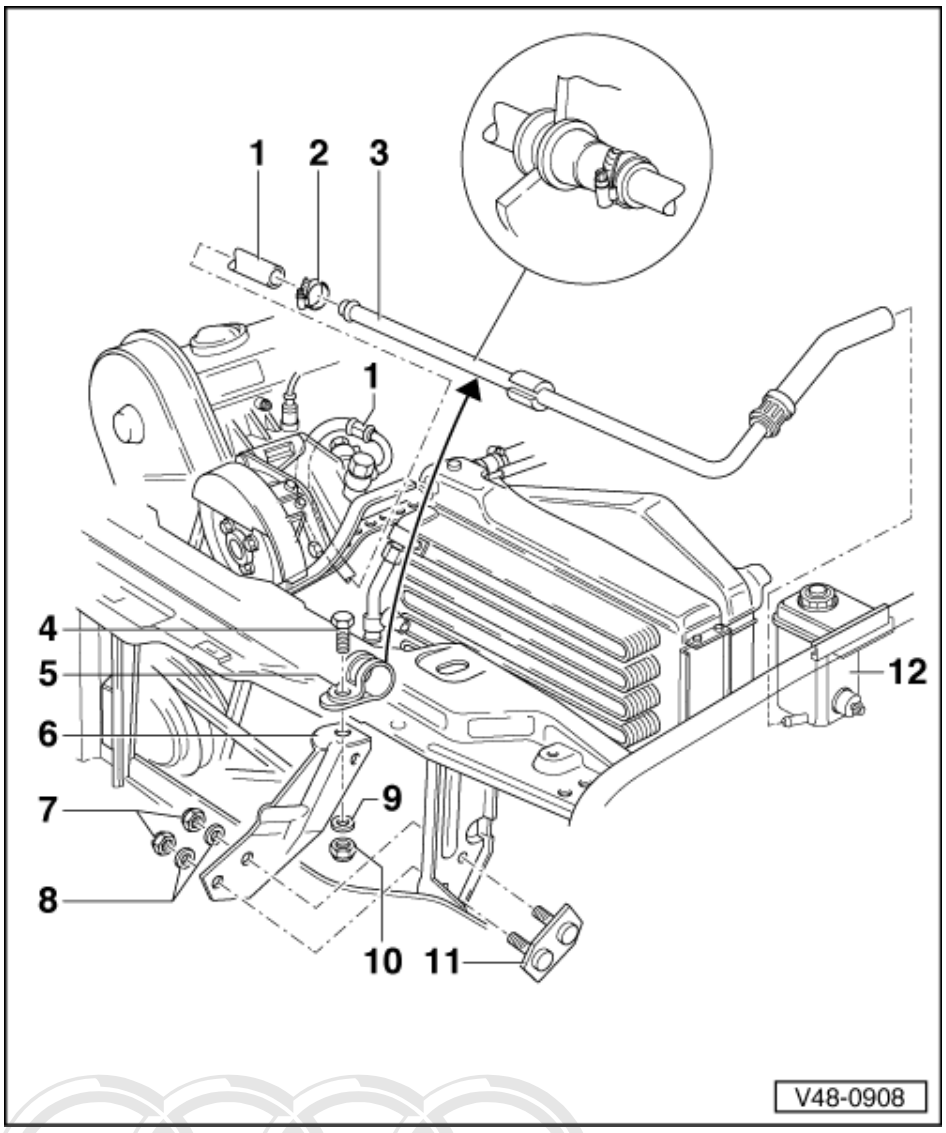
3 Hydraulic fluid cooler
- Vehicles with 4 valve engine feature an oil cooler with cooling fins

4 Hexagon bolt

5 Pipe clamp

6 Bracket
- Screw to lock bearer at top and lock carrier plate at bottom

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



7 Self-locking nut 10 Nm
- Always replace

8 Shim

9 Shim

10 Self-locking nut 10 Nm
- Always replace

11 Tab

12 Expansion tank
- Checking hydraulic fluid level:
- Run engine at idle for approx. 2 minutes with front wheels set to straight ahead position
- Switch off engine and immediately check hydraulic fluid level, paying attention to mark on reservoir/ dipstick; top up to "MAX" mark, if necessary

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

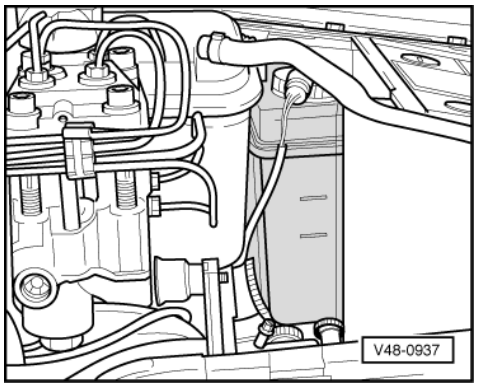
14.4 - Topping up hydraulic fluid - bleeding steering system

Note:

- After performing assembly work and if there is a lack of hydraulic fluid in the reservoir always check steering system for leakage => Page 336 .
- Do not re-use hydraulic fluid which has been drained off.

- After removing and installing steering components or renewing hydraulic fluid it must be ensured on starting the engine that the reservoir is not sucked completely empty.

When the engine is running the steering system is automatically bled after a time



- -> Top up hydraulic fluid as far as "MAX" mark on dipstick.
- Run engine at idle for approx. 2 minutes with front wheels set to straight ahead position
- Observe fluid level in reservoir during this process; as soon as there are no further ascending air bubbles in the reservoir switch off engine and immediately top up hydraulic fluid paying attention to mark on reservoir/ dipstick

14.5 - Checking steering system for leaks

=> Fault finding binder; Running gear

With engine idling

Warning! If there is a lack of hydraulic fluid in the reservoir always check steering system for leaks

- Turn steering wheel to both stops and hold there briefly (max 20 seconds). This builds up the maximum possible pressure.
- Perform the following visual inspections in this position:

Note:

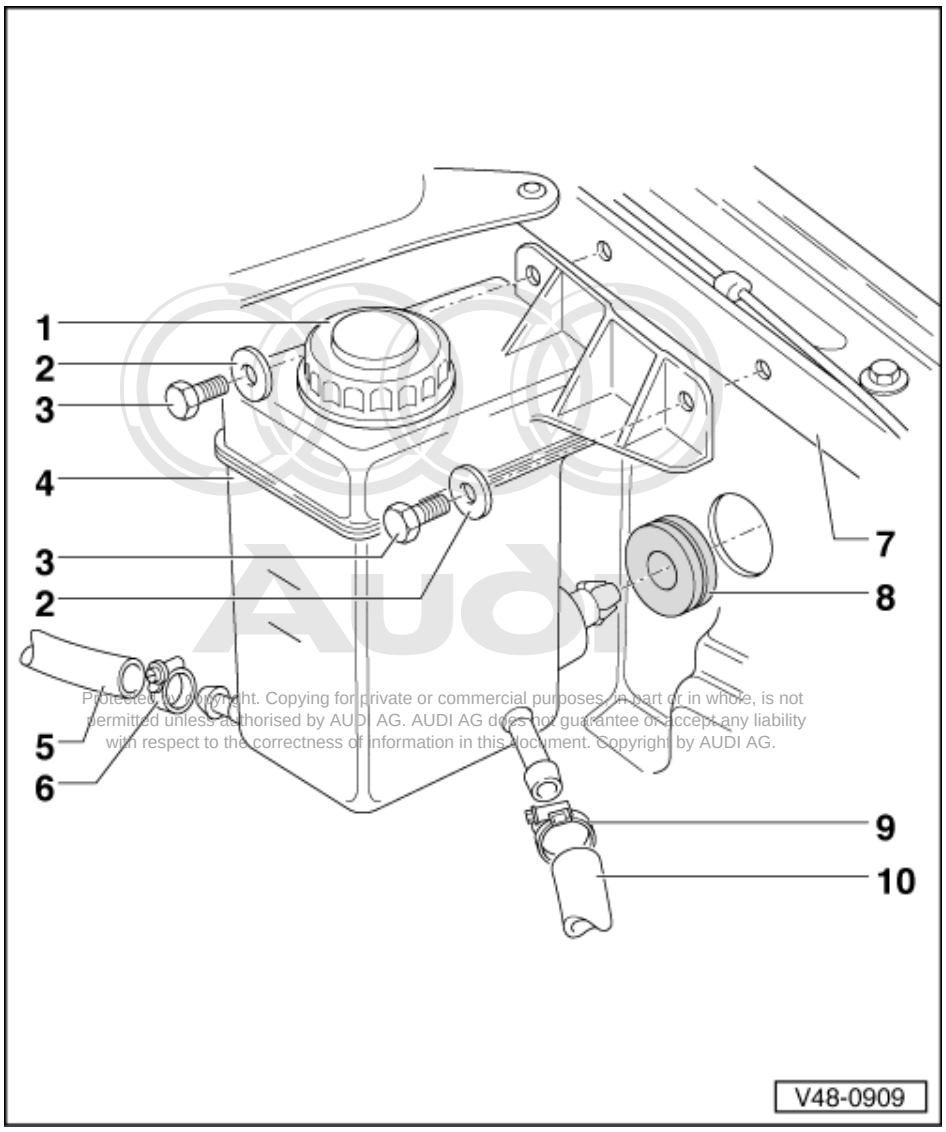
Visual inspection -1- must be performed in both positions.

1 - Rack seal (for this purpose loosen tie band of gaiter and push gaiter aside)
2 - Rotary valve housing
3 - Vane pump
4 - Wiring connections

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

15 - Removing and installing fluid reservoir

15.1 - Removing and installing fluid reservoir



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

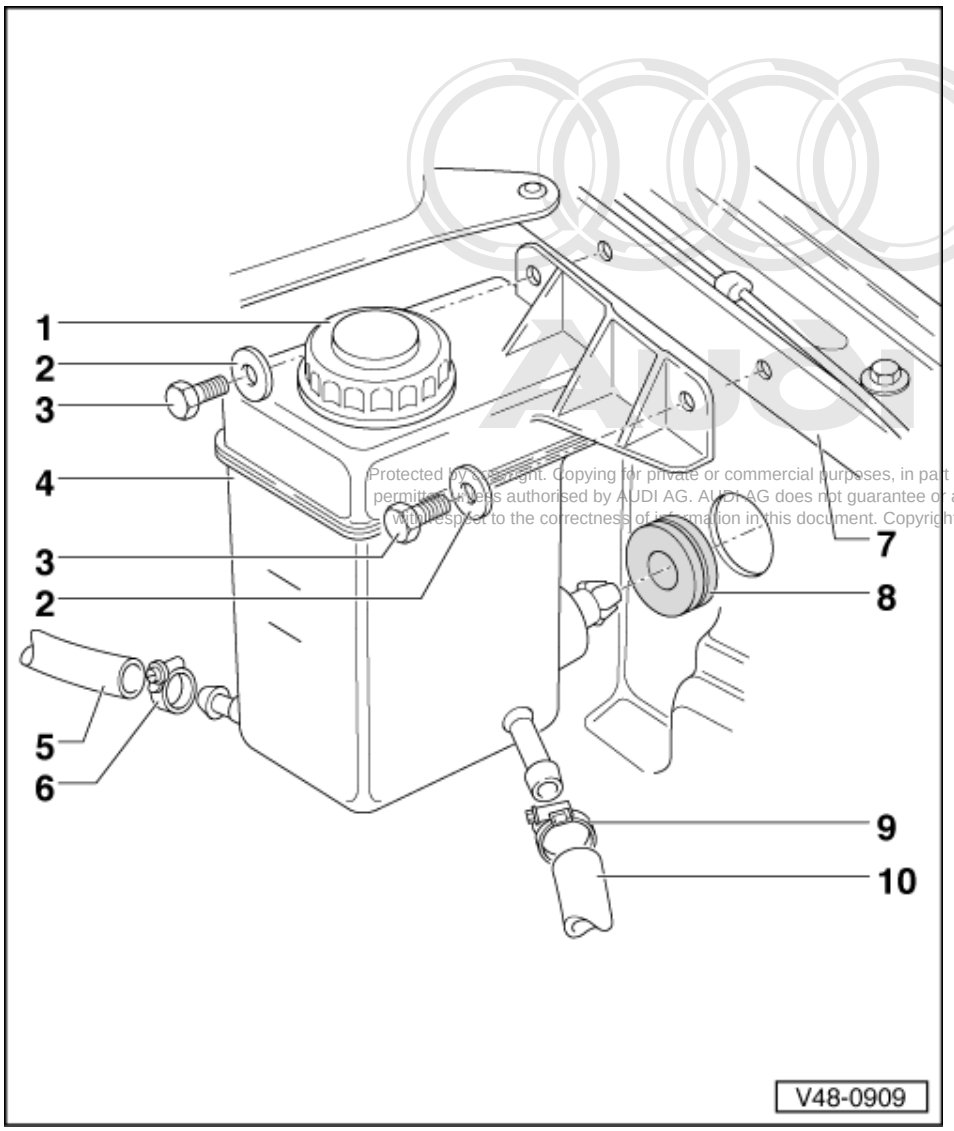
The power assisted steering uses hydraulic oil, part no. G 002 000

1 **Cap with dipstick and gasket**
- Tighten firmly by hand
- Pay attention to "MAX" and "MIN" marks on dipstick

2 **Shim**

3 **Hexagon bolt, 10 Nm**

4 **Expansion tank**
- Capacity approx. 0.85 l
- If necessary, clean strainer with white spirit



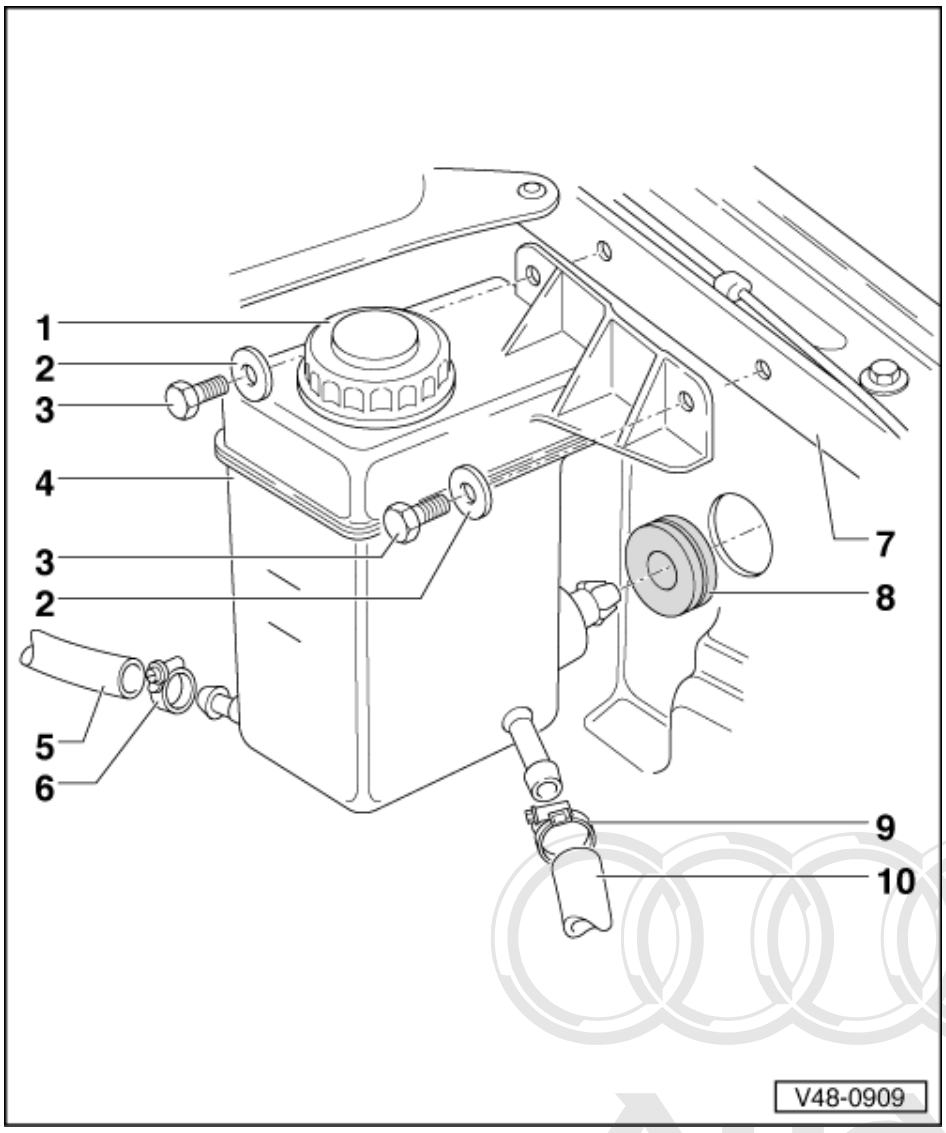
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Different versions on vehicles with 4- and 5-cylinder engine and on vehicles with 4-cylinder, 4 valve and 6-cylinder engines
- Checking hydraulic fluid level:

- Run engine at idle for approx. 2 minutes with front wheels set to straight ahead position
- Switch off engine and immediately check hydraulic fluid level, paying attention to mark on reservoir/ dipstick; top up to "MAX" mark, if necessary

5 Return hose

- Note different versions depending on engine
- Remove servo unit to replace on vehicles with 6-cylinder engine



6 Clamp
7 Wheel housing
8 Grommet
- Insert into wheel housing

9 Clamp
10 Suction hose
- Note different versions depending on engine

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.