

Audi A4 1995 ➤

Brake System

Edition 11.1997



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Groups

Audi A4 1995 ➤

Brake System

Repair Group

00 - Technical data

45 - Anti-locking brake system

46 - Brakes, Brake mechanics

47 - Brakes, Brake hydraulics



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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.

Contents

00 - Technical data	1
1 Technical data	1
1.1 Technical data	1
1.2 Brakes	1
2 Brake test	2
2.1 Brake test	2
2.2 General information	2
2.3 Vehicles with front-wheel drive	2
2.4 Vehicles with four-wheel drive	2
45 - Anti-locking brake system	3
1 General information on the anti-lock brake system	3
1.1 General information on the anti-lock brake system	3
1.2 Notes for repair work on the ABS	3
1.3 High- and low pressure test	4
2 Component overview for ABS/ESP system	5
2.1 Component overview for ABS/ESP system	5
3 Anti-lock brake system (ABS) Bosch 5.0	11
3.1 Anti-lock brake system (ABS) Bosch 5.0	11
3.2 Hydraulic unit and brake pipes	12
3.3 Removing and installing bracket for hydraulic unit	20
3.4 Removing and installing control unit for ABS/EDL or TCS	21
4 Anti-lock brake system (ABS) Bosch 5.3	21
4.1 Anti-lock brake system (ABS) Bosch 5.3	21
4.2 Hydraulic unit and brake pipes	23
4.3 Removing and installing hydraulic control unit	24
5 Servicing ESP hydraulic unit	26
5.1 Servicing ESP hydraulic unit	26
5.2 Charging pump with 3 connections	27
5.3 Charging pump with 2 connections	28
5.4 Removing and installing ESP (electronic stability program) hydraulic pump	29
5.5 Basic setting	32
6 Removing and installing components of the ABS/ESP system	33
6.1 Removing and installing components of the ABS/ESP system	33
6.2 Removing and installing brake light switch (F)	33
6.3 Removing and installing steering angle sensor -G85	36
6.4 Removing and installing ESP control unit -J104	38
6.5 Removing and installing lateral acceleration sender -G200 and yaw rate sender -G202	39
6.6 Handbrake switch	41
7 Removing and installing components of ABS system on front axle	42
7.1 Removing and installing components of ABS system on front axle	42
8 Removing and installing components of ABS system on rear axle, FWD models	45
8.1 Removing and installing components of ABS system on rear axle, FWD models	45
9 Removing and installing components of ABS system on rear axle, 4WD models	50
9.1 Removing and installing components of ABS system on rear axle, 4WD models	50
46 - Brakes, Brake mechanics	54
1 Front brakes FN3	54
1.1 Front brakes FN3	54
1.2 Servicing front brakes	54
1.3 Removing and installing brake pads	60
2 Front brakes C54	63



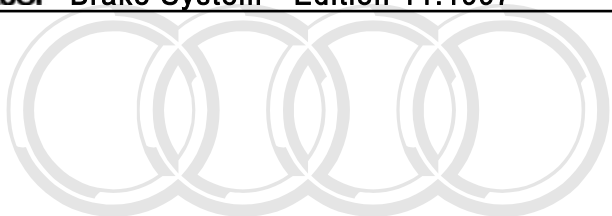
2.1	Front brakes C54	63
2.2	Servicing front brakes	64
2.3	Removing and installing brake pads	67
3	Front brake FN2	70
3.1	Front brake FN2	70
3.2	Servicing front brakes	70
3.3	Removing and installing brake pads	76
4	Front brake HP-2 double-piston brake/steel	81
4.1	Front brake HP-2 double-piston brake/steel	81
4.2	Servicing front brakes	81
4.3	Removing and installing brake pads	86
5	Front brake HP-2 double-piston brake / aluminium	89
5.1	Front brake HP-2 double-piston brake / aluminium	89
5.2	Servicing front brakes	89
5.3	Removing and installing brake pads	92
6	Rear brakes C38	96
6.1	Rear brakes C38	96
6.2	Servicing brake caliper	96
6.3	Removing and installing brake pads	99
6.4	Removing and installing brake pads (models with FWD and aluminium brake calipers)	101
7	Rear brakes C43	103
7.1	Rear brakes C43	103
7.2	Servicing brake caliper	103
7.3	Removing and installing brake pads	107
7.4	Basic setting of rear wheel brake	110
8	Removing and installing handbrake cables (FWD models)	111
8.1	Removing and installing handbrake cables (FWD models)	111
9	Removing and installing handbrake cables (4WD models)	114
9.1	Removing and installing handbrake cables (4WD models)	114
10	Removing and installing handbrake lever	117
10.1	Removing and installing handbrake lever	117
10.2	Adjusting handbrake	117
11	Assembly overview: Brake pedal, LHD models	120
11.1	Assembly overview: Brake pedal, LHD models	120
12	Assembly overview: Brake pedal, RHD models	125
12.1	Assembly overview: Brake pedal, RHD models	125
13	Removing and installing mounting bracket for brake pedal	131
13.1	Removing and installing mounting bracket for brake pedal	131
13.2	Adjusting vent valve for cruise control system	134
47 - Brakes, Brake hydraulics		135
1	Pressurised leak test	135
1.1	Pressurised leak test	135
2	Brake caliper FN3	136
2.1	Brake caliper FN3	136
2.2	Servicing brake caliper	136
2.3	Removing and installing piston for front brake caliper	139
3	Brake caliper C54	142
3.1	Brake caliper C54	142
3.2	Servicing brake caliper	142
3.3	Removing and installing piston for front brake caliper	144
4	Brake caliper FN2	147
4.1	Brake caliper FN2	147
4.2	Servicing brake caliper	147

4.3	Removing and installing piston for front brake caliper	150
5	Brake caliper HP-2 double-piston brake caliper/steel	154
5.1	Brake caliper HP-2 double-piston brake caliper/steel	154
5.2	Servicing brake caliper	154
5.3	Removing and installing piston for front brake caliper	157
6	Brake caliper HP-2 double-piston brake caliper/aluminium	159
6.1	Brake caliper HP-2 double-piston brake caliper/aluminium	159
6.2	Servicing brake caliper	160
6.3	Removing and installing piston for front brake caliper	162
7	Servicing rear brake caliper	165
7.1	Servicing rear brake caliper	165
7.2	Servicing brake caliper	165
7.3	Removing and installing rear brake caliper piston	169
7.4	Removing and installing aluminium brake caliper piston	171
8	Bleeding brake system	173
8.1	Bleeding brake system	173
8.2	Changing brake fluid (every 2 years)	174
9	Assembly overview: Servo unit/brake master cylinder	176
9.1	Assembly overview: Servo unit/brake master cylinder	176
10	Removing and installing brake master cylinder	180
10.1	Removing and installing brake master cylinder	180
11	Removing and installing brake servo	181
11.1	Removing and installing brake servo	181
12	Assembly overview: Servo unit/brake master cylinder	184
12.1	Assembly overview: Servo unit/brake master cylinder	184
13	Removing and installing brake master cylinder together with brake servo unit	190
13.1	Removing and installing brake master cylinder together with brake servo unit	190
14	Electric vacuum pump	194
14.1	Electric vacuum pump	194
14.2	Assembly overview	194
14.3	Removing and installing electric vacuum pump	195
14.4	Removing and installing pressure sensor	196
14.5	Removing and installing relay -J569	196
15	Electric vacuum pump	197
15.1	Electric vacuum pump	197
15.2	Description and function	197
15.3	Connecting vehicle diagnostic, testing and information system VAS 5051 or Connect fault reader V.A.G 1551	197
15.4	Selecting functions	198
15.5	Basic setting (perform short trip)	199
15.6	Performing final control diagnosis	200
15.7	Reading measured value block	200
15.8	Fault table	201
16	Brake lines and brake pipes	201
16.1	Brake lines and brake pipes	201
16.2	Routing of lines	201
16.3	Tightening torques	202



Audi A4 1995 ➤

Audi Brake System - Edition 11.1997



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.

00 - Technical data

1 - Technical data

1.1 - Technical data

1.2 - Brakes

Vehicles with front and rear disc brakes

Front brakes

Brake system

Diagonally split dual-circuit brake system
 Bosch 5.3 ABS with electronic brake pressure distribution (EBPD) / ESP

Brake master cylinder	øin mm	23.81	25.4	25.4
Amplification factor (i)		3.85	3.85	7"and 8"= 5.2 10"= 5.0
Brake servo	øin inches	10"	LHD models 10" RHD models 7" and 8"tandem	LHD 7" and 8" RHD 10"
Brake caliper		FN 3	C 54	Double piston
Front brake discs	øin mm	288	280	321
Front brake disc, piston diameter	øin mm	57	54	42.8
Thickness of internally ventilated brake disc	mm	25	22	30
Brake disc wear limit	mm	23	20	28
Thickness of unventilated brake disc	mm	15	13	-
Brake disc wear limit	mm	13	11	-
Brake pad thickness:	mm	14	14	14

Rear brakes

Rear brake calipers		C 38	C 43	C 43
Rear brake caliper, piston diameter	mm	38.1	43	42.8/ 40.8
Brake disc	øin mm	245	256	312
Brake disc thickness	mm	10	22	22
Brake disc wear limit	mm	8	19	20.4
Brake pad thickness	mm	17	17	17
Brake pad wear limit	mm	7	7	7



2 - Brake test

2.1 - Brake test

2.2 - General information

The wheels are driven by the test stand.

Throughout the test the gearbox should be in neutral on manual gearboxes or in position "N" on automatic gearboxes.

Follow the instructions provided by the test stand manufacturer when performing the test.

Note:

The brake control systems are inoperative when the ignition is in the OFF position.

2.3 - Vehicles with front-wheel drive

Perform the brake test on a 1-axle roller type test stand.

The test speed must not exceed 6 km/h, as otherwise the time delay in setting the rollers in motion could cause the brake control systems to intervene (EDS control).

The Audi-approved test stands meet these criteria.

2.4 - Vehicles with four-wheel drive

Test on a 1-axle test stand for 4WD vehicles

During the test the two wheels on an axle are driven in opposite directions so that no drive is transferred to the other axle.

The test speed must not exceed 6 km/h, as otherwise the time delay in setting the rollers in motion could cause the brake control systems to intervene (EDS control).

Important

The Torsen differential will be destroyed if the test speed exceeds 6 km/h.

The Audi-approved test stands meet these criteria.

Test on a 1-axle test stand

The test speed must not exceed 6 km/h, as otherwise the time delay in setting the rollers in motion could cause the brake control systems to intervene (EDS control).

The Audi-approved test stands meet these criteria.

45 - Anti-locking brake system

1 - General information on the anti-lock brake system

1.1 - General information on the anti-lock brake system

1.2 - Notes for repair work on the ABS

Important

The anti-lock brake system is basically maintenance free.

Testing, removing, installing and repair work may only be performed by qualified personnel.

Failure to observe the points described in this Workshop Manual may result in damage to the system and could make the vehicle unsafe.

- ◆ Before carrying out repair work on the anti-lock brake system, determine the cause of the problem with the aid of the self-diagnosis.
- ◆ When installing a new hydraulic control unit, always check its coding.

=> Running Gear Self-Diagnosis; Repair group 01

- ◆ Switch off the ignition before removing and installing components. If the vehicle is equipped with a coded radio, obtain the security code before disconnecting the earthing strap of the battery.
- ◆ Observe the relevant safety precautions and information when handling brake fluid.

=> Special Information; Running Gear No. 21

- ◆ If hydraulic system has to be opened, bleed the braking system after the work is finished (e.g. with V.A.G 1869) => Repair group 47. In addition, a high- and low-pressure test should be carried out on the brake system => Page 4
- ◆ During the concluding road test, ensure that an ABS-controlled brake application is carried out at least once (can be felt from the pulsing of the brake pedal).

=> Running Gear Self-Diagnosis; Repair group 01

- ◆ Absolute cleanliness is required when working on the anti lock brake system, and it is not permitted to use any products which contain mineral oil, such as oil, grease etc.
- ◆ Thoroughly clean all unions and the adjacent areas before undoing them, but do not use aggressive cleaning agents such as brake cleaner, petrol, thinners or similar.
- ◆ Place removed parts on a clean surface and cover.

- ◆ 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 for errors or omissions. The correctness of information in this document. Copyright by AUDI AG.
Carefully cover or seal open components if repairs cannot be carried out immediately. (Use plugs, repair set H0 698 311 A)
- ◆ Only use lint-free cloths.
- ◆ Do not remove replacement parts from their wrapping until you are ready to install them.
- ◆ Only use genuine parts in their original packaging.
- ◆ When the system is open do not work with compressed air and do not move the vehicle.
- ◆ Ensure that no brake fluid enters plug connectors.
- ◆ When carrying out spray painting work, the electronic control unit may be exposed for short periods to a maximum temperature of 95°C and for longer periods (about 2 hours) to a maximum temperature of 85°C.
- ◆ Before carrying out welding work with electric welding equipment

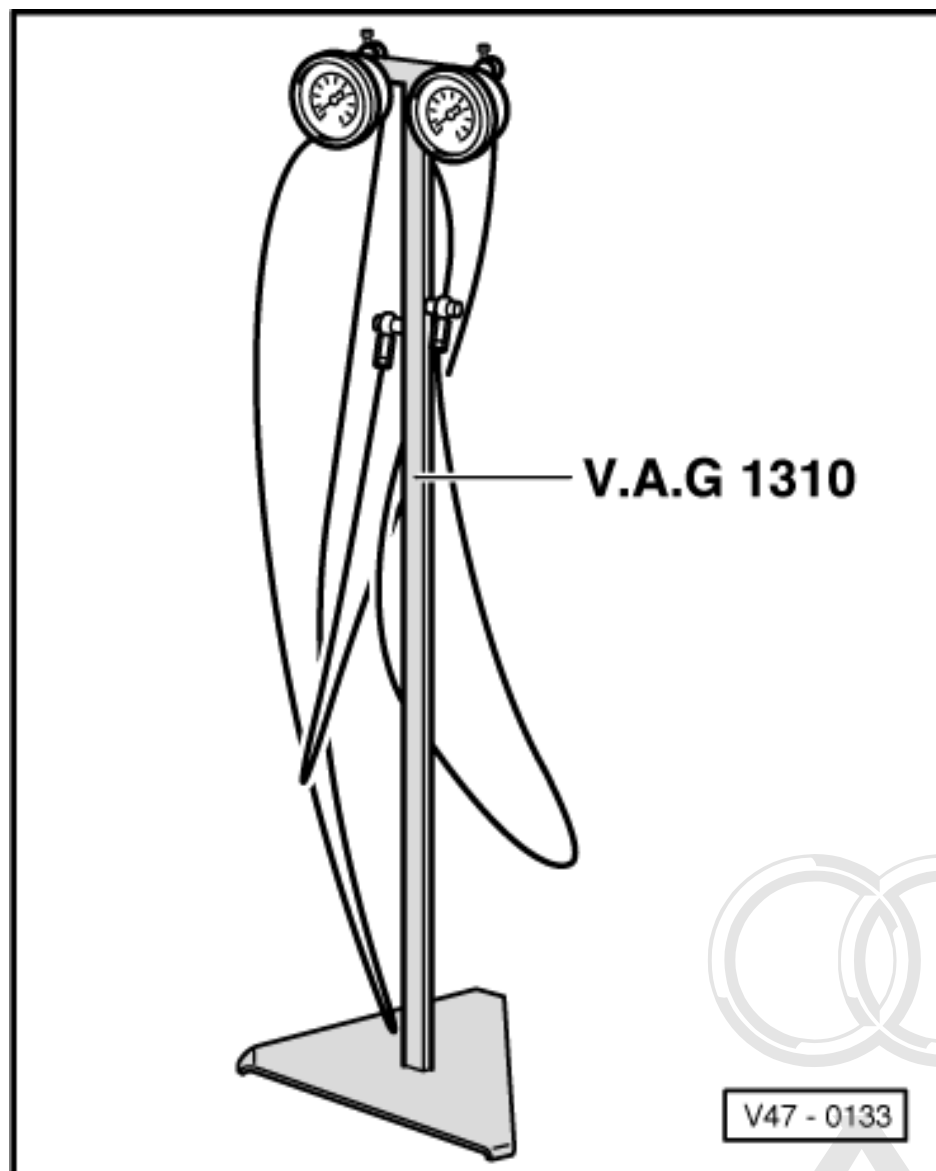
=> General Notes; General Body Assembly; Safety precautions

1.3 - High- and low pressure test

Before you begin:

Make sure that the brake system (master brake cylinder, brake hoses, brake pipes and brake calipers) works properly and is free of leaks.

High pressure test:



- Remove bleeder screw at one of the front brake calipers. Connect pressure gauge -V.A.G 1310- or V.A.G 1310A 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 bar during the test period of 45 seconds. Replace hydraulic unit if drop in pressure exceeds the above figure.

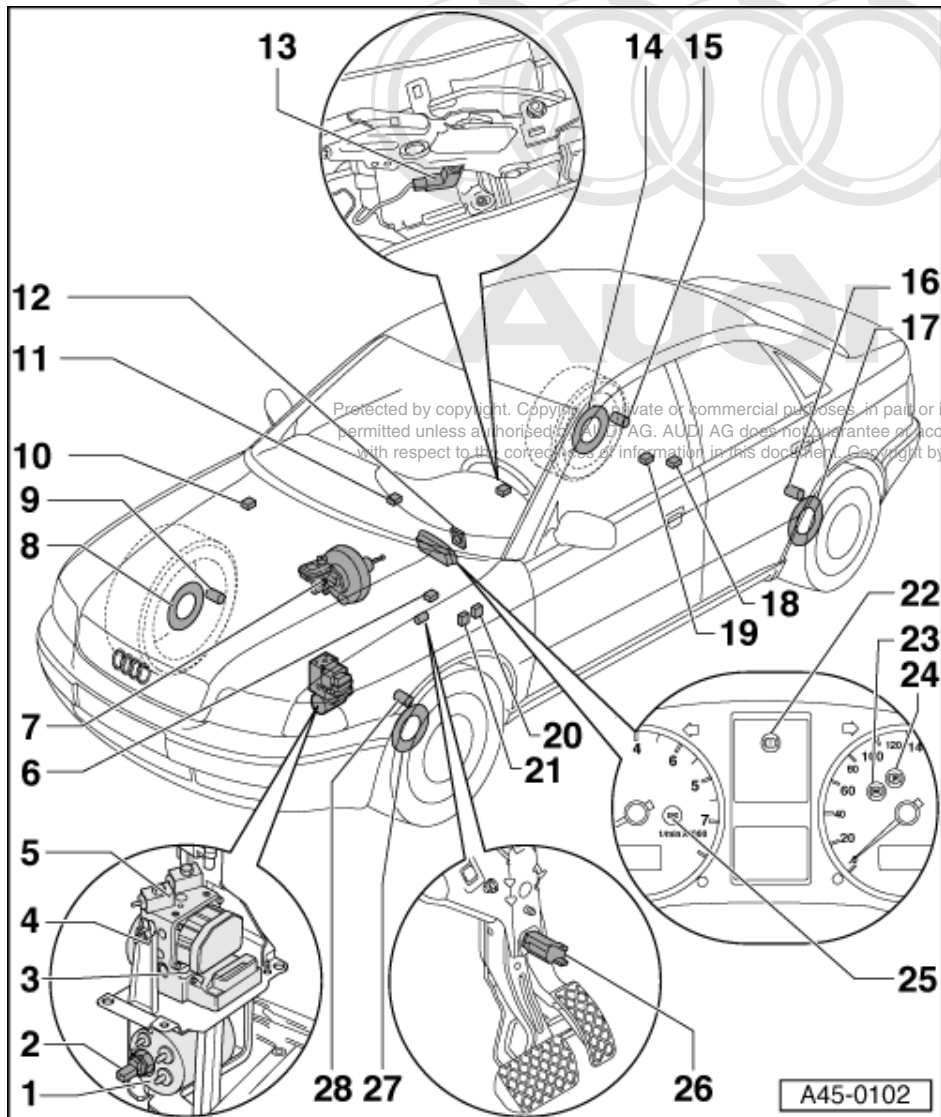
Low pressure test:

- Move the brake pedal depressor back until the pressure gauge indicates a pressure of 6 bar.
- The pressure must not drop by more than 1 bar during the test duration of 3 minutes.

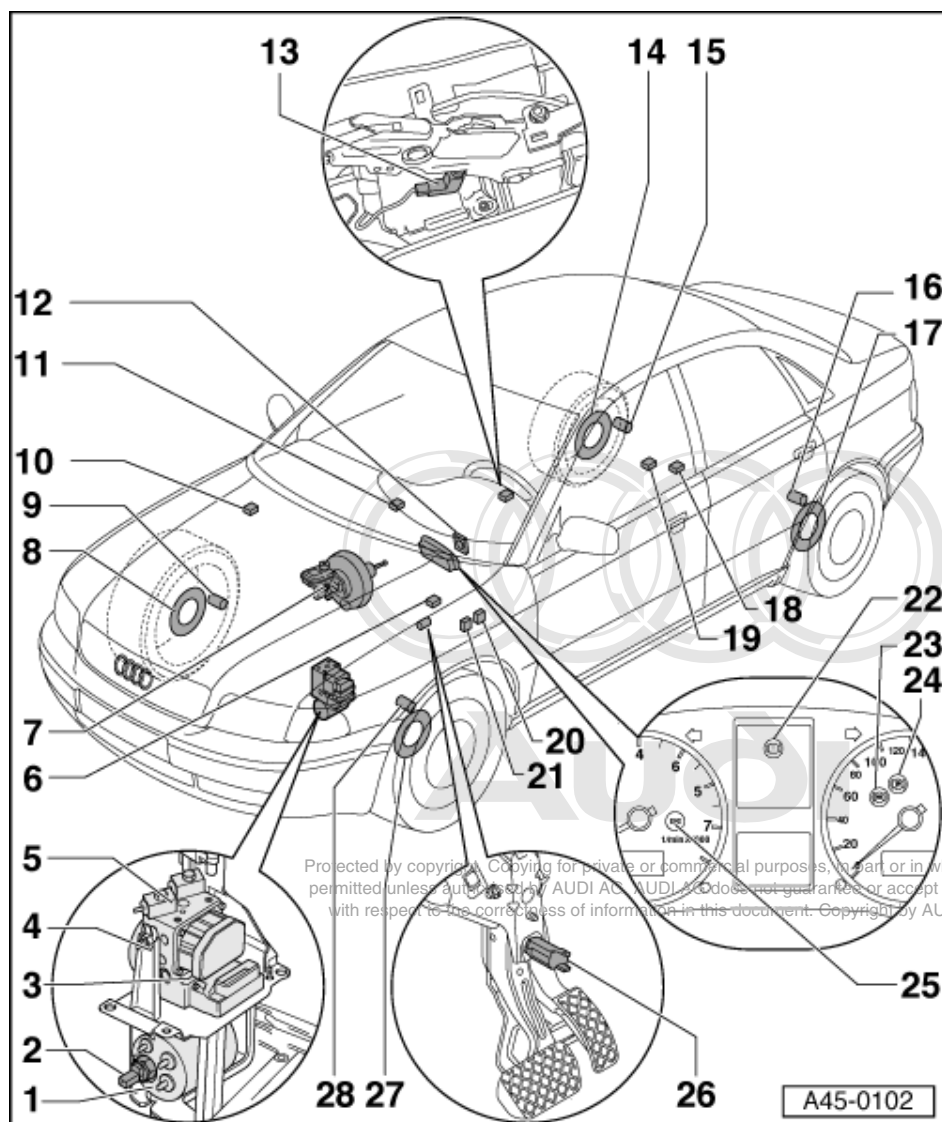
Replace hydraulic unit if drop in pressure exceeds the above figure.

2 - Component overview for ABS/ESP system

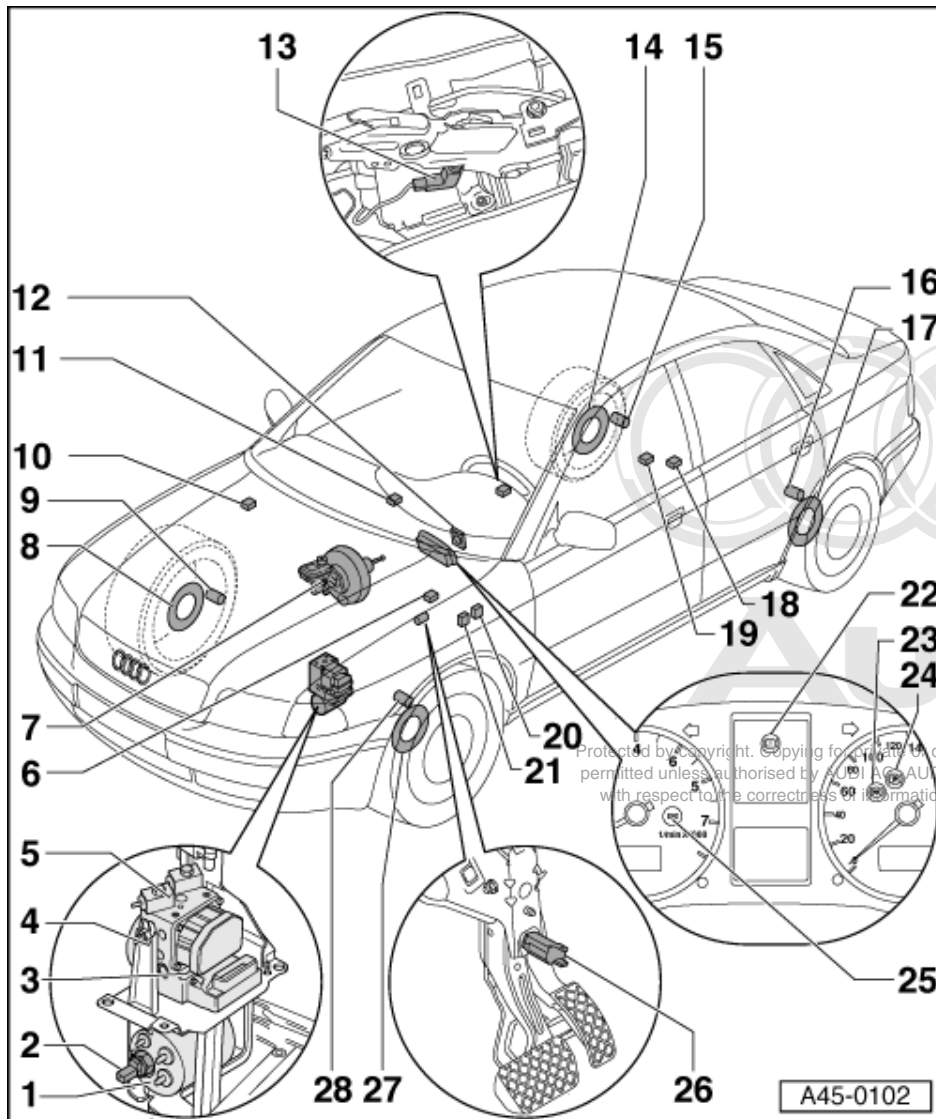
2.1 - Component overview for ABS/ESP system



- 1 Electronic stability program hydraulic pump V156 only with ESP
 - ♦ Removing and installing=>Page 29
- 2 Brake pressure sender G201 in ESP pump (only with ESP)
- 3 Return pump relay J105 for Bosch 5.3
- 4 Solenoid valve relay J106 for Bosch 5.3
- 5 Hydraulic control unit -N55 with control unit -J104
 - ♦ The hydraulic pump -V64, the hydraulic unit -N55 and the control unit -J104 (for Bosch 5.3 only) form the hydraulic control unit.
- 6 Control unit J104 (only for ABS 5.0)
 - ♦ Fitting location: Driver's footwell



- 7 Warning contact for brake fluid level F34
- 8 Rotor for speed sensor, front right
 - ♦ Checking => Page 48
- 9 Front right speed sensor -G45
 - ♦ Removing and installing=>Page 44
- 10 Control unit J104 (with ESP)
 - ♦ Fitting location: passenger's footwell
- 11 Switch for TCS/ESP E132
 - ♦ Fitting location: on the centre console



12 Steering angle sender G85 for ESP

- ♦ Fitting location: Installed on the steering column
- ♦ Removing and installing=>Page **36**

=> Running Gear Self-Diagnosis ESP; Repair group 01;

13 Handbrake warning switch F9

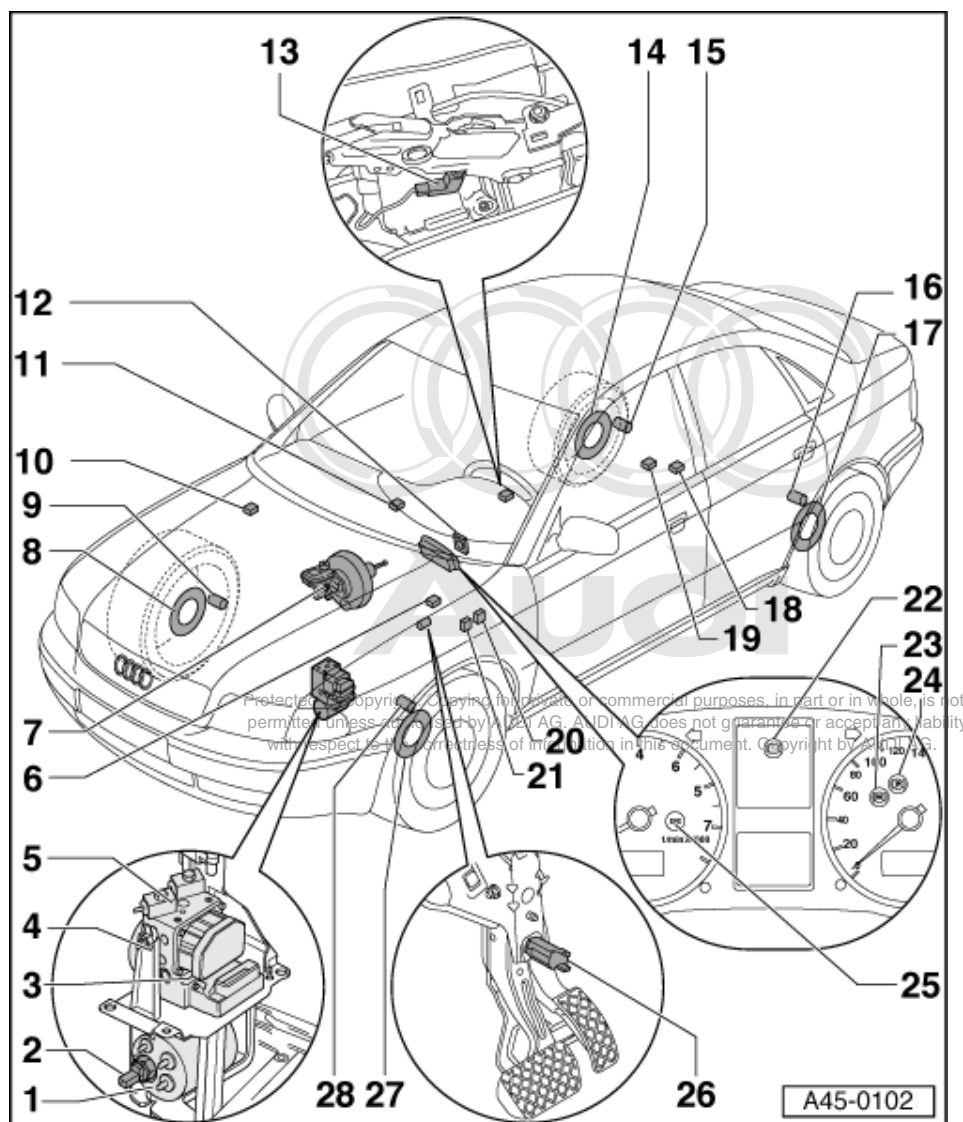
- ♦ Fitting location: on the handbrake lever assembly

14 Rotor for speed sensor, rear right

- ♦ Checking =>
FWD Page **53**

15 Rear right speed sensor -G44

- ♦ Removing and installing =>
FWD Page **52**



16 Rear left speed sensor -G46

- ♦ Removing and installing => FWD Page 52

17 Rotor for speed sensor, rear left

- ♦ Checking => FWD Page 53

18 Lateral acceleration sender G200

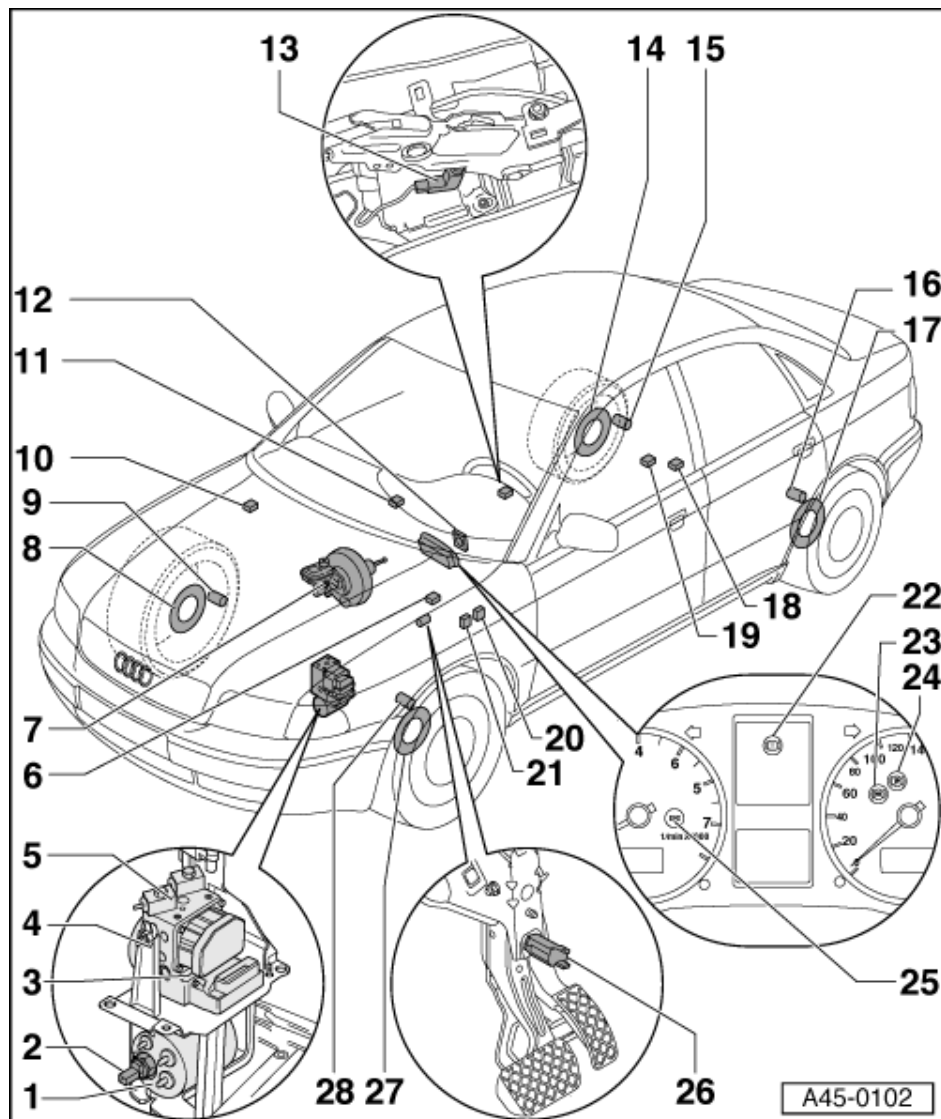
- ♦ New design in a housing together with G202
- ♦ Removing and installing=>Page 39

19 Yaw rate sender G202

- ♦ Removing and installing=>Page 39

20 Return pump relay J105 for Bosch 5.3 only

- ♦ Fitting location: on fuse box



21 Solenoid valve relay J106 for 5.3

22 Brake warning symbol -K118

- ♦ Fitting location: in the dash panel insert in the driver information system

23 ABS warning lamp -K47

- ♦ Fitting location: in dash panel insert

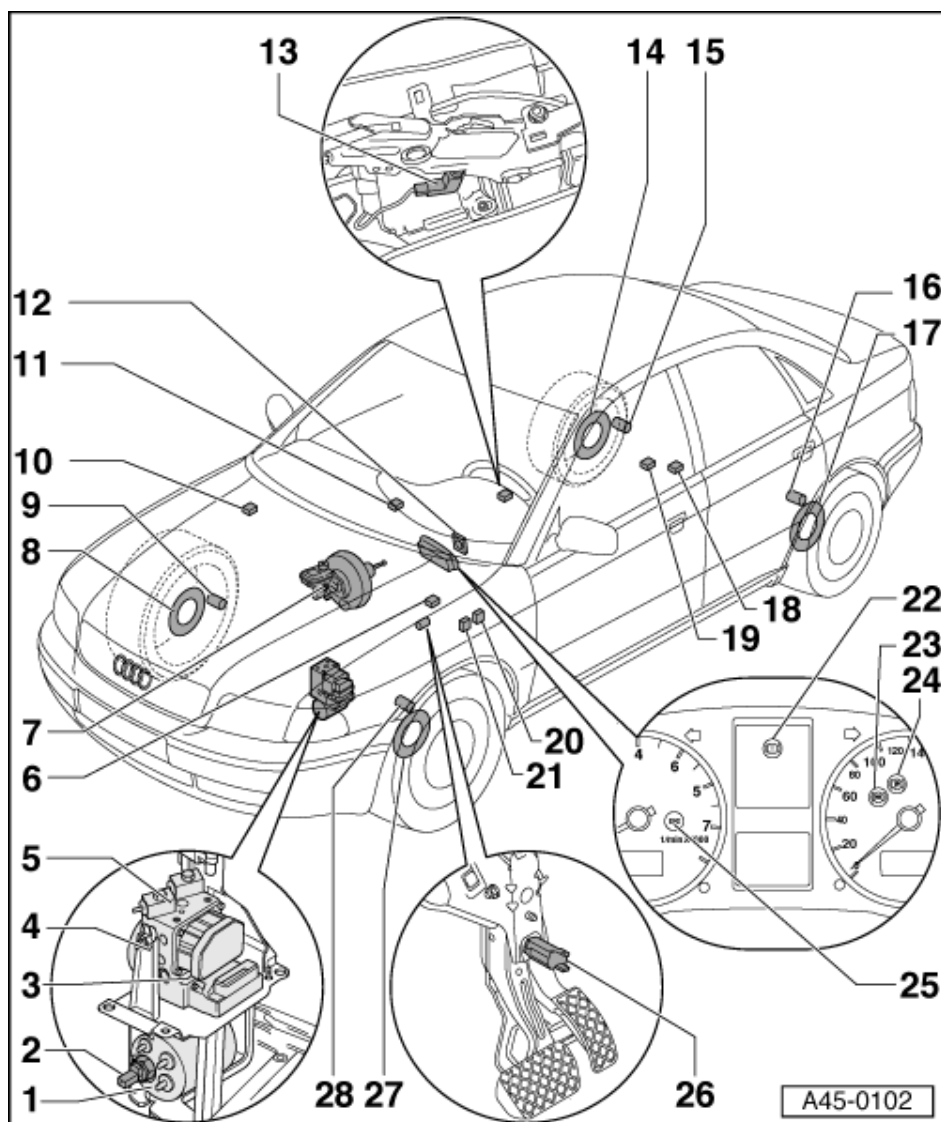
24 Handbrake warning lamp -K14

- ♦ Fitting location: in dash panel insert

25 TCS/ESP warning lamp -K86

- ♦ Fitting location: in dash panel insert

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Brake light switch - F

- Removing and installing the brake light switch =>Page **33**

27 Rotor for speed sensor, front left

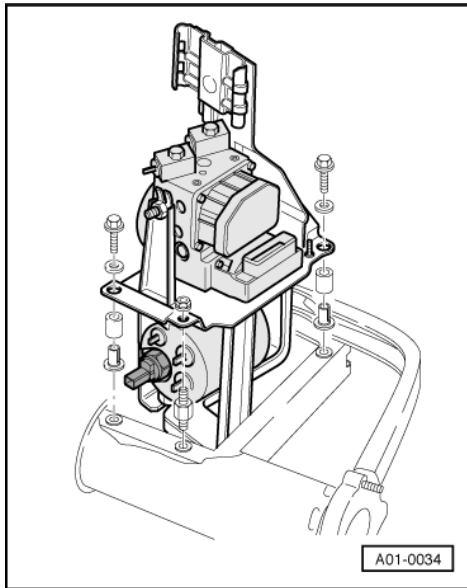
- ♦ Checking => Page **48**

28 Front left speed sensor -G47

- ♦ Removing and installing=>Page **44**

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

New components:



-> The electronic stability program hydraulic pump -V156 and the brake pressure sender -G201 are on the left side of the engine compartment beneath the hydraulic unit -N55 when viewed in direction of travel.

The hydraulic unit -N55 with hydraulic pump -V39 are assisted by the ESP hydraulic pump -V156. This enables the system to build up the required brake fluid pressure rapidly in the wheel brake cylinders.

Do not loosen the bolts securing the individual components of the hydraulic unit -N55 and the ESP hydraulic pump -V156. The ESP hydraulic pump -V156 and the brake pressure sender -G201 form a single unit and must always be replaced together if necessary.

The brake pressure sender -G201 measures the fluid pressure generated in the brake system.

3 - Anti-lock brake system (ABS) Bosch 5.0

3.1 - Anti-lock brake system (ABS) Bosch 5.0

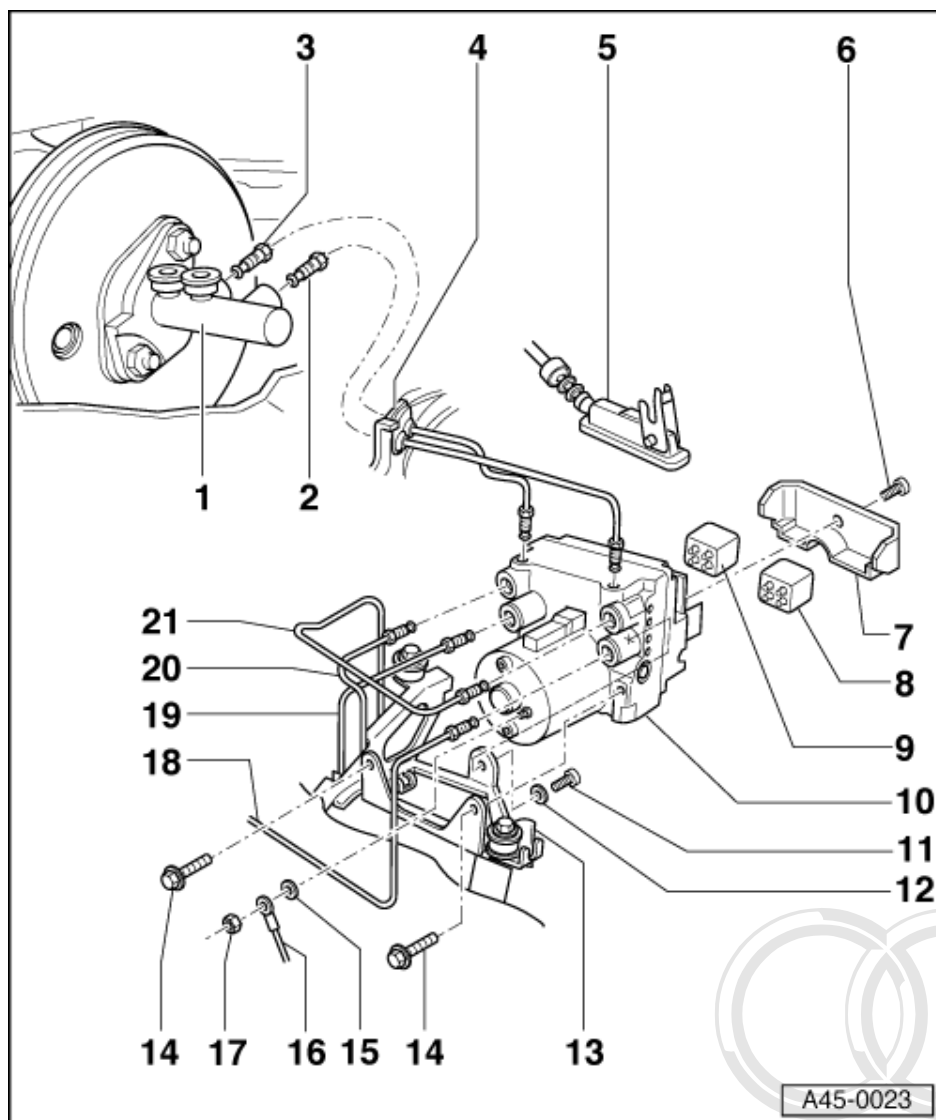
Important

The anti-lock brake system is basically maintenance free.

Testing, removing, installing and repair work may only be performed by qualified personnel.

Failure to observe the points described in this Workshop Manual may result in damage to the system and could make the vehicle unsafe.

3.2 - Hydraulic unit and brake pipes



The tightening torque for all brake pipes on the Audi A4 is 15 Nm.

1 Brake master cylinder and brake servo

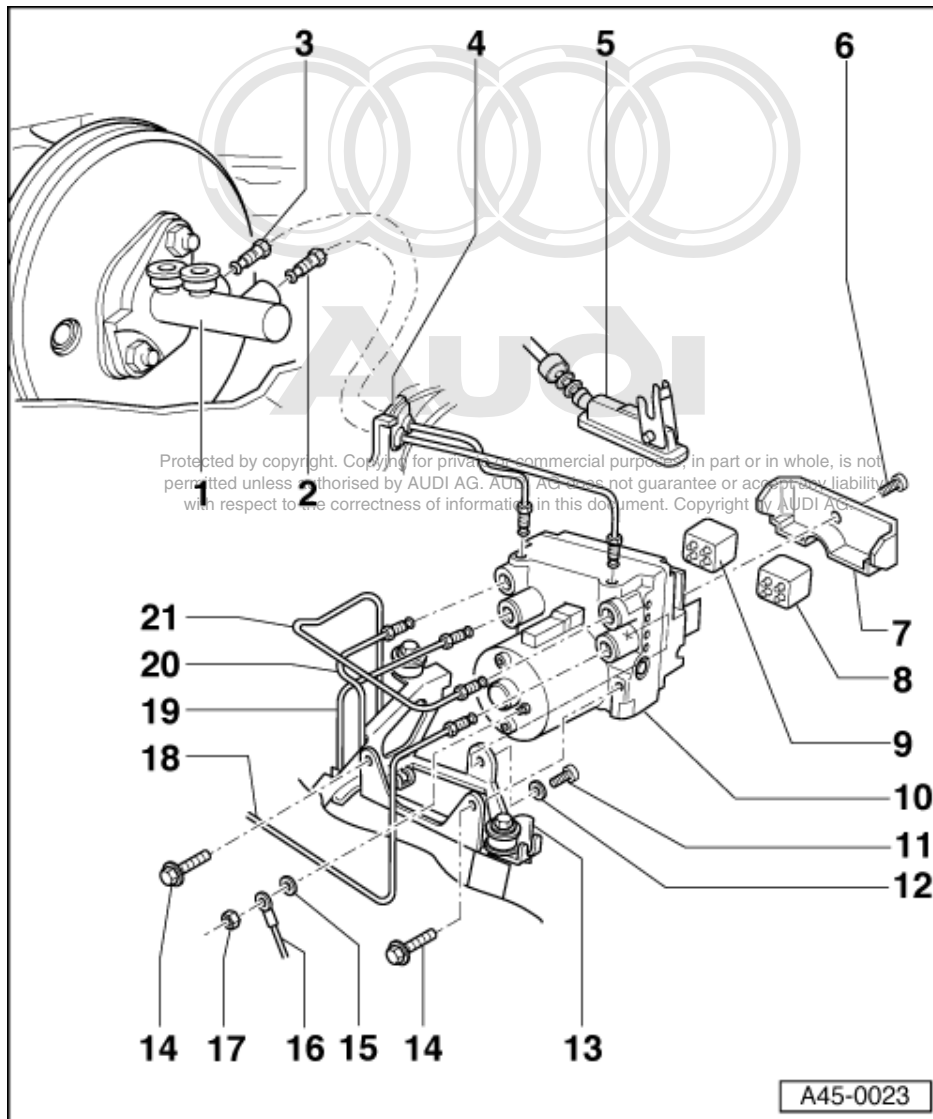
2 Brake pipe

- ◆ Brake master cylinder/floating piston circuit to hydraulic unit
- ◆ Screw connection at brake master cylinder: M12x1
- ◆ Screw connection at hydraulic unit: M12x1

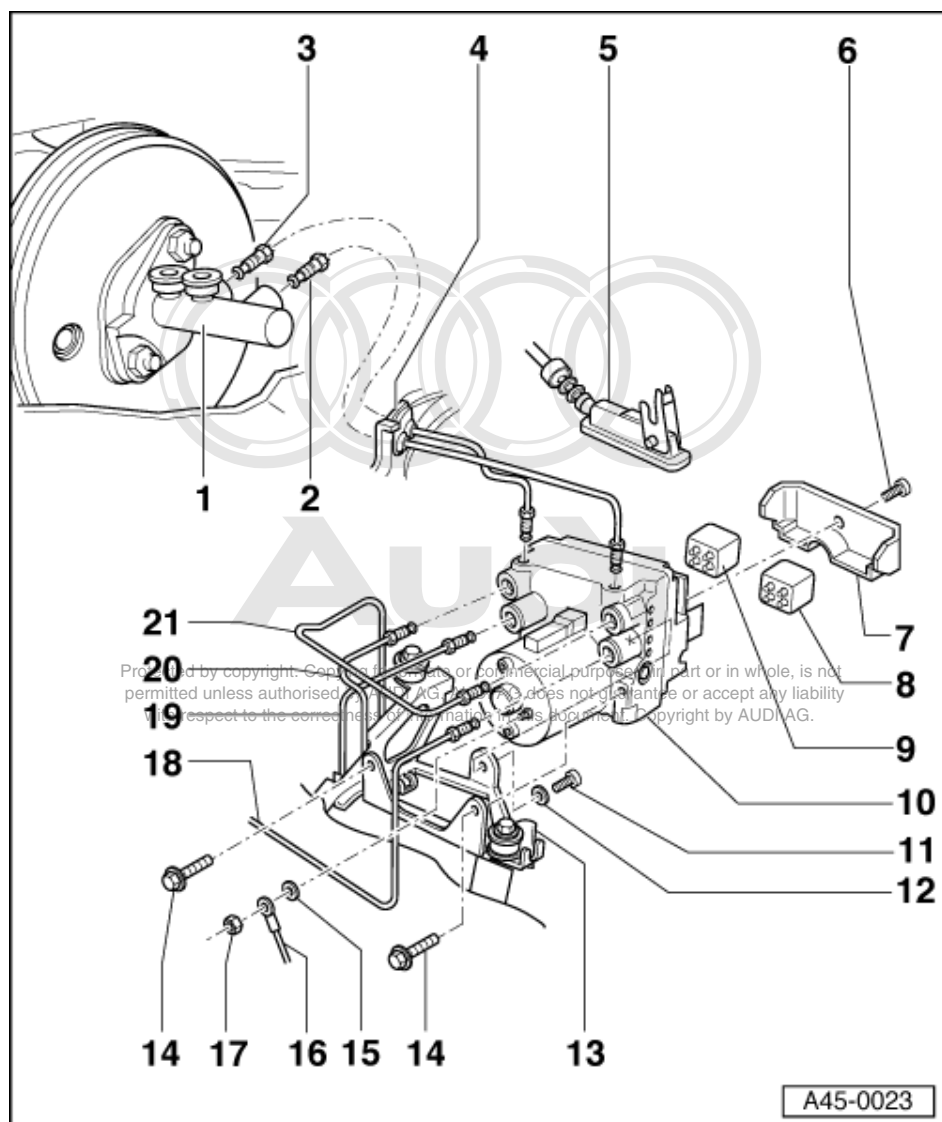
3 Brake pipe

- ◆ Brake master cylinder/push rod piston circuit to hydraulic unit
- ◆ Screw connection at brake master cylinder: M12x1
- ◆ Screw connection at hydraulic unit: M12x1

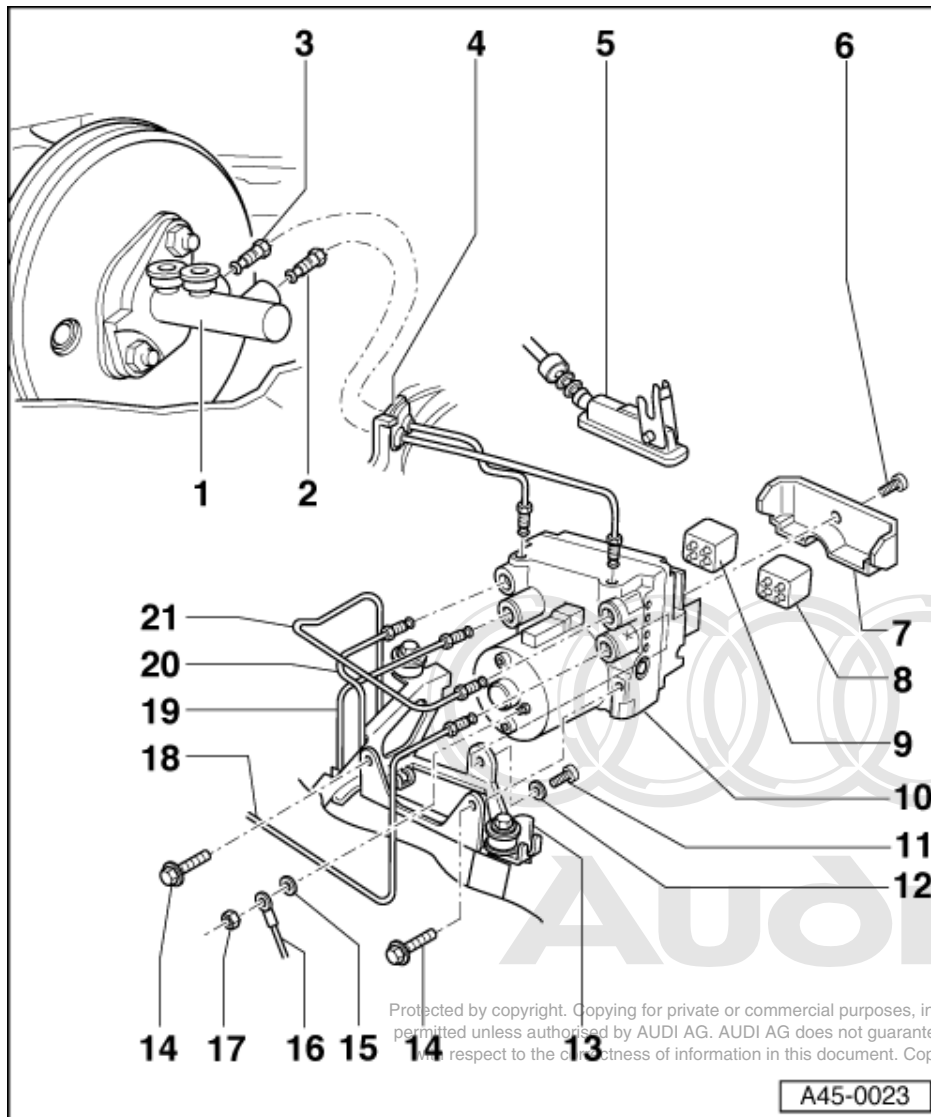
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- 4 Grommet
- 5 Connector, ABS wiring harness
 - ◆ Release and detach
 - ◆ The connector is part of the ABS wiring harness. Note that there are different versions for FWD and 4WD models.
 - ◆ Ensure correct positioning
- 6 Bolt, 5 Nm
- 7 Cover
- 8 Relay for solenoid valves
- 9 Relay for return pump
- 10 ABS hydraulic unit
 - ◆ Note that there are different versions:
 - ABS FWD models
 - ABS/EDL FWD models, ABS/EDL/TCS FWD models => Fig. 1
 - ABS/EDL 4WD models => Fig. 2
 - ABS/EDL 4WD models 05.95 => Fig. 3

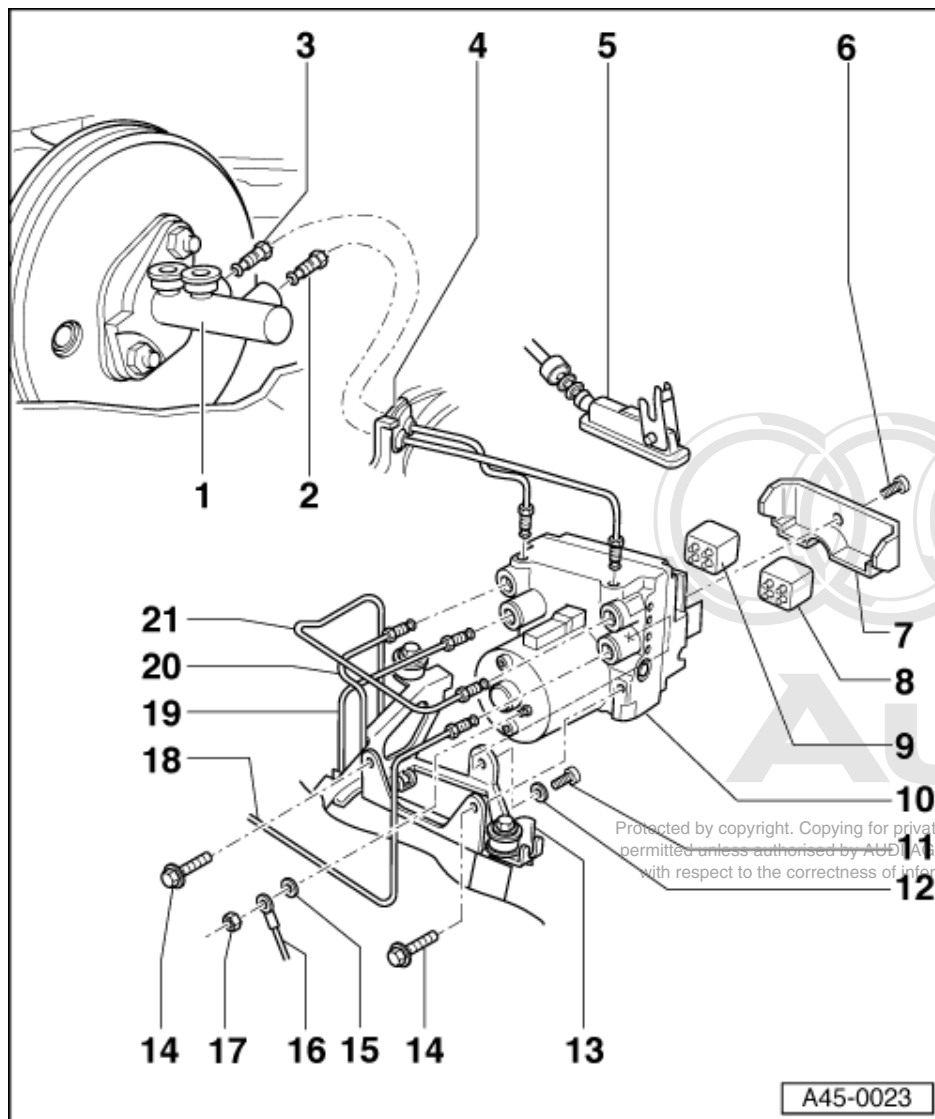


- ◆ No repair work may be carried out on the hydraulic unit, with the exception of replacing both relays .
Never unfasten bolted joints
- ◆ If necessary, replace hydraulic unit only as a complete assembly.
- ◆ Replacement hydraulic units are supplied pre-bled
- ◆ Removing and installing the hydraulic unit
 - Disconnect earthing strap from battery.
 - Seal the brake lines and connections immediately with dummy plugs.



- When replacing the hydraulic unit, the new hydraulic unit must be bolted into the bracket-item **13** -. The dummy plugs must be removed from the brake line connections. The brake lines should be connected in accordance with the designations on the hydraulic unit.
- The tightening torque of the brake pipes is 15 Nm.
- Bleed brake system => Page **173**
- Carry out high- and low-pressure test => Page **4**
- Perform electrical test

=> Running Gear Self-Diagnosis; Repair group 01



11 Cheese-head bolt, 15 Nm

12 Washer

13 Bracket for hydraulic unit

- ♦ Removing and installing bracket => Page **20**

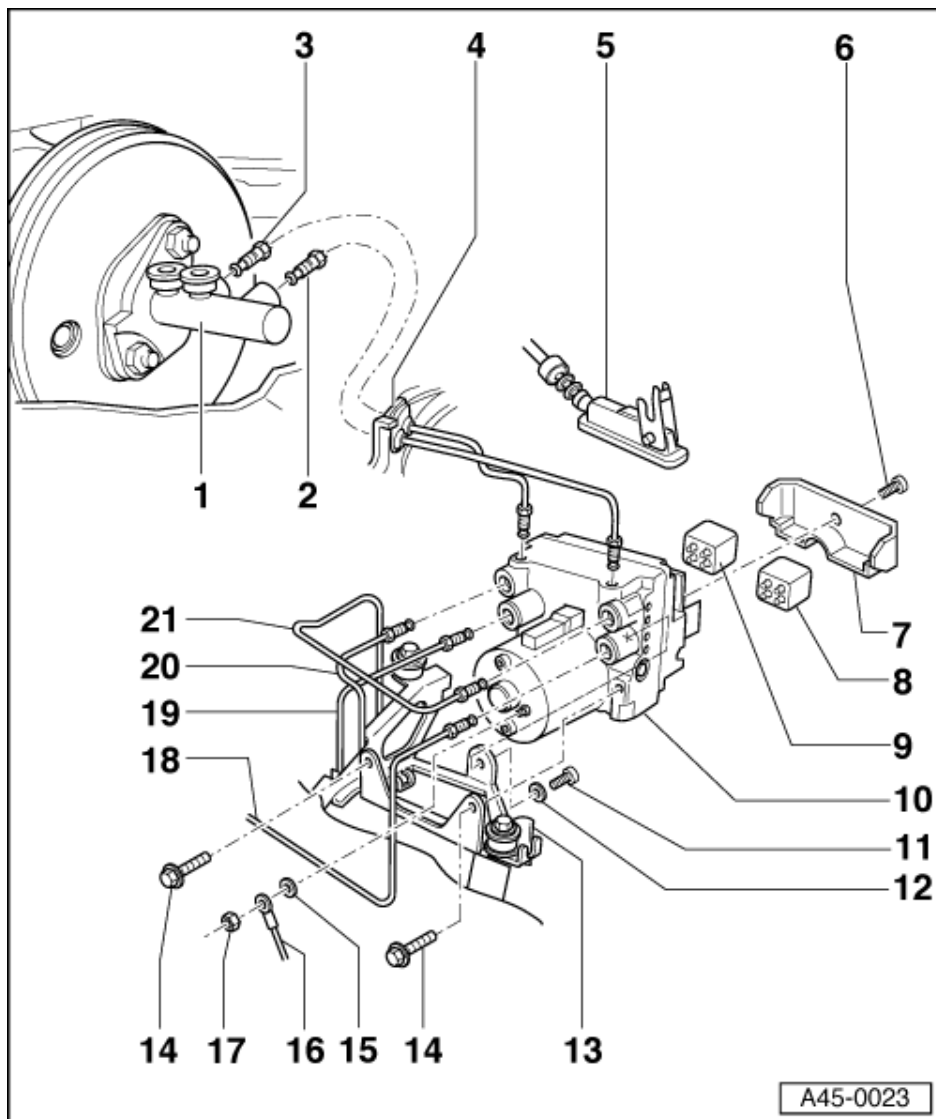
14 Combi bolt, 8 Nm

15 Toothed lock washer

16 Earth wire

- ♦ Ensure good contact

17 Hexagon nut, 10 Nm



18 Brake pipe

- ♦ Hydraulic unit to front right brake caliper

19 Brake pipe

- ♦ Hydraulic unit to front left brake caliper

20 Brake pipe

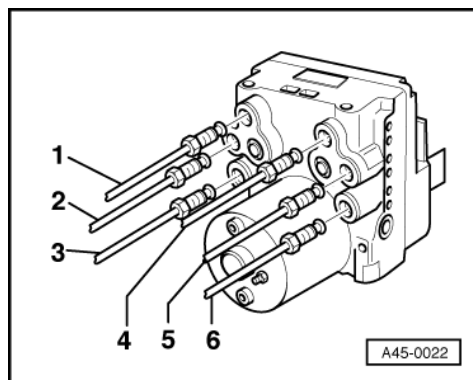
- ♦ Hydraulic unit to rear right brake caliper

21 Brake pipe

- ♦ Hydraulic unit to 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.



-> Fig.1 Hydraulic unit for ABS/EDL FWD models and also for ABS/EDL/TCS FWD models: brake pipe connections 15 Nm

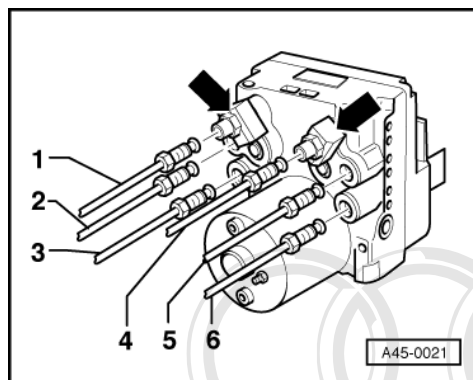
- 1 - Hydraulic unit - brake master cylinder (push rod piston circuit)
- 2 - Hydraulic unit - rear right brake caliper
- 3 - Hydraulic unit - front left brake caliper
- 4 - Hydraulic unit - brake master cylinder (floating piston circuit)
- 5 - Hydraulic unit - rear left brake caliper
- 6 - Hydraulic unit - front right brake caliper

Note:

The pressure dampers are not fitted to vehicles with 4WD and EDL suction control (05.95 onwards) => Fig. 2

EDL suction control minimises control noises.

The working range of the pressure limiting valve in the hydraulic unit is raised from 90 ± 25 bar to 170 ± 25 bar.



-> Fig.2 Brake pipe connections at hydraulic unit

For models with 4WD and ABS/EDL- pressure control (up to 05 95):

Two pressure dampers are screwed into the hydraulic unit -arrows- on vehicles with 4WD and EDL pressure control.

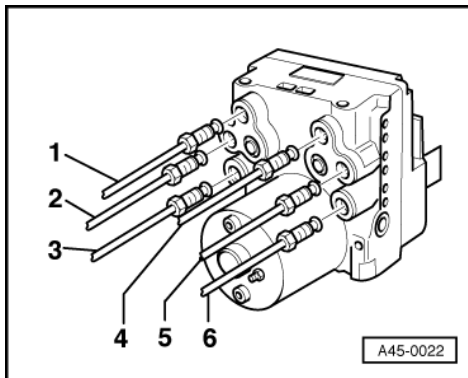
The dampers are designed to smooth pressure peaks in the brake pipes and reduce control noises.

permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability

Counterhold at the hexagon of the pressure dampers when unfastening the brake pipes.

- 1 - Hydraulic unit - brake master cylinder (push rod piston circuit)
- 2 - Hydraulic unit - rear right brake caliper
- 3 - Hydraulic unit - front left brake caliper
- 4 - Hydraulic unit - brake master cylinder (floating piston circuit)
- 5 - Hydraulic unit - rear left brake caliper

6 - Hydraulic unit - front right brake caliper



-> Fig.3 Hydraulic unit for ABS/EDL - 4WD, suction control.

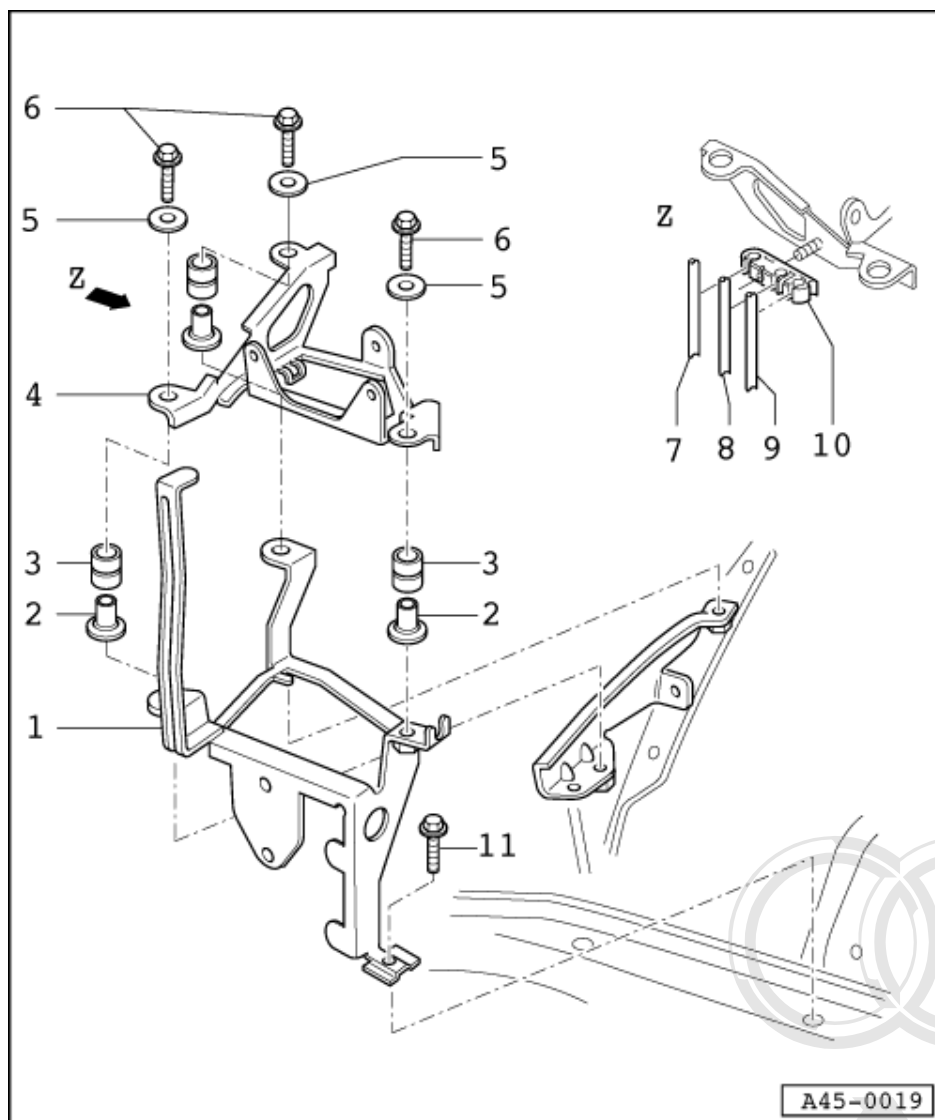
- The EDL suction control was introduced on models with 4WD with effect from 05.95. This technology reduces the operating noise during an EDL control cycle.
- The pressure dampers that were previously screwed into the hydraulic unit and were used to reduce the operating noise are no longer fitted. The working range of the pressure limiting valve in the hydraulic unit is raised from 90 ± 25 bar to 170 ± 25 bar.
- Connector coding eliminates the risk of incorrectly connecting the hydraulic unit.

- 1 - Brake pipe 15 Nm
- Extended version in line with FWD as the pressure damper screwed into the hydraulic unit is no longer fitted.
- 4 - Brake pipe 15 Nm
- Extended version in line with FWD as the pressure damper screwed into the hydraulic unit is no longer fitted.



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

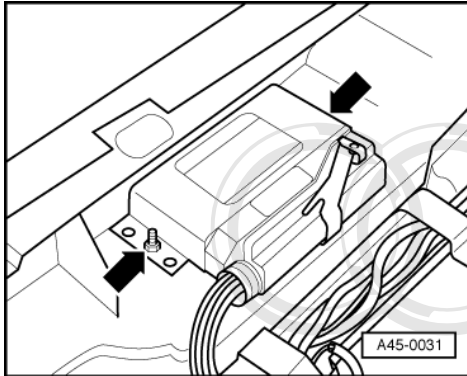
3.3 - Removing and installing bracket for hydraulic unit



- 1 Console
- 2 Bush
- 3 Buffer
- 4 Bracket for hydraulic unit
- 5 Washer
- 6 Combi bolt, 10 Nm
- 7 Brake pipe
 - ♦ Hydraulic unit to rear left brake caliper
- 8 Brake pipe
 - ♦ Hydraulic unit to rear right brake caliper
- 9 Brake pipe
 - ♦ Hydraulic unit to front left brake caliper
- 10 Bracket
- 11 Combi bolt, 10 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.

3.4 - Removing and installing control unit for ABS/EDL or TCS

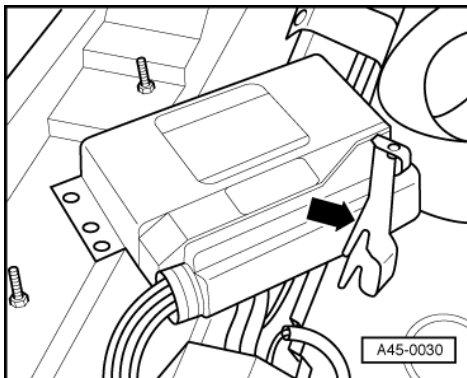


Fitting location:

On left below rear seat

- Disconnect battery.
- Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 27; Battery Battery

- Lift rear seat out of its catches.
- -> Remove both retaining bolts -arrows-



- -> Release connector -arrow- and separate from control unit -J104.

Pay special attention to the following on installation:

- ◆ Only remove sealing plugs on new hydraulic control unit when the corresponding brake pipe is about to be fitted.
- ◆ If the sealing plugs are removed too early, brake fluid can escape, it can then no longer be guaranteed that the unit is sufficiently filled or adequately bled.
- Bleeding brake system => Page 173
- Enter radio code.

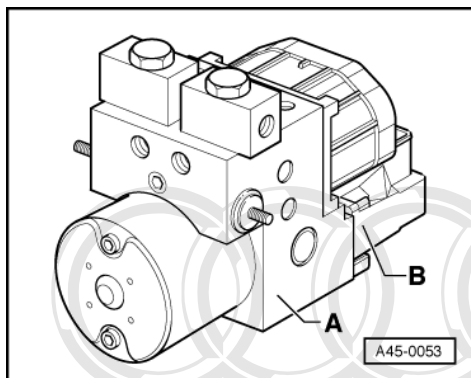
4 - Anti-lock brake system (ABS) Bosch 5.3

4.1 - Anti-lock brake system (ABS) Bosch 5.3

A traction control system (TCS) may also be fitted as an optional extra on front wheel drive vehicles.



The ABS is split diagonally. The brake servo assistance is provided pneumatically by the vacuum brake servo unit.



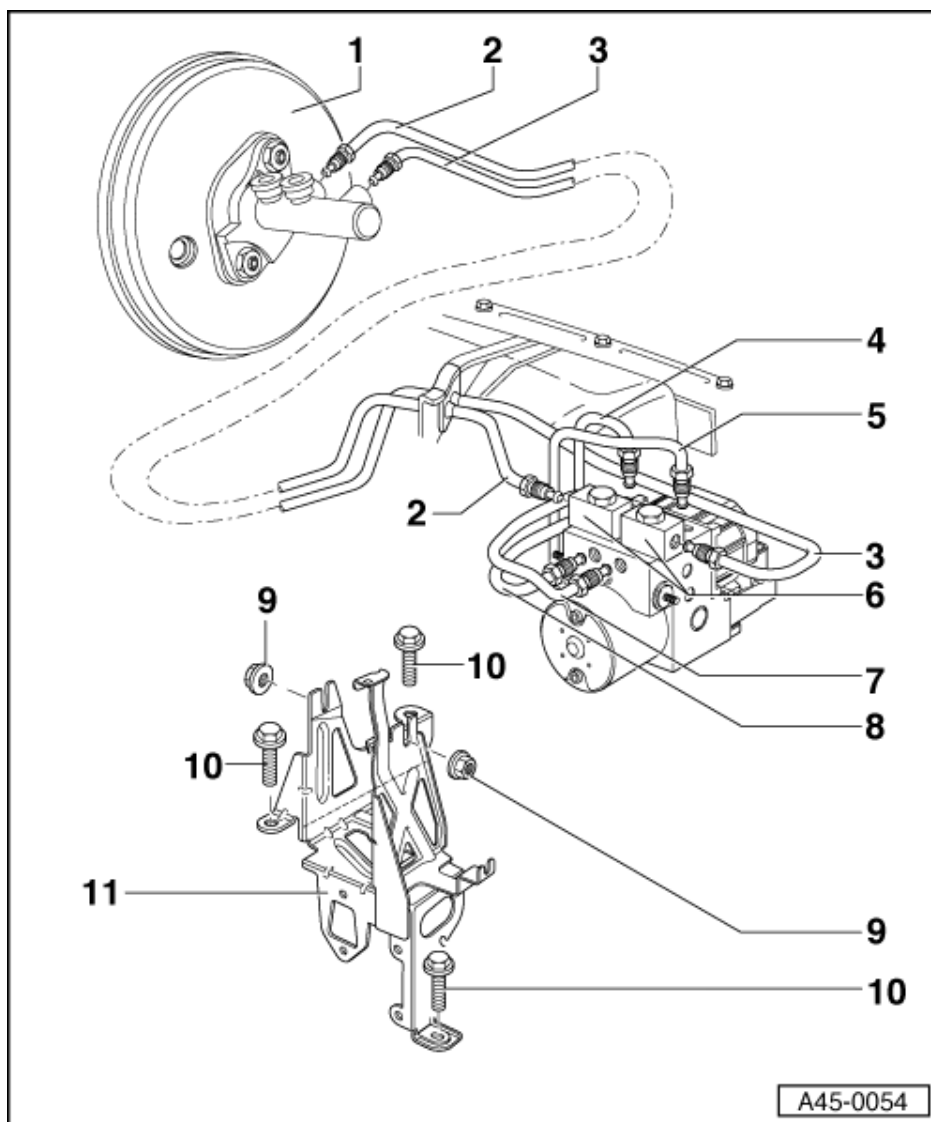
-> Hydraulic unit -a- and control unit -b- form a single unit. It is therefore termed the hydraulic control unit.

The direct connection between these components reduces possible sources of faults. There is no provision for repairing the hydraulic control unit - it must be renewed if faulty.

The bolts that connect the individual components of the hydraulic unit must not be loosened.

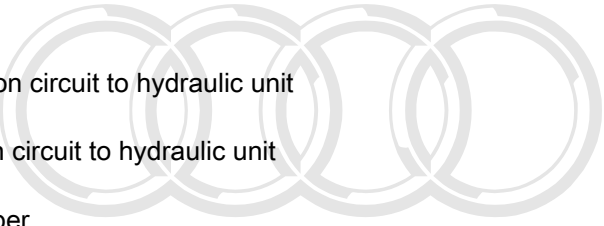
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

4.2 - Hydraulic unit and brake pipes

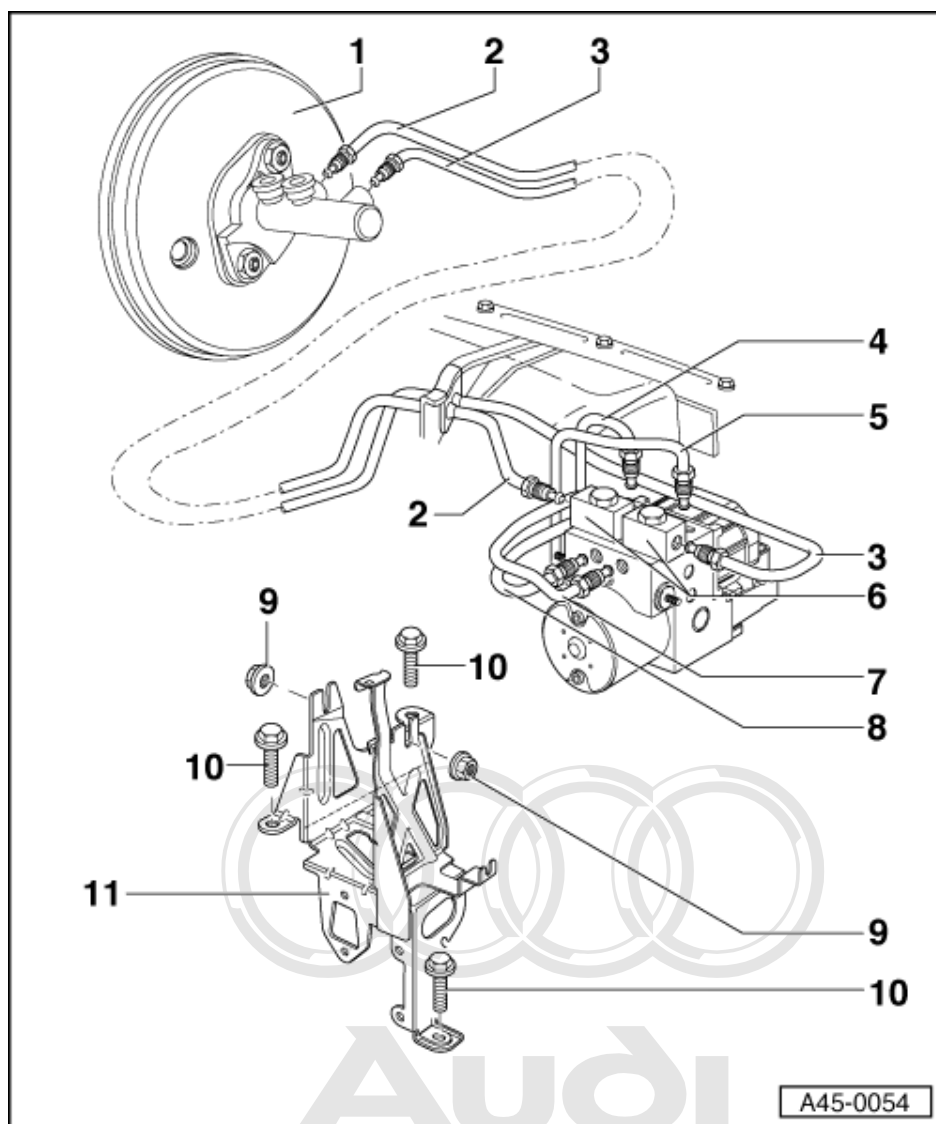


The tightening torque for all brake pipes on the Audi A4 is 15 Nm.

- 1 Brake master cylinder and brake servo**
- 2 Brake pipe**
 - ♦ Brake master cylinder/push rod piston circuit to hydraulic unit
- 3 Brake pipe**
 - ♦ Brake master cylinder/floating piston circuit to hydraulic unit
- 4 Brake pipe**
 - ♦ Hydraulic unit to front left brake caliper


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.



5 Brake pipe

- ♦ Hydraulic unit to front right brake caliper

6 Suction dampers

- ♦ They improve pressure build up during an EDL control cycle
- ♦ To be discontinued gradually (will be incorporated in the hydraulic control unit)

7 Brake pipe

- ♦ Hydraulic unit to rear left brake caliper

8 Brake pipe

- ♦ Hydraulic unit to rear right brake caliper

9 Hexagon nut, 10 Nm

10 Hexagon bolt, 10 Nm

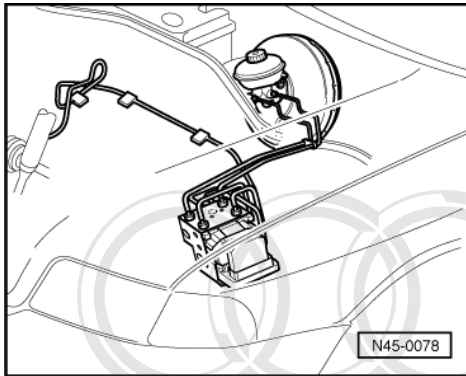
11 Bracket

4.3 - Removing and installing hydraulic control unit

Special tools and workshop equipment required

Plug repair set, Part no. 1H0 698 311A
--

Brake pedal depressor, e.g. from V.A.G 1813



-> Fitting location

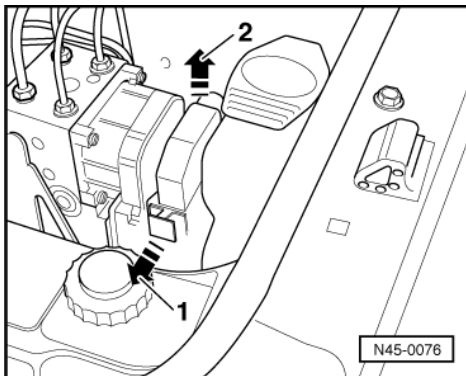
The hydraulic control unit is fitted on the left side of the engine compartment.

Removing

Important
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 pipes must not be bent.

- Note radio code on vehicles with coded radio; if necessary ask for it.
- Disconnect battery.

=> Electrical System; Repair group 27; Battery Battery



- -> Release connector from control unit (arrow -1-) and unplug it (arrow -2-).
- Connect bleeder bottle to bleeder screw on front left brake caliper and open the bleeder screw.
- Insert brake pedal depressor between brake pedal and driver's seat. Depress the brake pedal by at least 60 mm.

The brake pedal depressor must remain in position until all the brake pipes have been reconnected to the hydraulic unit.

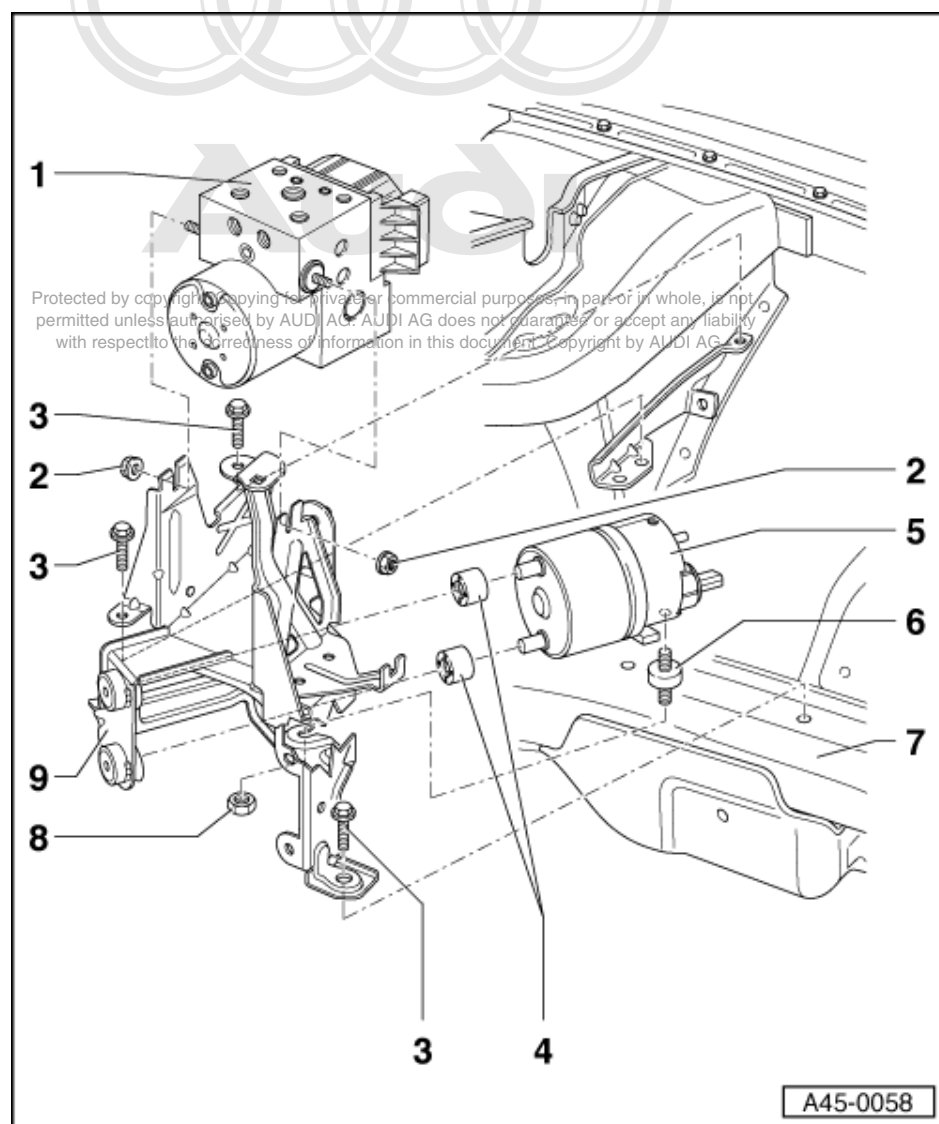
- Close front left bleeder screw.
- ◆ Protect the engine compartment against escaping brake fluid.
- Unscrew brake pipe connections on hydraulic unit.
- Seal brake pipes and threaded holes with plugs from repair set Part No. 1H0 698 311 A.
- Remove hexagon nuts on hydraulic control unit bracket.
- Remove hydraulic control unit.

Pay special attention to the following on installation:

- ♦ Only remove sealing plugs on new hydraulic control unit when the corresponding brake pipe is about to be fitted.
 - ♦ If the sealing plugs are removed too early, brake fluid can escape, it can then no longer be guaranteed that the unit is sufficiently filled or adequately bled.
- Bleeding brake system => Page **173**
 - Enter radio code.

5 - Servicing ESP hydraulic unit

5.1 - Servicing ESP hydraulic unit



The tightening torque for the brake pipes on the Audi A4 is: 15 Nm

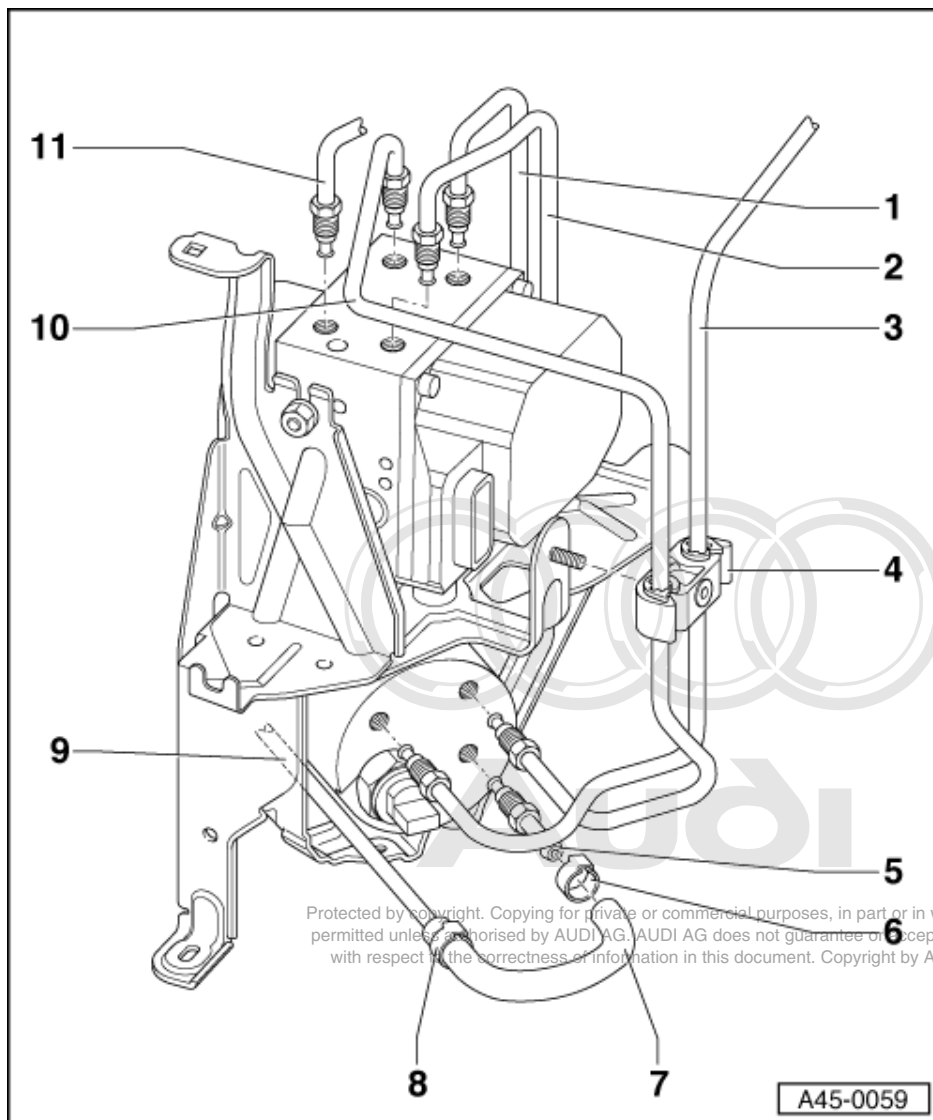
1 ESP hydraulic unit

- ♦ If necessary, replace hydraulic unit only as a complete assembly.

2 Hexagon nut, 12 Nm**3 Combi bolt, 9 Nm (3x)****4 Buffer (2x)**

- 5 ESP hydraulic pump -V156
 - ♦ Assembly with brake pressure sensor
- 6 Buffer
 - ♦ Buffer to hydraulic pump
 - 2 Nm
- 7 Body
- 8 Hexagon nut, 9 Nm
- 9 Bracket

5.2 - Charging pump with 3 connections



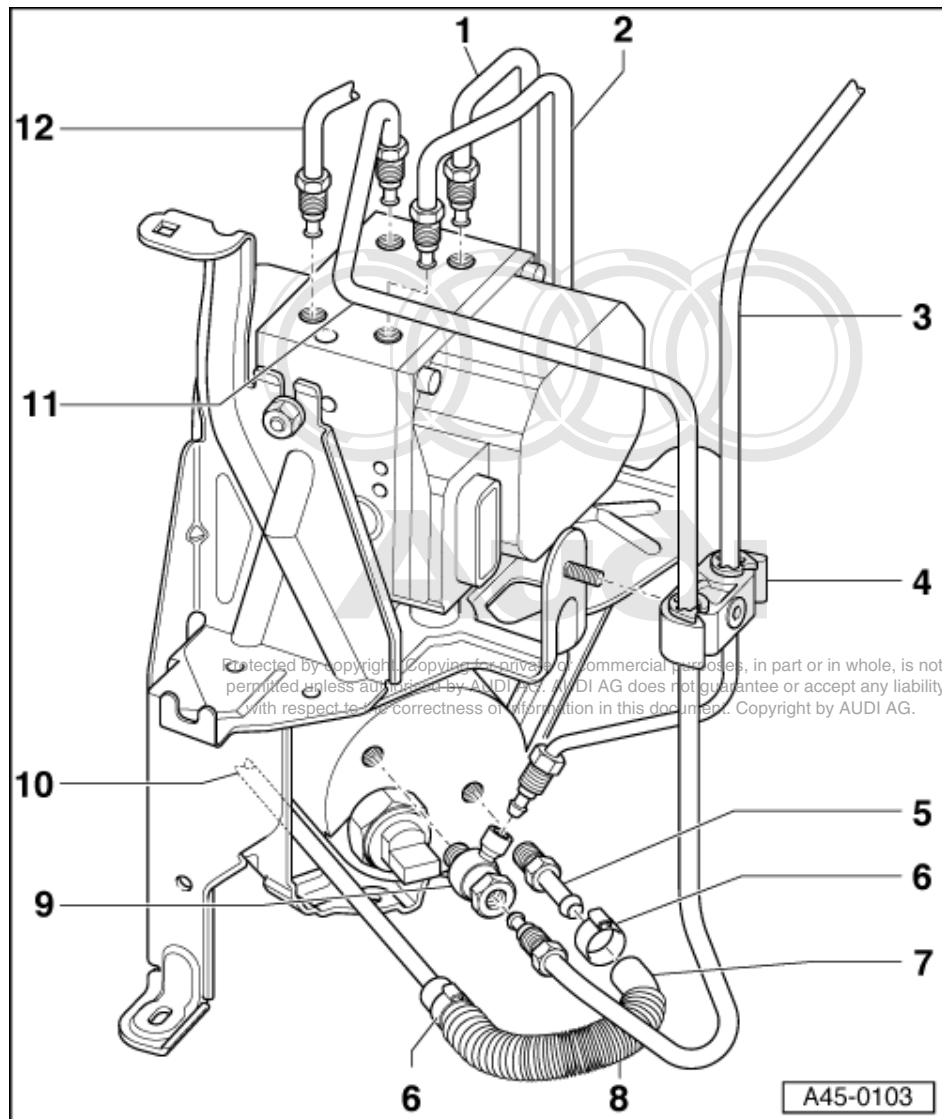
- 1 Front left brake pipe
- 2 Front right brake pipe
- 3 Brake pipe to charging pump of brake master cylinder/push rod piston circuit
- 4 Bracket
- 5 Pipe union
- 6 Hose clamp
- 7 Hose
- 8 Hose clamp
- 9 Suction pipe



10 Brake pipe to charging pump

11 Brake pipe to brake master cylinder/floating piston circuit

5.3 - Charging pump with 2 connections



1 Front left brake pipe

2 Front right brake pipe

3 Brake pipe to charging pump of brake master cylinder/push rod piston circuit

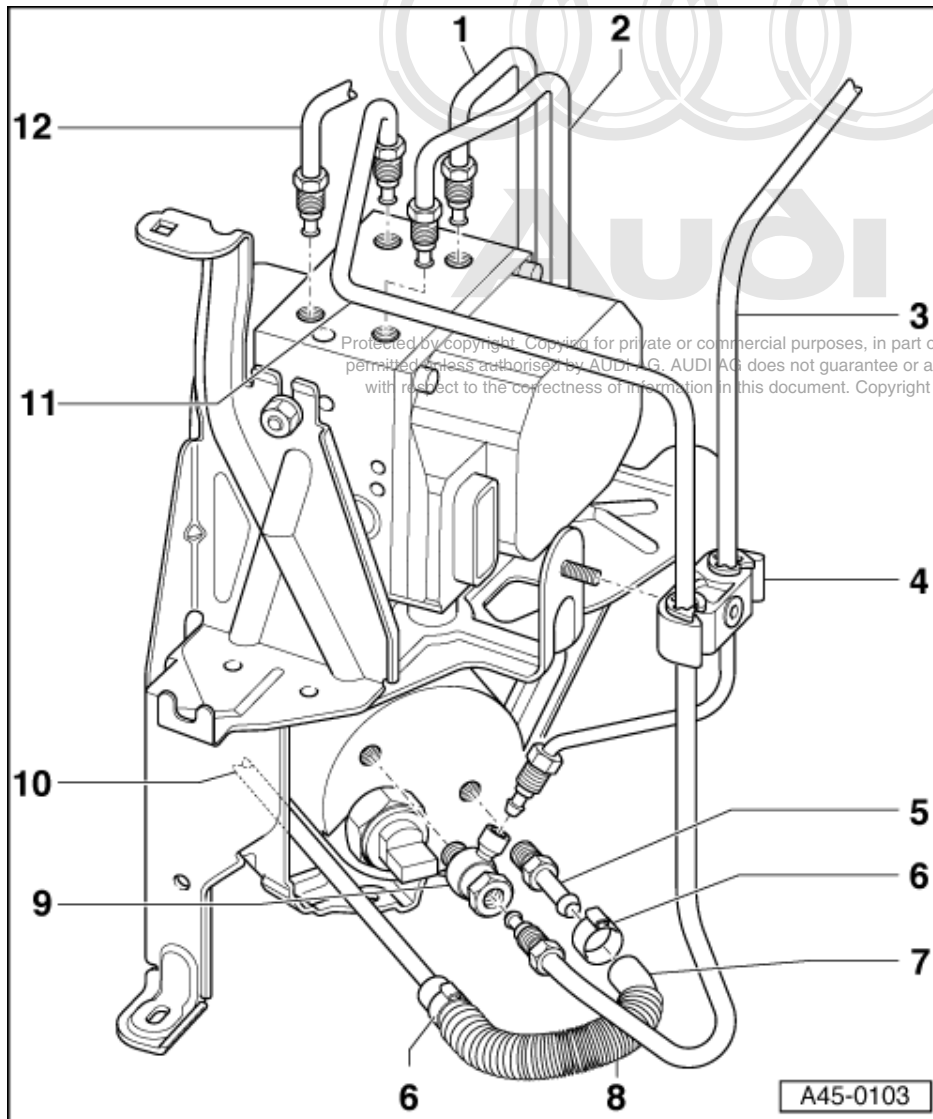
4 Bracket

5 Pipe union

♦ Tightening torque 28 Nm

6 Hose clamp

7 Hose

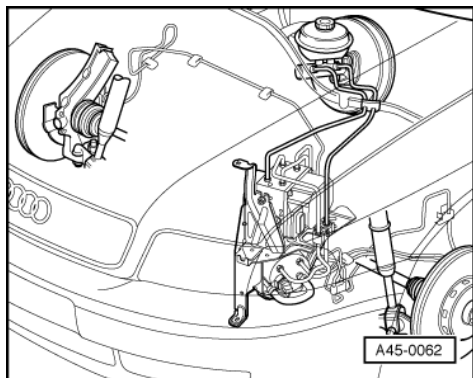


- 8 Protective sheathing
 9 Ring connection
 ♦ Tightening torque 28 Nm
 10 Suction pipe
 11 Brake pipe to charging pump
 12 Brake pipe to brake master cylinder/floating piston circuit

5.4 - Removing and installing ESP (electronic stability program) hydraulic pump

Special tools and workshop equipment required

Plug repair set, Part no. 1H0 698 311A
V.A.G 1551 or V.A.G 1552
V.A.G 1869



-> Fitting location

The ESP hydraulic pump is located in the engine compartment on the left beneath the hydraulic control unit.

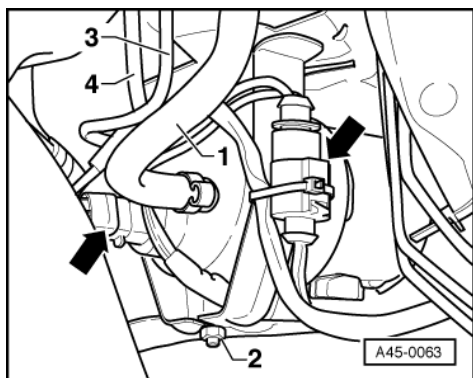
Removing

- Vehicle standing on its wheels over lifting platform.

Note:

- ♦ Switch off the ignition before removing and installing components. If the vehicle is equipped with a coded radio, obtain the security code before disconnecting the earthing strap of the battery.

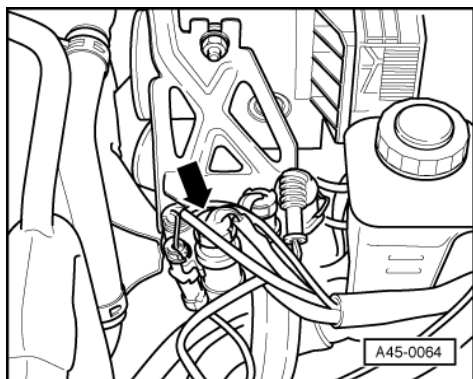
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



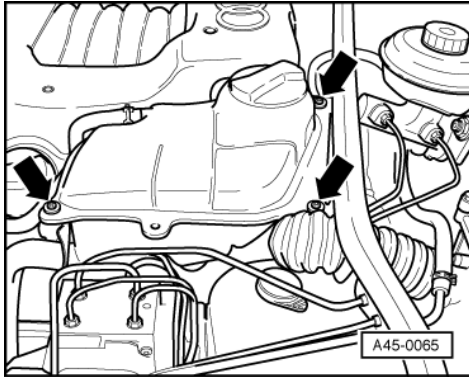
- Disconnect battery.

=> Electrical System; Repair group 27; Battery Battery

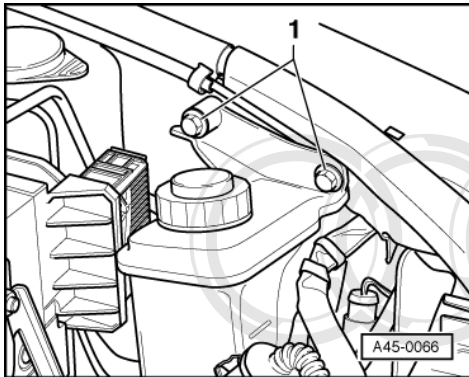
- Remove front left wheel.
- Raise vehicle.
- Remove front left wheel housing liner.
- -> Detach connectors (see arrows).



- Remove cover for hydraulic fluid reservoir.
- -> Unclip attachment strip for cable at bracket.



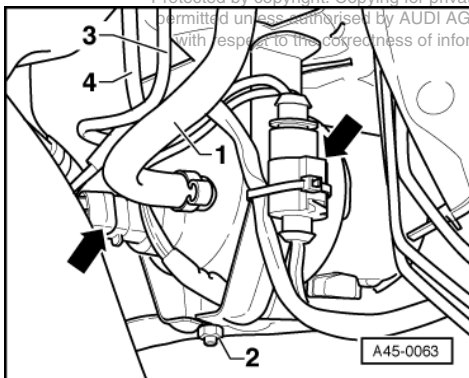
- -> Release securing screws - arrows- and swivel coolant expansion reservoir to one side.
- Tightening torque 6 Nm



- -> Release bolts -1- for hydraulic fluid reservoir and swivel away to one side.
- Tightening torque 10 Nm
- Note the locking element (rubber grommet) at the bottom when inserting.

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.



- ◆ Protect the engine compartment against escaping brake fluid.
- -> Release hose clamp of suction hose -1- and detach.
- Unbolt brake pipes -3- and -4-.
- Seal brake pipes and threaded holes with plugs from repair set Part No. 1H0 698 311 A.
- Unclip brake pipes from holder.
- Unscrew hexagon nut -2-.
- Unscrew hexagon nuts for holder =>Item 26 .



- Working from the engine compartment, lift the holder with the hydraulic unit and the hydraulic pump about 30 mm and take them out.

Installing

Pay special attention to the following on installation:

- ♦ Only remove sealing plugs on new hydraulic control unit when the corresponding brake pipe is about to be fitted. Otherwise brake fluid will leak =>Paintwork and Corrosion Protection

Bleeding brake system with brake filling and bleeding unit V.A.G 1869

- Connect V.A.G 1869.
- Open bleeder screws in the specified order and bleed brake calipers (assist as required with pedal pressure).

Bleeding sequence

- 1 - Rear left brake caliper
- 2 - Front right brake caliper
- 3 - Rear right brake caliper
- 4 - Front left brake caliper

5.5 - Basic setting

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 fault reader V.A.G 1551 or V.A.G 1552.

Display group 2: Actuation of ESP hydraulic pump -V156

Electronic stability program hydraulic pump -V156 is actuated to bleed the hydraulic system.

- Connect V.A.G diagnosis tester.

-> Indicated on display:

V.A.G

1) Displayed alternately

- Switch the ignition on.
- Switch on the printer by pressing the Print key on the fault reader.
- Press key -1- for "Rapid data transfer" operating mode.
- Enter address word 03 for brake electronics and confirm the entry with the Q key.
- Press =>key.

-> Indicated on display:

Rapid data transfer HELP
Select function XX

- Press 1 twice to select the function "Login procedure".

-> Indicated on display:

Rapid data transfer Q
11 - Login procedure

- Confirm input with Q key.

-> Indicated on display:

Login procedure Q
Enter code number XXXXX

- Enter code number 40168 and confirm entry with Q key.

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

- Press keys 0 and 4 to select function "Basic setting".

-> Indicated on display:

Rapid data transfer	Q
04 Basic setting	

- Confirm input with Q key.

-> Indicated on display:

Basic setting	Q
Enter display group number XXX	

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

The front left bleeder screw must be open when actuating the charging pump.
 Press keys 0, 0 and 2.

- After confirming the entry with the key Q, the electronic stability program hydraulic pump -V156 is actuated for 10 seconds.

-> Indicated on display:

System in basic setting	2
Bleed system	OK

- Close bleeder screw again.
- Go back to the initial settings of the program by pressing the => key:

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

=> Running Gear Self-diagnosis; Repair group 01; ESP, Electronic Stability Program for 4WD, from MY' 1998
 - Q, Basic setting; ESP, Electronic Stability Program for 4WD, from MY' 1998 - Q, Basic setting:

The remaining installation of the ESP hydraulic pump is performed in the reverse order.

6 - Removing and installing components of the ABS/ESP system

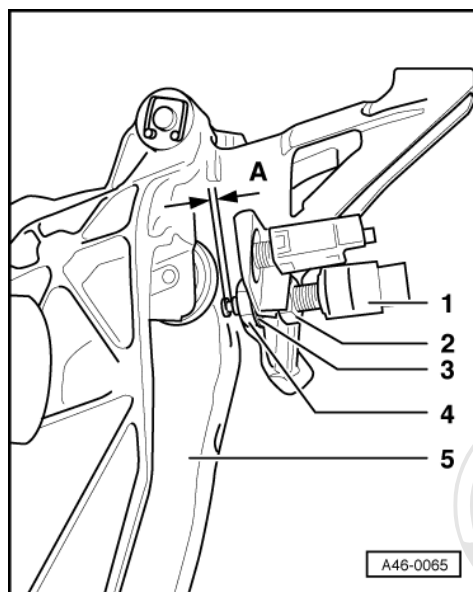
6.1 - Removing and installing components of the ABS/ESP system

6.2 - Removing and installing brake light switch (F)

Pedal assembly must be bolted to the brake servo unit and the dash panel crossmember before performing adjustment.

The following adjustments should be carried out on the brake light switch in the event of a complaint:

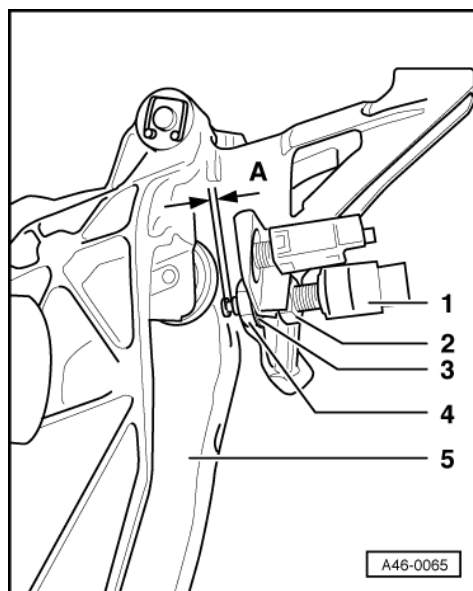
Pedal bracket with retaining clip for mounting brake light switch.



- 1 - -> Brake light switch
- 2 - Hexagon nut, M12 * 1.5
Part No.: N 011 162 9
- 3 - Spring lock washer for M12
Part No.: N 012 232 3
- 4 - Hexagon nut, M12 * 1.5
Part No.: N 011 162 9
- 5 - Brake pedal

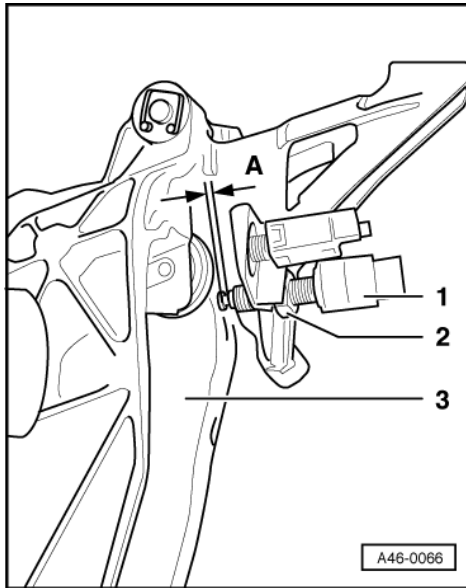
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for the correctness of information in this document. Copyright by AUDI AG.

- Pull brake light switch out of pedal bracket.
- Remove clip, => Page 123 , item 20 .



- -> Fit nut -2- onto removed brake light switch.
- Insert brake light switch into pedal bracket and fit on spring lock washer -3- and nut -4-.
- When the unit is fully assembled set dimension -A- to 0.1 - 0.5 mm, then lock nut -4- to 4 Nm.

Pedal bracket with internal thread for mounting brake light switch.



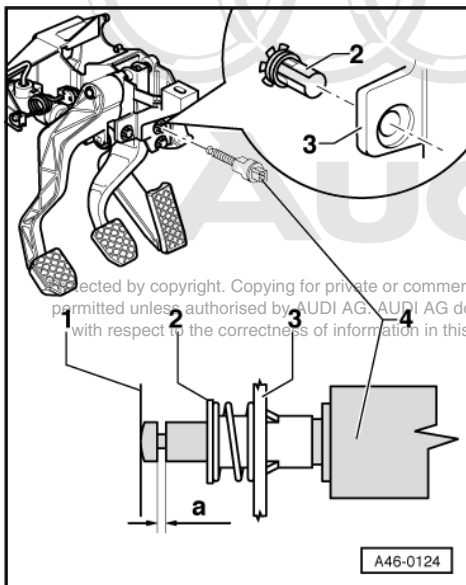
- 1 - -> Brake light switch
- 2 - Hexagon nut, M12 * 1.5
Part No.: N 011 020 8
- 3 - Brake pedal

Note:

There is a spring lock washer N 012 042 4 (not shown in illustration) between the nut -2- and the pedal bracket.

- Screw the brake light switch in or out to achieve distance -A- (between 0.1 and 0.5 mm), then lock nut -2- to 4.5 Nm.

With spring clip for mounting brake light switch.



- 1 - Brake pedal stop surface
- 2 - Spring clip
- 3 - Pedal bracket
- 4 - Brake light switch -F-
- a - Dimension: max. 1.2 mm - min. 0.5 mm

Note:

The switch must only be fitted once to ensure that it is sufficiently tight.

- Press spring clip -2- into the pedal bracket, against the direction of travel.
- Guide switch -4- into the installed spring clip -2- and press or screw it up to stop.

This must not place the brake pedal under any pre-tension.

- Check dimension -a- with feeler gauge and, if necessary, turn brake light switch to dimension -a-.

6.3 - Removing and installing steering angle sensor -G85

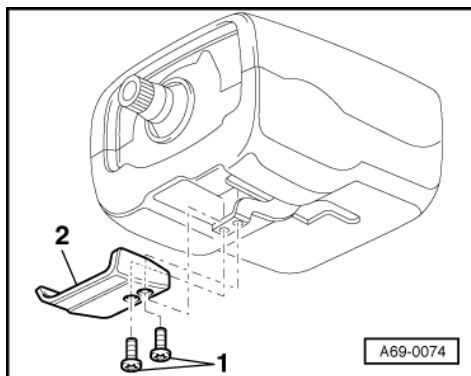
- Remove the driver's side airbag unit.

=> General Body Assembly, Interior; Repair group 69; Servicing airbag on driver's side Servicing airbag on driver's side

- Remove airbag unit and steering wheel

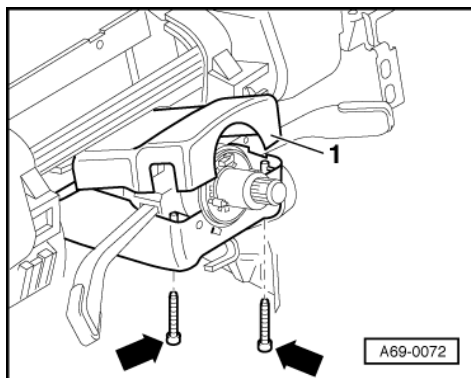
=> Running Gear, FWD and 4WD; Repair group 48; Airbag, Steering wheel, Steering column; Removing and installing driver's airbag unit Airbag, Steering wheel, Steering column Removing and installing driver's airbag unit

- Wheels set to straight-ahead position.

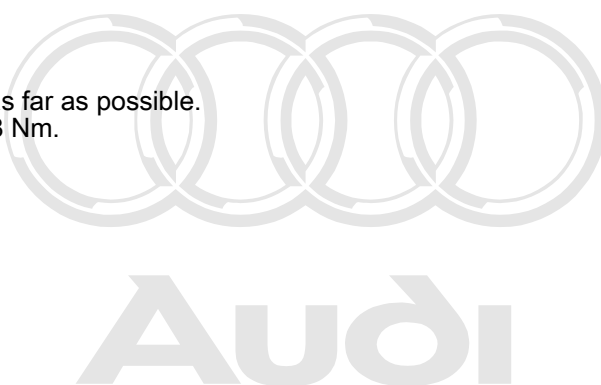


Driver airbag unit and steering wheel removed.

- Pull steering column out and tilt downwards as far as possible.
- -> Unscrew bolt -1- (2x), tightening torque 2.8 Nm.
- Remove grip -2-.



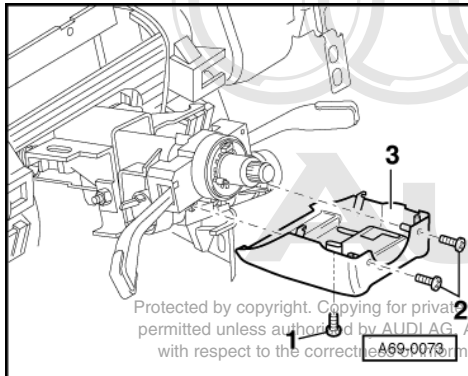
- -> Remove two cross head screws -arrows-.
- Tightening torque 0.6 Nm.



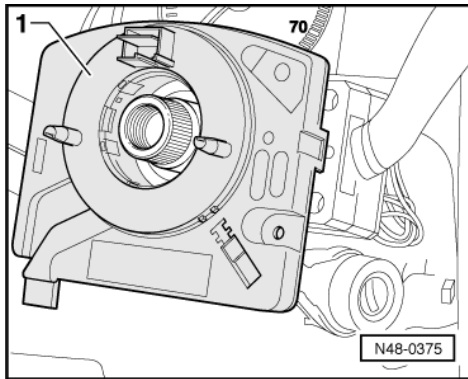
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Remove upper trim panel for steering column switch -1-.

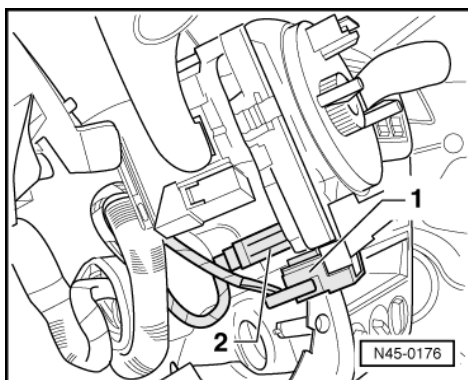
When installing, insert upper shell into hooks of lower shell, swivel downwards and screw in place.



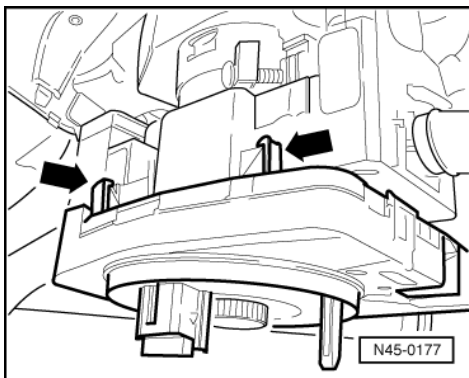
- -> Remove screws -2- (2x). Tightening torque 0.6 Nm
- Remove hexagon socket head bolt -1-.
- Tightening torque 0.6 Nm.
- Remove lower trim for steering column switch -3-.



-> The steering angle sensor -G85 is installed in housing -1- together with coil spring.



- -> Remove connectors -1- and -2-.

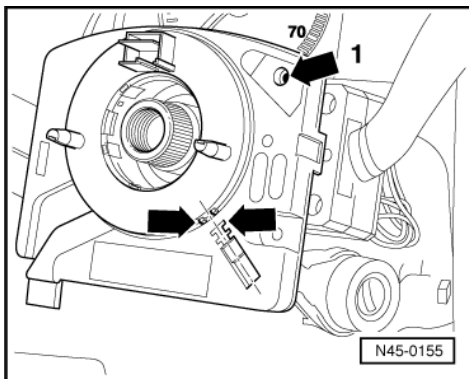


- -> Carefully lift hooks -arrows- and disconnect steering angle sensor.

Installing

The steering angle sensor -G85 must be in centre position before installing.

- Mount steering angle sensor until lugs engage.
- Remove transport protection.



- -> A yellow dot must be visible in the hole -arrow 1-.
- Furthermore, the markings -arrows- must align.

Make sure that centre position is adhered to.

The remaining installation steps are carried out in the reverse sequence:

- Install airbag unit and steering wheel

=> Running Gear, Front-wheel Drive; Repair group 48; Airbag, Steering wheel, Steering column; Removing and installing driver's airbag unit Airbag, Steering wheel, Steering column Removing and installing driver's airbag unit

- Carry out basic setting of steering angle sensor -G85.

=> Running Gear Self-Diagnosis for ESP; Repair group 01; Perform self-diagnosis Perform self-diagnosis

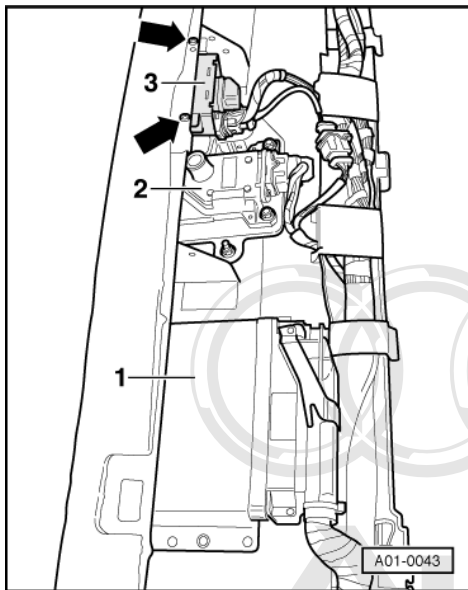
6.4 - Removing and installing ESP control unit -J104

Removing

- Note radio code on vehicles with coded radio; if necessary ask for it.
- Disconnect battery.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for errors or omissions, in particular, in the technical specifications and in the illustrations.

=> Electrical System; Repair group 27; Battery Battery



- Removing rear seat

=> General Body Assembly, Interior; Repair group 72; Rear seats; Removing and installing rear seat bench
 Rear seats Removing and installing rear seat bench

- Item 1, ESP control unit

-> The control unit -J104 is located under the rear seat bench.

Tightening torque for bolts 9 Nm.

Installing

The remaining installation steps are carried out in the reverse sequence:

- Installing rear seat

=> General Body Assembly, Interior; Repair group 72; Rear seats; Removing and installing rear seat bench
 Rear seats Removing and installing rear seat bench

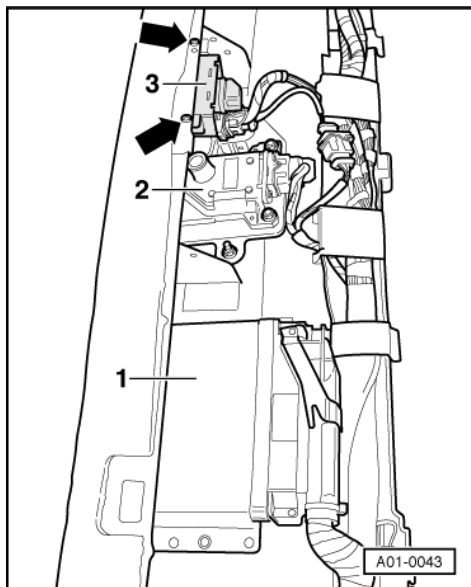
- Enter radio code.

6.5 - Removing and installing lateral acceleration sender -G200 and yaw rate sender -G202

Sender -G202 may also be installed in a joint housing with sender -G200.

Removing

- Note radio code on vehicles with coded radio; if necessary ask for it.



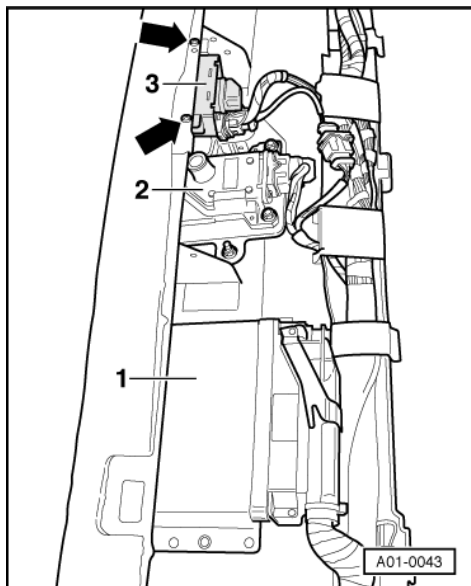
- Removing rear seat

=> General Body Assembly, Interior; Repair group 72; Rear seats; Removing and installing rear seat bench
 Rear seats Removing and installing rear seat bench

- Item 2 yaw rate sender

-> Yaw rate sender -G202 is located underneath the driver's seat.

It measures the vehicle's rotation about the vertical axis (yaw rate).
 Tightening torque for bolts 5 Nm.

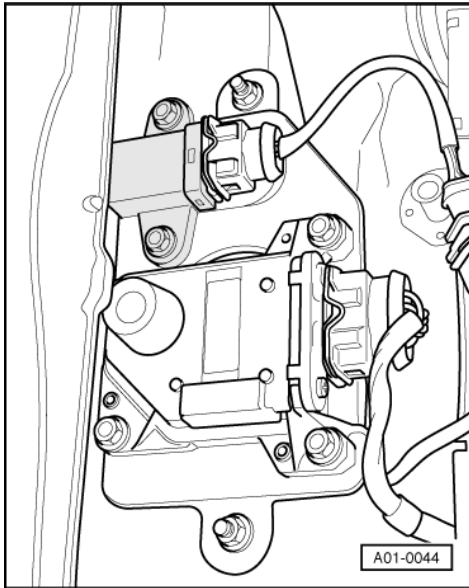


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Lateral acceleration sender -G200

- Item 3 Control unit for ultrasonic sensors -J347
 To remove lateral acceleration sensor -G200, first remove control unit for ultrasonic sensors -J347; see arrows.

Tightening torque of screws 2 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.

-> Lateral acceleration sensor -G200 following removal of ultrasonic sensor control unit -J347.

Caution.

Lateral acceleration sensor is sensitive to impact.

If the sensor has been dropped by mistake it may not work properly and must not be installed into the vehicle. Do not use the sensor again.

Tightening torque of screws 2 Nm.

Installing

The remaining installation steps are carried out in the reverse sequence:

- Installing rear seat

=> General Body Assembly, Interior; Repair group 72; Rear seats; Removing and installing rear seat bench
Rear seats Removing and installing rear seat bench

- Enter radio code.

6.6 - Handbrake switch

Informs control unit -J104 whether or not the handbrake is applied. This information is required because the handbrake influences the ESP control function.

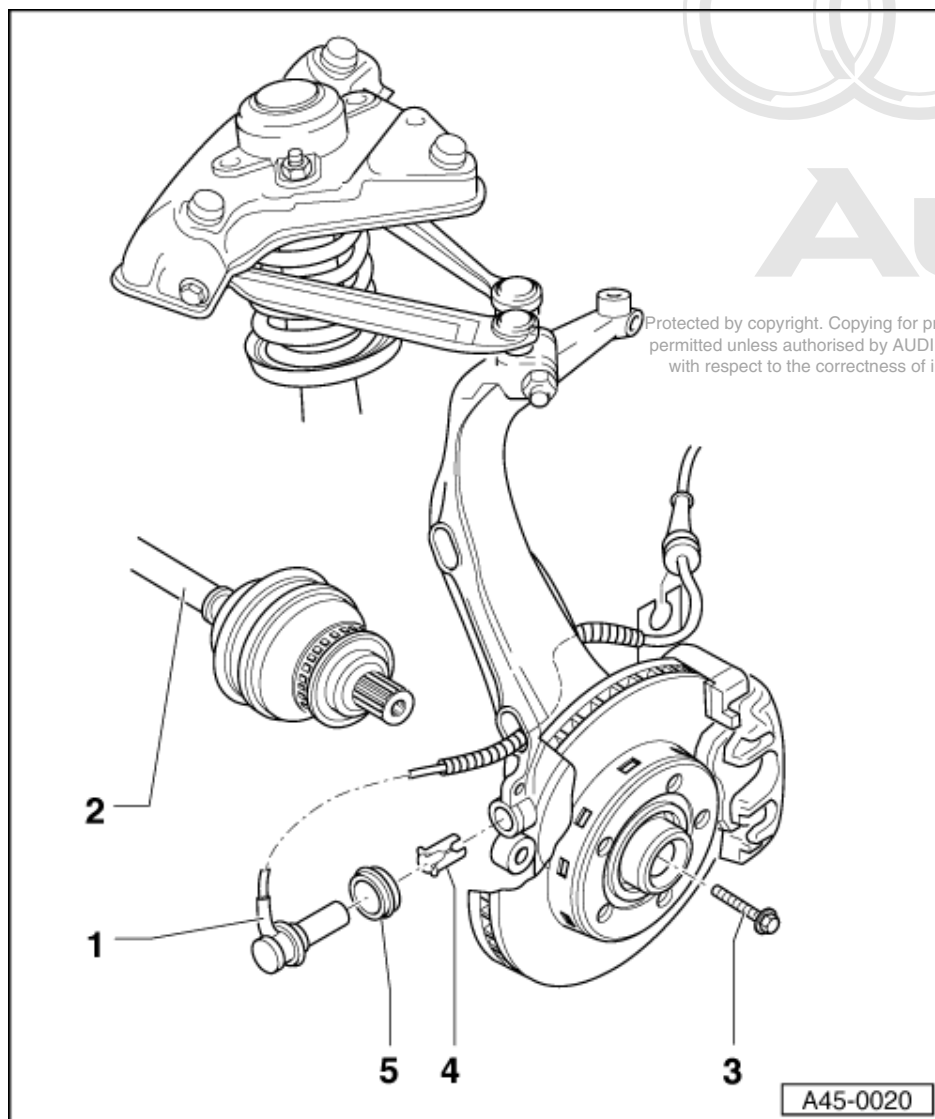
The ABS solenoid valve relay -J106 and ABS return pump relay -J105

are no longer integrated in the hydraulic unit -N55, as in the Bosch type 5.0 system. They are now located in the relay carrier below the driver's side storage compartment

=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations

7 - Removing and installing components of ABS system on front axle

7.1 - Removing and installing components of ABS system on front axle

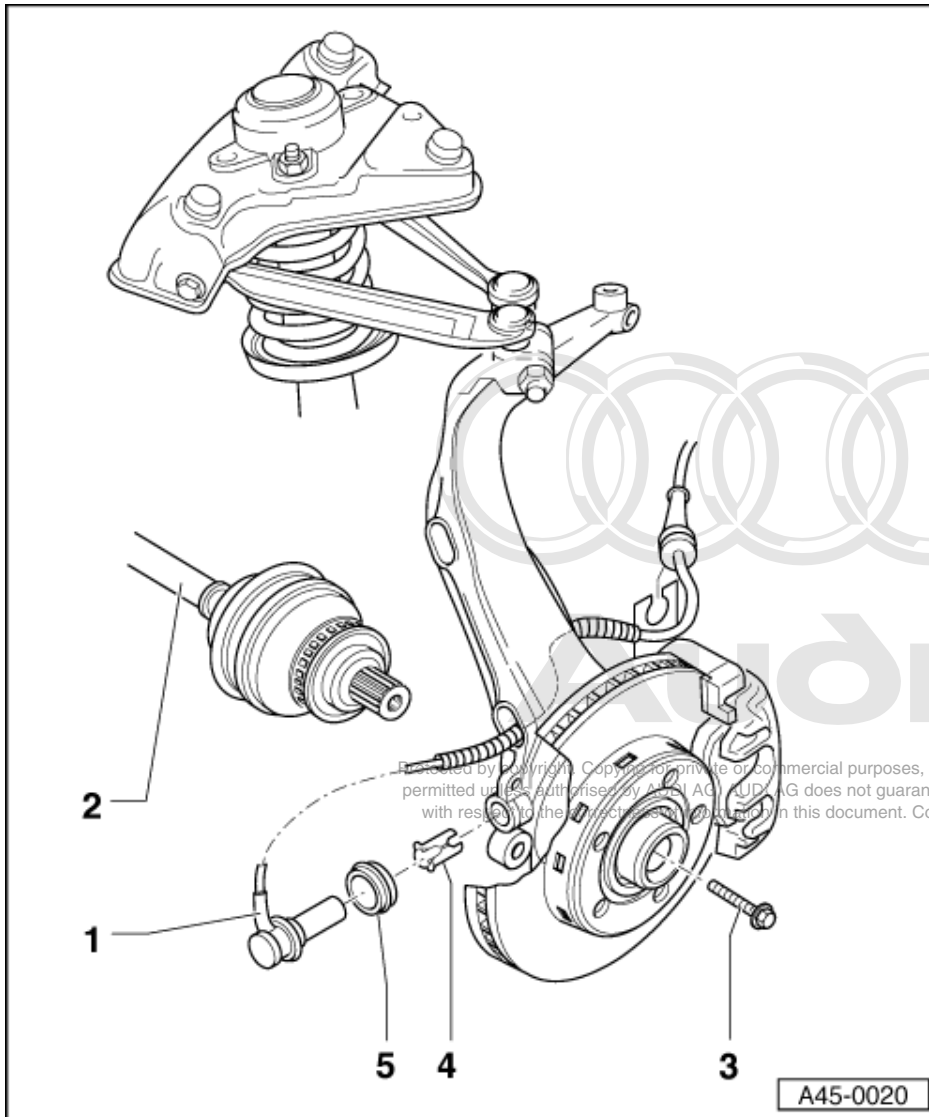


1 Speed sensor

- ◆ Identical part on left and right
- ◆ Removing and installing
=>Page 44 .
- ◆ Connector for speed sensor =>Page 44

2 Drive shaft with rotor

- ◆ Inspect rotor for signs of dirt and damage => Page 48
- ◆ If the rotor is damaged, replace the outer CV joint together with the rotor => Repair group 40
- ◆ Outer CV joint is supplied as a replacement part with the rotor.



3 Collar bolt

- ◆ Always replace
 - ◆ Different versions => Parts List
- Vehicle must be standing on the ground when tightening this bolt.
 Tightening torque:

=> Running Gear, FWD and 4WD; Repair group 40

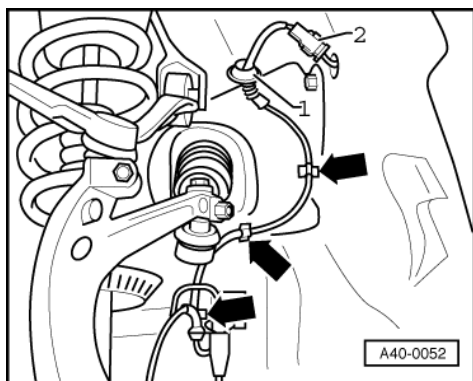
4 Clamping sleeve

- ◆ Always replace
- ◆ Identical part on left and right
- ◆ Grease all around with lubricating paste G 000 650 before inserting in wheel bearing housing
- ◆ Press home in wheel bearing housing

5 Sealing collar

Removing and installing speed sensor on front axle

Removing



- Loosen wheel bolts.
- Raise vehicle.
- Remove wheel.
- -> Detach grommet -1- from the wheel housing.
- Disconnect connector of speed sensor wiring -2-.
- Unclip speed sensor wiring from retainers (arrows).
- Pull ABS speed sensor from wheel bearing housing.

Installing

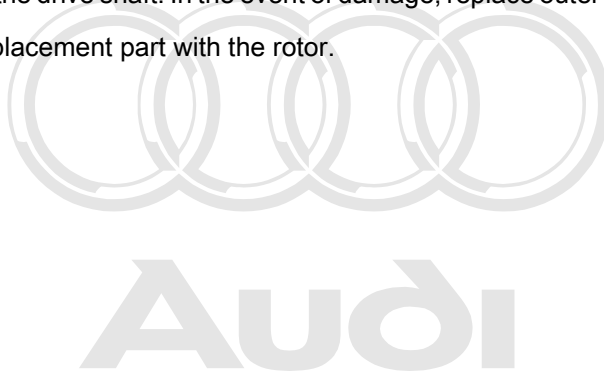
- Before inserting the speed sensor, fit the sealing collar and coat the speed sensor all around with lubricating paste G 000 650.
- Install ABS speed sensor.
- Clip speed sensor wiring into retainers and fit grommet in wheel housing.
- Fit wheels and tighten to 120 Nm.
- Turn steering to full left lock and full right lock and check clearance of speed sensor wiring.

Checking rotor on front axle, removing and installing if necessary

- Raise vehicle.
- Remove wheel.
- Pull speed sensor out of wheel bearing housing.
- Inspect rotor for signs of damage or dirt.

Note:

- ♦ If the rotor is damaged or dirty remove the drive shaft. In the event of damage, replace outer CV joint together with rotor =>Repair group 40
- ♦ The outer CV joint is supplied as a replacement part with the 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.

8.1 - Removing and installing components of ABS system on rear axle, FWD models



- ◆ Identical part on left and right
- ◆ Removing and installing

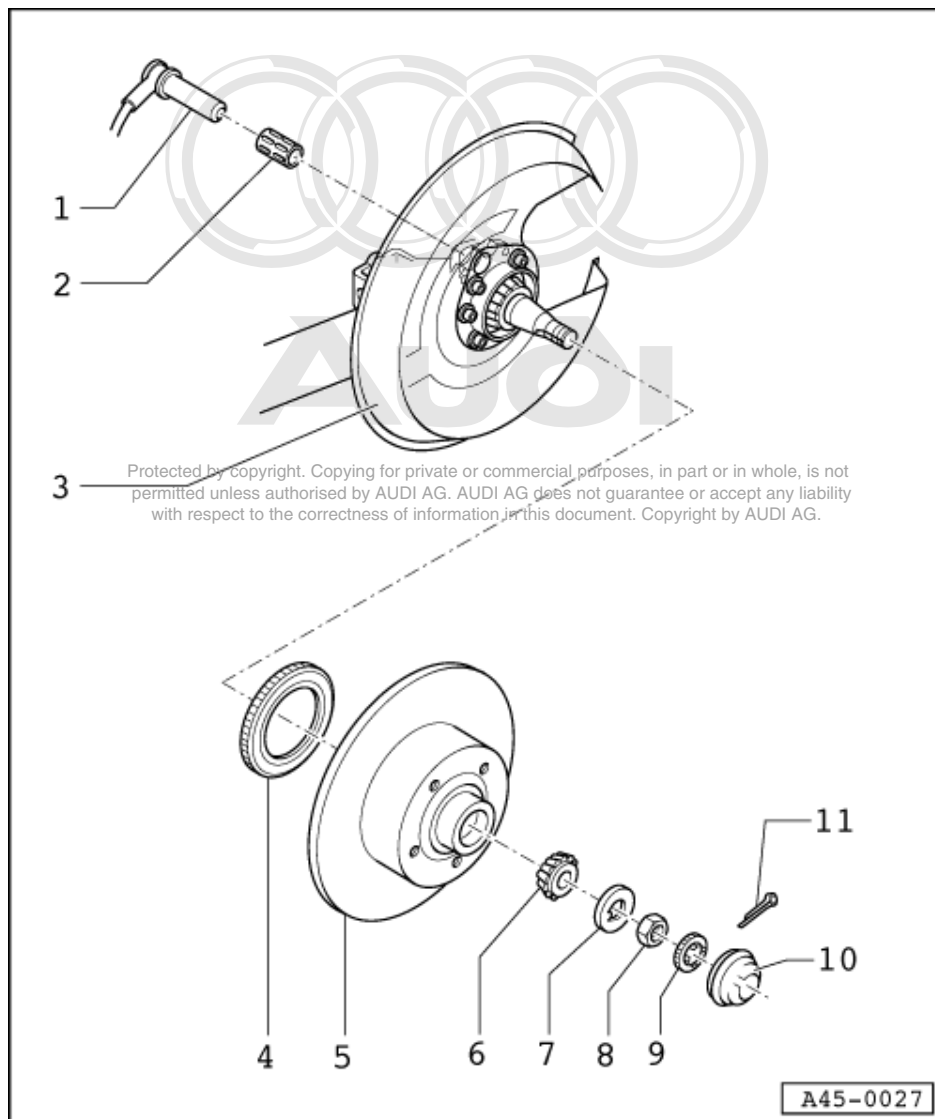
=>Page 48 .

- ◆ Identical part on left and right
- ◆ Removing and installing
=>Page 48 .
- ◆ Release connector of wheel speed sensor cable and detach. Unclip speed sensor wiring

- ◆ Always replace
- ◆ Identical part on left and right

- ◆ Always replace
- ◆ Identical part on left and right
- ◆ Grease all around with lubricating paste G 000 650 before inserting in wheel bearing housing
- ◆ Press home in wheel bearing housing

8.1 - Removing and installing components of ABS system on rear axle, FWD models



3 Axle beam/rear axle with splash plate and stub axle

4 Rotor

- ♦ Removing and installing
=>Page **48**.

5 Wheel hub

6 Outer wheel bearing

7 Thrust washer

8 Hexagon nut

- ♦ Adjusting => Page **49**

9 Locking ring

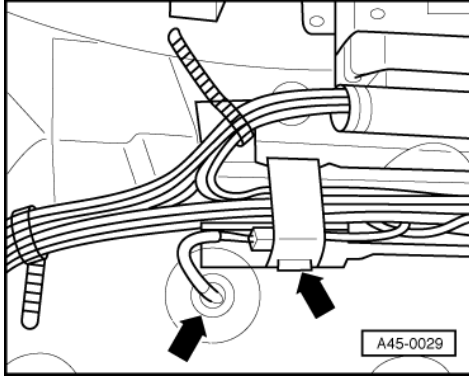
- ♦ Attach to hexagon nut

10 Grease cap

- ♦ Replace

11 Split pin

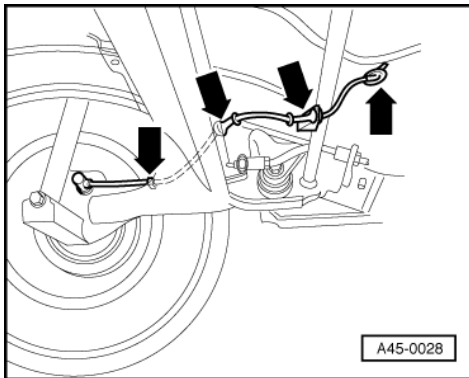
- ♦ Always replace



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.

Removing and installing speed sensor on rear axle

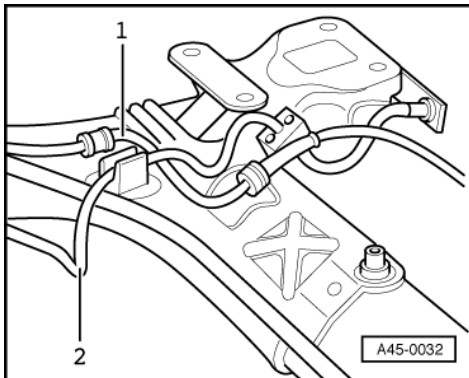
- Switch off ignition.
- Lift rear seat out of its catches.
- -> Release cable holder -arrow-, separate plug connection of speed sensor cable and press out grommet -arrow- (left and right sides are mirror image).
- Loosen wheel bolts.
- Raise vehicle.
- Remove wheel.



- -> Unclip speed sensor wiring from retainers.
- Pull speed sensor out of axle beam.

Installing

- Renew clamping sleeve (=> Page 45 -item 2).
- Grease the O-ring of the speed sensor all around with lubricating paste G 000 650 before inserting.

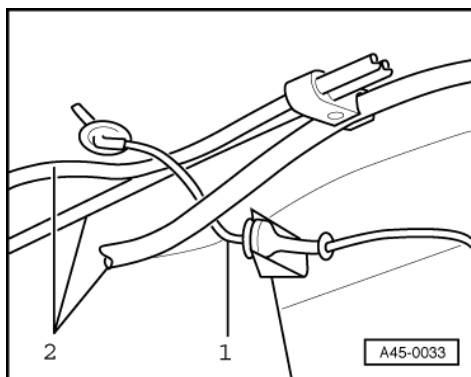


- Connect speed sensor wiring and press into retainers.



Pay attention to the following points when routing the speed sensor wiring:

- -> Route the speed sensor cable -1- in the area shown on the left and right below the brake pipe -2-.
- On the left-hand side, maintain a clearance of about 2 cm between the heat shield of the exhaust system and the speed sensor cable.



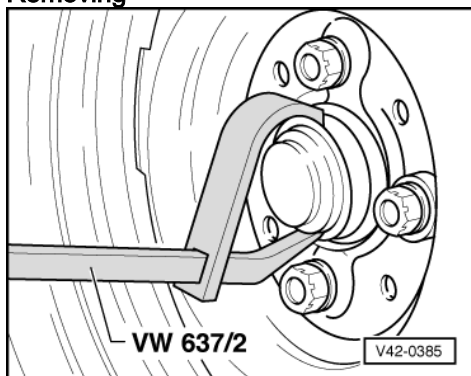
- -> On the right-hand side, route the speed sensor cable -1- between the fuel lines -2-.
- Fit wheels and tighten to 120 Nm.

Checking rotor on rear axle

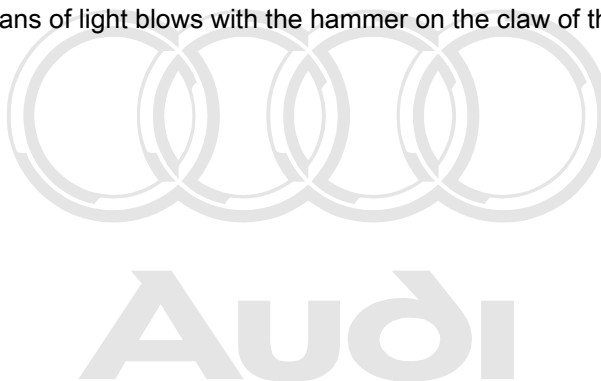
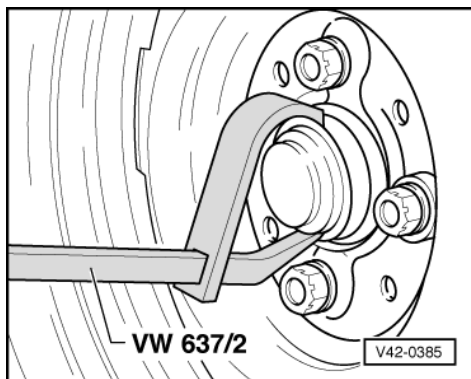
- Raise vehicle.
- Remove wheel.
- Pull speed sensor out of wheel bearing housing.
- Inspect rotor for signs of damage or dirt.

Removing and installing rotor on rear axle

Removing



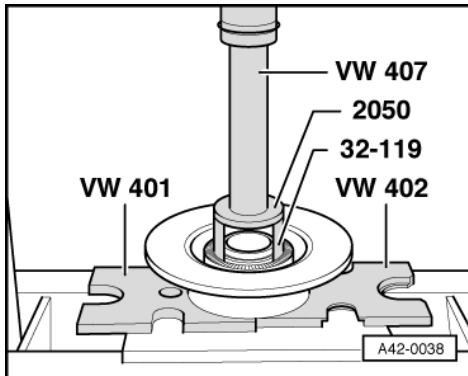
- Raise vehicle.
- Remove wheel.
- Unbolt brake caliper => Repair group 46.
- Suspend brake caliper from bodywork.
- -> Knock the grease cap off the wheel hub by means of light blows with the hammer on the claw of the special tool.



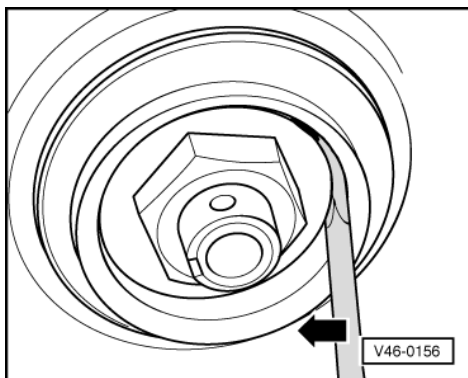
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Press off grease cap.
- Remove split pin (=> Page 46 -Item 11 -).
- Remove locking ring (=> Page 46 -Item 9).
- Remove hexagon nut => Page 46 -Item 8 -.
- Take off thrust washer => Page 46 , outer wheel bearing and wheel hub.
- Drive off rotor => Page 46 with copper drift evenly through the threaded holes of the wheel hub.

Installing



- -> Press rotor onto wheel hub.
- Fit wheel hub, outer wheel bearing and thrust washer onto stub axle.
- Remove hexagon nut => page 46 -Item 8 -.

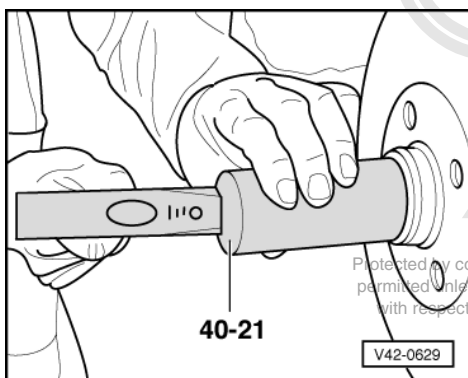


- -> Set wheel bearing play.

Note:

The wheel bearing play is set correctly if it is still just possible to move the thrust washer with a screwdriver by applying light pressure (on no account use lever action). To re-tighten, tighten the hexagon nut, but rotate the wheel during this step to avoid tensioning the bearing.

- Secure with locking ring and new split 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.

- -> Knocking in grease cap

Note:

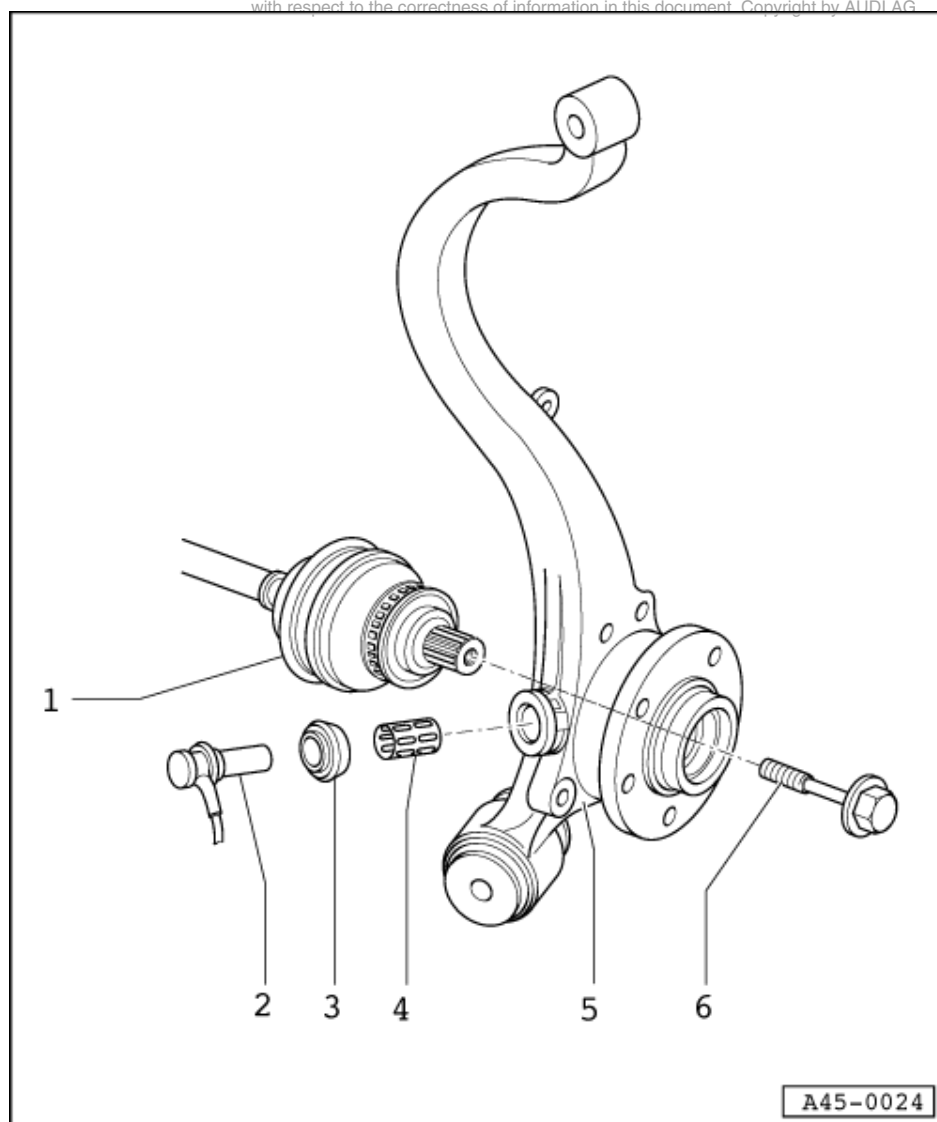
Damaged grease caps permit the ingress of moisture. That is why it is essential to use the tool shown in the illustration. A damaged grease cap must be replaced.

- Install brake caliper => Repair group 46.

9 - Removing and installing components of ABS system on rear axle, 4WD models

9.1 - Removing and installing components of ABS system on rear axle, 4WD models

permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG



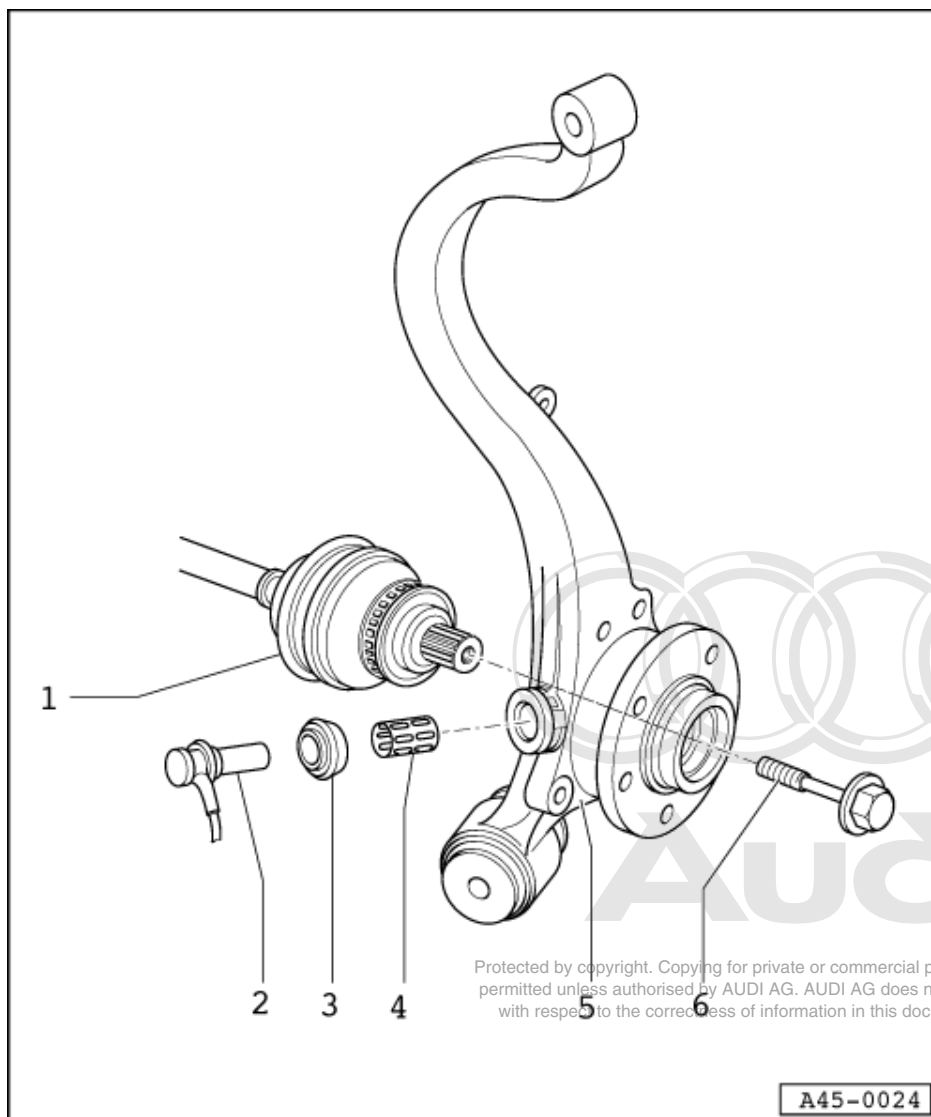
1 Drive shaft with rotor

- ◆ Inspect rotor for signs of dirt and damage => Page 53
- ◆ If rotor is damaged, replace outer CV joint => Page 53
- ◆ Outer CV joint is supplied as replacement part with rotor

2 ABS speed sensor

- ◆ Identical part on left and right
- ◆ Clean inside surface of hole before inserting sensor

♦ Replacing => Page 52 .



3 Sealing collar

4 Clamping sleeve

- ♦ Always replace
- ♦ Identical part on left and right
- ♦ Grease all around with lubricating paste G 000 650 before inserting in wheel bearing housing
- ♦ Press home in wheel bearing housing

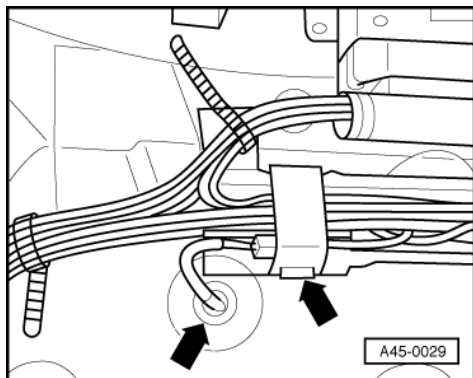
5 Wheel bearing housing

6 Hexagon bolt

- ♦ Always replace
- Vehicle must be standing on the ground when tightening this bolt.
- Tightening torque:
- Bolt M14:

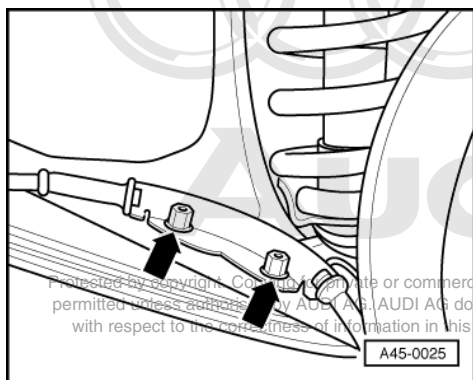
=> Running Gear, FWD and 4WD; Repair group 42

Removing and installing speed sensor on rear axle (vehicles with 4WD)

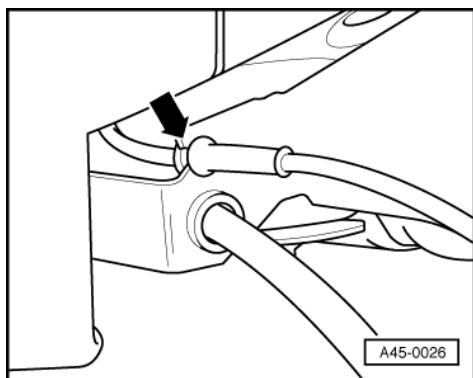


Removing

- Switch off ignition.
- Lift rear seat out of its catches.
- -> Release cable holder -arrow-, separate plug connection of speed sensor cable and press out grommet -arrow- (left and right sides are mirror image).
- Loosen wheel bolts.
- Raise vehicle.
- Remove wheel.



- -> Release securing nut -arrow-.



- -> Unclip speed sensor wiring from retainers (arrows).
- Pull speed sensor out of wheel bearing housing.

Installing

- Before inserting new speed sensor renew clamping sleeve.
- Grease the O-ring of the speed sensor all around with lubricating paste G 000 650 before inserting.
- Push speed sensor into wheel bearing housing by hand.

- Route speed sensor cable back in original position - see removal.

Checking rotor on rear axle, removing and installing if necessary

- Raise vehicle.
- Remove wheel.
- Pull speed sensor out of wheel bearing housing.
- Inspect rotor for signs of damage or dirt.

Note:

- ♦ If the rotor is damaged or dirty remove the drive shaft. In the event of damage, replace outer CV joint together with rotor =>Repair group 40.
- ♦ The outer CV joint is supplied as a replacement part with the rotor.

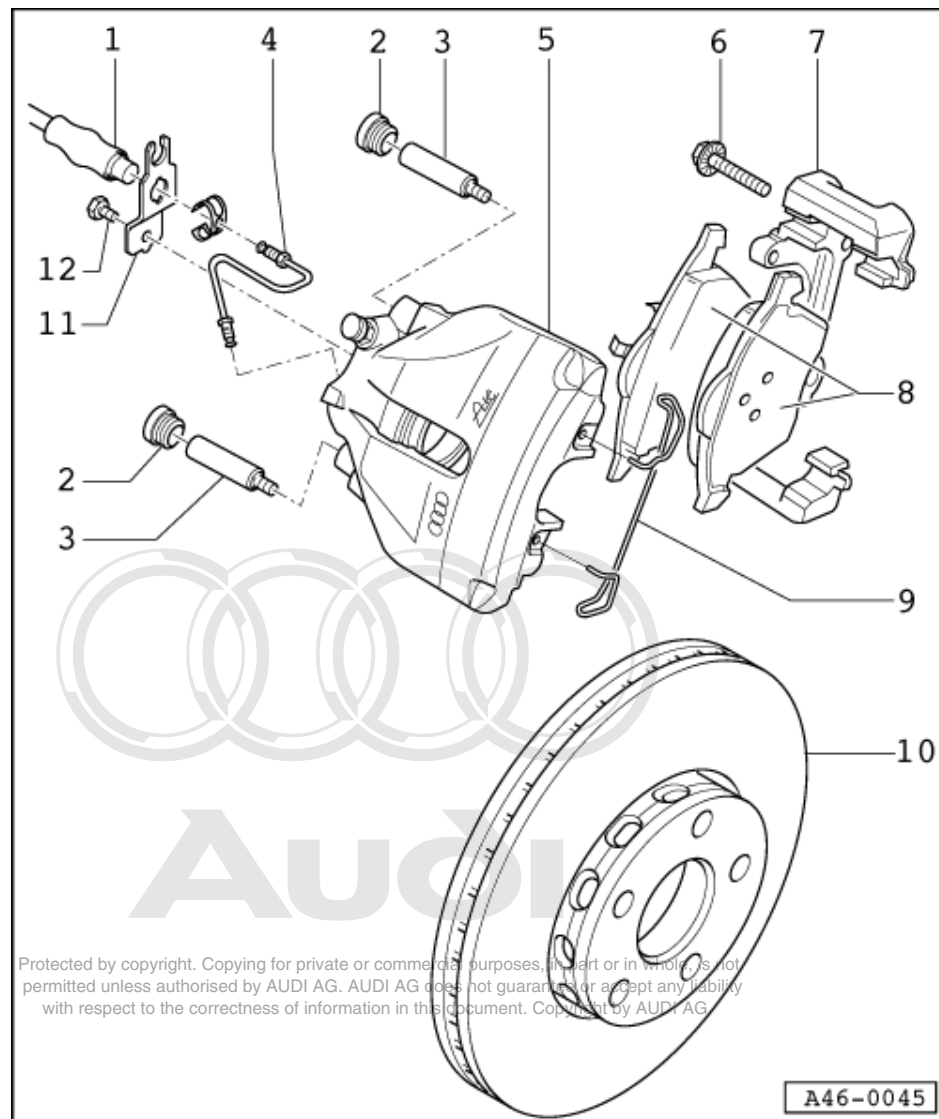


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

46 - Brakes, Brake mechanics

1 - Front brakes FN3

1.1 - Front brakes FN3

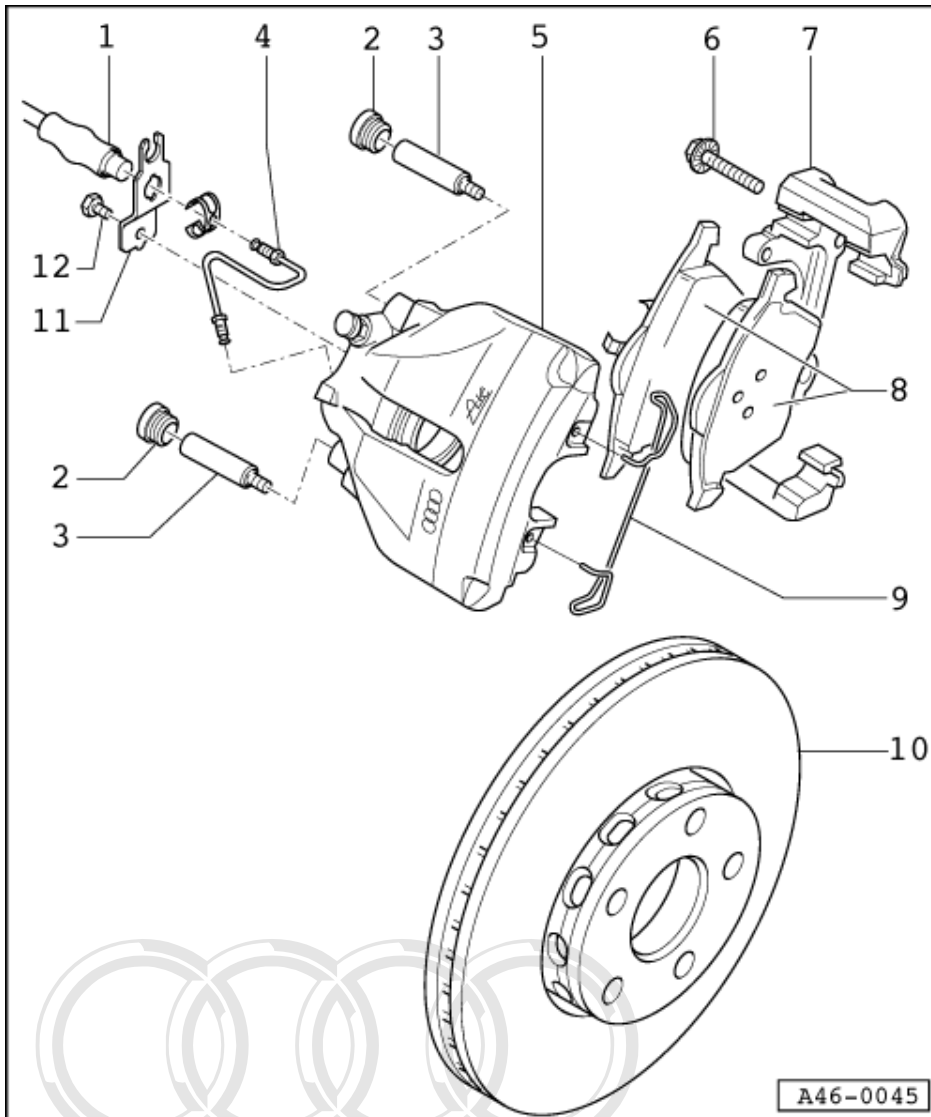


1.2 - Servicing front brakes

Notes:

- ♦ Always install the complete repair kit.
- ♦ After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in the normal operating position.

- ♦ To draw off brake fluid from the reservoir, use a bleeder bottle which is used only for brake fluid. Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.



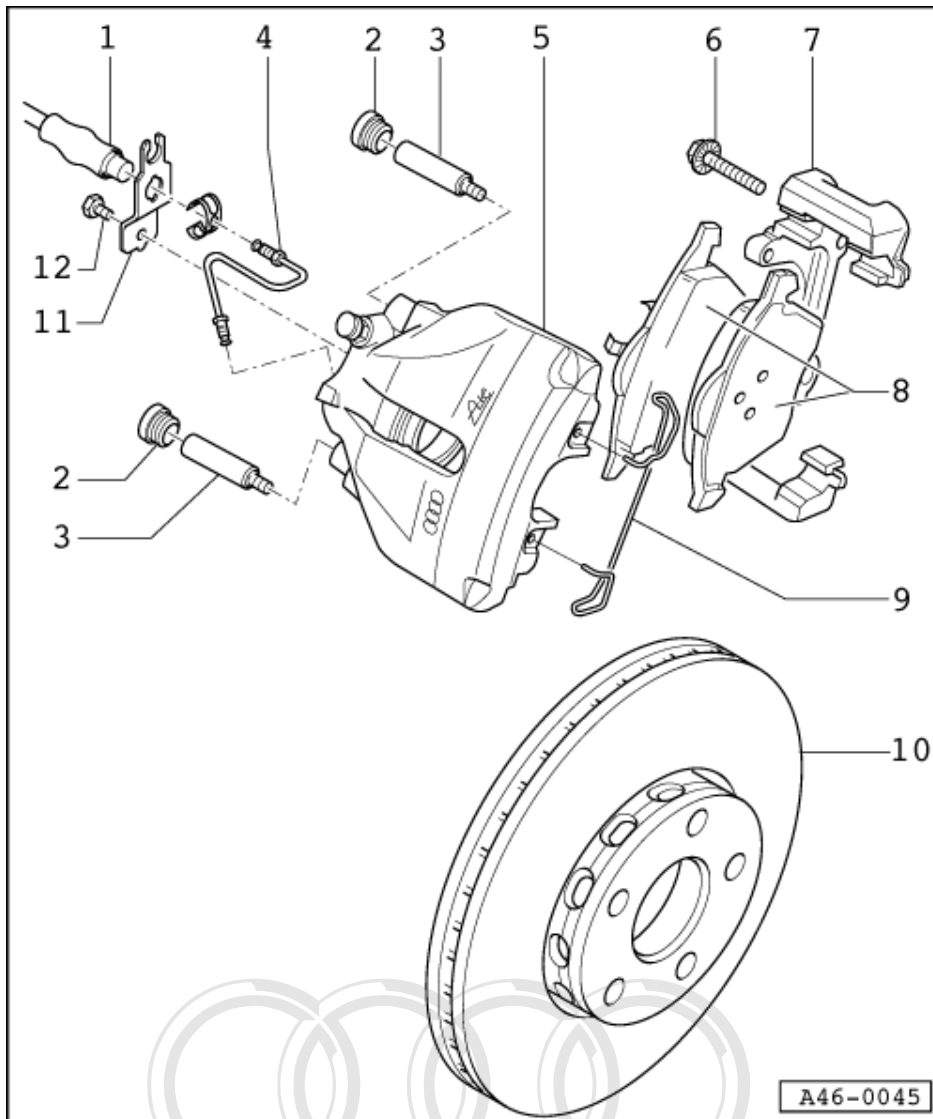
- ♦ Brakes can be checked on all commercially available brake test stands, provided that the driving speed of the two driving rollers of the test stand does not exceed 5.5 km/h.
- ♦ The tightening torque of the brake pipes is 15 Nm.

1 Brake hose

- ♦ Do not disconnect brake hose when changing brake pads

2 Trim cap

♦ **Remove** Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Guide pin, 25 Nm

4 Brake pipe, 15 Nm

- ◆ Screw into brake caliper housing
- ◆ Screw into brake hose, counterholding at hexagon on brake hose.
- ◆ Ensure that lugs are properly seated in retainer grooves.

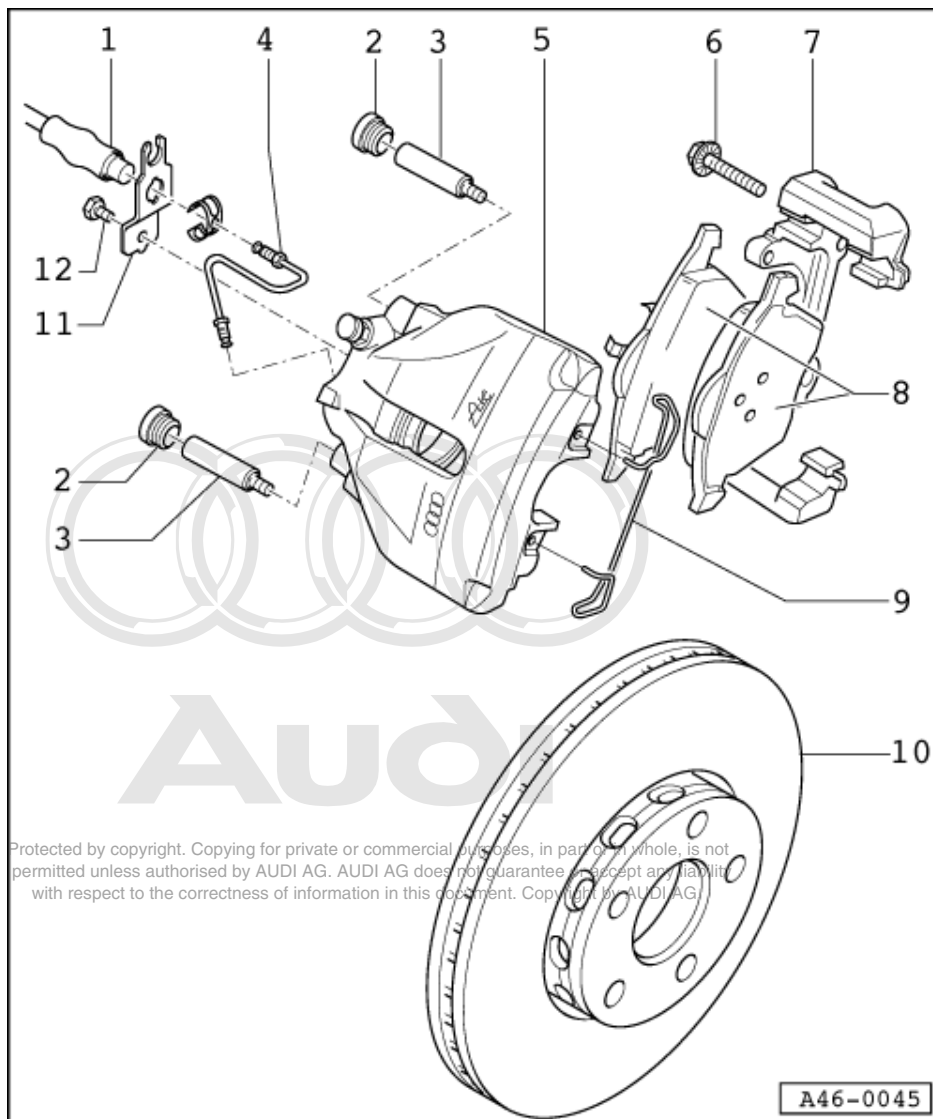
5 Brake caliper housing

- ◆ Unscrew from brake carrier to replace brake pads
- ◆ Servicing brake caliper => Page **136**

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the written permission of AUDI AG. AUDI AG does not accept any liability

=> Brake System Repair group 00, Technical data

with respect to the correctness of information in this document. Copyright by AUDI AG.

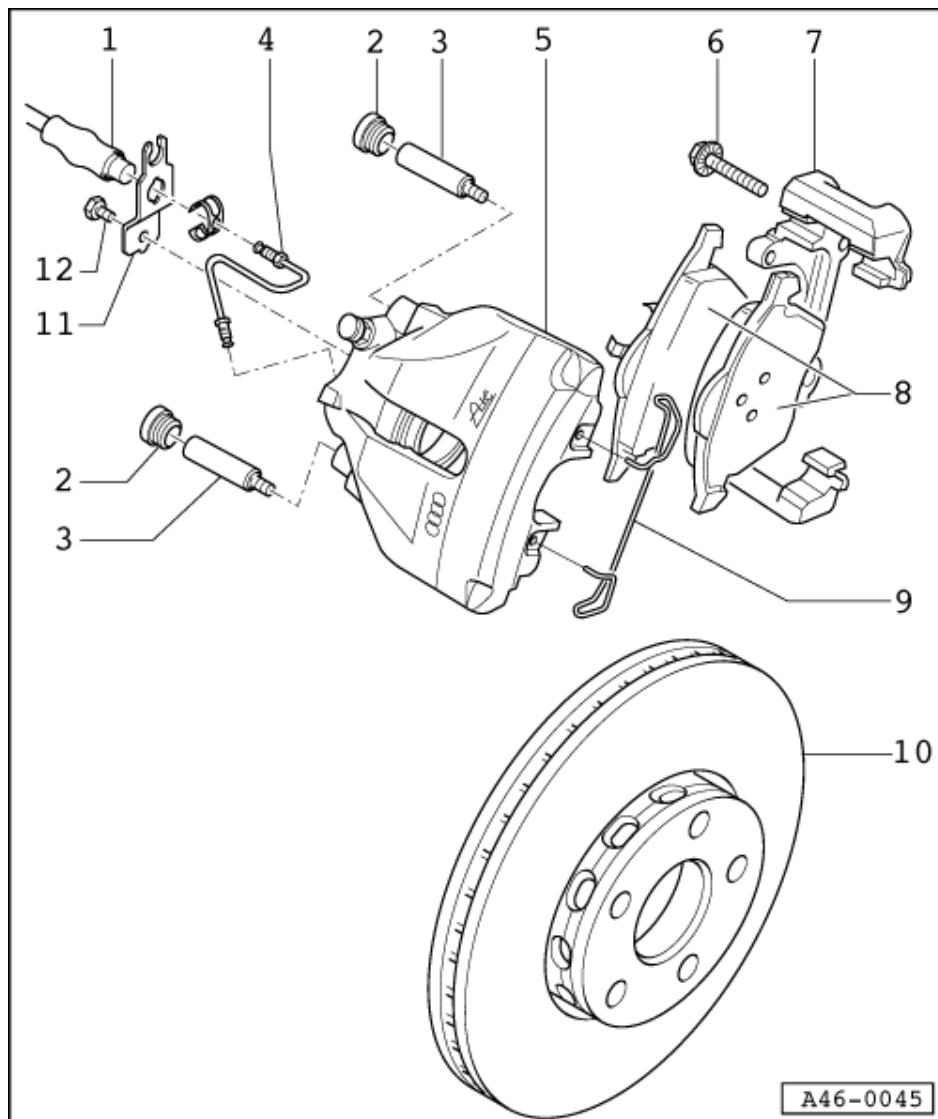


- 6 Ribbed bolt, 125 Nm**
 ♦ Clean ribbing if reusing
- 7 Brake carrier**
 ♦ Bolt to wheel bearing housing
- 8 Brake pads**

Note:

The inner pad (with expansion spring) has an arrow. The arrow should point in the direction of rotation of the brake disc when travelling forwards. If installed incorrectly this may cause noise problems.

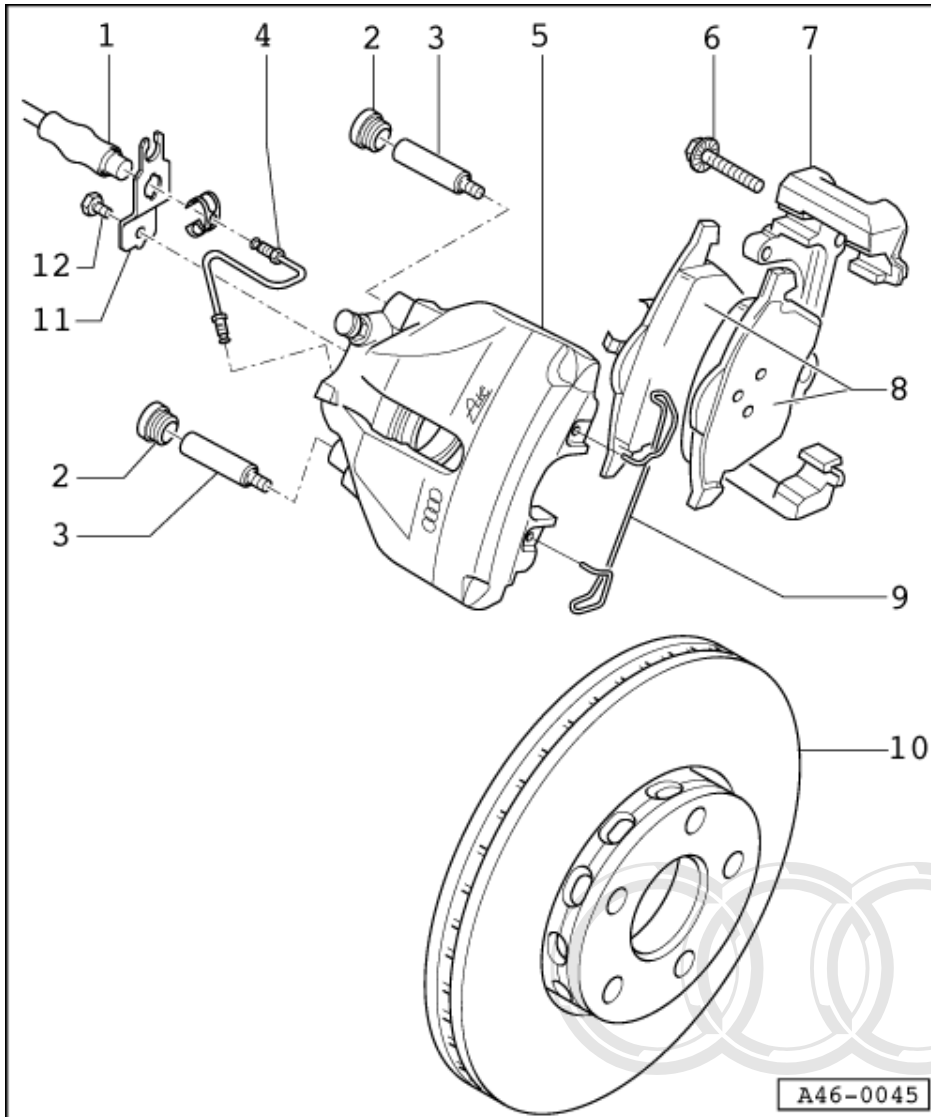
- ♦ The outer brake pads are provided with an adhesive sheet on the backing plate of the pad. Remove the protective sheet before inserting pads.



- ◆ Different versions => Parts List
- ◆ Always replace all components on an axle
- ◆ Removing and installing
=> Page 60

Note:

Always clean the brake calipers (no grease) before inserting new brake pads. At the same time, make sure that all adhesive sheet residue on the contact surfaces of the outer brake pad is removed.

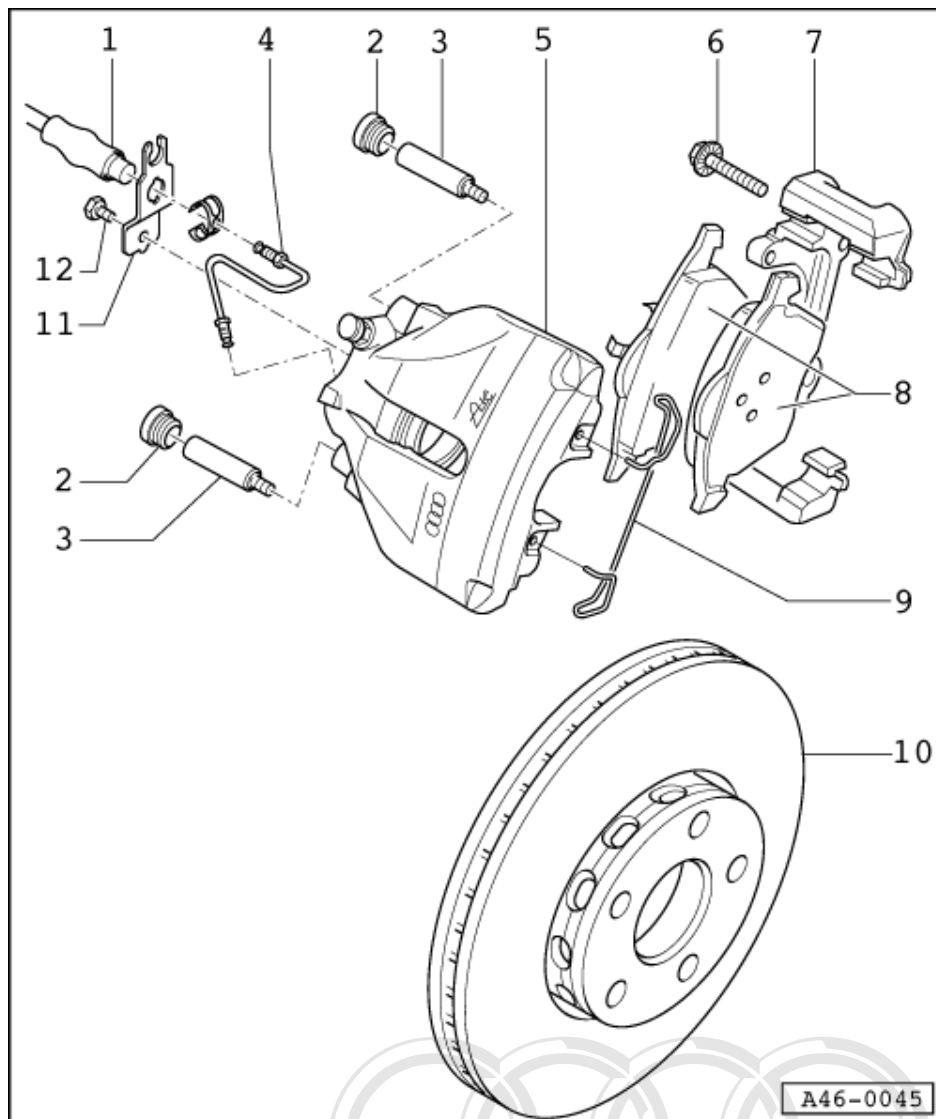


9 Retaining spring

- ♦ Insert in both holes in brake caliper housing

Note:

After inserting the retaining spring into the two holes, press it under the brake carrier. If incorrectly installed, it is not possible to adjust the wear of the outer pad, and the pedal travel will be increased as a result.



10 Brake disc

- ♦ Always replace all components on an axle
- ♦ Remove brake caliper prior to removing
- ♦ Always dress evenly, on both sides, starting from thickness when new

=> Brake System; Repair group 00; Technical data Technical data

11 Bracket

- ♦ Bolt to brake caliper housing

12 Hexagon bolt, 10 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.

1.3 - Removing and installing brake pads

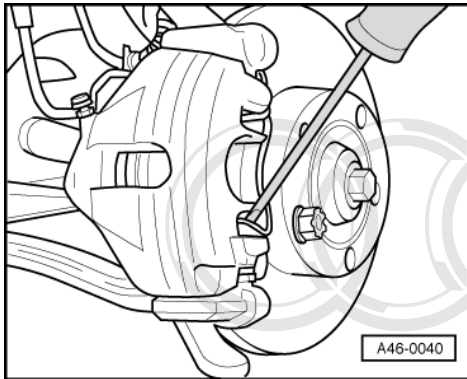
Removing

Note:

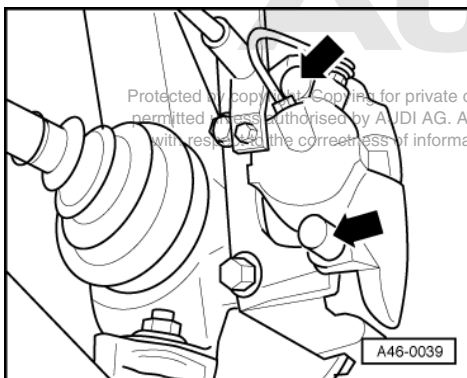
Mark brake pads to be reused on removal. Reinstall in their original position to prevent uneven braking!

- Raise vehicle.

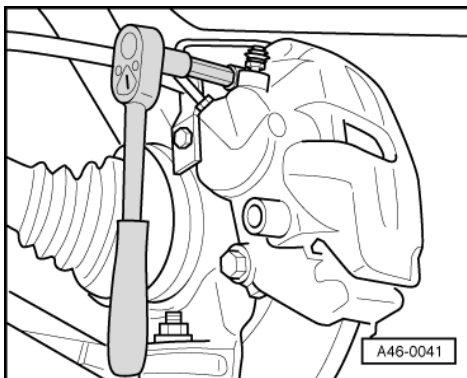
- Remove wheels.



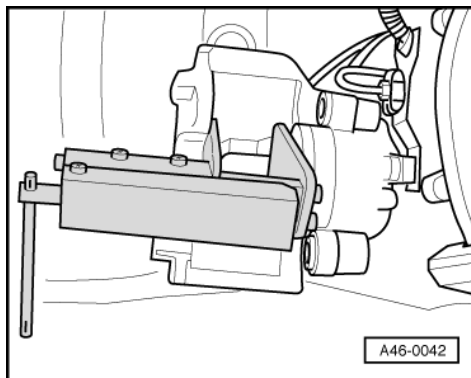
- -> Lever off brake pad retaining spring from brake caliper housing with a screwdriver and remove.



- -> Remove protective caps.



- -> Unscrew both guide pins and remove from brake caliper.
- Remove brake caliper housing and lay to one side so that the weight of the brake caliper does not stress or damage the brake hose.
- Remove brake pads from brake caliper housing or from brake carrier.



Installing

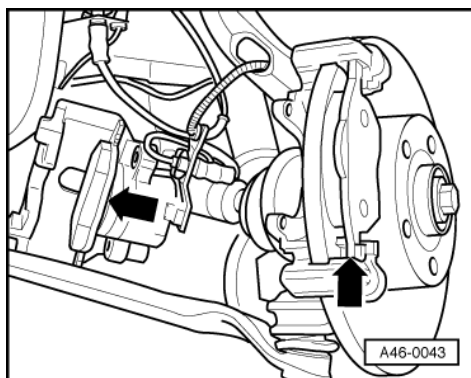
- -> Press back piston.

Note:

Before inserting new brake pads, press piston back into the cylinder with resetting tool. Before pressing the piston back, draw off brake fluid from the reservoir with a bleeder bottle. Otherwise brake fluid which was used to top up the brake fluid reservoir, may escape and cause damage.

Important

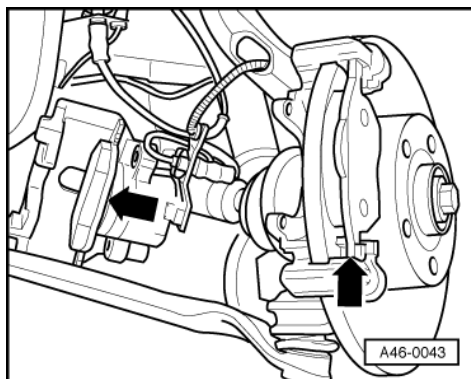
Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.



- Install brake pad with retaining spring into brake caliper housing (piston).

Note:

The inner pad (with expansion spring) has an arrow. The arrow should point in the direction of rotation of the brake disc when travelling forwards. If installed incorrectly this may cause noise problems.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 protective sheet on backing plate of outer brake pad.
- Fit outer brake pad onto brake carrier.
- Secure brake caliper housing to brake carrier with both guide pins to 25 Nm.
- Fit both protective caps.
- Insert retaining spring into brake caliper housing.

Notes:

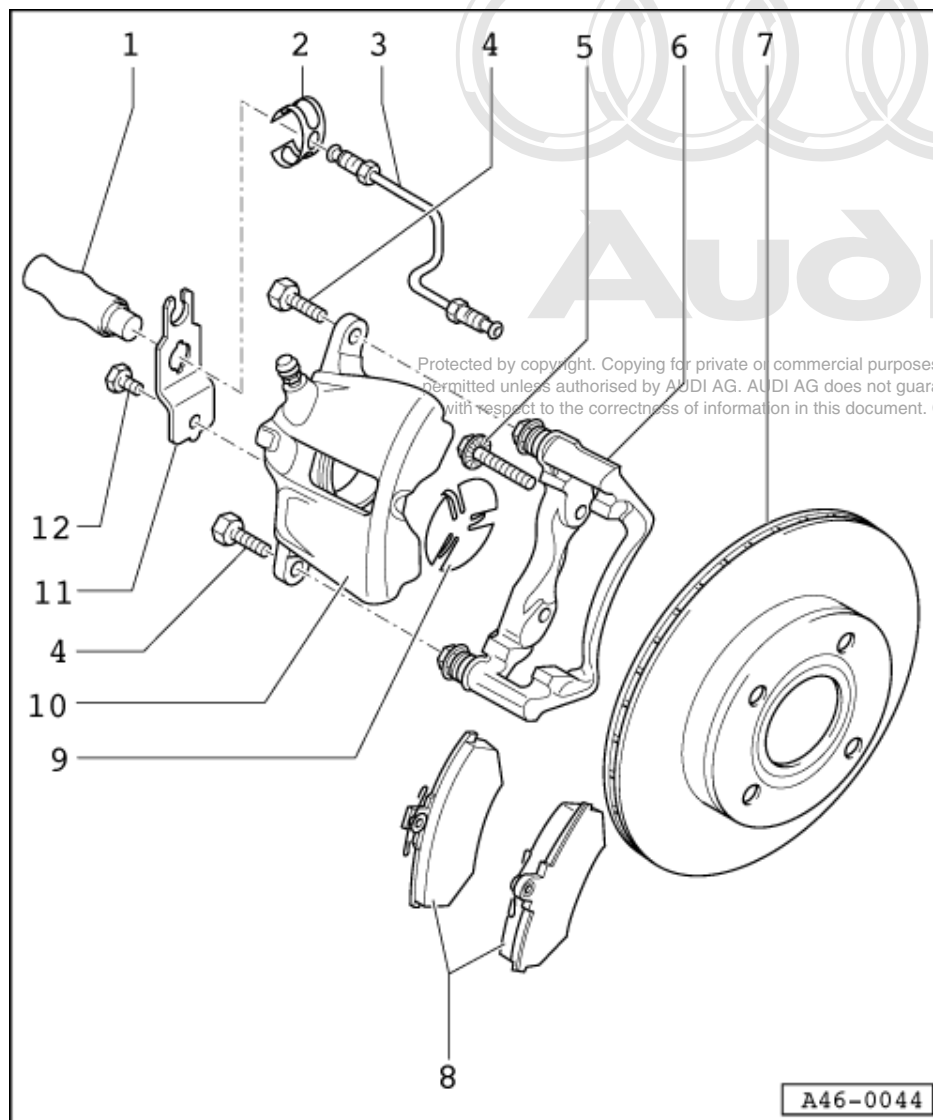
- ♦ After inserting the retaining spring into the two holes, press it under the brake carrier. If incorrectly installed, it is not possible to adjust the wear of the outer pad, and the pedal travel will be increased as a result.

After replacing the brake pads, depress pedal firmly several times with the vehicle stationary, so that the brake pads are properly seated in their normal operating position.

- Check brake fluid level and top up if necessary.

2 - Front brakes C54

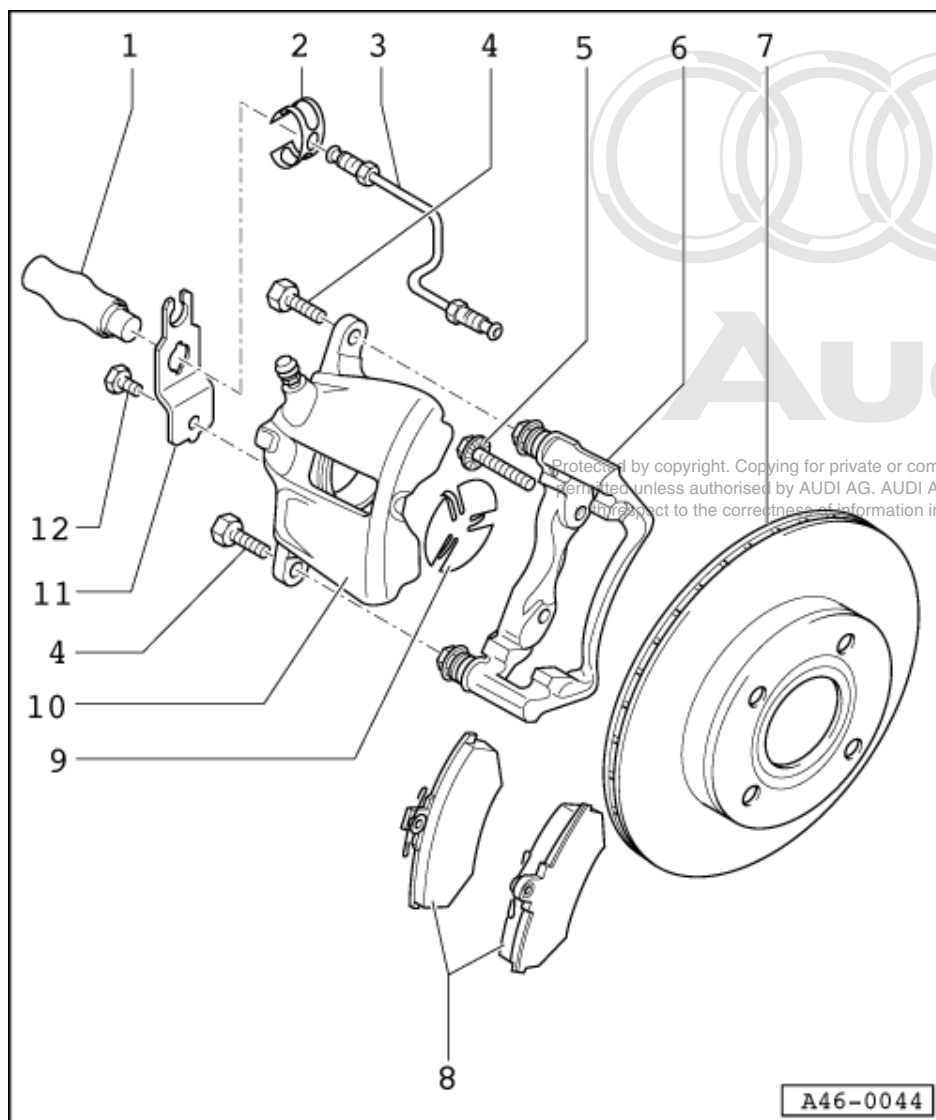
2.1 - Front brakes C54



2.2 - Servicing front brakes

Notes:

- ♦ Always install the complete repair kit.
- ♦ After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in the normal operating position.
- ♦ To draw off brake fluid from the reservoir, use a bleeder bottle which is used only for brake fluid. Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.

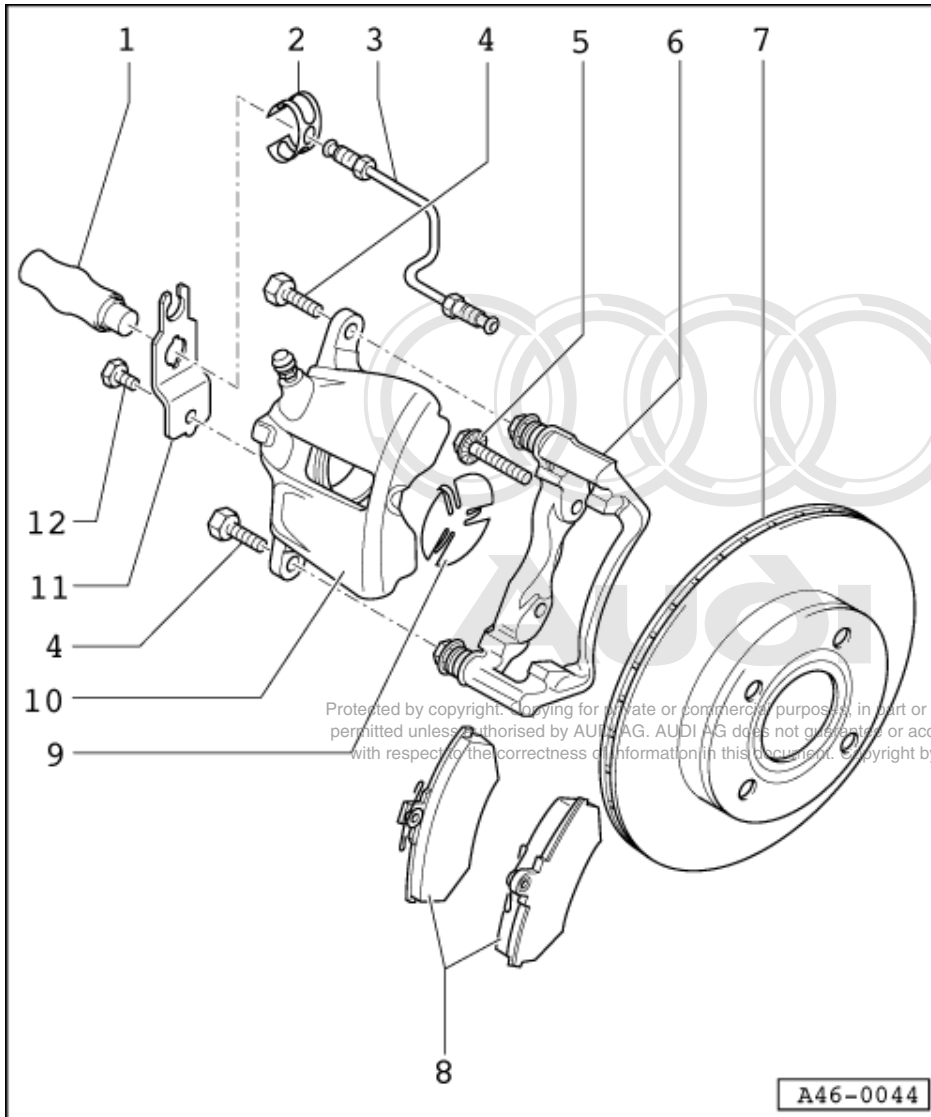


- ♦ Brakes can be checked on all commercially available brake test stands, provided that the driving speed of the two driving rollers of the test stand does not exceed 5.5 km/h.
- ♦ The tightening torque of the brake pipes is 15 Nm.

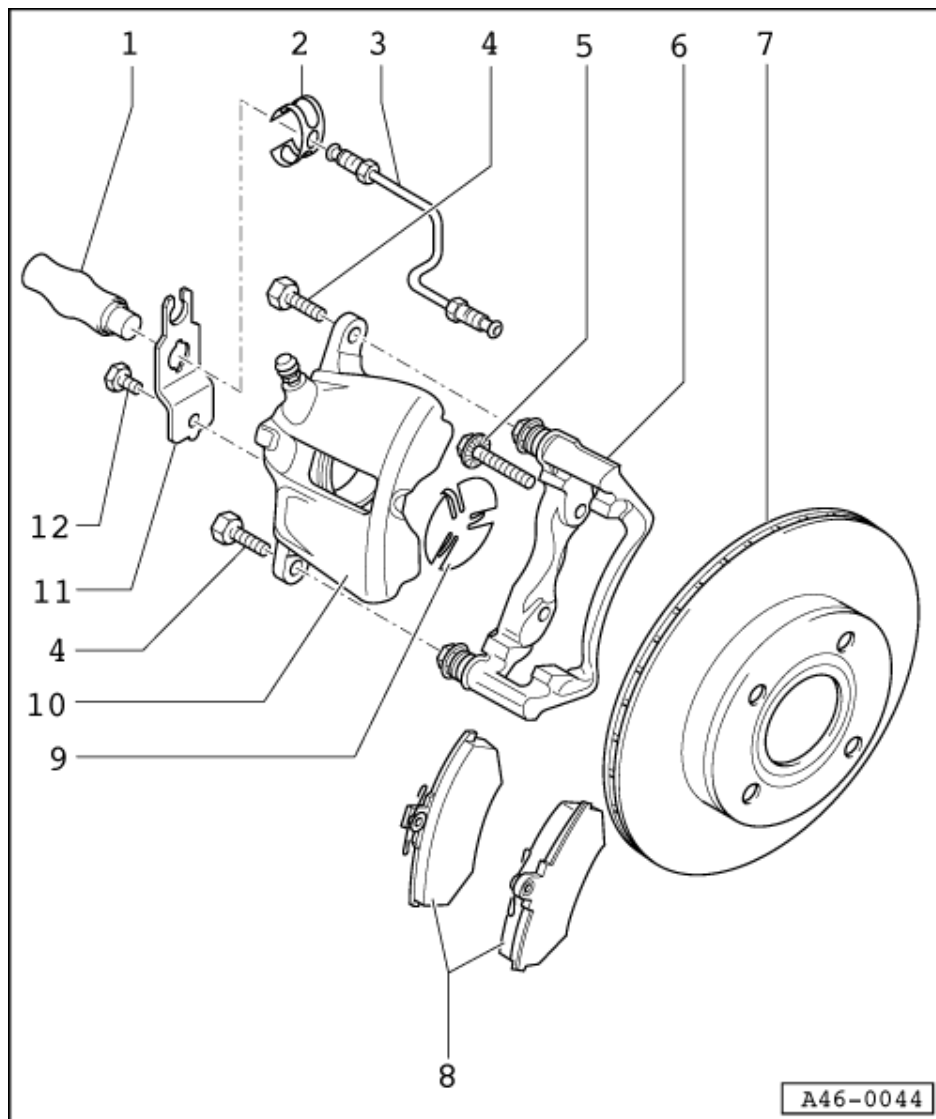
1 Brake hose

- ♦ Do not disconnect brake hose when changing brake pads

2 Clamp



- 3 Brake pipe, 15 Nm**
 - ◆ Screw into brake caliper housing
 - ◆ Screw into brake hose, counterholding at hexagon on brake hose.
- 4 Self-locking bolt, 30 Nm**
 - ◆ Always replace
 - ◆ When loosening and tightening counter hold on guide pin
- 5 Ribbed bolt, 125 Nm**
 - ◆ Clean ribbing if reusing
- 6 Brake carrier with guide pin and protective cap**
 - ◆ Supplied as replacement part assembled with sufficient quantities of grease on guide pins



7 Brake disc

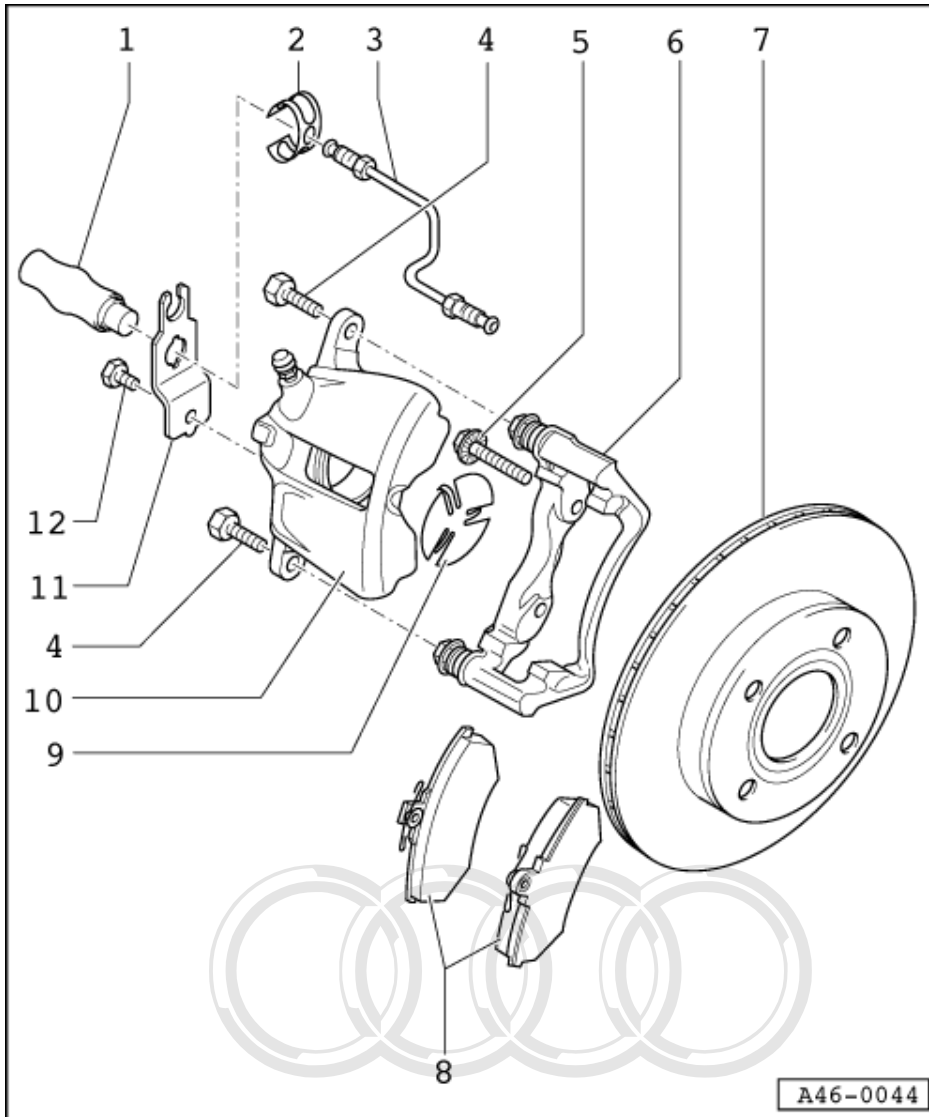
- ◆ Always replace all components on an axle
- ◆ Remove brake caliper prior to removing
- ◆ Always dress evenly, on both sides, starting from thickness when new

=> Brake System; Repair group 00; Technical data Technical data

8 Brake pads

- ◆ Different versions => Parts List
- ◆ Always replace all components on an axle
- ◆ Removing and installing=> Page 60

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Heat shield

- ◆ Insert into piston

10 Brake caliper housing

- ◆ Do not disconnect brake hose when changing brake pads

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

=> Brake System; Repair group 00; Technical data Technical data

11 Bracket

- ◆ Bolt to brake caliper housing

12 Hexagon bolt, 10 Nm

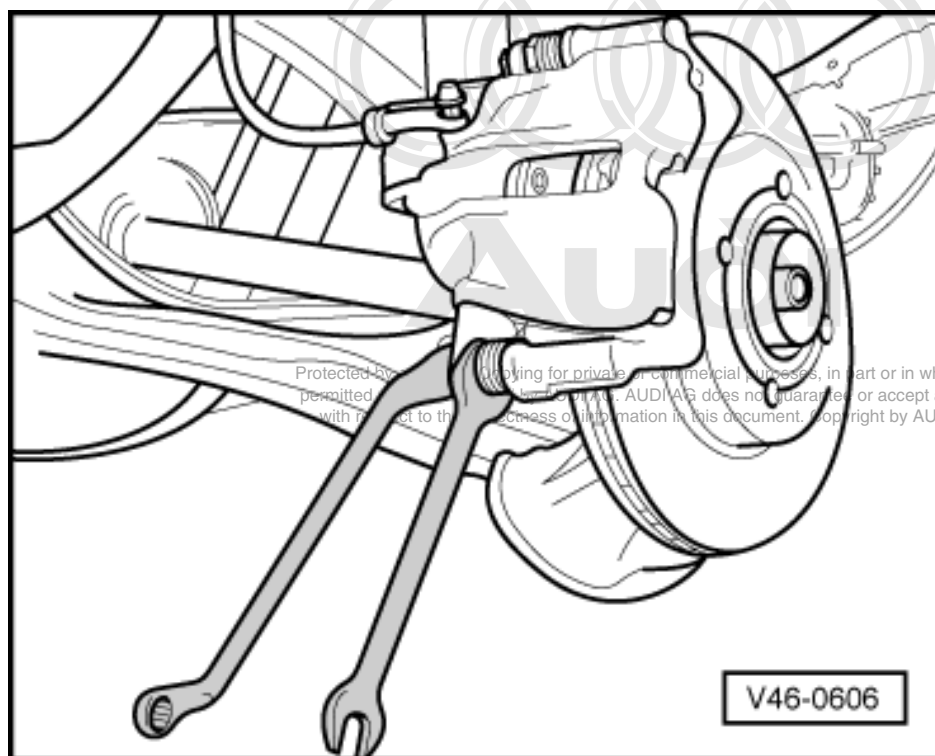
2.3 - Removing and installing brake pads

Removing

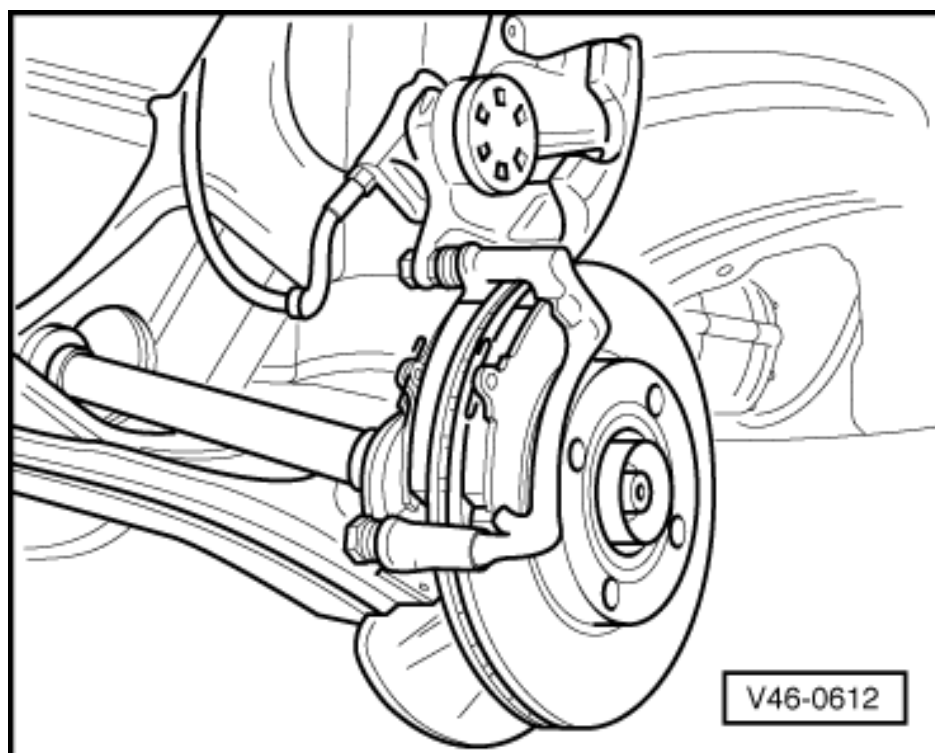
Note:

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

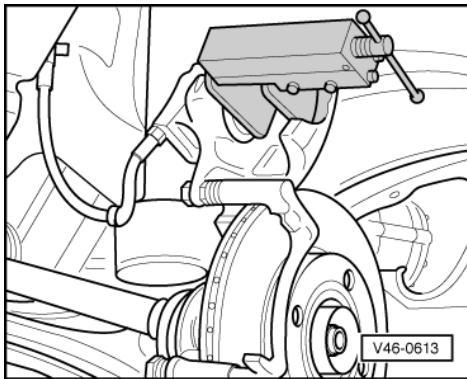
- Raise vehicle.
- Remove wheels.



- -> Remove bolts from brake caliper housing, counterholding on guide pins.



- -> Swivel brake calliper housing up and remove brake linings.



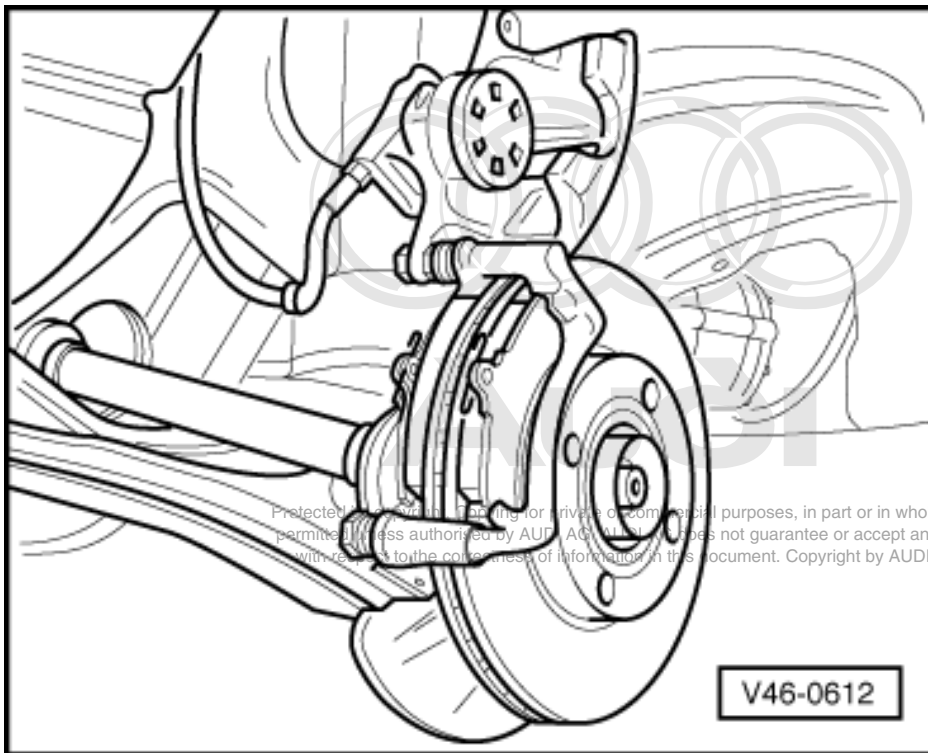
- -> Press back piston.

Note:

Before inserting new brake pads, press piston back into the cylinder with resetting tool. Before pressing the piston back, draw off brake fluid from the reservoir with a bleeder bottle. Otherwise brake fluid which was used to top up the brake fluid reservoir, may escape and cause damage.

Important
Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.

Installing



- -> Insert brake pads.
- Swivel brake caliper housing down and tighten bolts to 30 Nm.

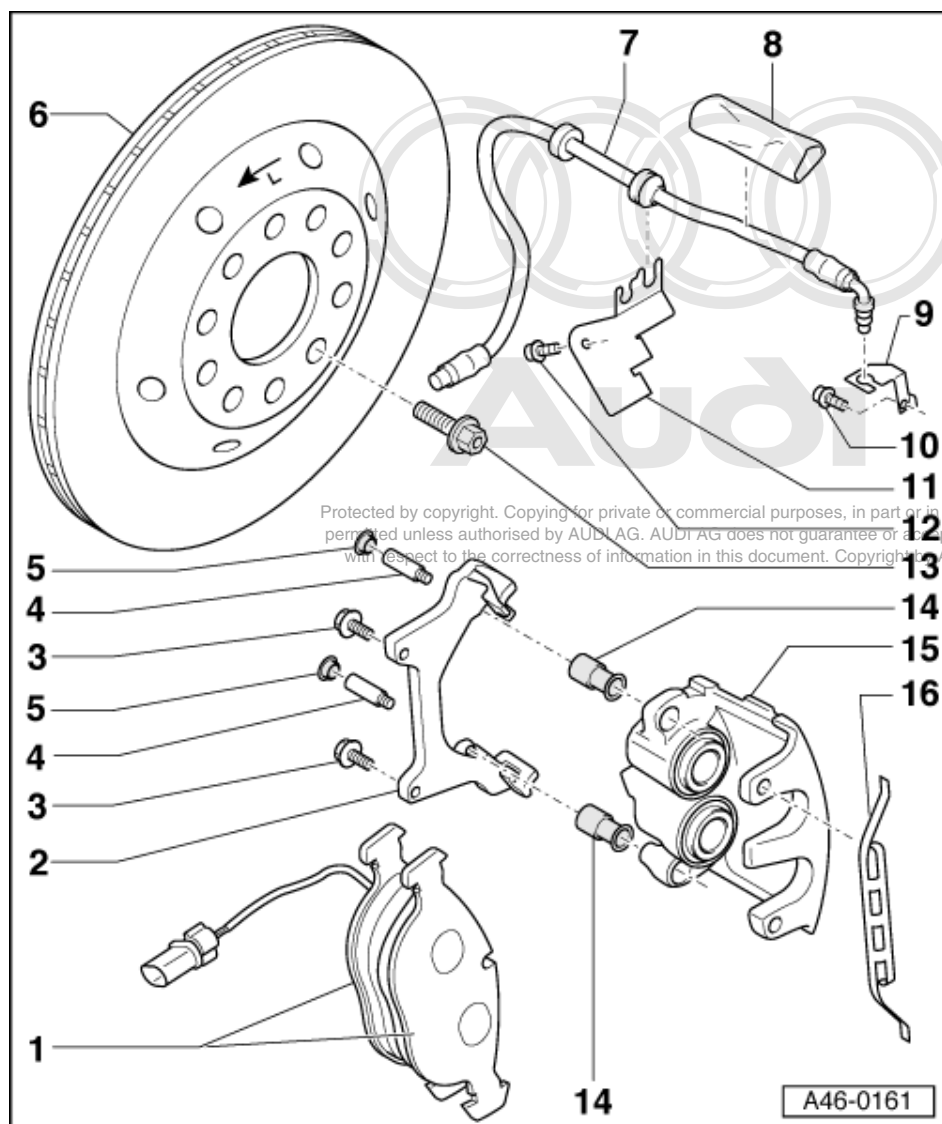
Notes:

- ♦ The repair kit includes four self locking hexagon bolts which must be installed in all cases.

- ♦ Each time after replacing the brake pads, depress the brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.
- Fit wheels and tighten to 120 Nm.
- Check brake fluid level and top up if necessary.

3 - Front brake FN2

3.1 - Front brake FN2

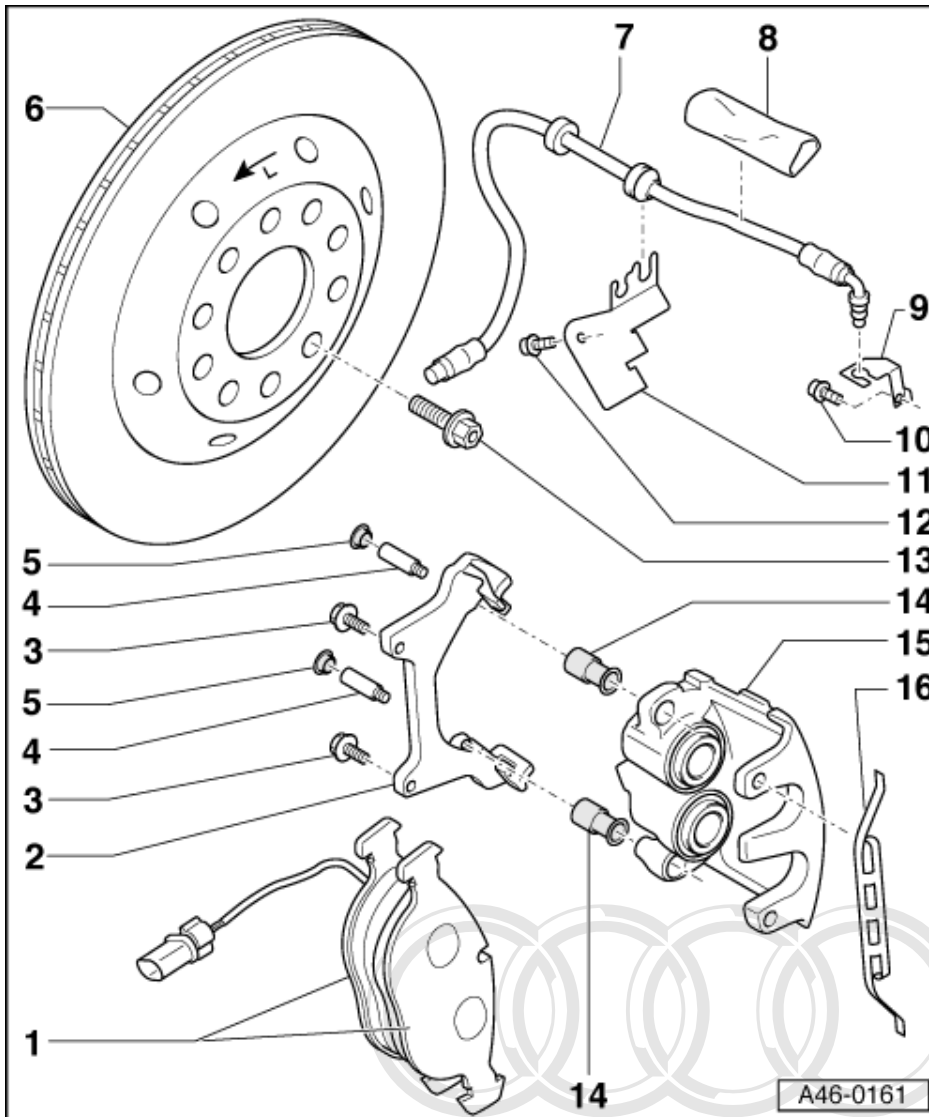


3.2 - Servicing front brakes

Notes:

- ♦ Always install the complete repair kit.
- ♦ After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in the normal operating position.

- ♦ To draw off brake fluid from the reservoir, use a bleeder bottle which is used only for brake fluid. Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.



- ♦ The tightening torque of the brake pipes is 15 Nm.
- ♦ Check that the brake caliper moves freely by moving it from side to side.

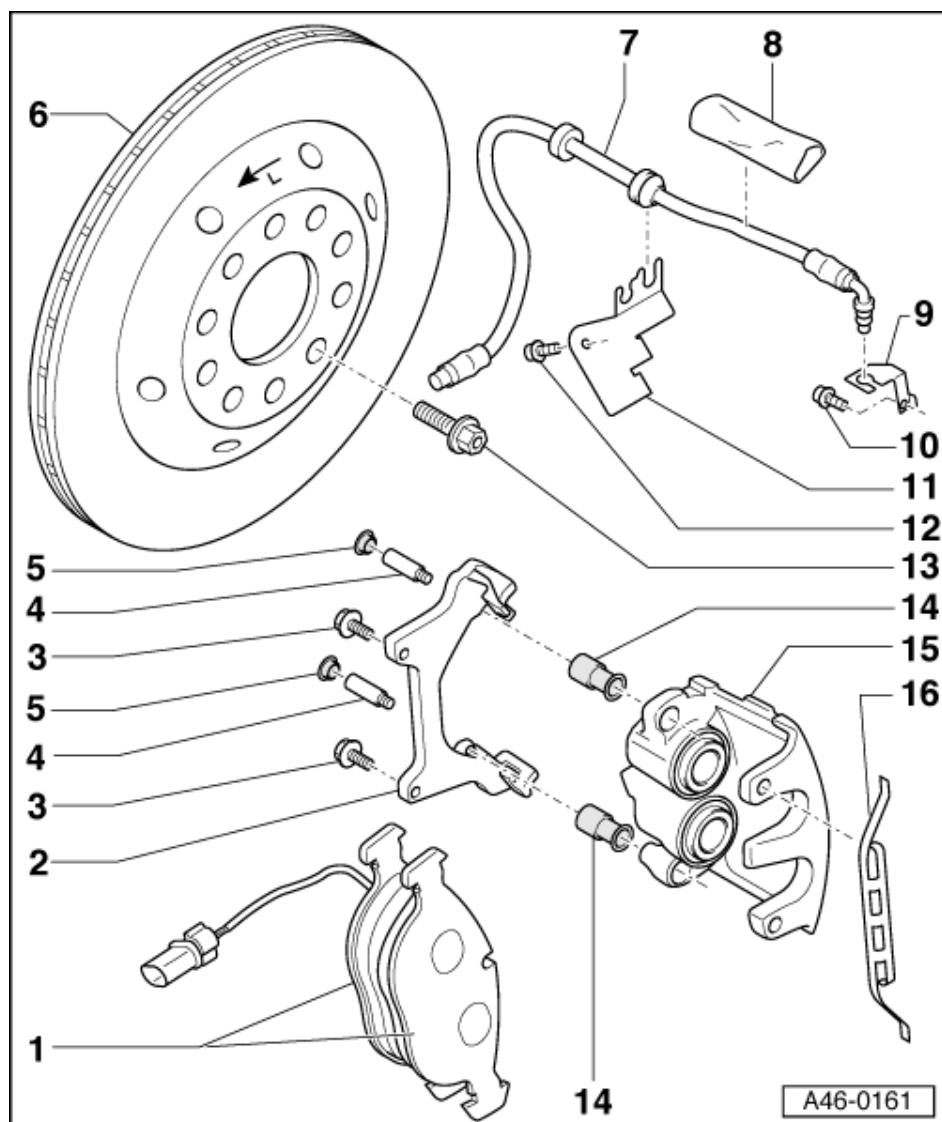
1 Brake pads

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.

The inner pad (with expansion spring) has a wire for the wear indicator.

- ♦ The outer brake pads are provided with an adhesive sheet on the backing plate of the pad. Remove the protective sheet before inserting pads.



- ◆ Different versions => Parts List
- ◆ Always replace all components on an axle
- ◆ Removing and installing
=> Page 76

Note:

Always clean the brake calipers (no grease) before inserting new brake pads. At the same time, make sure that all adhesive sheet residue on the contact surfaces of the outer brake pad is removed.

2 Brake carrier

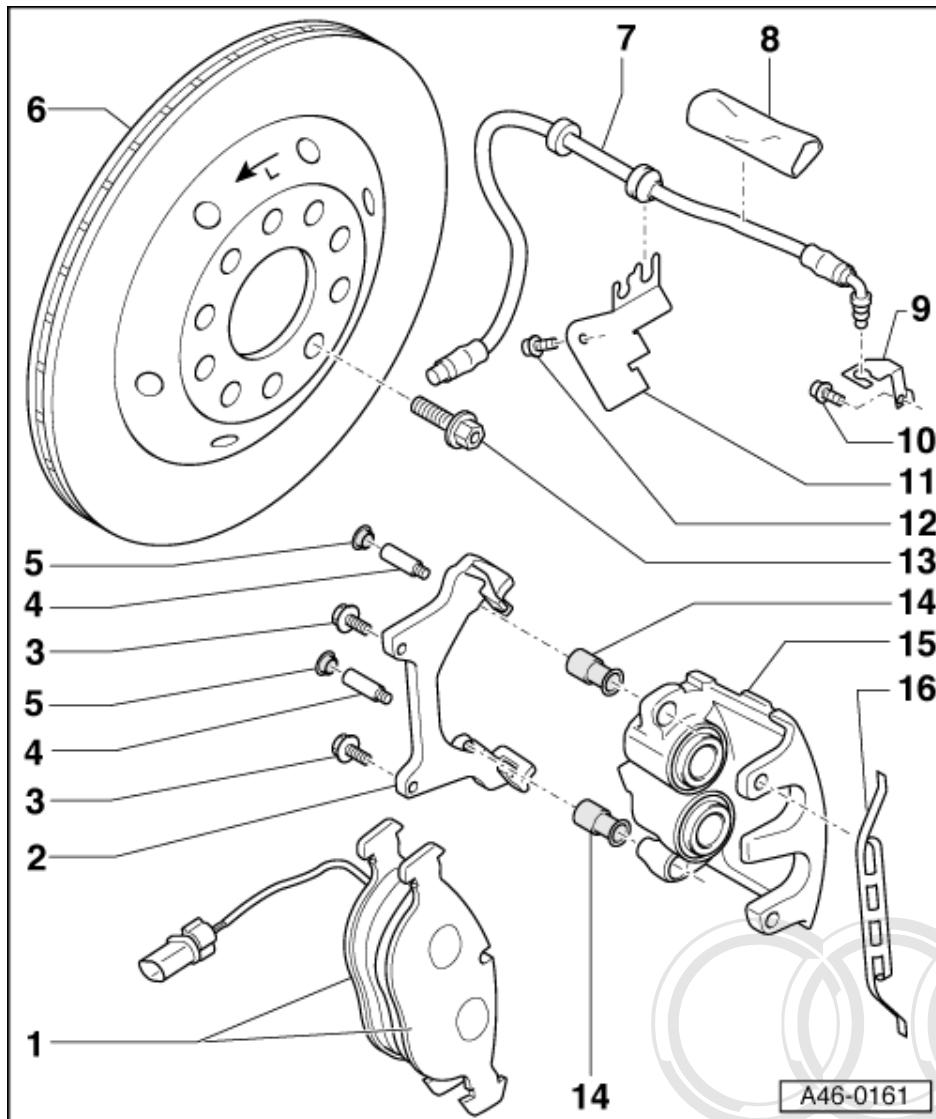
- ◆ Bolt to wheel bearing housing

3 Ribbed bolt, 190 Nm

- ◆ Clean ribbing if reusing



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Guide pin, 25 Nm

5 Trim cap

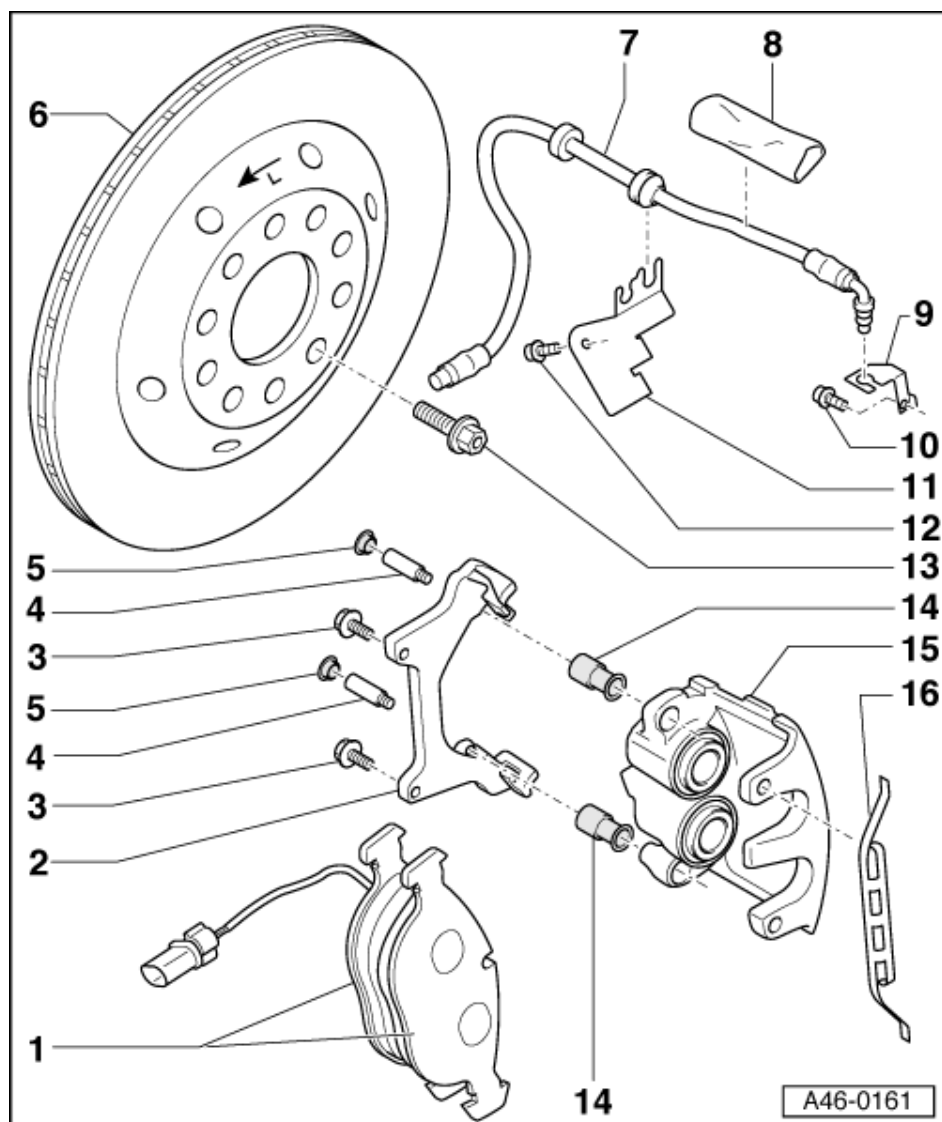
- ◆ Remove
- ◆ Attach cable for wear indicator

6 Brake disc

- ◆ Always replace all components on an axle
- ◆ Remove brake caliper prior to removing
- ◆ Different designs on left and right
- ◆ The arrow on the brake disc points in the running direction
- ◆ Lubricate contact surfaces between brake disc and wheel hub with polyurea grease G 052 142 A2.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 System; Repair group 00; Technical data Technical data



7 Brake pipe, 15 Nm

- ◆ Screw into brake caliper housing
- ◆ Screw into brake hose, counterholding at hexagon on brake hose.
- ◆ Hose must be attached without twisting
- ◆ Ensure that lugs are properly seated in retainer grooves.

8 Brake pipe heat shield

- ◆ Push over brake pipe

9 Bracket

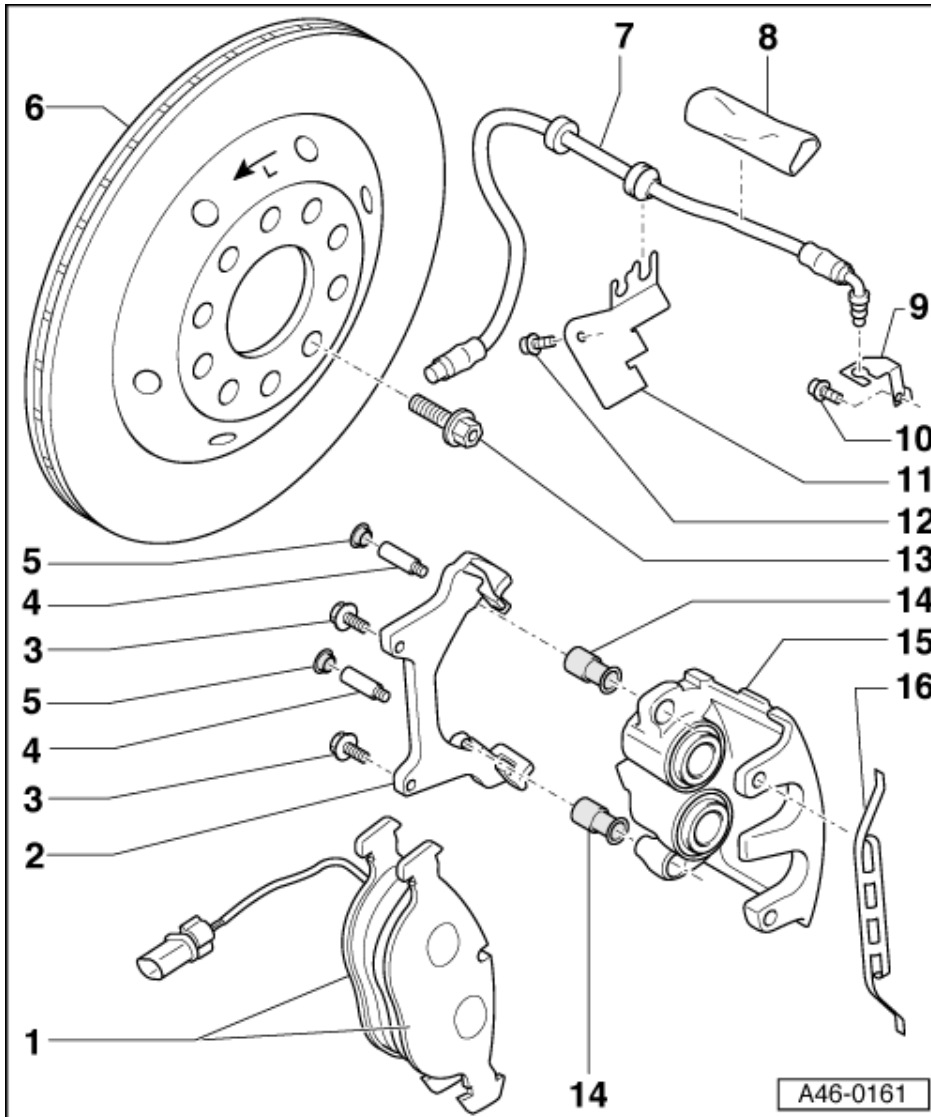
- ◆ Bolt to brake caliper housing

10 Hexagon bolt

- ◆ Tightening torque 8 Nm

11 Bracket

- ◆ Attach brake pipe
- ◆ Bolt to wheel bearing housing



12 Hexagon bolt

- ♦ Tightening torque 8 Nm

13 Wheel bolts

- ♦ Tightening torque 140 Nm

14 Bush

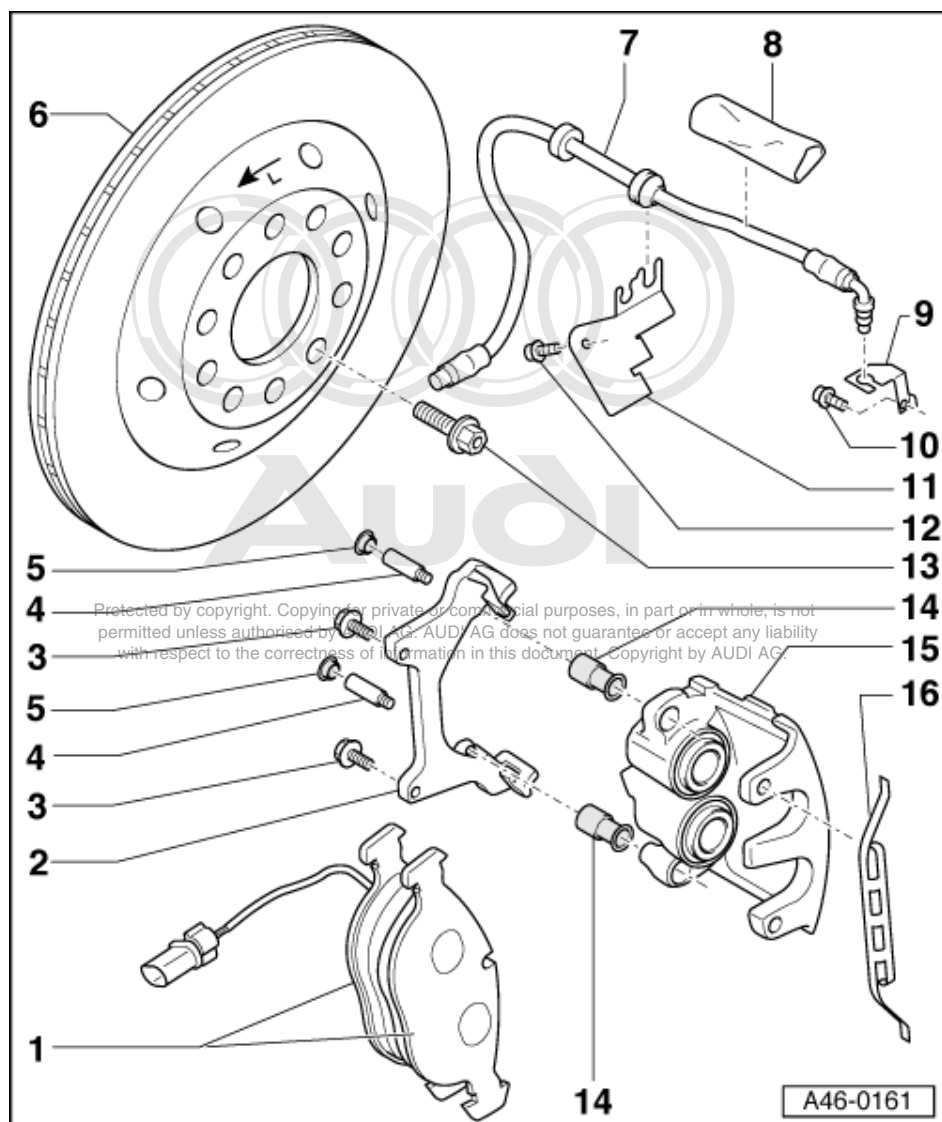
- ♦ Insert into brake caliper housing

15 Brake caliper housing

- ♦ If assembly work is required, do not leave caliper hanging from brake hose but secure it to bodywork with wire
- ♦ With the exception of "Replacing brake pads"=> Page 160, no further repairs may be performed on the brake calipers.
- ♦ Hose must be attached without twisting

=> Brake System; Repair group 00; Technical data Technical data

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Retaining spring

- ◆ Insert in both holes in brake caliper housing
- ◆ For removing and installing retaining spring, apply hand pressure in direction of arrow (stamped on spring) and remove.

3.3 - Removing and installing brake pads

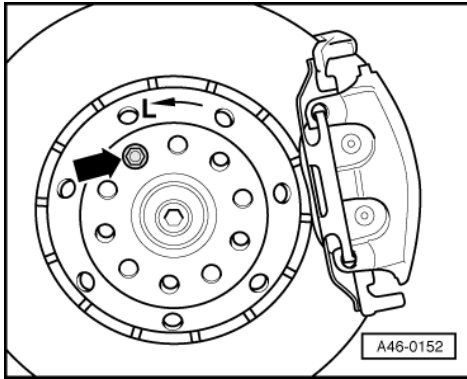
Removing

Note:

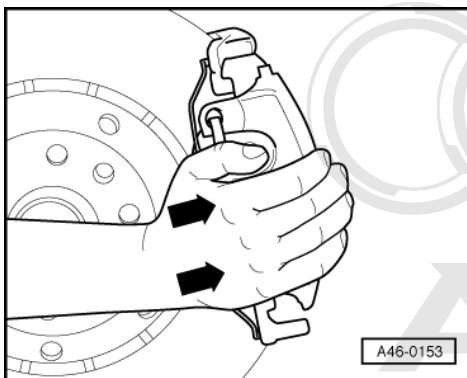
Mark brake pads to be reused on removal. Reinstall in their original position to prevent uneven braking!

When installing the brake discs, note the direction of rotation -arrow on the brake disc- and fitting location -left or right-

- Raise vehicle.
- Remove wheels.

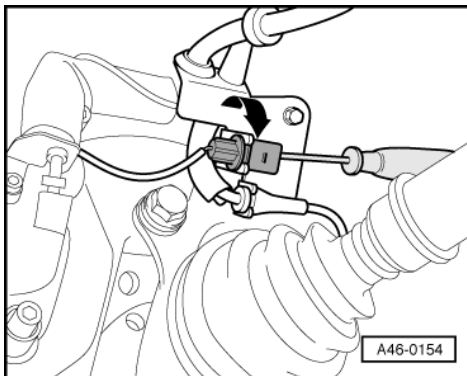


- -> Secure brake disc with a wheel bolt, see -arrow-.
- The arrow on the brake disc must point in the running direction.
- L-stands for left

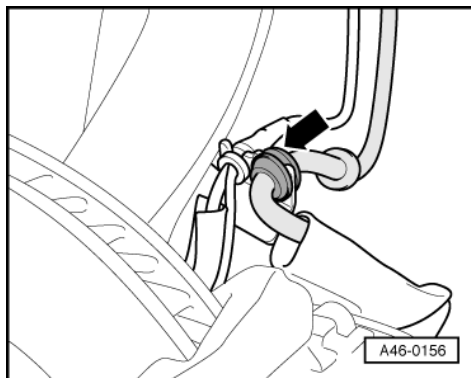


- -> Press retaining spring in direction of arrow (with ball of hand) and remove the spring from the brake caliper sideways.

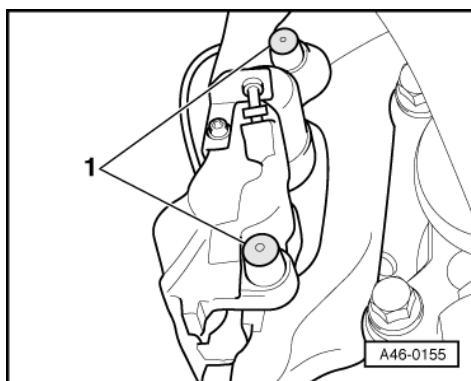
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



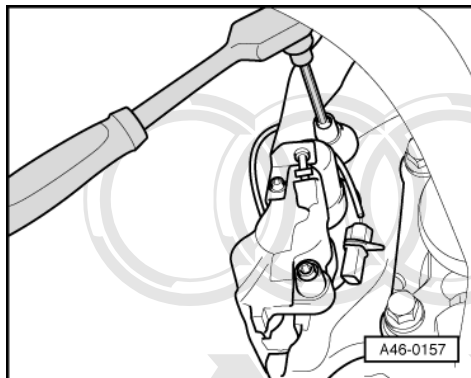
- Disconnect the brake wear indicator connector
- Release the connector from the holder using a screwdriver, turning connector by 90° at the same time.
- Pull connector out upwards and unhook the wire.



- -> Detach brake pipe from bracket



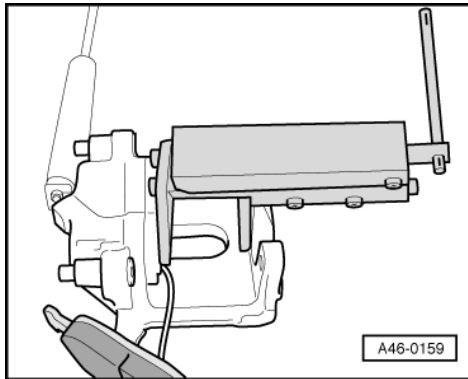
- -> Remove trim cap -1-.



- -> Unscrew both guide pins and remove from brake caliper.
- Remove brake caliper housing and lay to one side so that the weight of the brake caliper does not stress or damage the brake hose.
- Take brake pads out of brake caliper housing or from brake carrier.

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

Only use methyated spirits to clean the brake caliper housing.



Installing

- -> Press back piston.

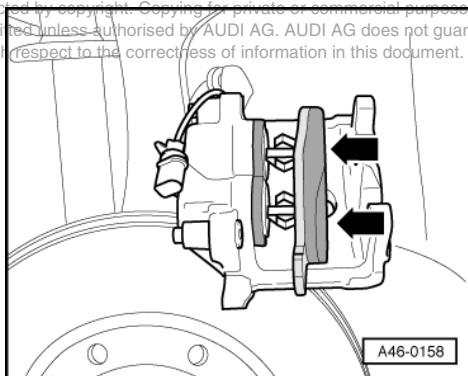
Note:

Before inserting new brake pads, press piston back into the cylinder with resetting tool. Before pressing the piston back, draw off brake fluid from the reservoir with a bleeder bottle. Otherwise brake fluid which was used to top up the brake fluid reservoir, may escape and cause damage.

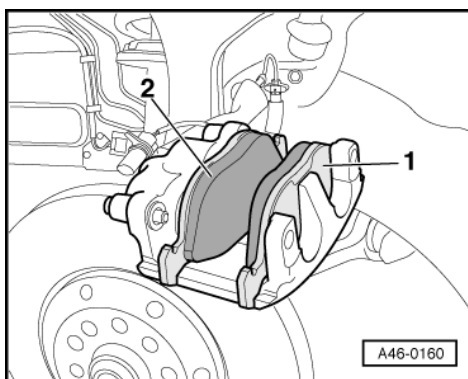
Important

Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.

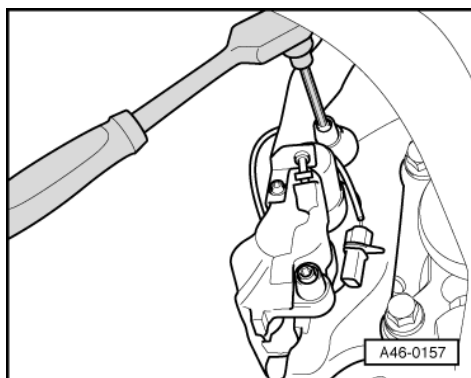
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Insert brake pad with retaining spring and wear indicator into brake caliper housing (piston).



- -> Fit outer brake pad -1- to brake caliper.



- Secure brake caliper housing to brake carrier with both guide pins to 25 Nm.
- Ensure that the brake hose is installed without twisting.
- Fit both protective caps.
- Insert retaining spring into brake caliper housing.
- Attach brake pipe
- Plug in connector for wear indicator and engage pipe in dust cap and trim cap.
- Fit wheels
- Tightening torque 140 Nm

Notes:

- ◆ After inserting the retaining spring into the two holes, press it under the brake carrier. If incorrectly installed, it is not possible to adjust the wear of the outer pad, and the pedal travel will be increased as a result.

After replacing the brake pads, depress pedal firmly several times with the vehicle stationary, so that the brake pads are properly seated in their normal operating position.

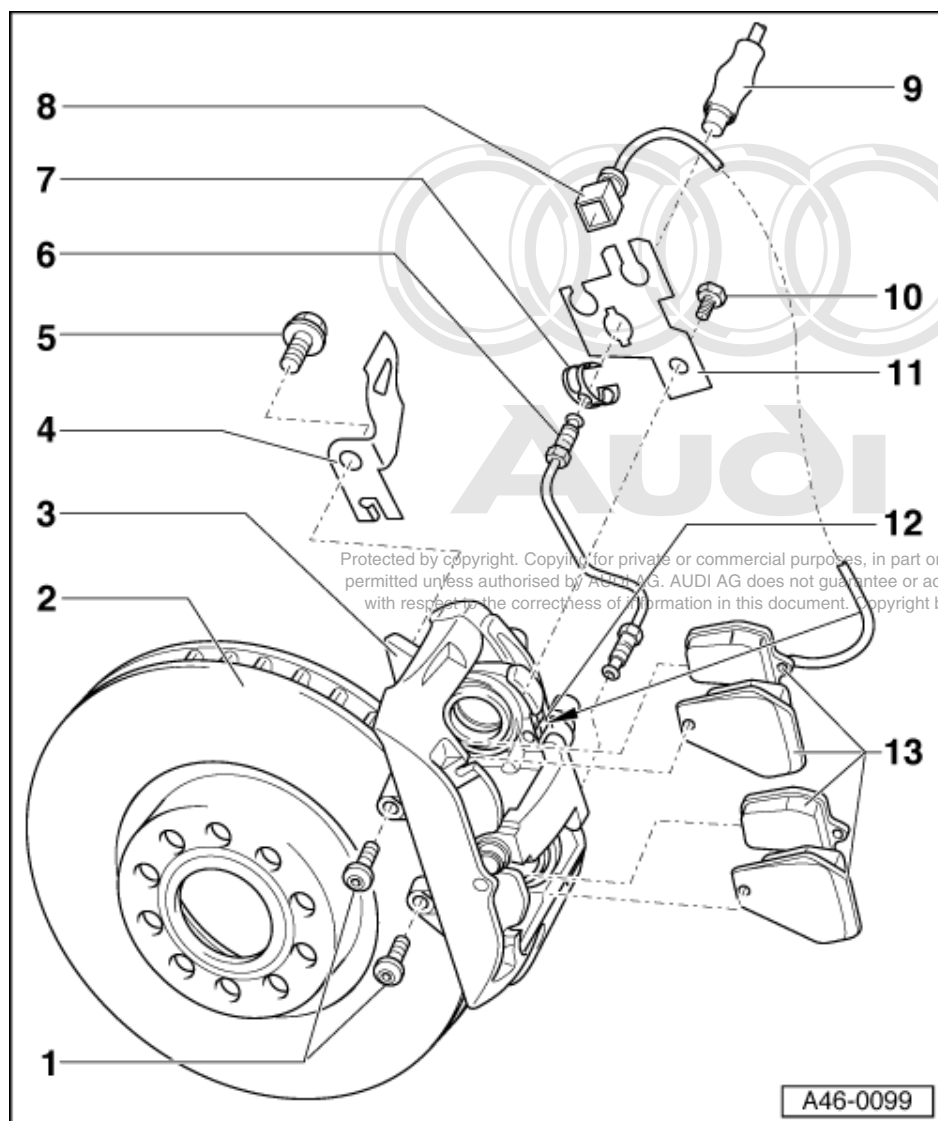
- Check brake fluid level and top up if necessary.



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.

4 - Front brake HP-2 double-piston brake/steel

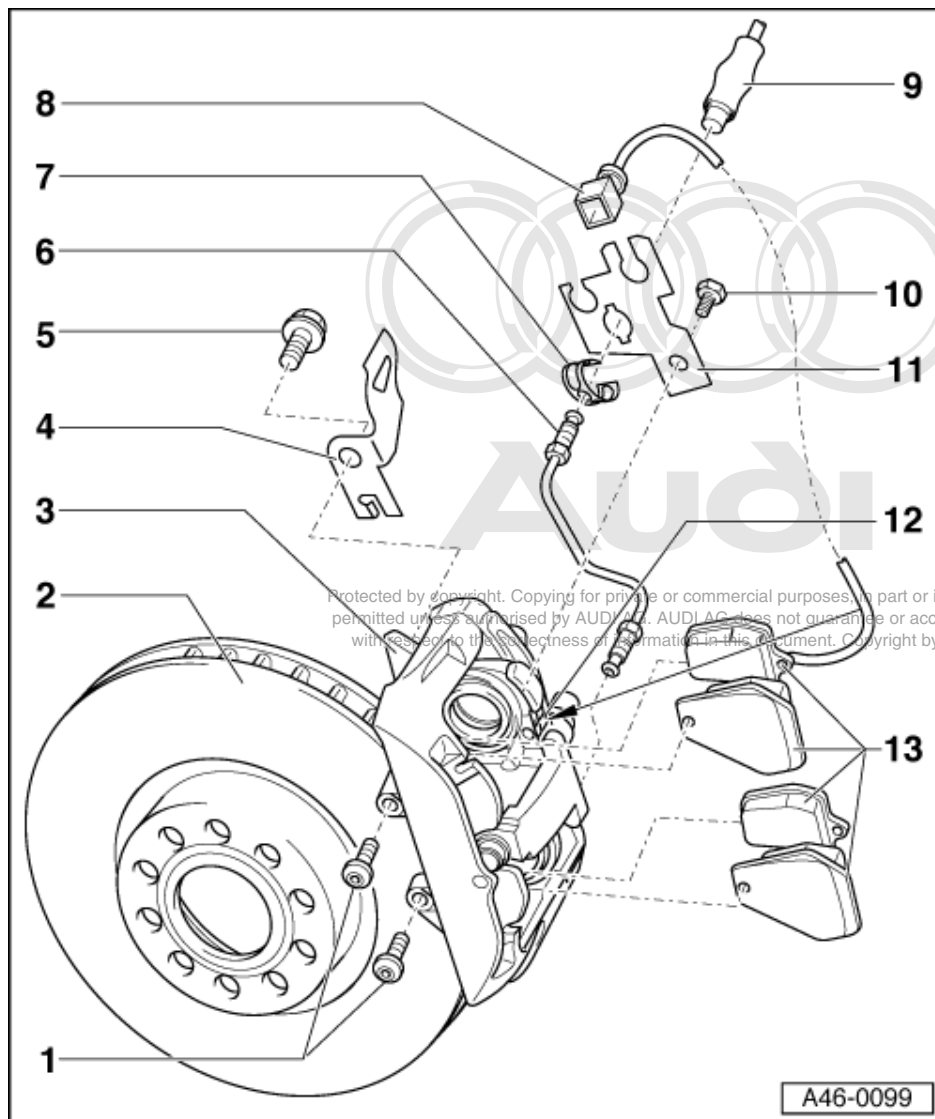
4.1 - Front brake HP-2 double-piston brake/steel



4.2 - Servicing front brakes

Notes:

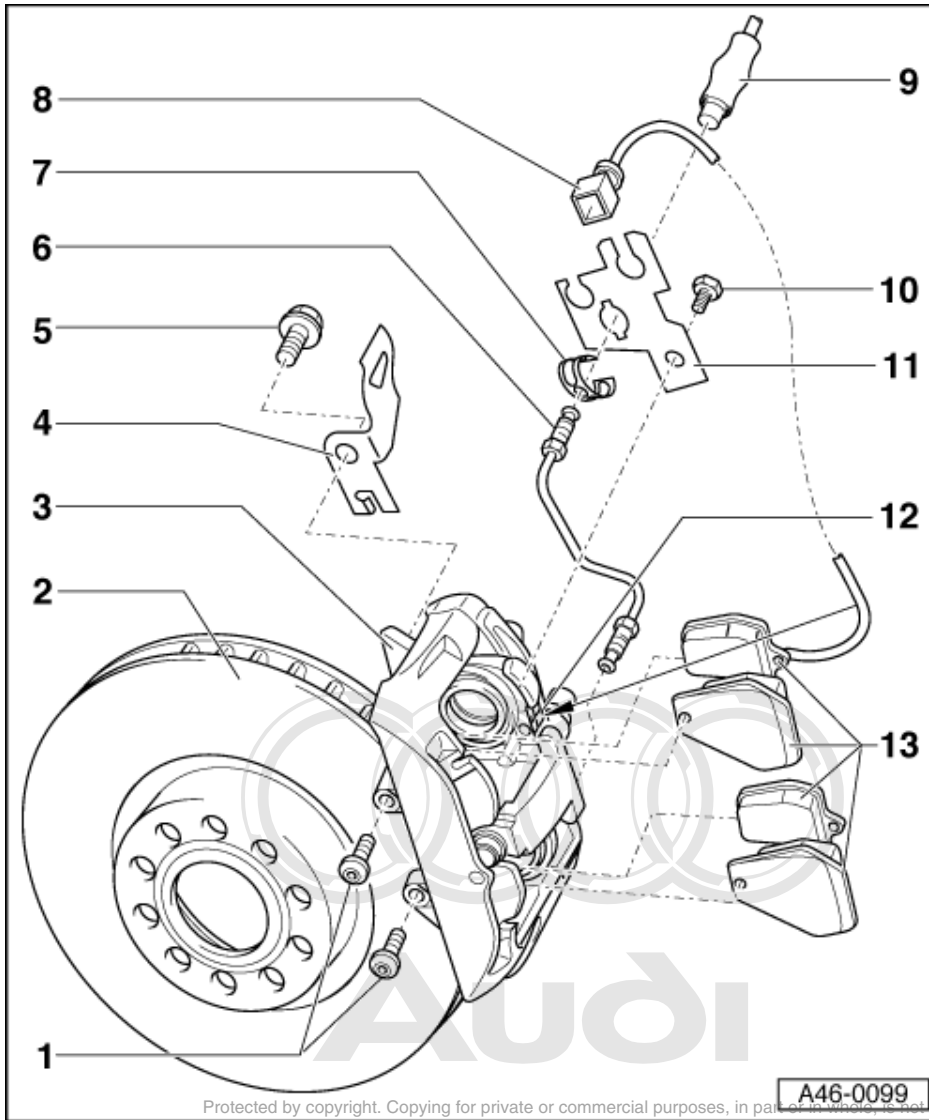
- ◆ Always install the complete repair kit.
- ◆ After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in the normal operating position.
- ◆ To draw off brake fluid from the reservoir, use a bleeder bottle which is used only for brake fluid. Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.



- ♦ 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.
- ♦ The tightening torque of the brake pipes is 15 Nm.

1 Torx bolts, 25 Nm

- ♦ Always replace
- ♦ Remove and insert using commercially available Torx socket (e.g. Hazet T40)
- ♦ Included in brake pad repair set



2 Brake disc

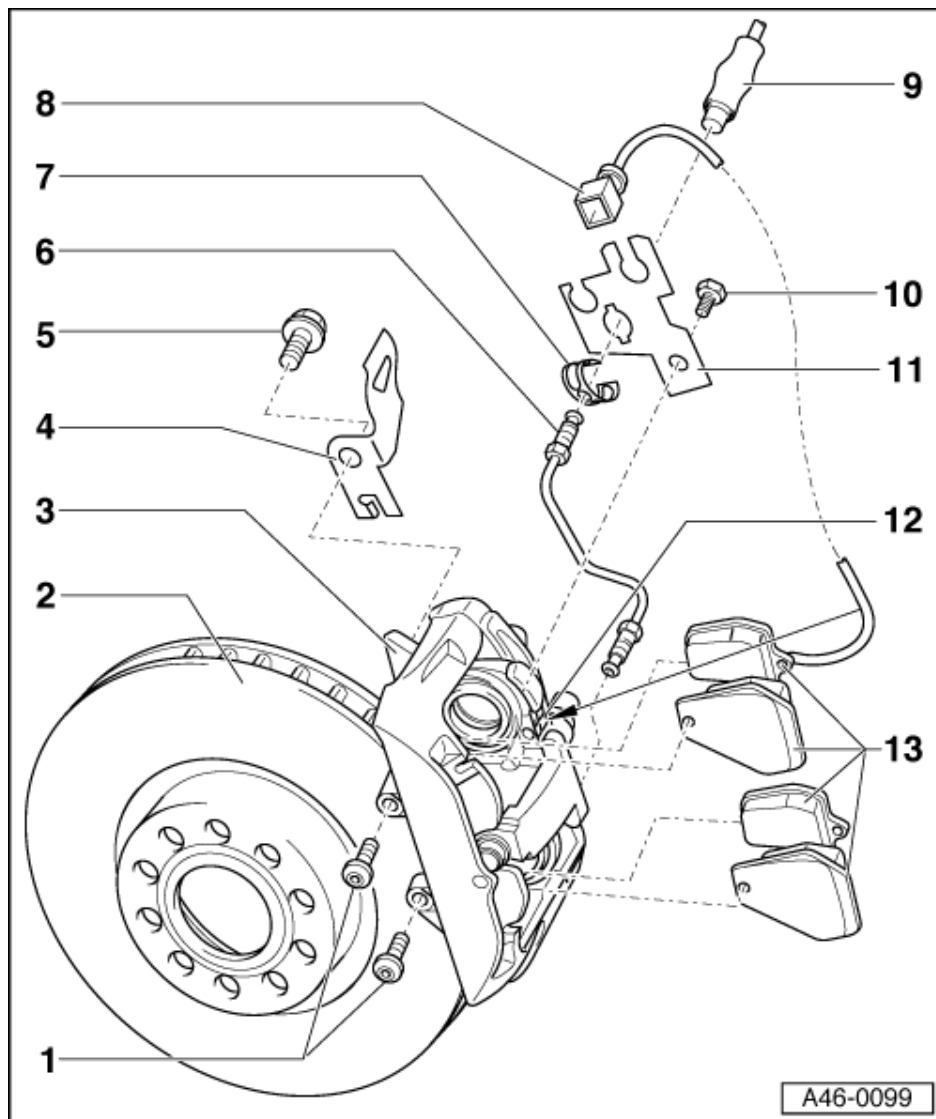
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

=> Brake System; Repair group 00; Technical data Technical data

- ◆ Always replace all components on an axle
- ◆ Ensure adequate wear reserve
- ◆ Remove brake caliper prior to removing

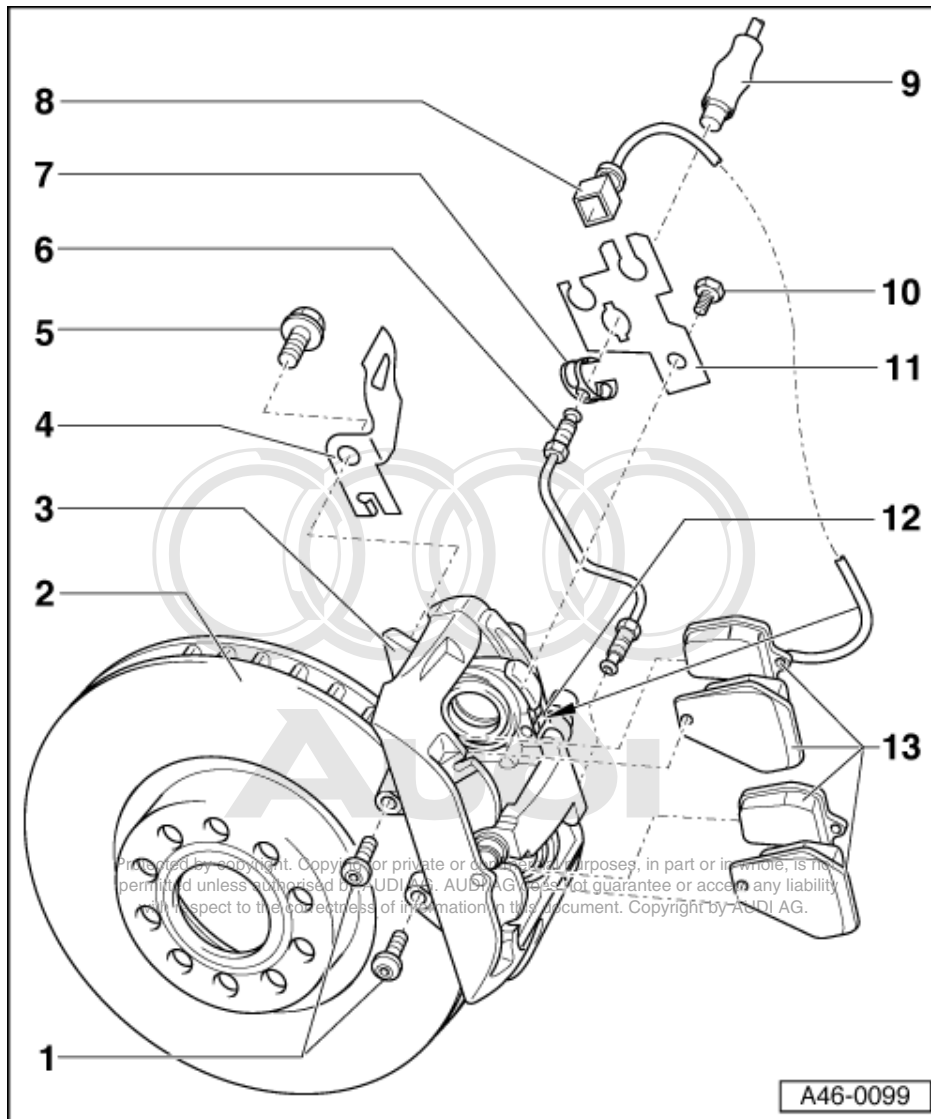
3 Brake caliper

- ◆ If assembly work is required, do not leave caliper hanging from brake hose but secure it to bodywork with wire
- ◆ With the exception of "Replacing brake pads"=> Page 81, no further repairs may be performed on the brake calipers.
- ◆ For removing and installing brake caliper, first remove bracket, Item 11



- 4 Clamping spring
- 5 Ribbed bolt, 200 Nm
 - ◆ Clean ribbing if reusing
- 6 Brake pipe, 15 Nm
- 7 Retaining spring
- 8 Connector
 - ◆ Only on models with wear indicator

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Brake hose

- ♦ Do not unscrew to replace brake pads

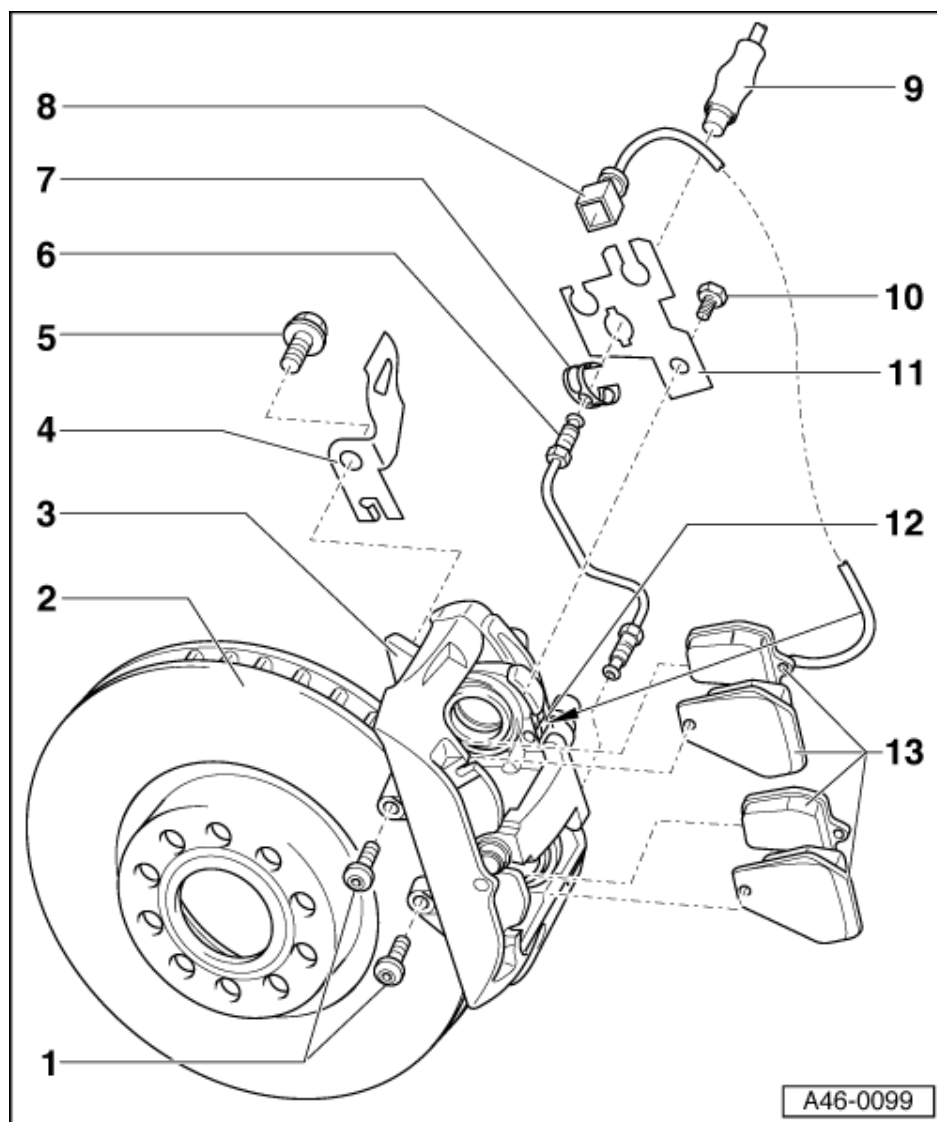
10 Hexagon bolt, 25 Nm

11 Bracket

- ♦ Bolt to brake caliper housing
- ♦ Insert connector for brake pad wear indicator

12 Cable holder

- ♦ Only on models with wear indicator
- ♦ Insert cable for brake pad wear indicator into cable holder



13 Brake pads

- ◆ Always replace all components on an axle
- ◆ Different designs on left and right
- ◆ Removing and installing
=> Page 86
- ◆ With wear indicator
- Once the wear limit is reached (limit: 3 mm), warning light in dash panel insert comes on.
- ◆ The outer brake pads are provided with an adhesive sheet on the backing plate of the pad. Remove the protective sheet before inserting pads.

=> Brake System; Repair group 00; Technical data Technical data

4.3 - Removing and installing brake pads

Removing

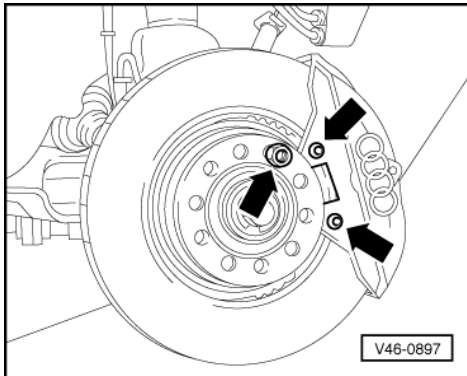
Note:

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

- Raise vehicle.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 wheels.

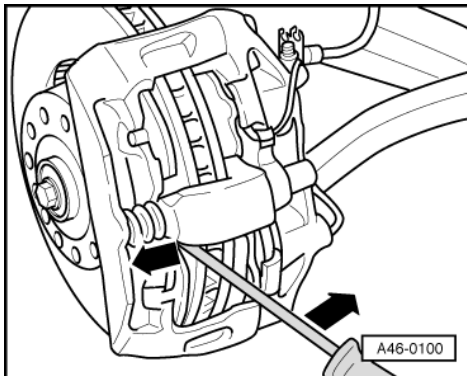


- -> Secure brake disc with a wheel bolt.
- Unscrew both Torx bolts for the outer brake pads.

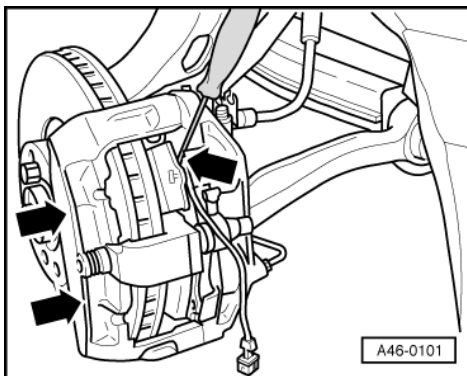
Note:

Before pressing back the piston, extract brake fluid from the brake fluid reservoir with a bleeder bottle. Otherwise brake fluid which was used to top up the brake fluid reservoir, may escape and cause damage.

Important
 Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.



- -> Press piston back into brake caliper housing.
- For this purpose, insert sliding caliper with screwdriver as shown and press firmly outwards.
- First remove outer brake pad; for this purpose, use screwdriver to press brake pads off brake caliper.



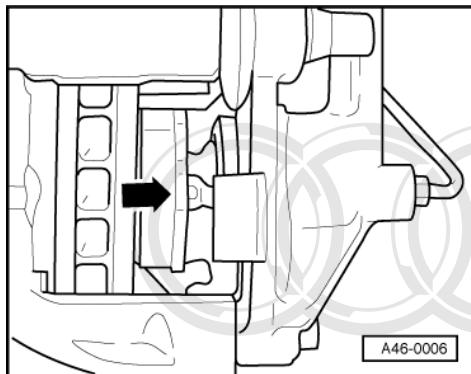
- -> Firmly press floating caliper in direction of arrow as far as it will go.
- Use screwdriver to carefully press brake pads out of piston and remove from brake caliper housing.

Note:

Thoroughly clean brake caliper housing before installing new brake pads.

In particular, watch for residual adhesive sheet from the outer brake pads.

Installing

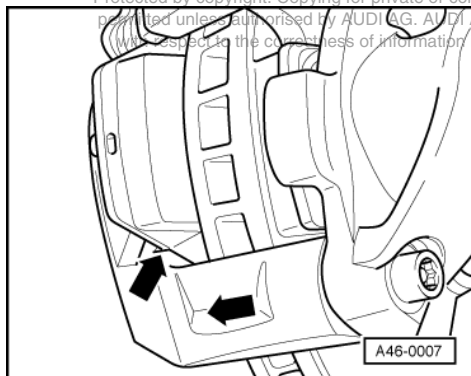


- -> Insert lower and upper brake pads into piston.

Note:

Take care not to damage protective caps when inserting brake pads.

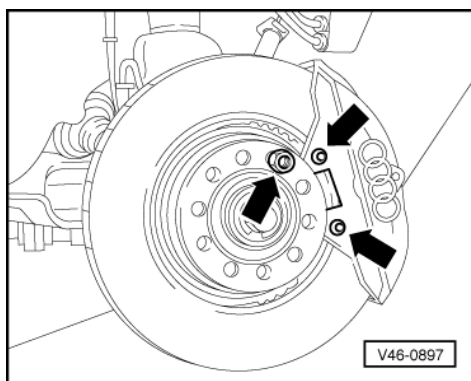
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Press floating caliper outwards as far as it will go.
- Pull protective sheet off backplates of outer brake pads.

Notes:

- ♦ The repair kit includes four self locking Torx bolts which must be installed in all cases.
- ♦ Each time after replacing the brake pads, depress the brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.



- -> Screw the Torx bolts from the repair set into the floating caliper and fix the brake pads in position.
- ◆ Tightening torque: 25 Nm.
- Unscrew wheel bolt from wheel hub.

Note:

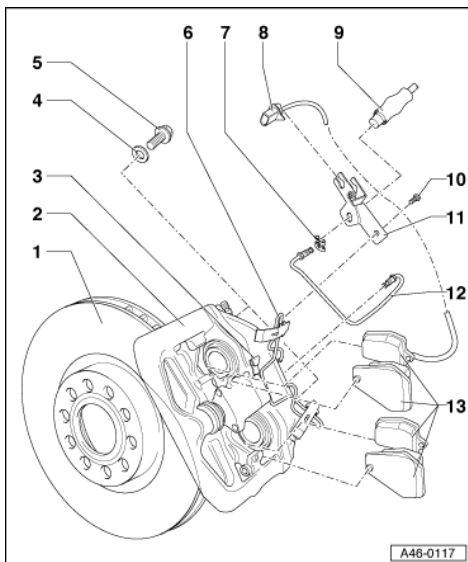
When fitting on the wheels, make sure that the rim flange is not mounted onto the brake caliper.

This could otherwise press the brake pads out of their guides.

- Fit wheels and tighten to 120 Nm.
- Check brake fluid level and top up if necessary.

5 - Front brake HP-2 double-piston brake / aluminium

5.1 - Front brake HP-2 double-piston brake / aluminium

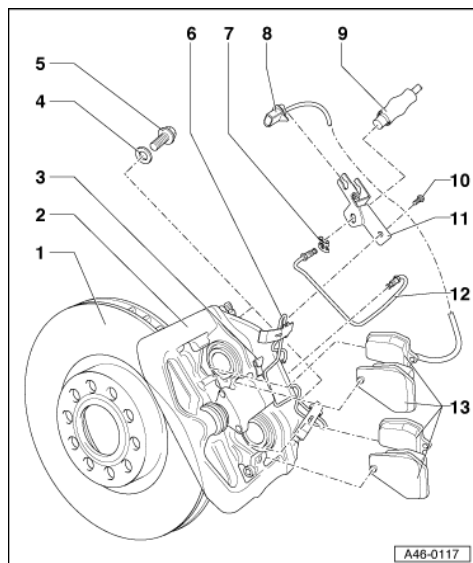


5.2 - Servicing front brakes

Notes:

- ◆ Always install the complete repair kit.
- ◆ After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in the normal operating position.
- ◆ To draw off brake fluid from the reservoir, use a bleeder bottle which is used only for brake fluid. Brake fluid is poisonous and must on no account be siphoned by mouth 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.

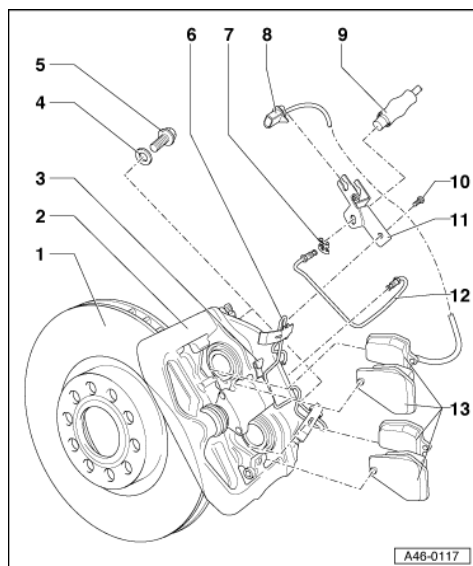


- ♦ The tightening torque of the brake pipes is 15 Nm.

1 Brake disc

=> Brake System; Repair group 00; Technical data Technical data

- ♦ Always replace all components on an axle
- ♦ Ensure adequate wear reserve
- ♦ Remove brake caliper prior to removing

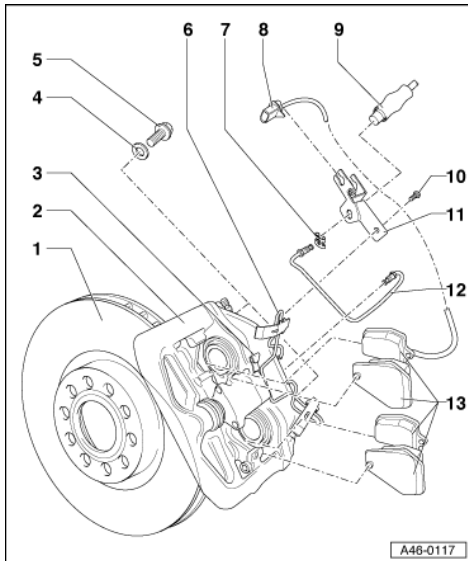


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2 Brake caliper

=> Brake System; Repair group 00; Technical data Technical data

- ♦ If assembly work is required, do not leave caliper hanging from brake hose but secure it to bodywork with wire
- ♦ With the exception of "Replacing brake pads"=> Page 160 , no further repairs may be performed on the brake calipers.
- ♦ Hose must be attached without twisting



3 Holder for wear indicator cable

- ♦ Insert cable for brake pad wear indicator into cable holder

4 Ribbed washer

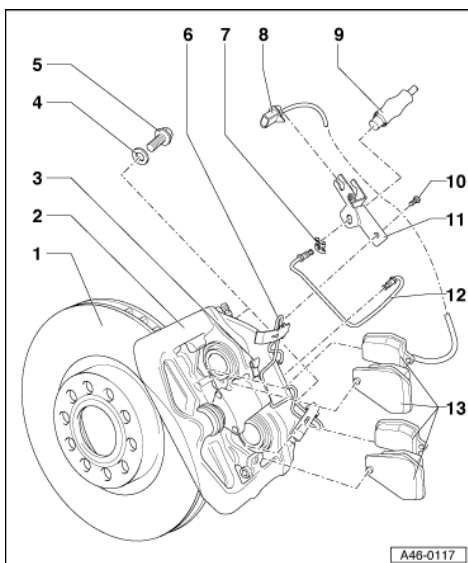
5 Ribbed bolt, 190 Nm

- ♦ Clean ribbing if reusing

6 Tension spring

- ♦ Swivel aside.
- ♦ Disassembly not possible

7 Retaining spring



8 Connector

- ♦ Only on models with wear indicator

9 Brake hose

- ♦ Do not unscrew to replace brake pads
- ♦ Hose must be attached without twisting

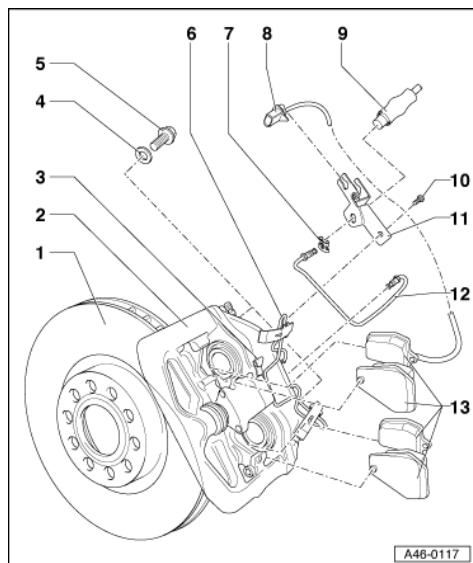
10 Hexagon bolt, 25 Nm

11 Bracket

- ♦ Bolt to brake caliper housing
- ♦ Insert connector for brake pad wear indicator



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Brake pipe, 15 Nm

13 Brake pads

- ◆ Always replace all components on an axle
- ◆ Different designs on left and right
- ◆ Removing and installing
=> Page **92**
- ◆ With wear indicator
 - Once the wear limit is reached (limit: 3 mm), warning light in dash panel insert comes on.
- ◆ The outer brake pads are provided with an adhesive sheet on the backing plate of the pad. Remove the protective sheet before inserting pads.

5.3 - Removing and installing brake pads

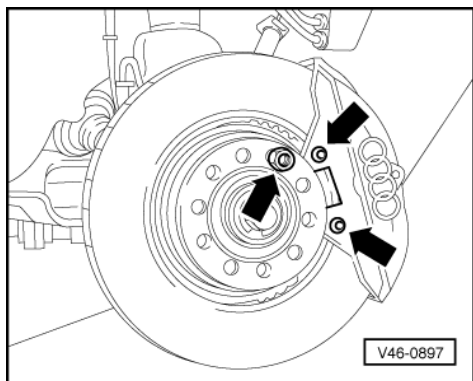
Removing

Note:

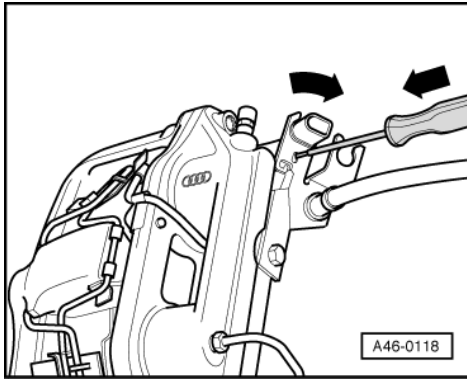
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

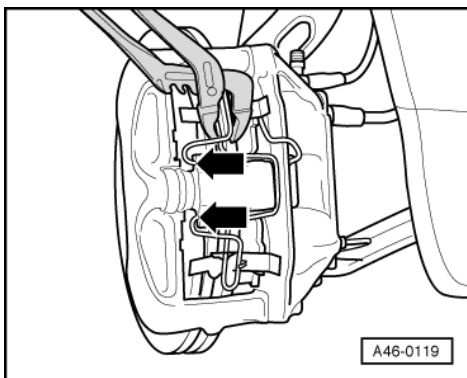
- Raise vehicle.
- Remove wheels.



- -> Secure brake disc with a wheel bolt.



- -> Disconnect the brake wear indicator connector
- Release the connector from the holder using a screwdriver, turning connector by 90° at the same time.
- Pull connector out upwards and unhook the wire.

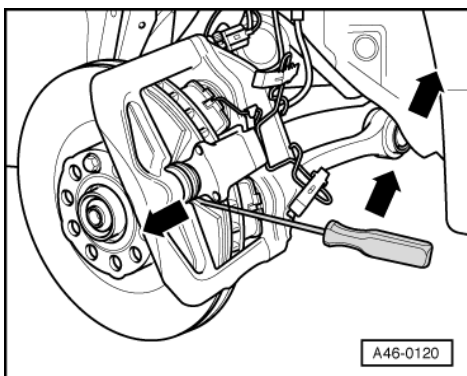


- -> Push the upper and lower spring tensioners out of the catches using pliers -see arrows-.
- Swivel the springs aside.

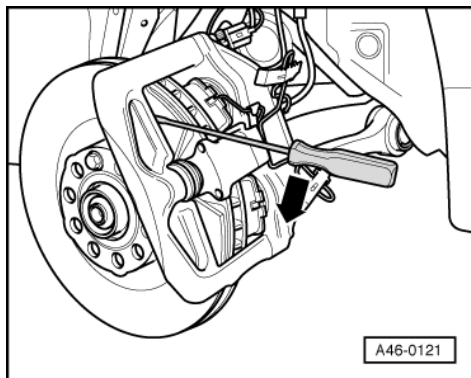
Note:

Before pressing back the piston, extract brake fluid from the brake fluid reservoir with a bleeder bottle. Otherwise brake fluid which was used to top up the brake fluid reservoir, may escape and cause damage.

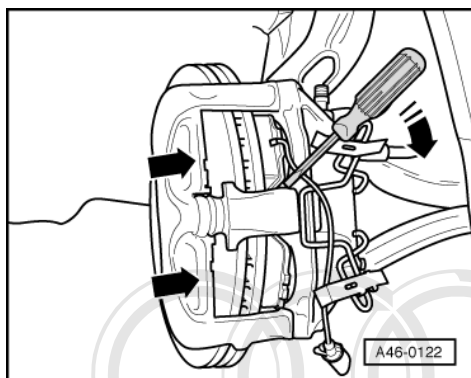
Important
 Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.



- -> Press piston back into brake caliper housing.
- For this purpose, insert sliding caliper with screwdriver as shown and press firmly outwards.



- -> First remove the outer brake pads by pushing them out of the brake caliper using a screwdriver.



- -> Firmly press floating caliper in direction of arrow as far as it will go.
- Carefully push the brake pads out of the piston and remove from brake caliper housing.

Note:

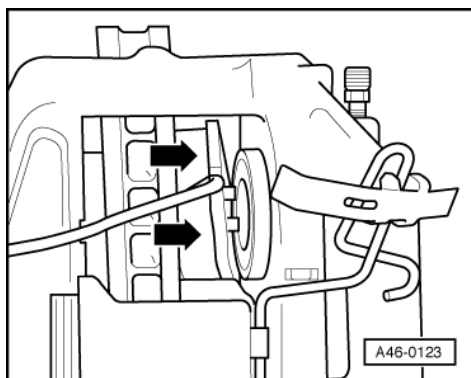
Thoroughly clean brake caliper housing before installing new brake pads.

In particular, watch for residual adhesive sheet from the outer brake pads.

Only use methylated spirits to clean the brake caliper 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.

Installing

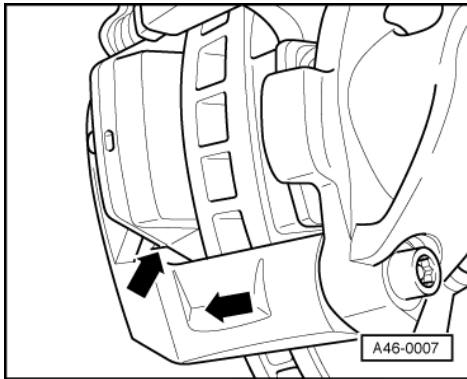


- -> Insert lower and upper brake pads into piston.

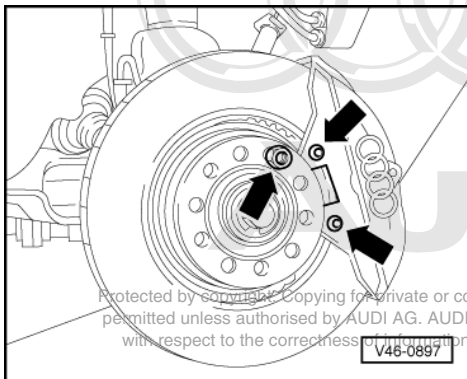
Note:

- ♦ Ensure that the lugs in the backplates are in position in the brake pistons.

- ♦ Take care not to damage protective caps when inserting brake pads.



- -> Press floating caliper outwards as far as it will go.
- Pull protective sheet off backplates of outer brake pads.



- -> Ensure that the lugs in the backplates are in position in the floating calipers.

Note:

- ♦ Each time after replacing the brake pads, depress the brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.
- Ensure that the brake hose is installed without twisting.
- Unscrew wheel bolt from wheel hub.

Note:

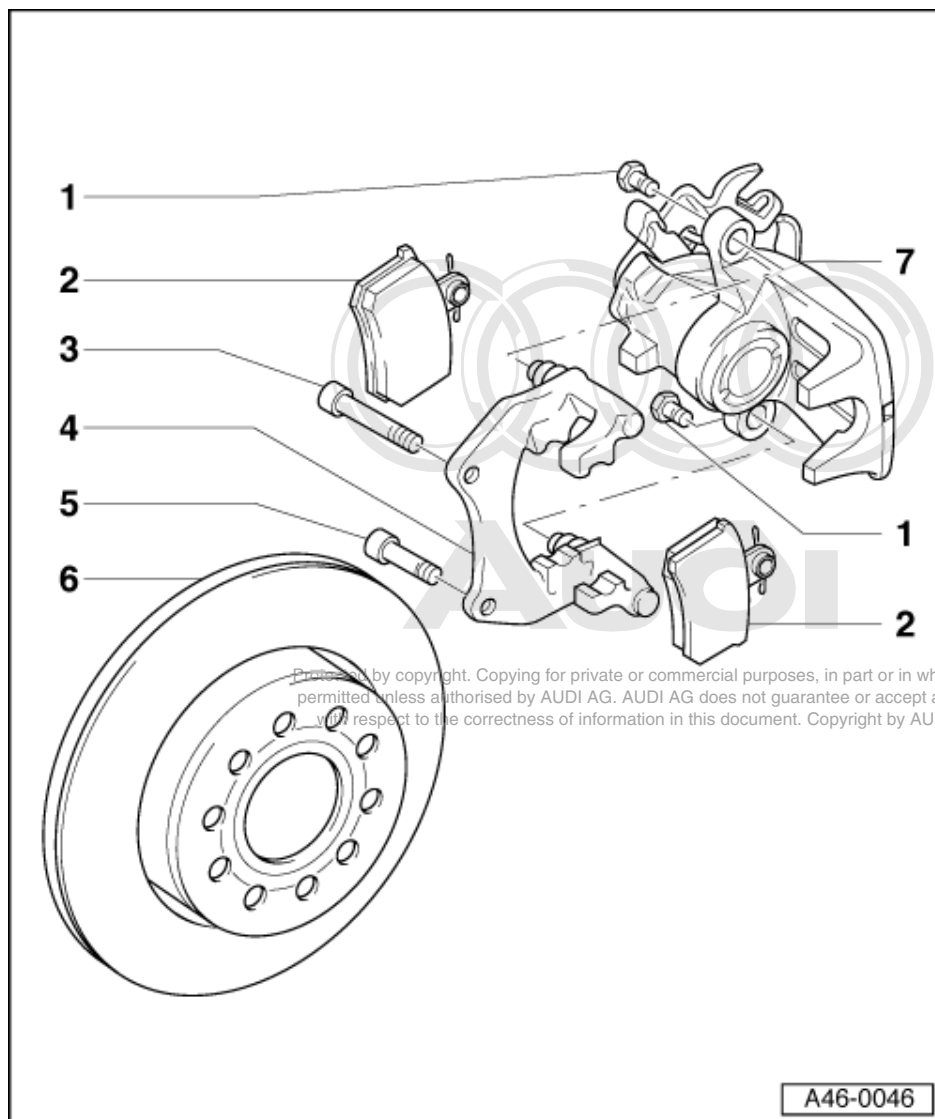
When fitting the wheels, ensure that the rim flange does not contact the brake caliper.

This could otherwise press the brake pads out of their guides.

- Fit wheels and tighten to 120 Nm.
- Check brake fluid level and top up if necessary.

6 - Rear brakes C38

6.1 - Rear brakes C38



6.2 - Servicing brake caliper

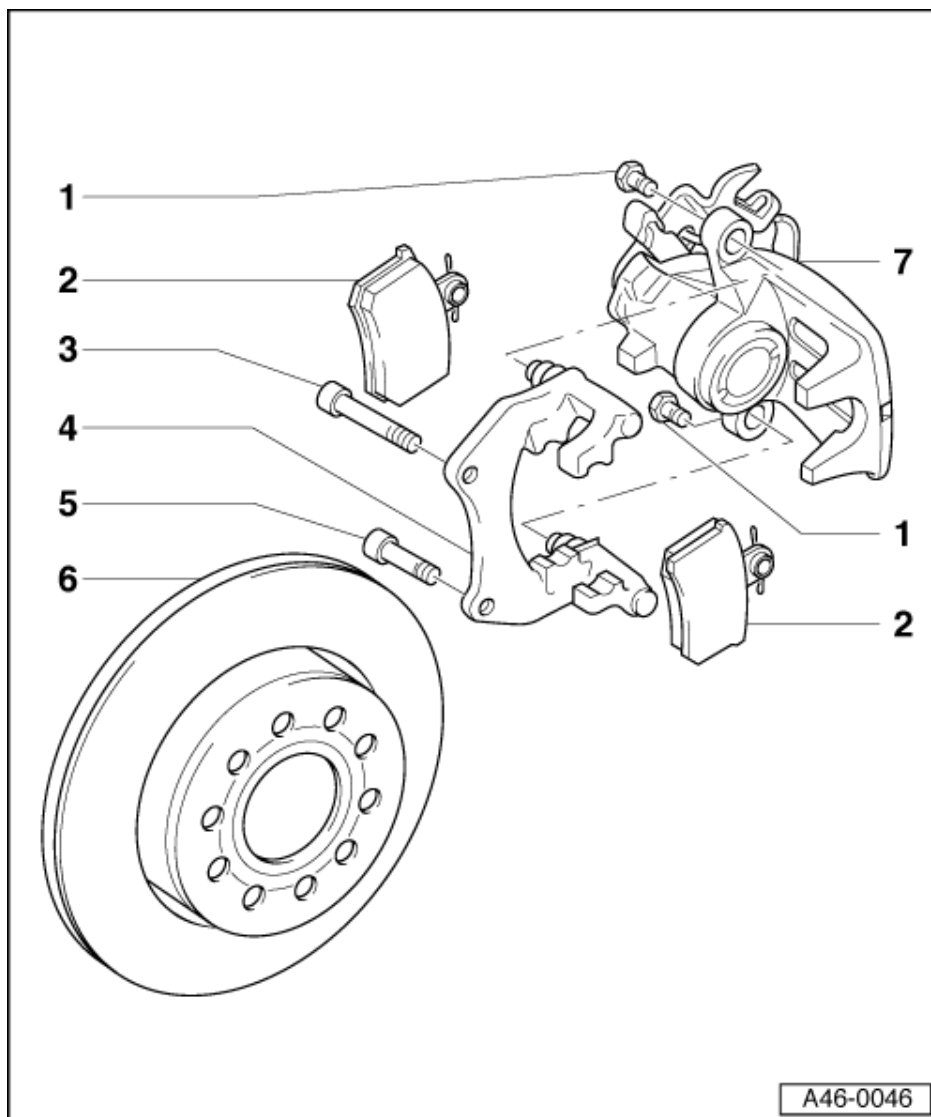
Rear brakes with automatic adjustment

Notes:

- ♦ Always install the complete repair kit.
- ♦ Brakes can be checked on any commercially available brake test stand, provided that the driving speed of the two driving rollers of the test stand is not more than 5.5 km/h.

- 1 Self-locking bolt,
35 Nm
- ♦ Always replace

- ♦ When loosening and tightening counter hold on guide pin



2 Brake pads

- ♦ Always replace all components on an axle
- ♦ Removing and installing
=> Page 99
- ♦ Checking thickness:

=> Maintenance Manual

=> Brake System; Repair group 00; Technical data Technical data

3 Ribbed bolt, 95 Nm

- ♦ Only on FWD models

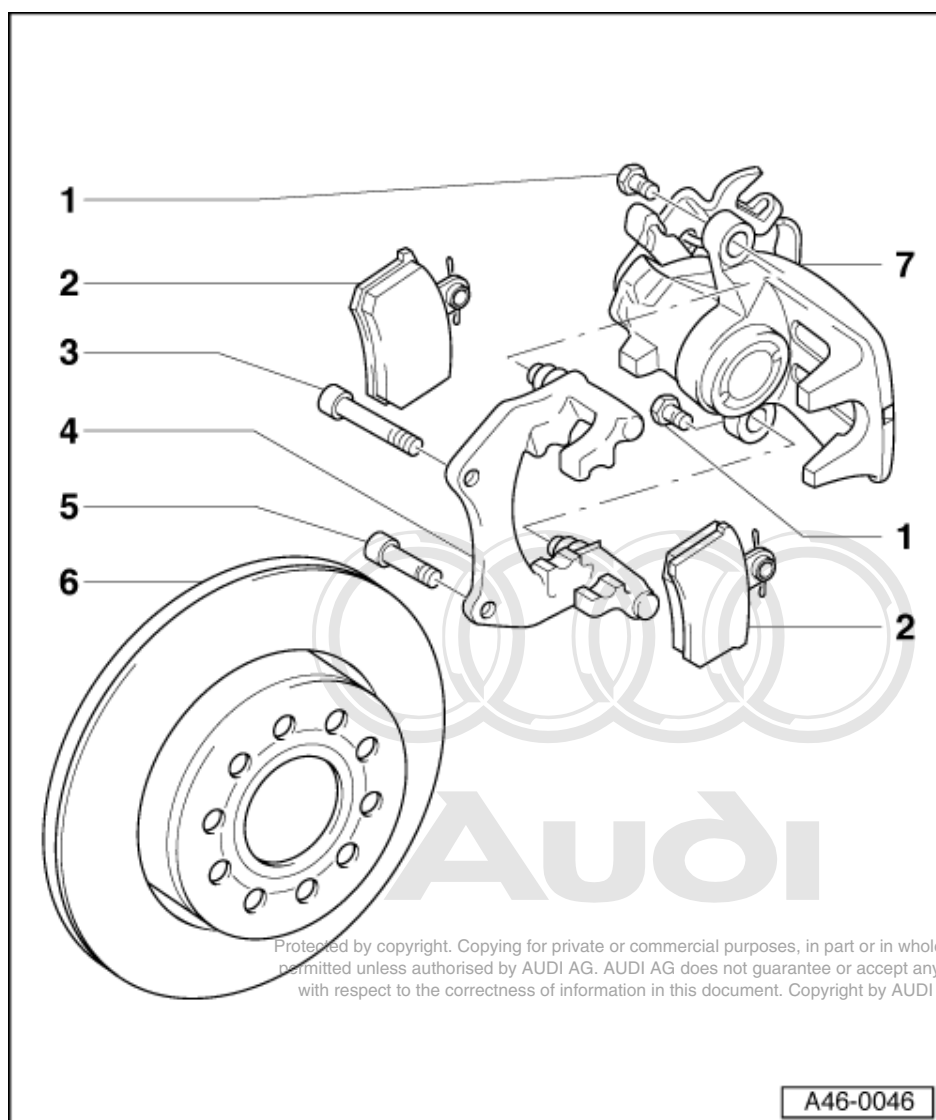
Note:

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

Remaining stocks of cheese head bolts are being fitted until conversion to ribbed bolts. Tightening torque of cheese head bolts: 60 Nm.

3 - Cheese-head bolt, 60 Nm

- ♦ Only on 4WD models



4 Brake carrier with guide pin and protective cap

- ♦ Supplied as replacement part assembled with sufficient quantities of grease on guide pins
- ♦ If protective caps or guide pins are damaged, install repair kit. Use grease sachet supplied to lubricate guide pins.

5 Ribbed bolt, 95 Nm

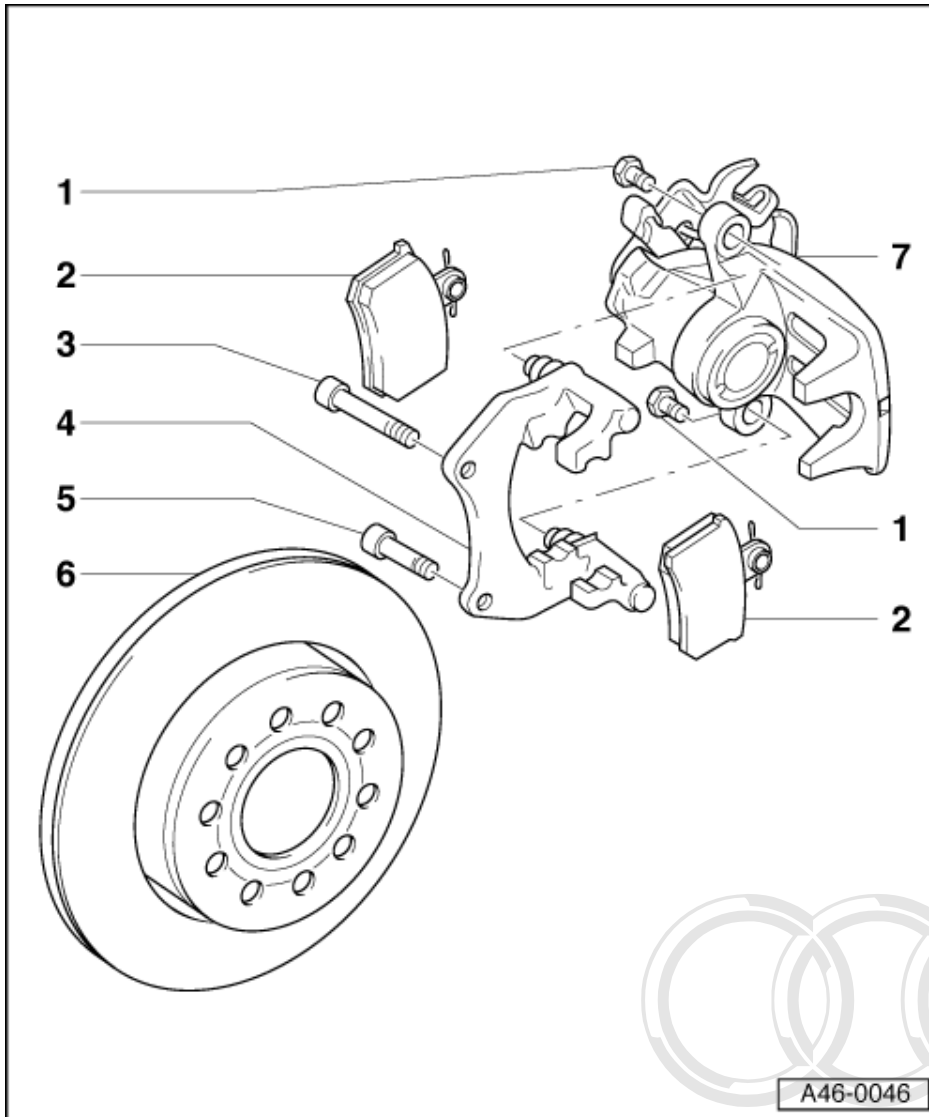
- ♦ Only on FWD models

Note:

Remaining stocks of cheese head bolts are being fitted until conversion to ribbed bolts. Tightening torque of cheese head bolts: 60 Nm.

5 - Cheese-head bolt, 60 Nm

- ♦ Only on 4WD models



6 Brake disc

- ◆ Always replace all components on an axle
- ◆ Remove brake caliper prior to removing
- ◆ Always dress evenly, on both sides, starting from thickness when new

=> Brake System; Repair group 00; Technical data Technical data

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 caliper housing

- ◆ Do not disconnect brake hose when changing brake pads
- ◆ Servicing brake caliper => Page **165**

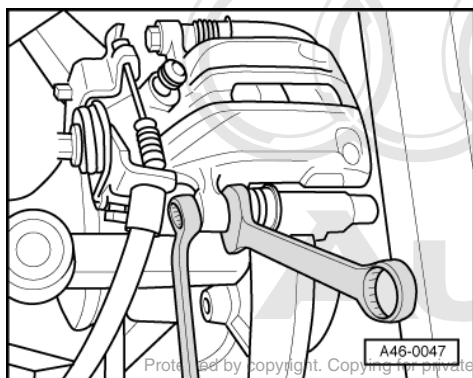
6.3 - Removing and installing brake pads

Removing

Note:

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

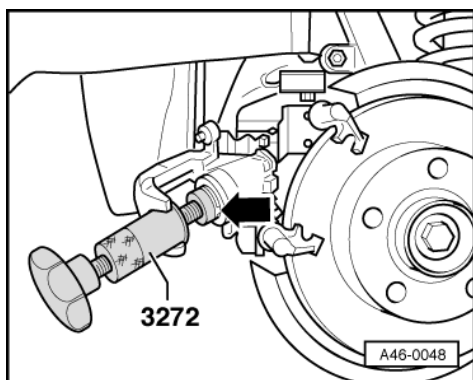
- Raise vehicle.
- Remove wheels.



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

- -> Remove bolts from brake caliper housing, counterholding on guide pins.
- Remove brake pads.

Installing



- -> Screw in the piston by turning special tool -3272- clockwise.

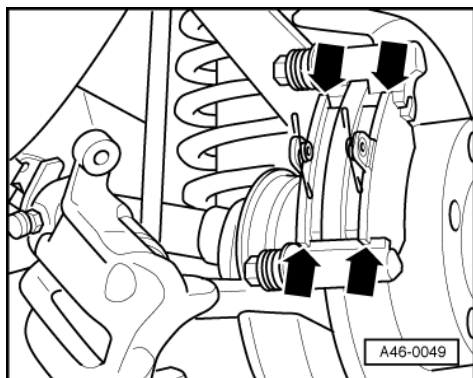
Note:

- ♦ Insert special tool -3272- so that the collar is positioned in front of the piston.

Before inserting new brake pads, press piston back into the cylinder with resetting tool. Before pressing the piston back, draw off brake fluid from the reservoir with a bleeder bottle. Otherwise brake fluid which was used to top up the brake fluid reservoir, may escape and cause damage.

Important

Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.



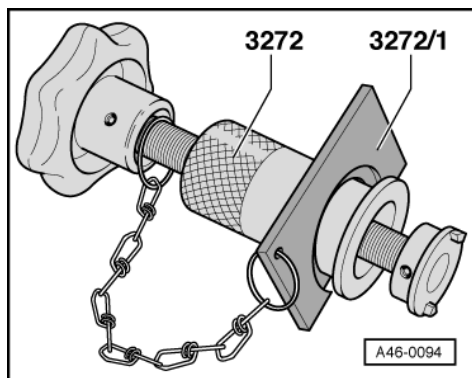
- -> Insert brake pads.
- Tighten bolts on brake caliper housing, 35 Nm.

Notes:

- ◆ The repair kit includes four self locking hexagon bolts which must be installed in all cases.
- ◆ Each time after replacing the brake pads, depress the brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.
- Fit wheels and tighten to 120 Nm.
- Check brake fluid level and top up if necessary.

6.4 - Removing and installing brake pads (models with FWD and aluminium brake calipers)

Special tools and workshop equipment required



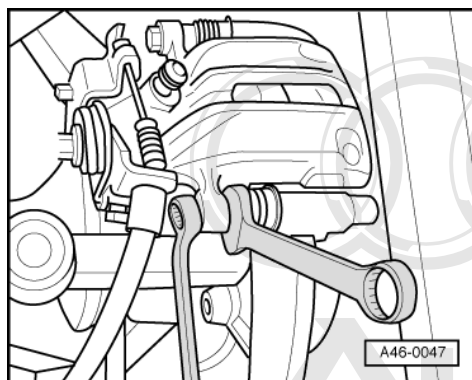
3272	3272/1	
------	--------	--

Removing

Note:

Mark brake pads when removing if they are to be reused. Reinstall in their original position to prevent uneven braking!

- Remove wheels.



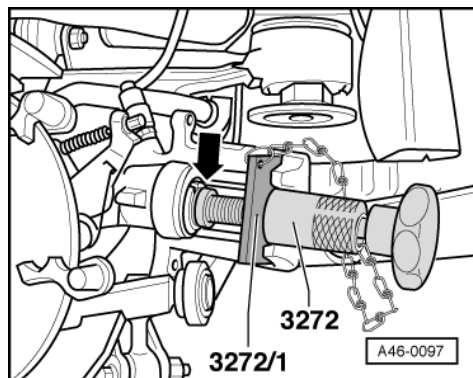
- -> Remove bolts from brake caliper housing, counterholding on guide pins.
- Remove brake pads.

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

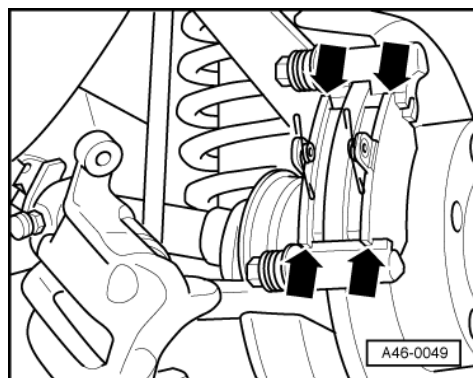
Installing

Note:

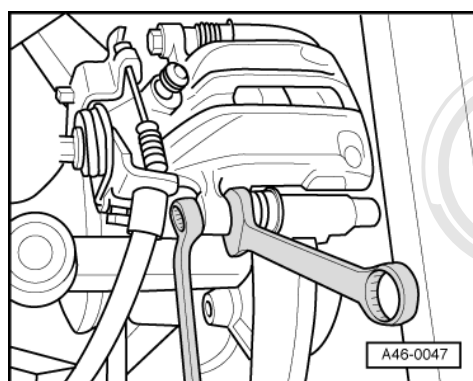
Before pressing the piston back, draw off brake fluid from the reservoir. For extracting use a bleeder bottle or a plastic bottle which is only used for brake fluid. Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.



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



- Pull protective foil off backing plates for brake pads.
- -> Insert brake pads.



- -> Secure brake caliper housing with new self locking bolts.
- Tighten bolts on brake caliper housing, 35 Nm.

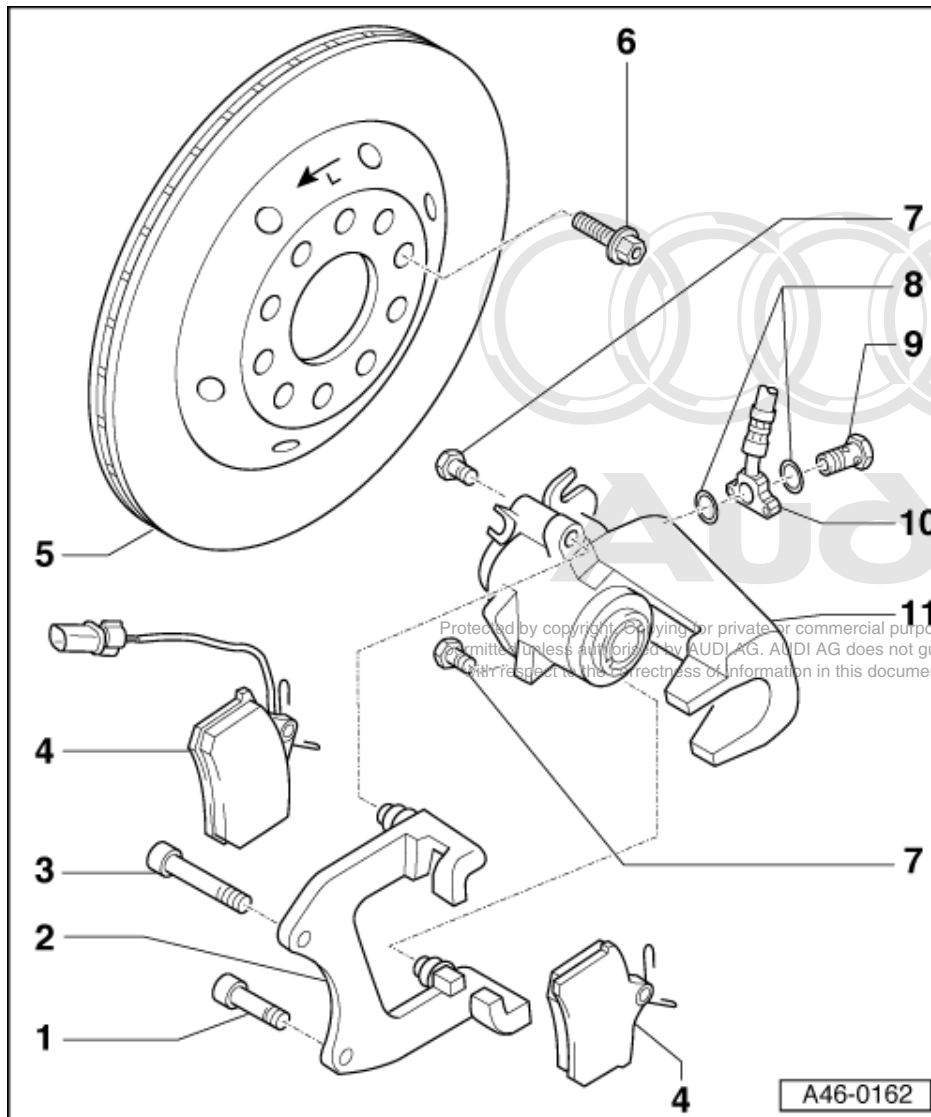
- ♦ The repair kit includes four self locking hexagon bolts which must be installed in all cases.
- ♦ Each time after replacing the brake pads, depress the brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.

- Fit wheels and tighten to 120 Nm.

- Check brake fluid level and top up if necessary.

7 - Rear brakes C43

7.1 - Rear brakes C43



7.2 - Servicing brake caliper

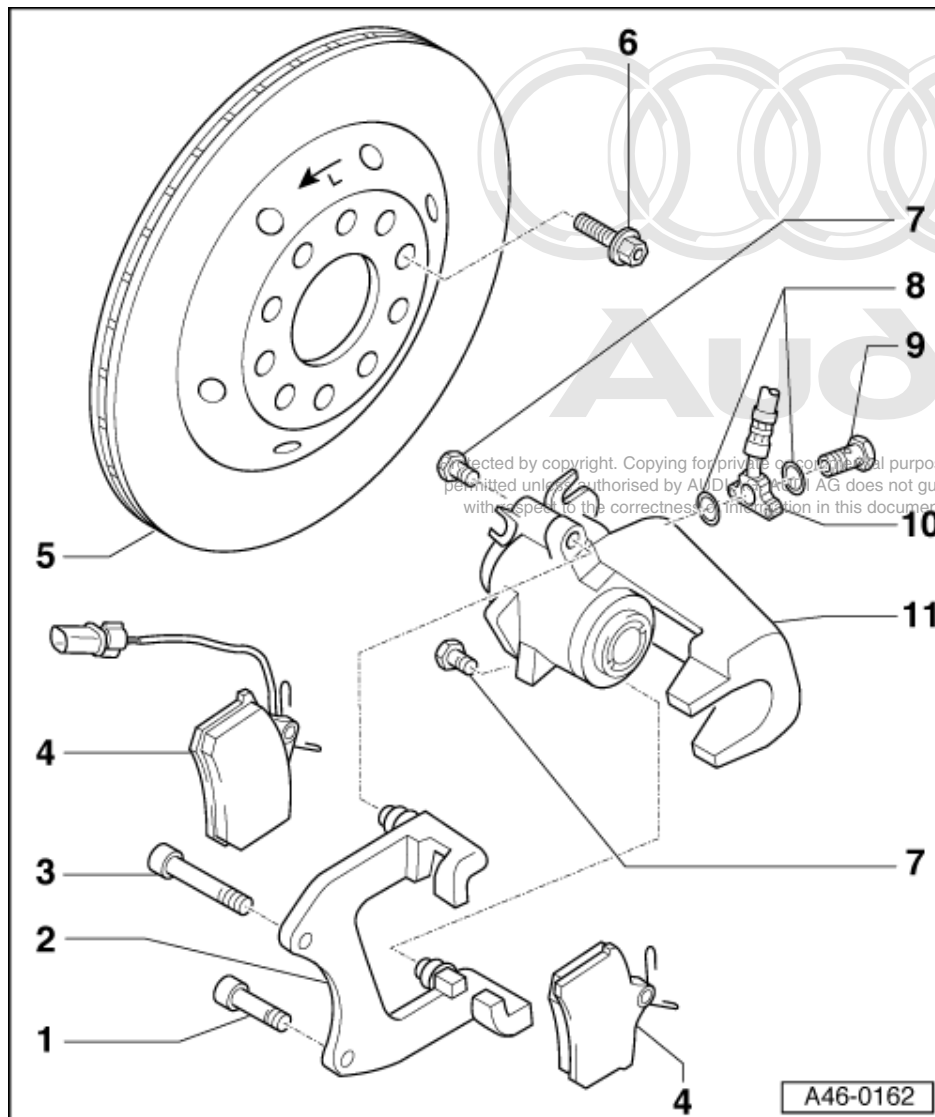
Rear brakes with automatic adjustment

Notes:

- ◆ Always install the complete repair kit.
- ◆ After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in the normal operating position.



- ♦ To draw off brake fluid from the reservoir, use a bleeder bottle which is used only for brake fluid. Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.



- ♦ Brakes can be checked on any commercially available brake test stand, provided that the driving speed of the two driving rollers of the test stand is not more than 5.5 km/h.
- ♦ The tightening torque of the brake pipes is 15 Nm.

1 Hexagon socket head bolt, 60 Nm

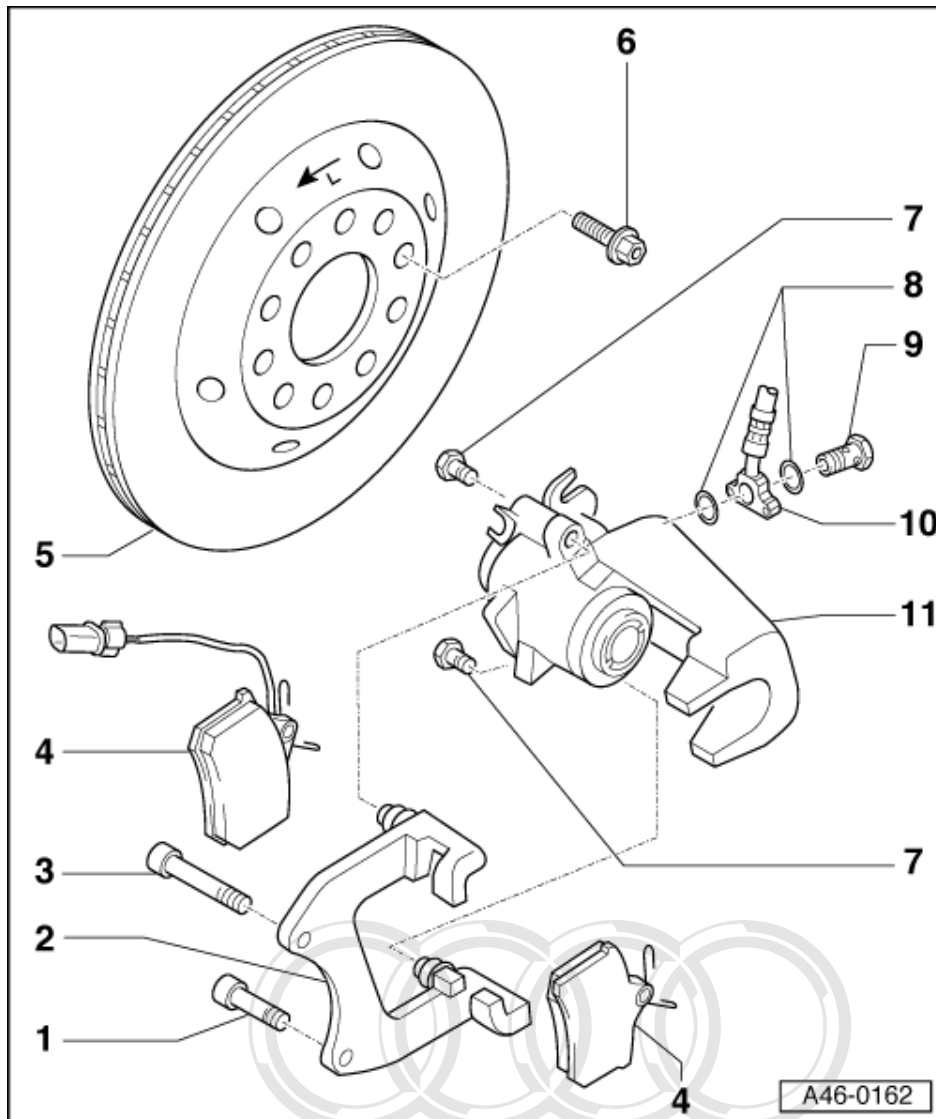
- ♦ M10 x 40

2 Brake carrier with guide pin and protective cap

- ♦ Supplied as replacement part assembled with sufficient quantities of grease on guide pins
- ♦ If protective caps or guide pins are damaged, install repair kit. Use grease sachet supplied to lubricate guide pins.

3 Hexagon socket head bolt, 60 Nm

- ♦ M10 x 65



4 Brake pads

- ◆ Always replace all components on an axle
- ◆ Do not disconnect brake hose when changing brake pads
- ◆ Inner brake pad with wear indicator
- ◆ Removing and installing
=> Page 99
- ◆ Checking thickness:

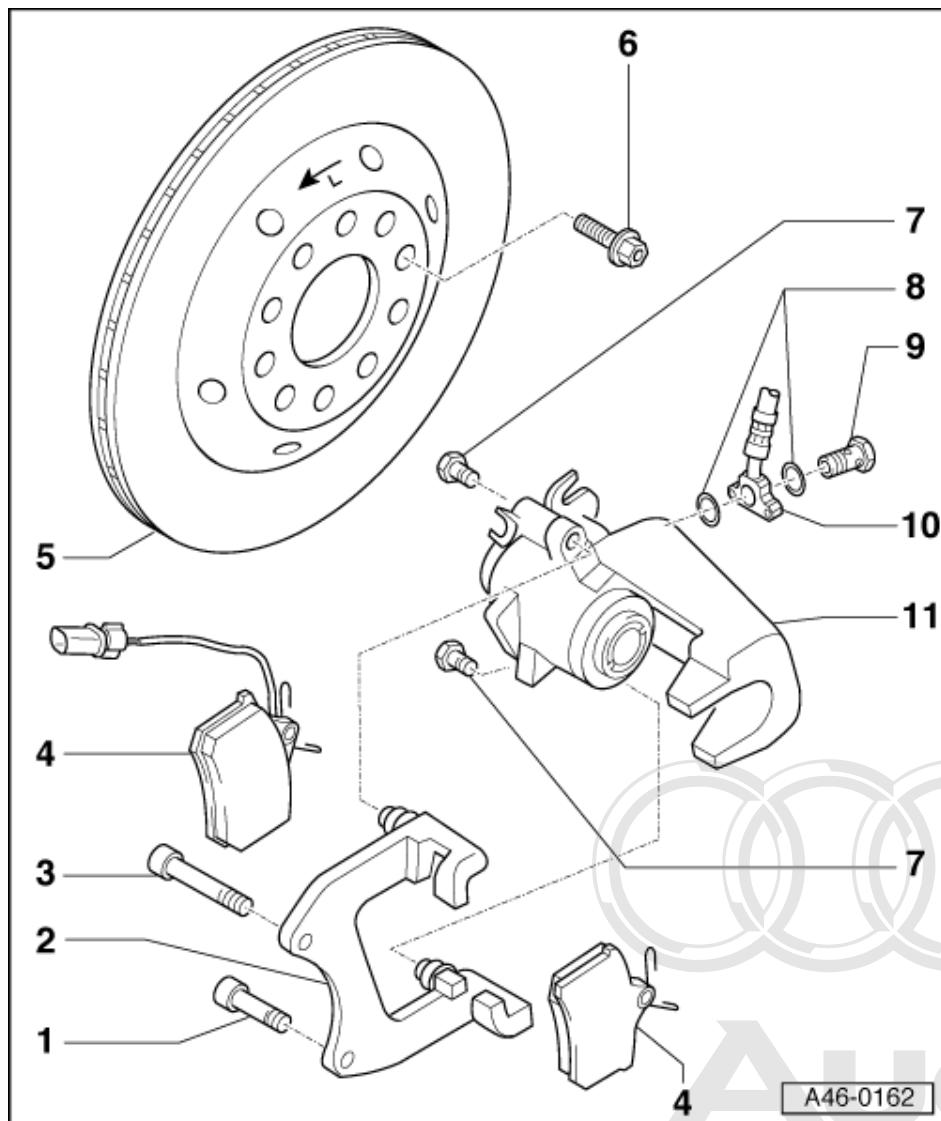
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

=> Maintenance Manual

5 Brake disc

- ◆ Always replace all components on an axle
- ◆ Arrow points in running direction
- ◆ Different versions on left and right
- ◆ Remove brake caliper prior to removing
- ◆ Lubricate contact surfaces between brake disc and wheel hub with polyurea grease G 052 142 A2.
- ◆ Ensure adequate wear reserve

=> Brake System; Repair group 00; Technical data Technical data



6 Wheel bolts

- ◆ Tightening torque 140 Nm

7 Hexagon bolt, Self-locking, 35 Nm

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

8 Seals

9 Banjo bolt 45 Nm

10 Brake pipe with banjo union

- ◆ Hose must be attached without twisting

11 Brake caliper housing

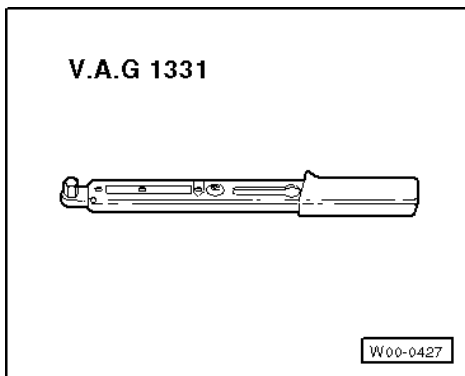
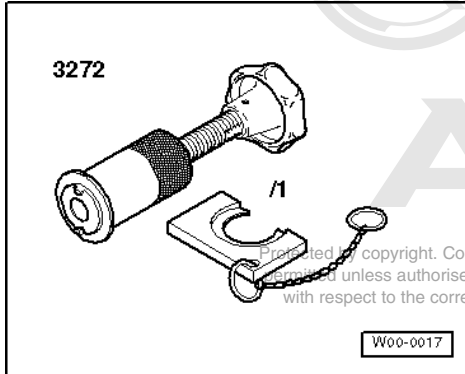
- ◆ Unscrew from brake carrier to replace brake pads
- ◆ Hose must be attached without twisting
- ◆ Do not disconnect brake hose when changing brake pads
- ◆ Servicing brake caliper => Page 165

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

7.3 - Removing and installing brake pads

Special tools and workshop equipment required

- ♦ 3272 Resetting and removing tool



- ♦ V.A.G 1331 Torque wrench

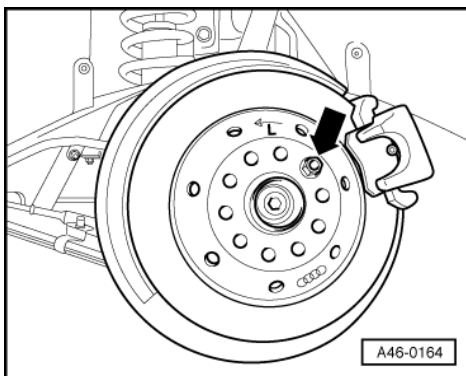
Removing

Note:

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

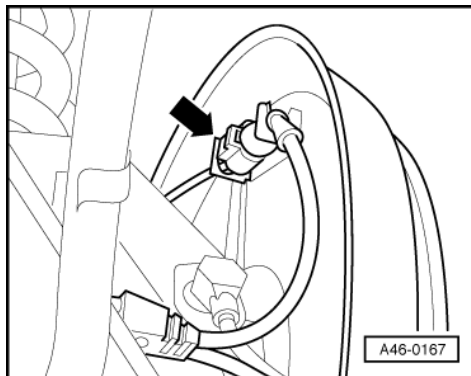
When installing the brake discs, note the direction of rotation -arrow on the brake disc- and fitting location -left or right-

- Raise vehicle.
- Remove wheels.

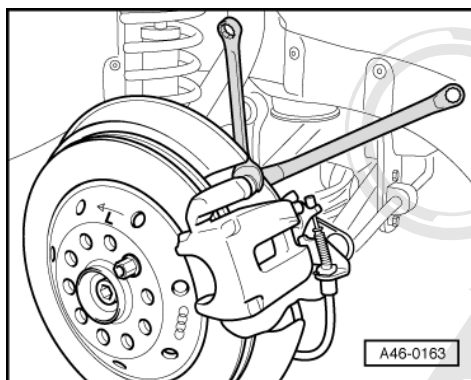




- -> Secure brake disc with a wheel bolt, see -arrow-.
- The arrow on the brake disc must point in the running direction.
- L-stands for left

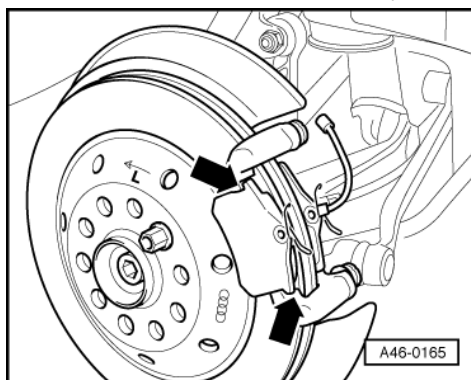


- -> Disconnect the brake wear indicator connector
- Release the connector from the holder using a screwdriver, turning connector by 90° at the same time.
- Pull connector out upwards and unhook the cable.



- -> Remove bolts from brake caliper housing, counterholding on guide pins.
- Remove brake caliper housing and lay to one side so that the weight of the brake caliper does not stress or damage the brake 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.



- -> Remove brake pads
- Clean brake caliper housing, in particular the bonding surface for the brake pad. It must be free of adhesive and grease residues.

Only use methylated spirits to clean the brake caliper housing.

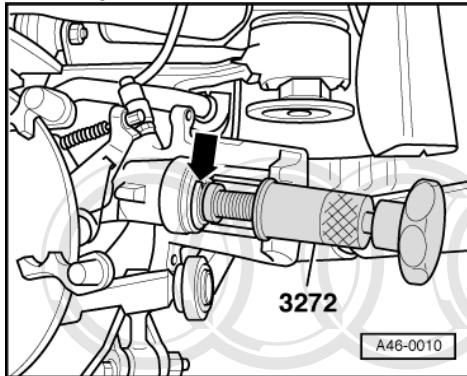
Note:

Before inserting new brake pads, press piston back into the cylinder with resetting tool. Before pressing the piston back, draw off brake fluid from the reservoir with a bleeder bottle. Otherwise brake fluid which was used to top up the brake fluid reservoir, may escape and cause damage.

Important

Brake fluid is poisonous and must on no account be siphoned by mouth through a hose.

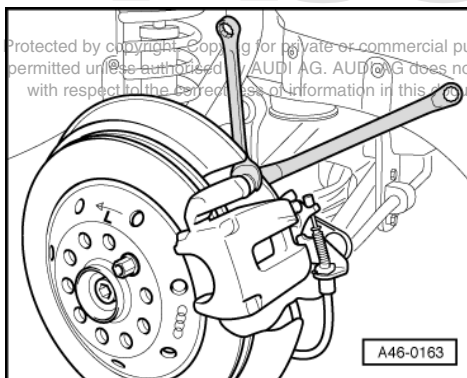
Installing



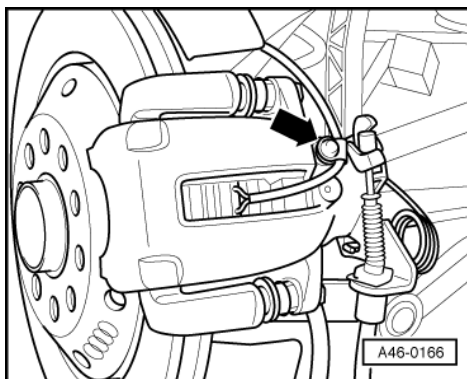
- -> Screw in the piston by turning special tool -3272- clockwise.

Note:

- ♦ The repair kit includes four self locking hexagon bolts which must be installed in all cases.



- -> Insert brake pads.
- Pull protective foil off outer brake pad backplate.
- Secure brake caliper housing with new self-locking bolts.
- Ensure that the brake hose is installed without twisting.
- Tighten bolts on brake caliper housing, 35 Nm.
- Fit both protective caps.



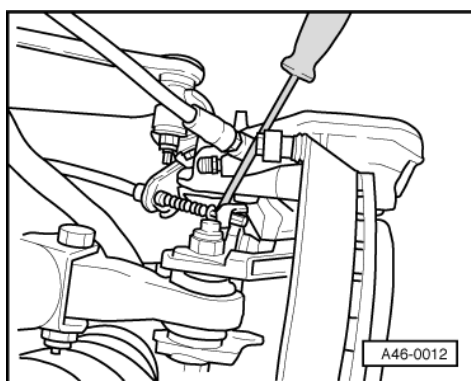
- -> Plug in connector for wear indicator and engage wire in dust cap and trim cap.

Notes:

- ♦ Each time after replacing the brake pads, depress the brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.
- ♦ Always perform basic setting of rear brakes whenever brake pads have been replaced =>Page 110
- Fit wheels
Tightening torque 140 Nm
- Check brake fluid level and top up if necessary.

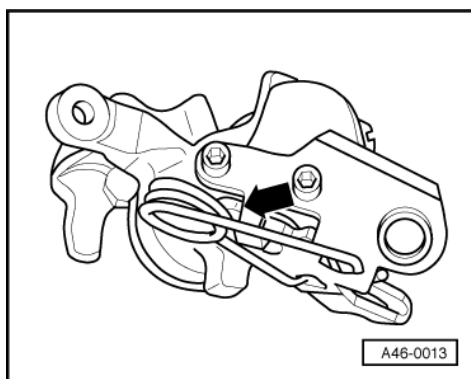
7.4 - Basic setting of rear wheel brake

Handbrake cable must not be pretensioned when performing basic setting (release handbrake).



To test:

- -> Use screwdriver to alternately press levers for handbrake cable against ...



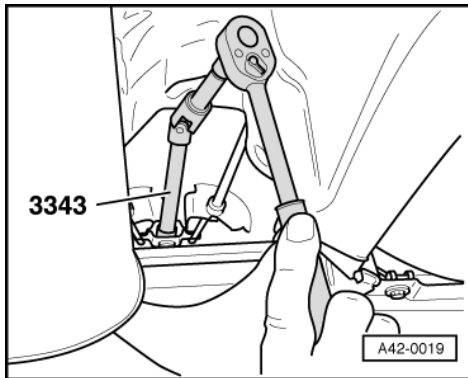
- -> ... stop (see arrow).

If lever of opposite brake caliper is pulled off stop, then handbrake cable is excessively pretensioned.

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.

For ease of illustration, stop is shown with brake caliper removed.

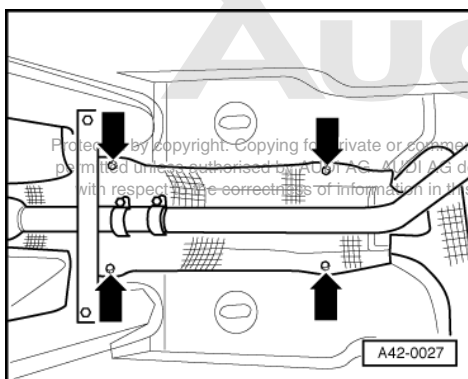


- -> Loosen the adjusting nut for the handbrake cable using special tool -3343- until both levers make contact with the stop of the brake caliper.

8 - Removing and installing handbrake cables (FWD models)

8.1 - Removing and installing handbrake cables (FWD models)

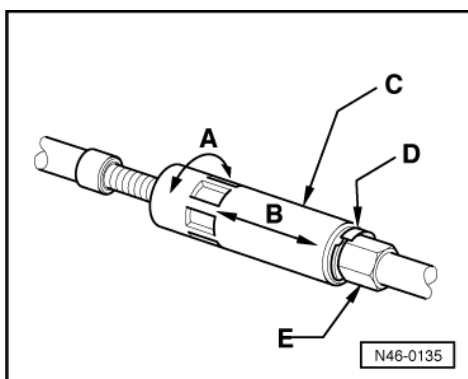
Special tools and workshop equipment required



Workshop Manual, General Body Assembly

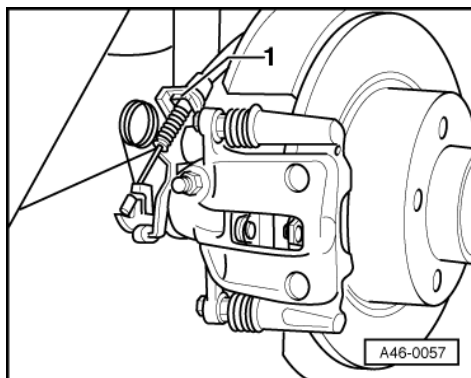
Removing

- Remove both rear wheels.
- -> Remove the heat insulation panel in the propshaft tunnel -arrow-.



- -> Remove locking element -D-.
- Screw adjusting nut -C- in as far as the stop; counterhold with an open jaw spanner (13 mm AF) in the area -E-.

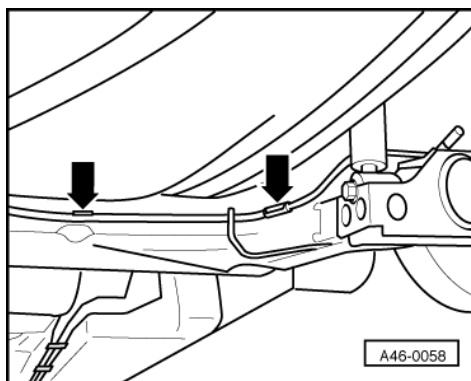
- Push together cable adjuster.



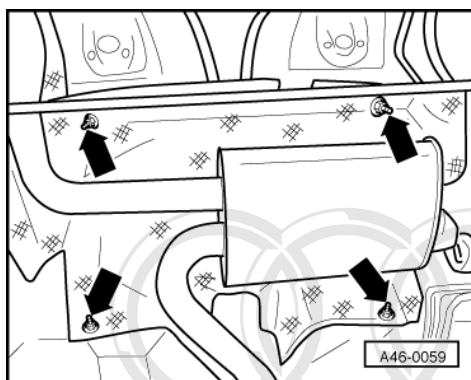
- -> Pull out circlip -1- and detach the handbrake cables at the brake caliper.

Note:

Do not damage handbrake bellows when detaching and attaching.



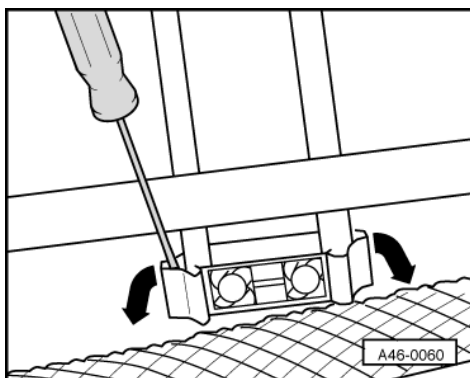
- -> Unscrew handbrake cables from retainers on rear axle beam.



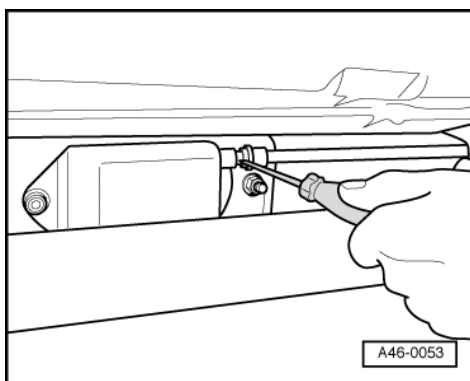
- -> Release heat insulation on rear silencer and push to one side.



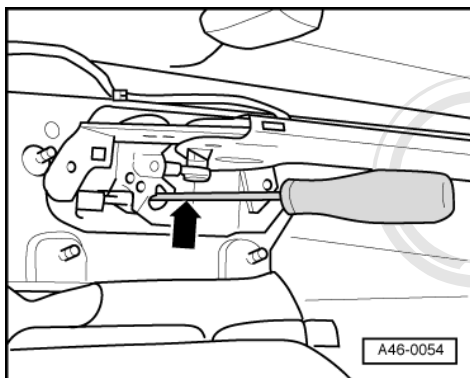
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Open retainer and remove handbrake cables.



- -> Use a screwdriver to lever the handbrake cables out of the console.

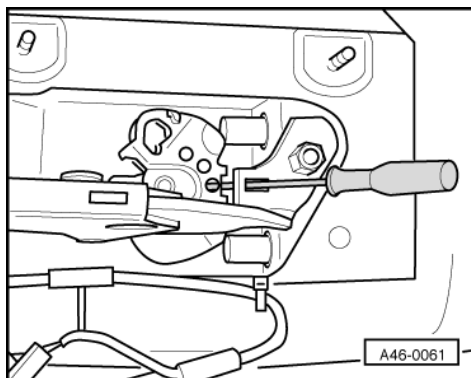


- Remove centre console extension,

=> General Body Assembly; Repair group 68

- -> Press handbrake cables in direction of handbrake lever using a screwdriver and push ball out of retainer.
- Remove handbrake cables.

Installing



- -> Remove any plastic parts on compensating bar; they do not need to be reinstalled.
- Fix compensating bar in place to stop it from turning (size 2 screwdriver).
- Insert ball head through console into compensating bar.
- Handbrake cable must engage in console.
- Secure handbrake cables to rear axle beam and insert in retainers on underbody.
- Adjusting handbrake =>Page 117 .
- Install centre console extension.

=> General Body Assembly; Repair group 68

9 - Removing and installing handbrake cables (4WD models)

9.1 - Removing and installing handbrake cables (4WD models)

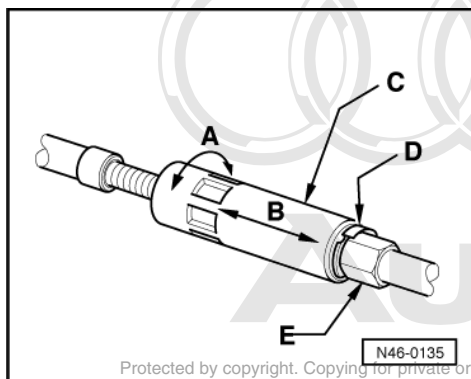
Note:

The handbrake cable adjusting elements are located in front of the rear lower transverse links.

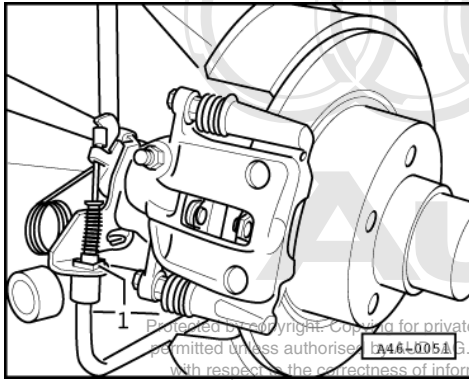
Special tools and workshop equipment required

Workshop Manual, General Body Assembly

Removing



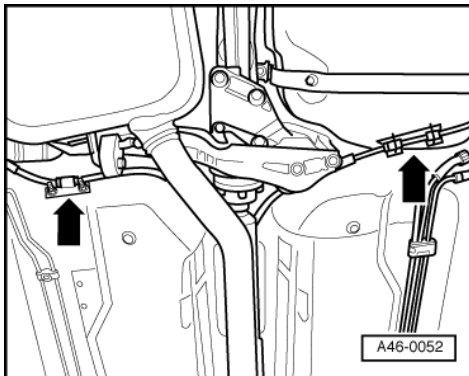
- Remove both rear wheels.
- -> Remove locking element -D-.
- Screw adjusting nut -C- in as far as the stop; counterhold with an open jaw spanner (13 mm AF) in the area -E-.
- Push together cable adjuster.



- -> Pull out circlip -1- and detach the handbrake cables at the brake caliper.

Note:

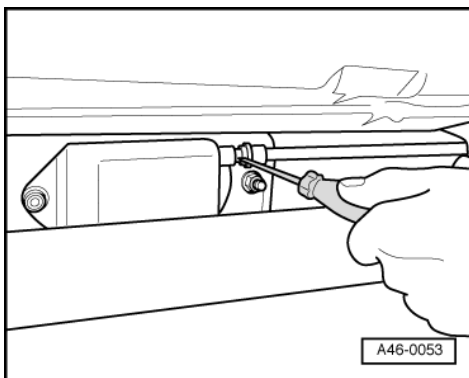
Do not damage handbrake bellows when detaching and attaching.



- -> Remove handbrake cables at underbody and tank -arrows-.

Note:

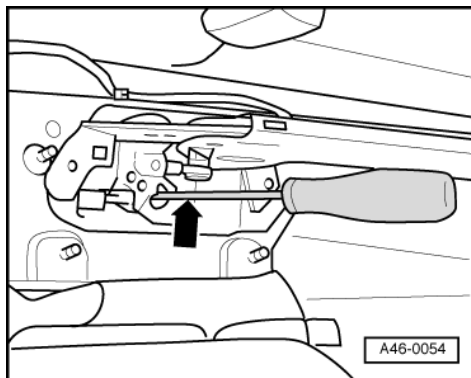
Assembly aid for handbrake cable may drop out. It does not need to be refitted.



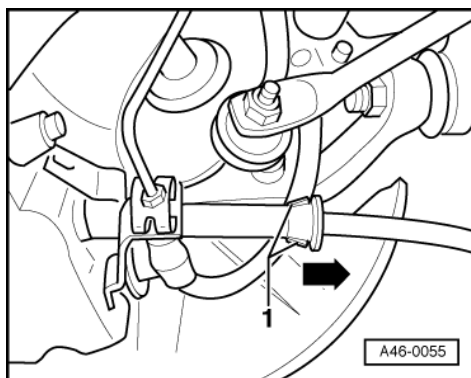
- -> Use a screwdriver to lever the handbrake cables out of the console.

- Remove centre console extension,

=> General Body Assembly; Repair group 68



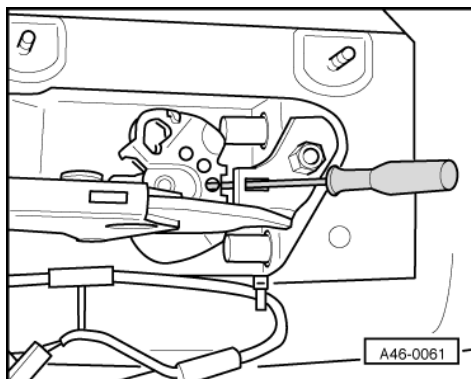
- -> Press handbrake cables in direction of handbrake lever using a screwdriver and push ball out of retainer.



- -> Press together locking element -1- of the guide sleeve and pull out the handbrake cables to the rear in the direction of the arrow.

Installing

- Guide handbrake cables far enough through transverse link until the guide sleeve locks in place.



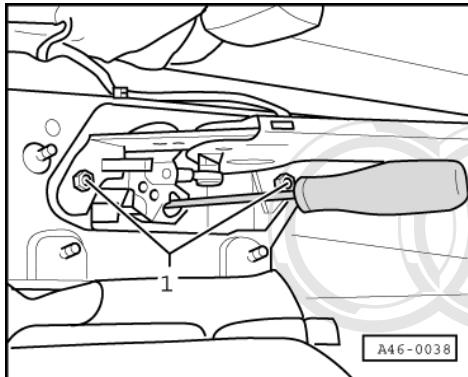
- -> Remove any plastic parts on compensating bar; they do not need to be reinstalled.
- Fix compensating bar in place to stop it from turning (size 2 screwdriver).
- Insert ball head through console into compensating bar.
- Handbrake cable must engage in console.
- Attach handbrake cables to underbody and tank and insert them into lever at brake caliper.
- Adjusting handbrake =>Page **117** .
- Install centre console extension.

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

=> General Body Assembly; Repair group 68

10 - Removing and installing handbrake lever

10.1 - Removing and installing handbrake lever



Special tools and workshop equipment required

Workshop Manual, General Body Assembly

Removing

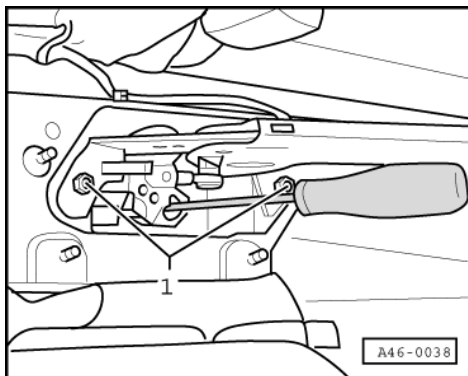
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Remove centre console extension.

=> General Body Assembly; Repair group 68

- -> Remove hexagon nuts -1-.
- Press handbrake cable inwards with a screwdriver and remove handbrake lever.

Installing



- Insert handbrake cable into compensating bar.
- -> Tighten hexagon nuts -1- to 25 Nm.
- Adjusting handbrake =>Page 117 .
- Install centre console extension.

=> General Body Assembly; Repair group 68

10.2 - Adjusting handbrake

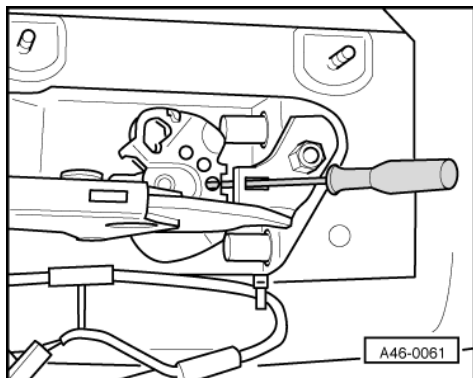
Special tools and workshop equipment required

Workshop Manual, General Body Assembly



Notes:

- ♦ The rear brakes are self-adjusting, so it is unnecessary to adjust the handbrake. Adjustment is only necessary if the handbrake cables, brake calipers, brake pads and brake discs are renewed.
- ♦ The foot brake system must have been bled and must be functioning properly.
- Depress brake pedal firmly at least 1*.
- Handbrake lever in rest position.



- Remove ashtray for rear compartment.

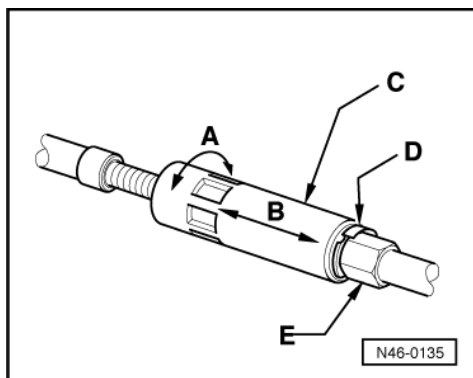
=> General Body Assembly; Repair group 68

- Remove any plastic parts on compensating bar; they do not need to be reinstalled.
- -> Use a screwdriver to fix compensating bar in place to prevent it from turning (shown without centre console to simplify illustration).

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

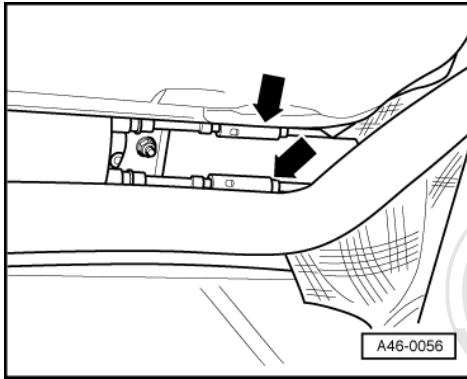
Note:

On 4WD vehicles the handbrake cable adjusting elements are located in front of the rear lower transverse links.

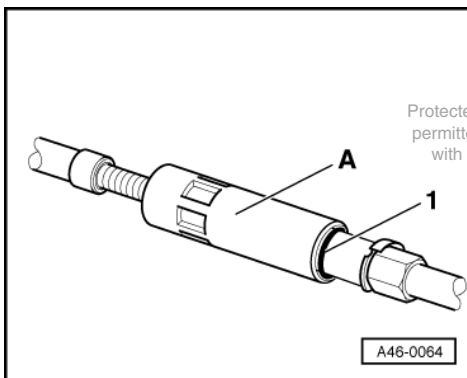


On FWD vehicles they are in the tunnel on the underside of the vehicle.

- -> Remove locking element -D-.
- Screw adjusting nut -C- in as far as the stop; counterhold with an open jaw spanner (13 mm AF) in the area -E-.
- Press together coarse adjuster -B-.
- Screw out adjusting nut until the slot for the locking element is visible.
- Insert locking element.



- -> Pull both cable sleeve coarse adjusters apart at the same time until the cables are tensioned; the lever must not be raised at the brake caliper.
- Remove screwdriver from compensating bar and apply handbrake firmly 3 times.

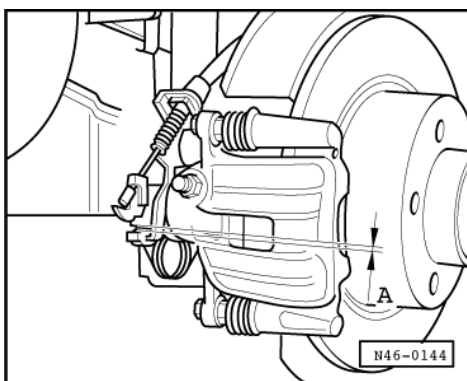


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

-> After completing the adjustment of the handbrake, the coloured O-ring -1- must not be visible to ensure that the adjustment mechanisms of the handbrake cable adjustment elements remain adequately protected against dirt and water.

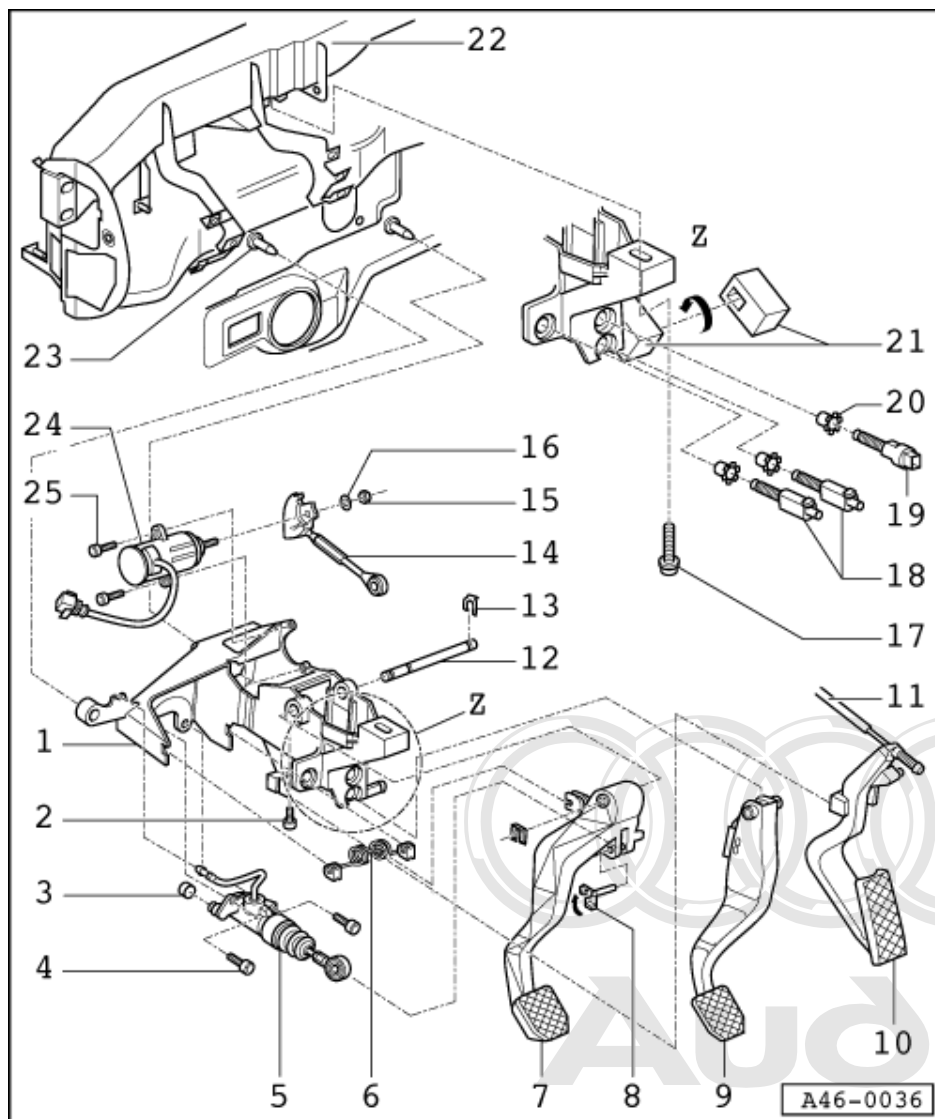
- Check pretension of handbrake and, if necessary, turn fine adjuster -A- in/out ...



- -> ... until the lever lifts slightly off the brake caliper.
- Pay attention to dimension -A-: A small gap should be visible. This gap must not be wider than 1.5 mm.

11 - Assembly overview: Brake pedal, LHD models

11.1 - Assembly overview: Brake pedal, LHD models



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

Important

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

1 Bracket

- ♦ Removing and installing
=> Page **131**

2 Cheese head bolts, 5 Nm

- ♦ Must engage in recess of pin (Item **12**).
- ♦ Do not tighten bolt until circlips (Item **13**) have been fitted.

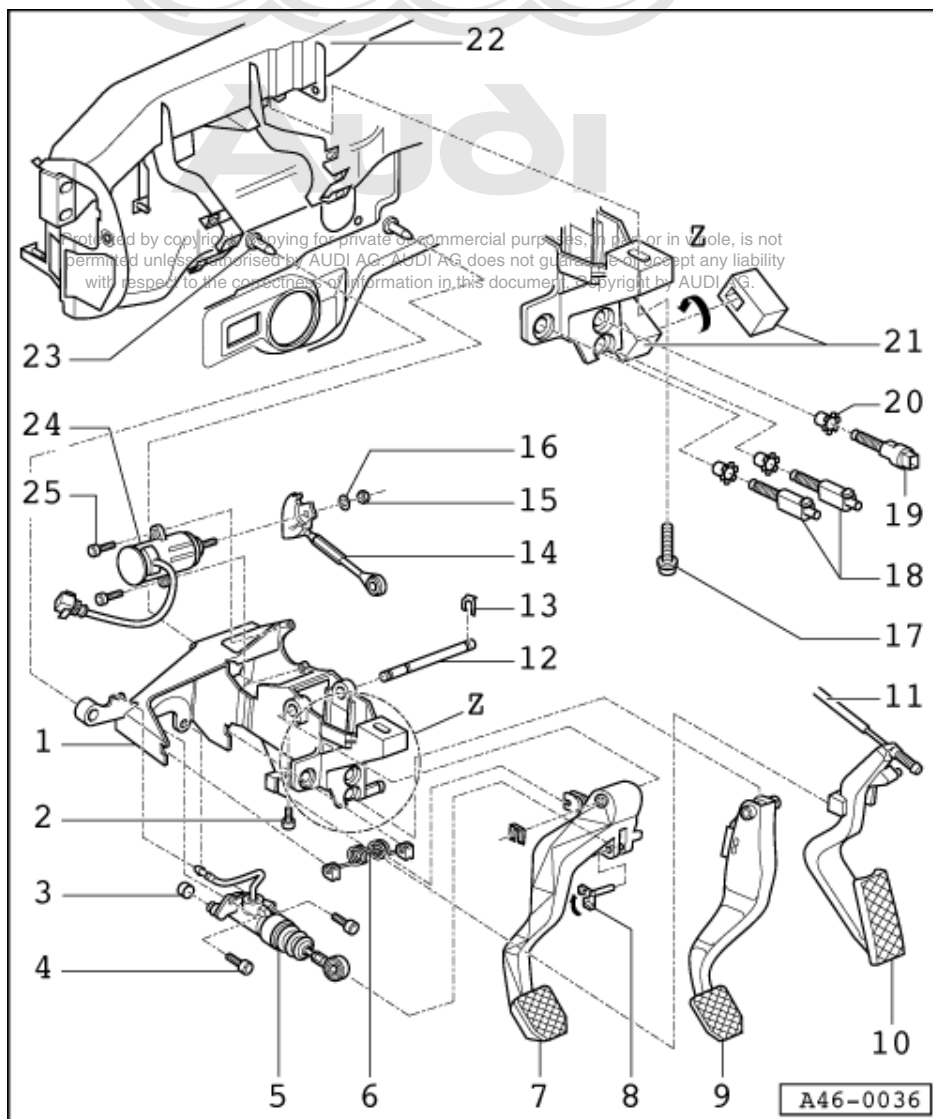
3 Seal

4 Cheese head bolts, 20 Nm

5 Master cylinder

6 Torsion spring

- ◆ Differs on 4- and 6-cylinder engines



7 Clutch pedal

- ◆ Located in position by clutch master cylinder adjustment
- ◆ Push on to pin, Item 12

8 Pin

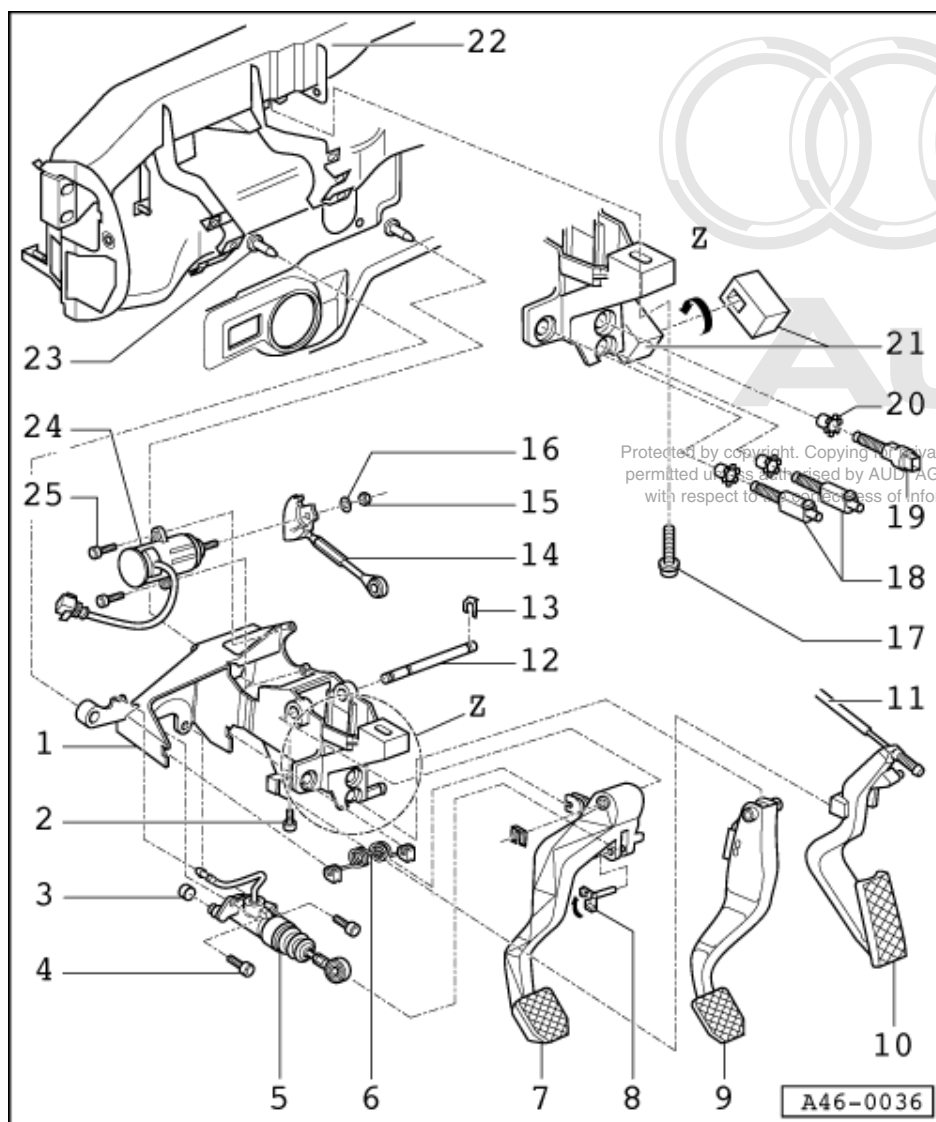
- ◆ Insert in clutch pedal and master cylinder
- ◆ Lock pin in pedal -arrow-.

9 Brake pedal

- ◆ Fit onto pin

10 Accelerator

- ◆ Clip into pedal bracket



11 Accelerator cable

- ♦ Detent ball of the accelerator cable should be locked in accelerator cable mount of accelerator pedal.

12 Pin

13 Circlip (2*)

- ♦ Always replace
- ♦ Fit onto pin

14 Cable pulley with linkage

- ♦ TDI only

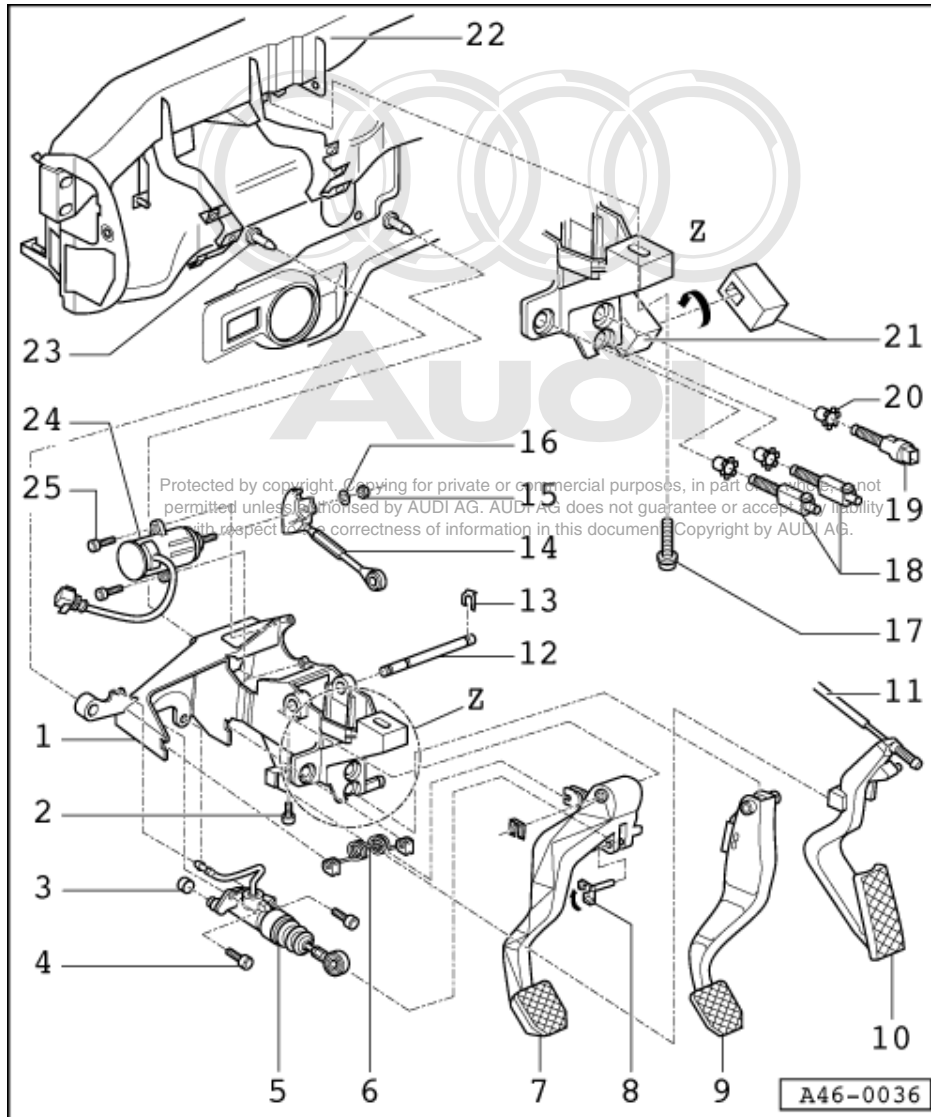
15 Hexagon nut, 8 Nm

- ♦ Always replace

16 Washer

17 Combi bolt, 25 Nm

- ♦ Tighten in vehicle after brake servo unit has been installed



18 Vent valve for cruise control system

- ♦ Adjusting => Page 134

19 Brake light switch

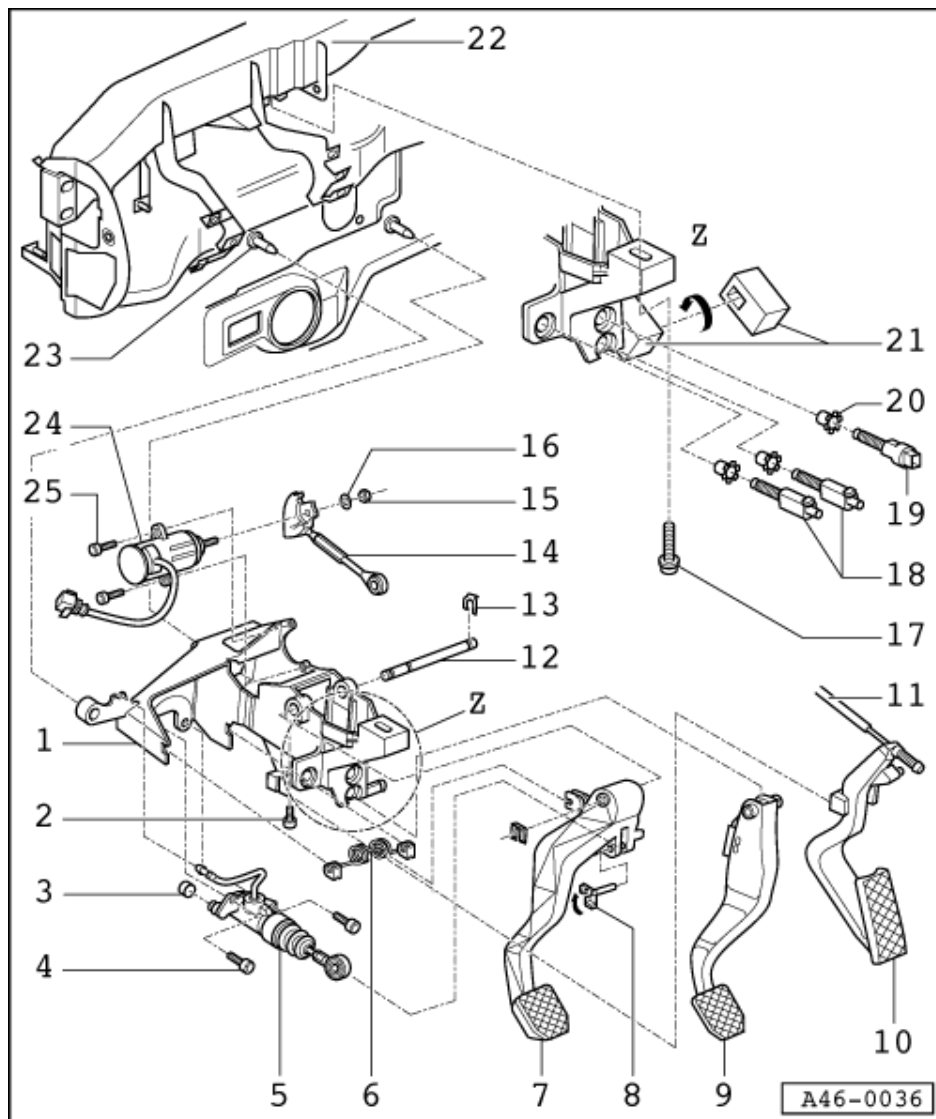
- ♦ Adjusting => Page 33
- ♦ Adjusting at spring clip => Page 33

20 Clip/spring clip

- ♦ Always replace
- ♦ Insert in mounting bracket
- ♦ Press spring clip into pedal bracket from rear => Page 33

21 Stop buffer

- ♦ Observe marking:
- ♦ Manual gearbox position: HS inscription is visible and AG inscription points in direction of travel
- ♦ Automatic gearbox position: AG inscription is visible and HS inscription points in direction of travel



22 Dash panel crossmember

23 Jointing pin

- ♦ Fit pedal bracket onto jointing pin

24 Pedal position sensor

- ♦ TDI only

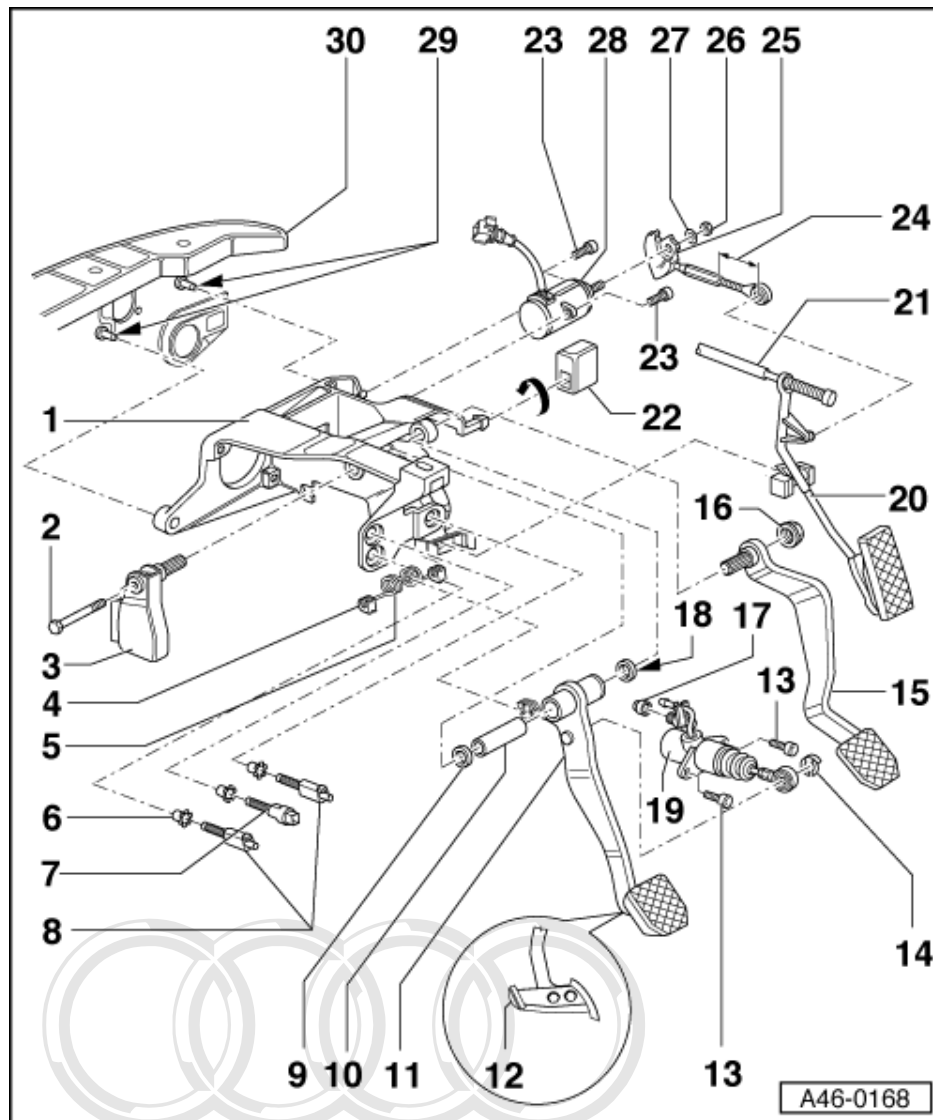
25 Cheese-head bolt, 8 Nm



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.

12 - Assembly overview: Brake pedal, RHD models

12.1 - Assembly overview: Brake pedal, RHD models



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

1 Bracket

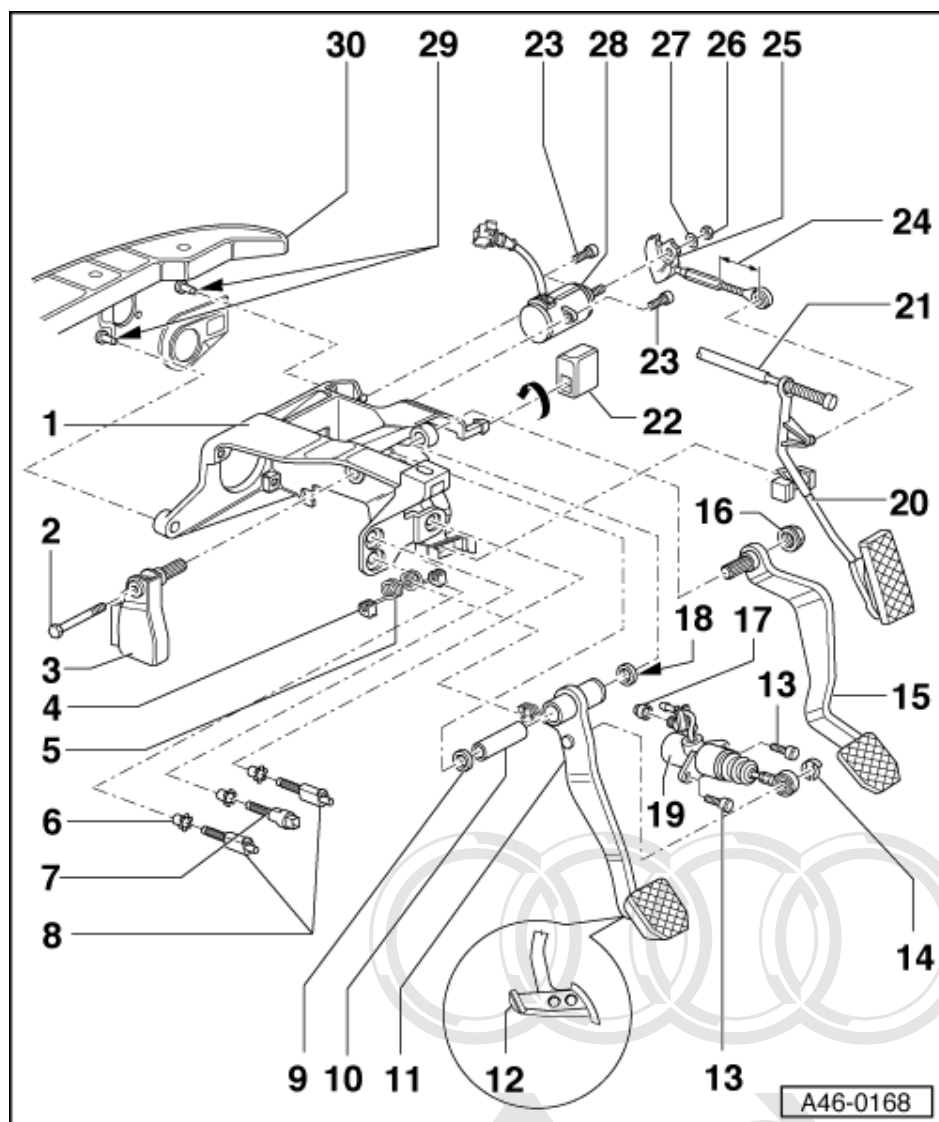
♦ Removing and installing
 => Page 131

2 Hexagon bolt

Tightening torques:

- ♦ Always replace
- ♦ Thread in brake pedal, 25 Nm
- ♦ With hexagon nut 30 Nm + 180°

3 Brake operating lever



4 Mounting

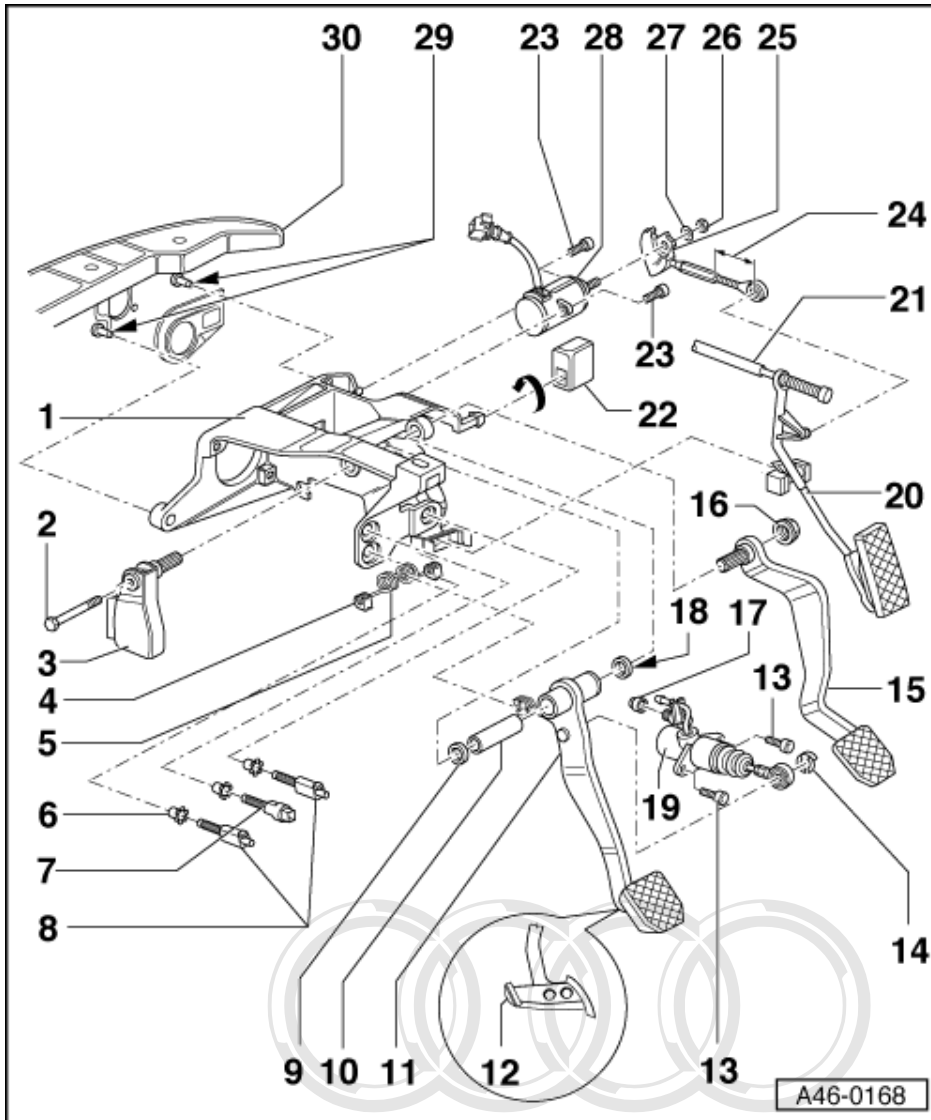
5 Torsion spring

- ◆ Differs on 4- and 6-cylinder engines

6 Clip/spring clip

- ◆ Always replace
- ◆ Insert in mounting bracket
- ◆ Press spring clip into pedal bracket from rear => Page 33

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 light switch

- ♦ Adjusting => Page **33**

8 Vent valve for cruise control system

- ♦ Adjusting => Page **134**

9 Washer

10 Bearing tube

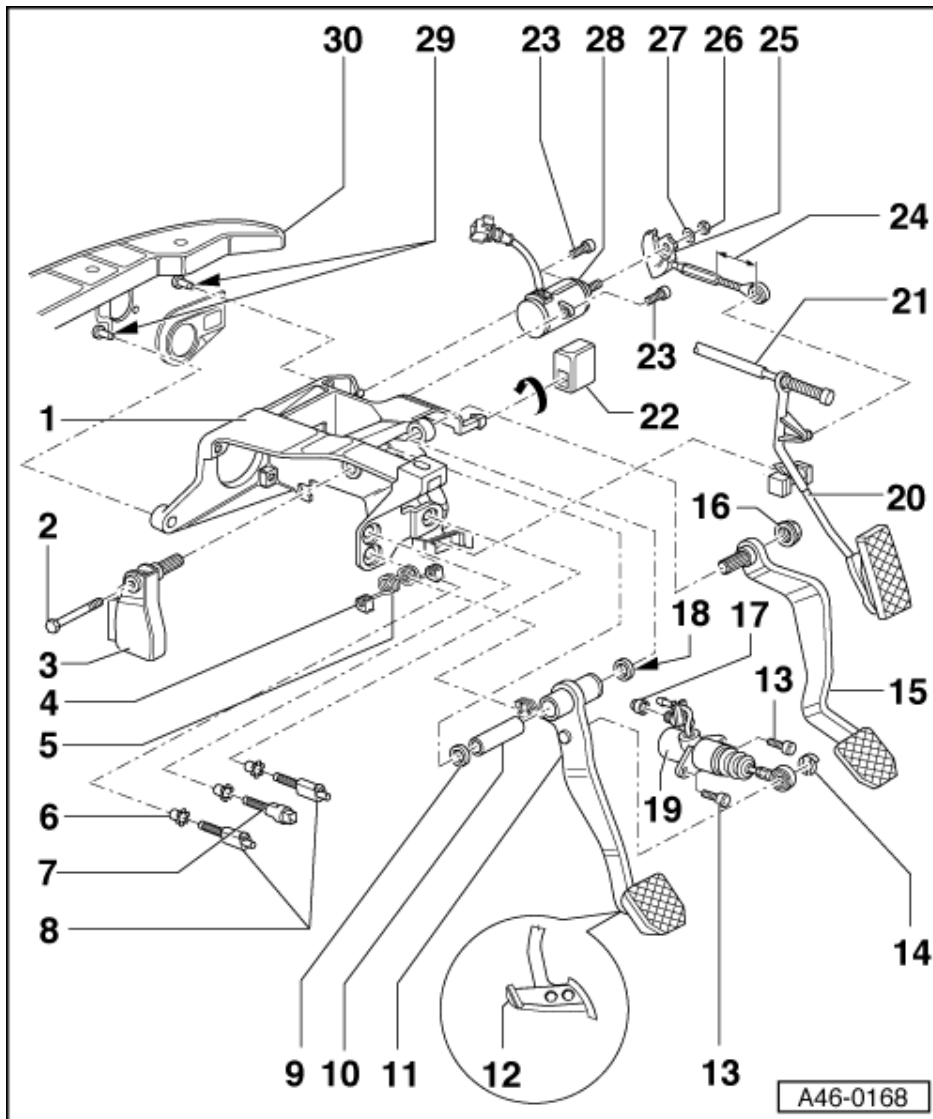
11 Clutch pedal

- ♦ Located in position by clutch master cylinder adjustment
- ♦ Fit onto pin and secure with circlip (Item **14**).

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 a needle bearing is fitted, ensure that the needles do not drop out when removing.

**12 Stop for clutch pedal**

- ◆ No adjustment required

13 Cheese head bolts, 20 Nm**14 Retainer**

- ◆ Always replace
- ◆ Fit onto pin

15 Brake pedal

- ◆ Allocation

=> Replacement Parts Catalogue

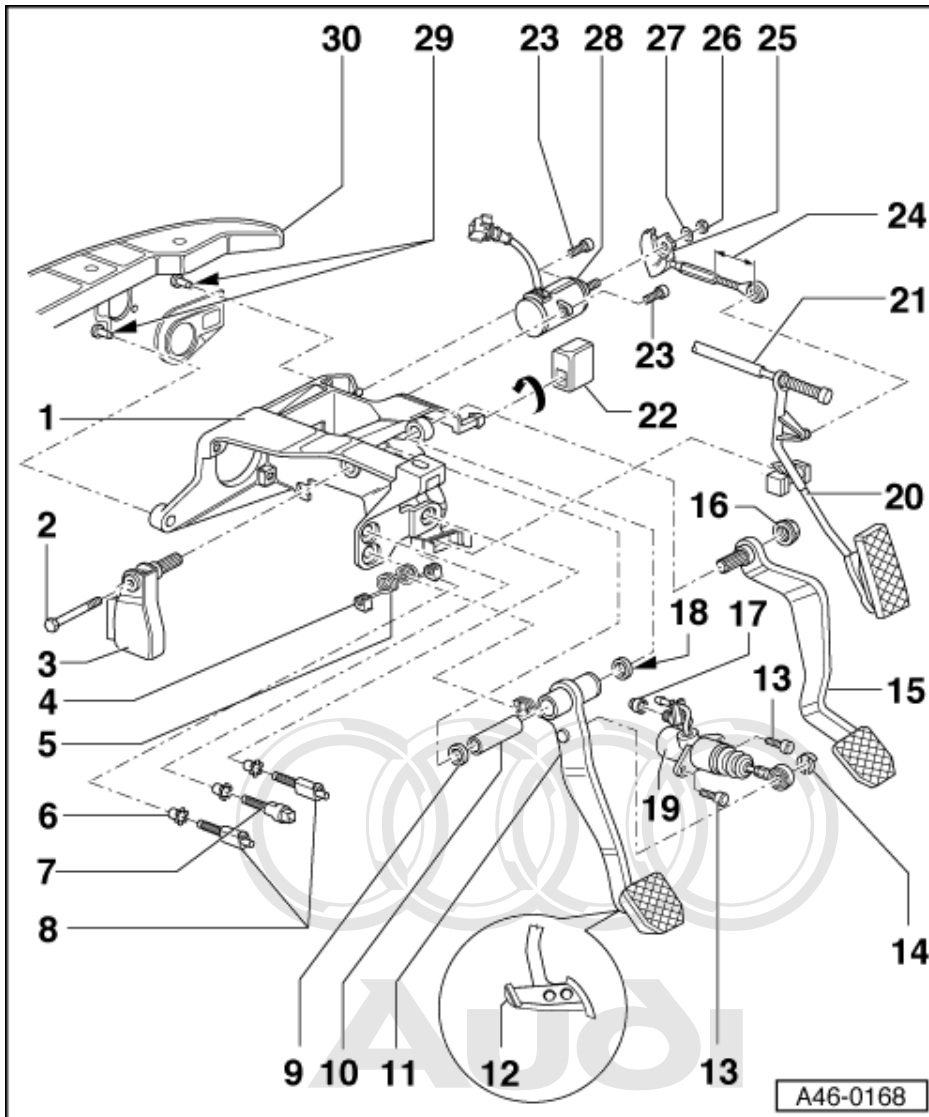
16 Hexagon nut

- ◆ Always replace
- ◆ Tightening torque:
30 Nm +180°

17 Seal**18 Washer****19 Master cylinder****20 Accelerator**

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

- ♦ Clip into pedal bracket



21 Accelerator cable

- ♦ Detent ball of the accelerator cable should be locked in accelerator cable mount of accelerator pedal.

22 Stop buffer

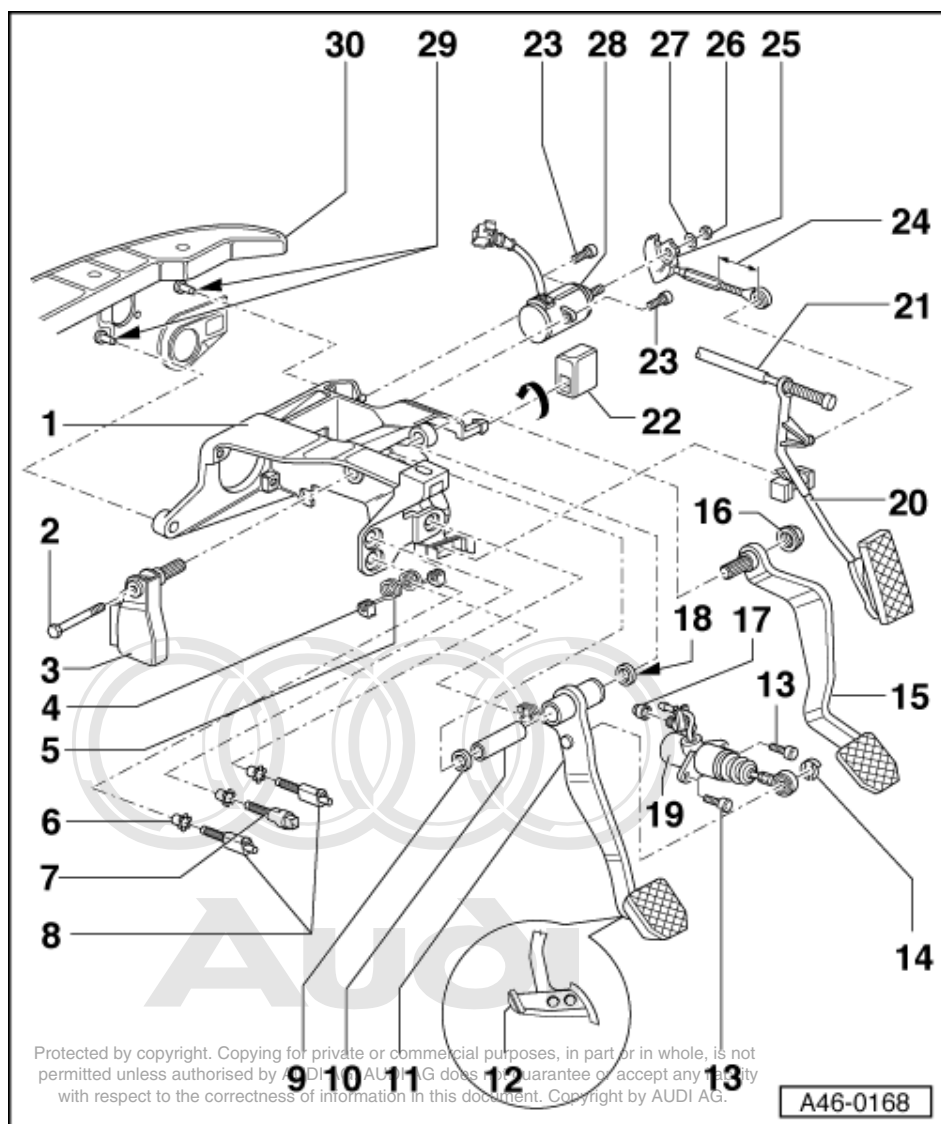
- ♦ Observe marking:
- ♦ Manual gearbox position: HS inscription is visible and AG inscription points in direction of travel
- ♦ Automatic gearbox position: AG inscription is visible and HS inscription points in direction of travel

23 Cheese-head bolt, 8 Nm

- ♦ TDI only

24 Linkage

- ♦ TDI only
- ♦ Screw in to size 28 mm before fitting



25 Cable pulley

- ♦ TDI only

26 Hexagon nut, 8 Nm

- ♦ Always replace
- ♦ TDI only

27 Washer

- ♦ TDI only

28 Pedal position sensor

- ♦ TDI only

29 Jointing pin

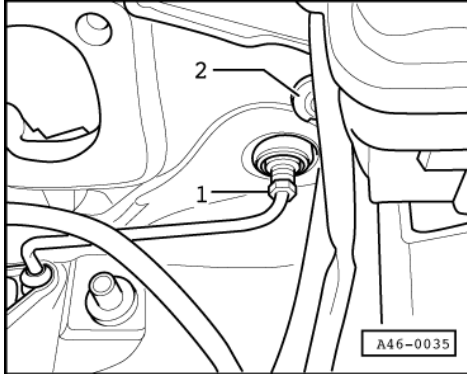
- ♦ Fit pedal bracket onto jointing pin

30 Dash panel crossmember

13 - Removing and installing mounting bracket for brake pedal

13.1 - Removing and installing mounting bracket for brake pedal

- Removing and installing vacuum brake servo unit with brake master cylinder => Page 181 .

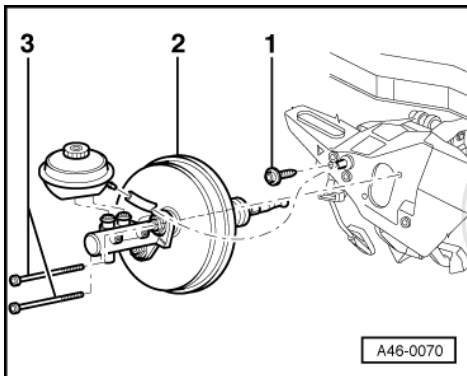


- -> Detach clutch pipe -1- at the master cylinder.

Note:

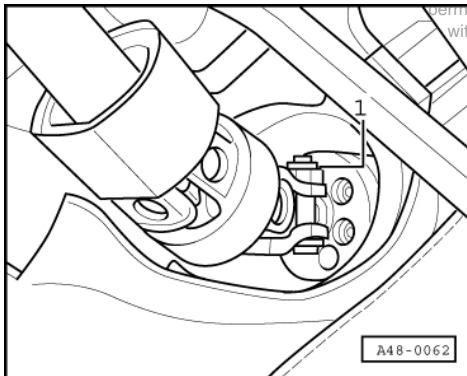
- ♦ Protect the plenum chamber against any escaping brake fluid.
- Detach the supply hose from the knee piece of the master cylinder.

Note:



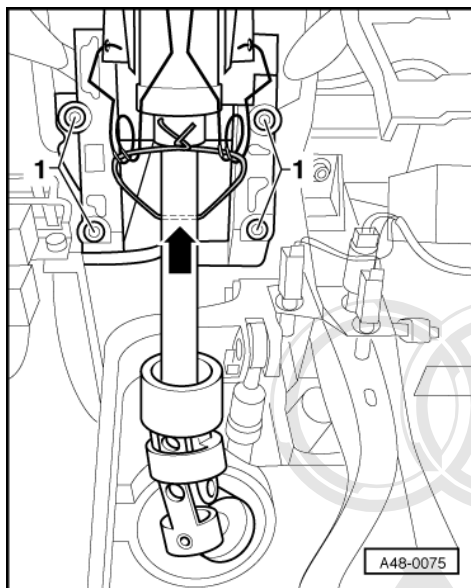
Only on RHD vehicles.

- -> Release securing screw -1- (Torx TP45).
 Tightening torque: 25 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.

- -> Unscrew nut -1- at universal joint.
- Release eccentric by turning the bolt (Torx T50) clockwise and remove bolt.

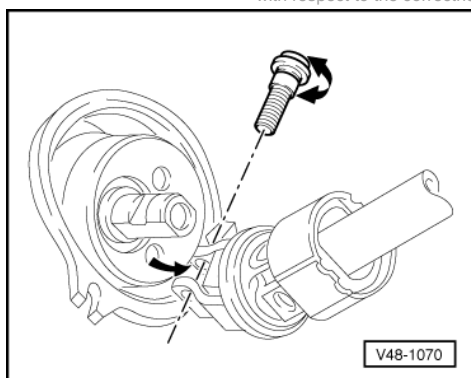


- -> Secure steering column with wire as shown in illustration, before pulling off steering box pinion.

Important

Never detach mesh section between upper and lower part of steering column on assembly.

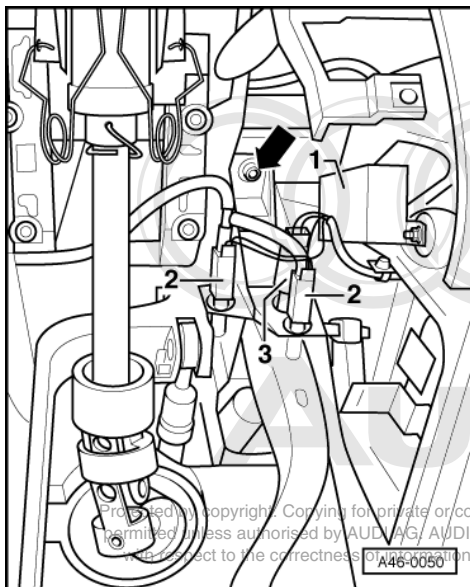
permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Swivel the universal joint downwards out of the way.

Important

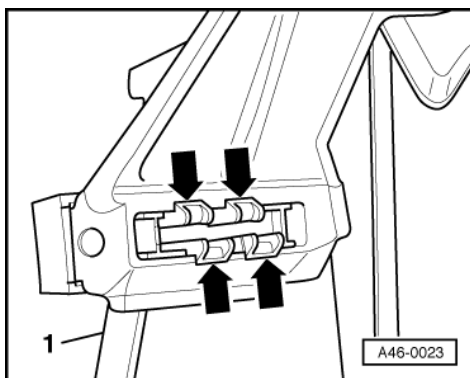
Bring steering wheel to centre position and do not turn whilst performing repair work, as otherwise coil spring of airbag unit could be damaged.



- -> Pull out brake light switch -3- and vent valves -2-.
- Release the Allen screw -arrow- that attaches the pedal cluster to the dash panel crossmember.
- Pull the pedal cluster down and take it out.

Note:

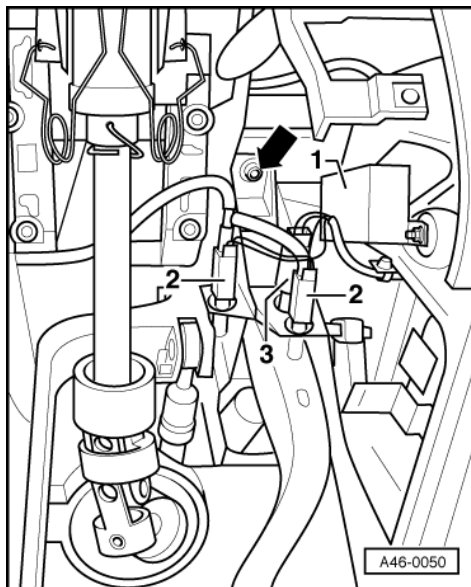
Do not damage the immobiliser control box -1- when taking out the pedal cluster.



- -> To remove accelerator pedal, press catches in direction of arrow and at the same time press out accelerator pedal.

Installing:

- Fit pedal cluster onto jointing pins.



- Fit the Allen screw -arrow- that attaches the pedal cluster to the dash panel crossmember and tighten it finger tight.

Note:

- ♦ Do not fully tighten the Allen screw -arrow- that attaches the pedal cluster to the dash panel crossmember until after the brake servo unit has been installed.
- ♦ Do not remove the steering column assembly lock until after fitting the universal joint onto the steering gear pinion.

- Attach the cable for the accelerator pedal.
- Install brake servo unit => Page 181
- After installing, bleed brakes => Page 173 and clutch.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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-speed Manual Gearbox 012 FWD or 5-speed Manual Gearbox 01A4WD; Repair group 30

- Adjusting brake light switch =>Page 33 .
- Adjusting vent valve for cruise control system => Page 134

13.2 - Adjusting vent valve for cruise control system

With clip without spring for mounting vent valve

Insert vent valve into the installed clip and push through to the stop.

Push back the valve by pulling back the brake pedal to the stop.

Note:

The valve must only be fitted once to ensure that it is secure.

With spring clip for mounting vent valve

- Same procedure as for brake light switch => Page 33

47 - Brakes, Brake hydraulics

1 - Pressurised leak test

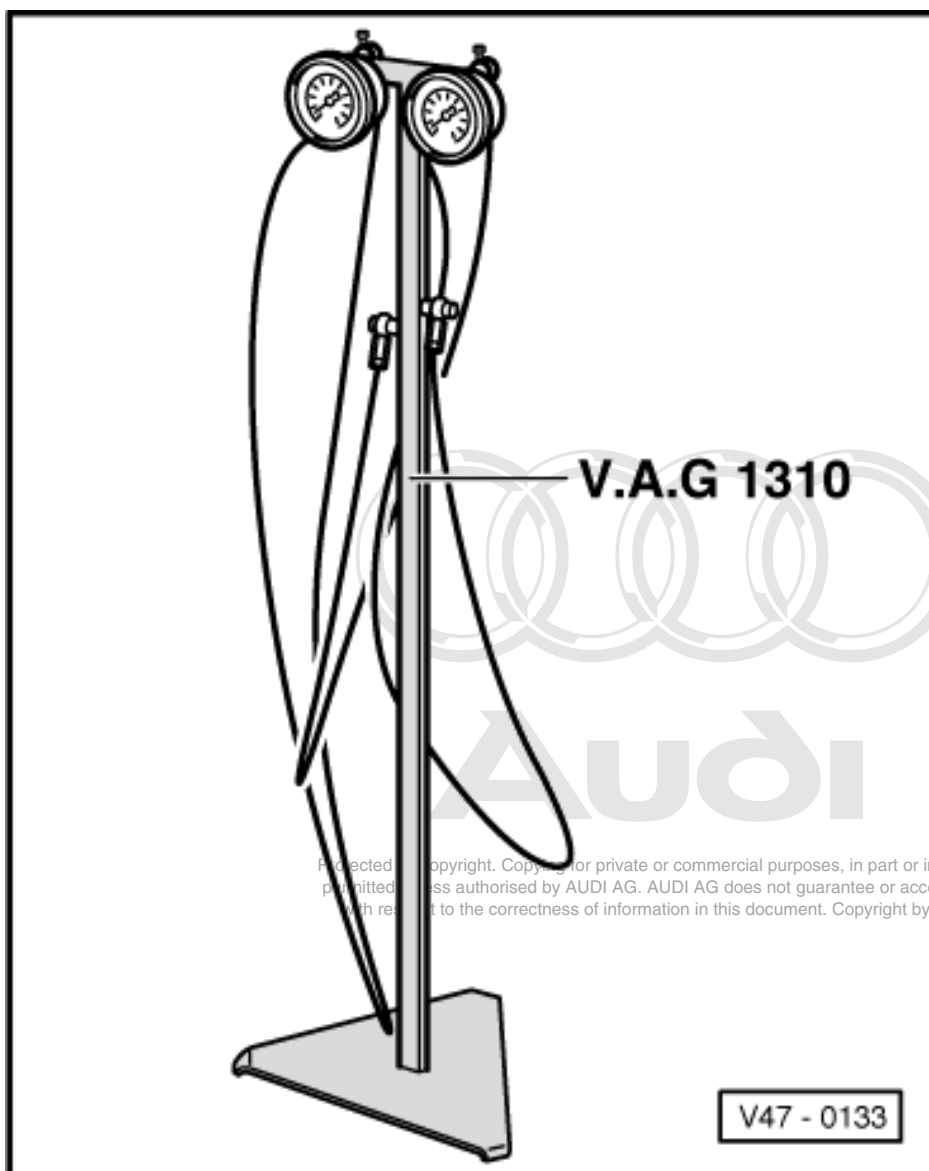
1.1 - Pressurised leak test

Special tools and workshop equipment required

V.A.G 1310	or V.A.G 1310A
------------	----------------

Before you begin:

Make sure that the brake system (hydraulic unit, brake hoses, brake pipes and brake calipers) works properly and is free of leaks.

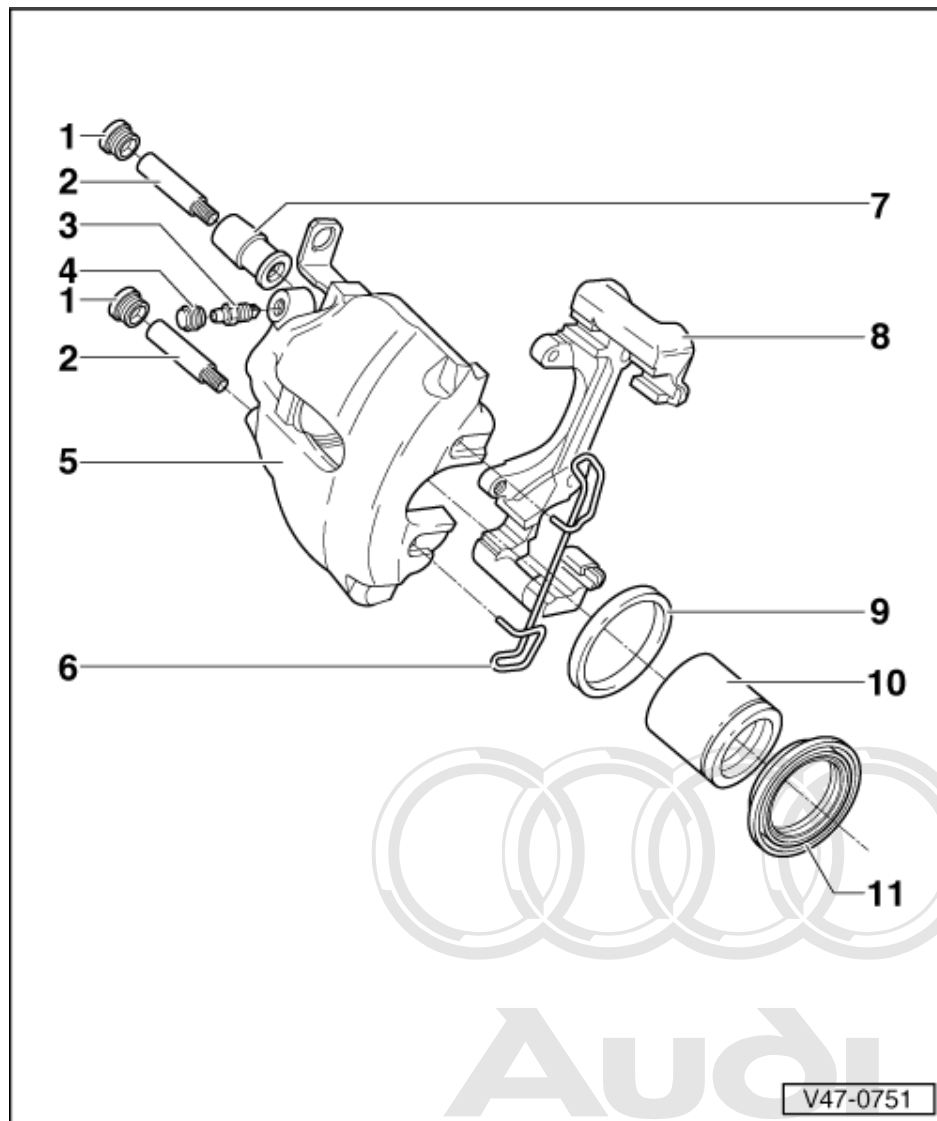


- Remove bleeder screw at one of the front brake calipers. Connect pressure gauge -V.A.G 1310- or V.A.G 1310A and bleed.

- 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 bar during the test period of 45 seconds. Replace brake master cylinder if pressure exceeds the above figure.

2 - Brake caliper FN3

2.1 - Brake caliper FN3



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

2.2 - Servicing brake caliper

Notes:

- ♦ Install complete repair set when servicing.
- ♦ New brake calipers are filled with brake fluid and are pre-bled.
- ♦ Apply thin coat of assembly paste G 052 150 A2 to brake cylinder, piston and sealing ring.

1 Caps

- ♦ Insert into bearing bush

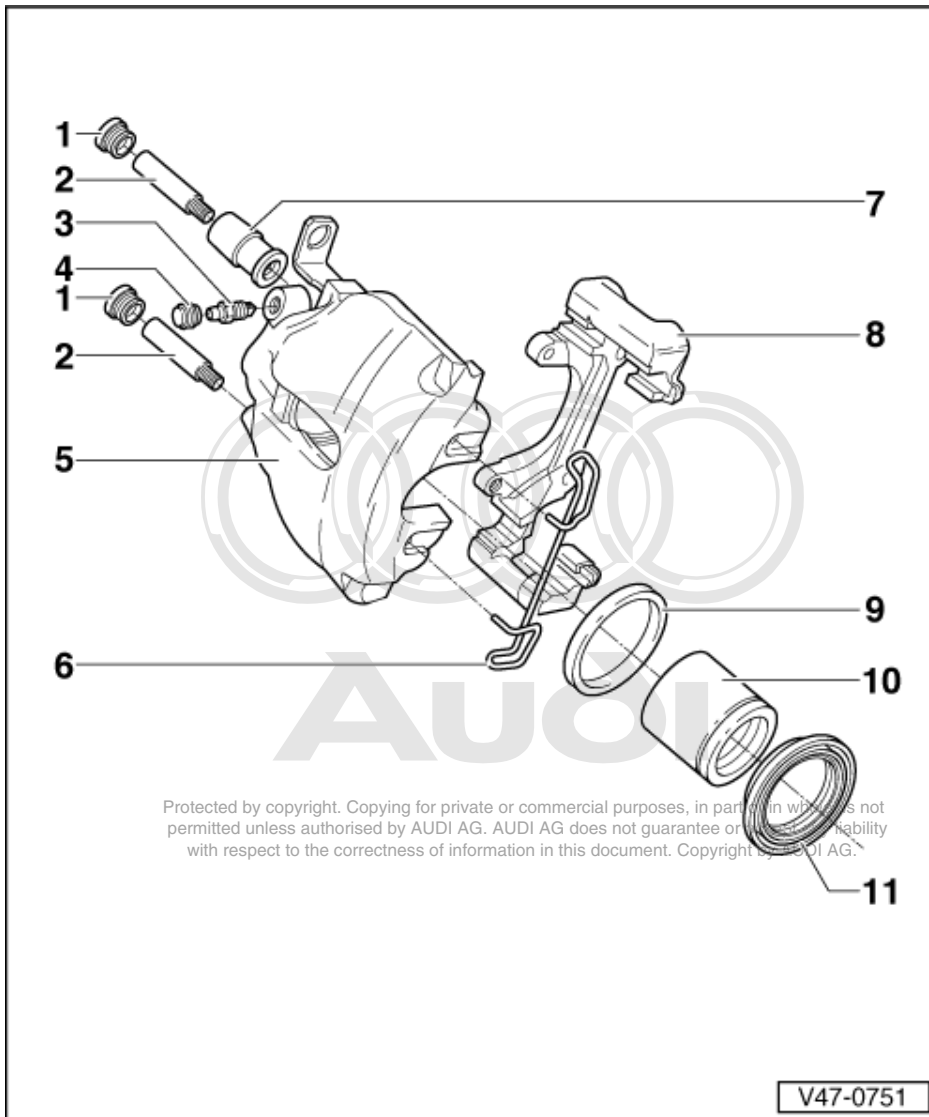
2 Guide pin, 25 Nm

3 Vent valve

- ♦ Apply thin coat of assembly paste G 052 150 A2 to thread before screwing in

4 Protective cap

- ♦ Attach to bleed valve



5 Brake caliper housing

6 Retaining spring

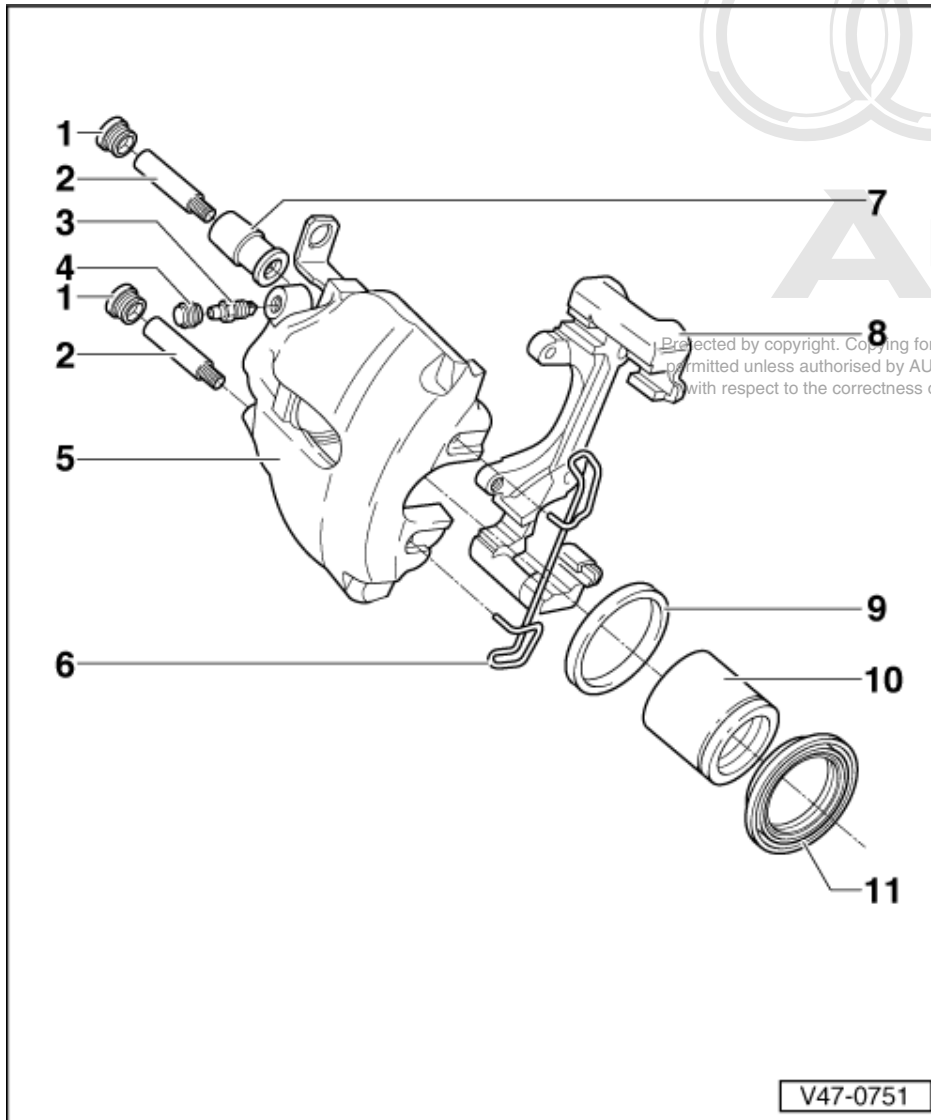
- ♦ Insert both ends into the holes in the brake caliper housing

Notes:

After inserting the retaining spring into the two holes, press it under the brake carrier. If incorrectly installed, it is not possible to adjust the wear of the outer pad, and the pedal travel will be increased as a result.

7 Bush

- ♦ Insert into brake caliper housing



8 Brake carrier

- ◆ Bolt to brake caliper housing

9 Sealing ring

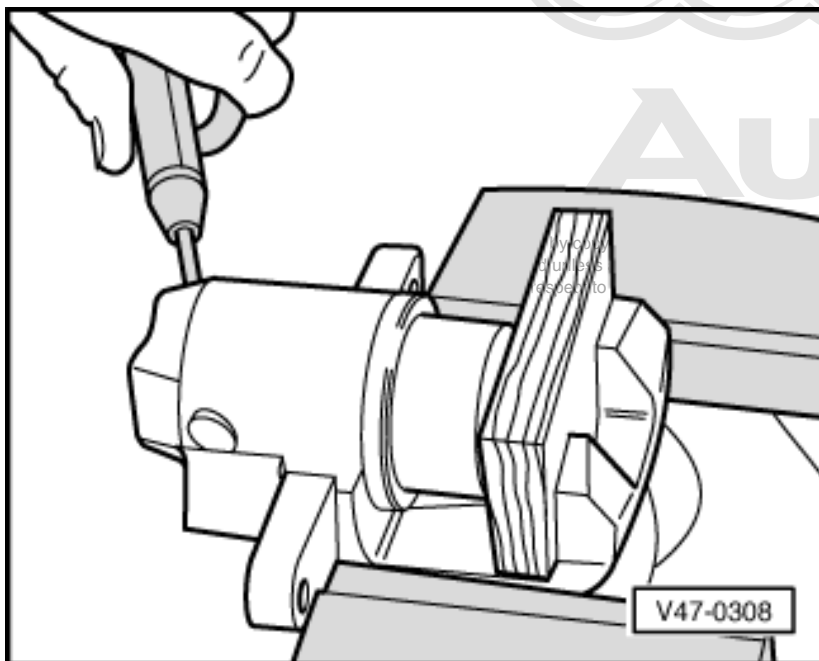
10 Piston

- ◆ Apply thin coat of assembly paste G 052 150 A2 to piston before inserting

11 Protective cap

- ◆ Do not damage when inserting piston

2.3 - Removing and installing piston for front brake caliper



commercial purposes, in part or in whole, is not
Audi AG does not guarantee or accept any liability
in this document. Copyright by AUDI AG.

Special tools and workshop equipment required

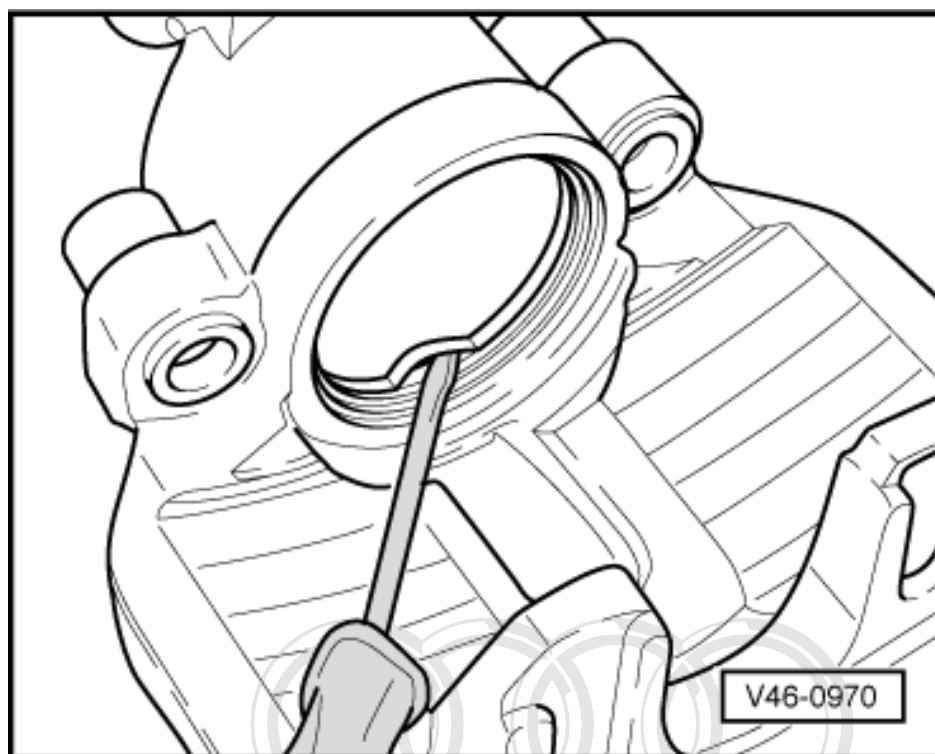
Assembly paste G 052 150 A2		
3409		

Removing

- -> Force piston out of brake caliper housing using compressed air.

Note:

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

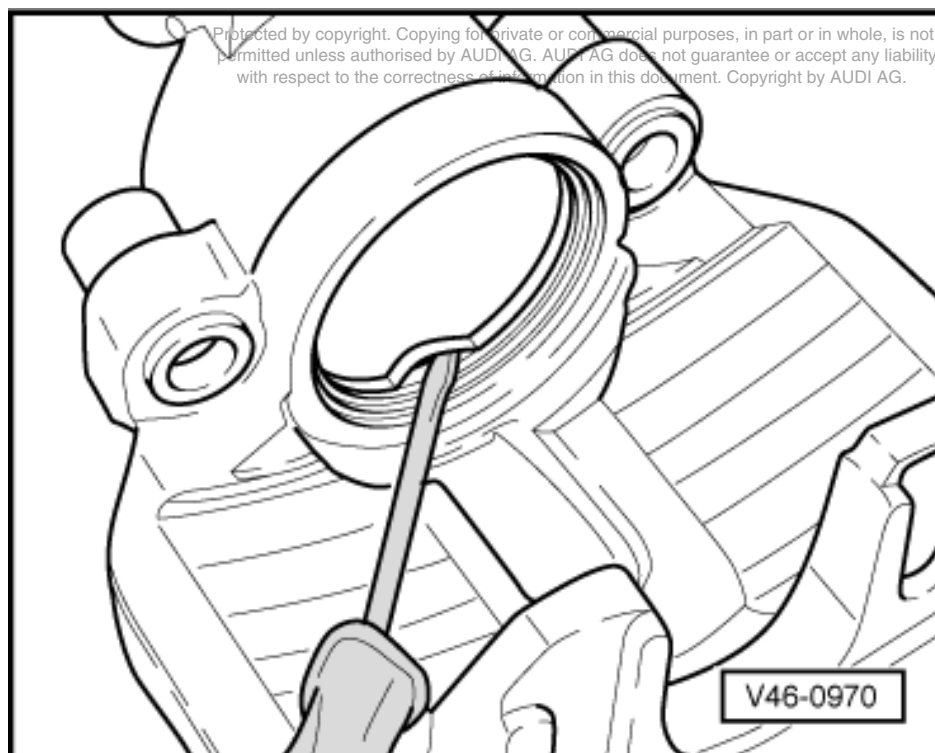


- -> Remove sealing ring.
- For this purpose, use removal wedge 3409.

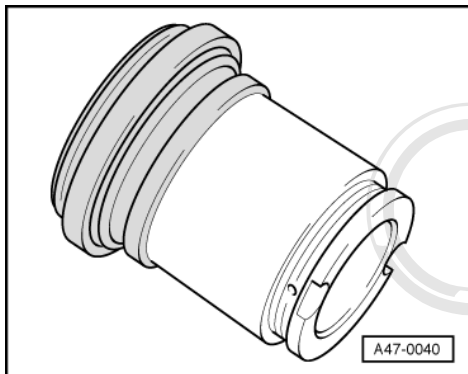
Note:

Ensure that the surface of the cylinder is not damaged during removal.

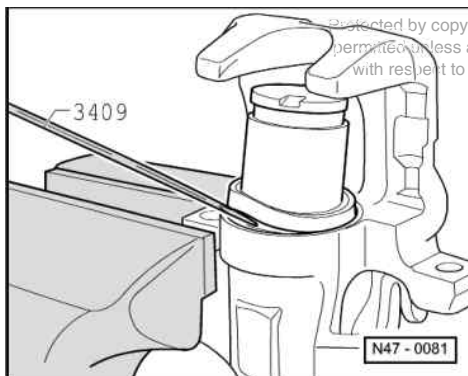
Installing



- -> Insert O-ring
- For this purpose, use removal wedge 3409.



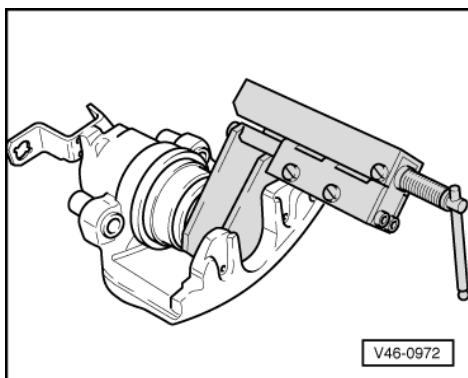
- -> Place protective cap with the outer sealing lip on the piston.
- The surface of the piston and sealing ring should be cleaned using only methylated spirits and then dried.
- Thinly coat piston and sealing ring with assembly paste G 052 150 A2 before inserting.



- -> Using removal wedge 3409, insert the inner sealing lip into the groove on the cylinder.

Note:

At the same time, hold piston in front of brake caliper housing.



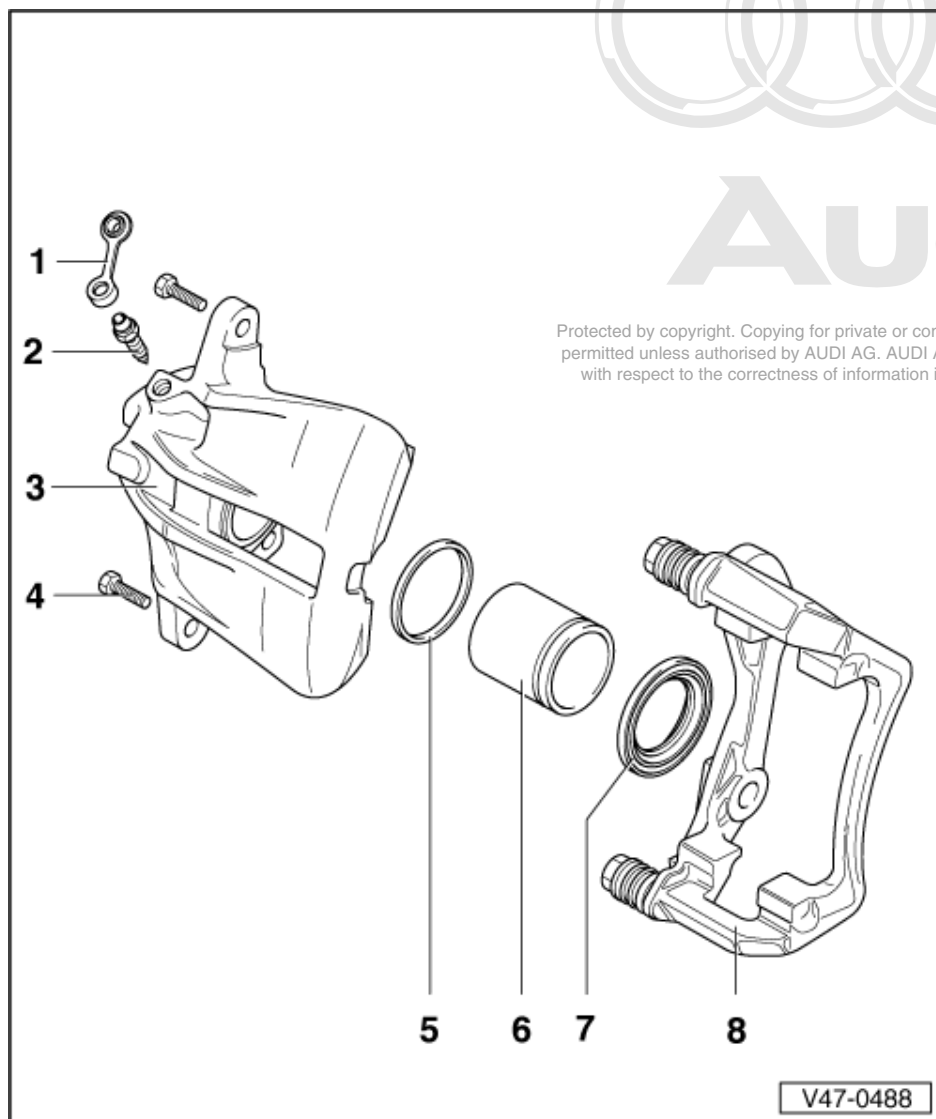
- -> Press the piston into the brake caliper housing using a piston resetting tool.

Note:

The outer sealing lip of the protective cap will then locate in the groove on the piston.

3 - Brake caliper C54

3.1 - Brake caliper C54



3.2 - Servicing brake caliper

Notes:

- ♦ When carrying out repairs install all parts supplied in repair kit.
- ♦ New brake calipers are filled with brake fluid and are pre-bled.
- ♦ Apply thin coat of assembly paste G 052 150 A2 to brake cylinders, pistons and seals.

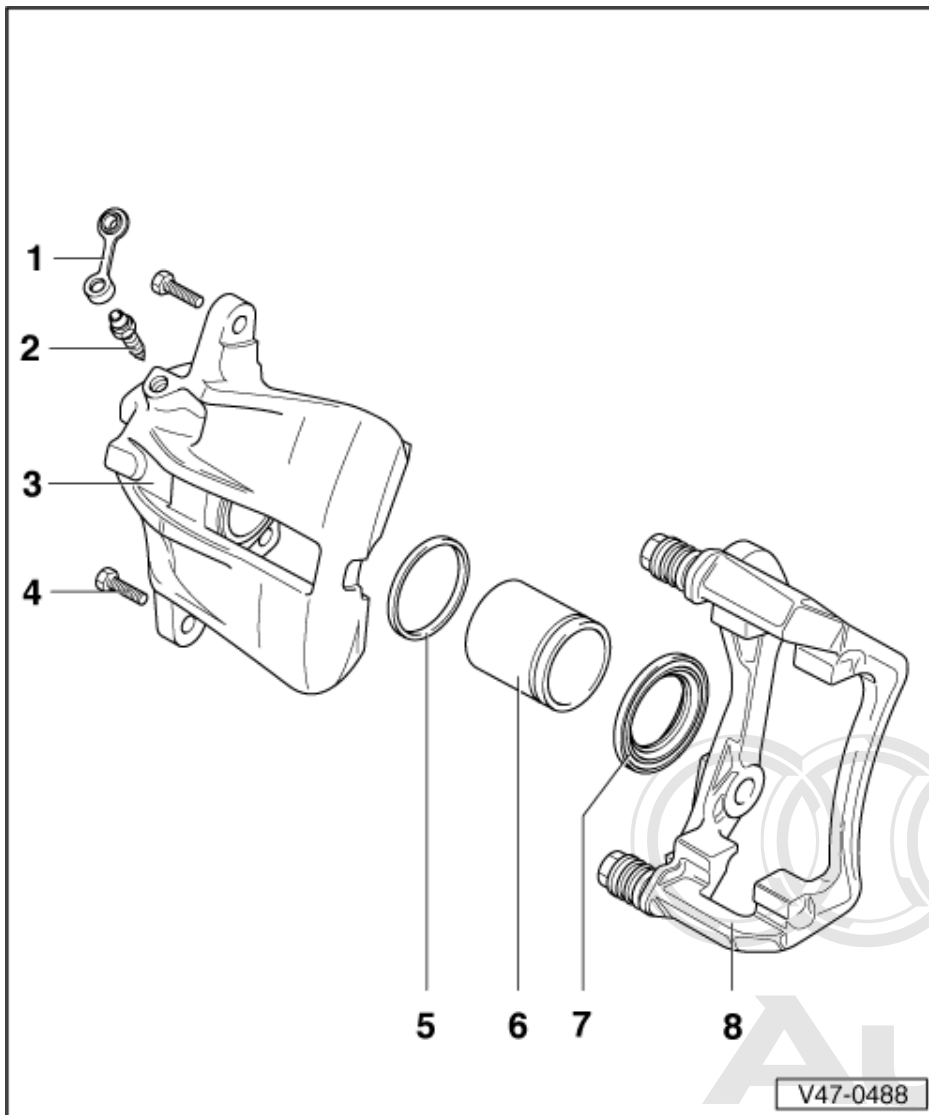
1 Dust cap

- ♦ Attach to bleed valve

2 Bleed valve

- ♦ Apply thin coat of assembly paste G 052 150 A2 to thread before screwing in

3 Brake caliper housing



4 Self-locking bolts, 30 Nm

- ♦ Replace
- ♦ When loosening and tightening counter hold on guide pin

5 Sealing ring

- ♦ Removing and installing
=> Page 144

6 Piston

- ♦ Removing and installing
=> Page 144
- ♦ Apply thin coat of assembly paste G 052 150 A2 to piston before inserting

7 Protective cap

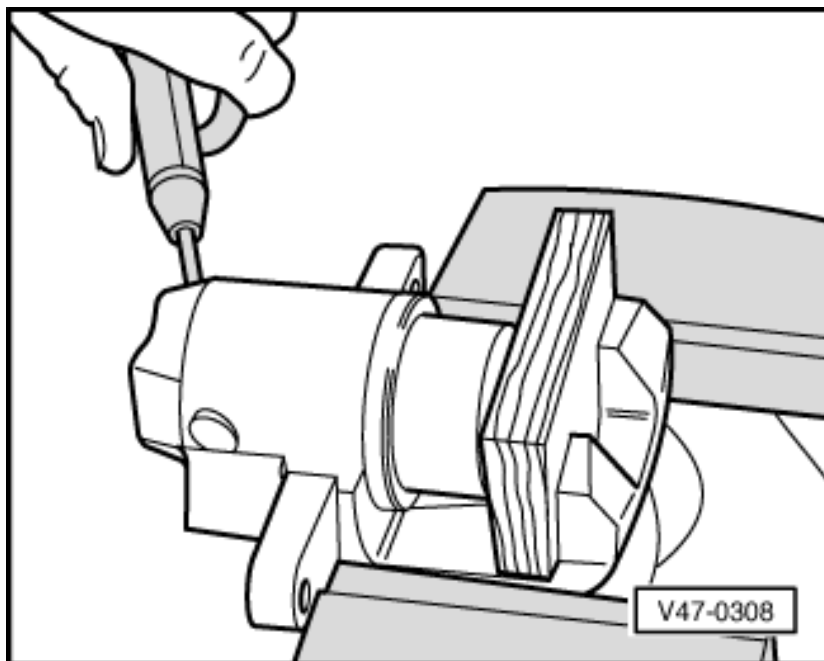
- ♦ Do not damage when inserting piston

8 Brake carrier with guide pins and protective caps

- ♦ Supplied as replacement part assembled with sufficient quantities of grease on 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.

3.3 - Removing and installing piston for front brake caliper



Special tools and workshop equipment required

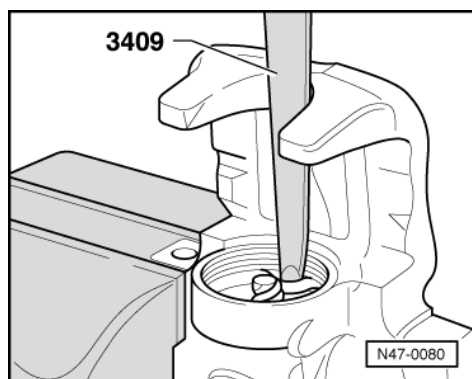
Assembly paste G 052 150 A2		
3409		

Removing

- -> Force piston out of brake caliper housing using compressed air.

Note:

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



- -> Remove sealing ring using assembly wedge 3409.

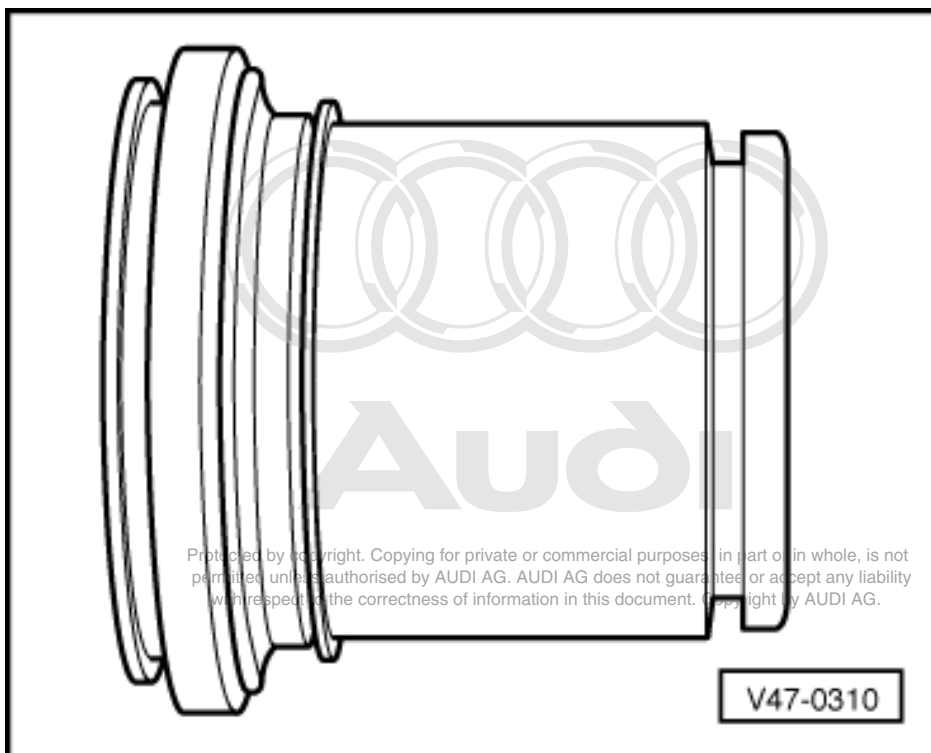


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

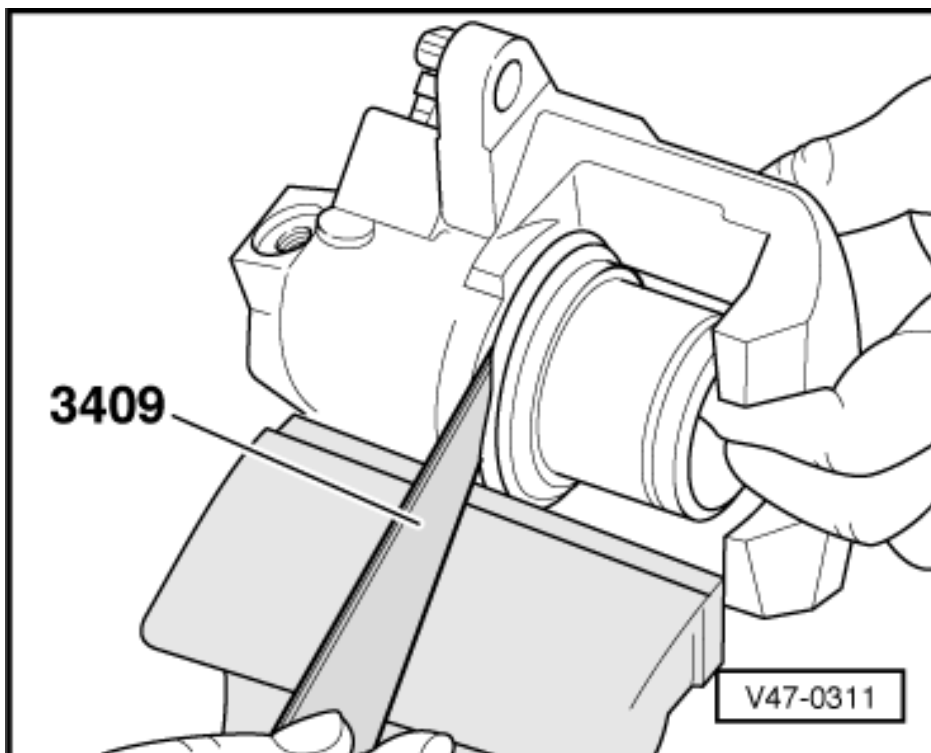
Note:

Ensure that the surface of the cylinder is not damaged during removal.

Installing



- The surface of the piston and sealing ring should be cleaned using only methylated spirits and then dried.
- Thinly coat piston and sealing ring with assembly paste G 052 150 A2 before inserting.
- -> Place protective cap with the outer sealing lip on the piston.

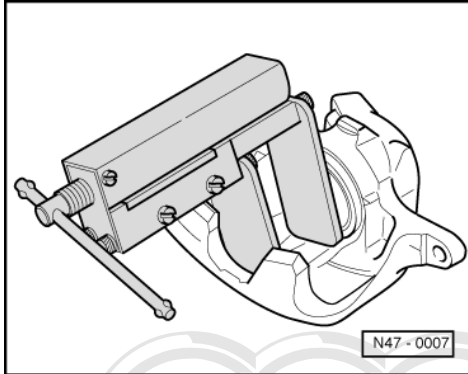




- -> Using assembly wedge 3409, insert the inner sealing lip into the groove on the cylinder.

Note:

At the same time, hold piston in front of brake caliper housing.



- -> Press the piston into the brake caliper housing using a piston resetting tool.

Note:

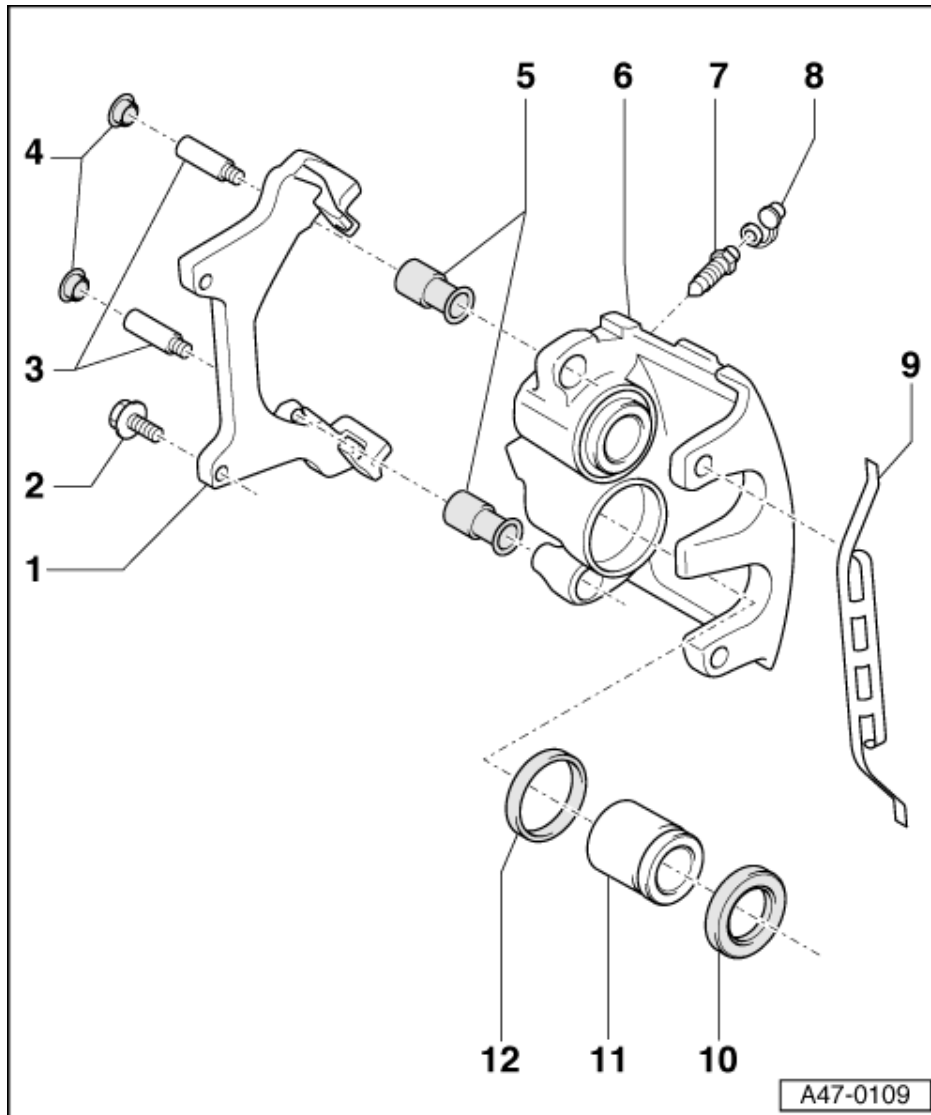
The outer sealing lip of the protective cap will then locate in the groove on the piston.



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.

4 - Brake caliper FN2

4.1 - Brake caliper FN2



4.2 - Servicing brake caliper

Notes:

- ◆ Install complete repair set when servicing.
- ◆ New brake calipers are filled with brake fluid and are pre-bled.
- ◆ Apply thin coat of assembly paste G 052 150 A2 to brake cylinder, piston and sealing ring.

1 Brake carrier

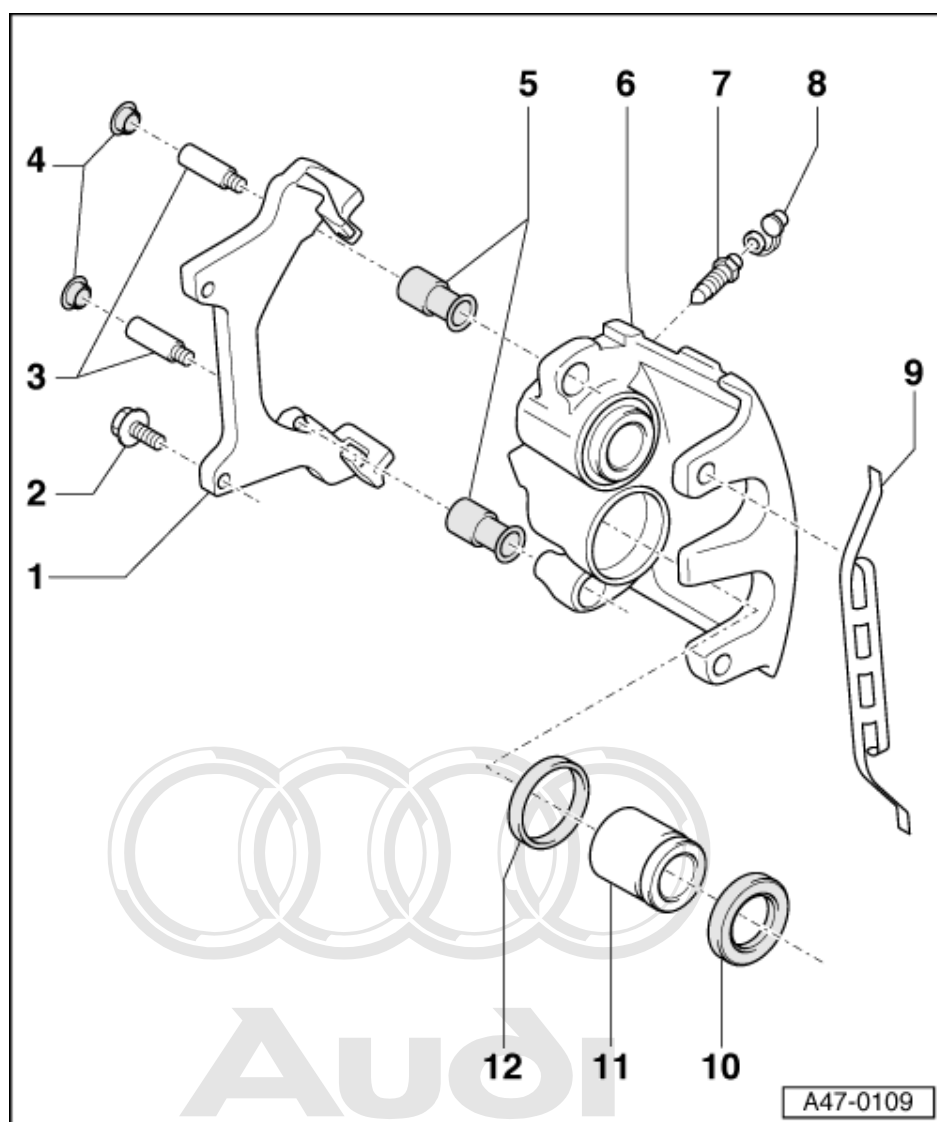
- ◆ Bolt to brake caliper housing

2 Ribbed bolt, 190 Nm

- ◆ Clean ribbing if reusing

3 Guide pin, 25 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.



4 Caps

- ♦ Insert into bearing bush

5 Bush

- ♦ Insert into brake caliper housing

6 Brake caliper housing

7 Vent valve

- ♦ Apply thin coat of assembly paste G 052 150 A2 to thread before screwing in

8 Protective cap

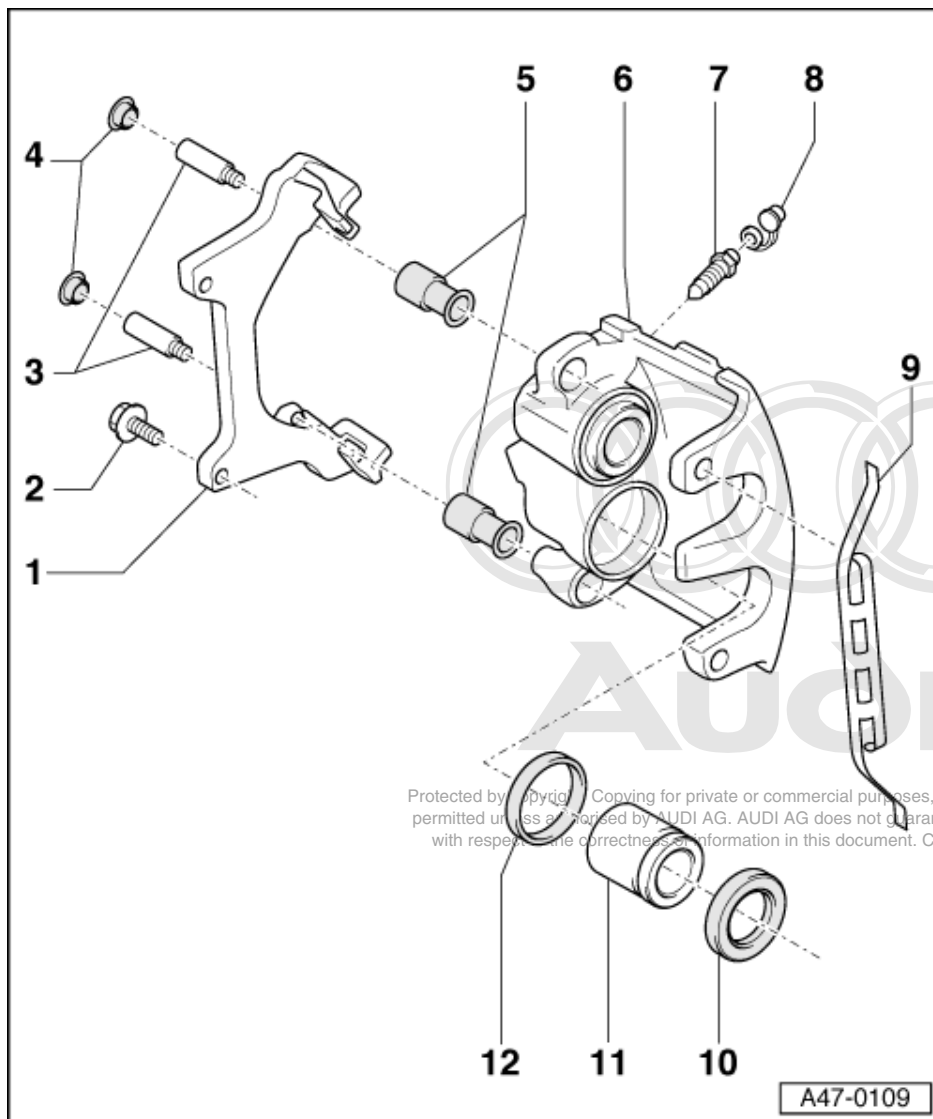
- ♦ Attach to bleed valve

9 Retaining spring

- ♦ Insert both ends into the holes in the brake caliper housing

Notes:

After inserting the retaining spring into the two holes, press it under the brake carrier. If incorrectly installed, it is not possible to adjust the wear of the outer pad, and the pedal travel will be increased as a result.



10 Sealing ring

11 Piston

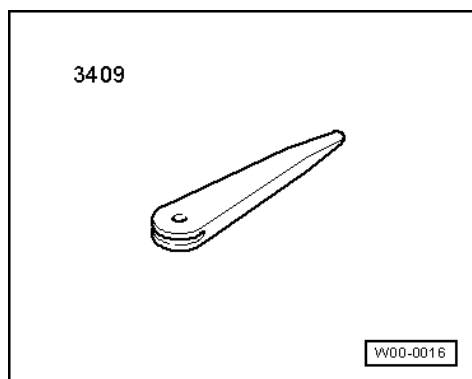
- ♦ Apply thin coat of assembly paste G 052 150 A2 to piston before inserting

=> Brake System; Repair group 00; Technical data Technical data

12 Protective cap

- ♦ Do not damage when inserting piston

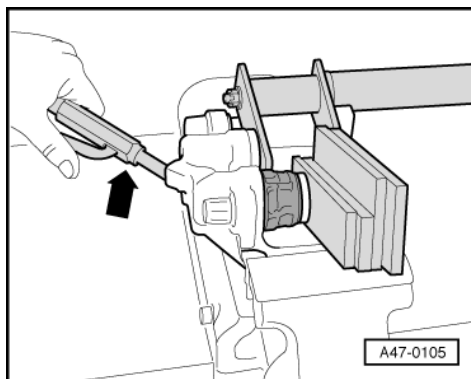
4.3 - Removing and installing piston for front brake caliper



Special tools and workshop equipment required

- ♦ 3409 Assembly wedge
- ♦ Piston resetting tool

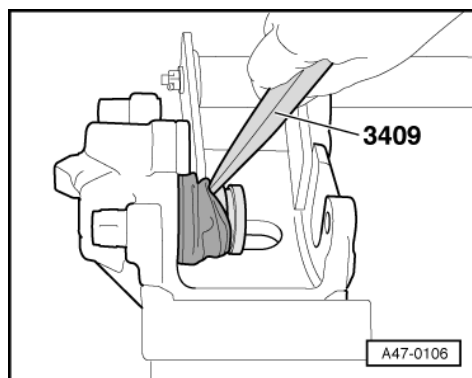
Removing



- -> Press piston out of brake caliper housing using compressed air.

Note:

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

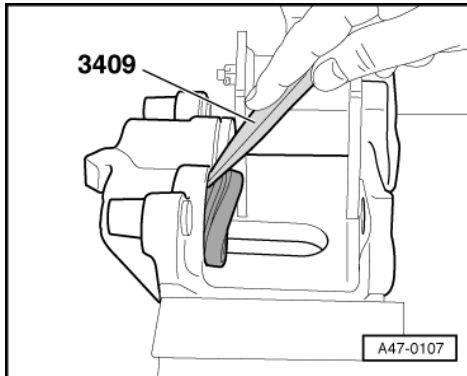


- -> Remove protective cap from piston groove.
- For this purpose, use removal wedge 3409.
- Remove piston.

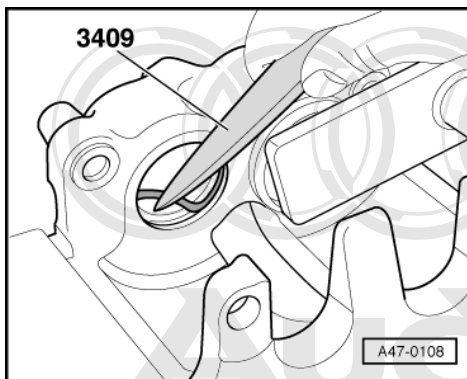
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note:

Ensure that the surface of the cylinder is not damaged during removal.



- -> Remove protective cap.
- For this purpose, use removal wedge 3409.



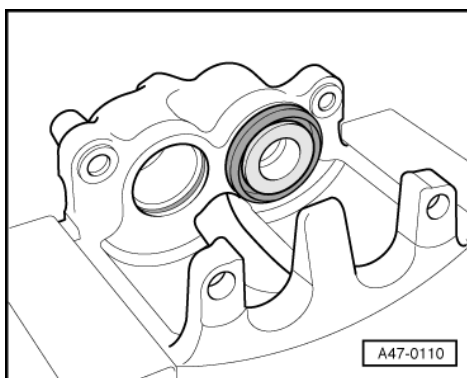
- -> Remove sealing ring.
- For this purpose, use removal wedge 3409.

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

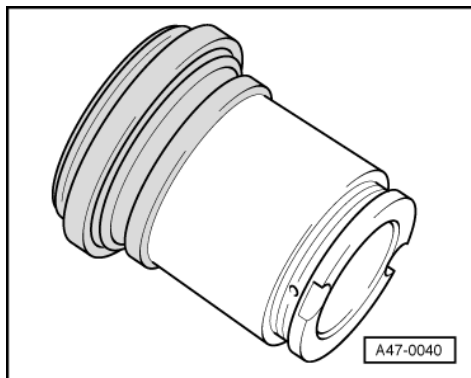
Note:

Ensure that the surface of the cylinder is not damaged during removal.

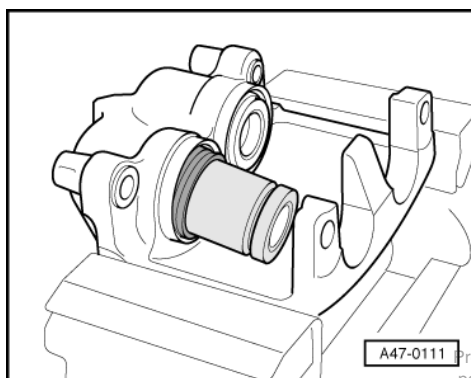
Installing



- The surface of the piston and sealing ring should be cleaned using only methylated spirits and then dried.
- Before inserting, thinly coat piston and sealing ring with assembly paste (lithium grease) G 052 150 A2.
- -> Insert inner sealing ring.



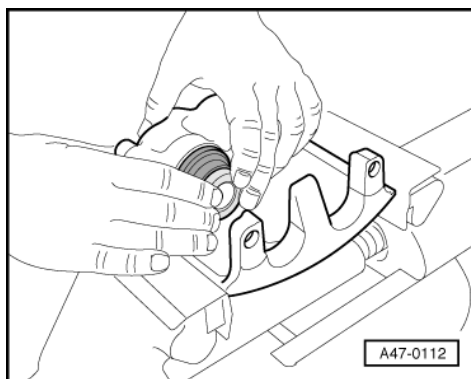
- -> Place protective cap with the outer sealing lip on the piston.
- Thinly coat piston and sealing ring with assembly paste G 052 150 A2 before inserting.



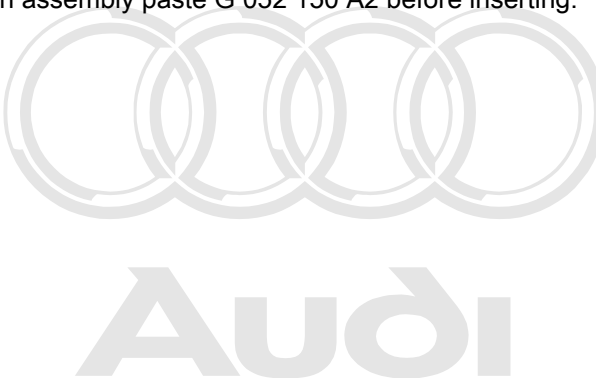
- -> Using removal wedge 3409, insert the inner sealing lip into the groove on the cylinder.

Note:

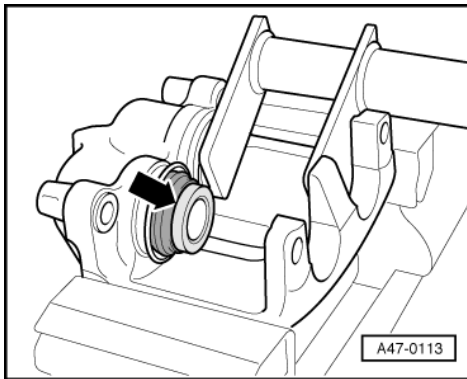
At the same time, hold piston in front of brake caliper housing.



- -> Press the piston into the brake caliper housing by hand.



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



- -> Press piston into brake caliper housing.

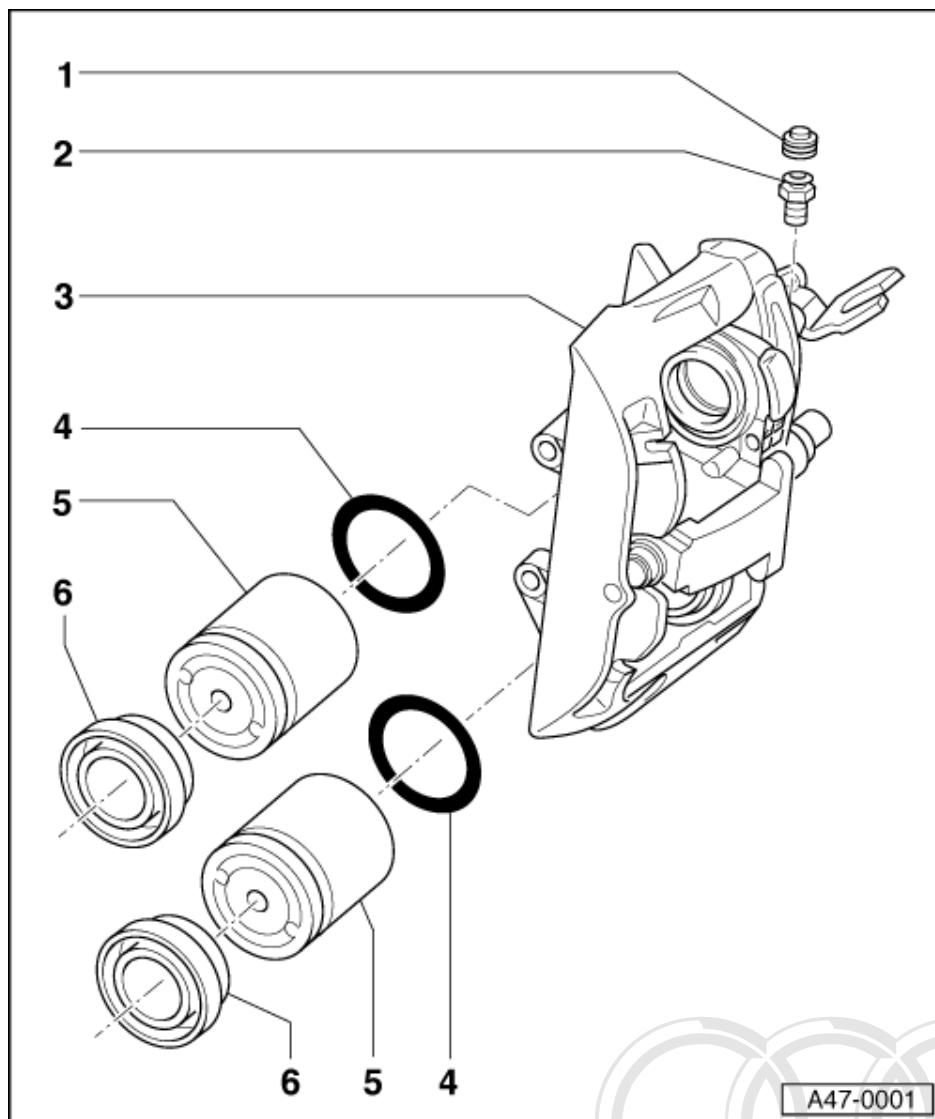
Note:

The outer sealing lip of the protective cap will then locate in the groove on 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.

5 - Brake caliper HP-2 double-piston brake caliper/steel

5.1 - Brake caliper HP-2 double-piston brake caliper/steel



5.2 - Servicing brake caliper

Notes:

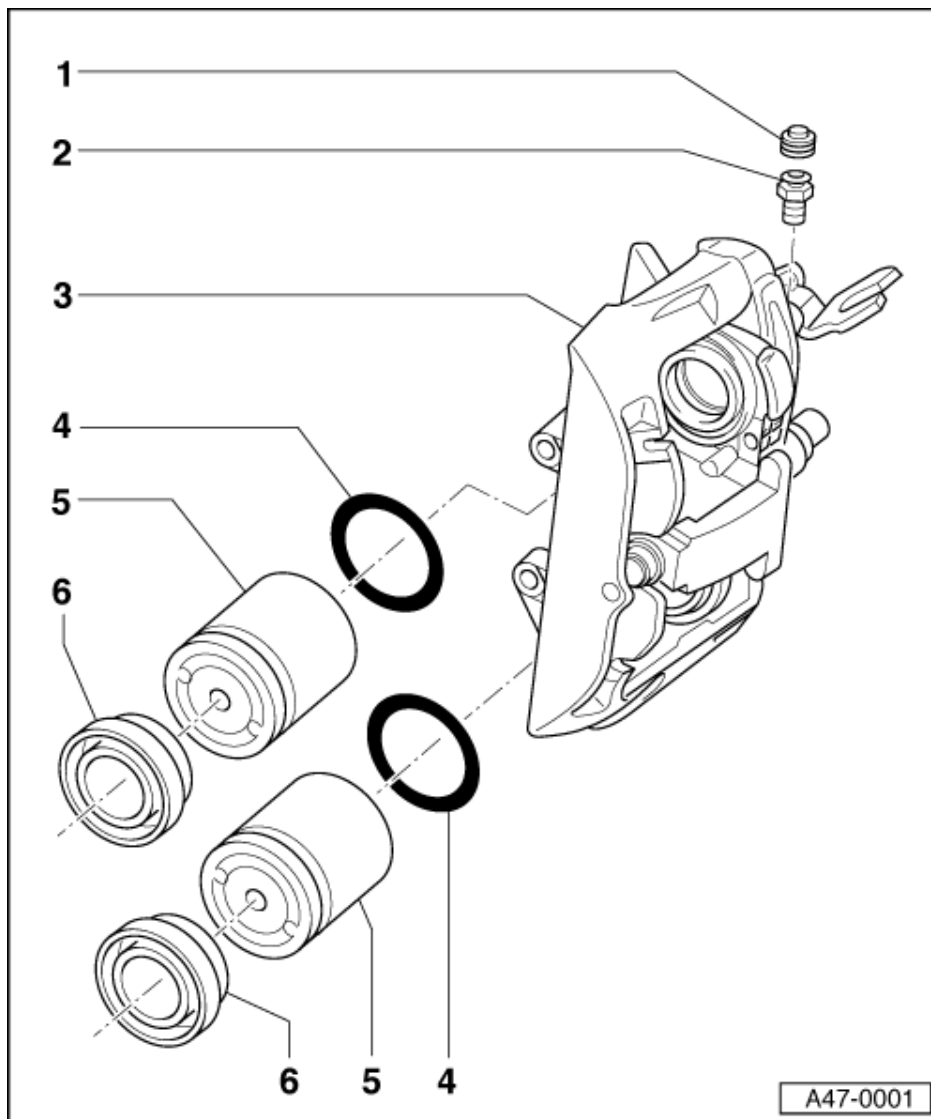
- ♦ Install complete repair set when servicing.
- ♦ New brake calipers are filled with brake fluid and are pre-bled.
- ♦ Apply thin coat of assembly paste G 052 150 A2 to brake cylinder, piston and sealing ring.

1 Protective cap

- ♦ Attach to bleed valve

2 Vent valve

- ♦ Apply thin coat of assembly paste G 052 150 A2 to thread before screwing in



3 Brake caliper housing

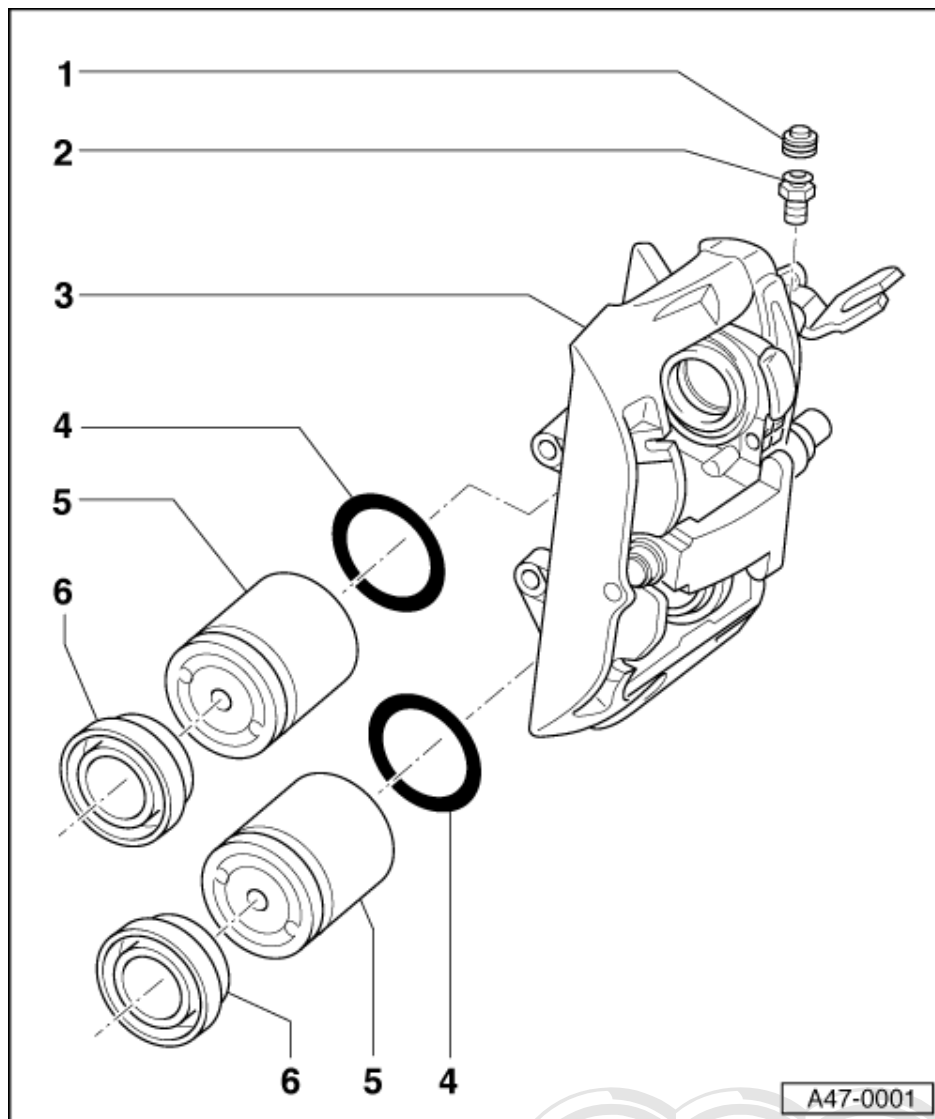
Important

Do not separate the two halves of the housing (internally serrated screws). Replace brake caliper if protective cap for guide pins is damaged.

4 Sealing rings

- ◆ Use wedge -3409- to remove => Fig. 2
- ◆ Insert carefully by hand

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Piston

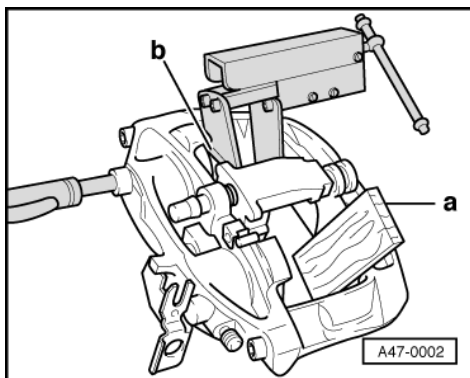
- ◆ Use compressed air to press out of brake caliper housing => Fig. 1
- ◆ Apply thin coat of assembly paste G 052 150 A2 to piston before inserting
- ◆ Installing => Fig. 3, 4, and 5

6 Protective caps

- ◆ Do not damage when inserting piston
- ◆ Fit onto piston with outer sealing lip => Fig. 3
- ◆ Insert with inner sealing lip in groove in brake caliper housing => Fig. 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.

5.3 - Removing and installing piston for front brake caliper



Special tools and workshop equipment required

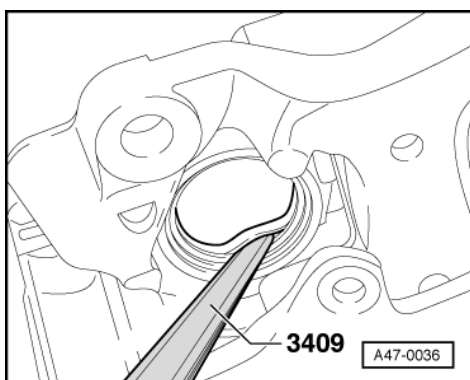
3409	Piston resetting tool	
------	-----------------------	--

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

Note:

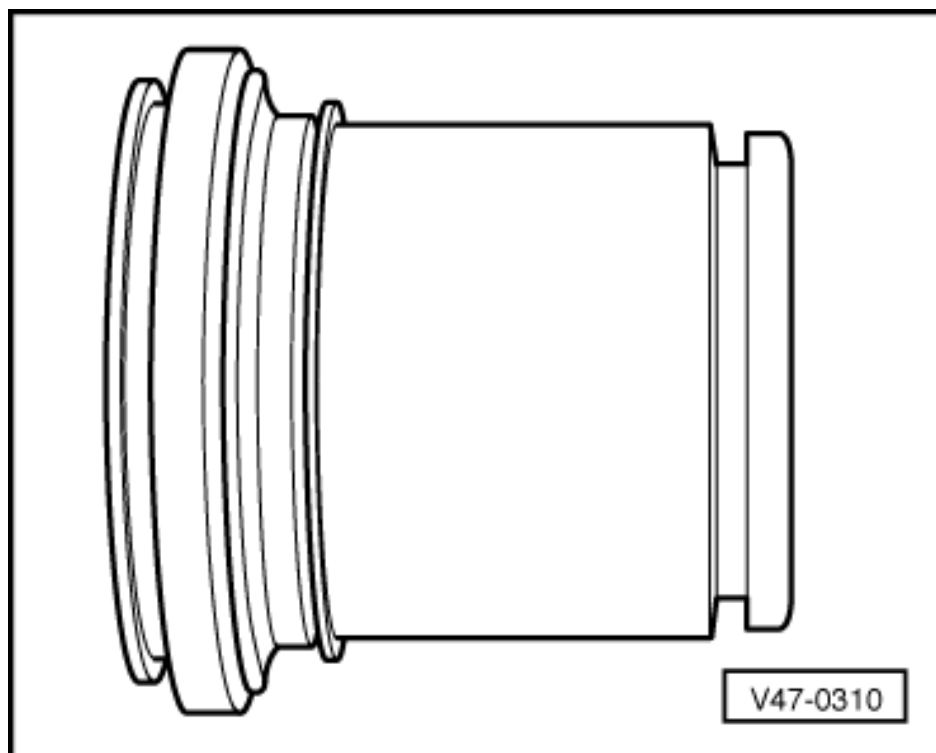
Insert brake pad -b- into the piston. Position wooden block -a- in recess to avoid piston damage.

Only one piston can be pressed out at a time. At the same time, hold other piston in position in brake caliper housing using piston resetting tool.

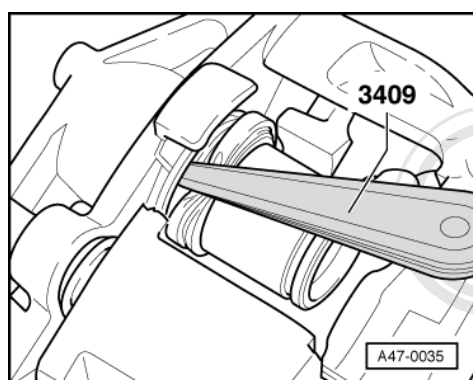


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.2 Using wedge -3409- to remove sealing ring



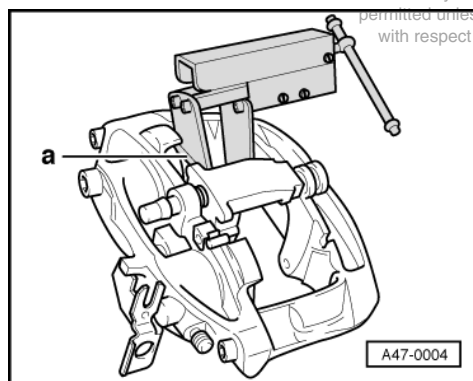
-> Fig.3 Attaching outer sealing lip of protective cap to piston.



-> Fig.4 Inserting inner sealing lip of protective cap with wedge -3409-

Note:

At the same time, hold piston in front of brake caliper 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.

-> Fig. 5 Press the piston into the brake calliper housing using a piston resetting tool.

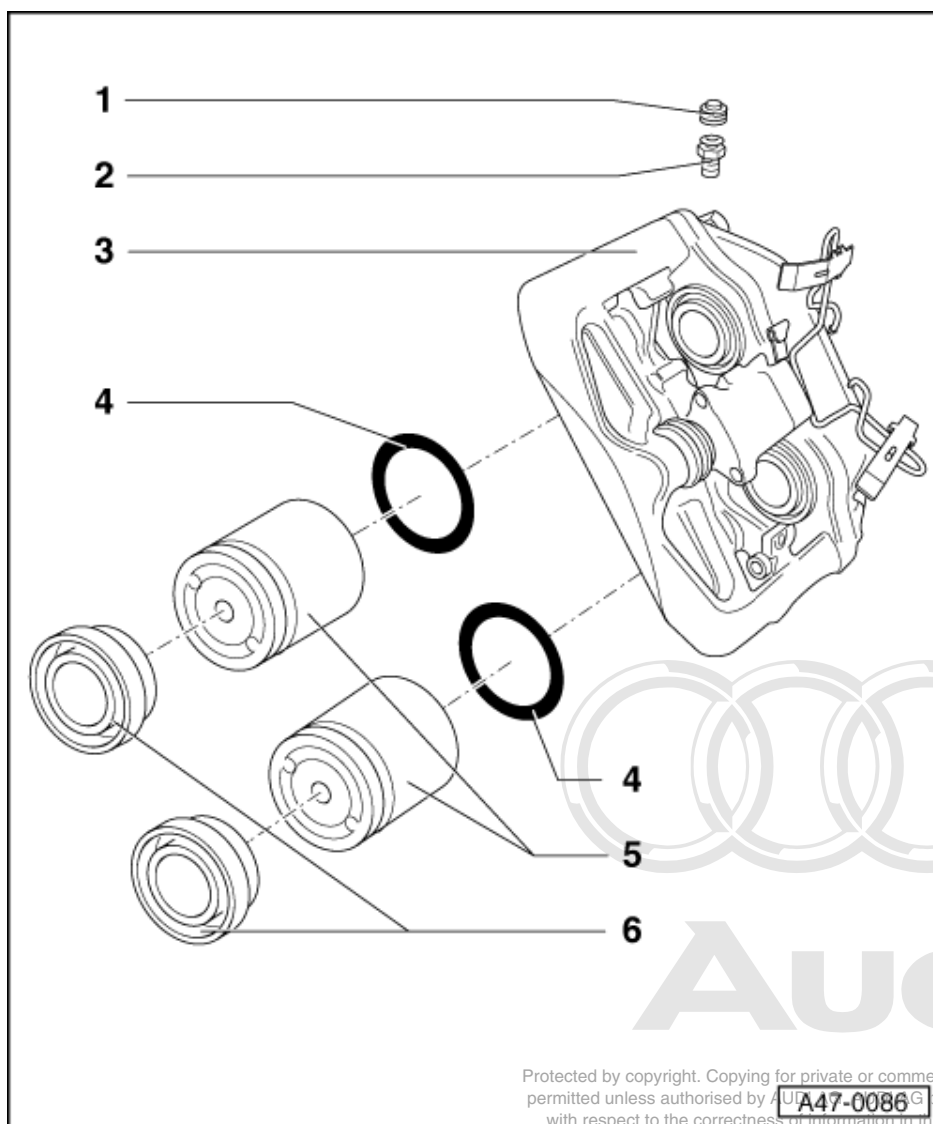
Note:

Insert piston by hand into the bore and then insert brake pad -a- into the piston before pressing into brake caliper housing.

The outer sealing lip of the protective cap will then locate in the groove on the piston.

6 - Brake caliper HP-2 double-piston brake caliper/aluminium

6.1 - Brake caliper HP-2 double-piston brake caliper/aluminium



6.2 - Servicing brake caliper

Notes:

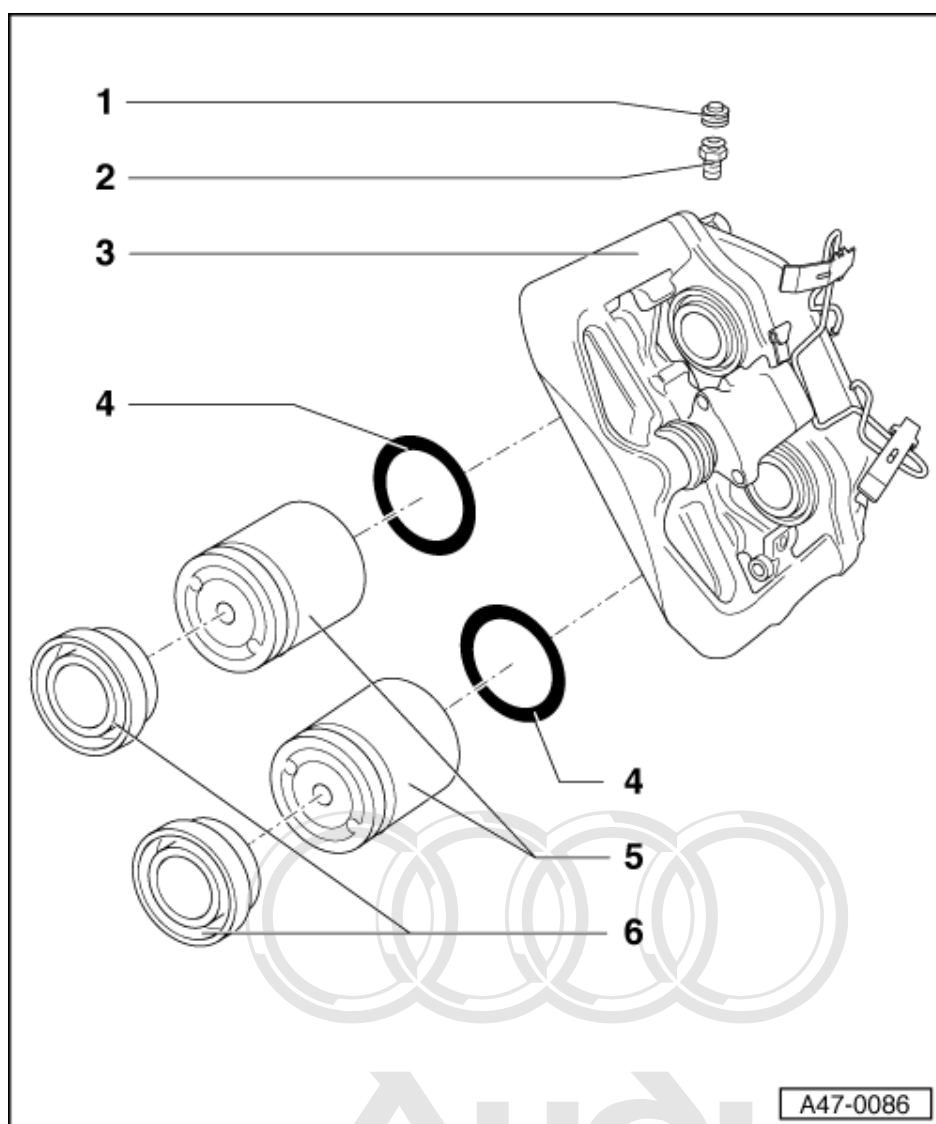
- ♦ Install complete repair set when servicing.
- ♦ New brake calipers are filled with brake fluid and are pre-bled.
- ♦ Apply thin coat of assembly paste G 052 150 A2 to brake cylinder, piston and sealing ring.

1 Protective cap

- ♦ Attach to bleed valve

2 Vent valve

- ♦ Apply thin coat of assembly paste G 052 150 A2 to thread before screwing in



3 Brake caliper housing

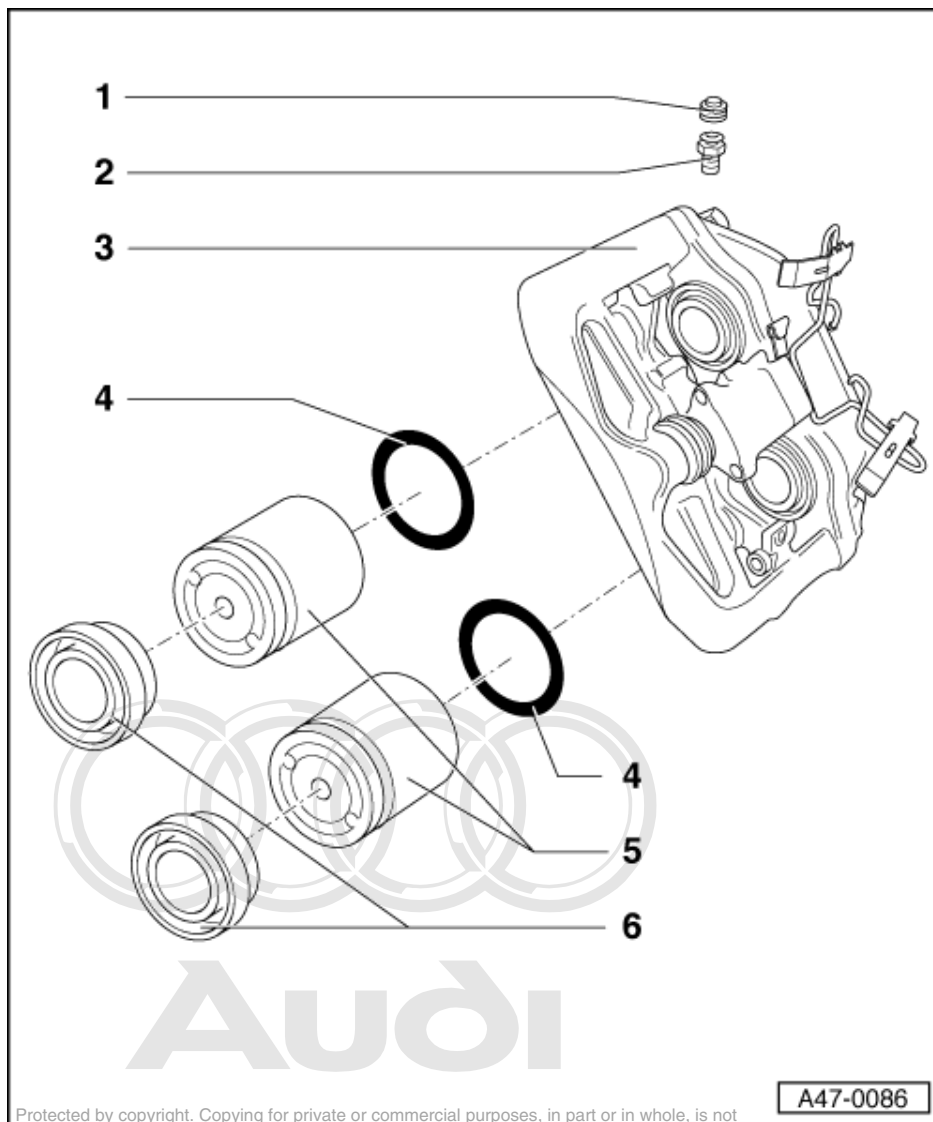
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Important

Do not separate the two halves of the housing (internally serrated screws). Replace brake caliper if protective cap for guide pins is damaged.

4 Sealing rings

- ◆ Use wedge -3409- to remove => Fig. 2
- ◆ Insert carefully by hand



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted, unless authorised by AUDI 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 Piston

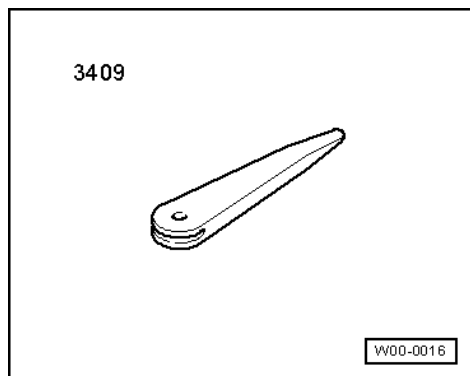
- ◆ Use compressed air to press out of brake caliper housing=> Fig. 1
- ◆ Apply thin coat of assembly paste G 052 150 A2 to piston before inserting
- ◆ Installing => Fig. 3, 4, and 5

6 Protective caps

- ◆ Do not damage when inserting piston
- ◆ Fit onto piston with outer sealing lip => Fig. 3
- ◆ Insert with inner sealing lip in groove in brake caliper housing => Fig. 4

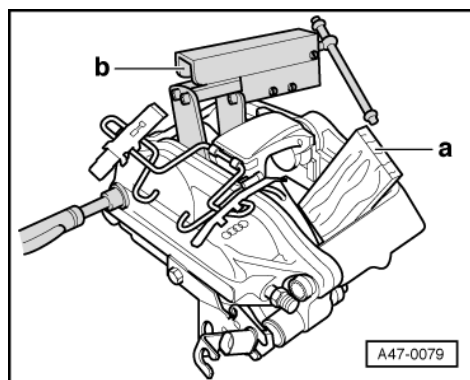
6.3 - Removing and installing piston for front brake caliper

Special tools and workshop equipment required



- ♦ 3409 Assembly wedge
- ♦ Piston resetting tool
- ♦ Assembly paste G 052 150 A2

Removing



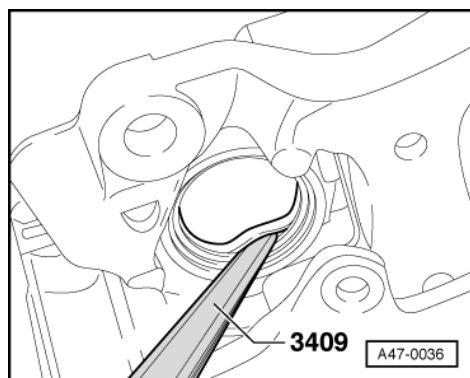
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

Note:

Insert brake pad -b- into the piston. Position wooden block -a- in recess to avoid piston damage.

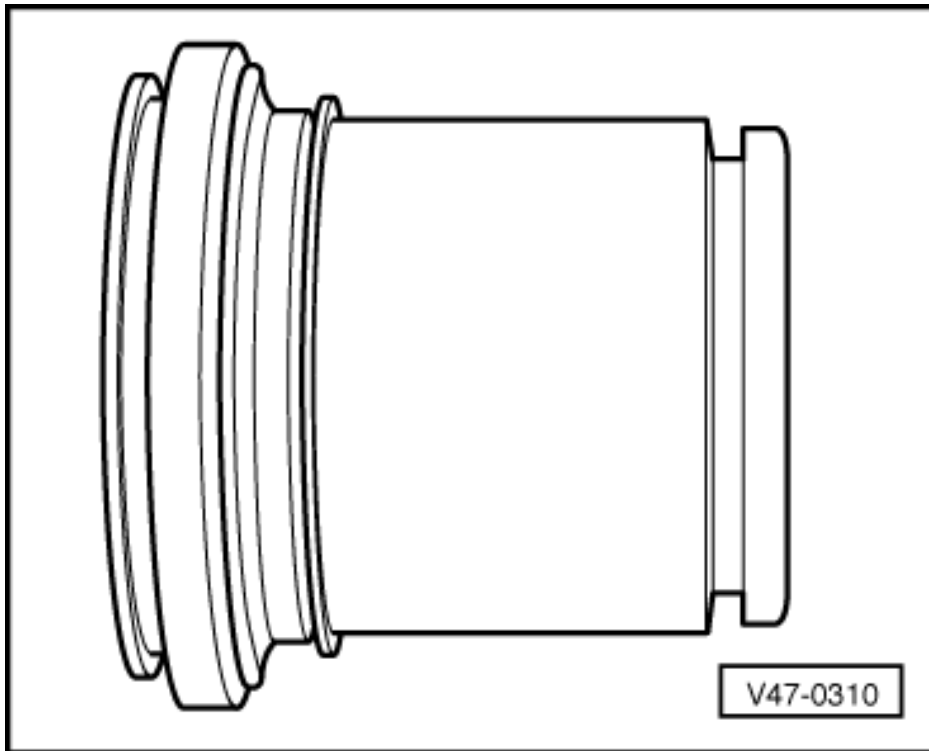
Only one piston can be pressed out at a time. At the same time, hold other piston in position in brake caliper housing using piston resetting tool.



-> Fig.2 Using wedge -3409- to remove sealing rings

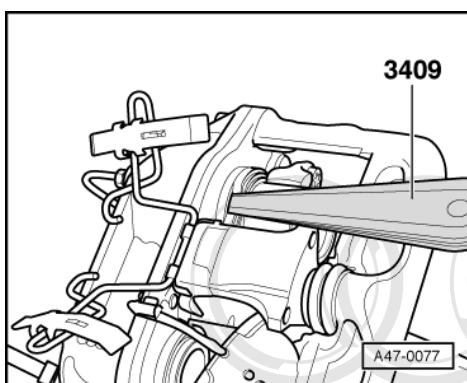
Ensure that the surface of the cylinder is not damaged during removal.

Installing



- Thinly coat piston and sealing ring with assembly paste G 052 150 A2 before inserting.
- The surface of the piston and sealing ring should be cleaned using only methylated spirits and then dried.

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

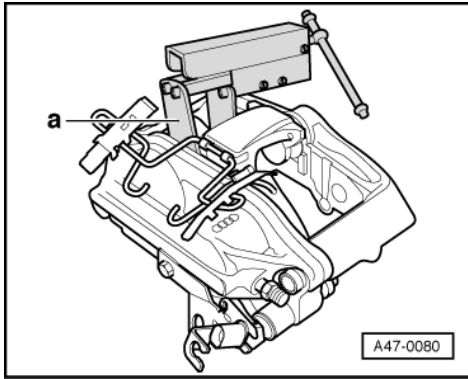


-> Fig.4 Inserting inner sealing lip of protective cap with wedge -3409-

Note:

At the same time, hold piston in front of brake caliper housing

Unauthorized copying or reuse of any part of this document is prohibited. This document, or in whole, is not permitted unless authorised by AUDI 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 Press the piston into the brake calliper housing using a piston resetting tool.

Note:

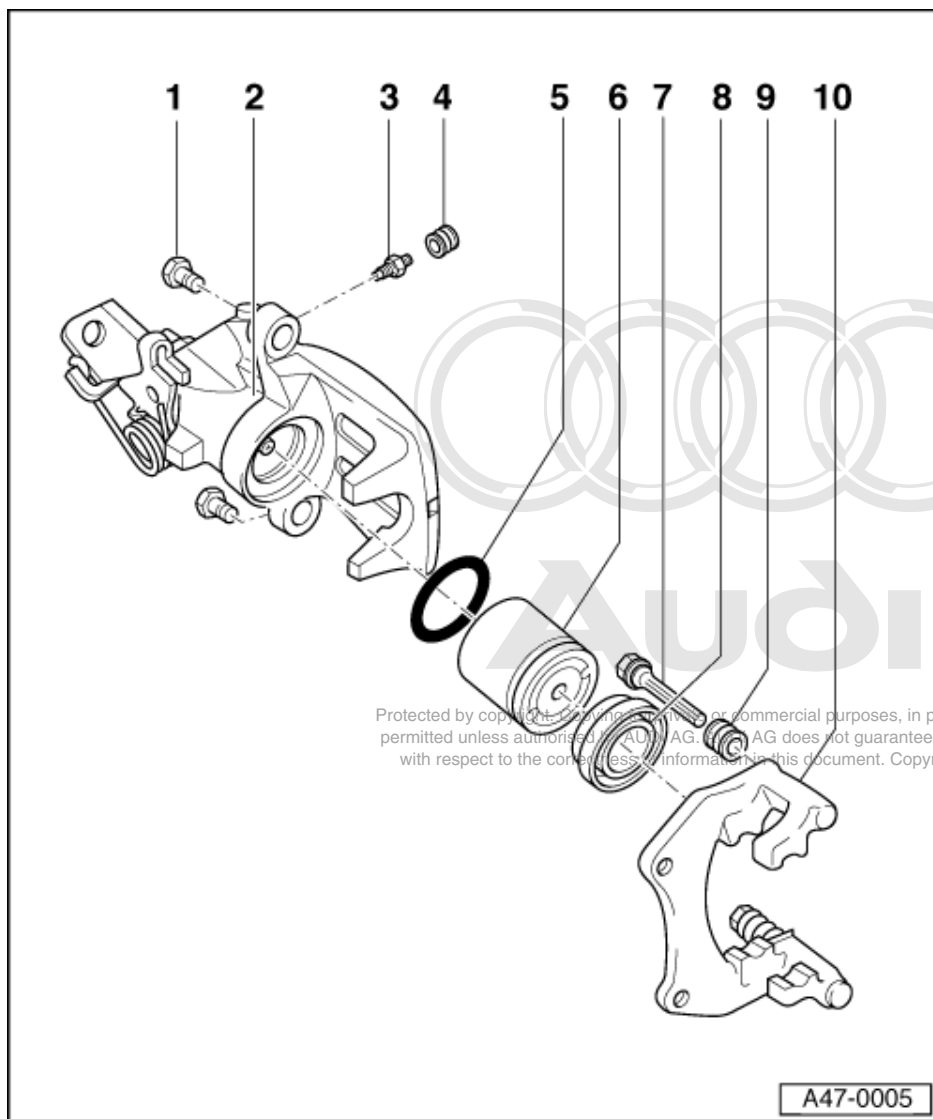
Insert piston by hand into the bore and then insert brake pad -a- into the piston before pressing into brake caliper housing.

The outer sealing lip of the protective cap will then locate in the groove on 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.

7 - Servicing rear brake caliper

7.1 - Servicing rear brake caliper



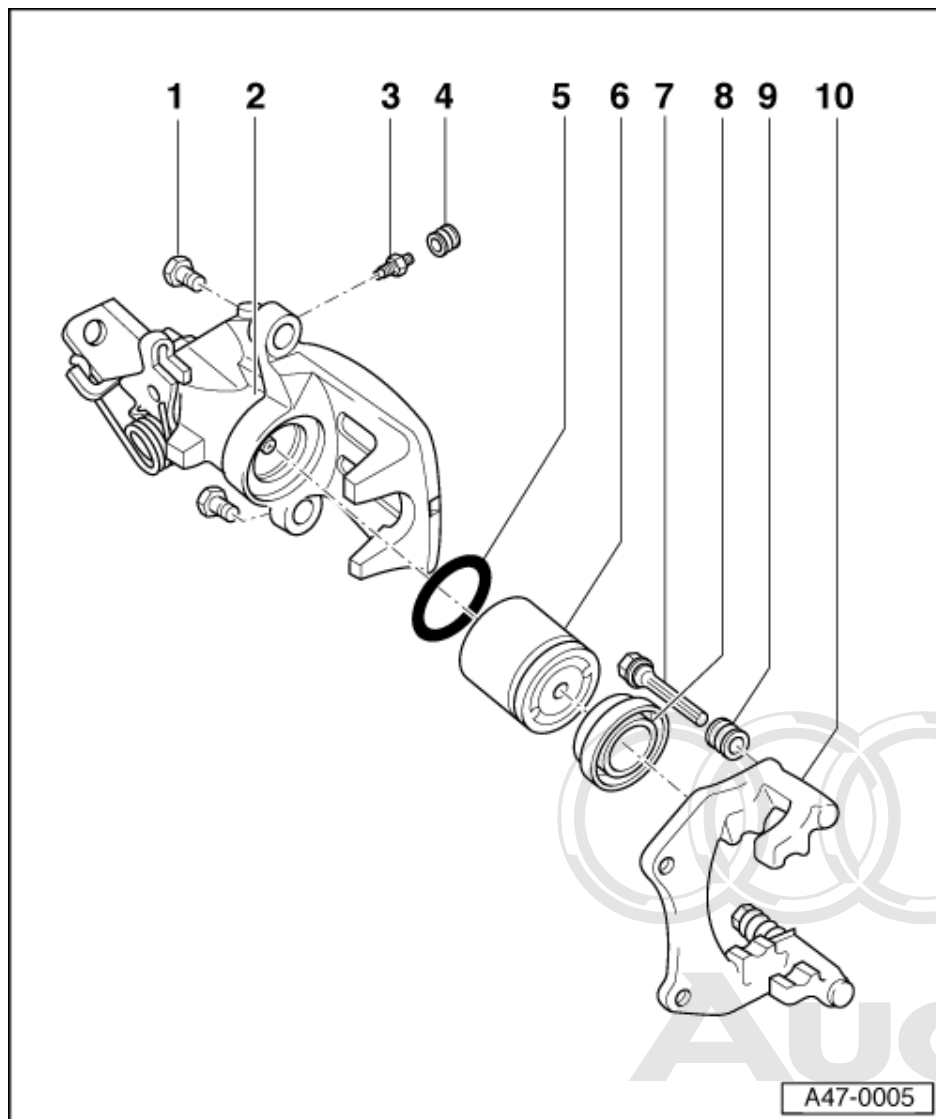
7.2 - Servicing brake caliper

Notes:

- ♦ When carrying out repairs install all parts supplied in repair kit.
- ♦ Apply thin coat of assembly paste G 052 150 A2 to brake cylinder, piston and sealing ring.

1 Self-locking bolt, 35 Nm

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



A47-0005

2 Brake caliper housing with lever for handbrake cable

- ◆ Renew the brake caliper housing if there is a leak at the lever for the handbrake cable
- ◆ After servicing, pre-bleed brake caliper housing =>Fig. 6
- ◆ From model year 97 aluminium brake calipers are fitted.
- ◆ Servicing aluminium brake caliper =>Page 169 .

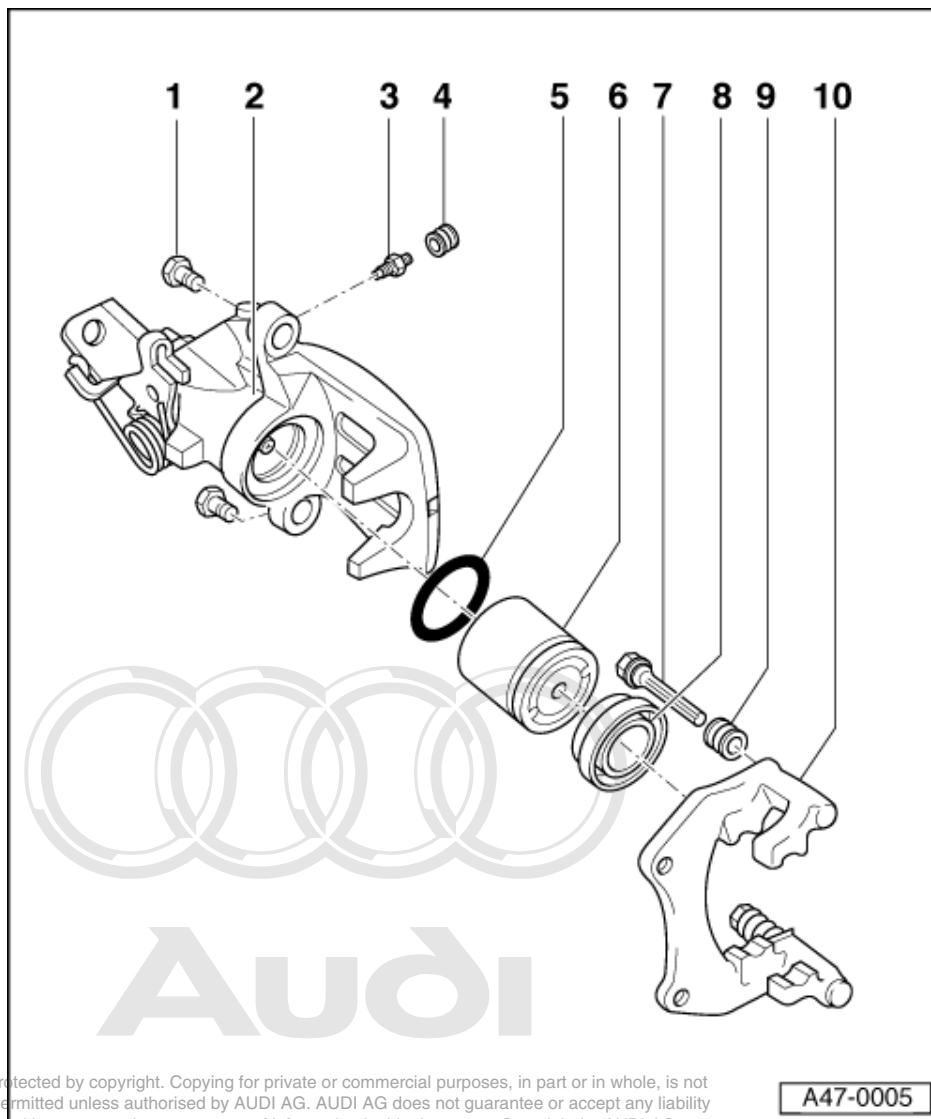
3 Vent valve

4 Dust cap

- ◆ Fit onto bleed valve

5 Sealing ring

- ◆ Use wedge -3409- to remove => 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.

A47-0005

6 Piston with automatic adjustment

- ◆ Unscrewing from brake caliper housing => Fig. 1
- ◆ Screwing into brake caliper housing => Fig. 5
- ◆ Servicing piston of aluminium brake caliper => Page 169

7 Guide pin

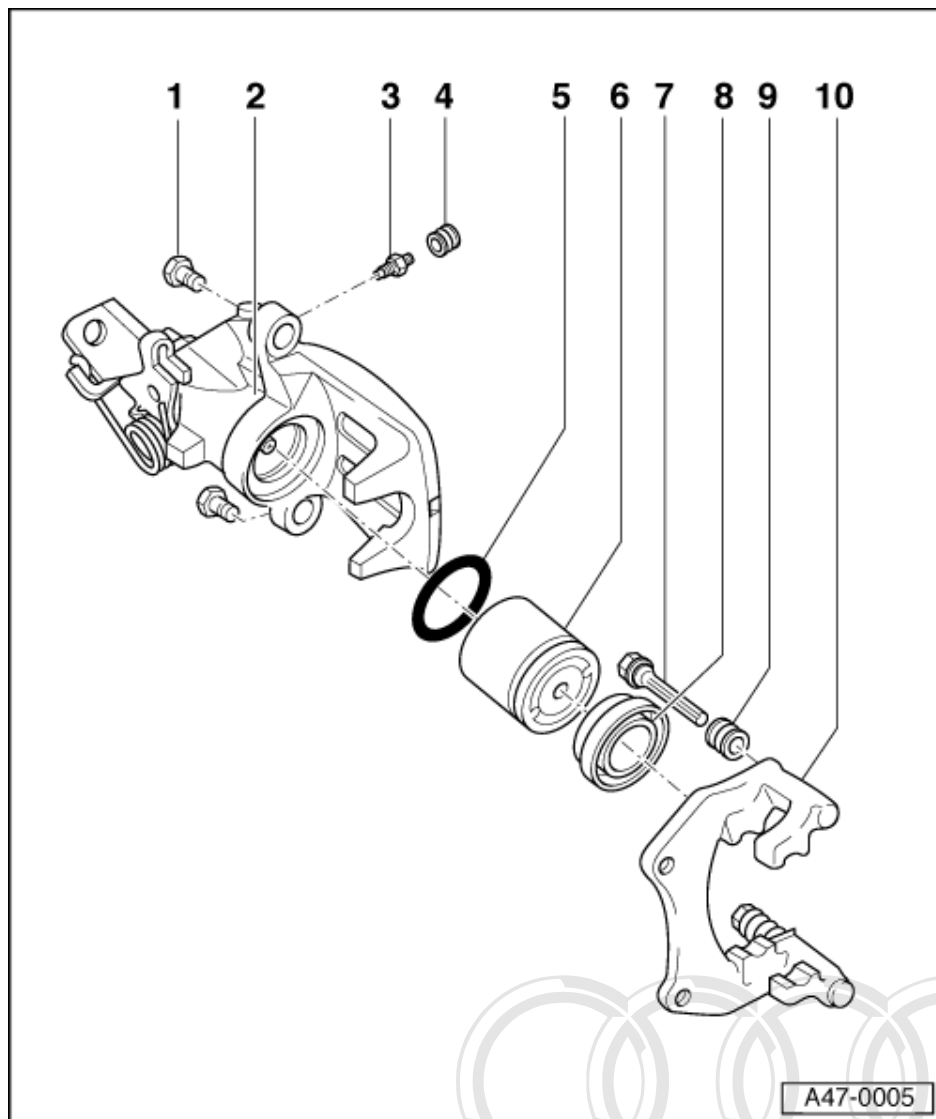
- ◆ Grease before installing protective cap

8 Protective cap

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

9 Protective cap

- ◆ Pull onto brake carrier and guide pin

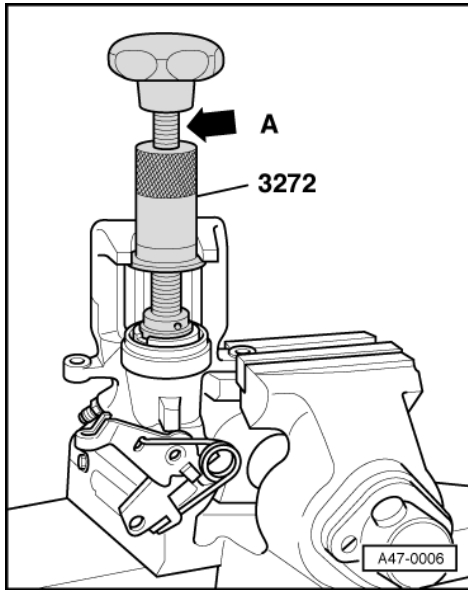


10 Brake carrier with guide pin and protective cap

- ◆ Supplied as replacement part assembled with sufficient quantities of grease on guide pins
- ◆ If protective caps or guide pins are damaged, install repair kit. Use grease sachet supplied to lubricate the 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.

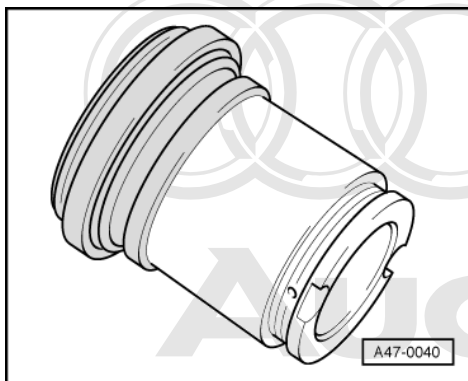
7.3 - Removing and installing rear brake caliper piston



Special tools and workshop equipment required

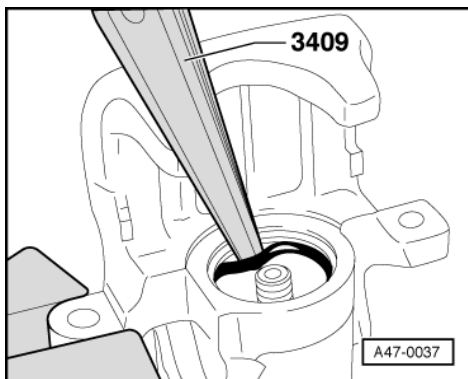
3409	3272	
------	------	--

-> Fig.1 Unscrewing piston from brake caliper housing



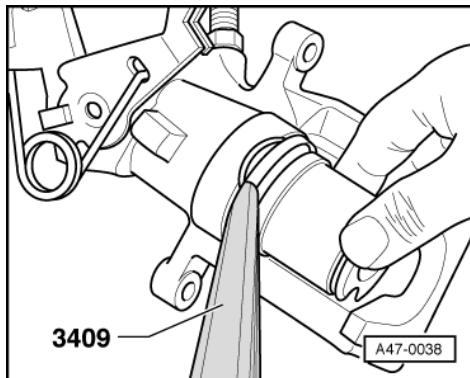
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness or information in this document. Copyright by AUDI AG.

-> Fig.2 Attaching outer sealing lip of protective cap to piston.





-> Fig.3 Using wedge -3409- to remove sealing ring

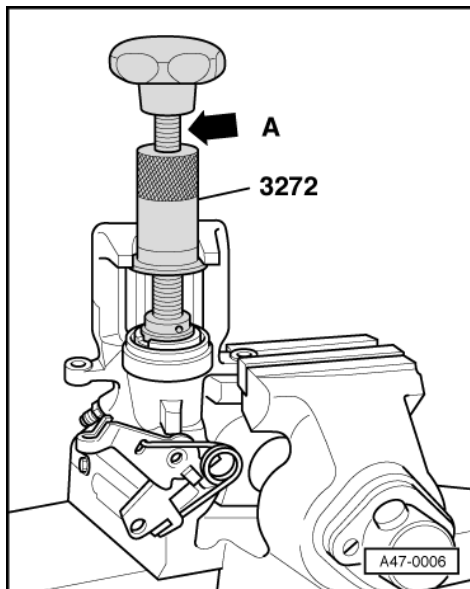


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.4 Inserting inner sealing lip of protective cap with wedge -3409-

Note:

At the same time, hold piston in front of brake caliper housing.

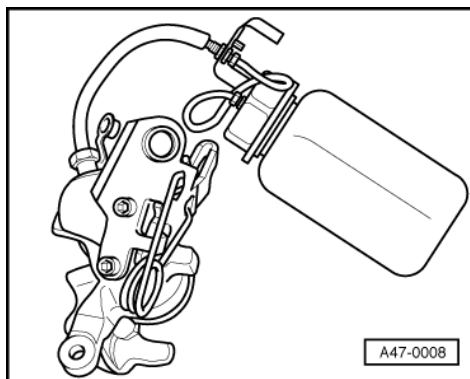


-> Fig.5 Screwing piston up to stop into brake caliper housing

- Press firmly onto piston while screwing it in.

Note:

The outer sealing lip of the protective cap will then locate in the groove on the piston.



-> Fig.6 Pre-bleeding brake caliper

- Open bleed valve and using a standard bleeder bottle, fill with brake fluid until bubble-free brake fluid flows from the threaded hole (brake hose connection). Close bleed valve.

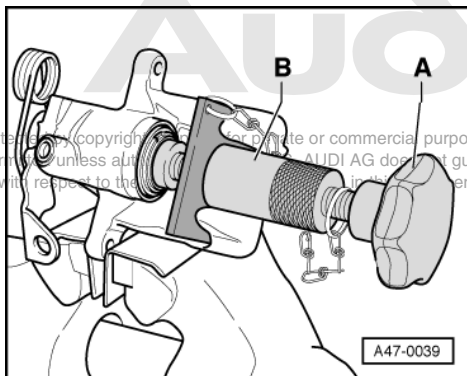
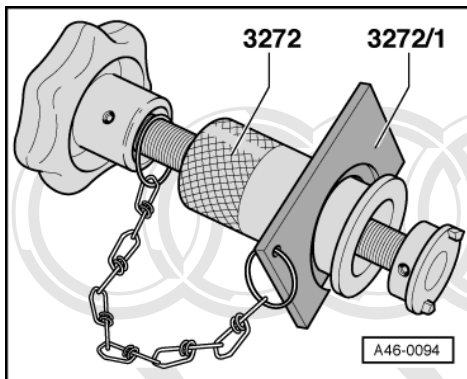
Note:

Position brake caliper as illustrated for pre-bleeding.

7.4 - Removing and installing aluminium brake caliper piston

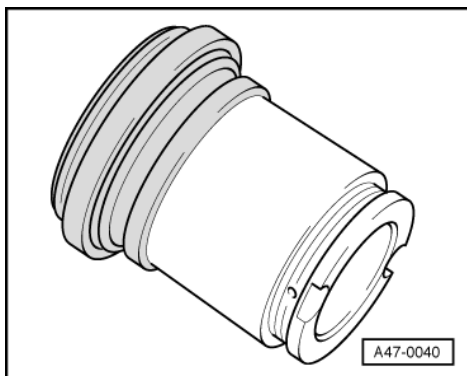
Special tools and workshop equipment required

3409	3272	3272/1
------	------	--------

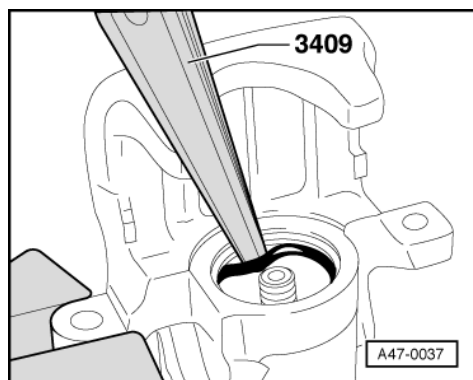


-> Fig.1 Unscrewing piston from brake caliper housing

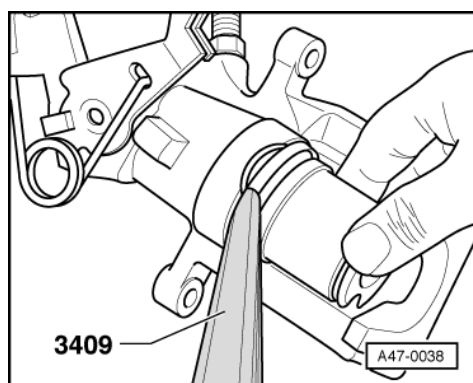
- Unscrew piston by turning threaded spindle -A- anticlockwise and knurled section -B- clockwise.



-> Fig.2 Attaching outer sealing lip of protective cap to piston.



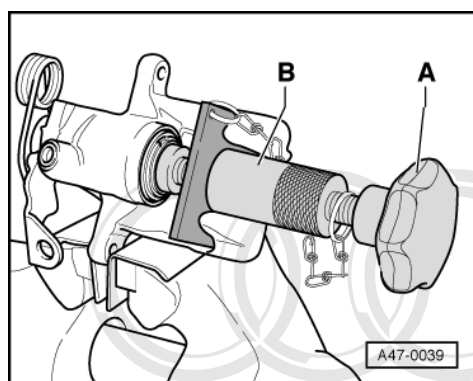
-> Fig.3 Using wedge -3409- to remove sealing ring



-> Fig.4 Inserting inner sealing lip of protective cap with wedge -3409-

Note:

At the same time, hold piston in front of brake caliper housing.

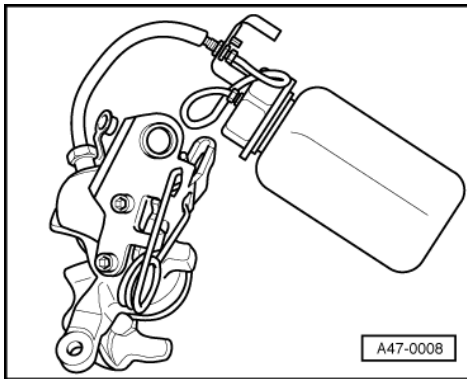


-> Fig.5 Screw piston into brake caliper housing as far as stop

- Screw in piston by turning threaded spindle -A- clockwise and knurled section -B- anti-clockwise.

Note:

The outer sealing lip of the protective cap will then locate in the groove on the piston.



-> Fig.6 Pre-bleeding brake caliper

- Open bleed valve and using a standard bleeder bottle, fill with brake fluid until bubble-free brake fluid flows from the threaded hole (brake hose connection). Close bleed valve.

Note:

Position brake caliper as illustrated for pre-bleeding.

8 - Bleeding brake system

8.1 - Bleeding brake system

Important

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted.

- ◆ 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 by mouth through a hose. Because of its caustic properties it must also not come into contact with paintwork.
- ◆ Brake fluid is hygroscopic, i.e. it absorbs moisture from the surrounding atmosphere. It is thus always to be kept in containers with an air-tight seal.
- ◆ Always observe the relevant environmental regulations for disposal.

Notes:

- ◆ Only use fresh brake fluid as per US Standard FMVSS 116 DOT 4.
- ◆ Genuine VW/Audi brake fluid complies with this specification.
- ◆ Use plenty of water to flush away any brake fluid spillage.
- ◆ When the system is open do not work with compressed air and do not move the vehicle.
- ◆ During the concluding road test, ensure that an ABS-controlled brake application is carried out at least once (can be felt from the pulsing of the brake pedal).

Bleeding brake system with brake filling and bleeding unit V.A.G 1869

- Connect V.A.G 1869.
- Open bleeder screws in the specified order and bleed brake calipers.

Bleeding sequence

- 1 - Rear right brake caliper
- 2 - Rear left brake caliper
- 3 - Front right brake caliper

4 - Front left brake caliper

8.2 - Changing brake fluid (every 2 years)

Important

- ♦ 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 by mouth through a hose. Because of its caustic properties it must also not come into contact with paintwork.
- ♦ Brake fluid is hygroscopic, i.e. it absorbs moisture from the surrounding atmosphere. It is thus always to be kept in containers with an air-tight seal.
- ♦ Always observe the relevant environmental regulations for disposal.

Notes:

- ♦ Only use fresh brake fluid as per US Standard FMVSS 116 DOT 4.
- ♦ Genuine VW/Audi brake fluid complies with this specification.
- ♦ Use plenty of water to flush away any brake fluid spillage.
- ♦ When the system is open do not work with compressed air and do not move the vehicle.
- ♦ During the concluding road test, ensure that an ABS-controlled brake application is carried out at least once (can be felt from the pulsing of the brake pedal).

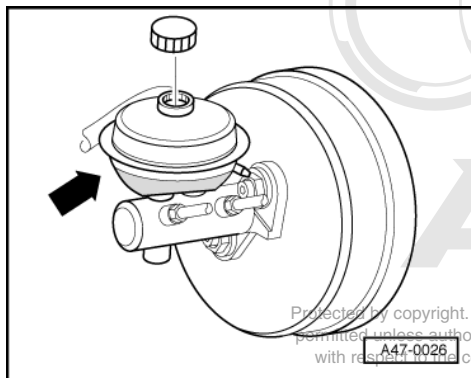
=> Running Gear Self-Diagnosis; Repair group 01

Changing brake fluid with brake filling and bleeding appliance V.A.G 1869

- Open the brake fluid reservoir.

Note:

The brake fluid reservoir must be kept adequately filled to ensure that no air can enter the brake system from the reservoir.



- -> With the engine running and the bleeder screw on the rear right brake caliper open, use the brake pedal to pump brake fluid out of the reservoir until the level goes down as far as the opening for the hydraulic clutch connector hose.
- Collect the used brake fluid in a suitable container. Close bleed screw.
- On vehicles with manual gearbox the clutch slave cylinder should also be "flushed" with new brake fluid.
- On models with electronic stability programme (ESP), note that the charging pump actuates the hydraulic pump for 10 seconds through the function 04-Basic Setting in display group 002=> Page 32 .

At the same time, note the following:

- Connect V.A.G 1869 but do not switch on yet.
- Open bleeder screw on slave cylinder.
- Attach collector bottle hose.
- Switch on the bleeding appliance and allow about 100 cm³ of brake fluid to flow out of the clutch slave cylinder.
- Close bleed screw.

The following steps apply to the four brake calipers.

- 1 - Rear right brake caliper
 - 2 - Rear left brake caliper
 - 3 - Front right brake caliper
 - 4 - Front left brake caliper
- Fit bleeder hose leading to brake fluid collector onto bleeder screw.
 - Open bleeder screw and allow about 250 cm³ of brake fluid to drain out.

Pumping in new brake fluid flushes the used brake fluid out of the system.

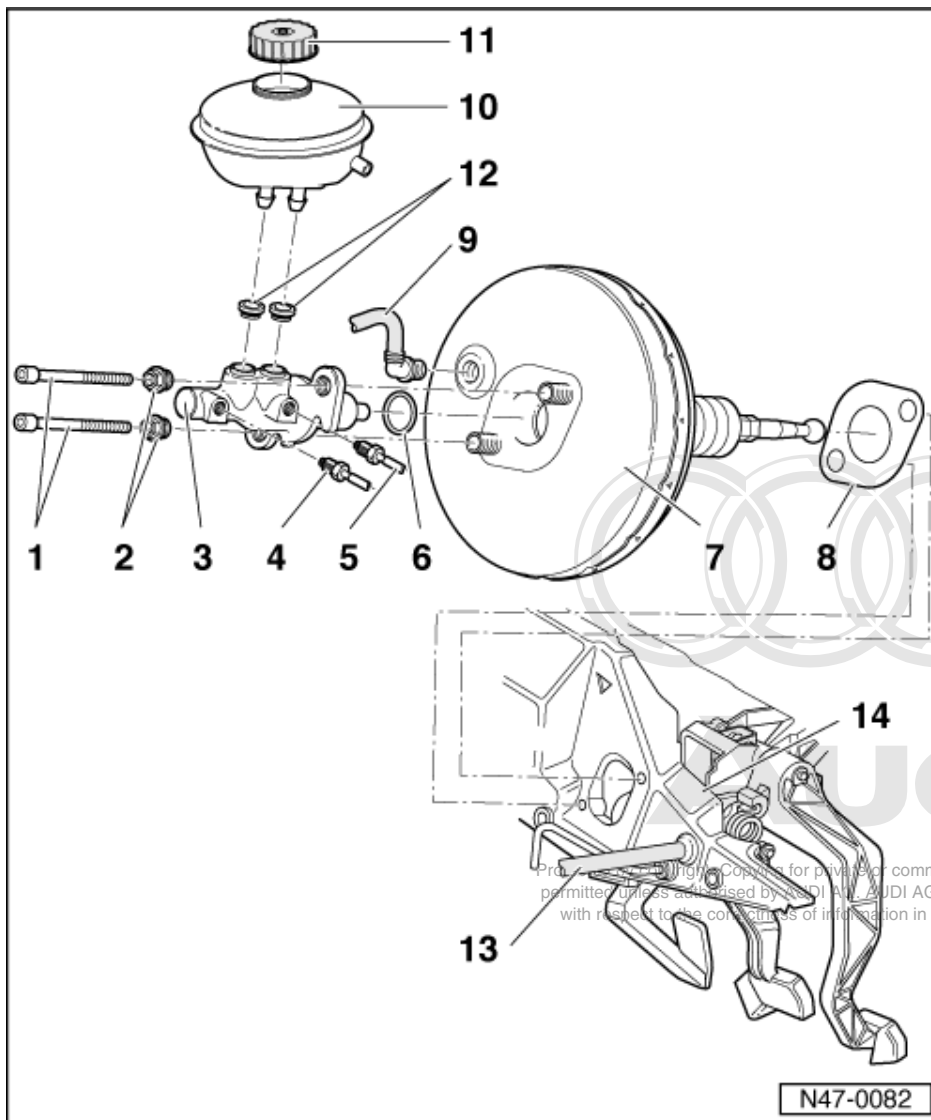
- Close bleed screw.
- Check pedal pressure and brake pedal free play. Free play: max. 1/3 of pedal travel



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.

9 - Assembly overview: Servo unit/brake master cylinder

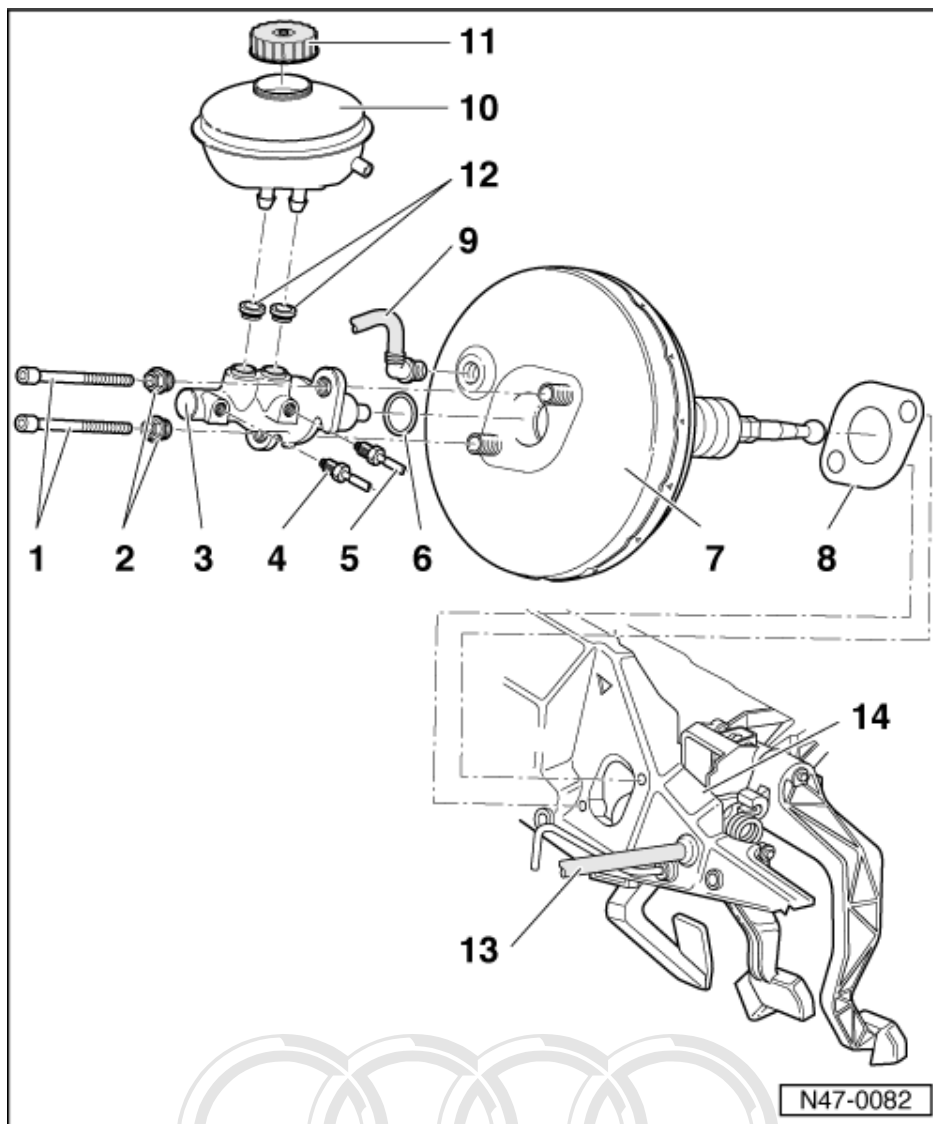
9.1 - Assembly overview: Servo unit/brake master cylinder



Note:

- ♦ The complete brake master cylinder and brake servo can be replaced separately from each other.
- ♦ 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.
- ♦ Assignment of brake pipe connections =>Repair group 45.

- 1 Bolt, Torx socket T45, 25 Nm
- 2 Self-locking hexagon nut, 49 Nm



3 Brake master cylinder, $\varnothing 23.81$ mm

- ♦ Cannot be repaired. If faulty, renew complete.
- ♦ Removing and installing
=> Page 180

4 Brake line 15 Nm

- ♦ Brake master cylinder/floating piston circuit to hydraulic unit

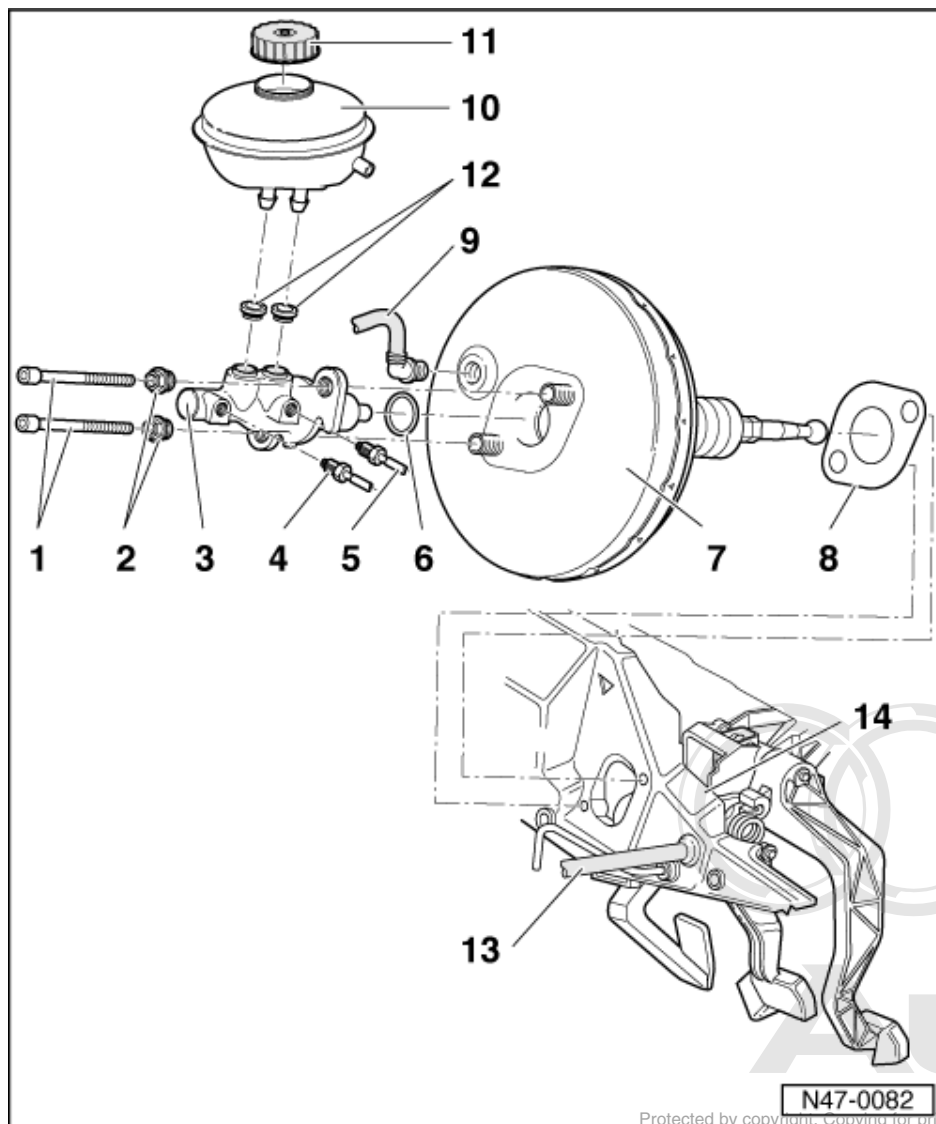
5 Brake line 15 Nm

- ♦ Brake master cylinder/push rod piston circuit to hydraulic unit

6 Sealing ring

- ♦ 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.



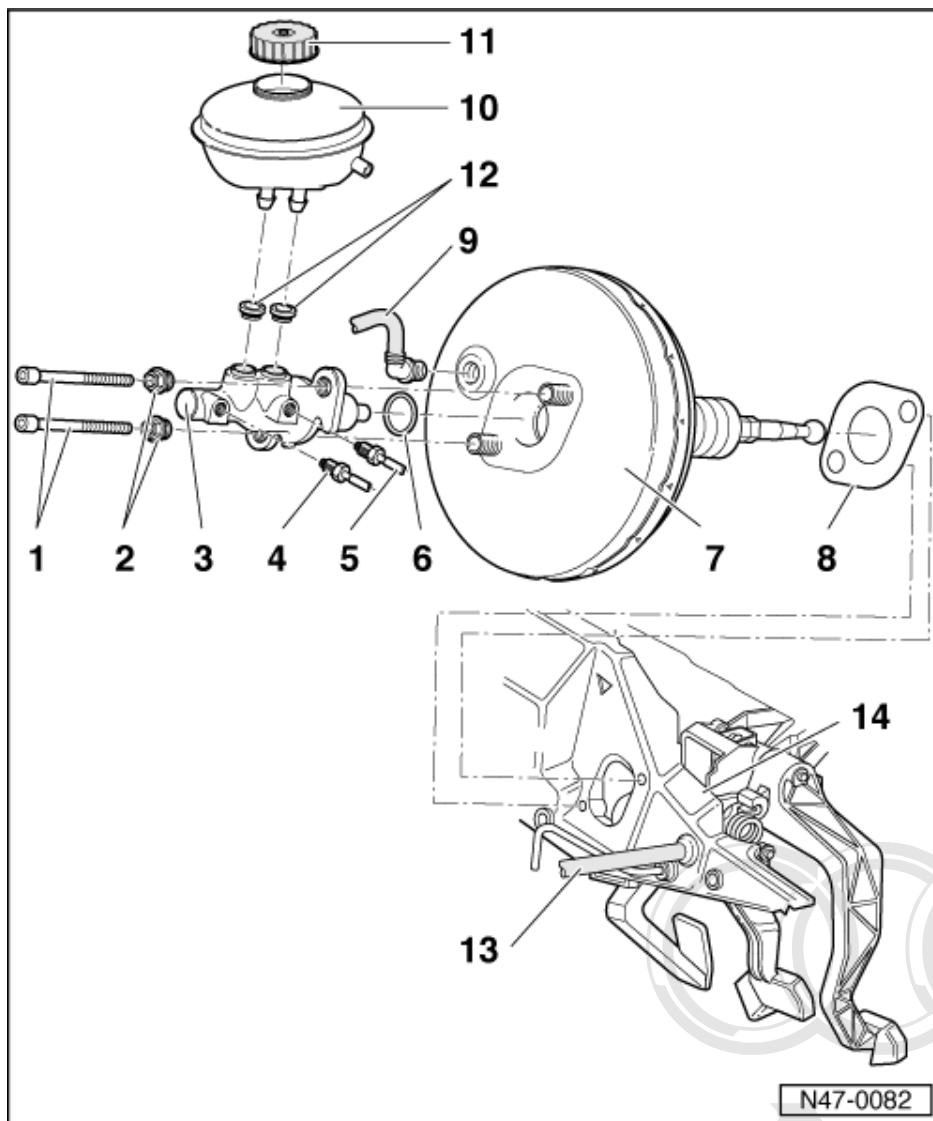
N47-0082

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 servo

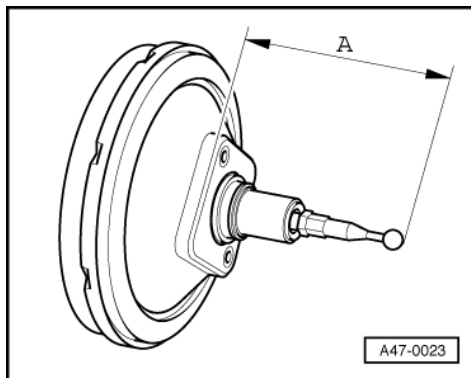
- ◆ On petrol engines the required vacuum is taken from the intake manifold.
- ◆ On diesel engines an exhauster pump is installed to create the required vacuum.
- ◆ Functional test
 - With the engine switched off, firmly depress the brake pedal several times (this reduces the vacuum present in the servo 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 when pressed (servo assistance becomes effective).
- ◆ If faulty renew complete.
- ◆ Non-return valve, item 9 (in vacuum hose)
- ◆ Removing and installing

=> Page 181



- 8 Seal
- 9 Vacuum hose
 - Insert into brake servo unit
- 10 Brake fluid reservoir
- 11 Cap
- 12 Sealing plug
- 13 Supply hose
 - ♦ From brake fluid reservoir to clutch master cylinder
- 14 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.



-> Fig.1 Adjusting ball head

LHD vehicles:

$$A = 159 \text{ mm} \pm 0.5 \text{ mm}$$

RHD models

$$A = 173.2 \text{ mm} \pm 0.5 \text{ mm}$$

Notes:

- ♦ When measuring, the ball head should be aligned at right angles to the surface of the brake servo unit.
- ♦ Measure without gasket up to the end of ball head.

10 - Removing and installing brake master cylinder

10.1 - Removing and installing brake master cylinder

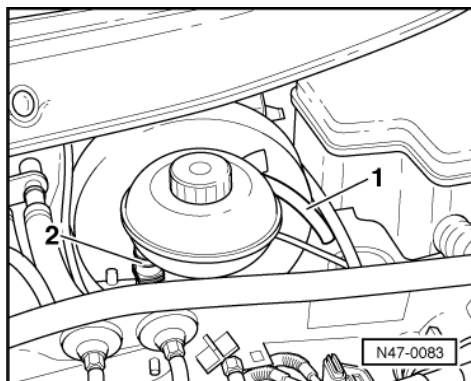
Special tools and workshop equipment required

Plug repair set, Part no. 1H0 698 311A

Removing

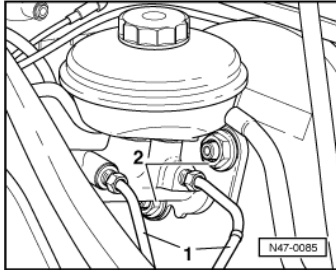
- Fit bleeder hose and bleeder bottle to the front left brake caliper bleeder screw and open bleeder screw.
- Depress the brake pedal in order to pump out as much brake fluid as possible.
- Close front left bleeder screw.

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.

- ♦ Protect the engine compartment against escaping brake fluid.
- -> Detach the feed hose -1- for the clutch master cylinder and seal with a dummy plug.
- Unplug the connector of the sender for the float warning indicator -2-.



- -> Disconnect brake pipes -1- from brake master cylinder and seal brake pipes with plugs from repair kit, Part No. 1H0 698 311 A.
- Unscrew nuts -2- from brake master cylinder.
- Carefully remove brake master cylinder from brake servo unit.

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.

Pay special attention to the following on installation:

- When fitting together the brake master cylinder and brake servo unit, ensure that the push rod is correctly located in the brake master cylinder.
- Apply slight pressure to the brake pedal in order to move the push rod towards brake master cylinder; this makes it easier to guide brake master cylinder onto the push rod.

Note:

On RHD models the following additional operations also need to be carried out.

- Pull off plenum chamber seal
- Unclip wiring loom
- When removing the brake master cylinder, pull the wiring loom up and take the brake master cylinder out of the brake servo unit.

Bleeding clutch hydraulic system:

- Connect V.A.G 1869 but do not switch on yet.
- Open bleeder screw on slave cylinder.
- Attach collector bottle hose.
- Switch on the bleeding appliance and allow about 100 cm³ of brake fluid to flow out of the clutch slave cylinder.
- Close bleed screw.
- Bleed brake system => Page 173

11 - Removing and installing brake servo

11.1 - Removing and installing brake servo

Special tools and workshop equipment required

Workshop Manual, General Body Assembly		
Plug repair set, Part no. 1H0 698 311A		
T10006		

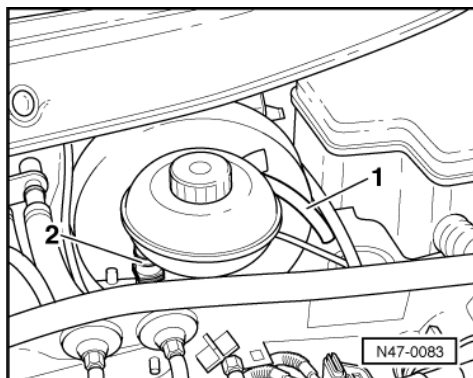
Removing

- Remove storage compartment, driver's side.

=> General Body Assembly; Repair group 68

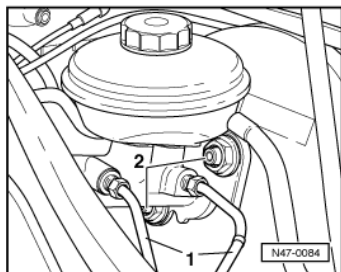
- Fit bleeder hose and bleeder bottle to the front left brake caliper bleeder screw and open bleeder screw.
- Depress the brake pedal in order to pump out as much brake fluid as possible.
- Close front left bleeder screw.

Note:

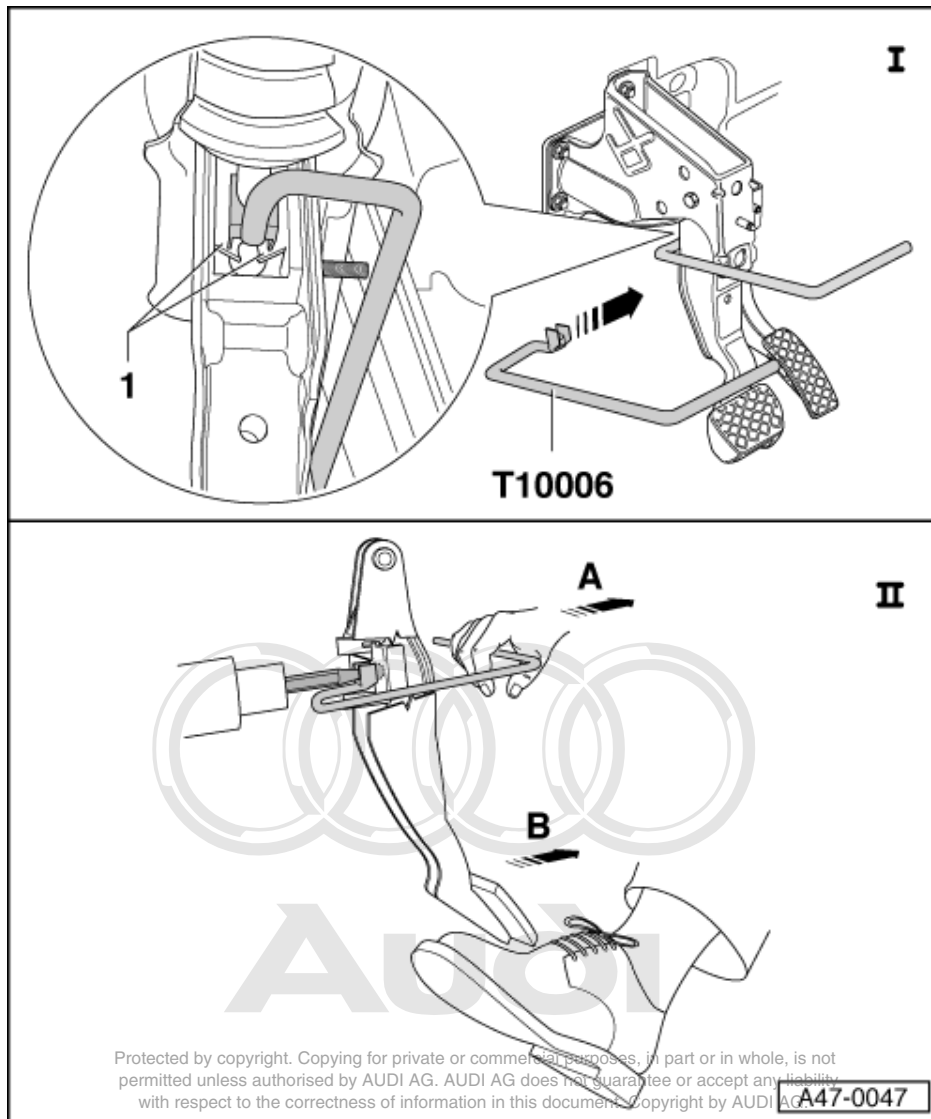


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- ♦ Protect the engine compartment against escaping brake fluid.
- -> Detach the feed hose -1- for the clutch master cylinder and seal with a dummy plug.
- Unplug the connector of the sender for the float warning indicator -2-.



- -> Disconnect brake pipes -1- from brake master cylinder and seal brake pipes with plugs from repair kit, Part No. 1H0 698 311 A.
- Unscrew T 45 socket head Torx bolts -2- from brake servo unit.
- Detach vacuum hose from brake servo unit.



Releasing brake pedal

Ensure that the brake light switch is removed.

1 - Inserting release tool -T10006

- ♦ Feed the tool in from below.

2 - Releasing process

- ♦ Hold the brake pedal tight. Lift the catches off the ball head by a slight pull on the tool -arrow A-.
- ♦ Hold the tool tensioned so that the catches do not engage again on the ball head.
- ♦ Now, detach the brake pedal from the ball head -arrow B-.

- Take the brake servo unit together with the brake master cylinder out of the plenum chamber.

Pay special attention to the following on installation:

- Adjust brake light switch =>Page 33 .
- Adjusting vent valve for cruise control system => Page 134

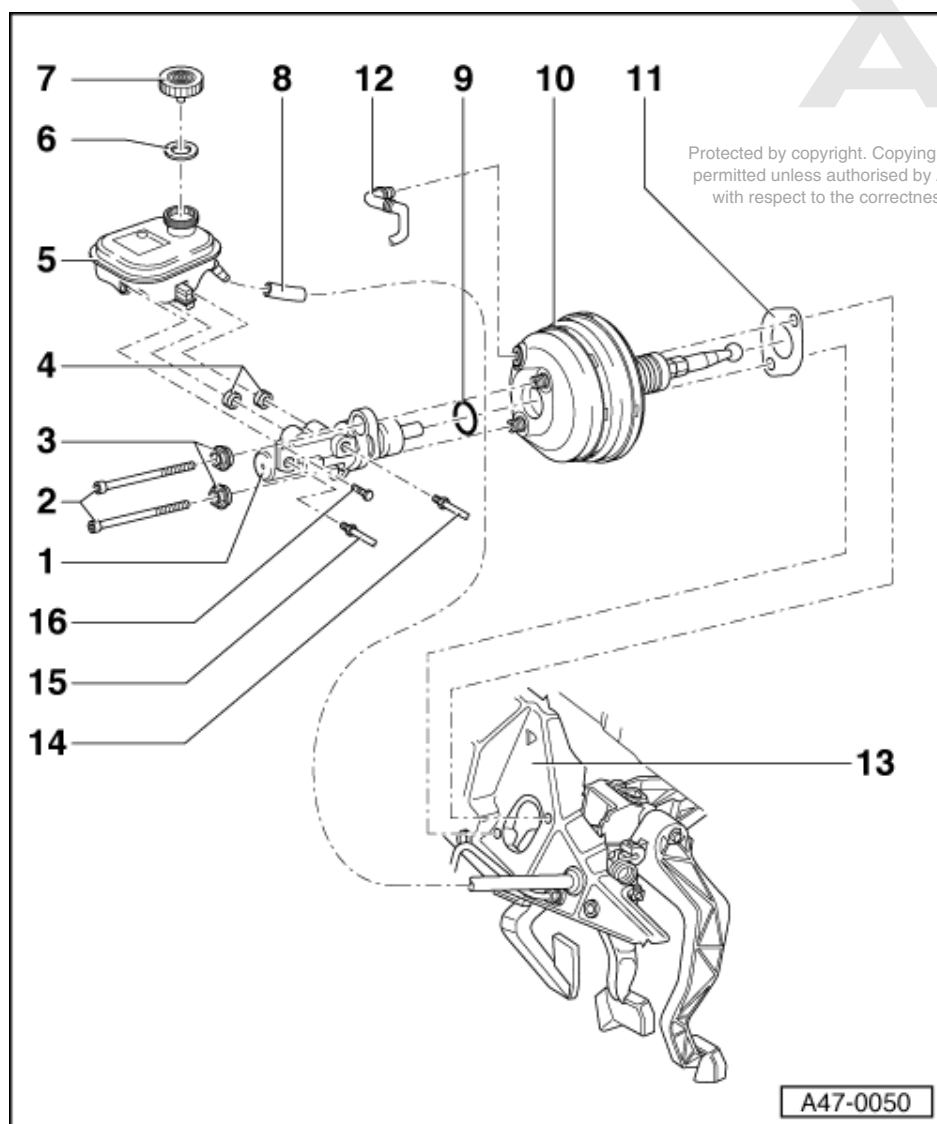
Bleeding clutch hydraulic system:

- Connect V.A.G 1869 but do not switch on yet.
- Open bleeder screw on slave cylinder.
- Attach collector bottle hose.

- Switch on the bleeding appliance and allow about 100 cm³ of brake fluid to flow out of the clutch slave cylinder.
- Close bleed screw.
- Bleed brake system => Page 173

12 - Assembly overview: Servo unit/brake master cylinder

12.1 - Assembly overview: Servo unit/brake master cylinder



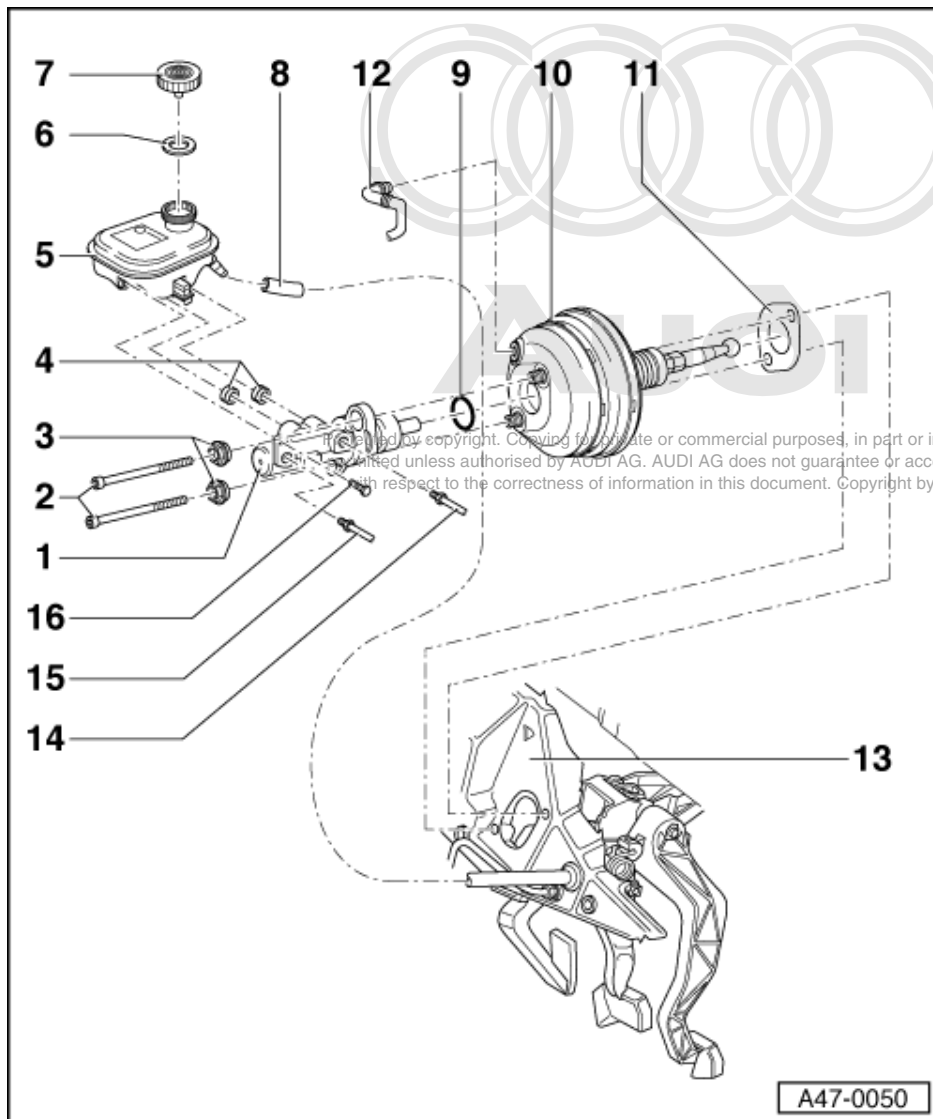
Note:

- ♦ 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.
- ♦ Assignment of brake pipe connections => Page 23

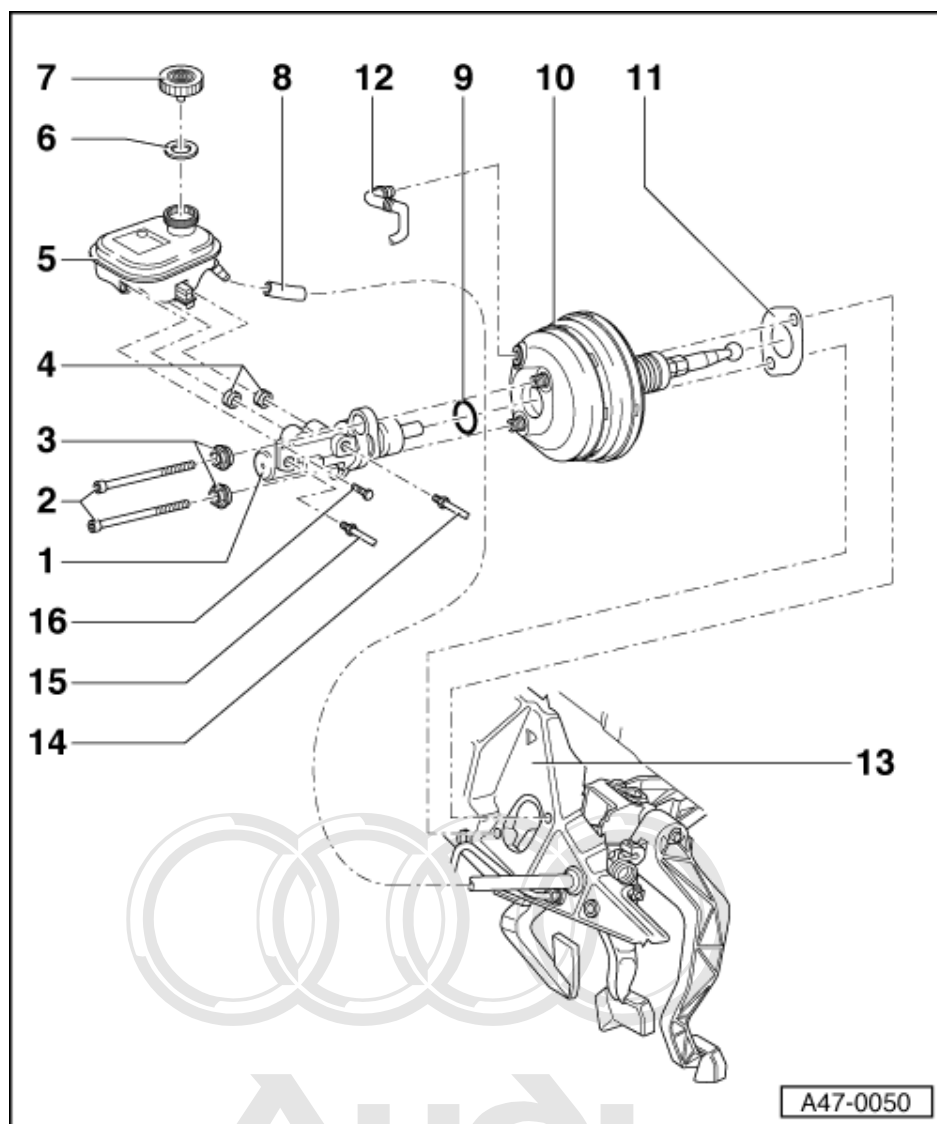
1 Brake master cylinder, ø 25.4mm

- ♦ Cannot be repaired. If faulty, renew complete.
- ♦ Has to be removed and installed together with the brake servo unit.
- ♦ Removing and installing

=>Page 190 .

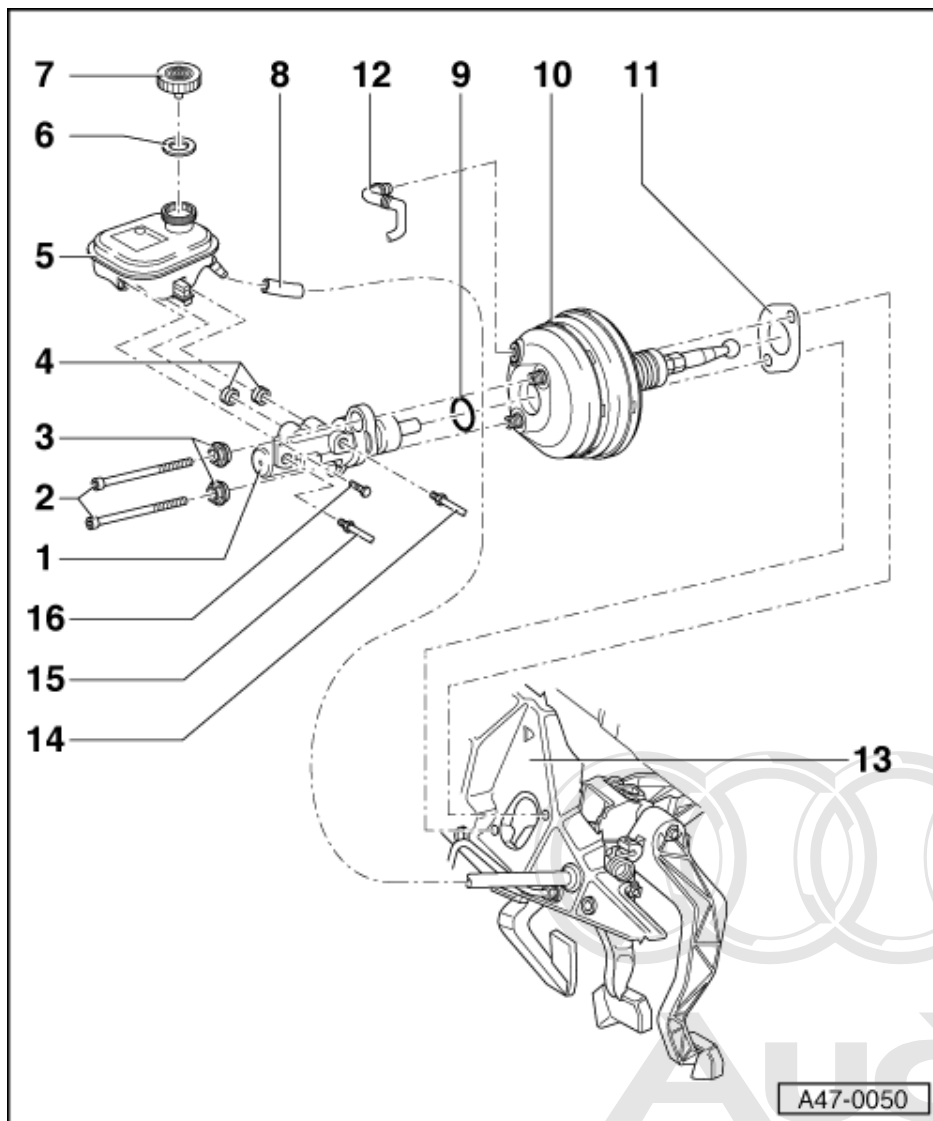


- 2 Bolt, Torx socket T45, 25 Nm
 3 Flanged nut, 50 Nm
 ♦ Always replace
 4 Sealing plug
 ♦ Moisten with brake fluid and insert into brake master cylinder
 ♦ Press brake fluid reservoir into sealing plugs



5 Brake fluid reservoir with float warning indicator

- ◆ Functional test
 - With the ignition switched on, remove the cap and press with your hand on the strainer that is visible. Warning lamp in instrument cluster lights and acoustic alarm sounds.
- ◆ Removing and installing
 - =>Page 190.
- ◆ Connection for hydraulic coupling is located on side
- ◆ Refer to label on reservoir before topping up brake fluid



6 Sealing ring

7 Cap

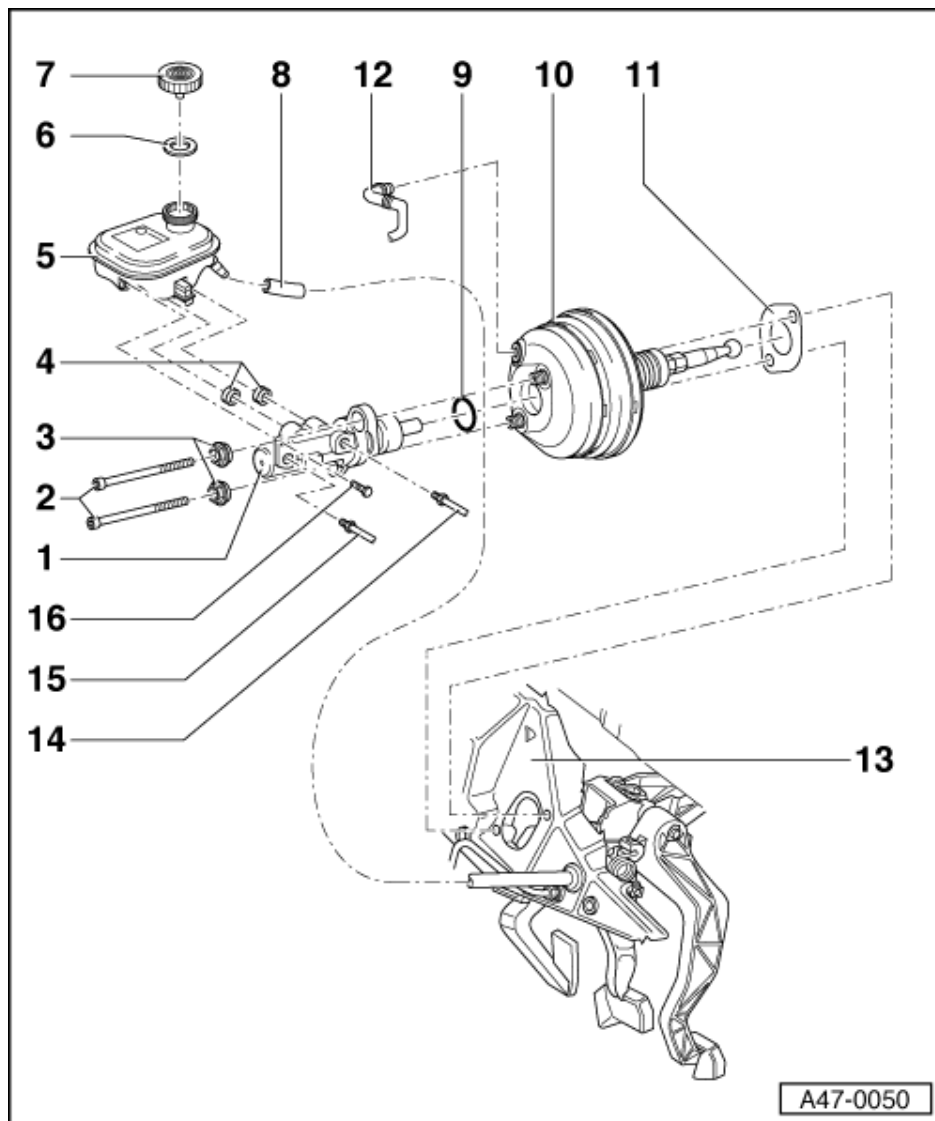
8 Supply hose

- ♦ From brake fluid reservoir to clutch master cylinder

9 Sealing ring

- ♦ Insert into groove at brake master cylinder
- ♦ Replace after removing brake master 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.



10 Brake servo

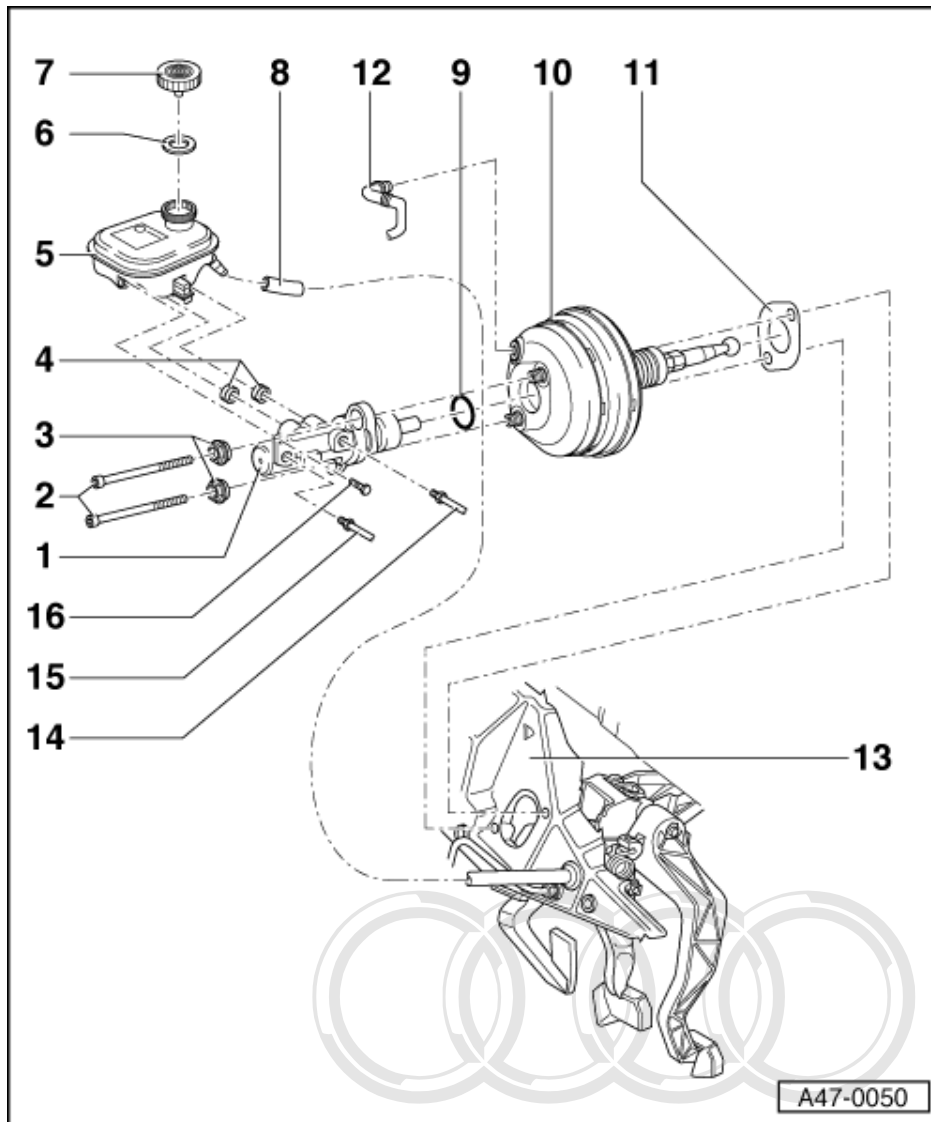
- ♦ Removing and installing
=>Page 190 .
- ♦ Adjust clevis =>Page 1 .
- ♦ Functional test
 - With the engine switched off, firmly depress the brake pedal several times (this reduces the vacuum present in the servo unit).
 - Now depress brake pedal with moderate force, hold and start engine. If the servo unit is working properly, the pedal will be felt to give slightly when pressed (servo assistance becomes effective).
- ♦ If faulty renew complete.

11 Gasket

- ♦ Brake servo is supplied with gasket bonded on
- ♦ Replace only if damaged

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.



12 Vacuum hose

- Insert into brake servo unit
- ♦ On petrol engines the required vacuum is taken from the intake manifold.

13 Bulkhead

14 Brake pipe, 15 Nm

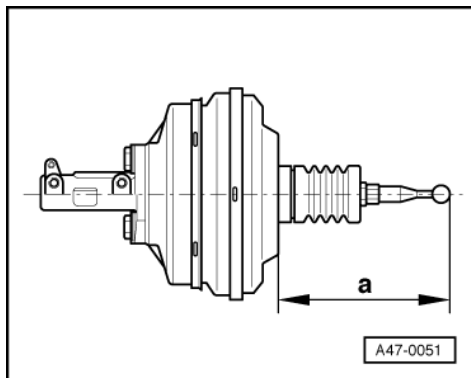
- ♦ Brake master cylinder/push rod piston circuit to hydraulic unit

15 Brake pipe, 15 Nm

- ♦ Brake master cylinder/floating piston circuit to hydraulic unit

16 Hexagon bolt

- ♦ Screw home
- ♦ Unscrew to remove brake fluid reservoir



-> Fig.1 Adjusting ball head

$a = 159 \text{ mm} \pm 0.5 \text{ mm}$

Notes:

- ♦ When measuring, the ball head should be aligned at right angles to the surface of the brake servo unit.
- ♦ Measure without gasket up to the end of ball head.

13 - Removing and installing brake master cylinder together with brake servo unit

13.1 - Removing and installing brake master cylinder together with brake servo unit

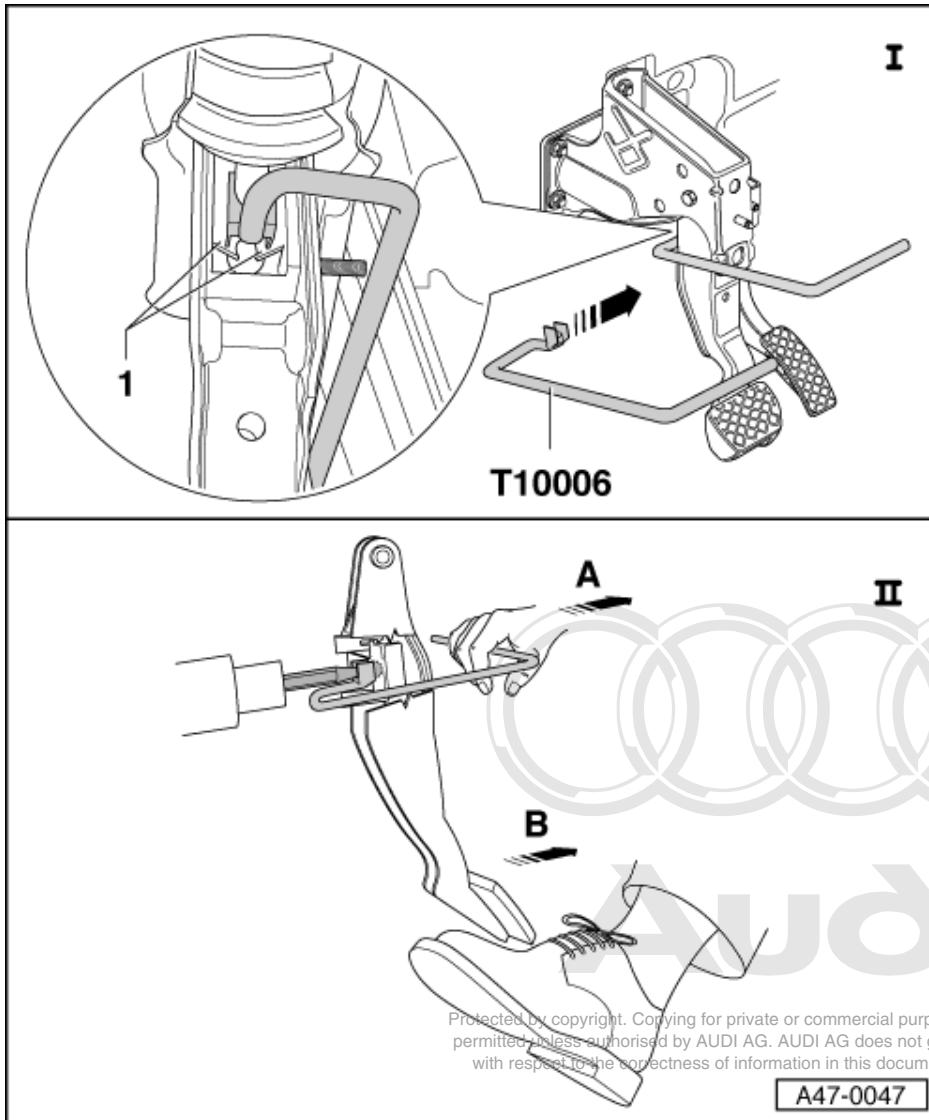
Special tools and workshop equipment required

Workshop Manual, General Body Assembly
Plug repair set, Part no. 1H0 698 311A
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Removing

- Remove storage compartment, driver's side.

=> General Body Assembly; Repair group 68



Releasing brake pedal

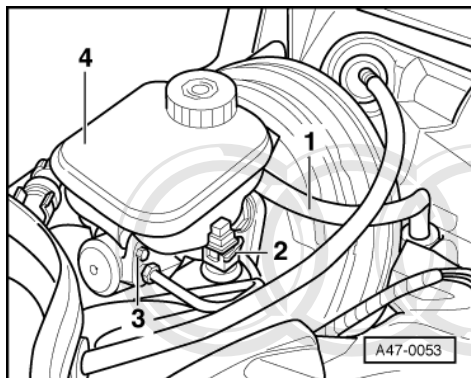
Ensure that the brake light switch is removed.

1 - Inserting release tool -T10006-

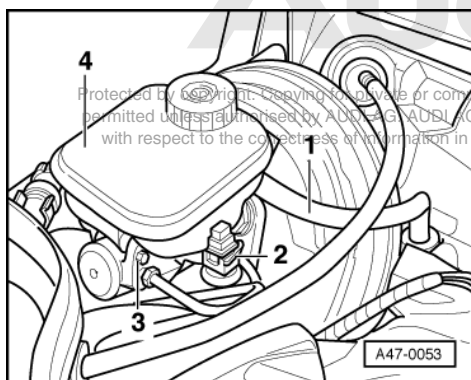
- ♦ Feed the tool in from below.

2 - Releasing process

- ♦ Hold the brake pedal tight. Lift the catches off the ball head by a slight pull on the tool -arrow A-.
 - ♦ Hold the tool tensioned so that the catches do not engage again on the ball head.
 - ♦ Now, detach the brake pedal from the ball head -arrow B-.
- Fit bleeder hose and bleeder bottle to the front left brake caliper bleeder screw and open bleeder screw.
 - Depress the brake pedal in order to pump out as much brake fluid as possible.
 - Close front left bleeder screw.



- -> Unscrew the bolt -3- attaching the brake fluid reservoir.
- Unplug the connector of the sender for the float warning indicator -2-.

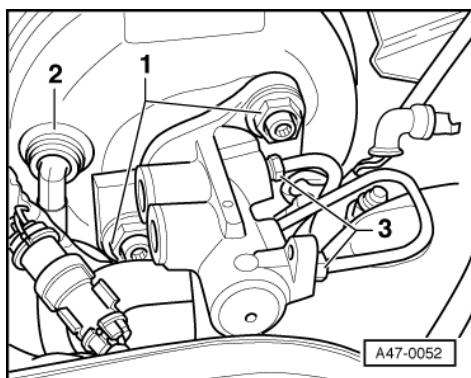


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

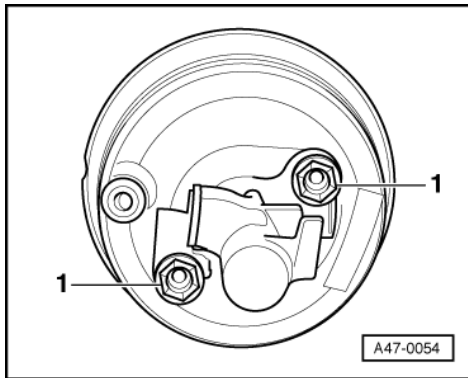
- -> Detach feed hose -1- for clutch master cylinder.

Notes:

- ♦ Protect the plenum chamber against any escaping brake fluid.
- ♦ The underside of the brake fluid reservoir clips into the brake master cylinder.
- To remove reservoir, press down locking lug and at the same time pull brake fluid reservoir out of sealing plugs.
- Remove brake fluid reservoir.



- -> Detach brake pipes -3- and seal with the dummy plugs from repair kit Part No. 1H0 698 311 A.
- Disconnect vacuum hose -2-.
- Unscrew the bolts attaching the brake servo unit -1- (Torx T45).
- Remove brake servo with brake master cylinder.



- Unscrew the nuts attaching the brake master cylinder -1-.
- Carefully remove brake master cylinder from brake servo unit.

Pay special attention to the following on installation:

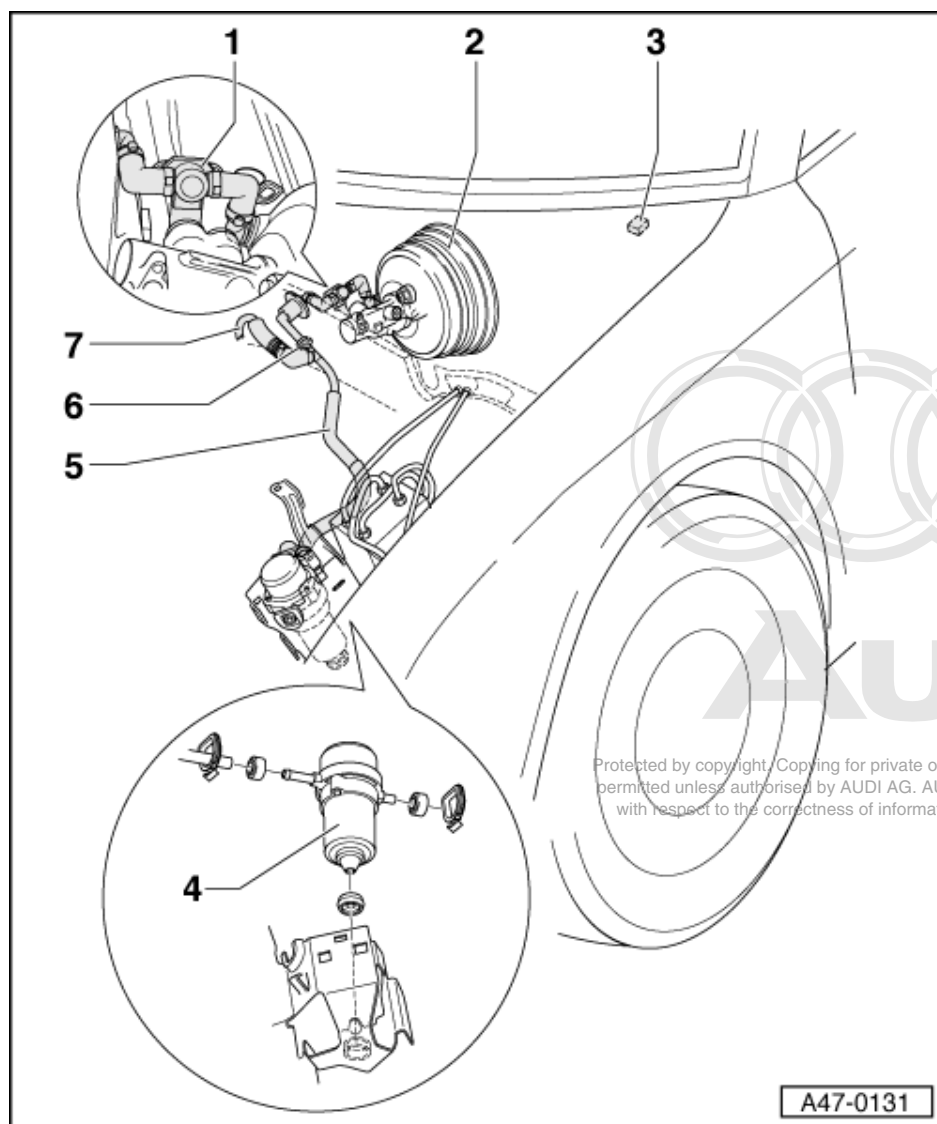
- ◆ Before installing brake master cylinder, clean any residual brake fluid off plenum chamber.
- ◆ When assembling brake master cylinder with brake servo unit, make sure push rod is properly positioned in brake master cylinder.
- Adjust brake light switch =>Page 33 .
- Adjusting vent valve for cruise control system => Page 134

Bleeding clutch hydraulic system:

- Connect V.A.G 1869 but do not switch on yet.
- Open bleeder screw on slave cylinder.
- Attach collector bottle hose.
- Switch on the bleeding appliance and allow about 100 cm³ of brake fluid to flow out of the clutch slave cylinder.
- Close bleed screw.
- Bleed brake system => Page 173

14 - Electric vacuum pump

14.1 - Electric vacuum pump

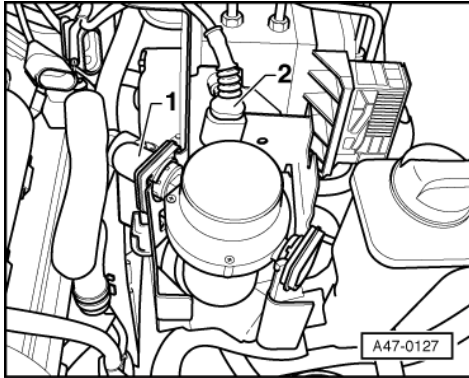


14.2 - Assembly overview

- 1 **Pressure sensor -G294**
 - ♦ Removing and installing
=>Page 196
- 2 **Brake servo**
- 3 **Relay -J569**
 - ♦ Removing and installing
=>Page 196
- 4 **Vacuum pump -V192**
 - ♦ Removing and installing
=>Page 195
 - ♦ Checking => Page 197
- 5 **Vacuum hose**
- 6 **Non-return valve**
- 7 **Vacuum hose**

- ♦ To engine

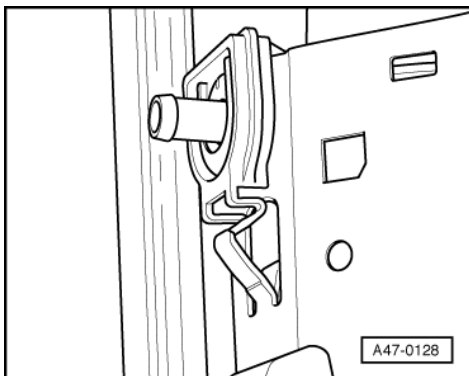
14.3 - Removing and installing electric vacuum pump



No provision is made for servicing the vacuum pump. If problems are encountered, determine the cause by means of a function test and leak test. If a fault is found then the electric vacuum pump must be replaced.

Removal:

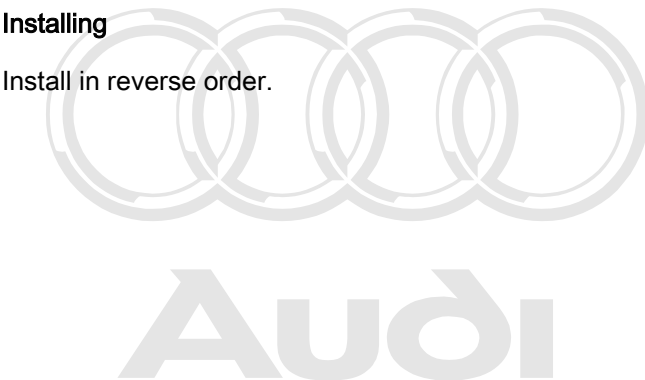
- Remove the design cover.
- -> Unplug electrical connector -2-.
- Detach vacuum hose -1- from the vacuum pump.



- -> Press the clip out of the retainer by hand.
- Lift out the electric vacuum pump from above.

Installing

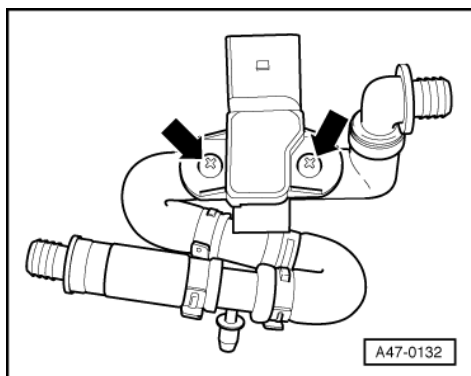
Install in reverse order.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 - Removing and installing pressure sensor

Removing



- Remove the cover of the plenum chamber.
- Detach the electrical connector downwards.
- -> Undo the bolts -arrow-.

Note:

- ♦ The pressure sensor may also be attached by means of clips
- Remove pressure sensor

Installing

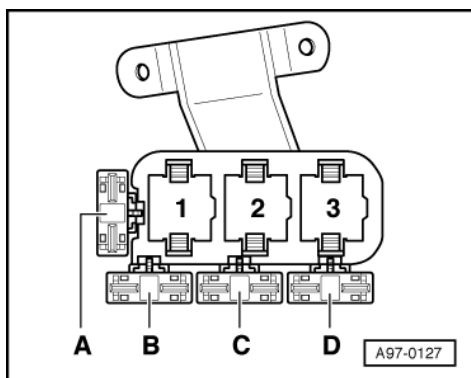
Install in reverse order.



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

14.5 - Removing and installing relay -J569

The relay carrier is located on the driver's side behind the storage compartment on the central support.



- Remove storage compartment on driver's side

=> General Body Assembly, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment Storage compartments, covers Removing driver's storage compartment

- -> Remove the relay at -1-

Install in reverse order.

15 - Electric vacuum pump

15.1 - Electric vacuum pump

15.2 - Description and function

The electric vacuum pump is only installed in vehicles with automatic gearbox. It is switched on by the engine control unit, depending upon the intake manifold pressure.

The vacuum pump has self-diagnosis capability. Recognised faults are stored in the engine control unit.

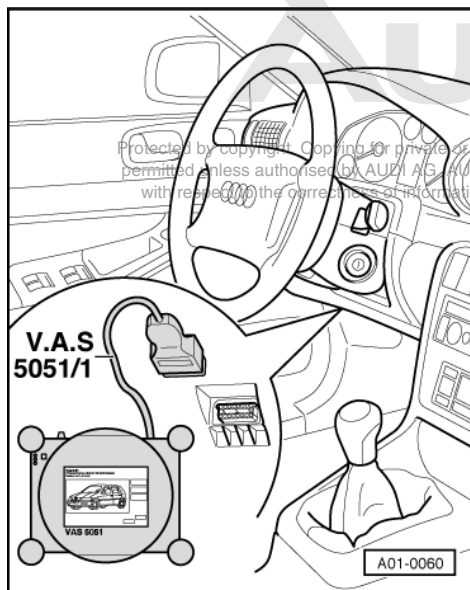
The function of the electric vacuum pump must only be checked via self-diagnosis with the engine stopped.

15.3 - Connecting vehicle diagnostic, testing and information system VAS 5051 or Connect fault reader V.A.G 1551

Test requirements:

- Battery voltage at least 11 V
- Earth connections on engine and gearbox OK.
- Engine off
- Automatic gearbox in position "P" or "N"

Procedure



- -> Connect vehicle diagnostic, testing and information system VAS 5051 with diagnostic cable VAS 5051/1 with the ignition switched off. Alternatively, connect fault reader V.A.G 1551 with diagnostic cable V.A.G 1551/3A.

Notes:

- ♦ The following describes self-diagnosis using the fault reader V.A.G 1551 only.
- ♦ When using the vehicle diagnostic, testing and information system VAS 5051, follow the procedures described in equipment's operating instructions.

-> Indicated on display:



V.A.G

- 1) Appears alternately

Note:

If the display remains blank:

=> Fault Reader Operating Instructions

- Switch the ignition on.
- Switch on the fault reader printer with the print key. The indicator lamp in the key must illuminate.
- Press key 1 for "Rapid data transfer".

-> Indicated on display

Rapid data transfer HELP
Enter address word XX

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.

Address word 00 is used to start the automatic test sequence i.e. interrogation of fault memories in all vehicle systems with self-diagnosis capability in vehicle with rapid data transfer.

- Enter "01" for address word "Engine electronics" and confirm entry with Q key.

-> The fault reader V.A.G 1551 display will show the control unit identification, for example:

3B0907552A 2.7l V6/5V G
0002 □
Coding 05002 WSC 12345

Note:

The control unit identification can be printed out by pressing the PRINT key on fault reader V.A.G 1551.

Control unit identification (example)

- 3B0907552 A	Part-No.; assignment => Parts List
- 2.7l	Engine capacity
- V6/5V	Design of engine (V-engine, 6-cyl- inder, 5-valve)
- "G" or no display	Vehicle with or without cruise con- trol
- 0002	Control unit software version
- Code 05002	Control unit code
- WSC 12345	Workshop Code of V.A.G 1551 with which encoding was last performed

15.4 - Selecting functions

Diagnostic communication established. Control unit version is checked and => key is pressed.

-> Indicated on display:

(Function selection, e.g. 02 - interrogate fault memory)

Rapid data transfer HELP
Select function XX

For self-diagnosis of the vacuum pump, the following functions are available in the engine control unit:

- 02 - Interrogating fault memory
- 03 - Final control diagnosis
- 04 - Starting basic setting
- 08 - Reading measured value block

15.5 - Basic setting (perform short trip)

- Press the $\Rightarrow$ key until the following display appears:

-> Indicated on display (function selection):

Vehicle system test HELP
 Select function XX

- Press keys 0 and 4 for "Basic setting" and confirm the entry with the Q key.

-> Indicated on display (function selection):

Basic setting
 Enter display group number XXX

- Press keys 0,0 and 8 for "Perform short trip UP 28" and confirm the entry with the Q key.

-> Indicated on display (function selection):

System in basic setting 8 off (4 on)
☐ not actuated Pump off XXX mbar test off

- Press 4
- Firmly actuate the brake pedal several times in succession (venting the brake servo) until the test is activated.

-> Indicated on display (function selection):

System in basic setting 8 on (8 off)
☐ actuated/not actuated Pump on XXX mbar
 test on

- The brake pedal must not be pressed once the test has been activated, as the pump is switched off when the brake pedal is actuated.

The pump evacuates the brake servo. The diagnosis of the brake servo system runs in parallel in the control unit. The system passes the test if the pressure in the brake servo reaches the shut-off threshold within the time limit set by the diagnostic function (max 20 sec).

-> Indicated on display (function selection):

System in basic setting 8 on (8 off)
☐ not actuated Pump off XXX mbar system OK

- Press 8
- Remove the diagnostic cable from the diagnostic connection

Or:

-> Indicated on display (function selection):

System in basic setting 8
 not actuated Pump off XXX mbar system not
 OK

If after the test the system is not OK, read out the fault memory and rectify the fault (ignition OFF).

- Afterwards perform the short trip again.

15.6 - Performing final control diagnosis

- Connect the fault reader and select the engine electronics function => Page 197 .
- Press =>key.

-> Indicated on display (function selection):

Vehicle system test	HELP
Select function XX	

- Press keys 0 and 3 for "Final control diagnosis" and confirm the entry with the Q key.
- Press the =>key until the following text appears:

-> Indicated on display (function selection):

Final control diagnosis
Actuating vacuum pump for brake system

- Confirm the entry with the Q key.

The electric vacuum pump should now run for approx. 10 sec.

- Remove the diagnostic cable from the diagnostic connection

15.7 - Reading measured value block

- Connect the fault reader and select the engine electronics function => Page 197 .
- Press =>key.

-> Indicated on display (function selection):

Vehicle system test	HELP
Select function XX	

- Press keys 0 and 8 for "Read measured value block" function.
- Confirm input with Q key.

-> Indicated on display:

Read measured value block	Help
Enter display group number	XXX

- Press keys 0, 0 and 8.
- Confirm input with Q key.

Display group 008

Reading measured value block		8=>	◀ Indicated on display
not actuated	Pump off	XXX mbar	Test off
actuated	Pump on		Test on
Test - Test (short trip) off - Test (short trip) on Vacuum - Measured vacuum in brake servo			- Indicated for vented brake servo: approx. 960, and for evacuated brake servo: approx. 450, dependent upon ambient pressure.

Vacuum pump - Pump off - Pump on Brake pedal: - Brake pedal not actuated - Brake pedal actuated	If the pump does not run when "Pump on" is displayed, perform fault finding according to current flow diagram. - Check brake light switch in the event of deviation.
--	---

15.8 - Fault table

Fault code		Fault readout	Fault remedy
SAE	V.A.G		
P1427	17835	Actuating vacuum pump for brake system Short to positive	- Locate and eliminate open circuit in wiring or short circuit. => Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder
P1428	17836	Actuating vacuum pump for brake system Short to earth	
P1429	17837	Actuating vacuum pump for brake system Open circuit	
P1479	17887	Brake vacuum system Mechanical fault	- Perform final control diagnosis in engine control unit to ascertain whether the vacuum pump runs/is actuated Check hoses to pump and from pump to brake servo Perform short trip in engine control unit (Basic setting; display group 8 with ignition on and selector lever in "P" or "N" position)

Fault code		Fault readout	Fault remedy
SAE	V.A.G		
P1912	18320	Brake servo pressure sensor - G294 Open circuit / short to positive	- Locate and eliminate open circuit in wiring or short circuit. => Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder
P1913	18321	Brake servo pressure sensor - G294 Short to earth	
P1914	18322	Brake servo pressure sensor - G294 Implausible signal	

16 - Brake lines and brake pipes

16.1 - Brake lines and brake pipes

16.2 - Routing of lines

The brake lines and brake pipes are supplied as replacement parts ready for installation.

The brake lines and brake pipes should be attached at the original attachment points during 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.



16.3 - Tightening torques

Brake caliper FN-3	45 Nm
Brake hose to brake caliper (banjo union with banjo bolt)	
HP-2 brake caliper	12 Nm
Brake pipe to brake caliper	
Vent valve to brake caliper	10 Nm
Brake pipes to hydraulic control unit	15 Nm
Brake pipes to brake hoses	15 Nm
Hydraulic unit to retainer, ABS 5.0	15 Nm
Hydraulic unit to retainer, ABS 5.3	12 Nm
ABS sensors to wheel bearing housing	10 Nm
Brake plates to wheel bear- ing housing	10 Nm
Rear brake caliper	45 Nm: aluminium sealing ring or
Brake hose to brake caliper (banjo union with banjo bolt)	38 Nm: titanium sealing ring



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