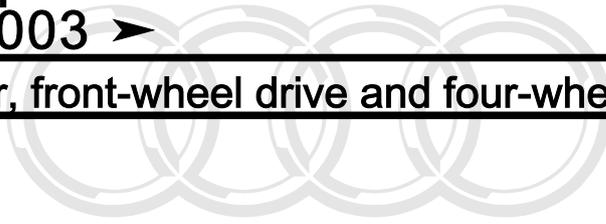


## Workshop Manual Audi A8 2003 ➤

### Running gear, front-wheel drive and four-wheel drive

Edition 09.2011



A large, light gray Audi logo is centered on the page, behind the main title and subtitle.

# 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.

## List of Workshop Manual Repair Groups

### Repair Group

- 00 - Technical data
- 40 - Front suspension
- 42 - Rear suspension
- 43 - Self-levelling suspension
- 44 - Wheels, tyres, vehicle geometry
- 48 - Steering



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

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

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

## Contents

<b>00 - Technical data</b> .....	<b>1</b>
<b>1 Technical data</b> .....	<b>1</b>
1.1 Running gear .....	1
1.2 Steering .....	1
<b>2 Proper disposal procedures for oil-filled and gas-filled components</b> .....	<b>2</b>
2.1 Discharging air spring struts .....	2
2.2 Discharging accumulator .....	3
2.3 Draining power steering box .....	3
<b>3 Shock absorbers</b> .....	<b>5</b>
3.1 Checking shock absorbers on shock tester .....	5
3.2 Maximum values „a“ in mm .....	6
<b>4 Positioning vehicle on lifting platform and setting down on wheels</b> .....	<b>7</b>
4.1 Raising and lowering vehicle when air spring system has been opened; raising and lowering vehicle when air spring system has not been opened .....	7
<b>40 - Front suspension</b> .....	<b>8</b>
<b>1 General notes on front axle</b> .....	<b>8</b>
1.1 Contact corrosion .....	8
1.2 General notes .....	8
1.3 Repairing threads in longitudinal member .....	9
1.4 Raising wheel bearing housing to reference position before tightening bolts .....	10
1.5 Exploded view of front axle .....	12
<b>2 Mounting bracket, upper links, air spring strut</b> .....	<b>13</b>
2.1 Exploded view of mounting bracket, upper links, air spring strut .....	13
2.2 Removing and installing air spring strut .....	16
2.3 Charging air spring strut .....	20
2.4 Servicing air spring strut .....	22
2.5 Eliminating indentations in boot .....	25
2.6 Removing and installing mounting bracket .....	25
2.7 Removing and installing front upper link .....	27
2.8 Removing and installing front and rear upper links .....	29
2.9 Renewing bushes for front and rear upper links .....	30
<b>3 Subframe, engine cross member, coupling rod, anti-roll bar</b> .....	<b>32</b>
3.1 Exploded view of subframe, engine cross member, coupling rod, anti-roll bar .....	32
3.2 Removing and installing subframe .....	35
3.3 Removing and installing coupling rod .....	42
3.4 Removing and installing anti-roll bar .....	43
<b>4 Track control link, guide link, vehicle level sender</b> .....	<b>45</b>
4.1 Exploded view of track control link, guide link, vehicle level sender .....	45
4.2 Removing and installing track control link .....	47
4.3 Renewing bush for track control link .....	49
4.4 Removing and installing guide link .....	54
4.5 Renewing bush (65 mm Ø) for guide link .....	56
4.6 Renewing bush (75 mm Ø) for guide link .....	59
4.7 Removing and installing vehicle level sender .....	61
<b>5 Wheel bearing housing, wheel bearing unit</b> .....	<b>62</b>
5.1 Exploded view of wheel bearing housing, wheel bearing unit .....	62
5.2 Removing and installing wheel bearing housing .....	64
5.3 Removing and installing wheel bearing unit .....	65
5.4 Renewing wheel bearing .....	67
<b>6 Front and rear cross members, body brace</b> .....	<b>70</b>
6.1 Exploded view of front and rear cross members, body brace .....	70



6.2	Removing and installing front and rear cross members	70
6.3	Removing and installing body brace	72
<b>7</b>	<b>Drive shaft</b>	<b>74</b>
7.1	Removing and installing drive shaft	74
7.2	Exploded view of drive shaft with peened triple roller joint AAR 3300 i and outer constant velocity joint (100 mm dia.)	78
7.3	Dismantling and assembling peened triple roller joint AAR 3300 i	80
7.4	Servicing outer constant velocity joint (100 mm dia.)	87
7.5	Dismantling, checking and assembling outer constant velocity joint	88
<b>42</b>	<b>Rear suspension</b>	<b>90</b>
<b>1</b>	<b>General notes on rear axle</b>	<b>90</b>
1.1	Contact corrosion	90
1.2	General notes	90
1.3	Repairing threads in longitudinal member	91
1.4	Raising wheel bearing housing to reference position before tightening bolts	92
1.5	Exploded view of rear axle	95
<b>2</b>	<b>Subframe - front-wheel drive</b>	<b>96</b>
2.1	Exploded view of subframe - front-wheel drive	96
2.2	Removing and installing subframe - front-wheel drive	98
<b>3</b>	<b>Subframe - four-wheel drive</b>	<b>106</b>
3.1	Exploded view of subframe - four-wheel drive	106
3.2	Removing and installing subframe - four-wheel drive	108
<b>4</b>	<b>Anti-roll bar, transverse link, track rod, coupling rods, trapezium link, vehicle level sender</b>	<b>117</b>
4.1	Exploded view of anti-roll bar, transverse link, track rod, coupling rods, trapezium link, vehicle level senders	117
4.2	Removing and installing anti-roll bar	120
4.3	Removing and installing transverse link	122
4.4	Removing and installing track rod	124
4.5	Removing and installing coupling rod (for anti-roll bar)	125
4.6	Removing and installing coupling rod (for track rod/trapezium link)	127
4.7	Removing and installing trapezium link	128
4.8	Removing and installing vehicle level sender	131
<b>5</b>	<b>Air spring strut, wheel bearing housing, wheel bearing unit, bonded rubber bush for wheel bearing housing</b>	<b>132</b>
5.1	Exploded view of air spring strut, wheel bearing housing, wheel bearing unit, bonded rubber bush for wheel bearing housing	133
5.2	Eliminating indentations in boot	135
5.3	Removing and installing air spring strut	136
5.4	Charging air spring strut	139
5.5	Servicing air spring strut	141
5.6	Removing and installing wheel bearing housing	144
5.7	Removing and installing wheel bearing unit	147
5.8	Renewing wheel bearing	149
5.9	Renewing bonded rubber bush for wheel bearing housing	153
<b>6</b>	<b>Drive shaft</b>	<b>158</b>
6.1	Removing and installing drive shaft	158
6.2	Exploded view of drive shaft with 88 mm Ø outer constant velocity joint and 108 mm Ø inner constant velocity joint	164
6.3	Servicing drive shaft with 88 mm Ø outer constant velocity joint	166
6.4	Exploded view of drive shaft with 100 mm Ø outer constant velocity joint and 108 mm Ø inner constant velocity joint	176
6.5	Servicing drive shaft with 100 mm Ø outer constant velocity joint	178
<b>43</b>	<b>Self-levelling suspension</b>	<b>188</b>

<b>1</b>	<b>Operation of self-levelling suspension</b>	<b>188</b>
1.1	Possible level settings	188
1.2	Setting vehicle level	188
1.3	Jacking mode	188
1.4	Towing mode	189
1.5	Shipping mode	189
<b>2</b>	<b>Connecting VAS 5051 A and selecting functions</b>	<b>191</b>
<b>3</b>	<b>Servicing self-levelling suspension (adaptive suspension)</b>	<b>193</b>
3.1	Electrical/electronic components - overview and fitting locations	194
3.2	Removing and installing front vehicle level senders	195
3.3	Removing and installing rear vehicle level senders	197
3.4	Removing and installing front body acceleration senders G341 and G342	198
3.5	Removing and installing rear body acceleration sender G343	199
3.6	Removing and installing adaptive suspension control unit J197	200
3.7	Re-adapting adaptive suspension control unit	201
3.8	Checking body acceleration signals from front/rear body acceleration senders	201
3.9	Bleeding or charging system	201
3.10	Re-adapting reference position (default position)	202
<b>4</b>	<b>Self-levelling suspension (adaptive air suspension)</b>	<b>203</b>
4.1	Overview of air pipes	203
4.2	Servicing air pipe	208
4.3	Renewing connection piece	213
4.4	Removing and installing solenoid valve block	215
4.5	Exploded view of air supply unit (vehicles with 6-cylinder and 8-cylinder petrol engines)	217
4.6	Removing and installing air supply unit (vehicles with 6-cylinder and 8-cylinder petrol engines)	219
4.7	Exploded view of air supply unit (vehicles with 6-cylinder and 8-cylinder diesel engines, 10-cylinder and 12-cylinder petrol engines)	223
4.8	Removing and installing air supply unit (vehicles with 6-cylinder and 8-cylinder diesel engines, 10-cylinder and 12-cylinder petrol engines)	224
4.9	Removing and installing accumulator	236
<b>44</b>	<b>Wheels, tyres, vehicle geometry</b>	<b>238</b>
<b>1</b>	<b>General information on wheels and tyres</b>	<b>238</b>
<b>2</b>	<b>Servicing tyre pressure monitoring system</b>	<b>239</b>
2.1	General notes	239
2.2	Overview of tyre pressure monitoring system components	240
2.3	Removing and installing tyre pressure monitor control unit J502	240
2.4	Removing and installing front reception aerials	241
2.5	Removing and installing rear reception aerials	242
<b>3</b>	<b>Operation of tyre pressure monitoring system</b>	<b>244</b>
<b>4</b>	<b>Wheel alignment</b>	<b>245</b>
4.1	General information on wheel alignment	245
4.2	Explanatory notes on weight codes used in production (PR Nos.)	246
4.3	Test requirements:	247
4.4	Preparations required before calibration/adjustment of driver assist systems	248
4.5	Preparations for measurement	249
4.6	Wheel runout compensation	250
4.7	Checking centre position of steering rack	250
4.8	Assignment of adapters to running gear versions (for wheel alignment)	250
4.9	Sequence of operations for checking and adjusting wheel alignment	250
4.10	Moving vehicle to initial position for wheel alignment (running gear 1BK, 2MA and 2MB)	251
4.11	Wheel alignment specifications	252
4.12	Centralising camber at front wheels	252

4.13	Adjusting camber at rear wheels	254
4.14	Adjusting toe setting at rear wheels	255
4.15	Adjusting toe-in curve at front wheels	255
4.16	Raising vehicle with running gear 1BK, 2MA and 2MB	256
4.17	Adjusting toe-constant „S“	257
4.18	Adjusting toe setting at front wheels	257
<b>5</b>	<b>Adaptive Cruise Control (ACC)</b>	<b>258</b>
5.1	Exploded view of sensor for adaptive cruise control G550	258
5.2	General information on ACC	259
5.3	Adjustment procedure using ACC setting device VAS 6190	260
5.4	Adjustment procedure using ACC setting device VAS 6430	266
5.5	Removing and installing sensor for adaptive cruise control G550	272
<b>6</b>	<b>Lane departure warning (Audi lane assist)</b>	<b>275</b>
6.1	General notes on lane departure warning function	275
6.2	Calibration procedure	276
6.3	Removing and installing lane departure warning control unit J759 and backlight masking screen	283
<b>48 - Steering</b>		<b>284</b>
<b>1</b>	<b>Steering wheel with airbag</b>	<b>284</b>
1.1	Exploded view of steering wheel with airbag	284
1.2	Removing and installing steering wheel with airbag	285
<b>2</b>	<b>Steering column</b>	<b>286</b>
2.1	Exploded view of steering column	286
2.2	Handling and transporting steering column	287
2.3	Removing and installing steering column	288
2.4	Electrical adjustment of steering wheel position	292
2.5	Checking steering column for damage	292
2.6	Easy-entry facility for vehicles with seat memory	293
<b>3</b>	<b>Power steering box</b>	<b>294</b>
3.1	Exploded view of power steering box	294
3.2	Centralising steering	296
3.3	Removing and installing power steering box (LHD vehicles)	298
3.4	Removing and installing power steering box (RHD vehicles)	307
3.5	Servicing power steering box	316
3.6	Removing and installing servotronic solenoid valve N119	319
3.7	Adjusting power steering box	319
3.8	Removing and installing track rod ball joint	320
3.9	Removing and installing track rods	323
<b>4</b>	<b>Checking fluid level, bleeding steering system and checking for leaks</b>	<b>326</b>
4.1	Checking power steering fluid level (all engine versions except V8 diesel and V10 and W12 petrol engines)	326
4.2	Checking power steering fluid level (V8 diesel and V10 and W12 petrol engines only)	327
4.3	Bleeding steering system after repairs	330
4.4	Checking steering system for leaks	331
<b>5</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 6-cylinder diesel engine)</b>	<b>332</b>
5.1	Exploded view (vehicles with 6-cylinder diesel engine)	332
5.2	Checking delivery pressure of power steering pump (vehicles with 6-cylinder diesel engine)	335
5.3	Removing and installing power steering pump (vehicles with 6-cylinder diesel engine)	337
5.4	Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 6-cylinder diesel engine)	344
<b>6</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 6-cylinder MPI petrol engine)</b>	<b>346</b>
6.1	Exploded view (vehicles with 6-cylinder MPI petrol engine)	346

6.2	Checking delivery pressure of power steering pump (vehicles with 6-cylinder MPI petrol engine) . . . . .	350
6.3	Removing and installing power steering pump (vehicles with 6-cylinder MPI petrol engine) . . . . .	352
6.4	Installation position of suction hoses on power steering pump and fluid reservoir (vehicles with 6-cylinder MPI petrol engine) . . . . .	358
<b>7</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 6-cylinder FSI petrol engine) . . . . .</b>	<b>359</b>
7.1	Exploded view (vehicles with 6-cylinder FSI petrol engine) . . . . .	359
7.2	Checking delivery pressure of power steering pump (vehicles with 6-cylinder FSI petrol engine) . . . . .	362
7.3	Removing and installing power steering pump (vehicles with 6-cylinder FSI petrol engine) . . . . .	364
7.4	Installation position of suction hoses on power steering pump and fluid reservoir (vehicles with 6-cylinder FSI petrol engine) . . . . .	371
<b>8</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 8-cylinder diesel engine) . . . . .</b>	<b>373</b>
8.1	Exploded view (vehicles with 8-cylinder diesel engine) . . . . .	373
8.2	Checking delivery pressure of power steering pump (vehicles with 8-cylinder diesel engine) . . . . .	377
8.3	Removing and installing power steering pump (vehicles with 8-cylinder diesel engine) . . . . .	381
8.4	Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 8-cylinder diesel engine) . . . . .	387
<b>9</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 8-cylinder MPI petrol engine) . . . . .</b>	<b>389</b>
9.1	Exploded view (vehicles with 8-cylinder MPI petrol engine) . . . . .	389
9.2	Checking delivery pressure of power steering pump (vehicles with 8-cylinder MPI petrol engine) . . . . .	392
9.3	Removing and installing power steering pump (vehicles with 8-cylinder MPI petrol engine) . . . . .	395
9.4	Installation position of suction hoses on power steering pump and fluid reservoir (vehicles with 8-cylinder MPI petrol engine) . . . . .	403
<b>10</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 8-cylinder FSI petrol engine) . . . . .</b>	<b>404</b>
10.1	Exploded view (vehicles with 8-cylinder FSI petrol engine) . . . . .	404
10.2	Checking delivery pressure of power steering pump (vehicles with 8-cylinder FSI petrol engine) . . . . .	408
10.3	Removing and installing power steering pump (vehicles with 8-cylinder FSI petrol engine) . . . . .	411
10.4	Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 8-cylinder FSI petrol engine) . . . . .	416
<b>11</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 10-cylinder petrol engine) . . . . .</b>	<b>418</b>
11.1	Exploded view (vehicles with 10-cylinder petrol engine) . . . . .	418
11.2	Checking delivery pressure of power steering pump (vehicles with 10-cylinder petrol engine) . . . . .	422
11.3	Removing and installing power steering pump (vehicles with 10-cylinder petrol engine) . . . . .	427
11.4	Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 10-cylinder petrol engine) . . . . .	432
<b>12</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 12-cylinder petrol engine) . . . . .</b>	<b>433</b>
12.1	Exploded view (vehicles with 12-cylinder petrol engine) . . . . .	433
12.2	Checking delivery pressure of power steering pump (vehicles with 12-cylinder petrol engine) . . . . .	436
12.3	Removing and installing power steering pump (vehicles with 12-cylinder petrol engine) . . . . .	440
12.4	Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 12-cylinder petrol engine) . . . . .	450



**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 Running gear“, page 1

⇒ „1.2 Steering“, page 1

#### 1.1 Running gear

Front axle	Lightweight four-link suspension, anti-roll bar, air spring struts with variable level settings and damping characteristics, guide links with hydraulically damped mountings
Rear axle	Self-tracking trapezium link axle, anti-roll bar, air spring struts with variable level settings and damping characteristics

	Front-wheel drive / four-wheel drive		
		Standard running gear 1BK	Sports running gear 2MA, 2MB
Wheelbase in „normal“ level setting	mm	2948 <sup>2)</sup> 3078 <sup>3)</sup>	2948 <sup>2)</sup> 3078 <sup>3)</sup>
Track width (front)	mm	1628 <sup>1)</sup>	1630 <sup>1)</sup>
Track width (rear)	mm	1615 <sup>1)</sup>	1617 <sup>1)</sup>
Maximum steering angle at inside wheel	Degrees	40.59	40.13

1) These specifications correspond to a rim offset (ET) of 40 mm in „normal“ level setting.

2) Vehicles with „short“ wheelbase.

3) Vehicles with „long“ wheelbase.

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

- ◆ *These specifications are applicable for all engines.*
- ◆ *Different track width figures will apply if wheels with different rim offset are installed.*

#### 1.2 Steering

Steering box	Maintenance-free rack-and-pinion steering with speed-dependent power assistance
Turning circle diameter	approx. 12.20 m

## 2 Proper disposal procedures for oil-filled and gas-filled components

⇒ „2.1 Discharging air spring struts“, page 2

⇒ „2.2 Discharging accumulator“, page 3

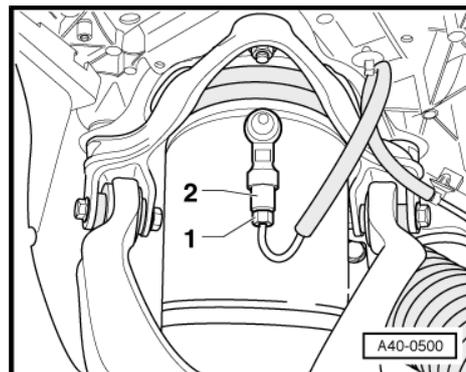
⇒ „2.3 Draining power steering box“, page 3

### 2.1 Discharging air spring struts

Remove front air spring strut ⇒ [page 16](#) .

- Slowly loosen residual pressure valve -2- on front air spring strut to dissipate air pressure.

Remove rear air spring strut ⇒ [page 136](#) .

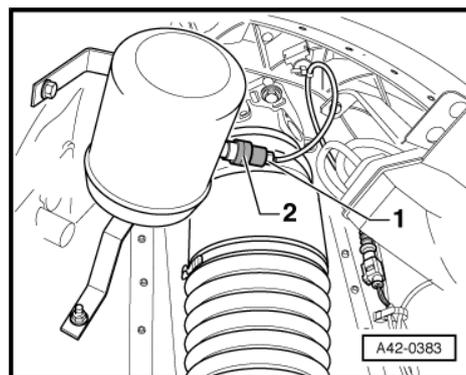


- Slowly loosen residual pressure valve -2- on rear air spring strut to dissipate air pressure.

The illustrations show a conventional shock absorber. The procedure for air spring struts is identical.

#### A - Drilling open

- Clamp air spring strut vertically in vice with piston rod facing downwards.



#### WARNING

*Safety goggles must be worn when drilling.*

- Drill a 3 mm  $\varnothing$  hole -arrow A- through outer tube of shock absorber.
- Continue drilling until inner tube is fully penetrated (approx. 25 mm deep).
- Drill a second 6 mm  $\varnothing$  hole -arrow B- through outer and inner tubes of shock absorber.
- Hold shock absorber over a drip tray and move piston rod up and down several times through entire stroke until no more fluid comes out.

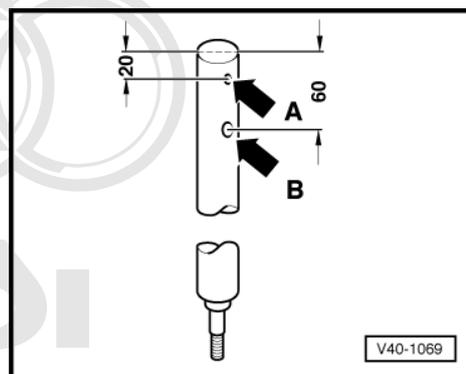
#### B - Opening with pipe cutter



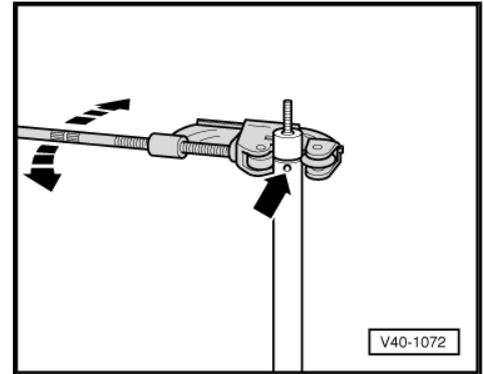
#### WARNING

*Wear safety goggles whilst sawing.*

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

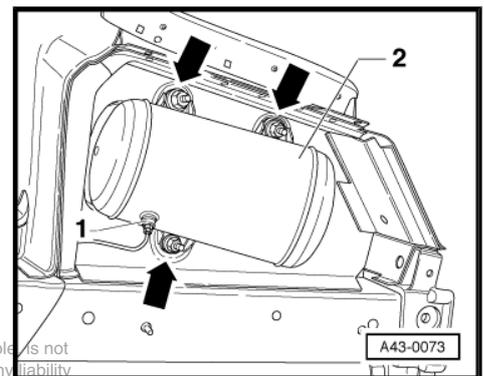


- Apply pipe cutter (e.g. Stahlwille Express 150/3) as shown and cut through outer tube.
- Pull the piston rod upwards, at the same time holding the inner tube securely with pliers and pressing it downwards, so that it remains in the outer tube when the piston rod is slowly pulled upwards.
- Pull piston rod off inner tube.
- Drain damper tube.



## 2.2 Discharging accumulator

- Bleed system => [page 201](#).
- Slowly loosen air pipe -1- at accumulator -2- to dissipate air pressure. Unscrew air pipe -1- when air pressure has been dissipated.



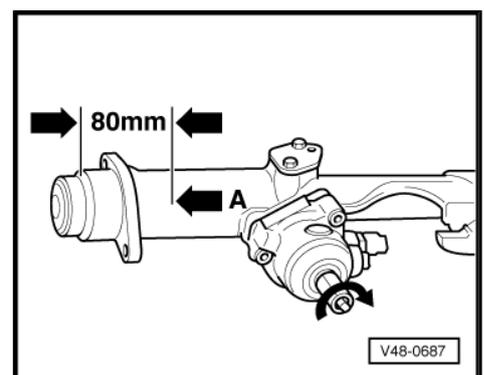
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

## 2.3 Draining power steering box



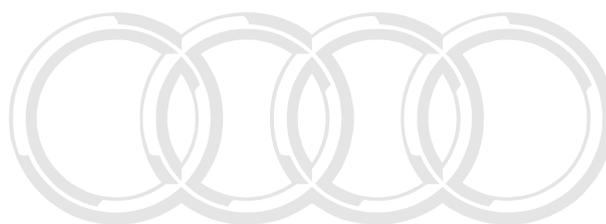
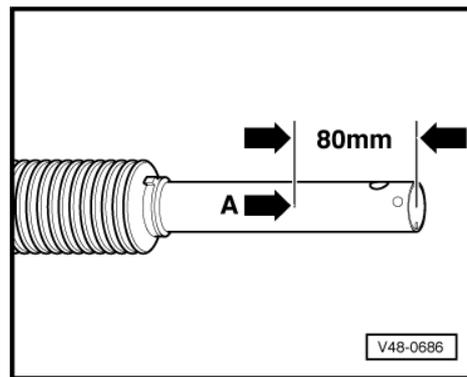
*Room temperature should be at least 20°C when draining the steering box.*

- Turn steering pinion as far as it will go in direction of -arrow-.
- Clamp steering box horizontally in vice.
- Place drip tray under steering box.





- Saw off steering box at marked location -arrow A-.
- Hold sawn-off steering box over drip tray and allow hydraulic fluid to drain off. If necessary, turn steering pinion as far as opposite stop.



**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.

## 3 Shock absorbers

⇒ „3.1 Checking shock absorbers on shock tester“, page 5

⇒ „3.2 Maximum values a in mm“, page 6

### 3.1 Checking shock absorbers on shock tester

The shock tester allows shock absorbers to be tested without removing them from the vehicle. The damping effect can be assessed on the basis of the pointer deflection or the print-out.

#### Special tools and workshop equipment required

- ◆ Boge shock tester
- ◆ or
- ◆ Sachs shock tester -V.A.G 1975-
- ◆ or
- ◆ Maha shock absorber tester -VAS 1990-

#### Requirements for test

- Temperature: +10 ... +40 °C.
- Driver in vehicle.
- Correct tyre inflation pressure.
- **Wheels of vehicle in a central and straight position on the tyre contact plates.**
- Front wheels in straight-ahead position.
- Handbrake not applied, brake pedal not depressed.

#### Test results

The condition of the shock absorbers can only be evaluated as follows:

- ◆ Satisfactory damping effect
- or
- ◆ Unsatisfactory damping effect



#### Note

- ◆ *It is not possible to obtain intermediate readings specifying the exact degree of impairment of damping effect.*
- ◆ *A forecast of the remaining service life is not permissible.*
- ◆ *Test results will be falsified if the suspension contacts the bump stops when the readings are taken.*

The following values apply only to tests conducted on the test equipment listed above. If the stated values are exceeded, damper action has deteriorated to such an extent that replacement is recommended.



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

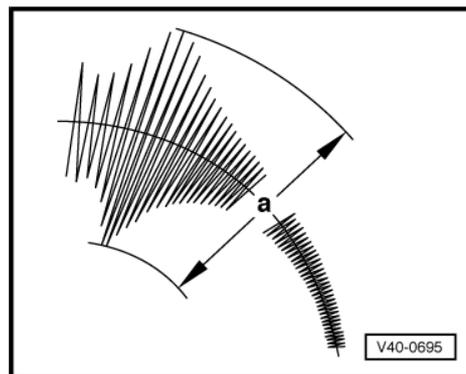
**Example:**

Maximum value = 70

- ◆ a = higher than 70: unsatisfactory damping effect
- ◆ a = lower than 70: satisfactory damping effect

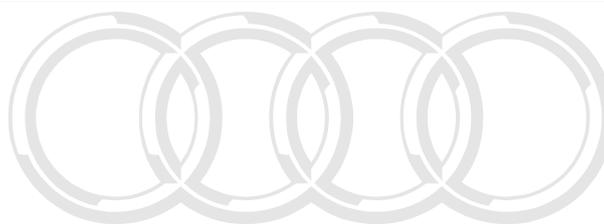
The damper combinations fitted in the vehicle are indicated by the corresponding PR No. on the vehicle data sticker.

Explanatory notes on weight codes used in production (PR Nos.)  
⇒ [page 246](#) .

**3.2 Maximum values „a“ in mm****Note**

- ◆ *If the reading is higher than the maximum value „a“ listed in the table, the damping effect is unsatisfactory ⇒ renew the shock absorber.*
- ◆ *If the reading is lower than the maximum value „a“ listed in the table, the damping effect is satisfactory ⇒ the shock absorber does not have to be renewed.*
- ◆ *The vehicle level setting has no influence on this test.*

Model/version	Front axle	Rear axle	Remarks
A8 standard running gear PR No.: 1BK	38	42	Unladen Tank full
A8 sports running gear PR No.: 2MA	38	37	Unladen Tank full

**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.

## 4 Positioning vehicle on lifting platform and setting down on wheels

⇒ „4.1 Raising and lowering vehicle when air spring system has been opened; raising and lowering vehicle when air spring system has not been opened“, page 7

### 4.1 Raising and lowering vehicle when air spring system has been opened; raising and lowering vehicle when air spring system has not been opened

#### Raising vehicle when air spring system has not been opened

- Before raising vehicle with lifting platform, set vehicle to „Lift“ (high level) and activate „Jacking mode“ ⇒ [page 188](#) .

This ensures that the support arms of the lifting platform can be swivelled under the vehicle and that no unregulated air spring system control action is activated.

- Position support arms of lifting platform beneath jacking points provided at longitudinal members and raise vehicle.

#### Lowering vehicle when air spring system has not been opened

- Lower lifting platform and set down vehicle on its wheels.
- Swivel back support arms of lifting platform.
- Deactivate „Jacking mode“ and set desired drive mode ⇒ [page 188](#) .



#### Note

„Jacking mode“ is also deactivated automatically at road speeds in excess of 10 km/h.

#### Lowering vehicle when air spring system has been opened

- Lower lifting platform and set down vehicle on its wheels.
- Switch on ignition and deactivate „Jacking mode“ ⇒ [page 188](#) .

Air spring struts are „pumped up“ by accumulator.

If vehicle is not raised sufficiently to swivel back support arms of lifting platform (not enough pressure in accumulator), start engine and allow it to idle. This switches on compressor of air supply unit.

- Air spring system can also be charged using „Guided fault-finding“ routine ⇒ [page 201](#) .



## 40 – Front suspension

### 1 General notes on front axle

⇒ „1.1 Contact corrosion“, page 8

⇒ „1.2 General notes“, page 8

⇒ „1.3 Repairing threads in longitudinal member“, page 9

⇒ „1.4 Raising wheel bearing housing to reference position before tightening bolts“, page 10

⇒ „1.5 Exploded view of front axle“, page 12

#### 1.1 Contact corrosion

Contact corrosion can occur if unsuitable fasteners (bolts, nuts, washers ...) are used.

For this reason, all the fastening components have received a special surface treatment (Dacromet). These components can be recognised by their greenish colour.

In addition, rubber parts, plastic parts and adhesives are made of non-conductive material.

Always install new parts if you are not sure whether used parts can be refitted.

##### Note:

**Always use genuine parts. These have been tested and are compatible with aluminium.**

**Accessories must be approved by AUDI AG.**

**Damage resulting from contact corrosion is not covered under the warranty.**

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

#### 1.2 General notes

- Load-bearing components and suspension parts must not be welded or straightened.
- Do not attempt to move the vehicle without the drive shafts fitted; this would result in wheel bearing damage. If the vehicle does have to be moved, always note the following points:
  - Fit an outer joint in place of the drive shaft.
  - Tighten the outer joint to 200 Nm.
  - Bonded rubber bushes can only be turned to a limited extent. For this reason, do not tighten bolted connections on components with bonded rubber bushes until the wheel bearing housing has been lifted (suspension in reference position)  
⇒ [page 10](#) .
- When installing vehicle level sender, refer to  
⇒ [Item 9 \(page 32\)](#) .

If the wheel alignment has to be checked and adjusted at a later stage, all bolts and nuts which need to be slackened to make adjustments should initially only be tightened to the specified torque figure. After wheel alignment has been checked and adjusted, bolts and nuts must then be fully tightened by turning them through the specified angle.



**WARNING**

*All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.*

### 1.3 Repairing threads in longitudinal member

#### Special tools and workshop equipment required

◆ Thread repair kit - VAS 6027 -

Exchangeable threaded plates and thread inserts made of wire for tapped holes as per DIN 8140 (Helicoil) are provided for attaching subframes to body.

The exploded views of the components indicate which threads can be repaired.

#### Repairing damaged threads

Replace damaged Helicoil threaded inserts with next largest size. Note the following points:

- ◆ Each thread can only be repaired once.



**WARNING**

*Always wear safety goggles when drilling.*

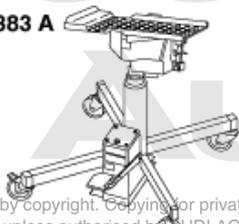
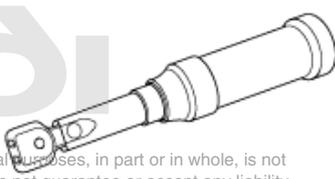
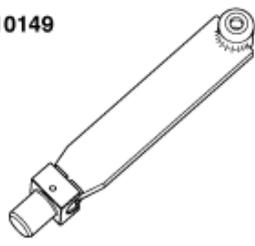
- ◆ Helicoil thread inserts must have a zinc-nickel coating.
- ◆ The thread insert must be of the same length as the thread in the body.
- ◆ Have all thread repairs checked by foreman or supervisor.
- ◆ Metal particles remaining in the vehicle body must be embedded in wax.
- ◆ Make good any damage to underseal



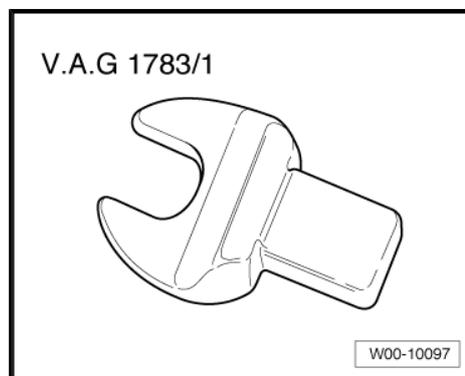
### 1.4 Raising wheel bearing housing to reference position before tightening bolts

#### Special tools and workshop equipment required

- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Torque wrench -V.A.G 1783-
- ◆ Support -T10149-

<p><b>V.A.G 1383 A</b></p> 	<p><b>V.A.G 1783</b></p> 
<p><b>T10149</b></p> 	<p>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</p>
	<p style="text-align: right;">G40-0064</p>

- ◆ Open end spanner insert, 10 mm -V.A.G 1783/1-



Bonded rubber bushes can only be turned to a limited extent. Therefore, before tightening the bolts, suspension components with bonded rubber bushes must be brought into a position corresponding to the normal position of the vehicle while driving (reference position).

Otherwise, the bush would be subject to torsion loading and its service life shortened.

This position can be simulated on the lifting platform by raising the wheel bearing housing with engine and gearbox jack -V.A.G 1383 A- and support -T10149- .

**Requirement:**

- Engine must be installed
- Position vehicle on lifting platform ⇒ [page 7](#) .

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.

- **Clean area around air connection.**
- **Unscrew connection piece -1- on residual pressure valve -2-.** This will allow air to escape.

 **Note**

*The residual pressure valve -2- MUST NOT be loosened or removed.*

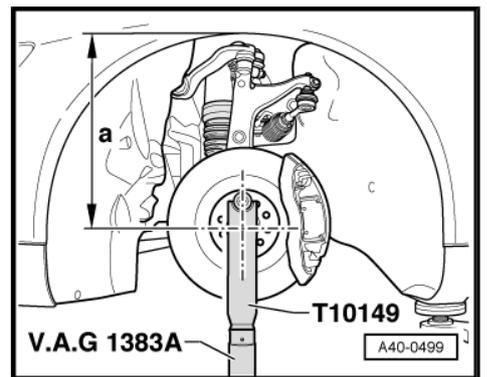
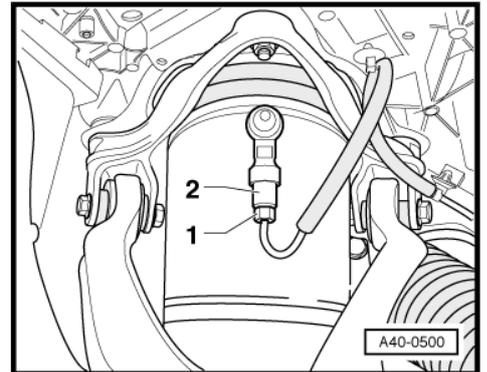
- Seal both connections. Take care to prevent dirt entering the connections.
- Turn wheel hub until one of the wheel bolt holes is at the top.
- Use wheel bolt to attach support -T10149- .
- Insert support -T10149- in engine/gearbox jack -V.A.G 1383 A- and press wheel bearing housing upwards until reference position, dimension -a-, is attained.

**Reference position**

- ◆ Dimension -a- for vehicles with standard running gear: 416 mm
- ◆ Dimension -a- for vehicles with sports running gear: 396 mm

 **WARNING**

- ◆ *Do not lift or lower the vehicle while the engine/gearbox jack is under the vehicle.*
- ◆ *Do not leave the engine/gearbox jack under the vehicle for longer than necessary.*

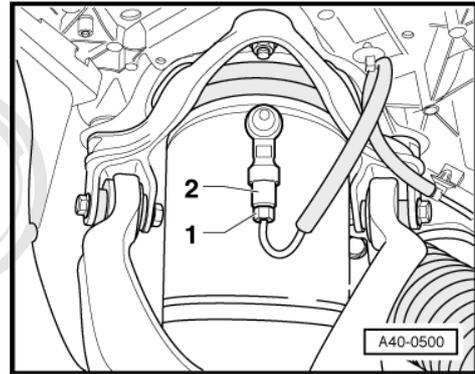


**Operations following setting of reference position**

- Tighten relevant bolts/nuts.
- Lower wheel bearing housing.
- Pull out engine and gearbox jack from underneath vehicle.
- Detach support -T10149- .



- Screw on connection piece -1- at residual pressure valve -2- => [Item 23 \(page 15\)](#) .
- Fit and secure wheel => [Wheels and tyres; Rep. gr. 44](#) .
- Charge air spring system => [page 201](#) .



## 1.5 Exploded view of front axle

I - Mounting bracket, upper links, air spring strut  
=> [page 13](#)

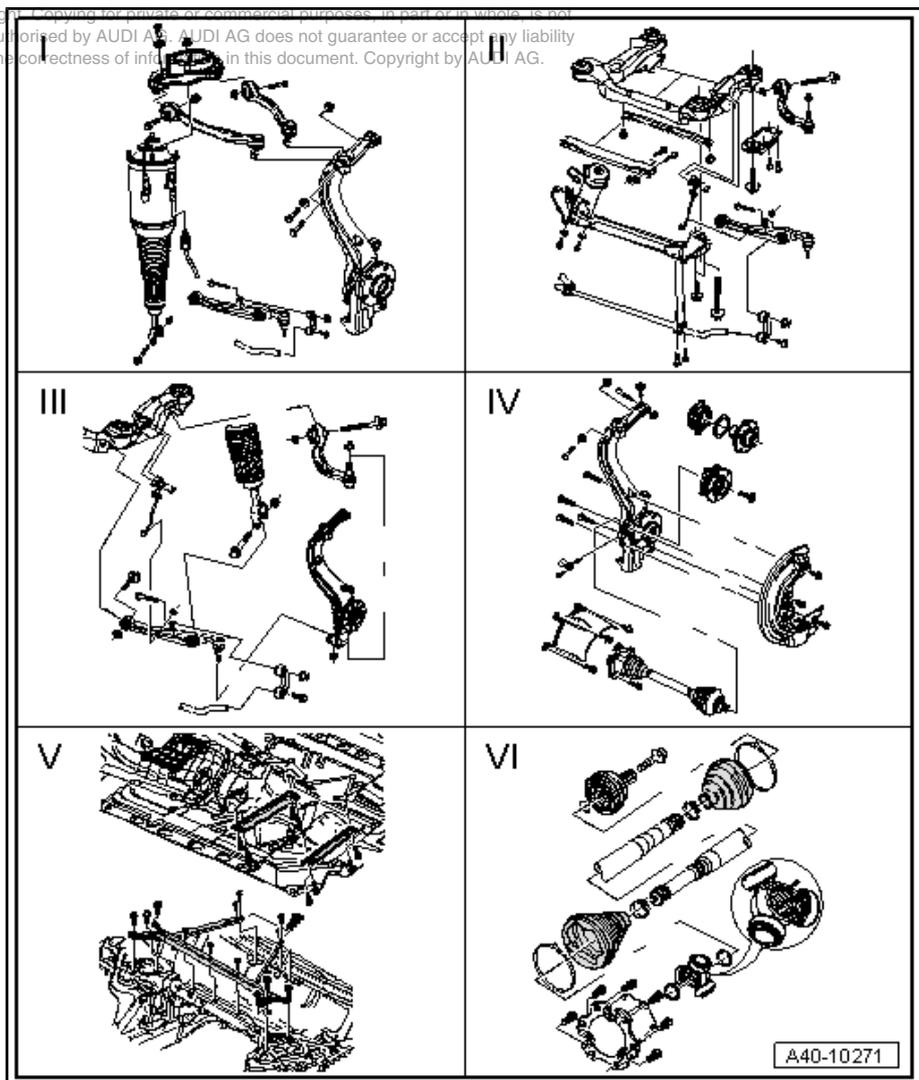
II - Subframe, engine cross member, coupling rod, anti-roll bar  
=> [page 32](#)

III - Track control link, guide link, vehicle level sender  
=> [page 45](#)

IV - Wheel bearing housing, wheel bearing unit  
=> [page 62](#)

V - Front and rear cross members, body brace  
=> [page 70](#)

VI - Drive shaft  
=> [page 74](#)







- Removing and installing mounting bracket ⇒ [page 25](#)
- Renewing bush ⇒ [page 30](#)

#### 9 - Self-locking nut

- Always renew
- Please note the different types of nut. For correct version refer to ⇒ Electronic parts catalogue „ETKA“

#### 10 - Washer

- Not installed on special security vehicles. For correct version refer to ⇒ Electronic parts catalogue „ETKA“

#### 11 - Bolt, 50 Nm

- Not for special security vehicles; please note the different types of bolt. For correct version refer to ⇒ Electronic parts catalogue „ETKA“

#### 12 - Bolt, 50 Nm + turn 180° further

- Always renew
- For special security vehicles; please note the different types of bolt. For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- It is permissible to turn bolt through specified angle in several stages
- Coat complete surface of bolt and bore in wheel bearing housing with grease before installing. For correct version refer to ⇒ Electronic parts catalogue „ETKA“

#### 13 - Wheel bearing housing

- ⇒ [Item 8 \(page 45\)](#)
- Wheel bearing: exploded view ⇒ [page 62](#)
- Removing and installing wheel bearing housing ⇒ [page 64](#)

#### 14 - Coupling rod

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

- Right and left sides identical
- Installation position ⇒ [page 34](#)
- Removing and installing ⇒ [page 42](#)

#### 15 - Self-locking nut

- 40 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 10](#)

#### 16 - Bolt

- 40 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 10](#)

#### 17 - Anti-roll bar

- With integral rubber bush and clamp
- Removing and installing ⇒ [page 43](#)
- Note different running gear versions ⇒ [page 246](#)

#### 18 - Track control link

- Removing and installing ⇒ [page 47](#)
- Renewing bush ⇒ [page 49](#)

#### 19 - Bolt

- 90 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 10](#)

#### 20 - Self-locking nut

- Always renew

#### 21 - Bolt

- Always renew

## 22 - Air pipe

- Colours: Front left - red; front right - green
- Servicing air pipe ⇒ [page 208](#)
- Renewing connection piece if leakage occurs ⇒ [page 213](#)

## 23 - Connection piece, 3 Nm

- Important: Always keep to specified tightening torque.
- Only to be unscrewed with vehicle raised and no load on air spring strut (otherwise danger of injury due to vehicle dropping)
- In the event of leaks: service air pipe ⇒ [page 208](#) or renew connection piece ⇒ [page 213](#)
- Clean pipe connection before loosening
- Air will escape when this component is unscrewed
- Protect pipe connection from dirt

## 24 - Air spring strut

- With grommet on suspension turret
- Boot must be free of indentations; eliminating indentations ⇒ [page 25](#)
- Note different running gear versions ⇒ [page 246](#)
- Different versions are available according to model year; for correct version, refer to ⇒ Electronic parts catalogue „ETKA“
- Removing and installing ⇒ [page 16](#)
- Servicing ⇒ [page 22](#)

## 25 - Residual pressure valve

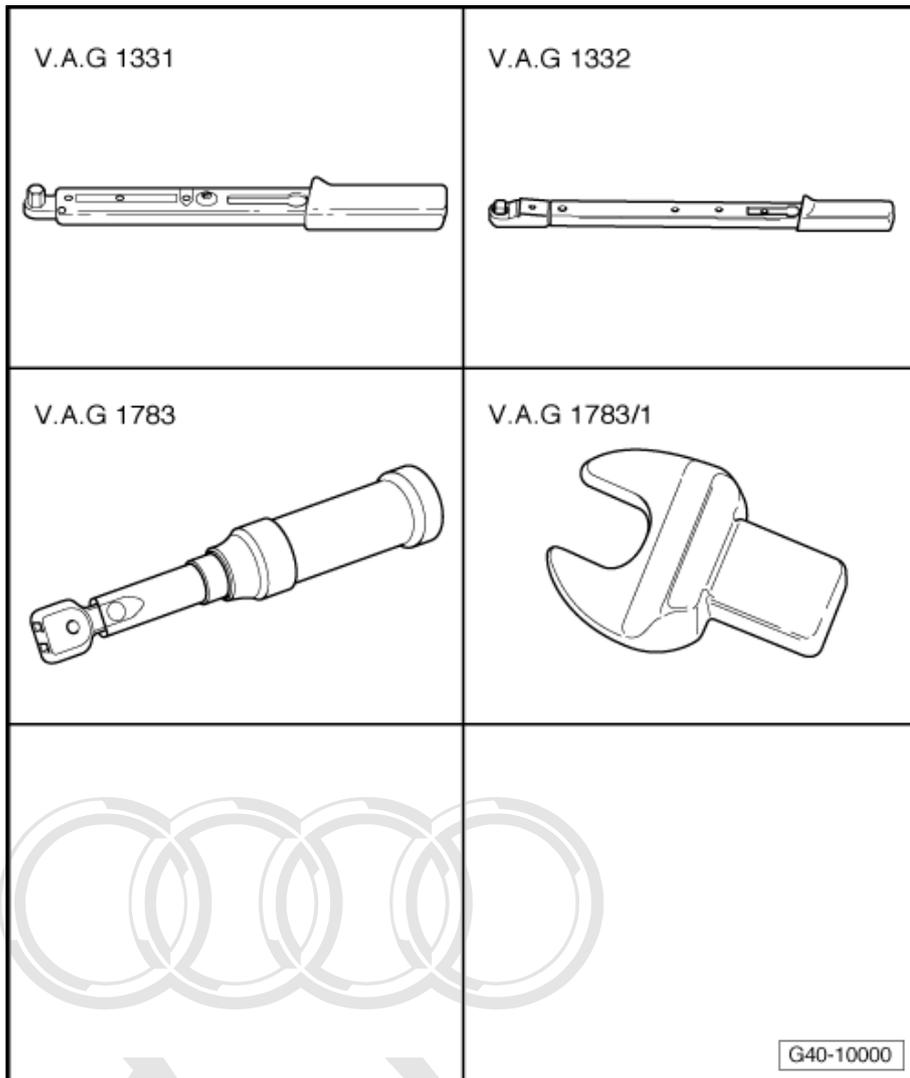
- MUST NOT be loosened



## 2.2 Removing and installing air spring strut

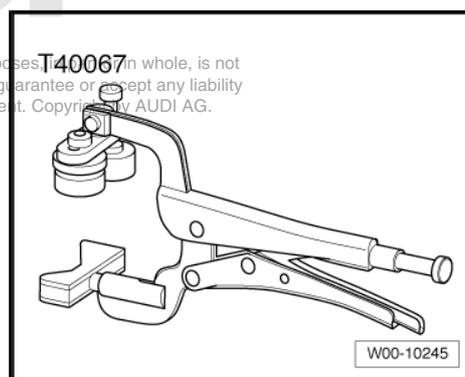
### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Torque wrench -V.A.G 1783-
- ◆ Open end spanner insert (10 mm) -V.A.G 1783/1-



- ◆ Pliers -T40067-

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



- ◆ Wooden block (hardwood) 30 x 50 x 1000 mm

## Removing

The air spring strut is removed together with the mounting bracket and upper links.

Take care to prevent indentations forming in boot on air spring strut during assembly work.

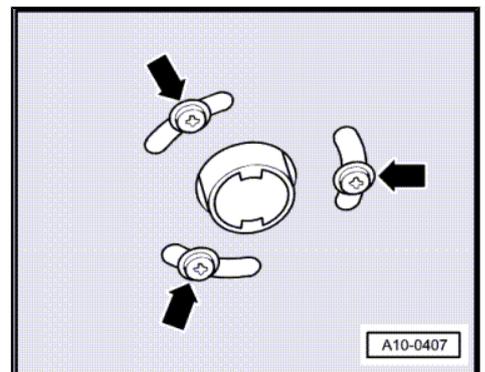
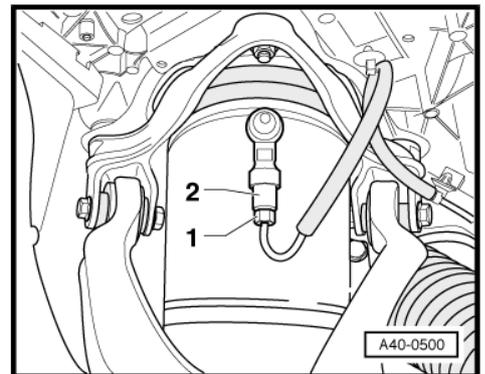
Servicing air spring strut ⇒ [page 22](#)

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Secure brake disc with one wheel bolt.
- Clean area around air connection.
- Unscrew connection piece -1- on residual pressure valve -2-. This will allow air to escape.

### Note

*The residual pressure valve -2- MUST NOT be loosened or removed.*

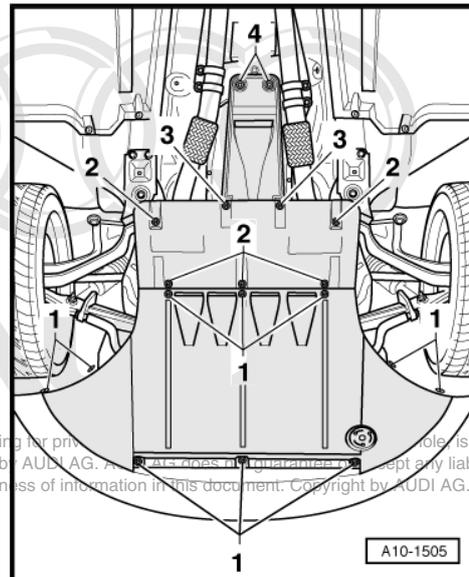
- Seal both connections. Take care to prevent dirt entering the connections.
- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.



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



- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.
- Unbolt drive shaft from flange shaft on gearbox.

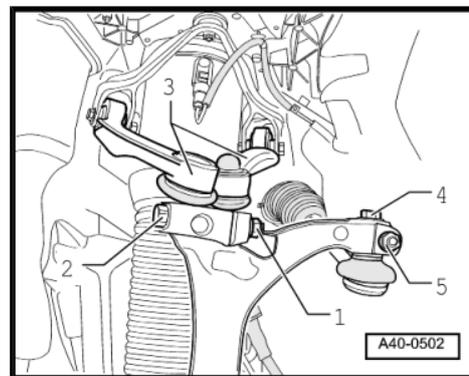


Protected by copyright. Copying for private use without the express written permission of Audi AG is not permitted unless authorised by Audi AG. Audi AG does not accept any liability with respect to the correctness of information in this document. Copyright by Audi AG.

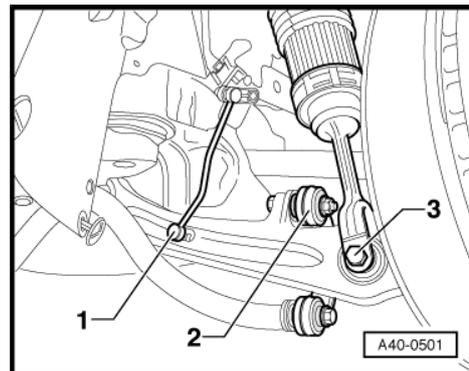
- Unscrew nut -1-, take out bolt -2- and lift out both links -3-.

**Note**

*Do not attempt to enlarge slots in wheel bearing housing using a chisel or similar.*

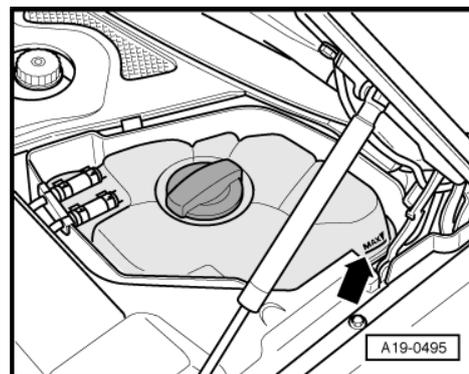


- Unscrew coupling rod of vehicle level sender -1- from track control link.
- Remove coupling rod -2- on both sides ⇒ [page 42](#) .
- Unbolt air spring strut from track control link -3- and pull outwards.
- Unscrew bolts on anti-roll bar mounting 5 turns (unscrew bolts evenly).
- Remove plenum chamber cover ⇒ Rep. gr. 92 .



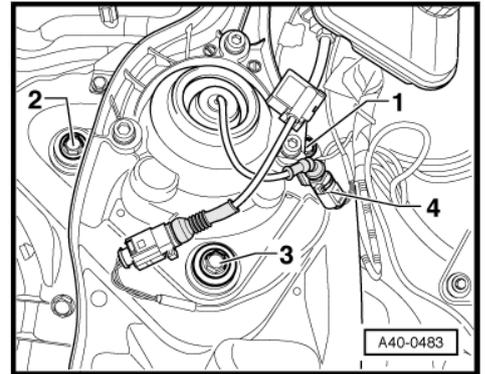
### Applies to vehicles with coolant expansion tank on left side of plenum chamber

- Remove rear section of front wheel housing liner ⇒ Rep. gr. 66 .
- Unplug electrical connector at coolant shortage indicator sender -G32- .
- Detach coolant expansion tank with collector container and pivot slightly to one side (the cooling circuit does not have to be opened for this step).



**All vehicles (continued):**

- Unclip and unplug connector -4-.
- Unscrew bolts -1- to -3-.
- Working from wheel housing side, press mounting bracket out of bushes on body in vicinity of bolted joints.
- Turn steering box to left/right as far as it will go (for removal of left/right air spring strut).



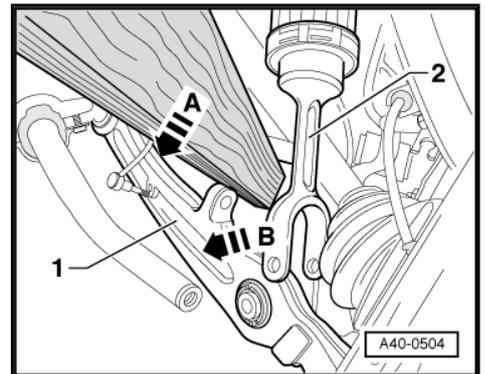
- Use wooden block to press down track control link -1- -arrow A- so that air spring strut -2- can be taken out towards the front -arrow B-. This requires the assistance of a second mechanic.

 **Note**

*When removing air spring strut, take care not to damage protective boots on steering, drive shaft and air spring strut.*

- Detach mounting bracket at air spring strut ⇒ [page 25](#) .

Refer to ⇒ [page 20](#) if air spring strut is to be renewed.



**Installing**

Installation is carried out in the reverse sequence. Note the following points:

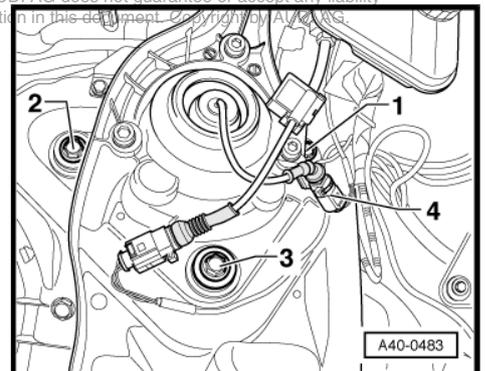
**Take care to prevent indentations forming in boot on air spring strut during assembly work.**

- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts ⇒ [page 10](#) .
- Attach mounting bracket to air spring strut ⇒ [page 25](#) .
- Start by attaching air spring strut to body.

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

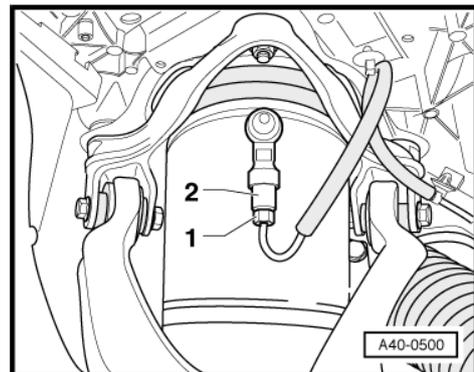
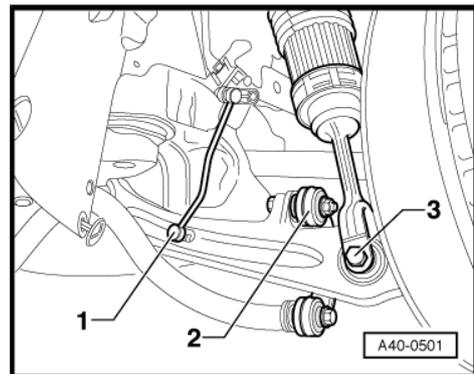
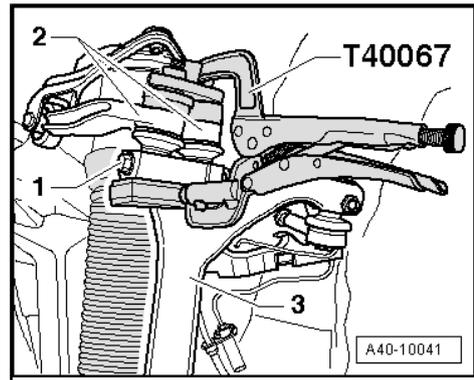
**Tightening sequence:**

- Screw in and hand-tighten bolts -1-, -2- and -3-.
- Guides of mounting bracket must be positioned in bushes on body.
- Tighten bolt -2-, then bolts -1- and -3- ⇒ [Item 3 \(page 13\)](#) .





- Fit joint pins of both upper links -2- in wheel bearing housing -3- and press down as far as possible by clamping with pliers -T40067- .
- Tighten bolt -1-; tightening torque according to version ⇒ [Item 11 \(page 14\)](#) or ⇒ [Item 12 \(page 14\)](#) . For correct version refer to ⇒ "Electronic parts catalogue„ETKA“ .
- Screw coupling rod of vehicle level sender -1- onto track control link ⇒ [Item 9 \(page 32\)](#) .
- Attach coupling rod -2- on right and left ⇒ [Item 15 \(page 14\)](#) and ⇒ [Item 16 \(page 14\)](#) .
- Screw bolt -3- for air spring strut onto track control link ⇒ [Item 19 \(page 14\)](#) .
- Tighten bolts securing anti-roll bar mount ⇒ [Item 20 \(page 33\)](#) .
- Screw on connection piece -1- at residual pressure valve -2- ⇒ [Item 23 \(page 15\)](#) .
- Fit and secure wheel ⇒ Wheels and tyres; Rep. gr. 44 .
- Charge air spring system ⇒ [page 201](#) .
- Re-adapt reference position ⇒ [page 202](#) .
- Fit plenum chamber cover ⇒ Rep. gr. 92 .



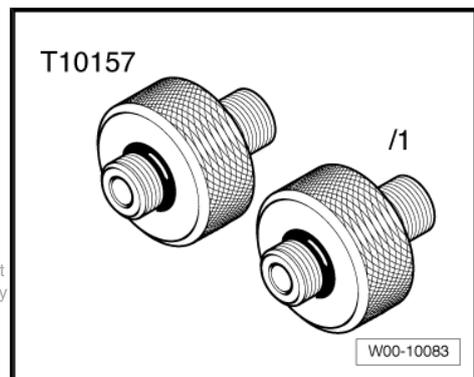
## 2.3 Charging air spring strut

### Special tools and workshop equipment required

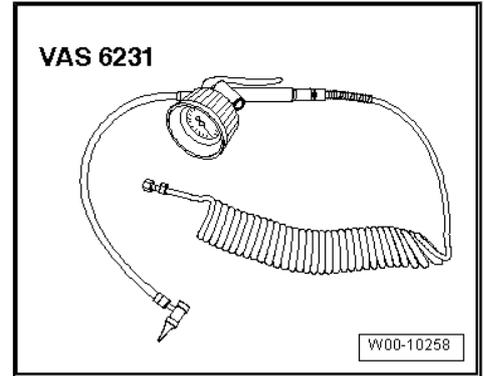
- ◆ Adapter -T10157-

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.



◆ Air suspension strut charger unit -VAS 6231-

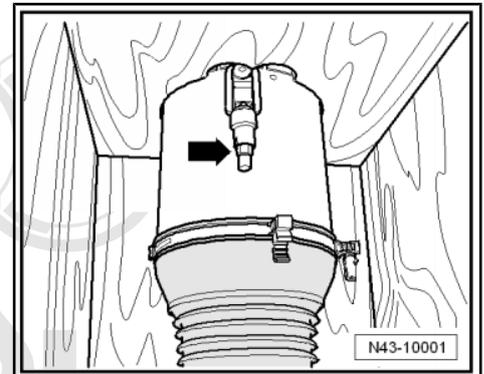


◆ Gas cylinder: Argon or Corgon

**i** Note

*Replacement air spring struts are supplied with a minimum gas filling. After a period of storage, the struts can lose some of this initial pressure (in the same way as a tyre). The minimum pressure must therefore be checked, and if necessary »recharged« to the required level before the air spring struts are taken out of their packaging. If the strut is taken out of its packaging without checking and recharging the pressure, this can cause indentations or kinks to form in the U-bellows before it reaches its normal shape. This will damage the bellows and can cause premature failure.*

- Remove cover from packaging.
- Remove union screw -arrow- from residual pressure valve.
- Close valve on gas cylinder.
- Make sure that you are familiar with the relevant safety instructions for the use of pressurised containers and industrial gases.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 air suspension strut charger unit -VAS 6231- and adapter -T10157- as illustrated.

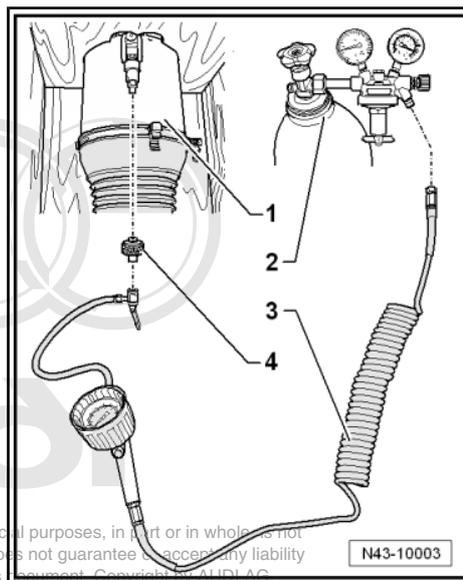
- 1 - Air spring strut in its packaging
- 2 - Gas cylinder for argon or Corgon with fittings
- 3 - Air suspension strut charger unit -VAS 6231-
- 4 - Adapter -T10157-



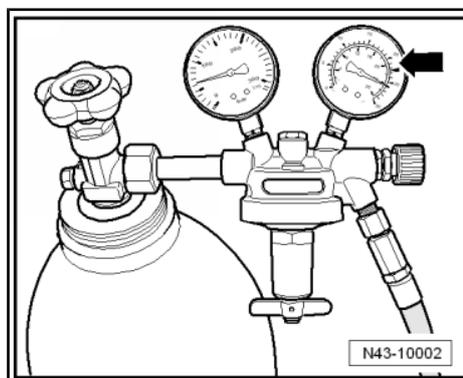
**Note**

*To prevent „contaminated air“ from entering the air spring system, the suspension strut (air suspension) must only be »recharged« with the types of gas listed above.*

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



- Set restrictor valve to 2.0 ltr./min -arrow-.
- Now charge the air spring strut with gas, using several separate bursts of pressure.



The display will only show the correct pressure when the »back pressure« in the residual pressure valve has been overcome. The »back pressure« is approx. 3.5 bar. The air spring strut is adequately filled when the indicated pressure reaches 3.5...4.5 bar.

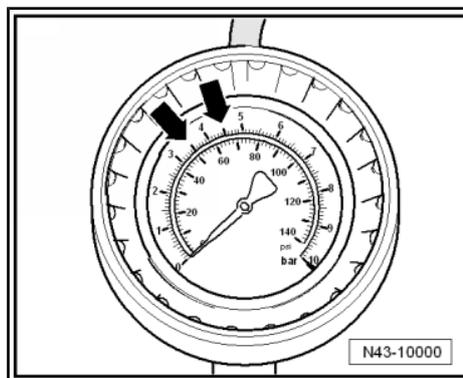
- Make sure pressure does not exceed 4.5 bar while charging.
- Disconnect air suspension strut charger unit -VAS 6231- from adapter -T10157- ; gas pressure in excess of 3.5 bar will then be released.

The minimum pressure has now been restored. You can take the air spring strut out of the packaging.

- After installation, set the suspension to the raised level setting and then back to the normal level. Repeat this procedure once more.

Most of the gas will be replaced with the filtered air from the air supply unit once the suspension has twice moved up and down to these settings.

- Install air spring strut => [page 19](#) .

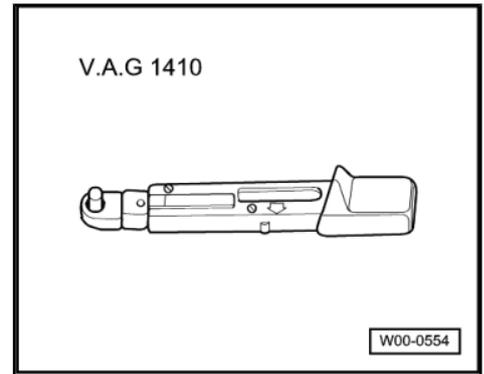


## 2.4 Servicing air spring strut

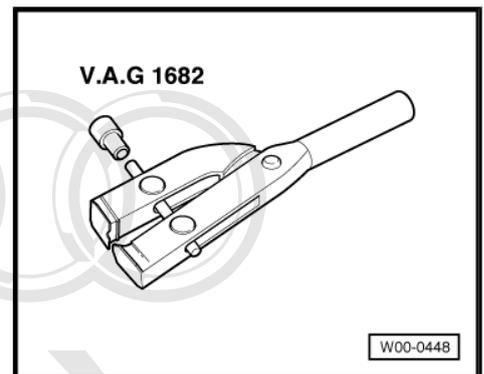
Removing and installing air spring strut => [page 16](#)

**Special tools and workshop equipment required**

- ◆ Torque wrench -V.A.G 1410-



- ◆ Clamp tensioner -V.A.G 1682-



**i** Note

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the written consent of Audi AG. Copyright by Audi AG.

*Servicing of the air spring strut is currently limited to replacement of the dust boot and cleaning the piston.*

**1 - Air spring strut**

- Complete air spring strut assembly must be renewed if front left - N336- or front right - N337- shock absorber damping adjustment valve is defective

**2 - Screw connection**

- Do not unfasten

**3 - Hose clip**

- Always renew
- Tightening => [page 24](#)

**4 - Residual pressure valve**

- DO NOT unfasten, as this would damage air spring strut

**5 - Boot**

- Must not be kinked, eliminate indentations => [page 25](#)
- Installation position:
- Slide top over air spring strut as far as end of grooves
- Bottom must be engaged in retaining ring => [Item 8 \(page 24\)](#)

**6 - Rubber boot**

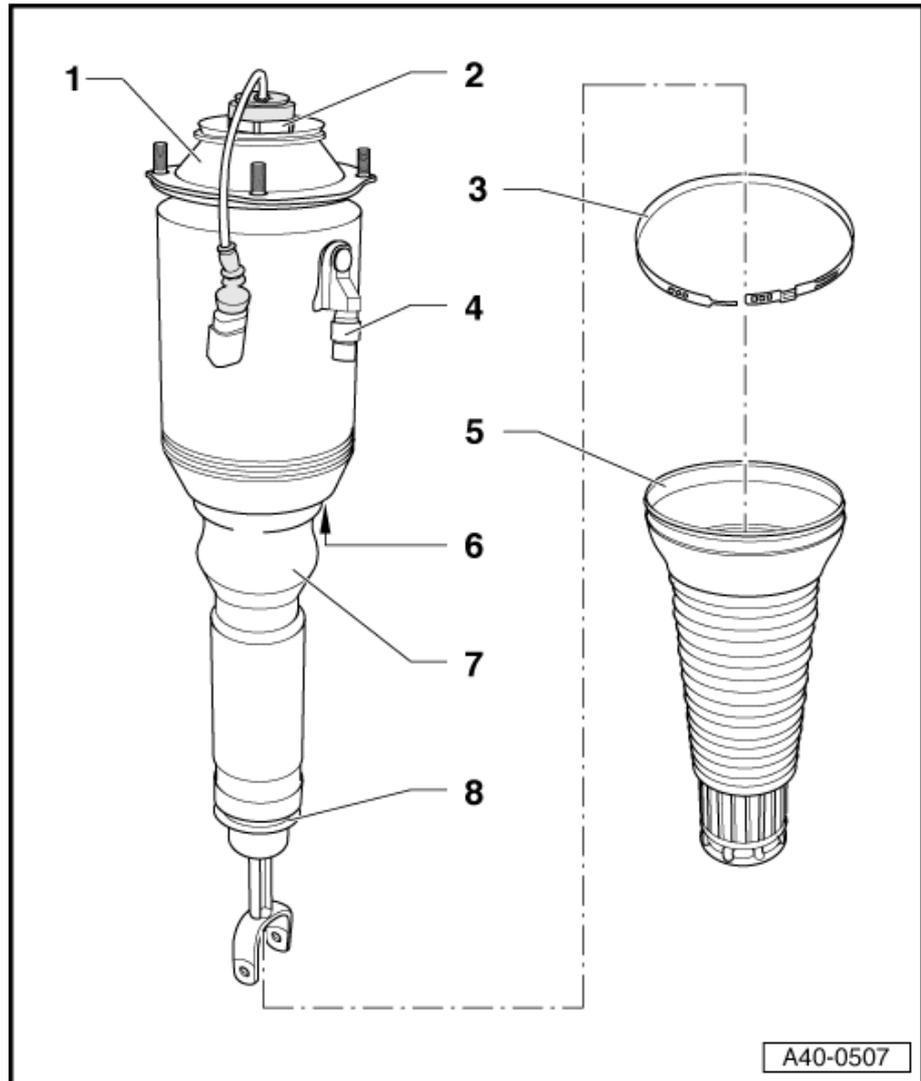
- Visual inspection => [page 25](#)

**7 - Piston**

- Clean if dirty

**8 - Retaining ring**

- For securing bottom of dust boot

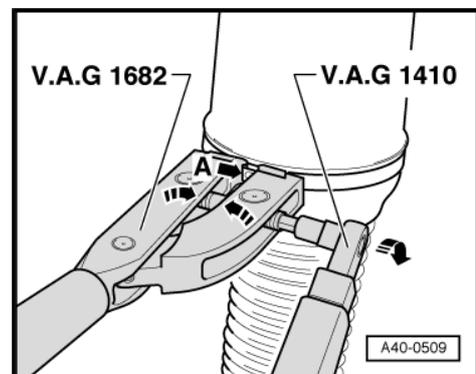
**Tightening hose clip on air spring strut**

- Apply clamp tensioner -V.A.G 1682- as shown. Make sure tips of tool are applied centrally -arrow A- to clip.
- Tighten hose clip by turning spindle with torque wrench (take care to keep clamp tensioner straight).

## ◆ Tightening torque: 8 Nm

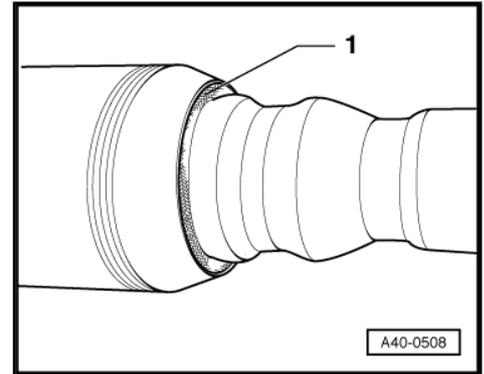
◆ Use torque wrench with 4...20 Nm adjustment range (e.g. - Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted. Copyright by Audi AG. Audi AG does not accept any liability for the correctness of information in this document. Copyright by AUDI AG. V.A.G 1410-)◆ Make sure thread of spindle on tool -A- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.

## ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.



### Visual inspection

- Check rubber boot -1- for damage. Surface must be regular and even.
- Replace air spring strut if damaged.



## 2.5 Eliminating indentations in boot

### Special tools and workshop equipment required

- ◆ Commercially available compressed-air gun
- ◆ Cloth



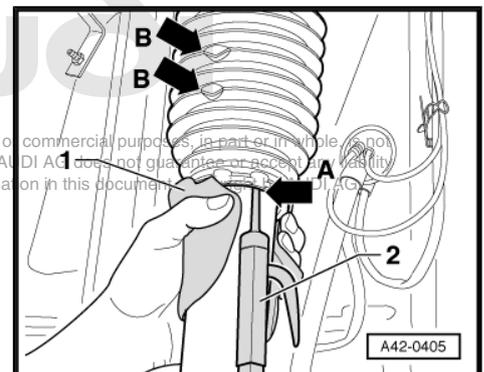
*Illustration shows rear air spring strut. Procedure at front and rear is identical.*

- Wrap cloth -1- around lower joint and use compressed-air gun (thin nozzle) -2- to blow in compressed air through vent slot -arrow A-.



*Only increase pressure to the extent required to slightly inflate the boot. This will smooth out indentations -arrows B-.*

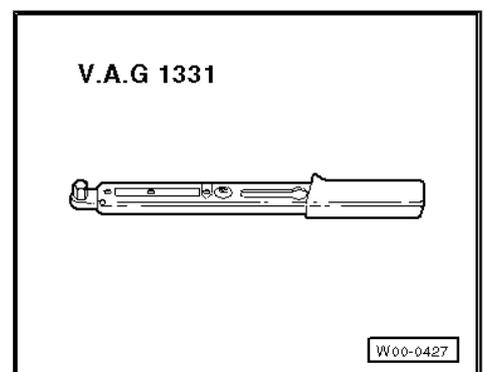
- If indentations are not eliminated, smooth them out by hand. This may involve sliding dust boot upwards out of lower fastener.



## 2.6 Removing and installing mounting bracket

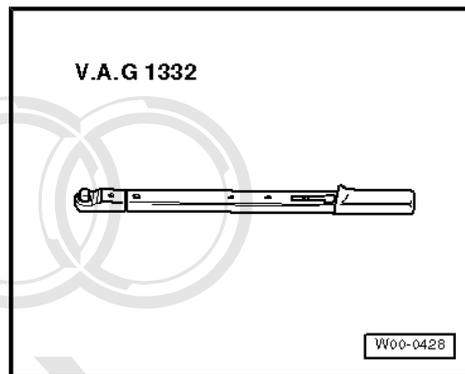
### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-





- ◆ Torque wrench -V.A.G 1332-



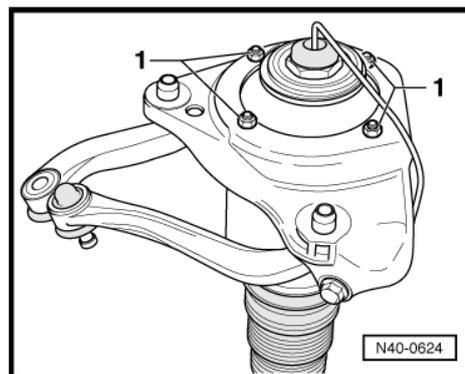
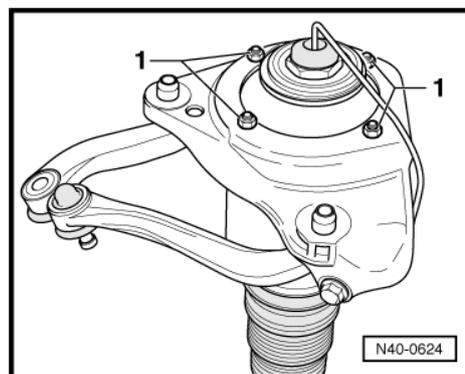
### Removing

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove air spring strut ⇒ [page 16](#) .
- Clamp air spring strut in vice with soft jaws.
- Unbolt front and rear upper links ⇒ [page 29](#) .
- Detach mounting bracket from air spring strut -1-.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

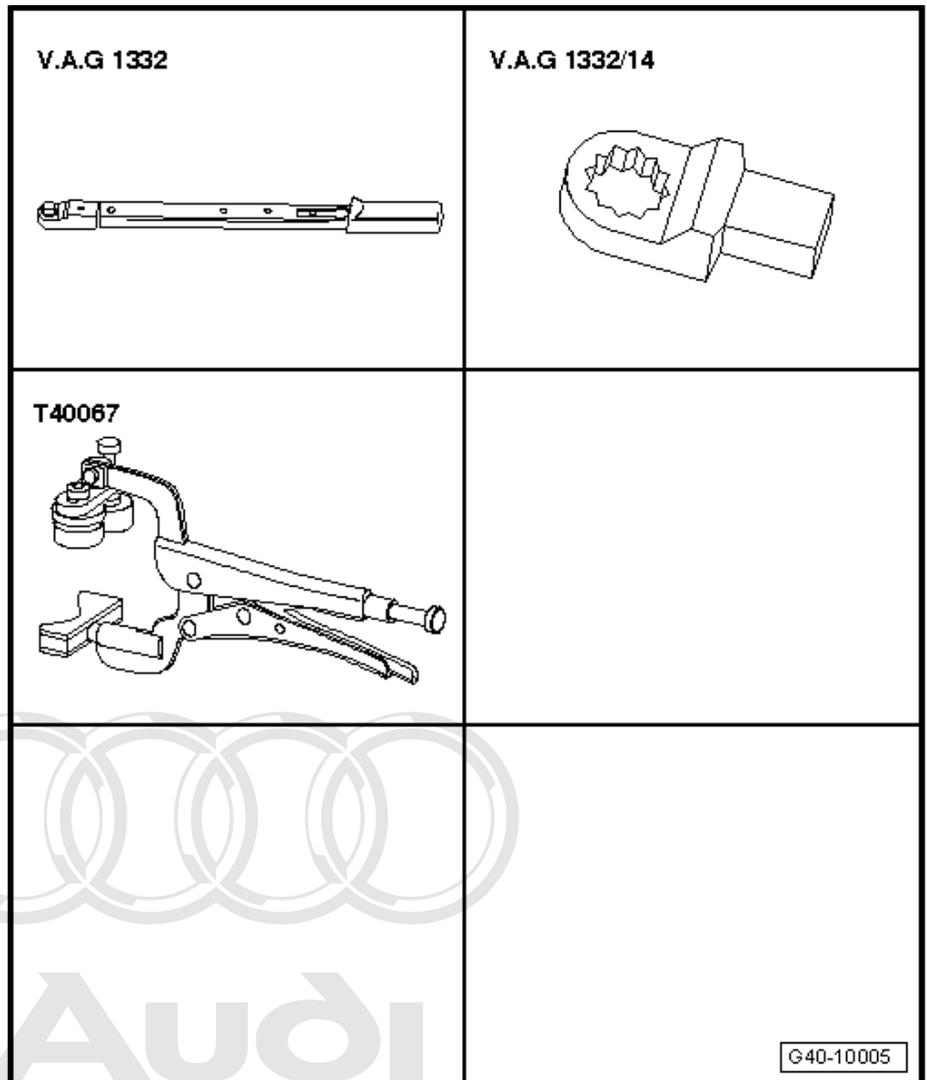
- Secure mounting bracket to air spring strut -1- ⇒ [Item 4 \(page 13\)](#) .
- Installation position of links ⇒ [page 30](#)
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .



## 2.7 Removing and installing front upper link

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Ring spanner insert, 16 mm -V.A.G 1332/14-
- ◆ Pliers -T40067-



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

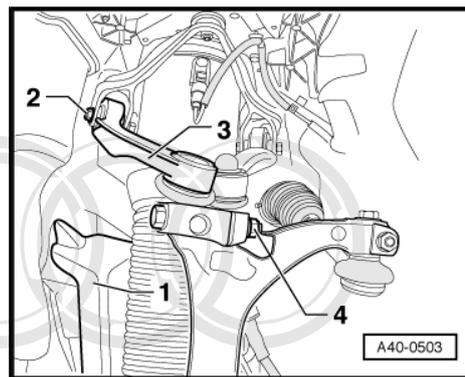
#### Vehicles with 12-cylinder petrol engine and 8-cylinder diesel engine

- Procedure for removing front upper link (left-side) on vehicles with 12-cylinder petrol engine and 8-cylinder diesel engine  
 => [page 29](#)



**All vehicles (continued):**

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Secure brake disc with one wheel bolt.
- Remove front section -1- of front wheel housing liner ⇒ Rep. gr. 66 .
- Remove nut -4-, take out bolt and pull out upper link -3- upwards.



Do not attempt to enlarge slot in wheel bearing housing using a chisel or similar.

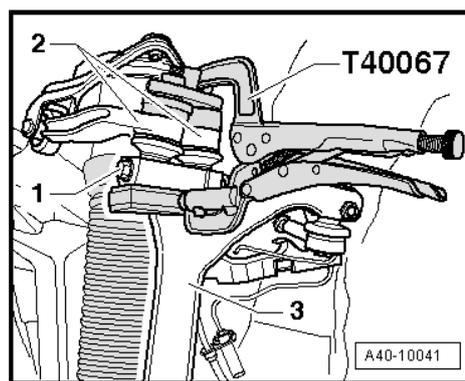
- Remove bolt -2-.

**Installing**

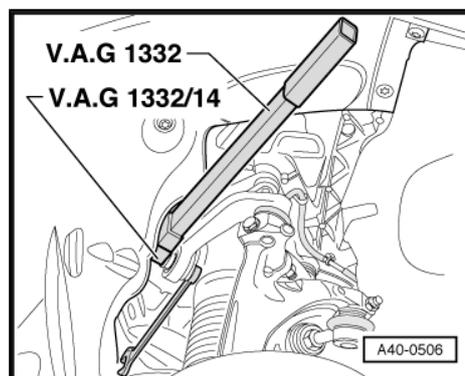
Installation is carried out in the reverse sequence. Note the following points:

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.

- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts ⇒ [page 10](#) .
- Fit joint pin of front upper link -2- in wheel bearing housing -3- and clamp down as far as possible using pliers -T40067- .
- Tighten bolt -1-; tightening torque according to version ⇒ [Item 11 \(page 14\)](#) or ⇒ [Item 12 \(page 14\)](#) . For correct version refer to ⇒ Electronic parts catalogue „ETKA“ .



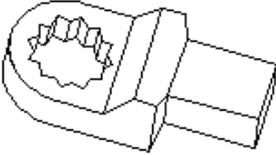
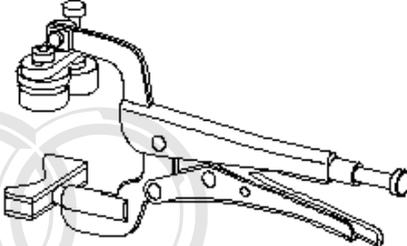
- Tighten bolt at mounting bracket ⇒ [Item 1 \(page 13\)](#) .
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .



## 2.8 Removing and installing front and rear upper links

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Ring spanner insert, 16 mm -V.A.G 1332/14-
- ◆ Pliers -T40067-
- ◆ Straightedge

<p>V.A.G 1332</p> 	<p>V.A.G 1332/14</p> 
<p>T40067</p> 	
	<p>G40-10005</p>

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

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove air spring strut ⇒ [page 16](#) .
- Clamp air spring strut in vice with soft jaws.
- Unbolt both links.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

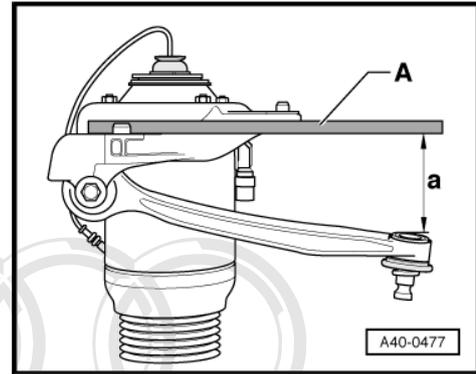
- Attach both links to mounting bracket.
- Adjust both links before tightening.

### Adjusting upper links

- Position straightedge -A- so it is in flat contact.

Dimension -a- =  $87 \pm 2$  mm

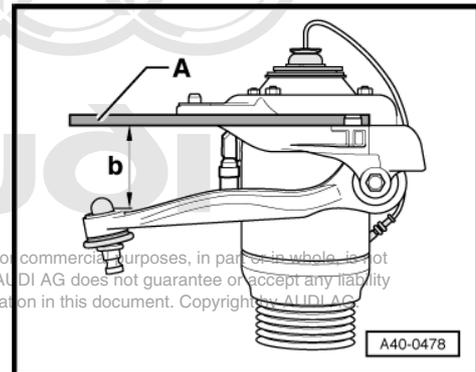
- Set front upper link to dimension -a- and tighten to specified torque setting only ⇒ [Item 1 \(page 13\)](#) .
- After tightening bolt to torque setting (without turning further), check adjustment and repeat adjustment if necessary.



- Position straightedge -A- so it is in flat contact.

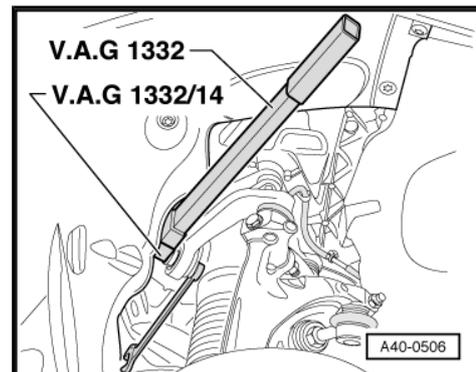
Dimension -b- =  $73 \pm 2$  mm

- Set rear upper link to dimension -a- and tighten to specified torque setting only ⇒ [Item 1 \(page 13\)](#) .
- After tightening bolt to torque setting (without turning further), check adjustment and repeat adjustment if necessary.
- Tighten bolts securing upper links.



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

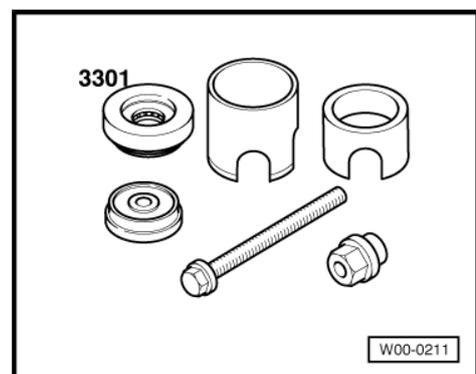
- Tighten bolts at mounting bracket ⇒ [Item 1 \(page 13\)](#) .
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .



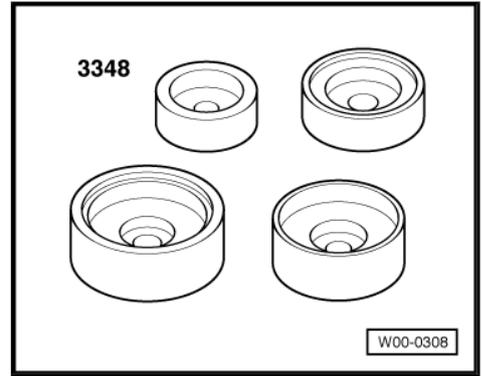
## 2.9 Renewing bushes for front and rear upper links

### Special tools and workshop equipment required

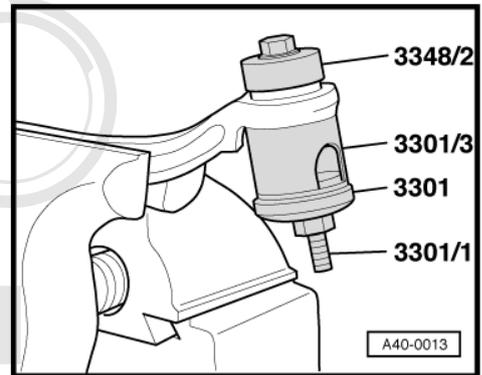
- ◆ Assembly tool -3301-



◆ Assembly tool -3348-



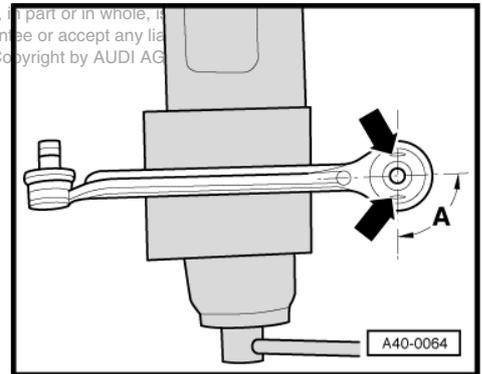
Always use soft jaws when clamping suspension links in a vice.  
 Pulling out bush



Installation position of bush

A = ~ 90° ± 5°

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



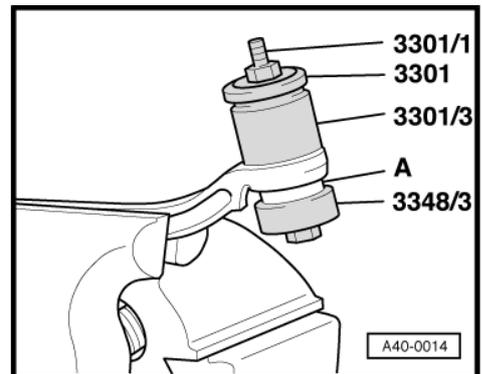
Installing bush

A = Bush



Note

*Do not use lubricant.*



### 3 Subframe, engine cross member, coupling rod, anti-roll bar

⇒ „3.1 Exploded view of subframe, engine cross member, coupling rod, anti-roll bar“, page 32

⇒ „3.2 Removing and installing subframe“, page 35

⇒ „3.3 Removing and installing coupling rod“, page 42

⇒ „3.4 Removing and installing anti-roll bar“, page 43

#### 3.1 Exploded view of subframe, engine cross member, coupling rod, anti-roll bar

##### 1 - Subframe

- Removing and installing  
⇒ page 35

##### 2 - Self-locking nut

- Always renew

##### 3 - Guide link

- Removing and installing  
⇒ page 54
- Leaking hydro-bushes must be renewed  
⇒ page 59

##### 4 - Bolt

- 70 Nm and turn 180° further
- Always renew
- Before tightening, raise wheel bearing housing  
⇒ page 10

##### 5 - Self-locking nut, 120 Nm

- Always renew
- If guide link is not to be renewed, remove locking fluid from thread of ball joint before installing

##### 6 - Subframe support

##### 7 - Bolt, 50 Nm

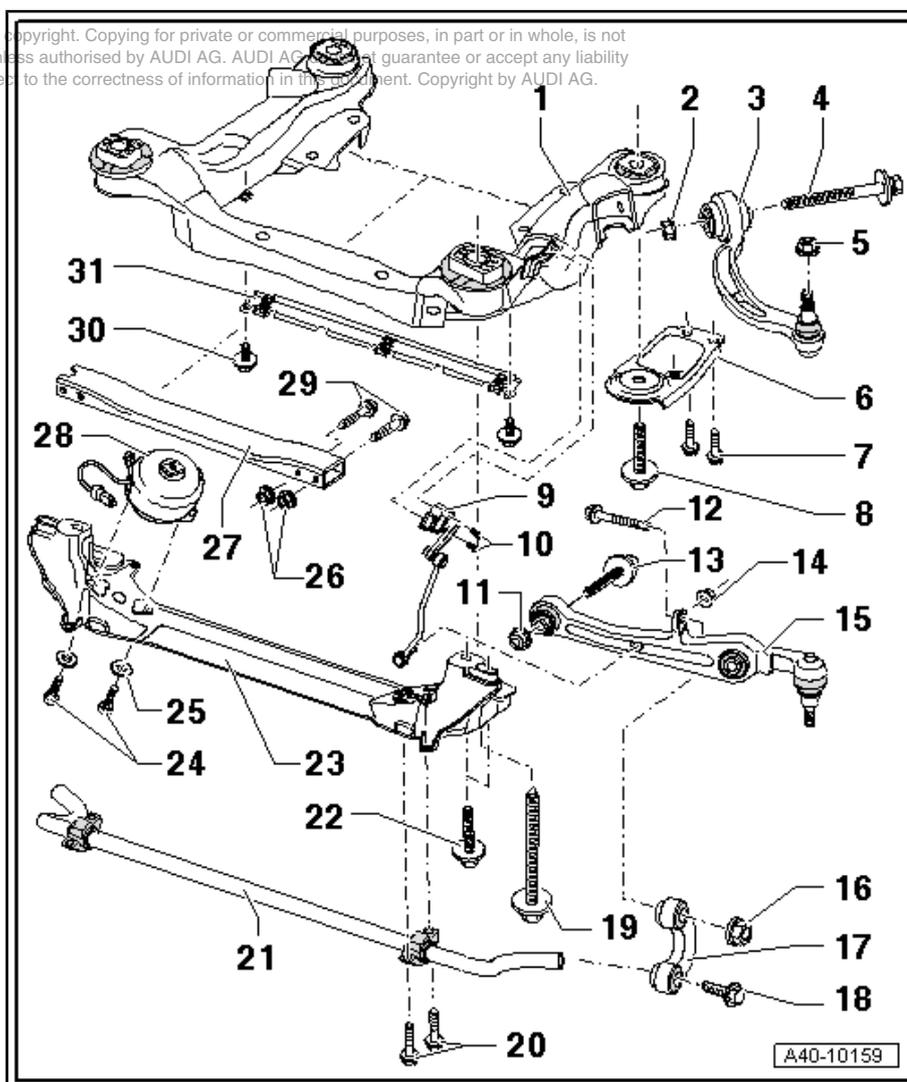
##### 8 - Bolt

- Tighten together with bolt  
⇒ Item 19 (page 33) in diagonal sequence

- 150 Nm and turn 90° further
- Always renew
- Threaded plate in body can be renewed

##### 9 - Front left -G78- and front right -G289- vehicle level sender

- Note different versions with „long“ and „short“ levers.



**Always install senders of the same version. Mixed installation of different versions on the same vehicle is not permissible.**

- Remove/install and renew only as a complete assembly ⇒ [page 195](#)
- Sender lever must face forwards

#### 10 - Bolt, 5 Nm

#### 11 - Self-locking nut

- 70 Nm and turn 180° further
- Always renew

#### 12 - Bolt

- Always renew

#### 13 - Bolt

- Always renew

#### 14 - Self-locking nut, 8 Nm

- Always renew

#### 15 - Track control link

- Removing and installing ⇒ [page 47](#)
- Renewing bush ⇒ [page 49](#)

#### 16 - Self-locking nut

- 40 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 10](#)

#### 17 - Coupling rod

- Right and left sides identical
- Installation position ⇒ [page 34](#)
- Removing and installing ⇒ [page 42](#)

#### 18 - Bolt

- 40 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 10](#)

#### 19 - Bolt

- Tighten together with bolt ⇒ [Item 8 \(page 32\)](#) in diagonal sequence
- 150 Nm and turn 90° further
- Always renew
- Thread in body can be repaired with Helicoil threaded wire insert (DIN 8140). The thread insert must be of the same length as the thread in the body ⇒ [page 9](#).

#### 20 - Bolt, 38 Nm

- Unscrew and screw in the 2 bolts evenly

#### 21 - Anti-roll bar

- With integral rubber bush and clamp
- Removing and installing ⇒ [page 43](#)
- Note different running gear versions ⇒ [page 246](#)

#### 22 - Bolt

- For attachment to body
- Tightening torque ⇒ Rep. gr. 10

#### 23 - Engine cross member

- Removing and installing ⇒ Rep. gr. 10



**24 - Bolt**

- For attachment of engine mounting
- Tightening torque ⇒ Rep. gr. 10

**25 - Washer**

**26 - Self-locking nut, 56 Nm**

- Always renew

**27 - Cross piece**

- Observe installation position: Outer semi-circular recess must be at top right

**28 - Engine mounting**

**29 - Bolt**

**30 - Bolt, 10 Nm**

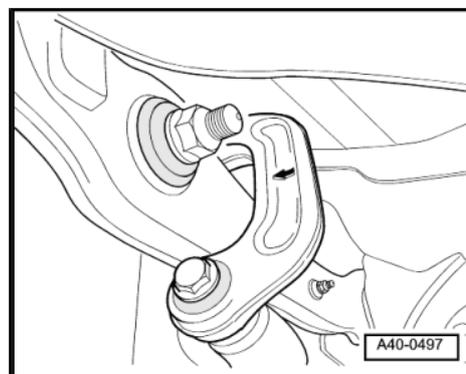
**31 - Bracket for noise insulation**

**Installation position of coupling rod**

Left and right coupling rods are identical.

Arrow on coupling rod must point forwards and be visible from outside.

This ensures that larger diameter of sleeve makes contact with anti-roll bar/track control link.

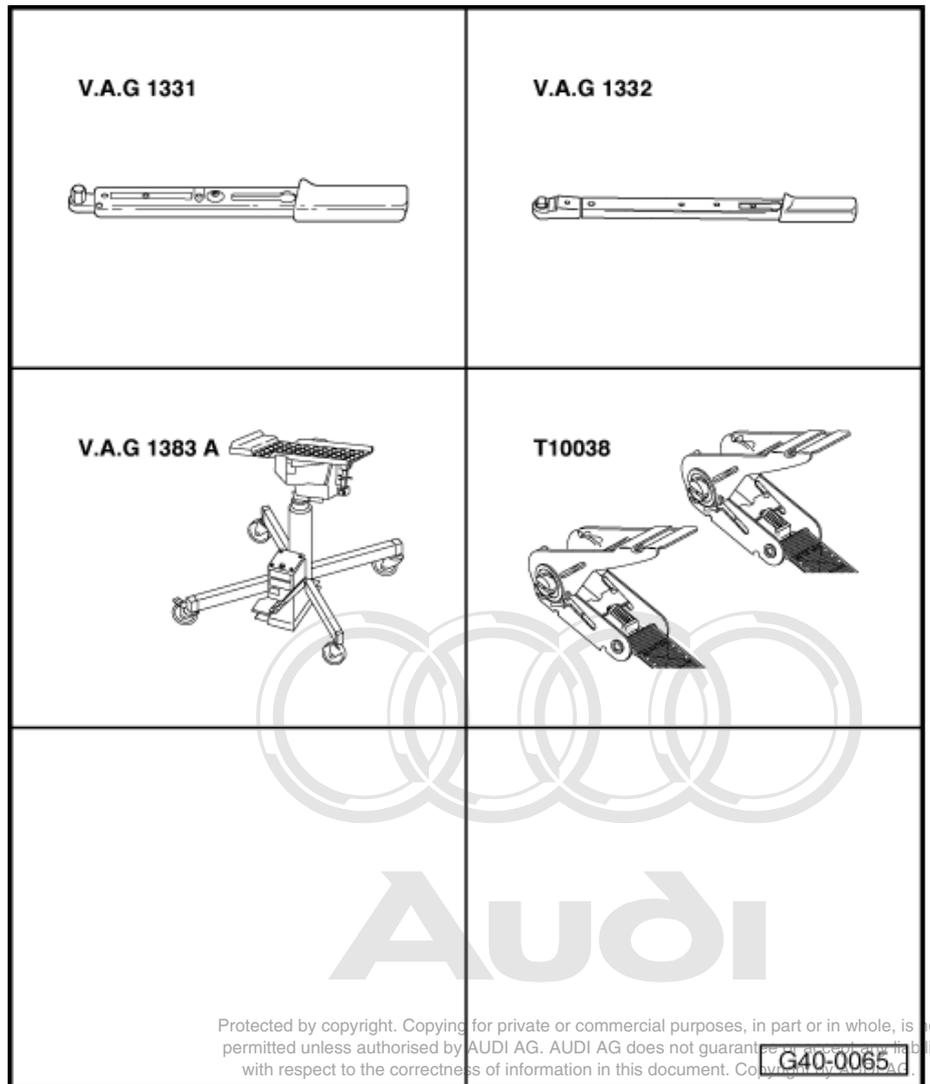


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### 3.2 Removing and installing subframe

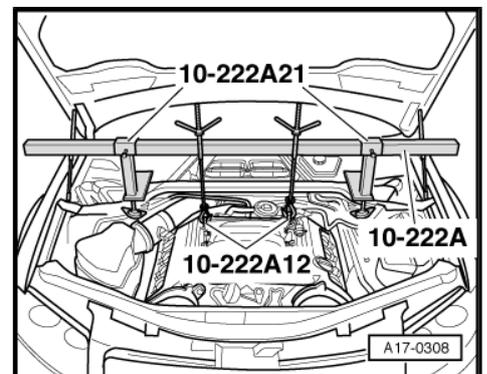
#### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2-
- ◆ Tensioning strap -T10038- , 2x
- ◆ 8 mm drift (commercially available), 2x



#### Removing

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Set up engine support bracket and take up weight of engine ⇒ Rep. gr. 13 .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheels.
- Secure brake discs with one wheel bolt each.
- Clean area around air connection.





- Unscrew connection pieces -1- on both sides at residual pressure valves -2-. This will allow air to escape.

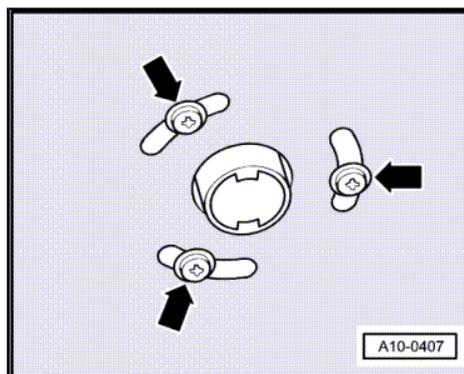
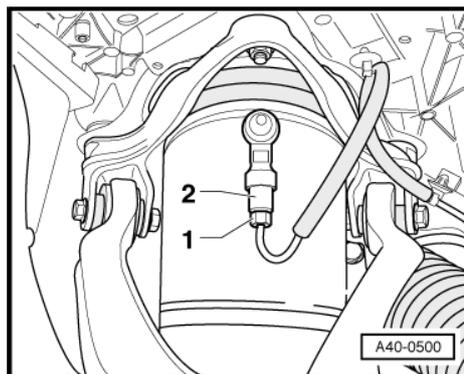


**Note**

*The residual pressure valve -2- MUST NOT be loosened or removed.*

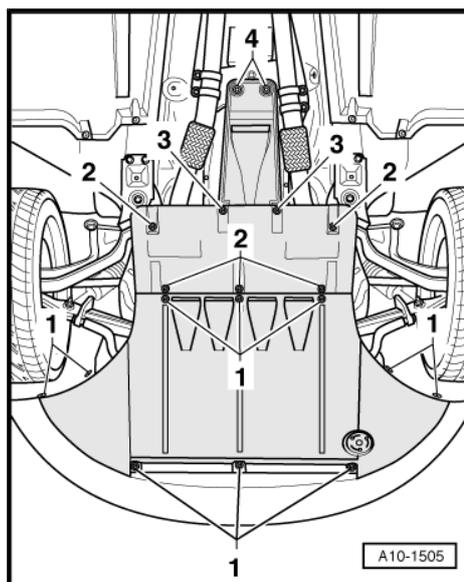
- Seal both connections. Take care to prevent dirt entering the connections.

- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.

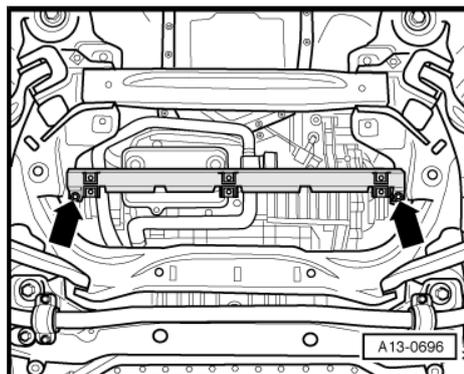


- Release quick-release fasteners -1- to -4- and remove noise insulation panels.

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



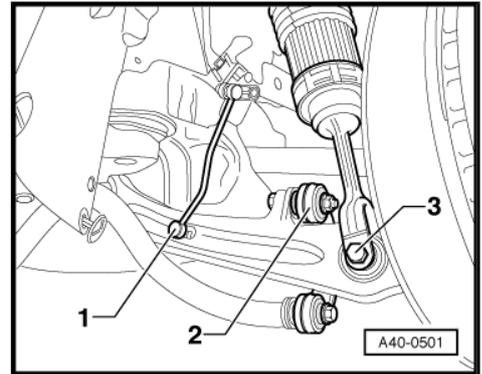
- Remove cross piece for noise insulation at subframe -arrows-.



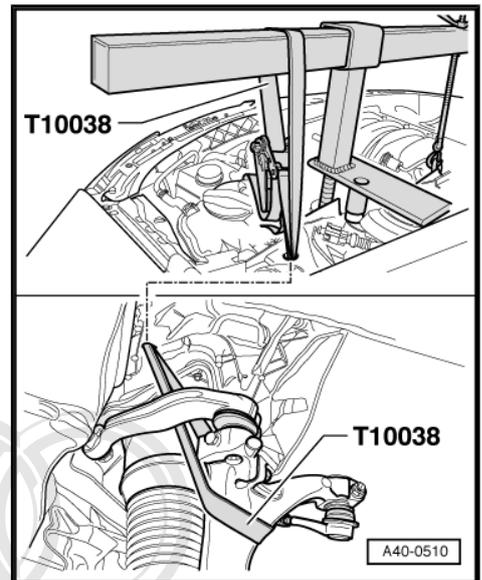
- Unbolt coupling rod of vehicle level sender -1- from track control link on both sides.
- Unplug connector from vehicle level sender on both sides.
- Remove coupling rod -2- on both sides => [page 42](#) .
- Unscrew nuts from both guide links and track control links at subframe.

 **Note**

*Wheel bearing housing must be supported to avoid damaging joints of upper links.*

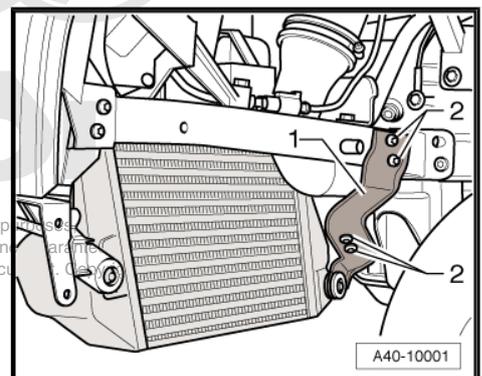


- Lift both wheel bearing housings approx. 50 mm clear and tie in place. To do so, guide tensioning strap -T10038- through hole in body.



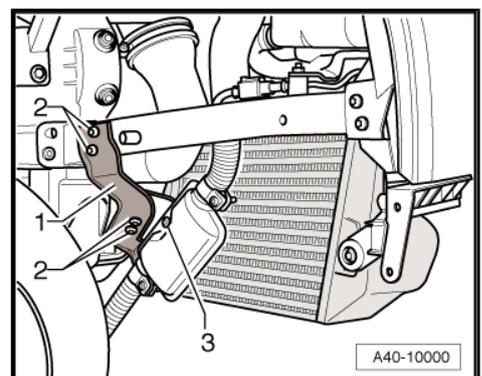
**Vehicles with 8-cyl. diesel engine**

- Remove bolts -2- and detach bracket -1- for charge air cooler.



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

- Remove bolts -2- and -3- detach bracket -1- for charge air cooler.

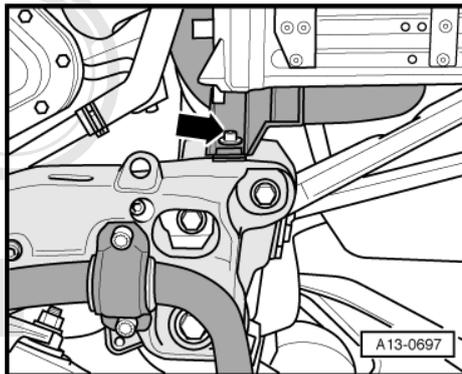




- Remove bolt -arrow- for air pipe on left and right.

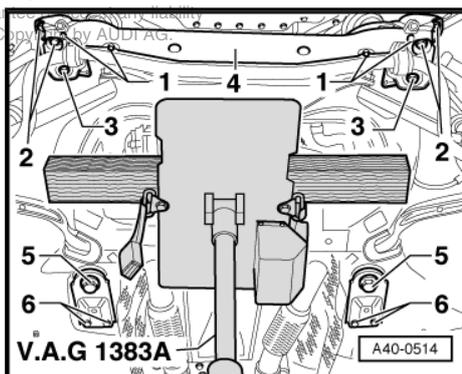
**All vehicles (continued):**

- Use felt-tip pen to mark position of subframe on body.

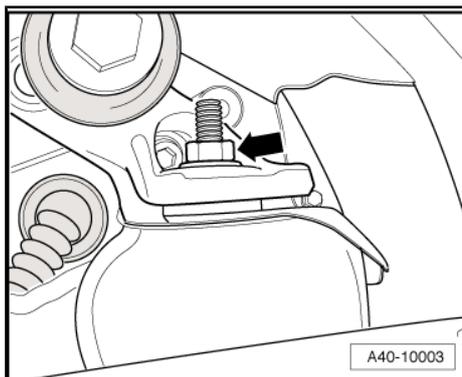


- Position engine and gearbox jack -V.A.G 1383 A- with suitable wooden block under subframe and press subframe upwards lightly.
- Remove bolts -1- for engine mounting.
- Remove bolts -2- and -3- and detach engine cross member -4- with anti-roll bar.
- Remove bolts -5- and -6-.

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



- Slacken nut -arrow- for front gearbox mounting.

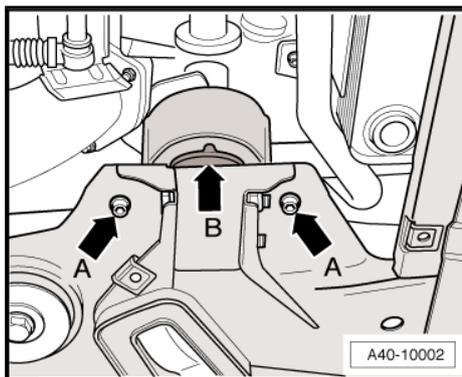


- Remove bolts for front gearbox mounting -arrows A- on left and right.



**Note**

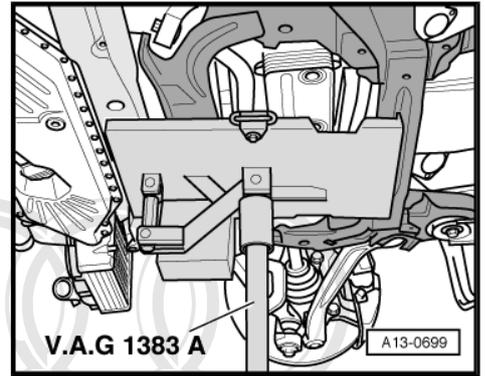
Spacers -arrow B- are fitted between subframe and front gearbox mounting to allow stress-free alignment. The gap between the subframe and front gearbox mounting must be re-set accordingly on installation.



- Position engine and gearbox jack -V.A.G 1383 A- beneath subframe and press subframe up lightly.

A second mechanic is required for the following operations.

- Lower subframe approx. 80 mm at the rear (subframe mounting must be beneath longitudinal member).
- Remove spacers between subframe and front gearbox mounting.
- Remove bolt from left guide link.
- Turn steering wheel to right.
- Press subframe to right as far as possible and pull left guide link out of subframe.



 **Note**

*Detached guide links must not be subjected to load, as this would damage guide link joints.*

- Remove right guide link from subframe in the same way as left link.
- Pull bolts out of track control link on right and left.
- Slide subframe as far as possible to right or left and swivel out left/right track control link.
- Lower subframe.

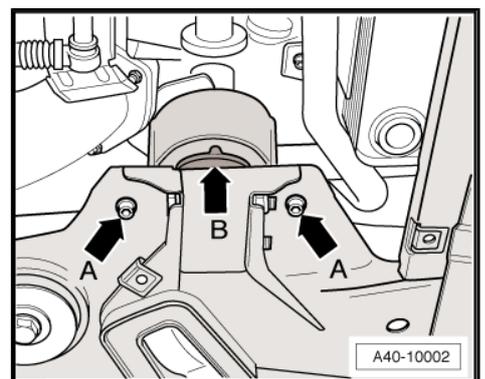
**Installing**

Installation is carried out in the reverse sequence. Note the following points:

- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts => [page 10](#).
- Insert track control links and guide links in subframe.
- Position subframe at marked location with respect to body.
- Fit spacers -arrow B- between subframe and front gearbox mounting => Rep. gr. 37.
- Loosely screw all bolts into engine cross member and subframe by hand.

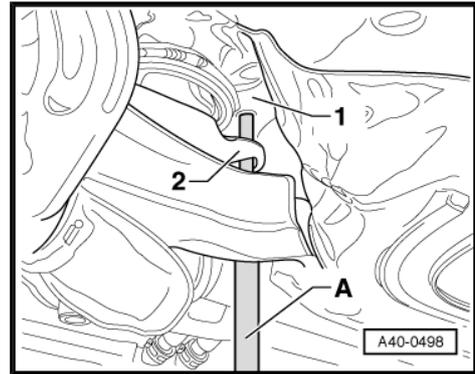
 **Note**

*When fitting engine cross member, make sure centring element of engine mountings is located in mounting holes in engine cross member.*

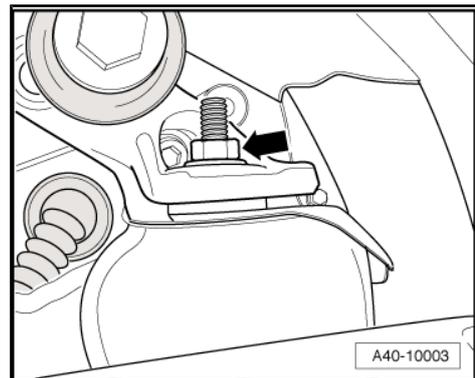




- Use 8 mm drift -A- to align engine cross member with subframe. Holes in subframe -1- and engine cross member -2- must be vertically aligned.
- Ensure subframe is stress-free when installed ⇒ Rep. gr. 37 .

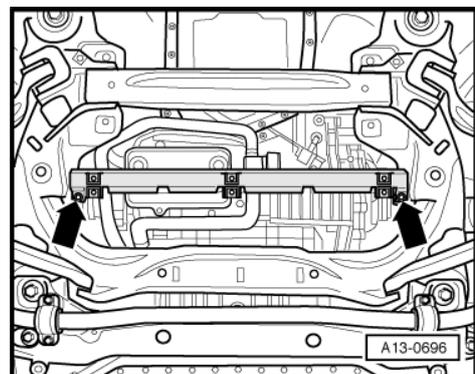
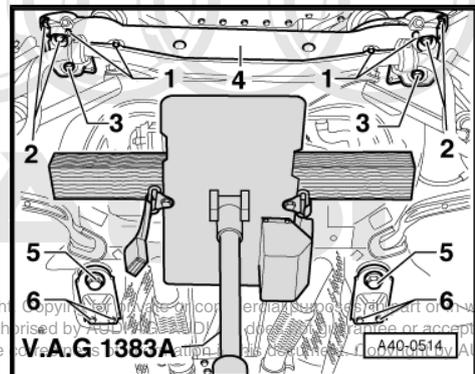


- To permit stress-free alignment of subframe, tighten nut for front gearbox mounting -arrow- on left and right sides after wheel alignment has been checked and adjusted ⇒ Rep. gr. 37 .
- Install spacers ⇒ Rep. gr. 37 .
- Tighten subframe bolts to torque setting, but do not turn further (only tighten bolts to final setting after wheel alignment has been checked and adjusted).

**WARNING**

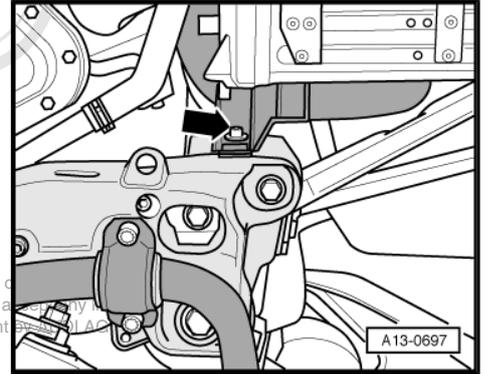
*All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.*

- Position engine and gearbox jack -V.A.G 1383 A- with suitable wooden block under subframe and press subframe upwards lightly.
- Tighten bolts -1- for engine mounting ⇒ Rep. gr. 10 .
- Fit engine cross member -4- with anti-roll bar in position and tighten bolts -2- ⇒ Rep. gr. 10 .
- Diagonally tighten bolts -3- and -5- to torque setting only. Bolt -5- ⇒ [Item 8 \(page 32\)](#) , bolt -3- ⇒ [Item 19 \(page 33\)](#)
- Tighten bolts -6- ⇒ [Item 7 \(page 32\)](#) .
- Insert bolts for track control links on right and left and tighten bolts ⇒ [Item 15 \(page 46\)](#) .
- Insert bolts for guide links on right and left and tighten bolts ⇒ [Item 4 \(page 32\)](#) .
- Attach cross piece for noise insulation at subframe -arrows- ⇒ [Item 30 \(page 34\)](#) .



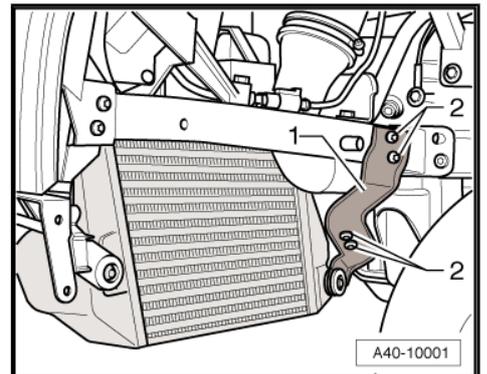
**Vehicles with 8-cyl. diesel engine**

- Screw in bolt -arrow- for air pipe on left and right ⇒ Rep. gr. 13 .

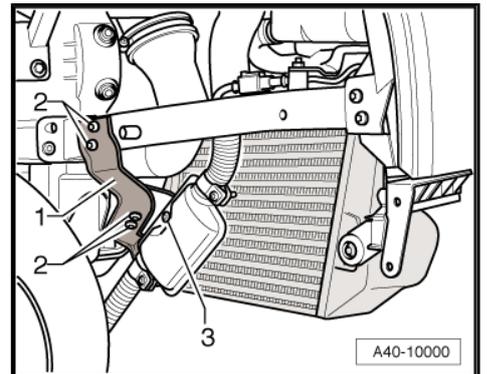


Protected by copyright. Copying for private or commercial purposes, in part or in full, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright © 2011 Audi AG

- Fit bracket -1- and screw in bolts -2- ⇒ Rep. gr. 13 .

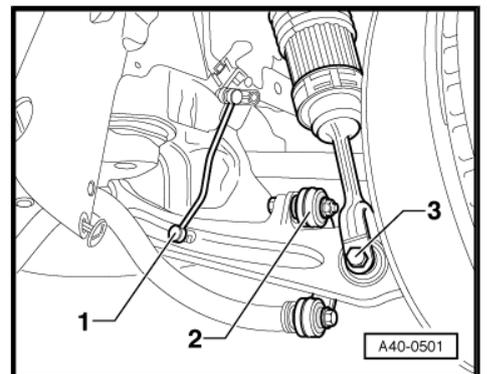


- Fit bracket -1- and screw in bolts -2- and -3- ⇒ Rep. gr. 13 .



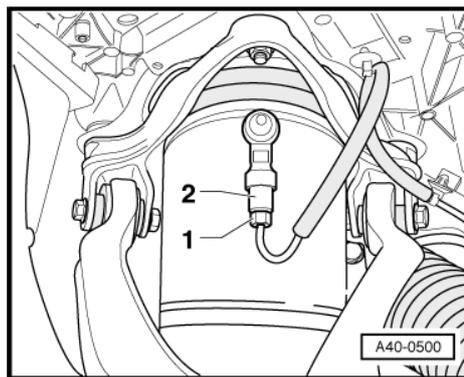
**All vehicles (continued):**

- Screw coupling rod of vehicle level sender -1- onto track control link ⇒ [Item 14 \(page 33\)](#) .
- Plug in connector of vehicle level sender on right and left.
- Attach coupling rod -2- on right and left ⇒ [Item 15 \(page 14\)](#) and ⇒ [Item 18 \(page 33\)](#) .
- Screw bolt -3- for air spring strut onto track control link ⇒ [Item 19 \(page 14\)](#) .





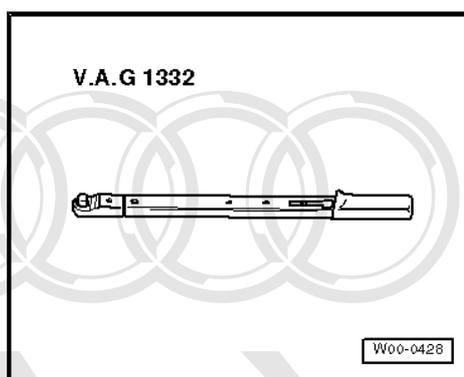
- Screw on connection piece -1- at residual pressure valve -2- => [Item 23 \(page 15\)](#) .
- Fit noise insulation => Rep. gr. 50 .
- Fit and secure wheels => Wheels and tyres; Rep. gr. 44 .
- Set down vehicle on its wheels => [page 7](#) .
- Check and adjust wheel alignment => [page 245](#) .
- Following wheel alignment, tighten subframe bolts to final setting by turning through specified angle.
- Re-adapt reference position => [page 202](#) .



### 3.3 Removing and installing coupling rod

#### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



#### Removing

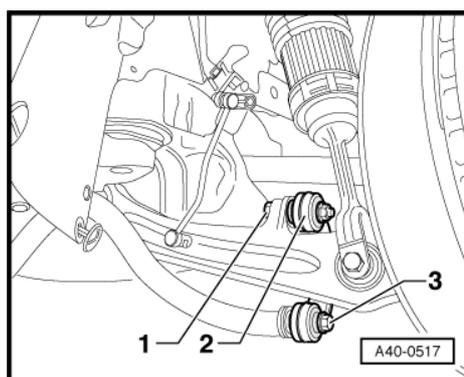
- Position vehicle on lifting platform => [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Secure brake disc with one wheel bolt.
- First remove bolt -3-, then bolt -1- and detach coupling rod -2-. Raise wheel bearing housing slightly if necessary.

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

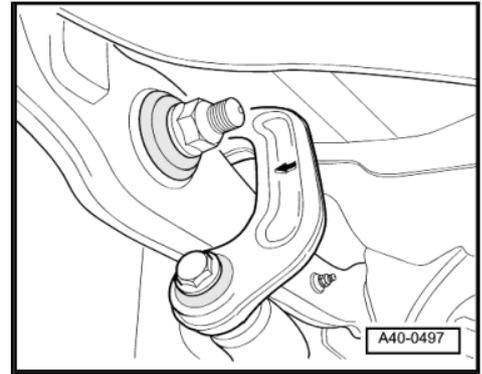
#### Installing

Installation is carried out in the reverse sequence. Note the following points:

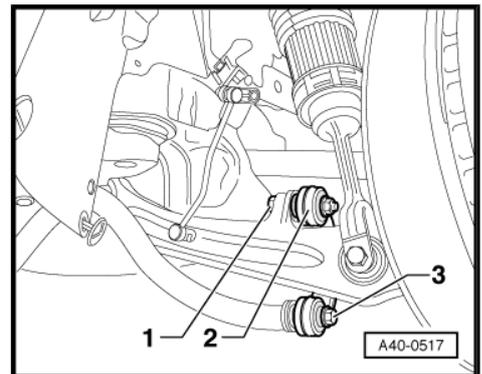
- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts => [page 10](#) .



- Fit coupling rod so that arrow faces forwards and is visible from outside. This ensures that larger diameter of sleeve makes contact with anti-roll bar/track control link.



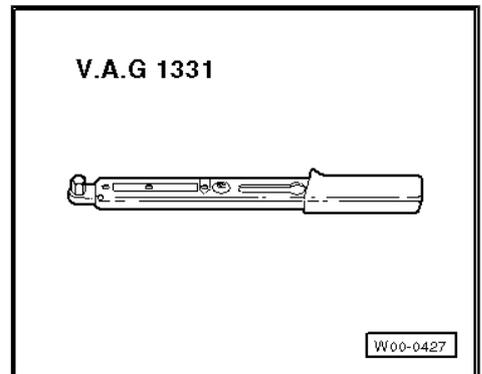
- Tighten bolt -3- ⇒ [Item 16 \(page 14\)](#) .
- Tighten bolt -1- ⇒ [Item 15 \(page 14\)](#) .
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .



### 3.4 Removing and installing anti-roll bar

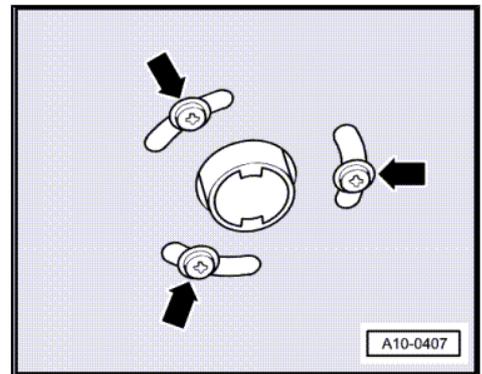
Special tools and workshop equipment required

◆ **Torque wrench -V.A.G 1331-**  
 Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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

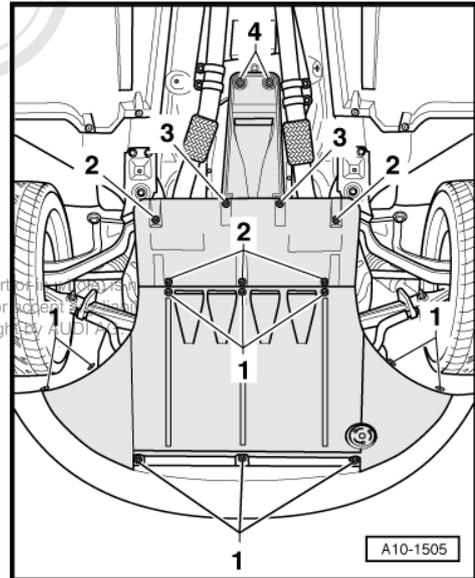
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.





- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.
- Remove coupling rods on right and left sides ⇒ [page 42](#) .

Protected by copyright. Copying for private or commercial purposes, in part or in full, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright © 2011 Audi AG

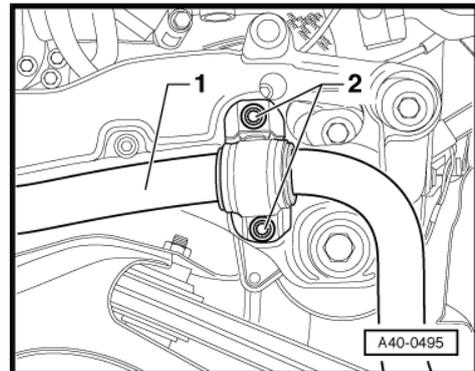
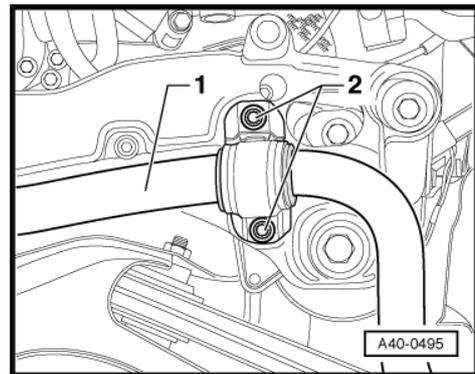


- Unscrew bolts -2- evenly on both sides and detach anti-roll bar -1-.
- Check rubber bushes for cracks. Renew anti-roll bar if bushes are damaged.

#### Installing

Installation is carried out in the reverse sequence. Note the following points:

- Fit anti-roll bar -1- with integral rubber bushes and clamps in recesses in engine cross member.
- Screw in bolts -2- evenly on right and left sides and then tighten ⇒ [Item 20 \(page 33\)](#) .
- Install coupling rod ⇒ [page 42](#) .
- Fit noise insulation ⇒ Rep. gr. 50 .
- Set down vehicle on its wheels ⇒ [page 7](#) .



## 4 Track control link, guide link, vehicle level sender

⇒ „4.1 Exploded view of track control link, guide link, vehicle level sender“, page 45

⇒ „4.2 Removing and installing track control link“, page 47

⇒ „4.3 Renewing bush for track control link“, page 49

⇒ „4.4 Removing and installing guide link“, page 54

⇒ „4.5 Renewing bush (65 mm Ø) for guide link“, page 56

⇒ „4.6 Renewing bush (75 mm Ø) for guide link“, page 59

⇒ „4.7 Removing and installing vehicle level sender“, page 61

### 4.1 Exploded view of track control link, guide link, vehicle level sender

#### 1 - Subframe

- Exploded view  
⇒ page 32

#### 2 - Guide link

- Removing and installing  
⇒ page 54
- Leaking hydro-bushes must be renewed  
⇒ page 59

#### 3 - Bolt

- 70 Nm and turn 180° further
- Always renew
- Before tightening, raise wheel bearing housing  
⇒ page 10

#### 4 - Self-locking nut, 120 Nm

- Always renew
- If guide link is not to be renewed, remove locking fluid from thread of ball joint before installing

#### 5 - Self-locking nut

- Always renew

#### 6 - Air spring strut

- ⇒ Item 24 (page 15)

#### 7 - Self-locking nut

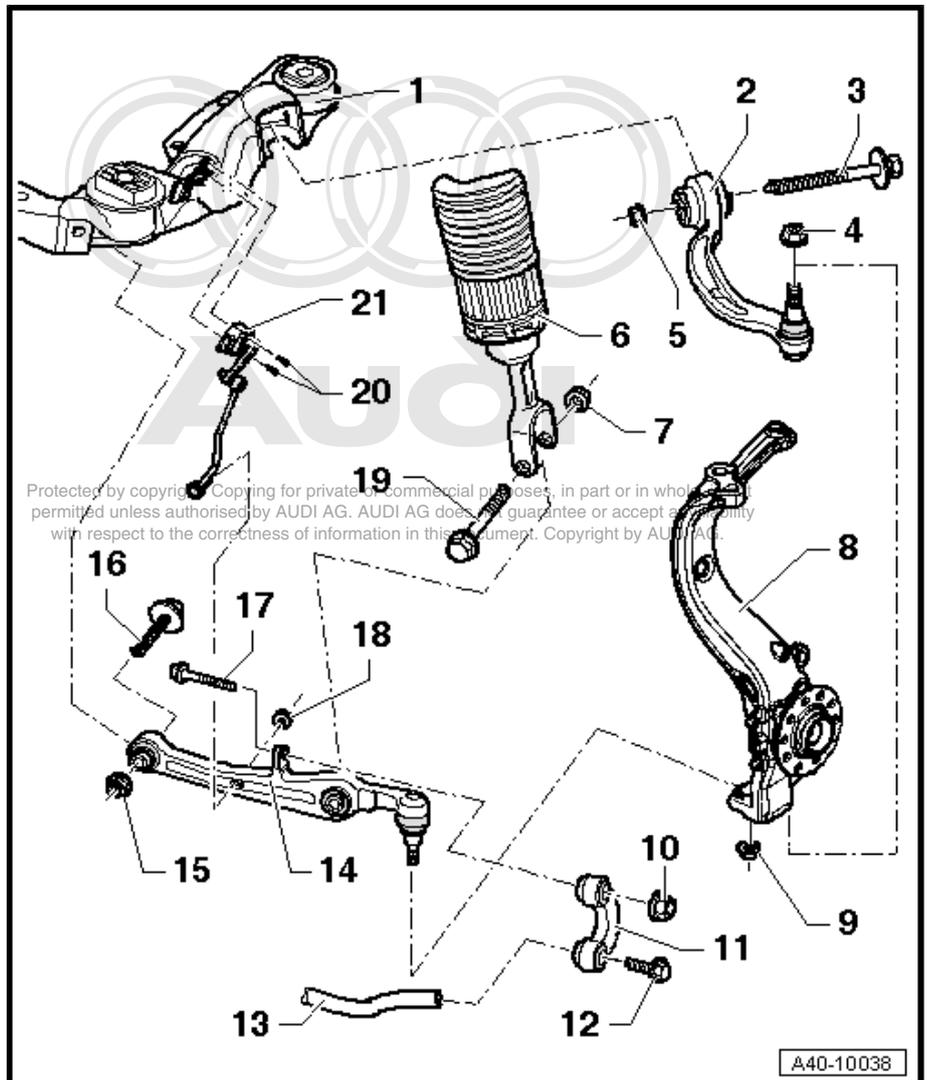
- Always renew

#### 8 - Wheel bearing housing

- Removing and installing  
⇒ page 64
- Exploded view of wheel bearing housing, wheel bearing unit ⇒ page 62
- Removing and installing wheel bearing unit ⇒ page 65

#### 9 - Self-locking nut, 120 Nm

- Always renew





- If track control link is not to be renewed, remove locking fluid from thread of ball joint before installing

#### 10 - Self-locking nut

- 40 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 10](#)

#### 11 - Coupling rod

- Right and left sides identical
- Installation position ⇒ [page 34](#)
- Removing and installing ⇒ [page 42](#)

#### 12 - Bolt

- 40 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 10](#)

#### 13 - Anti-roll bar

- With integral rubber bush and clamp
- Removing and installing ⇒ [page 43](#)
- Note different running gear versions ⇒ [page 246](#)

#### 14 - Track control link

- Removing and installing ⇒ [page 47](#)
- Renewing bush ⇒ [page 49](#)

#### 15 - Self-locking nut

- 70 Nm and turn 180° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 10](#)

#### 16 - Bolt

- Always renew

#### 17 - Bolt

- Always renew

#### 18 - Self-locking nut, 8 Nm

- Always renew

#### 19 - Bolt

- 90 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 10](#)

#### 20 - Bolt, 5 Nm

#### 21 - Front left -G78- and front right -G289- vehicle level sender

- Note different versions with „long“ and „short“ levers.

**Always install senders of the same version. Mixed installation of different versions on the same vehicle is not permissible.**

- Remove/install and renew only as a complete assembly ⇒ [page 195](#)
- Sender lever must face forwards

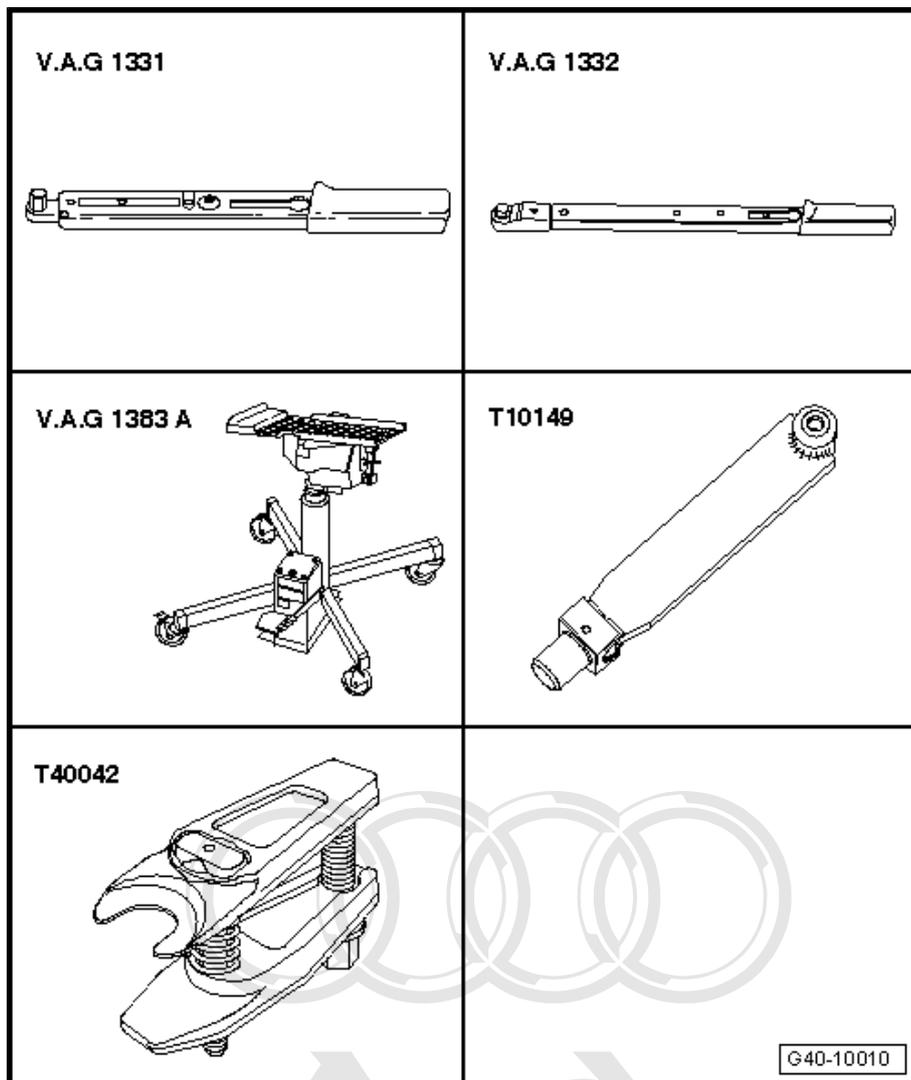


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

## 4.2 Removing and installing track control link

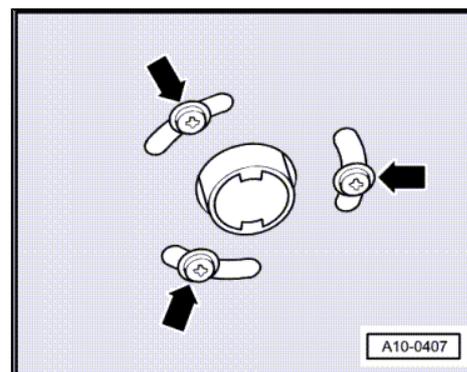
### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Support -T10149-
- ◆ Ball joint puller -T40042-
- ◆ Wooden block (hardwood) 30 x 50 x 1000 mm



### Removing

- Position vehicle on lifting platform ⇒ [page 7](#)
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Secure brake disc with one wheel bolt.
- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.

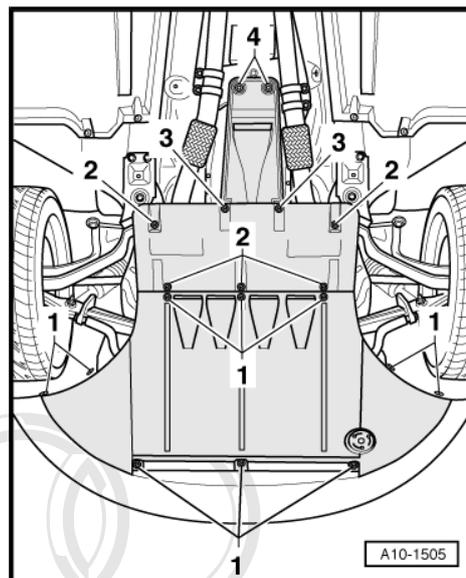




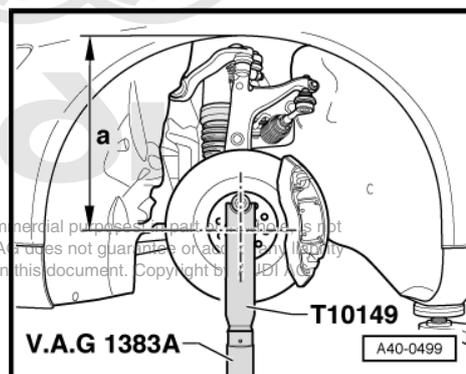
- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.
- Remove anti-roll bar ⇒ [page 43](#) .

**Note**

The wheel housing must be supported for the following steps to avoid bending the ball joints too far.



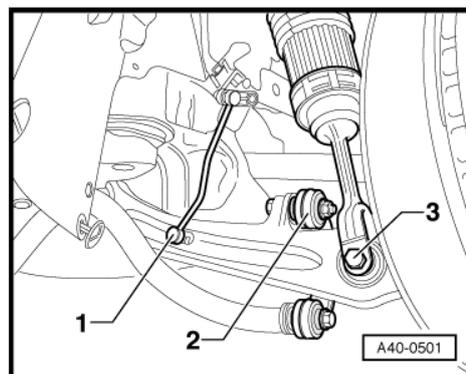
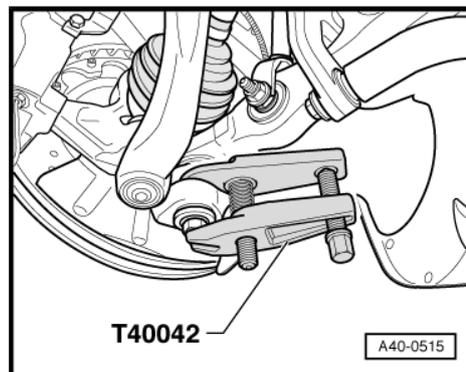
- Use wheel bolt to attach support -T10149- .
- Fit support -T10149- in engine and gearbox jack -V.A.G 1383 A- and support wheel bearing housing. Dimension -a- can be disregarded here.
- Unscrew nut on joint pin of track control link until it is flush with end of thread.
- Counterhold joint pin with 6 mm Allen key. Allen key may have to be shortened to fit.



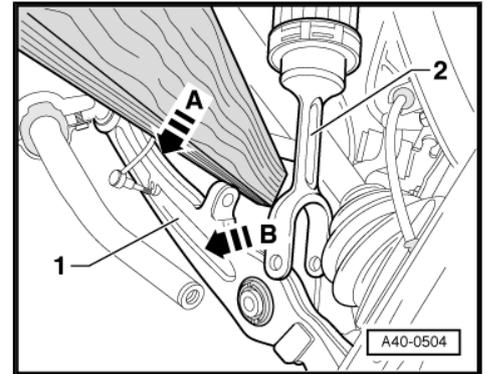
- Use ball joint puller -T40042- to press joint pin of track control link off tapered seat and unscrew nut.

**Note**

- ◆ Take care not to damage drive shaft boot.
  - ◆ Make sure the two lever arms of the puller are parallel when maximum force is exerted.
  - ◆ Secure ball joint puller to prevent it dropping.
- Unscrew coupling rod of vehicle level sender from track control link -1-.
  - Unscrew bolt -3- from track control link.



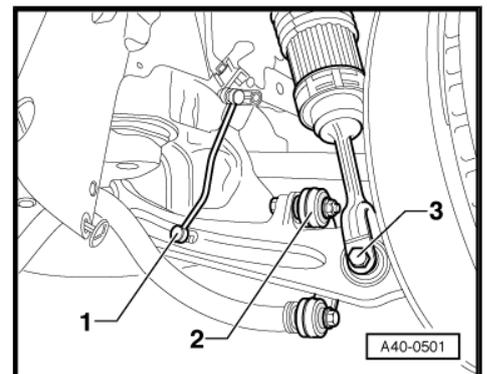
- Use wooden block to press down track control link -1- -arrow A- so that air spring strut -2- can be taken out towards the front -arrow B-. This requires the assistance of a second mechanic.
- Turn steering wheel to left for left track control link and to right for right track control link.
- Unscrew bolt of track control link at subframe.
- Press wheel bearing housing outwards and pull track control link out of subframe.
- Pull track control link forwards at an angle out of wheel bearing housing.
- If track control link is to be re-installed, remove locking fluid from thread of ball joint beforehand.



### Installing

Installation is carried out in the reverse sequence. Note the following points:

- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts ⇒ [page 10](#) .
- Screw coupling rod of vehicle level sender -1- onto track control link ⇒ [page 195](#) .
- Attach coupling rod -2- on right and left ⇒ [Item 10 \(page 46\)](#) and ⇒ [Item 12 \(page 46\)](#) .
- Screw bolt -3- for air spring strut onto track control link ⇒ [Item 19 \(page 46\)](#) .
- Tighten bolts securing anti-roll bar mount ⇒ [Item 20 \(page 33\)](#) .
- ~~Screw nut onto joint pin ⇒ [Item 9 \(page 45\)](#) .~~
- Fit noise insulation ⇒ Rep. gr. 50 .
- Fit and secure wheel ⇒ Wheels and tyres; Rep. gr. 44 .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Re-adapt reference position ⇒ [page 202](#) .



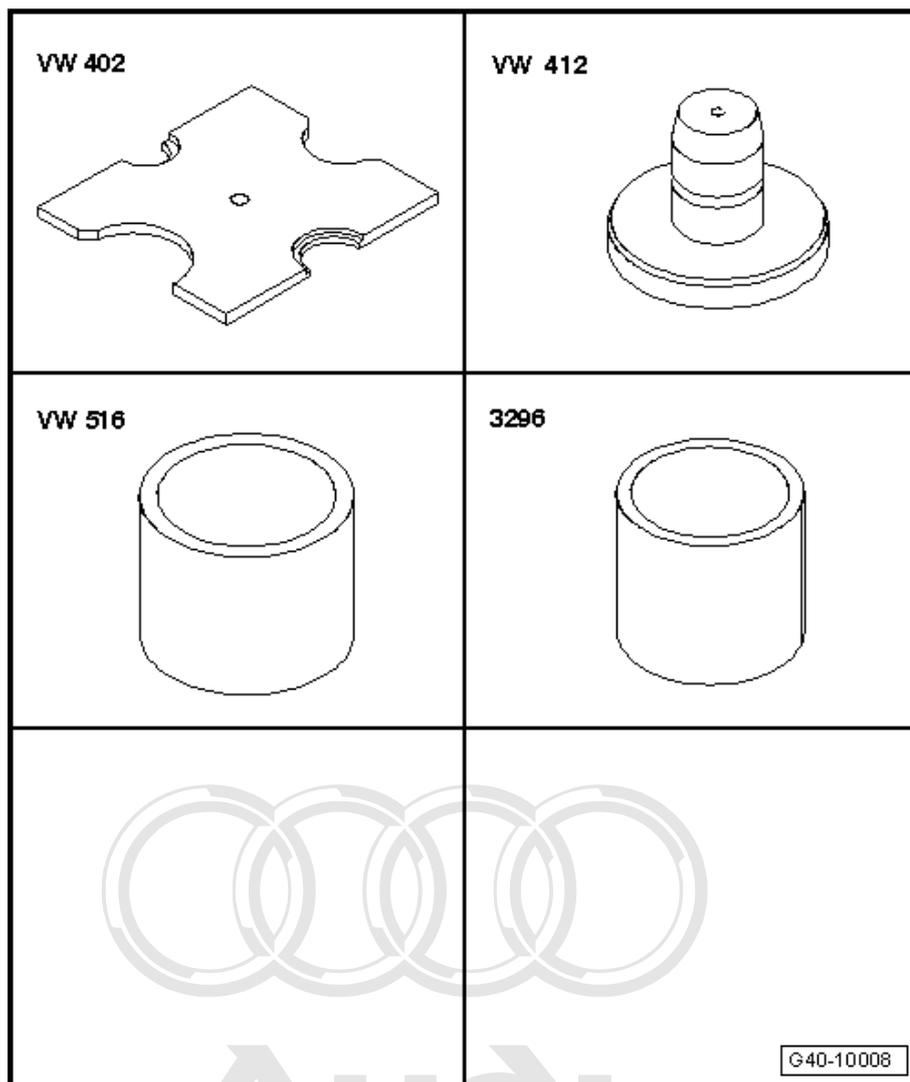
## 4.3 Renewing bush for track control link

Pressing out / pressing in bush for track control link (wheel bearing housing end)



**Special tools and workshop equipment required**

- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 412-
- ◆ Tube -VW 516-
- ◆ Tube -3296-
- ◆ Assembly paste -G 052 109 A2-



**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.

*Track control link must be held in position while bush is being removed or installed.*

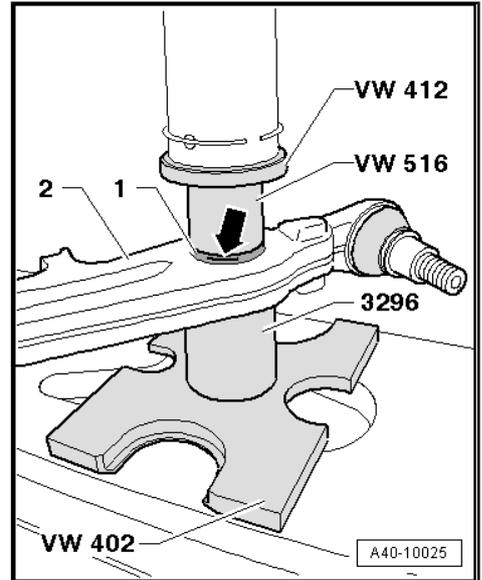
**Pressing out bush**

- Remove track control link ⇒ [page 47](#) .

- Mark position (installation depth) of bush -1- on bush -arrow-. Use a waterproof felt pen or similar for marking.
- Apply special tools as shown in illustration.
- Press bush -1- out of track control link -2-.

**Pressing in bush**

- Transfer marking for installation position from old bush to new bush.
- Lightly lubricate bush with assembly paste -G 052 109 A2- .

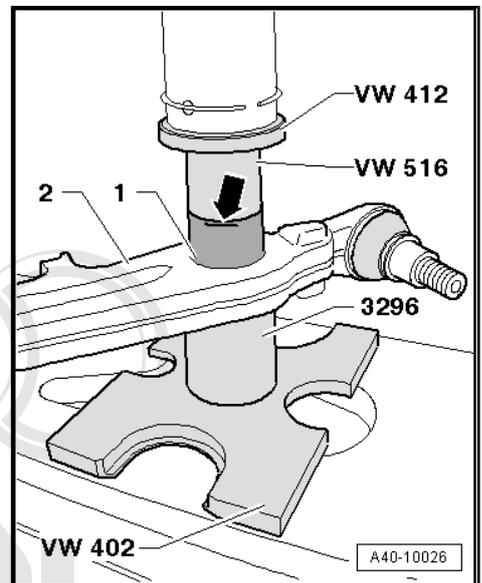


- Locate bush -1- in track control link -2-.
- Apply special tools as shown in illustration.

 **Note**

*Make sure bush remains straight while pressing in.*

- Press bush -1- into track control link -2-.
- Refit to marking made before removal -arrow-.

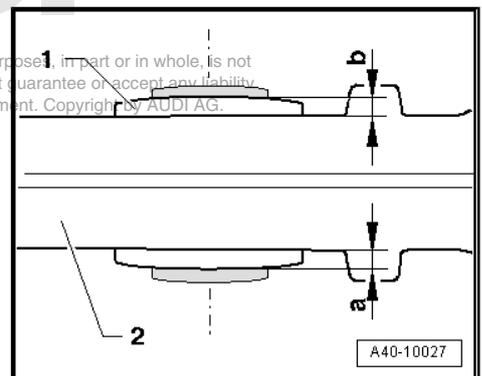


- Check installation depth of bush -1- in track control link -2-.

**Dimensions -a- and -b- must be equal.**

- Press bush -1- in further if dimensions -a- and -b- are not equal.
- Install track control link [⇒ page 47](#) .

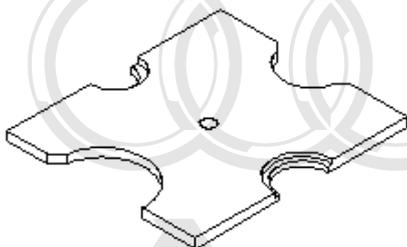
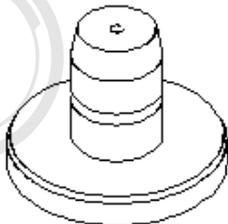
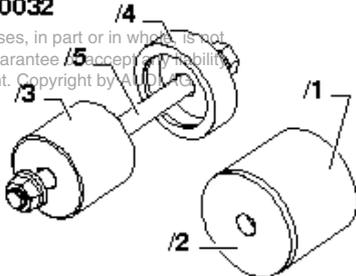
**Pressing out / pressing in bush for track control link (subframe end)**





**Special tools and workshop equipment required**

- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 412-
- ◆ Tube -3296-
- ◆ Assembly tool -T40032-
- ◆ Assembly paste -G 052 109 A2-

<p><b>VW 402</b></p> 	<p><b>VW 412</b></p> 
<p><b>3296</b></p> 	<p><b>T40032</b></p> 
	<p style="text-align: right;">G40-10009</p>

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



**Note**

*Track control link must be held in position while bush is being removed or installed.*

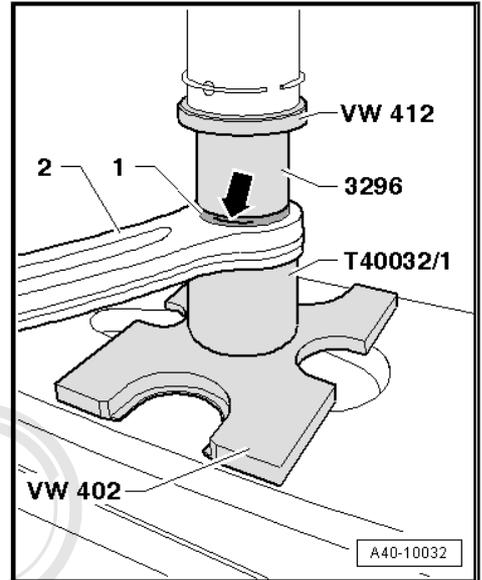
**Pressing out bush**

- Remove track control link ⇒ [page 47](#) .

- Mark position (installation depth) of bush -1- on bush -arrow-.
- Use a waterproof felt pen or similar for marking.
- Apply special tools as shown in illustration.
- Press bush -1- out of track control link -2-.

**Pressing in bush**

- Transfer marking for installation position from old bush to new bush.
- Lightly lubricate bush with assembly paste -G 052 109 A2- .

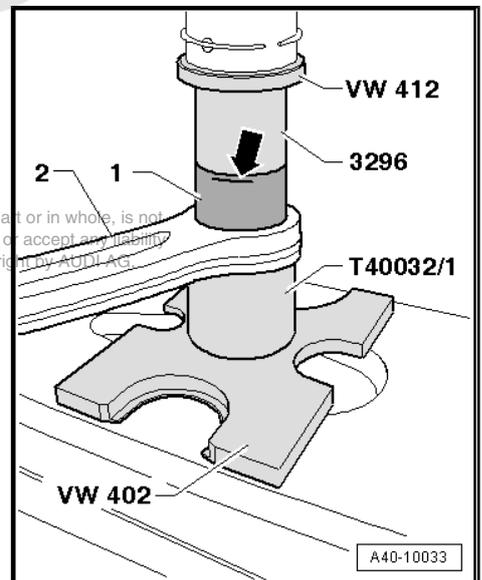


- Locate bush -1- in track control link -2-.
- Apply special tools as shown in illustration.

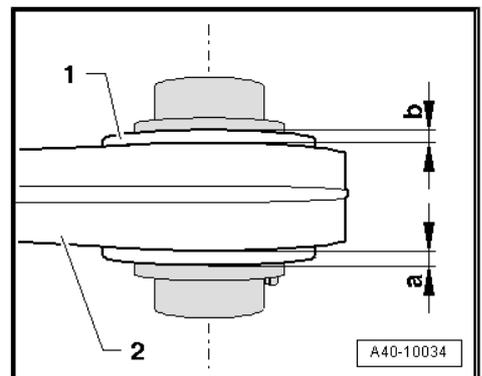
 **Note**

*Make sure bush remains straight while pressing in.*

- Press bush -1- into track control link -2-.
- Refit to marking made before removal -arrow-.



- Check installation depth of bush -1- in track control link -2-.
- Dimensions -a- and -b- must be equal.
- Press bush -1- in further if dimensions -a- and -b- are not equal.
- Install track control link => [page 47](#) .

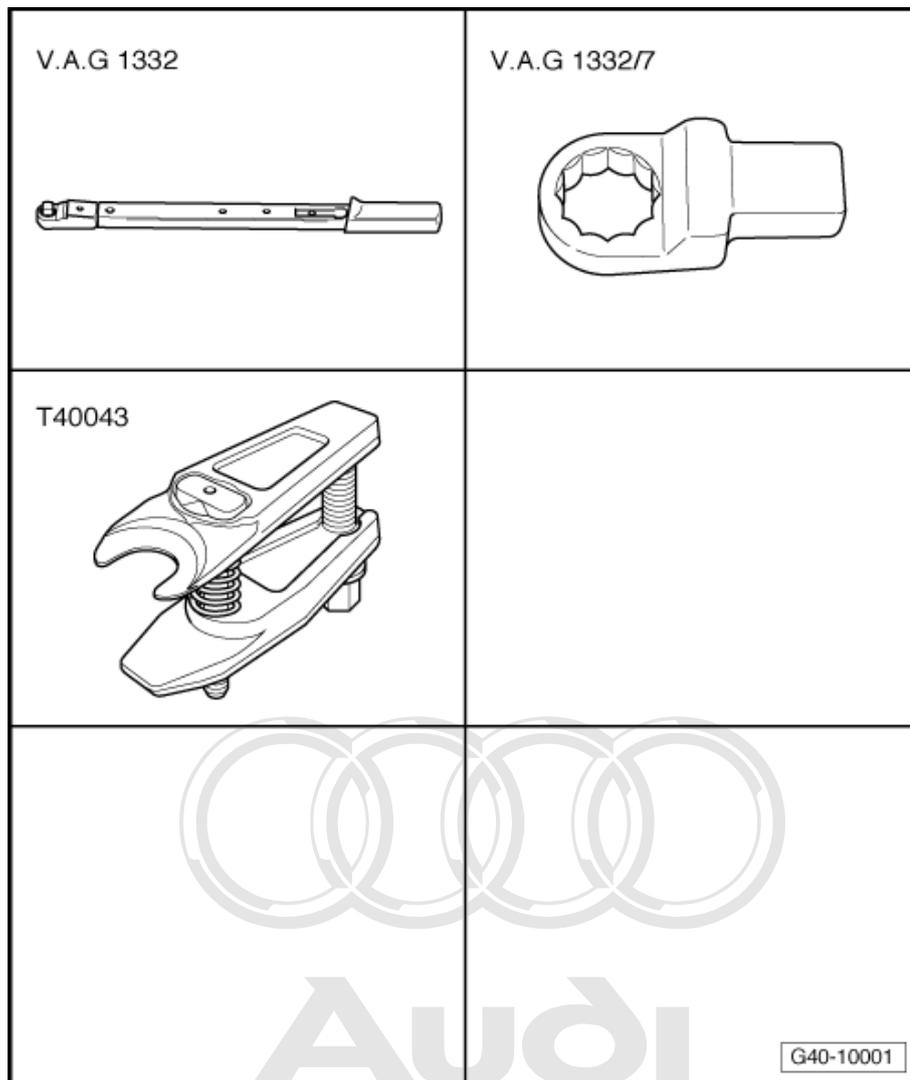




## 4.4 Removing and installing guide link

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Socket -V.A.G 1332/7-
- ◆ Ball joint puller -T40043-



### Removing

- Position vehicle on lifting platform ⇒ [page 7](#).
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Secure brake disc with one wheel bolt.
- Unscrew nut on joint pin of guide link until it is flush with end of thread.
- Counterhold joint pin with 6 mm Allen key. Allen key may have to be shortened to fit.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 joint pin of guide link out of tapered seat using ball joint puller -T40043- .

 **Note**

- ◆ *Take care not to damage drive shaft boot.*
- ◆ *Make sure the two lever arms of the puller are parallel when maximum force is exerted.*
- ◆ *Secure ball joint puller to prevent it dropping.*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the express 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.

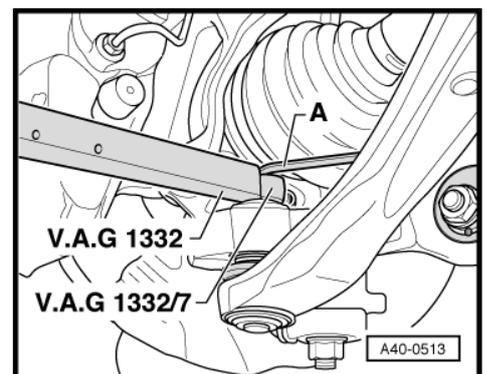
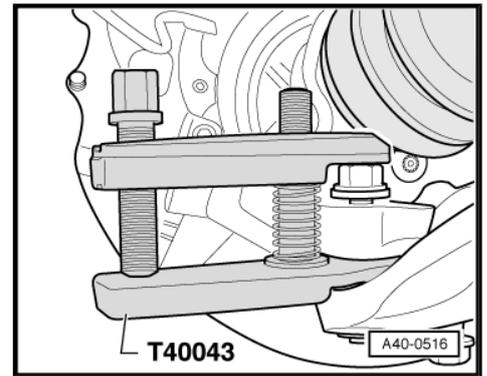
**Unbolt guide link from subframe and take out.**

- If guide link is to be re-installed, remove locking fluid from thread of ball joint beforehand.

**Installing**

Installation is carried out in the reverse sequence. Note the following points:

- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts  
⇒ [page 10](#) .
- Secure guide link to subframe ⇒ [Item 3 \(page 45\)](#) .
- Tighten nut at wheel bearing housing ⇒ [Item 4 \(page 45\)](#) .  
When doing so, counterhold with shortened 6 mm Allen key -A-.
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Re-adapt reference position ⇒ [page 202](#) .

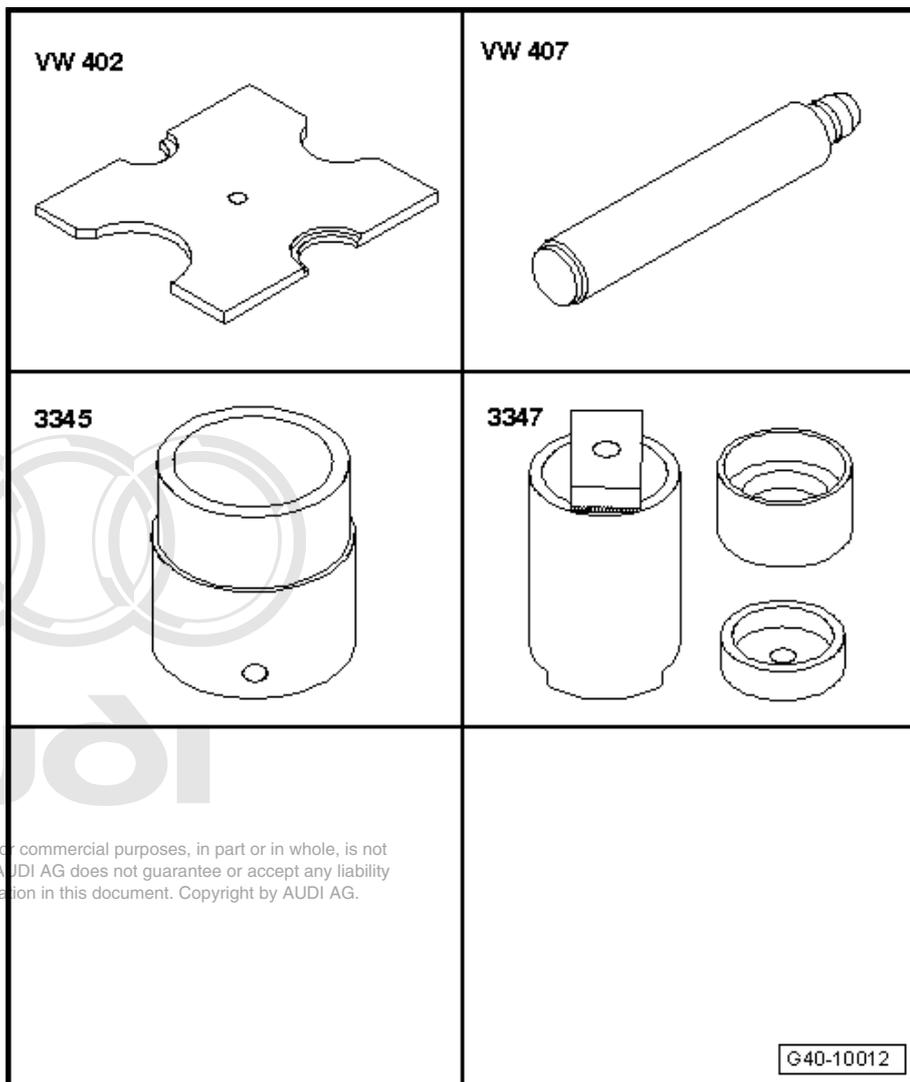




### 4.5 Renewing bush (65 mm Ø) for guide link

#### Special tools and workshop equipment required

- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 407-
- ◆ Wheel bearing tube -3345-
- ◆ Assembly tool -3347/1-



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



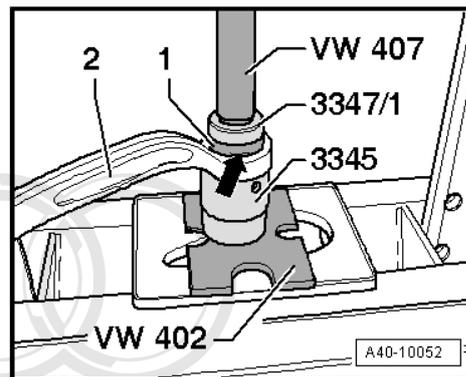
#### Note

*Guide link must be held in position while bush is being removed or installed.*

#### Pressing out bush

- Remove guide link ⇒ [page 54](#) .

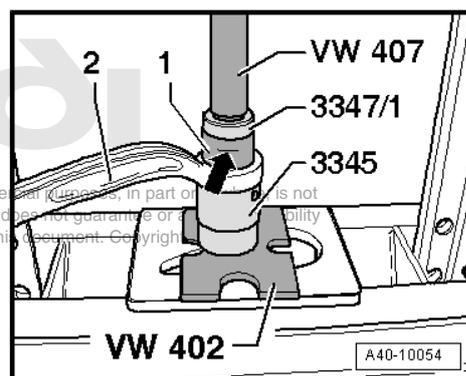
- Mark position (installation depth) of bush -1- on bush -arrow-.
- Use a waterproof felt pen or similar for marking.
- Apply special tools as shown in illustration.
- Press bush -1- out of track control link -2-.



### Pressing in bush

- Transfer marking for installation position from old bush to new bush -arrow-.
- Lightly lubricate bush with assembly paste -G 052 109 A2-.

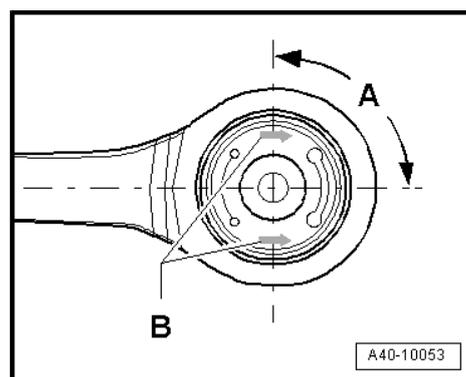
Protected by copyright. Copying for private or commercial purposes, in part or in full, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or assume liability with respect to the correctness of information in this document. Copyright



### Installation position of bush

$A = \sim 90^\circ \pm 5^\circ$

Arrows on bush -B- point away from ball joint.



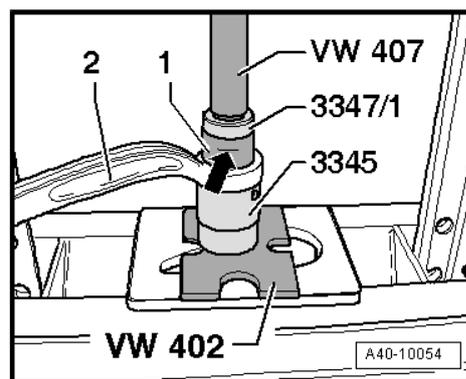
- Locate bush -1- in guide link -2-. Note correct installation position.
- Apply special tools as shown in illustration.



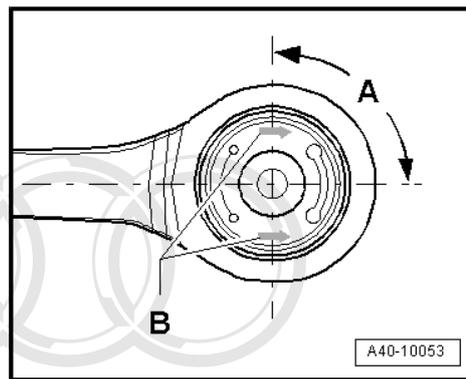
### Note

*Make sure bush remains straight while pressing in.*

- Press bush -1- into guide link -2-.
- Refit to marking made before removal -arrow-.



- Check that bush -1- is positioned correctly in guide link -2-.

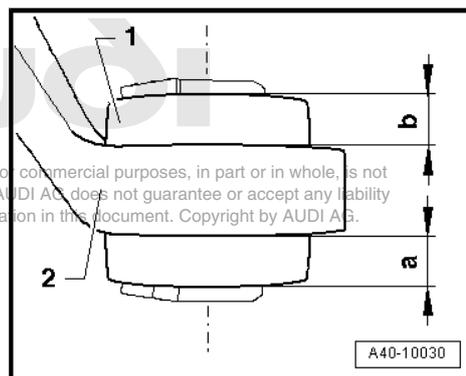


- Check installation depth of bush -1- in guide link -2-.

Dimensions -a- and -b- must be equal.

- Press bush -1- in further if dimensions -a- and -b- are not equal.
- Install guide link ⇒ [page 54](#) .

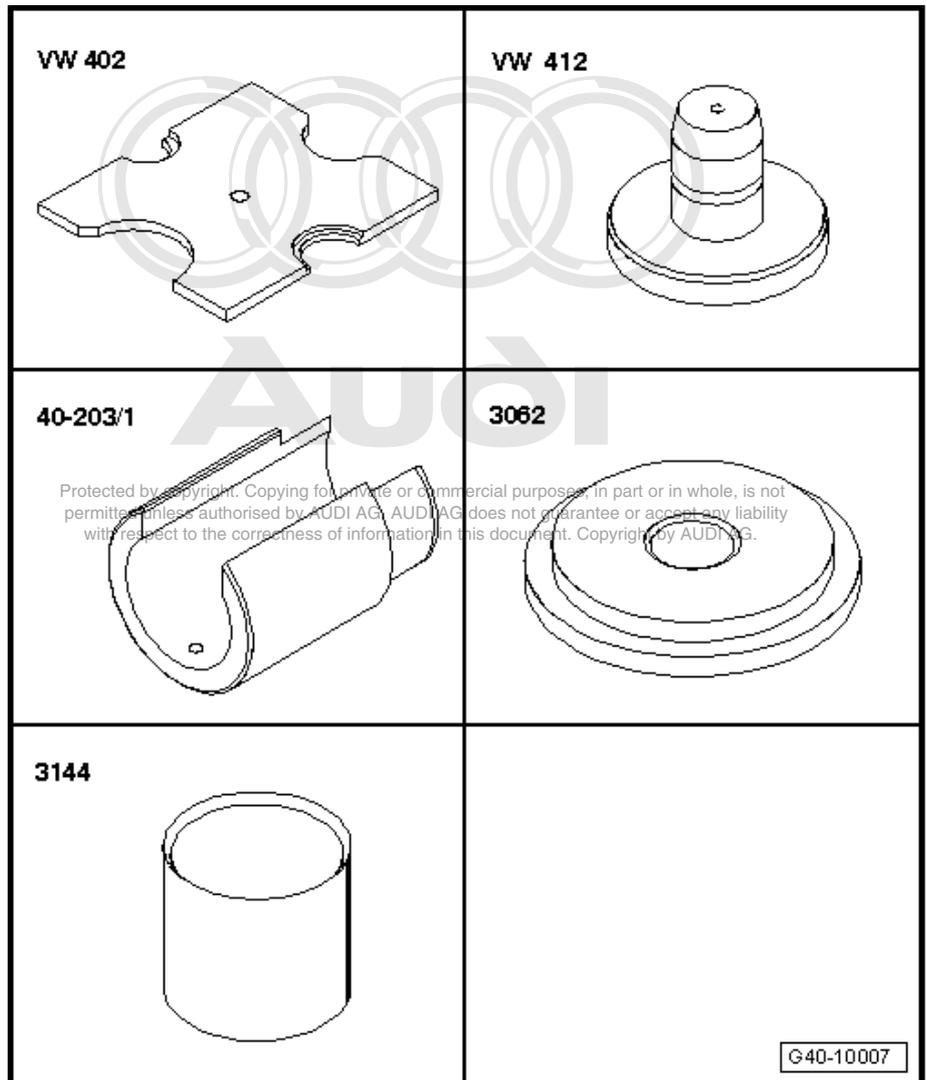
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



## 4.6 Renewing bush (75 mm Ø) for guide link

### Special tools and workshop equipment required

- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 412-
- ◆ Tube -40-203/1-
- ◆ Thrust pad -3062-
- ◆ Sleeve -3144-
- ◆ Assembly paste -G 052 109 A2-



**i** Note

*Guide link must be held in position while bush is being removed or installed.*

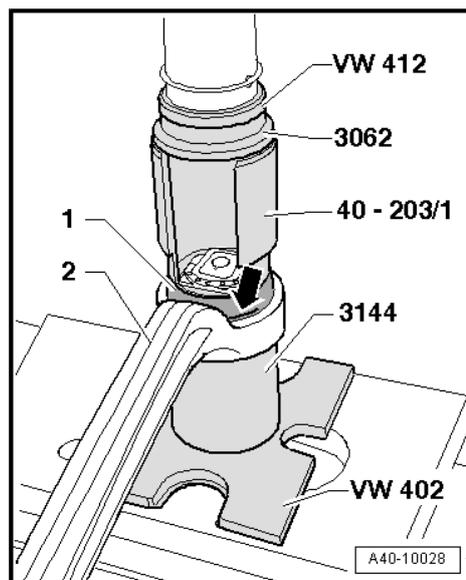
### Pressing out bush

- Remove guide link ⇒ [page 54](#) .

- Mark position (installation depth) of bush -1- on bush -arrow-.
- Use a waterproof felt pen or similar for marking.
- Apply special tools as shown in illustration.
  - Press bush -1- out of track control link -2-.

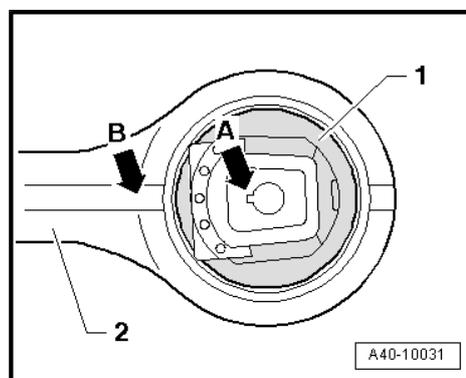
#### Pressing in bush

- Transfer marking for installation position from old bush to new bush.
- Lightly lubricate bush with assembly paste -G 052 109 A2- .



#### Installation position of bush

The recess in the core of the bush -arrow A- must be aligned centrally with the seam -arrow B-.



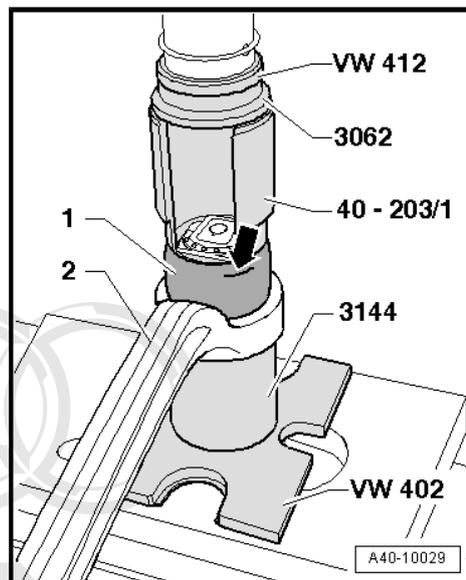
- Locate bush -1- in guide link -2-, making sure bush is positioned correctly.
- Apply special tools as shown in illustration.



#### Note

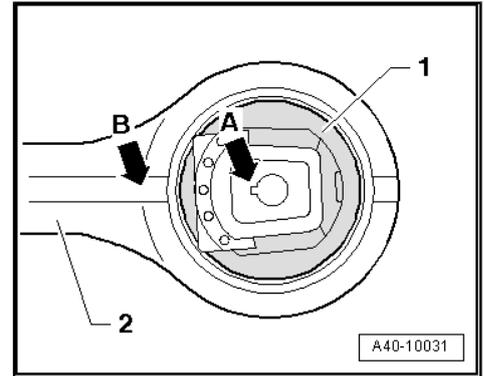
*Make sure bush remains straight while pressing in.*

- Press bush -1- into guide link -2-.
- Refit to marking made before removal -arrow-.



- Check that bush -1- is positioned correctly in guide link -2-.

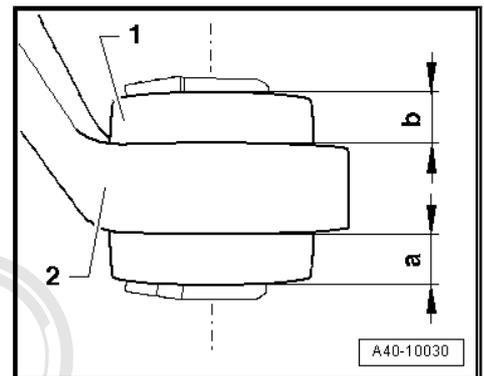
The recess in the core of the bush -arrow A- must be aligned centrally with the seam -arrow B-.



- Check installation depth of bush -1- in guide link -2-.

Dimensions -a- and -b- must be equal.

- Press bush -1- in further if dimensions -a- and -b- are not equal.
- Install guide link ⇒ [page 54](#) .



#### 4.7 Removing and installing vehicle level sender

- Removing and installing vehicle level sender ⇒ [page 195](#)

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

⇒ „5.1 Exploded view of wheel bearing housing, wheel bearing unit“, page 62

⇒ „5.2 Removing and installing wheel bearing housing“, page 64

⇒ „5.3 Removing and installing wheel bearing unit“, page 65

⇒ „5.4 Renewing wheel bearing“, page 67

### 5.1 Exploded view of wheel bearing housing, wheel bearing unit

#### 1 - Wheel bearing housing

- Removing and installing ⇒ page 64

#### 2 - Self-locking nut

- Always renew
- Please note the different types of nut. For correct version refer to ⇒ Electronic parts catalogue „ETKA“

#### 3 - Bolt

#### 4 - Bolt

- Tightening torque ⇒ Item 7 (page 295)
- For adjusting toe constant „S“ ⇒ page 257

#### 5 - Nut

- Tightening torque ⇒ Item 9 (page 295)

#### 6 - Wheel bearing

- Renewing ⇒ page 67

#### 7 - Deflector ring

- Always renew together with wheel bearing ⇒ Item 6 (page 62) or wheel hub ⇒ Item 8 (page 62)

#### 8 - Wheel hub

- Renewing ⇒ page 67

#### 9 - Wheel bearing unit

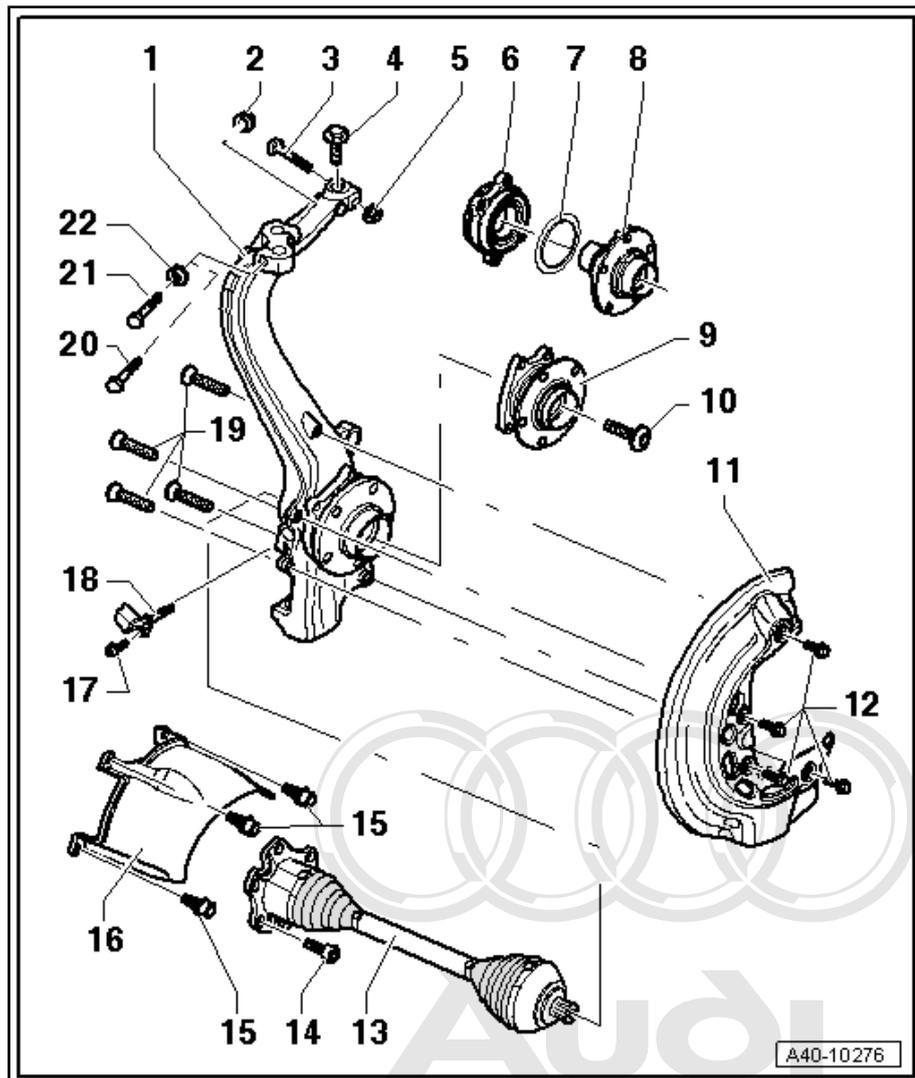
- Comprising: Wheel bearing ⇒ Item 6 (page 62), deflector ring ⇒ Item 7 (page 62) and wheel hub ⇒ Item 8 (page 62)

- Removing and installing ⇒ page 65

- Grease wheel bearing in marked area before installation ⇒ page 63

#### 10 - Flange bolt

- Always renew
- Keep to specified sequence of operations for slackening off ⇒ page 74 and tightening ⇒ page 76
- Tightening torque ⇒ page 76



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

**11 - Splash plate**

**12 - Bolt, 10 Nm**

**13 - Drive shaft**

- Removing and installing ⇒ [page 74](#)
- Servicing triple roller joint ⇒ [page 80](#)
- Servicing outer joint ⇒ [page 88](#)

**14 - Bolt, 70 Nm**

- Pre-tighten to 10 Nm in diagonal sequence

**15 - Bolt**

- Tightening torque ⇒ Rep. gr. 34 or ⇒ Rep. gr. 37

**16 - Guard plate**

**17 - Bolt, 8 Nm**

**18 - Speed sensor**

**19 - Countersunk bolts**

- Always renew
- 80 Nm and turn 90° further

**20 - Bolt, 50 Nm + turn 180° further**

- Always renew
- For special security vehicles; please note the different types of bolt. For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- It is permissible to turn bolt through specified angle in several stages
- Coat complete surface of bolt and bore in wheel bearing housing with grease before installing. For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**21 - Bolt, 50 Nm**

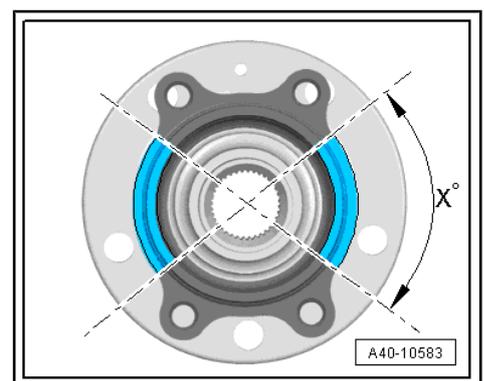
- Not for special security vehicles; please note the different types of bolt. For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**22 - Washer**

- Not installed on special security vehicles. For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**Greasing contact surface on wheel bearing**

- Grease contact surface in area marked. For correct type of grease refer to ⇒ Electronic parts catalogue .
- -X- > 90°

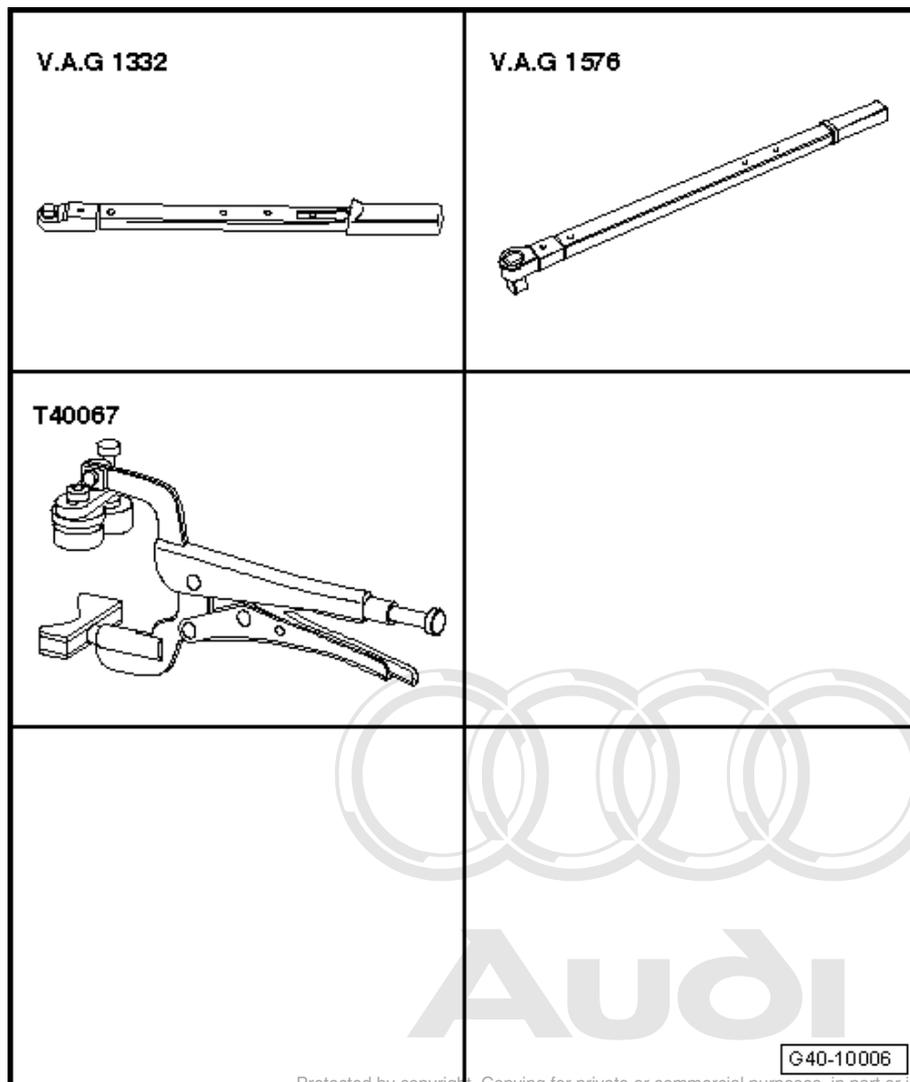




## 5.2 Removing and installing wheel bearing housing

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Torque wrench -V.A.G 1576-
- ◆ Pliers -T40067-



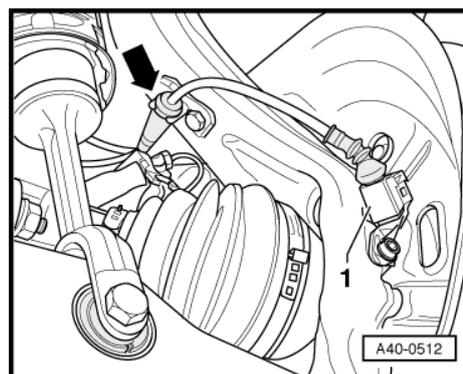
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### Removing

Take care to prevent indentations forming in boot on air spring strut during assembly work.

Exploded view of wheel bearing installation ⇒ [page 62](#)

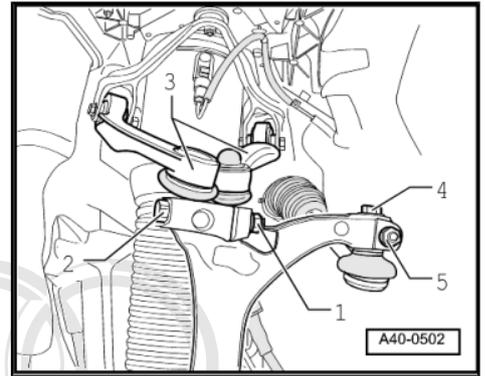
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Unscrew flange bolt securing drive shaft ⇒ [page 74](#) .
- Unplug connector -1- from speed sensor and pull wire out of bracket -arrow-.
- Detach brake caliper and tie to body with wire ⇒ Rep. gr. 46 .
- Remove brake disc.
- Press joint pin of track control link off tapered seat in wheel bearing housing (leave nut loosely attached to joint pin) ⇒ [page 47](#) .
- Press joint pin of guide link off tapered seat in wheel bearing housing (leave nut loosely attached to joint pin) ⇒ [page 54](#) .



- Unscrew bolt -4- and nut -5-.
- Pull out track rod ball joint.
- Unscrew nut -1-, take out bolt -2- and lift out both links -3-.

Do not attempt to enlarge slots in wheel bearing housing using a chisel or similar.

- Detach track control link and guide link from wheel bearing housing.
- Tie up drive shaft to body with wire or similar.
- Take out wheel bearing housing.

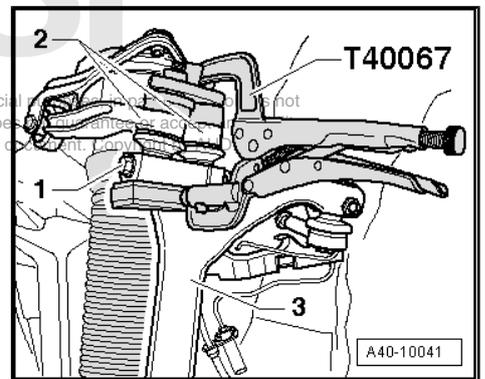


### Installing

Installation is carried out in the reverse sequence. Note the following points:

**Take care to prevent indentations forming in boot on air spring strut during assembly work.**

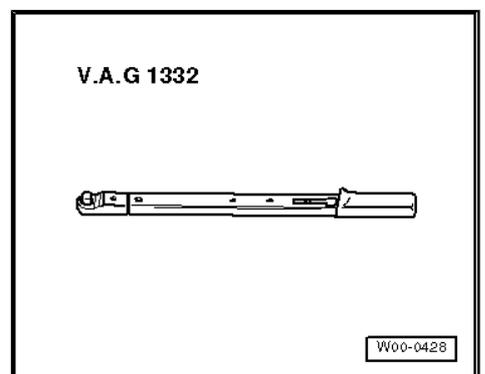
- Fit joint pins of both upper links -2- in wheel bearing housing -3- and press down as far as possible by clamping with pliers -T40067- .
- Tighten bolt -1-; tightening torque according to version ⇒ [Item 20 \(page 63\)](#) or ⇒ [Item 21 \(page 63\)](#) . For correct version refer to ⇒ "Electronic parts catalogue„ETKA“" .
- Fit track rod ball joint ⇒ [page 320](#) .
- Fit joint pin of track control link ⇒ [page 47](#) .
- Fit joint pin of guide link ⇒ [page 54](#) .
- Tighten flange bolt for drive shaft ⇒ [page 76](#) .
- Fit and secure wheel ⇒ Wheels and tyres; Rep. gr. 44 .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .



## 5.3 Removing and installing wheel bearing unit

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



### Removing

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove drive shaft ⇒ [page 74](#) .
- Detach brake caliper and tie to body with wire ⇒ Rep. gr. 46 .

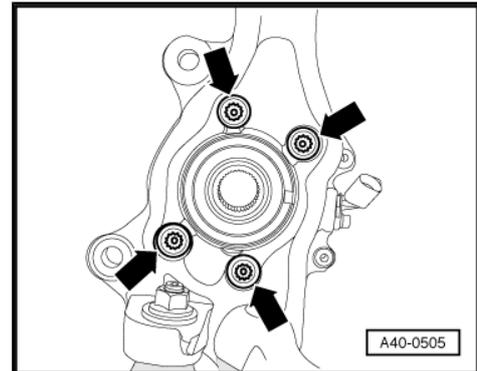


- Remove brake disc.
- Remove bolts -arrows- securing wheel bearing unit.
- Take wheel bearing unit out of wheel bearing housing.



**Caution**

- *Avoid dirtying or damaging the seal when laying down or storing the wheel bearing.*



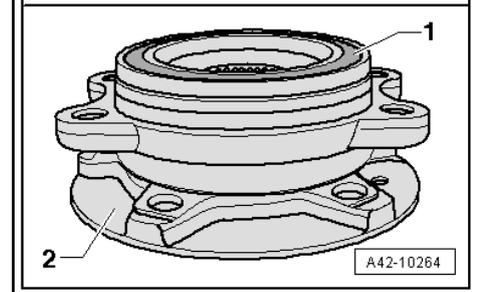
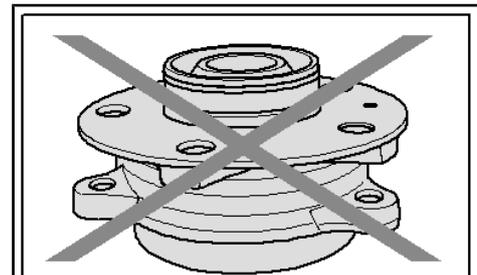
The wheel bearing -1- must always be pointing upwards.

- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.

**Installing**

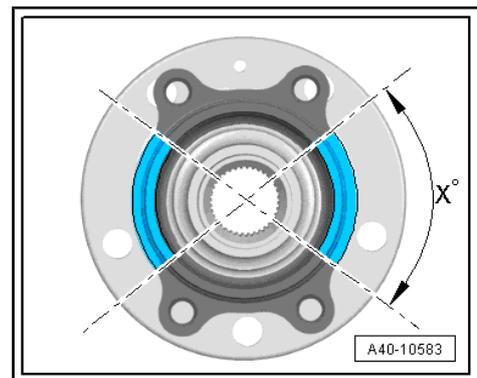
Installation is carried out in the reverse sequence, when doing this note the following:

Take care to prevent indentations forming in boot on air spring strut during assembly work.

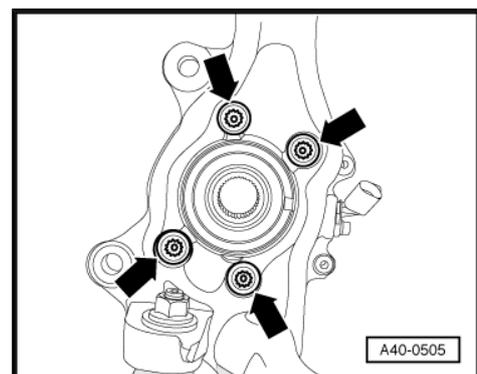


**Greasing contact surface on wheel bearing**

- Grease contact surface in area marked. For correct type of grease refer to => Electronic parts catalogue .
- -X- > 90°



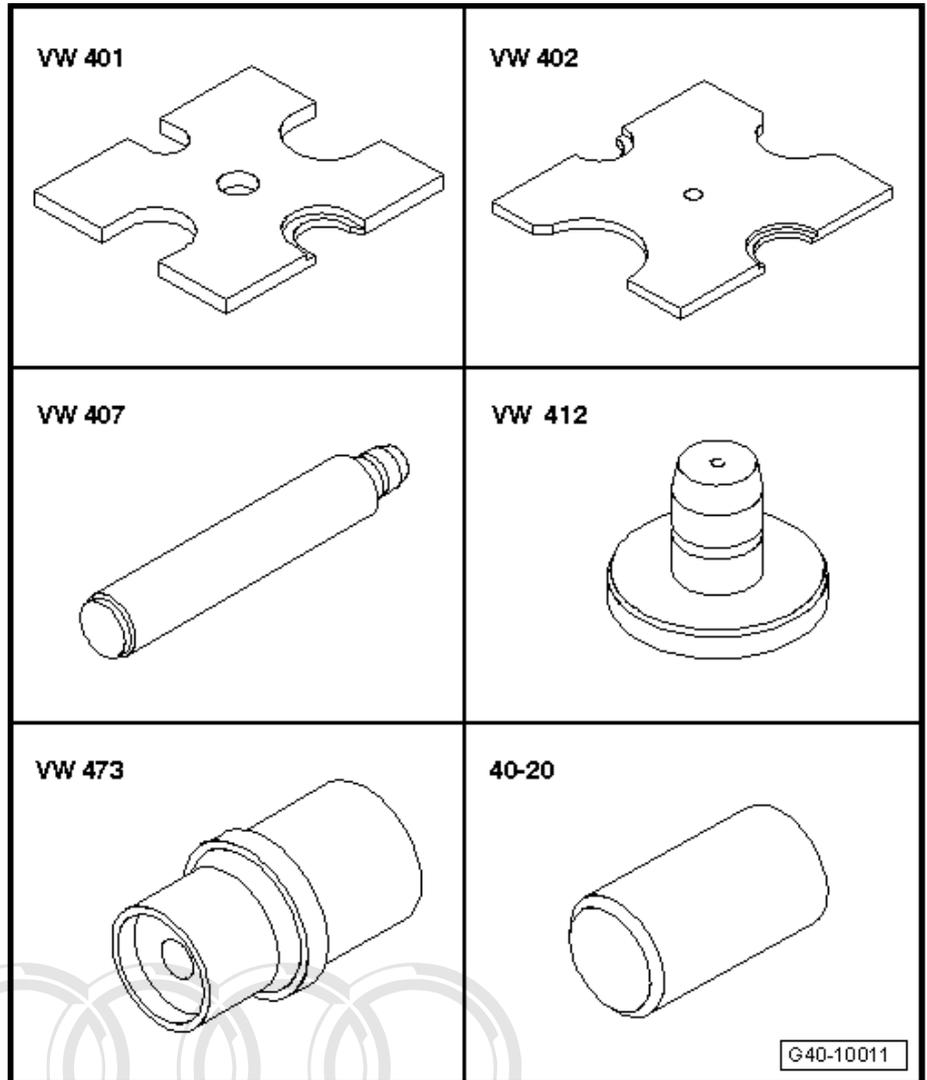
- Tighten bolts -arrows- securing wheel bearing unit => [Item 19 \(page 63\)](#) .
- Install brake disc and brake caliper => Rep. gr. 46 .
- Install drive shaft => [page 74](#) .
- Fit and secure wheel => Wheels and tyres; Rep. gr. 44 .
- Set down vehicle on its wheels => [page 7](#) .



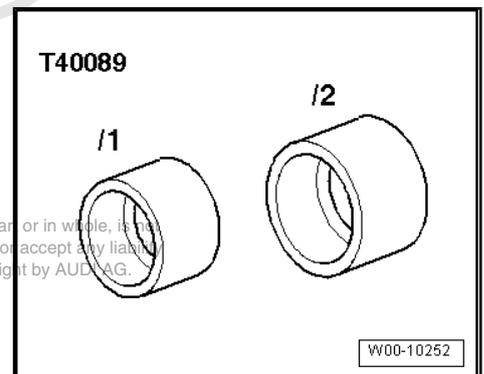
## 5.4 Renewing wheel bearing

### Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 407-
- ◆ Press tool -VW 412-
- ◆ Press tool -VW 473-
- ◆ Drift sleeve -40-20-



- ◆ Assembly tool -T40089/2-



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.

◆ -3- Splitter -Kukko 17/2-

– Remove wheel bearing unit ⇒ [page 65](#) .

**Pressing wheel hub out of 92 mm Ø wheel bearing**

**Pressing inner bearing race off wheel hub**

– Apply splitter between inner bearing race -1- and deflector ring -2-, and tighten spindle.

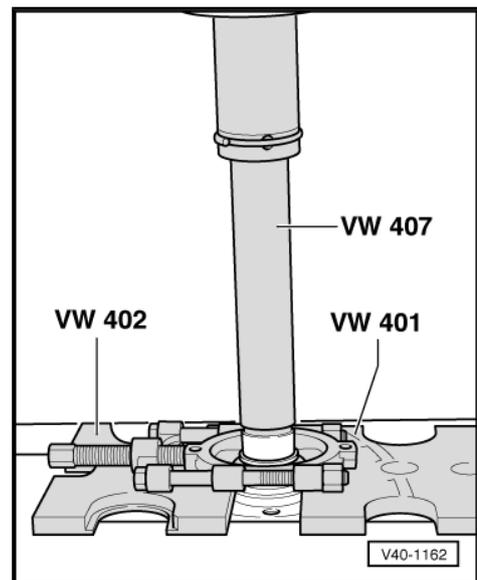
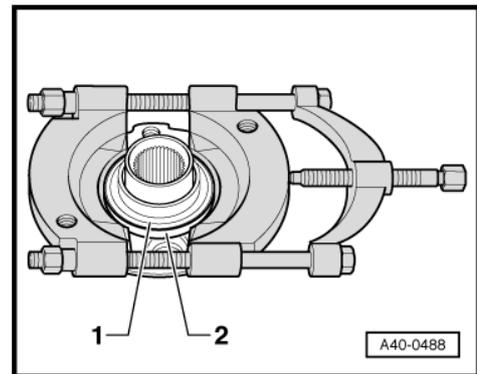
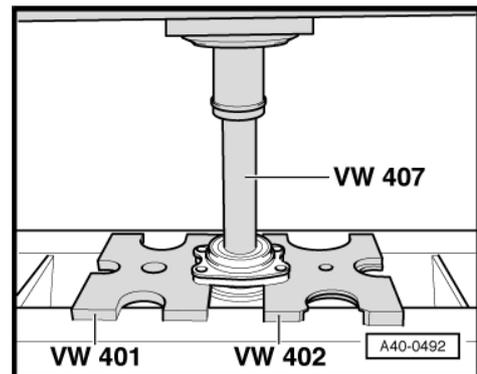
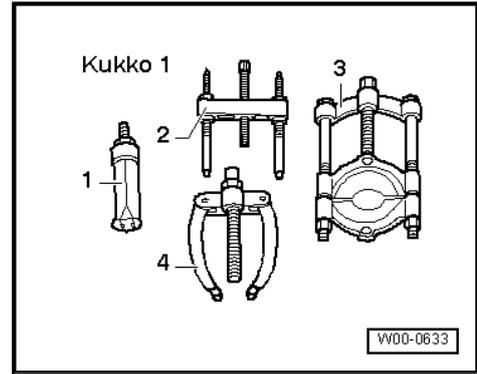


**Note**

Use commercially available splitter , e.g. -Kukko 17/2- .

The deflector ring becomes deformed in this process and must then be renewed.

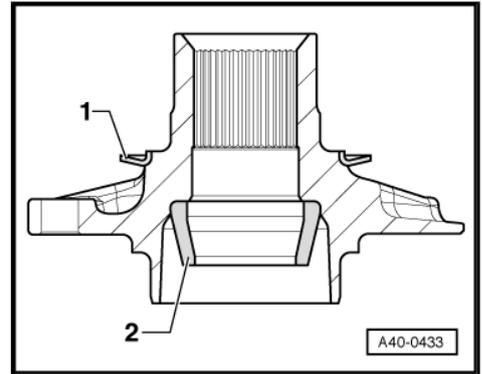
– **Press inner bearing race off wheel hub (92 mm Ø wheel bearing):**



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the express written consent of Audi AG. Copyright by AUDI AG.

### Renewing deflector ring

- Carefully prise off old deflector ring -1- using a screwdriver.
- Fit new deflector ring on wheel hub.



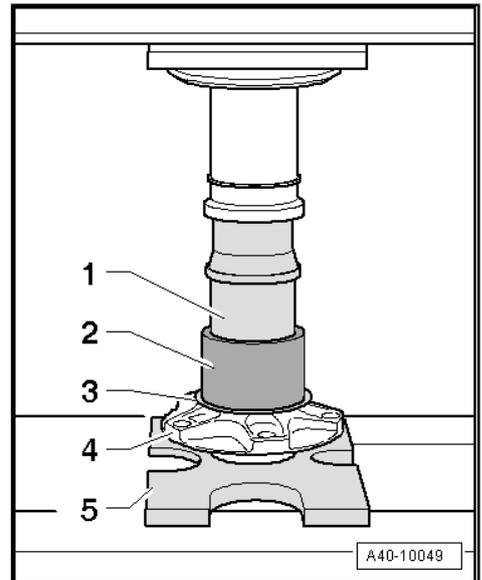
- Apply special tools as shown in illustration.

- 1 - Press tool -VW 473-
- 2 - Assembly tool -T40089/2-
- 3 - Deflector ring
- 4 - Wheel hub
- 5 - Thrust plate -VW 401-



Note

*The deflector ring must be pressed on until it is seated against the radius on the wheel hub.*



### Pressing wheel hub into 92 mm Ø wheel bearing

- Apply special tools as shown in illustration.

- 1 - Press tool -VW 412-
- 2 - Thrust plate -VW 402-
- 3 - Wheel hub
- 4 - Ball bearing
- 5 - Thrust plate -VW 401-



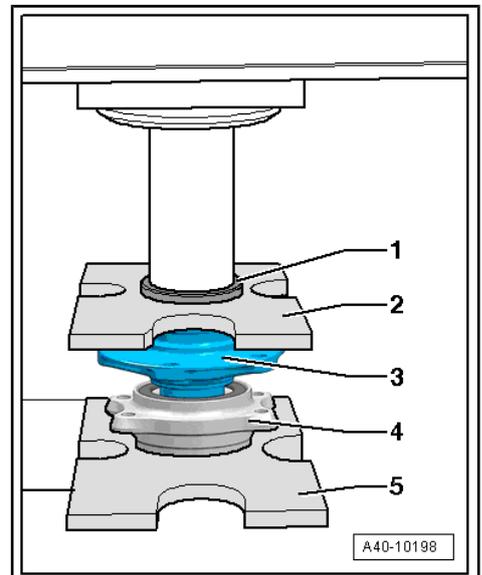
Note

*The machined surface of the wheel bearing outer race faces downwards.*



Caution

*Make sure no dirt gets between thrust plate -VW 401- -5- and ball bearing -4- when pressing in the hub or when the parts are placed on a workbench, etc.*



- Press wheel hub into wheel bearing.
- Install wheel bearing unit => [page 65](#) .

## 6 Front and rear cross members, body brace

⇒ „6.1 Exploded view of front and rear cross members, body brace“, page 70

⇒ „6.2 Removing and installing front and rear cross members“, page 70

⇒ „6.3 Removing and installing body brace“, page 72

### 6.1 Exploded view of front and rear cross members, body brace

#### 1 - Front cross member

- Removing and installing  
⇒ page 71

#### 2 - Bolt, 23 Nm

#### 3 - Rear cross member

- Removing and installing  
⇒ page 71

#### 4 - Bolt, 23 Nm

#### 5 - Bolt, 9 Nm

#### 6 - Support for windscreen cross member connecting element

#### 7 - Windscreen cross member

#### 8 - Bolt, 44 Nm

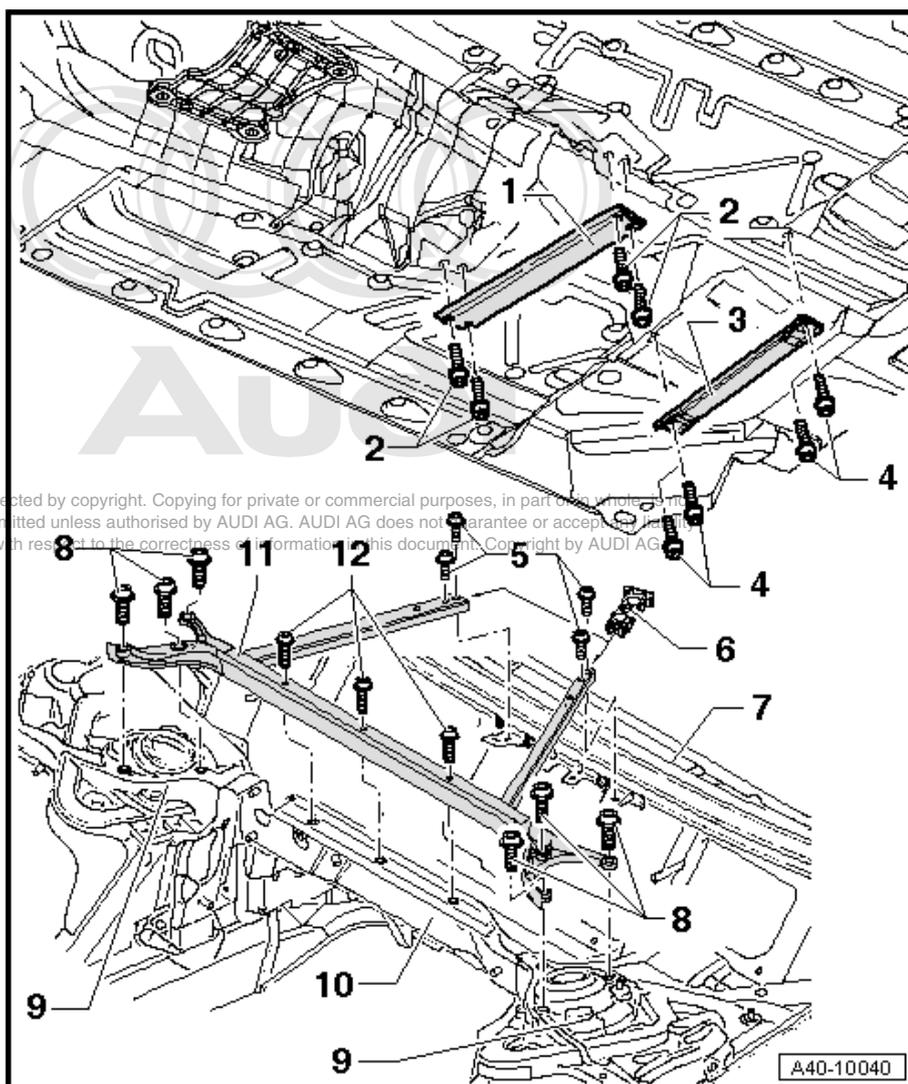
#### 9 - Suspension strut mounting

#### 10 - Plenum chamber (front section)

#### 11 - Body brace

- Removing and installing  
⇒ page 72

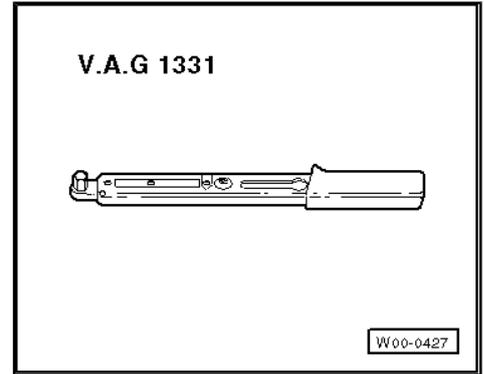
#### 12 - Bolt, 3 Nm



### 6.2 Removing and installing front and rear cross members

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-

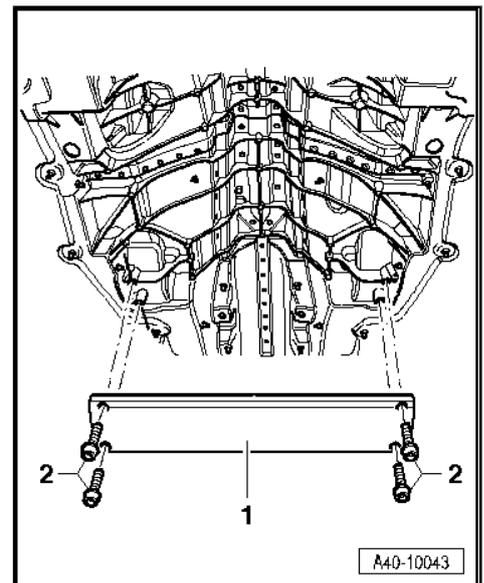


### Removing and installing front cross member

- Mark installation position of front cross member -1-.
- Remove bolts -2-.
- Detach front cross member -1-.

Installation is carried out in the reverse sequence.

- Note correct position of front cross member -1-.
- Tightening torque for bolts -2- ⇒ [Item 2 \(page 70\)](#)

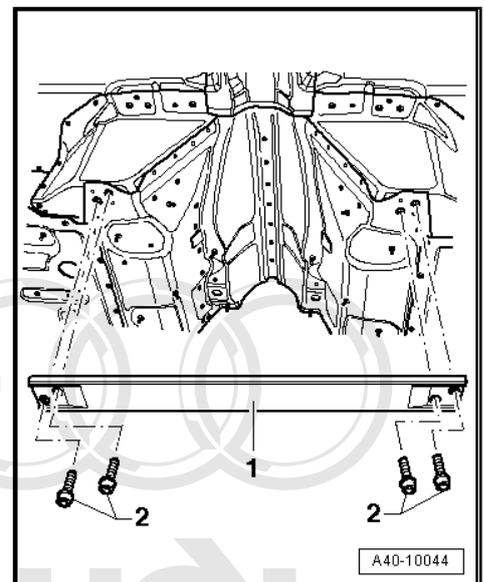


### Removing and installing rear cross member

- Mark installation position of rear cross member -1-.
- Remove bolts -2-.
- Detach rear cross member -1-.

Installation is carried out in the reverse sequence.

- Note correct position of rear cross member -1-.
- Tightening torque for bolts -2- ⇒ [Item 4 \(page 70\)](#)



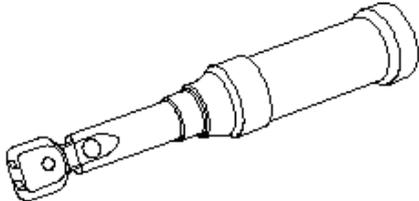
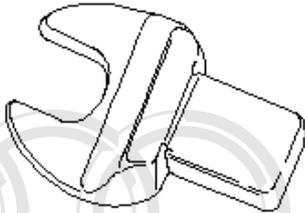
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



### 6.3 Removing and installing body brace

#### Special tools and workshop equipment required

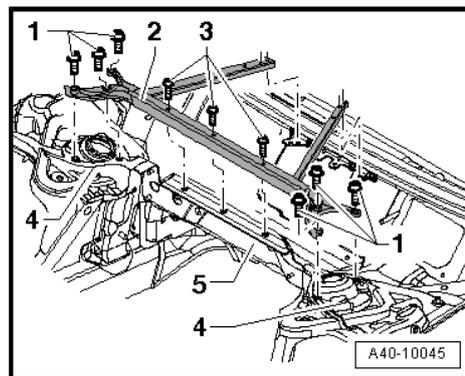
- ◆ Torque wrench -V.A.G 1332-
- ◆ Torque wrench -V.A.G 1783-
- ◆ Open end spanner insert (10 mm) -V.A.G 1783/1-

<p>V.A.G 1332</p> 	<p>V.A.G 1783</p> 
<p>V.A.G 1783/1</p> 	
	<p style="text-align: right;">G40-10004</p>

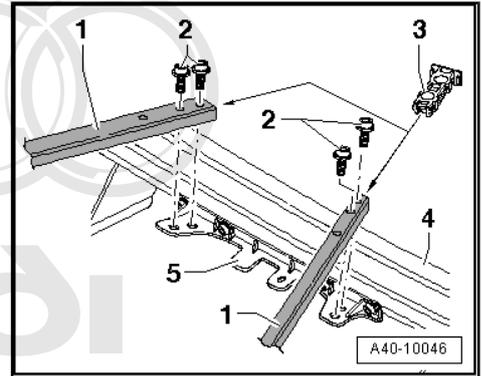
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

#### Removing

- Remove bolts -1-.
- Remove bolts -3-.
- 2 - Body brace
- 4 - Suspension strut mounting
- 5 - Plenum chamber (front section)

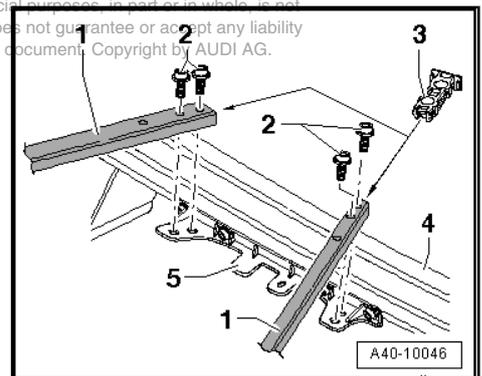


- Remove bolts -2-.
  - Take out body brace -1- together with supports for windscreen cross member connecting element -3-.
  - If necessary, pull supports for windscreen cross member connecting element -3- out of body brace -1-.
- 4 - Windscreen cross member  
 5 - Connecting element for windscreen cross member

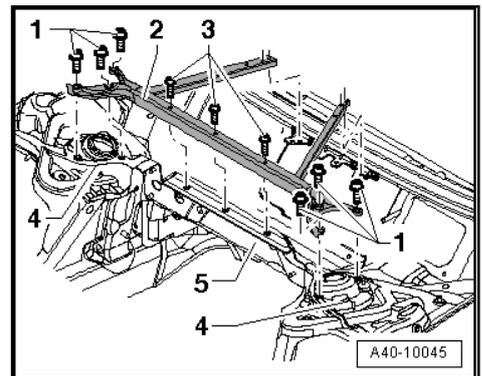


### Installing

- Fit supports for windscreen cross member connecting element -3- in body brace -1-.
- Secure body brace -1- and supports for windscreen cross member connecting element -3- to windscreen cross member connecting element -5-.
- For this step, install bolts -2- and tighten to specified torque => [Item 5 \(page 70\)](#).



- Install bolts -3- and tighten to specified torque => [Item 12 \(page 70\)](#).
- Install bolts -1- and tighten to specified torque => [Item 8 \(page 70\)](#).



## 7 Drive shaft

⇒ „7.1 Removing and installing drive shaft“, page 74

⇒ „7.2 Exploded view of drive shaft with peened triple roller joint AAR 3300 i and outer constant velocity joint (100 mm dia.)“, page 78

⇒ „7.3 Dismantling and assembling peened triple roller joint AAR 3300 i“, page 80

⇒ „7.4 Servicing outer constant velocity joint (100 mm dia.)“, page 87

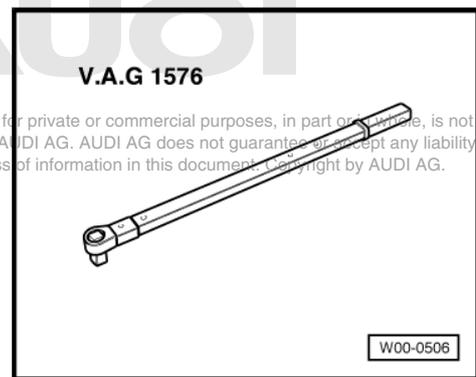
⇒ „7.5 Dismantling, checking and assembling outer constant velocity joint“, page 88

### 7.1 Removing and installing drive shaft

#### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1576-

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

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).

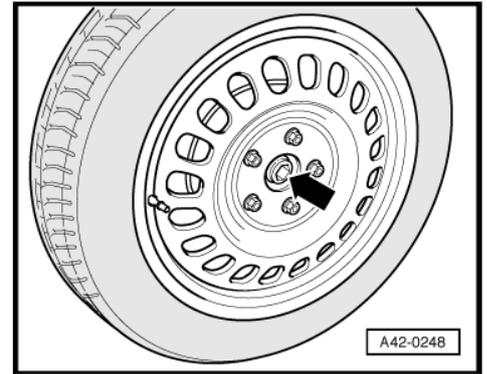
- Loosen the flange bolt -arrow- only 90°, otherwise the wheel bearing will be damaged.



**WARNING**

*The vehicle must be standing on its wheels when loosening and tightening the flange bolt.*

*-Accident risk-*



- Remove wheel.
- Screw in and hand-tighten all 5 wheel bolts again.

A second mechanic is required for the next operation.

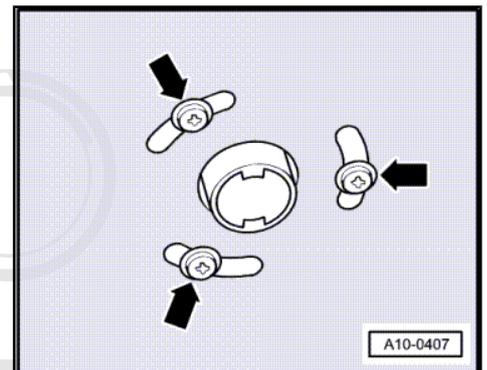
- 1st mechanic gets into vehicle and presses brake pedal.
- 2nd mechanic unscrews flange bolt for drive shaft.

The wheel bearings must not be subjected to load after the flange bolt has been slackened or removed.

If the wheel bearings are subjected to the full weight of the vehicle they will be overloaded, resulting in reduced service life.

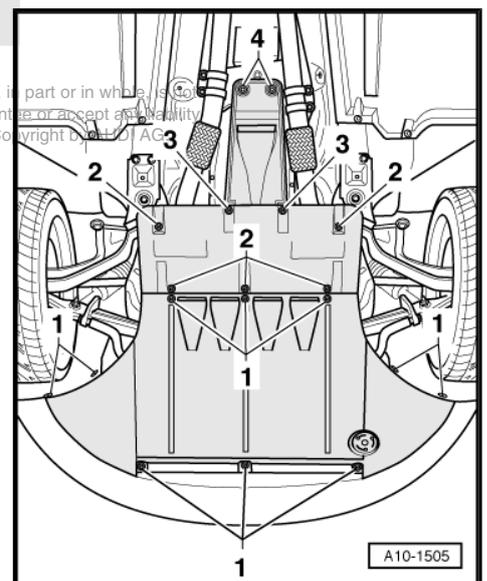
If a vehicle has to be moved after removing the drive shaft, first install an outer joint in place of the drive shaft and tighten to 200 Nm. Otherwise the wheel bearing will be damaged.

- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.



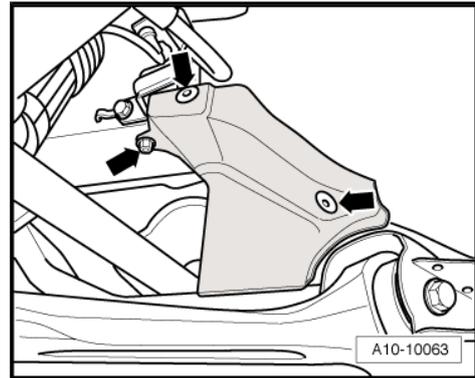
- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.
- Detach guide link at wheel bearing housing → [page 54](#).

This document is intended for informational purposes only. It is not to be used for commercial purposes, in part or in whole, without the express written permission of Audi AG. Audi AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright © 2011 Audi AG.

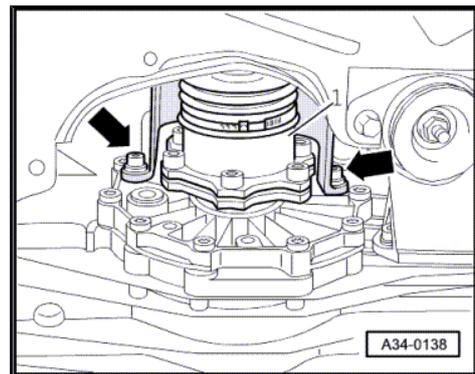




- Detach noise insulation (if fitted) -arrows-.
- Pull drive shaft out of wheel bearing housing.



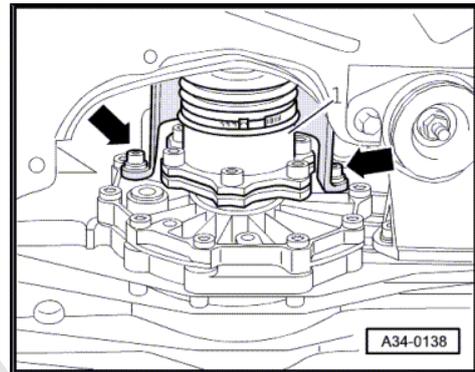
- Unbolt drive shaft -1- from flange shaft.
- Take out drive shaft.



### Installing

Installation is carried out in the reverse sequence. Note the following points:

- Fit inner joint -1- of drive shaft in position and pre-tighten bolts in diagonal sequence to 10 Nm.
- Tighten bolts securing drive shaft to flange shaft/gearbox => [Item 14 \(page 79\)](#) .
- Attach guide link at wheel bearing housing => [page 54](#) .

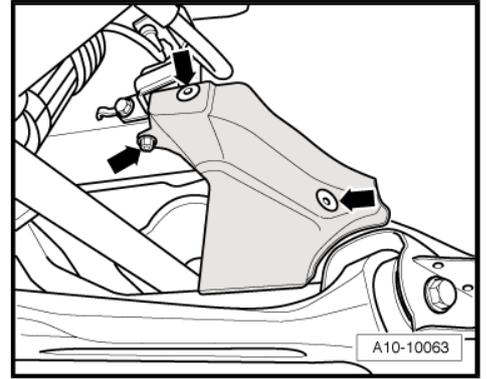


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Install noise insulation (if fitted) -arrows-.
- Fit noise insulation ⇒ Rep. gr. 50 .

A second mechanic is required when tightening flange bolt for drive shaft.

- 1st mechanic gets into vehicle and presses brake pedal.
- 2nd mechanic tightens flange bolt for drive shaft ONLY to 200 Nm.
- Fit and secure wheel ⇒ Wheels and tyres; Rep. gr. 44 .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Tighten bolt securing drive shaft by turning flange bolt 180° further.



**WARNING**

*The vehicle must be standing on its wheels when loosening and tightening the flange bolt.*

*-Accident risk-*

**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.

## 7.2 Exploded view of drive shaft with peened triple roller joint AAR 3300 i and outer constant velocity joint (100 mm dia.)

### 1 - Hose clip

- Always renew
- Installing hose clip  
⇒ [page 86](#)
- Depending on type of clip, use hose clip pliers -V.A.G 1275- to tighten  
⇒ [page 86](#)
- Depending on type of clip, use pliers -3340- to tighten  
⇒ [page 87](#)

### 2 - Boot for triple roller joint

- Boot must rest in groove and on contour of joint body.
- Briefly lift boot to equalise pressure before tightening hose clip

### 3 - Hose clip

- Always renew
- Tightening ⇒ [page 86](#)

### 4 - Circlip

- Always renew
- Fit into annular groove on shaft before installing (no longer visible once joint is installed)
- Before fitting constant velocity joint, align circlip centrally with opening facing upwards.

### 5 - Outer constant velocity joint

- Renew only as complete unit
- Detaching ⇒ [page 87](#)
- Checking ⇒ [page 88](#)
- Installing ⇒ [page 87](#)
- Greasing ⇒ [page 79](#)
- Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft

### 6 - Flange bolt

- Always renew

Observe instructions for removal ⇒ [page 74](#)

Observe instructions for installation ⇒ [page 76](#)

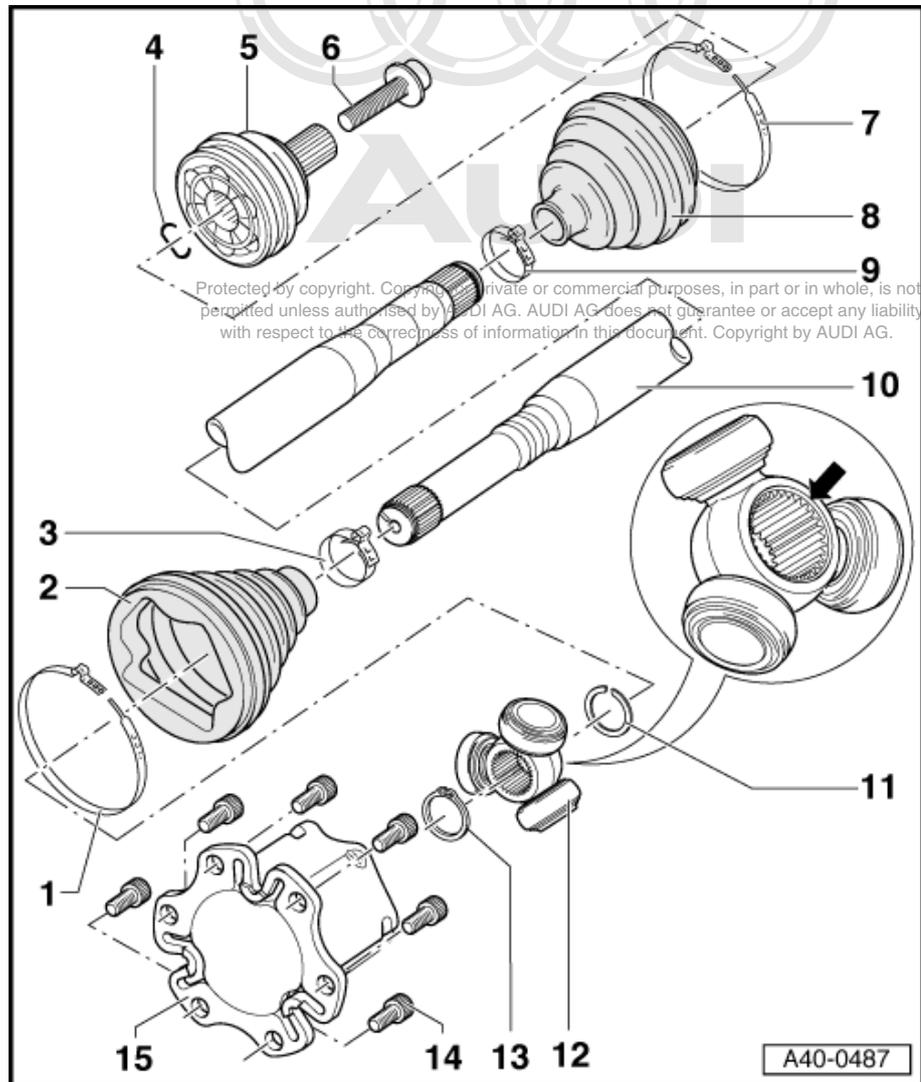
- Tightening torque ⇒ [page 76](#)

### 7 - Hose clip

- Always renew
- Tightening ⇒ [page 88](#)

### 8 - Boot for outer constant velocity joint

- Check for splits and chafing



- Briefly lift boot to equalise pressure before tightening hose clip

**9 - Hose clip**

- Always renew
- Tightening => [page 88](#)

**10 - Drive shaft**

- Removing and installing => [page 74](#)

**11 - Circlip**

- For correct version refer to => Electronic parts catalogue „ETKA“

**12 - Triple roller spider**

Chamfer -arrow- faces towards drive shaft splines

- Grease splines on drive shaft lightly with grease used in joint when fitting triple roller spider onto drive shaft.

**13 - Circlip**

- Renew
- Insert in groove on shaft

**14 - Bolt, 70 Nm**

- Always renew
- Pre-tighten to 10 Nm in diagonal sequence

**15 - Joint body**

**Grease quantity and type**

Regrease joint when renewing boot.

Refer to => Electronic parts catalogue „ETKA“ for grease filling in joints.



**Note**

*Note that different types of grease are required for outer and inner joints.*

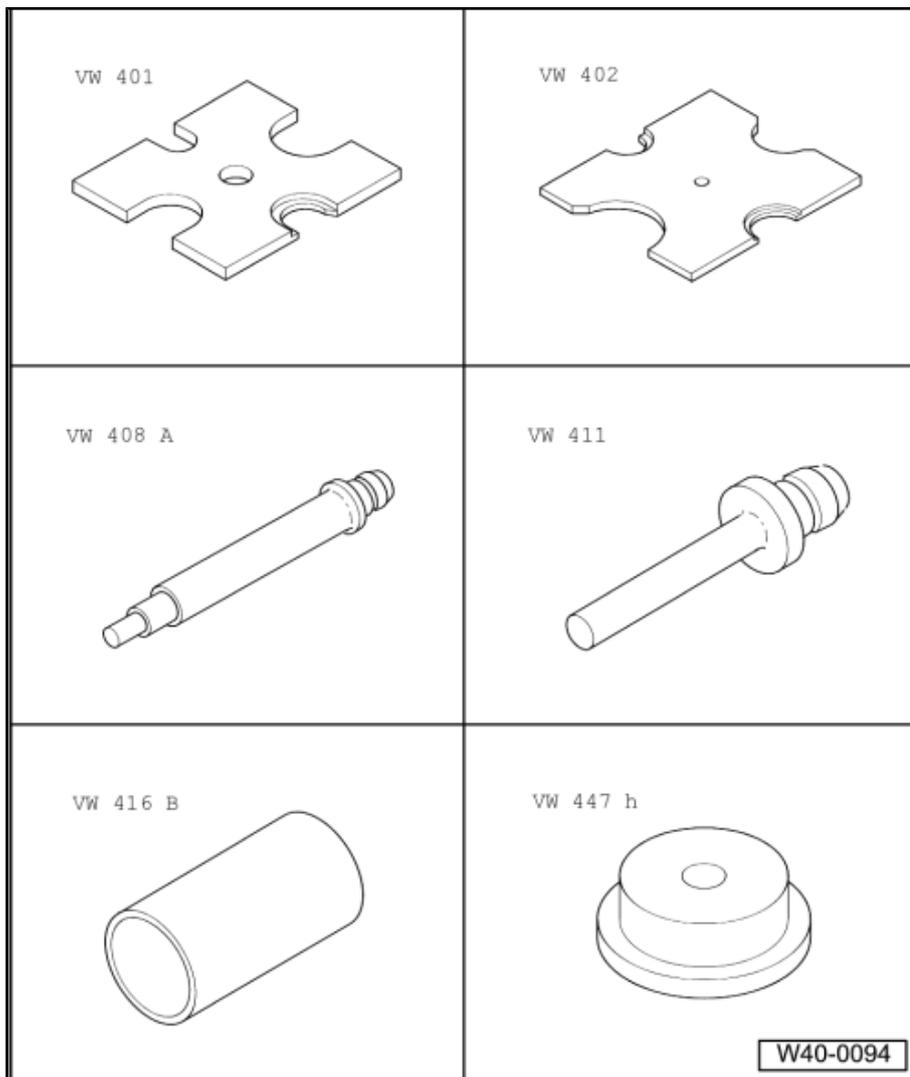
Outer joint	Grease		of which in:	
	Total quantity	Joint	Joint	Boot
∅ mm	[g]	[g]	[g]	[g]
100	120	70	50	
Inner joint				
	130	70	60	



### 7.3 Dismantling and assembling peened triple roller joint AAR 3300 i

#### Special tools and workshop equipment required

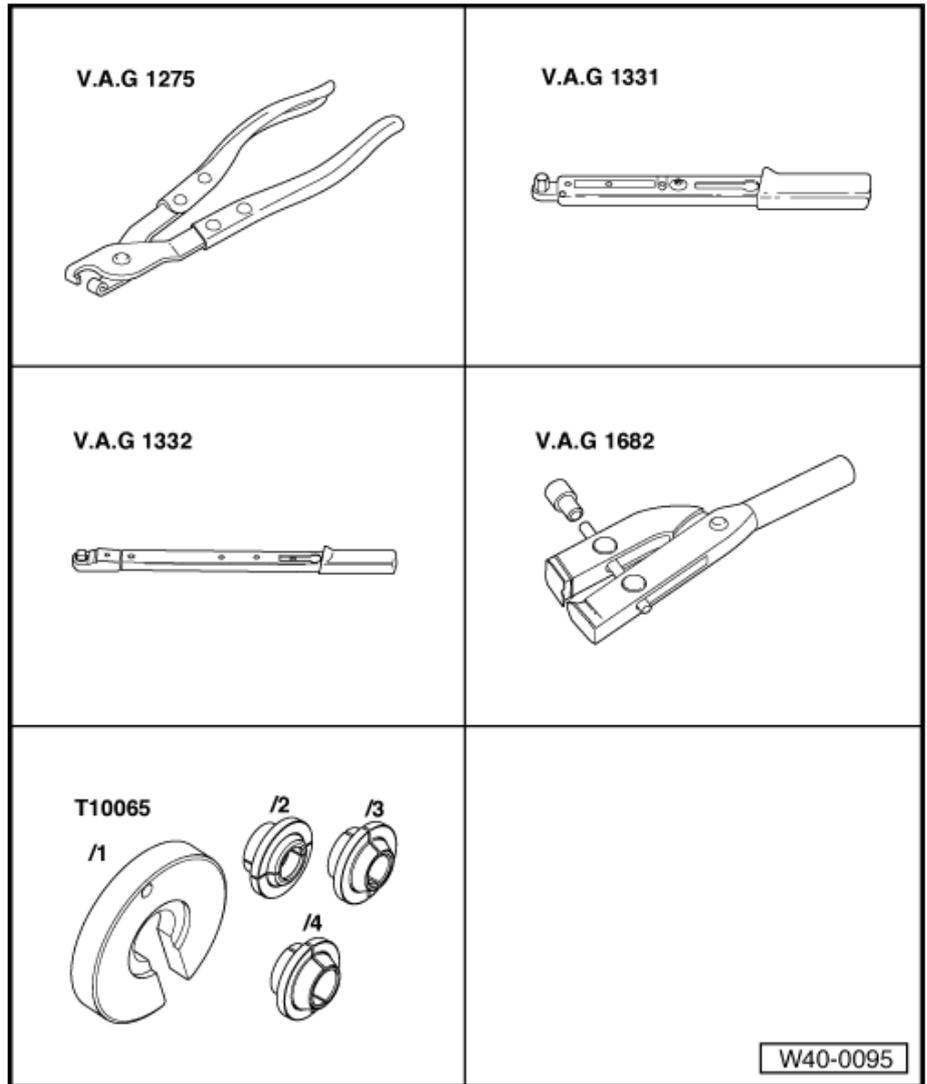
- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 408 A-
- ◆ Press tool -VW 411-
- ◆ Tube -VW 416 B-
- ◆ Thrust plate -VW 447 H-



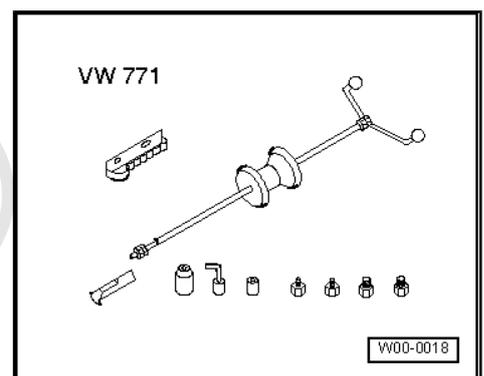
# Audi

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.

- ◆ Hose clip pliers -V.A.G 1275-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Clamp tensioner -V.A.G 1682-
- ◆ Assembly tool -T10065-



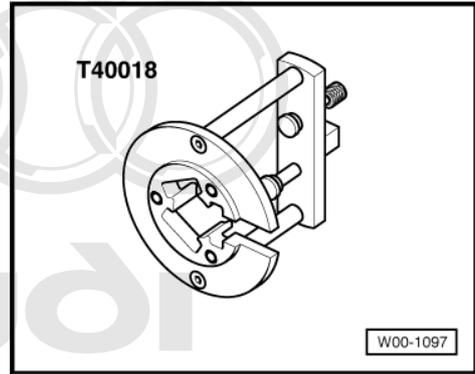
- ◆ Multi-purpose tool -VW 771-



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



- ◆ Assembly tool -T40018-



- ◆ Pliers -3340-

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



- ◆ Brass/copper drift
- ◆ Circlip pliers (commercially available)

**Dismantling triple roller joint AAR 3300 i**

- Clamp drive shaft horizontally in vice.



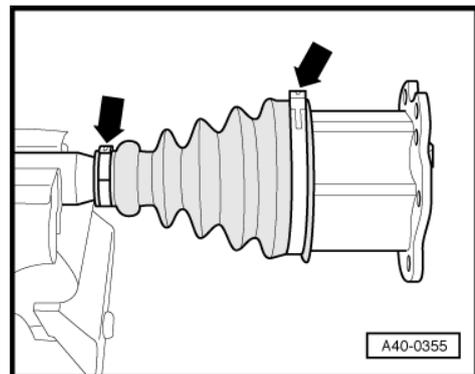
**Note**

- ◆ Use protective jaw covers
  - ◆ Take care not to damage drive shaft.
- Mark position of joint body relative to drive shaft.

The joint may be noisy if these parts are not marked and reinstalled in their original positions.

Use a waterproof felt-tip pen for marking.

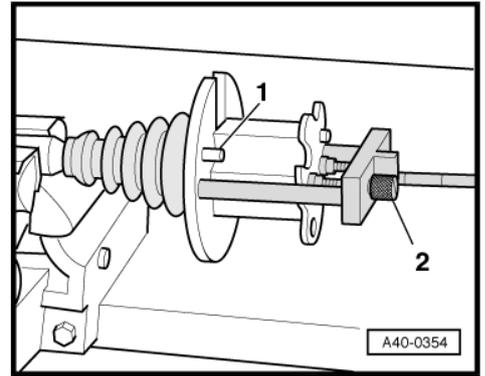
- Open hose clips -arrows-.
- Push back boot.



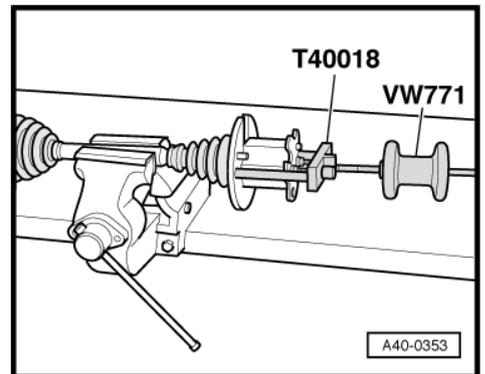
- Apply removal and assembly tool -T40018- behind joint body.  
Locating pin -1- must lie against outside of joint body.
- Bring assembly tool -T40018- into contact with joint body by turning knurled screws -2-.

 **Note**

- ◆ *Joint body must be fixed in assembly tool -T40018- without play.*
- ◆ *Tighten screws -2- only hand-tight.*



- Screw multi-purpose tool -VW 771- into removal and assembly tool -T40018- .
- Pull off joint body horizontally with multi-purpose tool .  
Leave joint body clamped in assembly tool -T40018- .



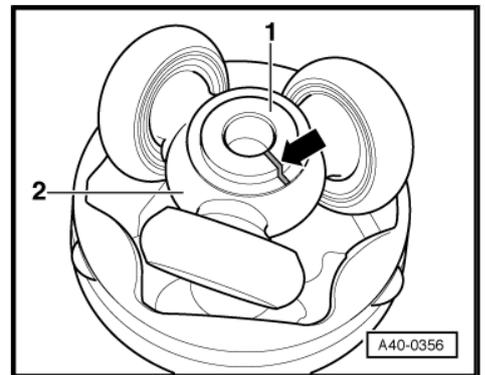
- Mark installation position of components -1- and -2- as shown.

The joint may be noisy if these parts are not marked and reinstalled in their original positions.  
Use a waterproof felt-tip pen for marking.

1 - Drive shaft

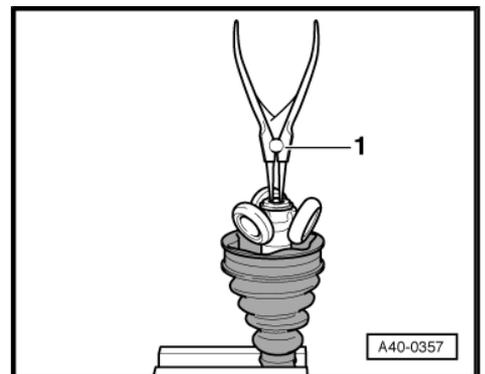
2 - Triple roller spider

- Using a lint-free cloth, remove grease from joint body and remaining parts of joint.



- Remove circlip.

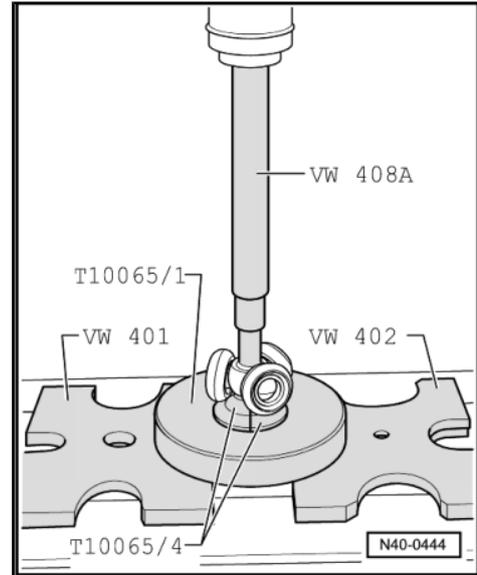
1 - Circlip pliers (commercially available)



- Press triple roller spider off drive shaft.

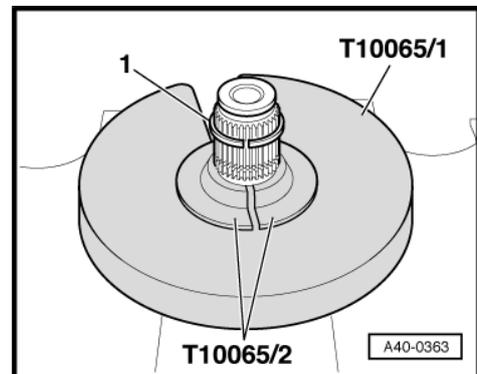
Assembly tool -T10065/4- must not make contact with joint rollers.

- Pull off boot.
- Remove grease from shaft splines and boot.
- Check rollers and roller races for wear.
- Clean drive shaft and housing.



### Assembling triple roller joint AAR 3300 i

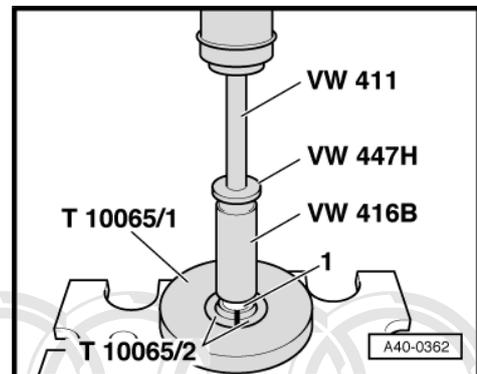
- Push new joint boot onto drive shaft.
- Press on circlip -1- as far as centre of splines.



- Use the special tools shown in the illustration.

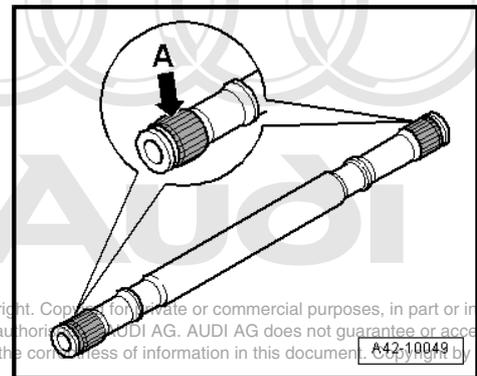
Instead of -T10065/2- for drive shaft with tapered end, use - T10065/3- for drive shaft with cylindrical (straight) end

[=> page 84](#) .



### Pressing triple roller spider onto drive shaft

- Grease splines -A- on drive shaft lightly with grease used in joint before fitting triple roller spider onto drive shaft.
- Fit triple roller spider onto shaft according to markings and drive home onto stop.



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 © 2011 by AUDI AG.

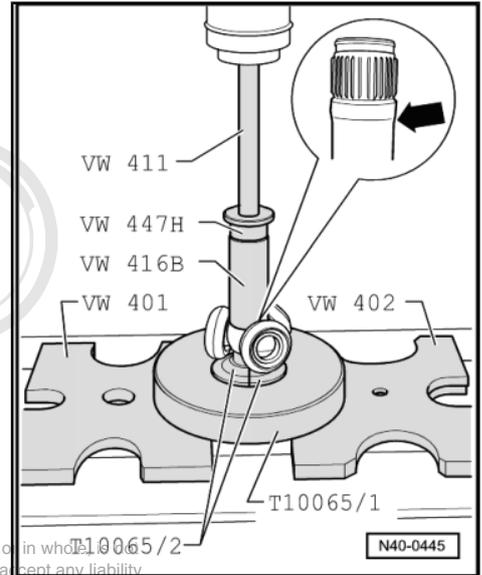
**This description only applies to drive shafts with tapered end -arrow-.**

Chamfer on spider faces towards drive shaft and is used as an assembly aid.

- Use the special tools shown in the illustration.

Special tool -T10065/2- must not rest on rollers.

- Fit triple roller spider onto shaft according to markings and drive home onto stop.
- Circlip must engage audibly. Triple roller spider must lie directly against circlip (zero gap).



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

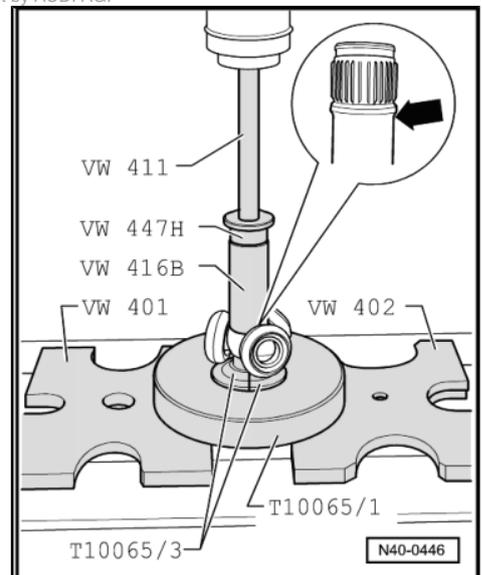
**This description only applies to drive shafts with cylindrical end -arrow-.**

Chamfer on spider faces towards drive shaft and is used as an assembly aid.

- Use the special tools shown in the illustration.

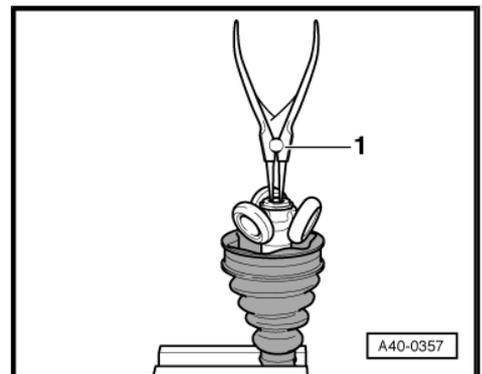
Special tool -T10065/3- must not rest on rollers.

- Fit triple roller spider onto shaft according to markings and drive home onto stop.
- Circlip must engage audibly. Triple roller spider must lie directly against circlip (zero gap).



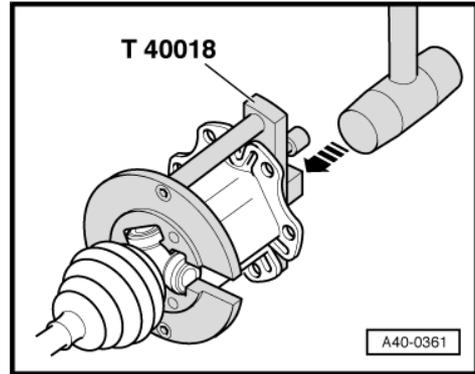
- Fit circlip.
- 1 - Circlip pliers (commercially available)
- Press 70 g of high-temperature grease from repair kit into triple roller joint.
- Lightly grease rollers.

Make sure rollers are aligned straight.





- Use plastic-headed hammer to drive joint body over triple roller spider.
- Pack remaining quantity of grease into boot.
- Make sure boot is properly seated on joint body.
- Boot must engage in groove and make contact with contour of joint body.

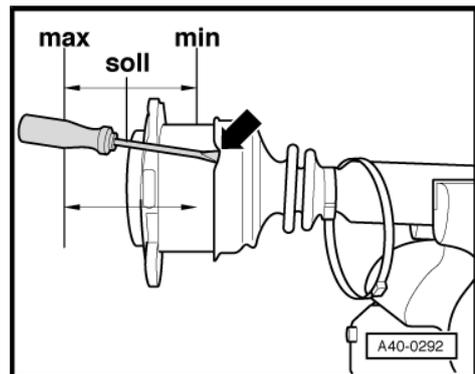


- Position joint body in central position. Refer to „min - max“ position.



**Note**

*When setting joint body to centre position, use screwdriver or similar to vent boot -arrow-.*

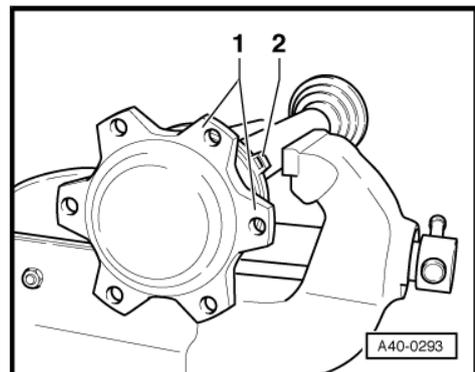


- Install hose clip.

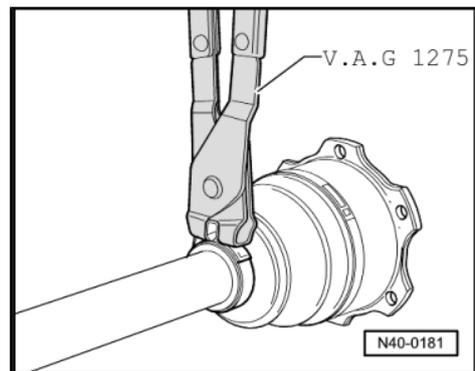


**Note**

*To facilitate fitting of multi-point socket head bolts when installing drive shaft, fastener lug -2- on hose clip must be positioned between mounting flanges -1- on joint body.*

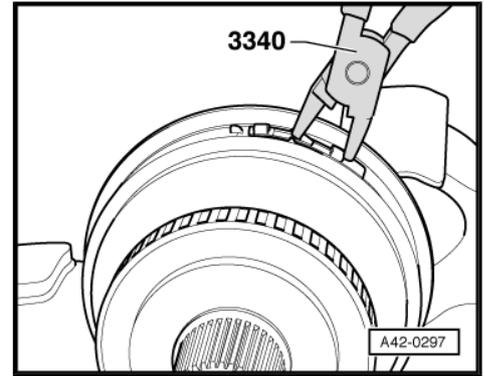


- Depending on type of clip, use hose clip pliers -V.A.G 1275- to tighten small and large hose clips.



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

- Depending on type of clip, use pliers -3340- to tighten small and large hose clips.

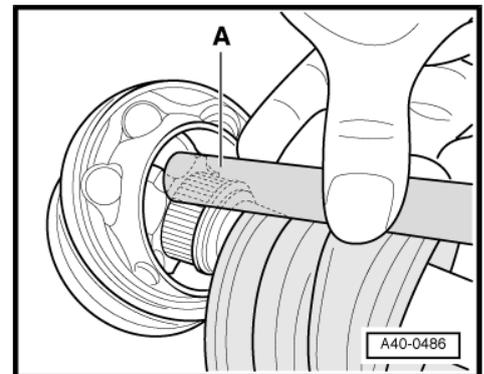


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the accuracy of the information.

## 7.4 Servicing outer constant velocity joint (100 mm dia.)

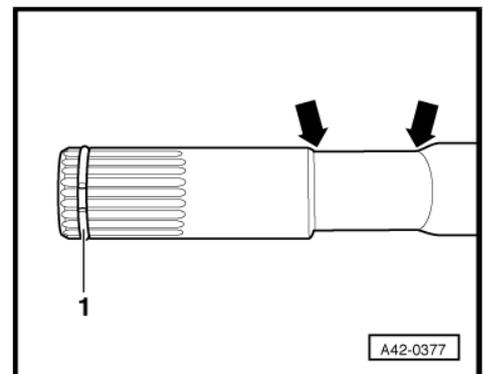
### Removing outer constant velocity joint

- Clamp drive shaft in vice using protective jaw covers.
- Unfasten both clips and detach boot from outer joint.
- Use hammer to tap copper or brass drift -A- against inner race of constant velocity joint.
- Detach joint and boot.
- Remove grease from outer joint, boot and drive shaft.



### Installing outer constant velocity joint

- Push boot with small hose clip onto drive shaft.
- Boot and drive shaft must be free from grease.
- 1 - Circlip (always renew)
- Position CV joint boot between arrows.
  - Pack 70 g of drive shaft grease inside joint body.

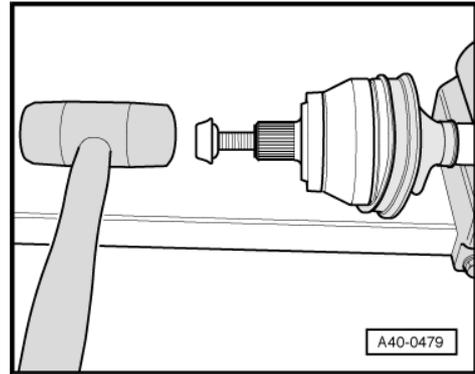




- Screw old drive shaft bolt into joint body as shown.
- Use plastic hammer to drive joint onto drive shaft until circlip engages.
- Pack 50 g of drive shaft grease into joint (boot side).
- Grease outer constant velocity joint => [page 79](#) .
- Push boot onto joint body.
- Make sure boot is properly positioned on joint body.
- Boot must rest in groove and on contour of joint body.

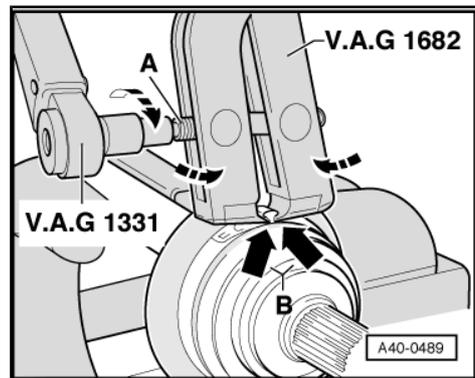
Instructions apply only to stainless steel clips.

Galvanised hose clips for boots made of rubber material are tightened using hose clip pliers -V.A.G 1275- .



#### Tightening large and small hose clips on outer joint

- Apply clamp tensioner -V.A.G 1682- as shown. Ensure jaws of clamp tensioner make contact with both sides of lug -arrows B- on hose clip.
- Tighten hose clip by turning spindle with torque wrench (take care to keep tool straight).
- ◆ Tightening torque: 20 Nm.
- ◆ Use torque wrench with 5...50 Nm adjustment range (e.g. - V.A.G 1331- ).
- ◆ Make sure thread of spindle on tool -A- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.



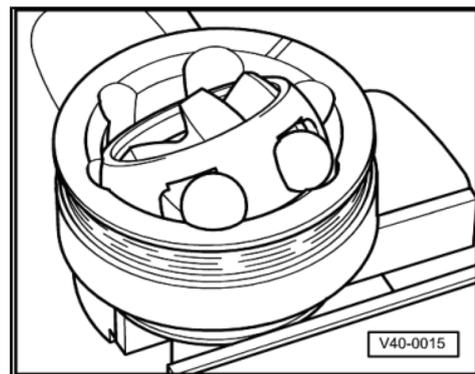
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

## 7.5 Dismantling, checking and assembling outer constant velocity joint

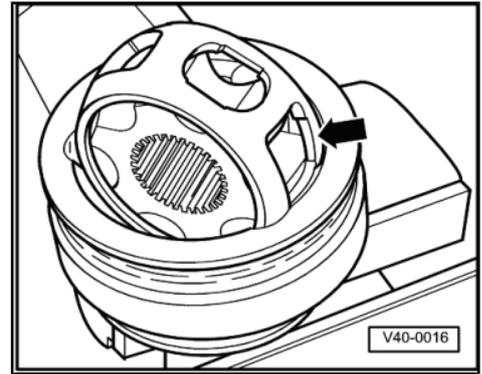
The joint should be dismantled to renew dirty grease or for checking the balls and ball races for wear and damage.

#### Dismantling

- Before dismantling, mark position of ball hub in relation to ball cage and joint body with an electric scribe or oil stone.
- Swivel ball hub and ball cage.
- Take out balls one after the other.



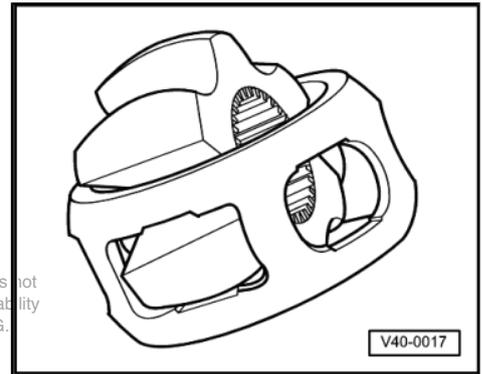
- Turn the cage until the two rectangular openings -arrow- are level with the joint body.
- Lift out cage together with hub.



- Swivel segment of hub with short lobe into square cage opening.
- Pivot hub out of cage.

### Checking

The 6 balls in each joint belong to one tolerance group. Check stub axle, hub, cage and balls for pitting and signs of seizure. Excessive backlash in the joint will cause knocking or jolts under load change; in such cases the joint must be renewed. Polished areas and visible tracks in the ball races do not justify renewal of the joint.



### Assembling

- Fit cage with hub into joint body.



*Make sure cage is inserted in correct position (i.e. sides facing in same direction as original position).*

- Press in balls one after the other from opposite sides, taking care to re-establish original position of hub relative to cage and joint body.
- Pack required amount of grease into joint body ⇒ [page 79](#) .

## 42 – Rear suspension

### 1 General notes on rear axle

⇒ „1.1 Contact corrosion“, page 90

⇒ „1.2 General notes“, page 90

⇒ „1.3 Repairing threads in longitudinal member“, page 91

⇒ „1.4 Raising wheel bearing housing to reference position before tightening bolts“, page 92

⇒ „1.5 Exploded view of rear axle“, page 95

#### 1.1 Contact corrosion

Contact corrosion can occur if unsuitable fasteners (bolts, nuts, washers ...) are used.

For this reason, all the fastening components have received a special surface treatment (Dacromet). These components can be recognised by their greenish colour.

In addition, rubber parts, plastic parts and adhesives are made of non-conductive material.

Always install new parts if you are not sure whether used parts can be refitted.

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

**Always use genuine parts. These have been tested and are compatible with aluminium.**

**Accessories must be approved by AUDI AG.**

**Damage resulting from contact corrosion is not covered under the warranty.**

#### 1.2 General notes

- Load-bearing components and suspension parts must not be welded or straightened.
- Do not attempt to move the vehicle without the drive shafts fitted; this would result in wheel bearing damage. If the vehicle does have to be moved, always note the following points:
  - Fit an outer joint in place of the drive shaft.
  - Tighten the outer joint to 200 Nm.
  - Bonded rubber bushes can only be turned to a limited extent. For this reason, do not tighten bolted connections on components with bonded rubber bushes until the wheel bearing housing has been lifted (suspension in reference position)  
⇒ [page 92](#) .
- When installing vehicle level sender, refer to  
⇒ [Item 26 \(page 97\)](#) .

If the wheel alignment has to be checked and adjusted at a later stage, all bolts and nuts which need to be slackened to make adjustments should initially only be tightened to the specified torque figure. After wheel alignment has been checked and adjusted, bolts and nuts must then be fully tightened by turning them through the specified angle.



**WARNING**

*All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.*

### 1.3 Repairing threads in longitudinal member

#### Special tools and workshop equipment required

- ◆ Thread repair kit -VAS 6027-

Exchangeable threaded plates and thread inserts made of wire for tapped holes as per DIN 8140 (Helicoil) are provided for attaching subframes to body.

The exploded views of the components indicate which threads can be repaired.

#### Repairing damaged threads

Replace damaged Helicoil threaded inserts with next largest size. Note the following points:

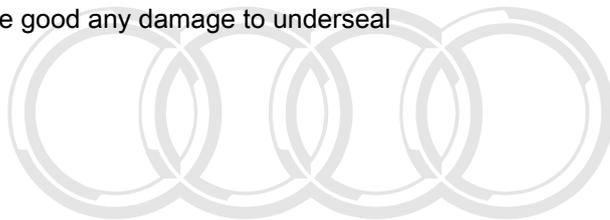
- ◆ Each thread can only be repaired once.



**WARNING**

*Always wear safety goggles when drilling.*

- ◆ Helicoil thread inserts must have a zinc-nickel coating.
- ◆ The thread insert must be of the same length as the thread in the body.
- ◆ Have all thread repairs checked by foreman or supervisor.
- ◆ Metal particles remaining in the vehicle body must be embedded in wax.
- ◆ Make good any damage to underseal



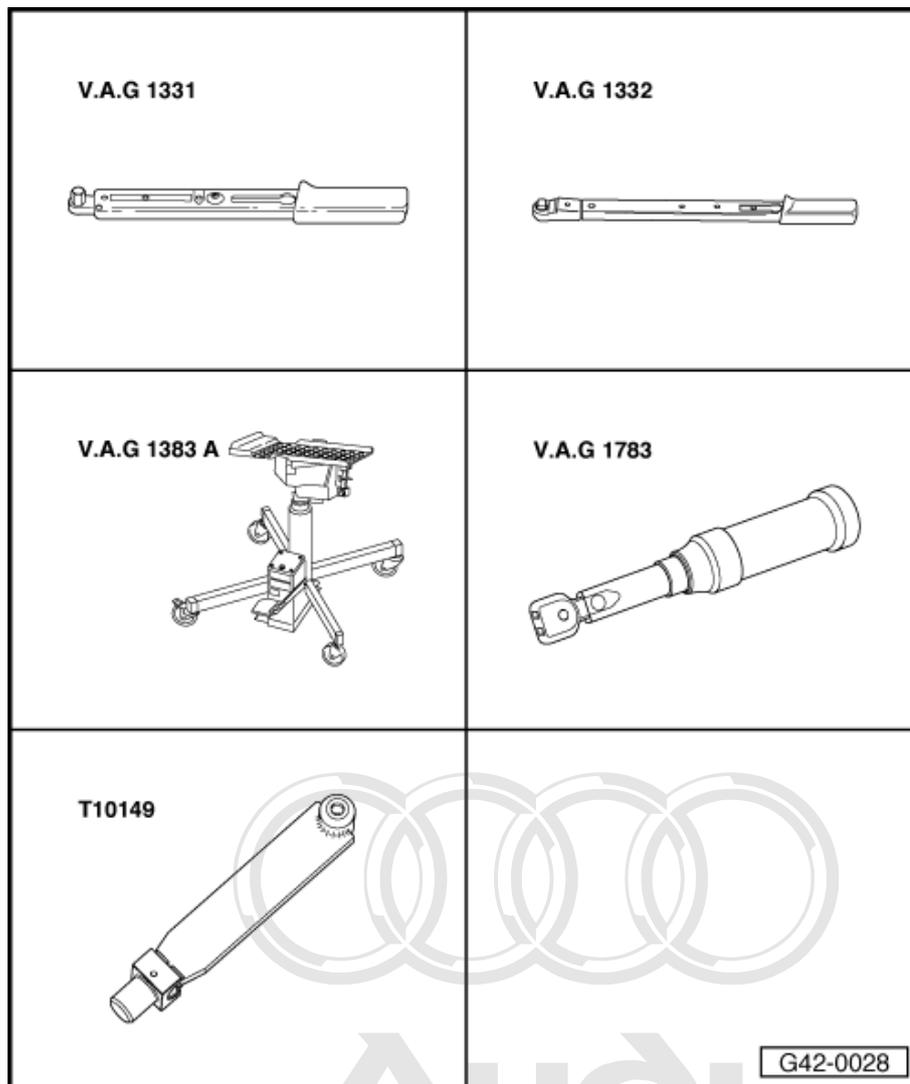
**Audi**

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.

## 1.4 Raising wheel bearing housing to reference position before tightening bolts

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Torque wrench -V.A.G 1783-
- ◆ Support -T10149-



- ◆ Open end spanner insert, 10 mm -V.A.G 1783/1-

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



- ◆ Wooden block (hardwood) 30 x 50 x 1000 mm

Bonded rubber bushes can only be turned to a limited extent.

Therefore, before tightening the bolts, suspension components with bonded rubber bushes must be brought into a position corresponding to the normal position of the vehicle while driving (reference position).

Otherwise, the bush would be subject to torsion loading and its service life shortened.

This position can be simulated on the lifting platform by raising the wheel bearing housing with engine and gearbox jack -V.A.G 1383 A- and support -T10149- .

**Steps required before setting reference position**

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel housing liner ⇒ Rep. gr. 66 .
- Clean area around air connection.
- Unscrew connection piece -1- on residual pressure valve -2-. This will allow air to escape.

 **Note**

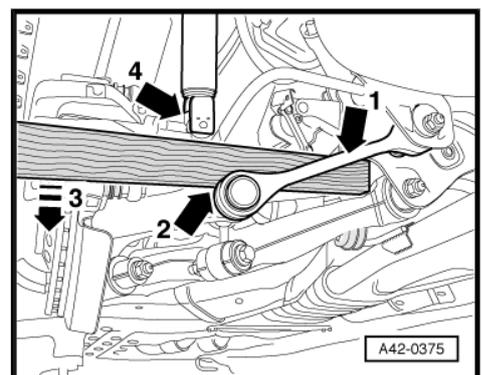
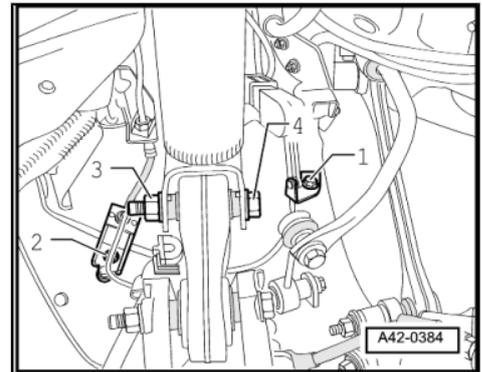
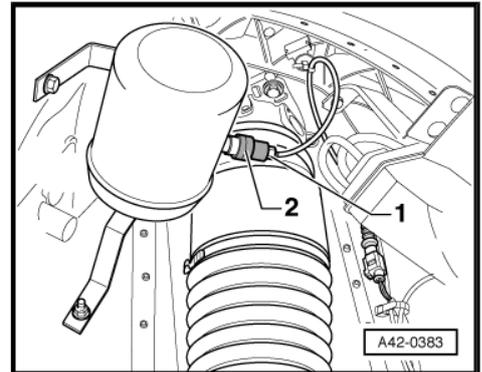
*The residual pressure valve -2- MUST NOT be loosened or removed.*

- Seal both connections. Take care to prevent dirt entering the connections.
- Unscrew bolt -1- on vehicle level sender.
- Remove nut -3-.
- Press down wheel bearing housing by hand and pull out bolt -4- on air spring strut/transverse link.

- Insert wooden block in subframe -arrow 1- and support against wheel bearing housing -arrow 2-.
- Use wooden block to press down wheel bearing housing -arrow 3- until fork -arrow 4- of air spring strut can be detached to the rear.

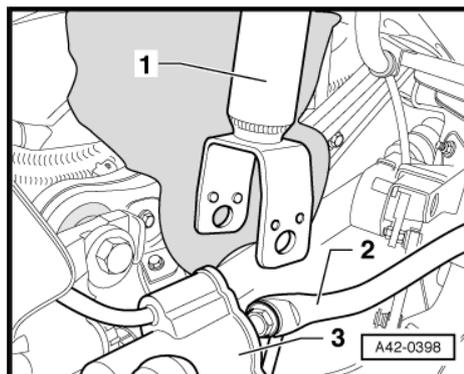
This requires a second mechanic to pull fork of air spring strut out to the rear.

- Place folded cloth between air spring strut and transverse link.





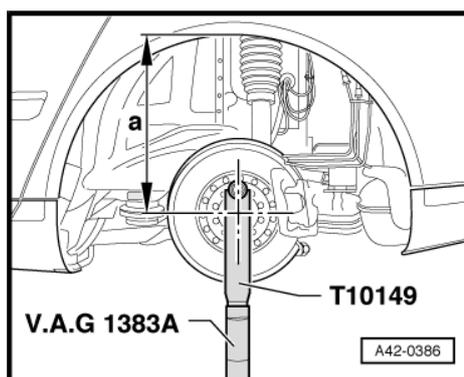
- Slowly relieve load on wheel bearing housing. When doing this, do not allow air spring strut -1- to rest on housing of parking brake -3- or anti-roll bar -2-.



- Use wheel bolt to attach support -T10149- .
- Insert support -T10149- in engine/gearbox jack -V.A.G 1383 A- and press wheel bearing housing upwards until reference position, dimension -a-, is attained.

#### Reference position

- ◆ Dimension -a- for vehicles with standard running gear: 398 mm
- ◆ Dimension -a- for vehicles with sports running gear: 378 mm

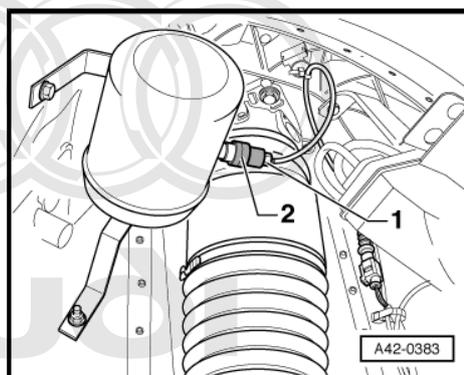


#### WARNING

- ◆ *Do not lift or lower the vehicle while the engine/gearbox jack is under the vehicle.*
- ◆ *Do not leave the engine/gearbox jack under the vehicle for longer than necessary.*

#### Operations following setting of reference position

- Tighten relevant bolts/nuts.
- Lower wheel bearing housing.
- Pull out engine and gearbox jack from underneath vehicle.
- Detach support -T10149- .
- Fit air spring strut on transverse link.
- Screw on connection piece -1- at residual pressure valve -2- ⇒ [Item 37 \(page 135\)](#) .
- Fit wheel housing liner ⇒ Rep. gr. 66 .

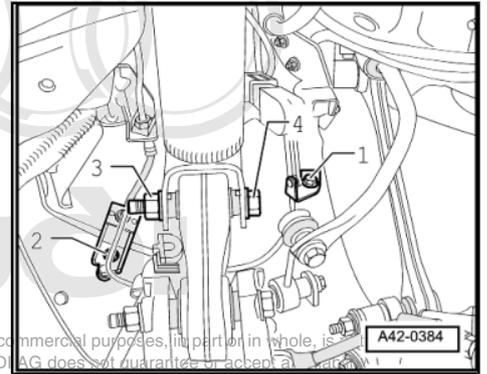


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- For attachment of vehicle level sender -1-, refer to [⇒ Item 26 \(page 97\)](#) .
- Only hand-tighten nut -3-.

 **Note**

*The bolt -4- cannot be tightened when the suspension is in the reference position. This must therefore be done with the suspension at „normal level“ when the vehicle is standing on the ground.*



- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- With vehicle standing on ground at „normal level“, tighten bolt -4- ⇒ [Item 6 \(page 117\)](#) . When doing this, counterhold nut -3-.
- Re-adapt reference position ⇒ [page 202](#) .

## 1.5 Exploded view of rear axle

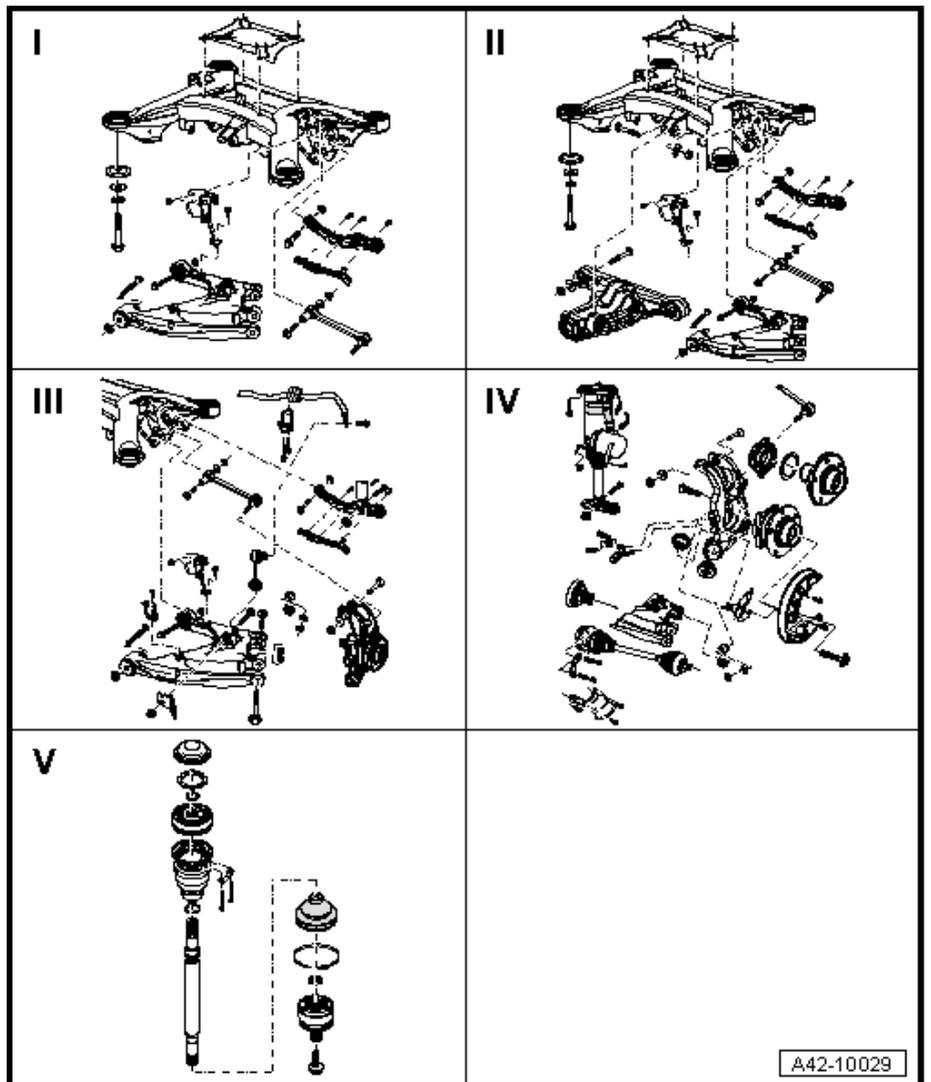
I - Subframe - front-wheel drive ⇒ [page 96](#)

II - Subframe - four-wheel drive ⇒ [page 106](#)

III - Anti-roll bar, transverse link, track rod, coupling rods, trapezium link, vehicle level sender ⇒ [page 117](#)

IV - Air spring strut, wheel bearing housing, wheel bearing unit, bonded rubber bush for wheel bearing housing ⇒ [page 132](#)

V - Drive shaft ⇒ [page 158](#)



## 2 Subframe - front-wheel drive

⇒ „2.1 Exploded view of subframe - front-wheel drive“, page 96

⇒ „2.2 Removing and installing subframe - front-wheel drive“, page 98

### 2.1 Exploded view of subframe - front-wheel drive

#### 1 - Subframe

- Removing and installing ⇒ page 98
- Cannot be repaired; there is no provision for renewing the bonded rubber bushes



#### Note

#### 2 - Guard plate

- Arrow on guard plate points in direction of travel

#### 3 - Bolt, 3 Nm

#### 4 - Speed nut

#### 5 - Washer

#### 6 - Washer

#### 7 - Locking washer

- Always renew
- Retaining edges face bolt head

#### 8 - Bolt



#### Note

- Initially tighten all bolts to 50 Nm. Then tighten all bolts fully to specified torque.
- 150 Nm and turn 90° further
- Always renew
- Threaded plate in body can be renewed

#### 9 - Self-locking nut

- Always renew

#### 10 - Transverse link

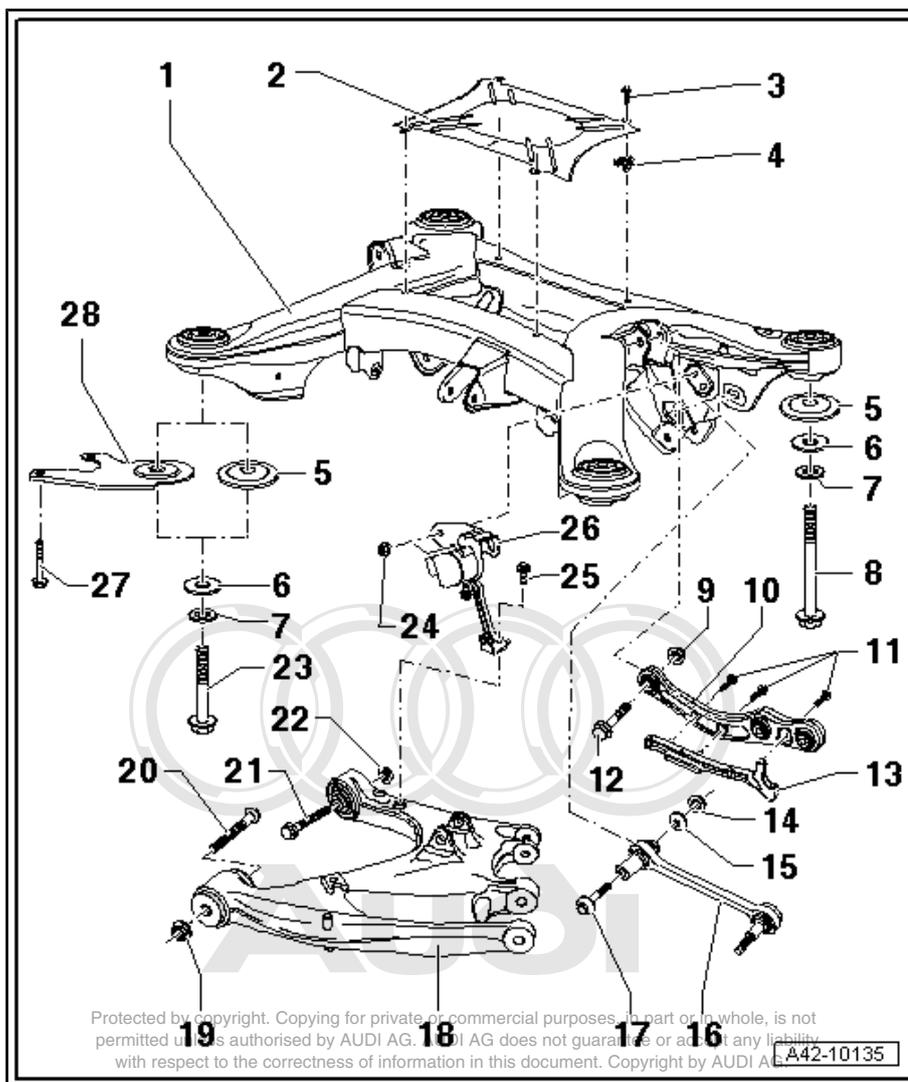
- Removing and installing ⇒ page 122

#### 11 - Bolt, 4 Nm

#### 12 - Bolt

- 80 Nm and turn 90° further
- Always renew

#### 13 - Cable duct



#### 14 - Self-locking nut, 95 Nm

- Always renew
- Raise wheel bearing housing before tightening ⇒ [page 92](#) (except when performing wheel alignment)

#### 15 - Eccentric washer

- With lug on inner bore

#### 16 - Track rod

- Removing and installing ⇒ [page 124](#)
- Must be renewed if track rod is detached from coupling rod ⇒ [Item 20 \(page 118\)](#)

#### 17 - Eccentric bolt

- Adjusting toe after slackening off ⇒ [page 255](#)
- Do not turn more than 90° in either direction (i.e. from minimum to maximum adjustment position)

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

#### 18 - Trapezium link

- Removing and installing ⇒ [page 128](#)

#### 19 - Self-locking nut

- Always renew

#### 20 - Bolt

- 80 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 92](#)

#### 21 - Bolt

- Always renew

#### 22 - Self-locking nut

- 80 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 92](#)

#### 23 - Bolt



#### Note

- Initially tighten all bolts to 50 Nm. Then tighten all bolts fully to specified torque.
- 150 Nm and turn 90° further
- Always renew
- Threaded plate in body can be renewed

#### 24 - Self-locking nut, 10 Nm

- Always renew

#### 25 - Bolt, 10 Nm

#### 26 - Rear left vehicle level sender -G76- and rear right vehicle level sender -G77-

- Note different versions with „long“ and „short“ levers.

Always install senders of the same version. Mixed installation of different versions on the same vehicle is not permissible.

- Renew only as complete unit ⇒ [page 197](#)
- Sender lever must face inwards

#### 27 - Bolt, 50 Nm

- Not installed in all vehicles



#### Note



### 28 - Support

- Not installed in all vehicles

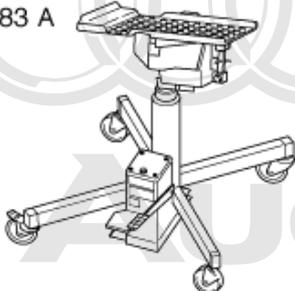


Note

## 2.2 Removing and installing subframe - front-wheel drive

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2-
- ◆ Wooden block (hardwood) 700 x 60 x 110 mm

<p>V.A.G 1331</p> 	<p>V.A.G 1332</p> 
<p>V.A.G 1383 A</p> 	
<p>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</p> <p style="text-align: right;">G42-10000</p>	

### Removing



Note

- ◆ *The following steps describe the procedure for removing the subframe as a complete unit (i.e. including hub carriers/wheel bearing housings, trapezium links, etc.).*
- ◆ *Check and adjust wheel alignment after completing repair*  
⇒ [page 245](#).



**WARNING**

**Before slackening off subframe bolts, secure vehicle to stop it tipping over (e.g. load of at least 100 kg in luggage compartment).**

- Position vehicle on lifting platform ⇒ [page 7](#) .

The following operations must be performed on both sides of the vehicle.

- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Secure brake disc with one wheel bolt.
- Remove wheel housing liner ⇒ Rep. gr. 66 .
- Clean area around air connection.
- Unscrew connection piece -1- on residual pressure valve -2-. This will allow air to escape.



**Note**

**The residual pressure valve -2- MUST NOT be loosened or removed.**

- Seal both connections. Take care to prevent dirt entering the connections.

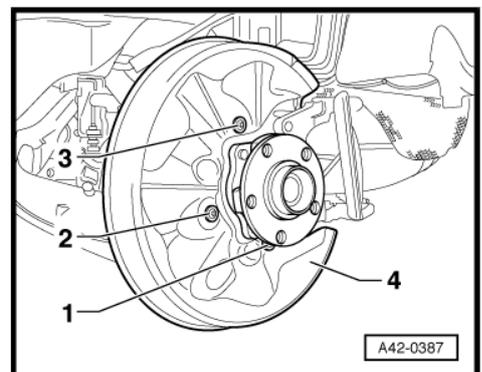
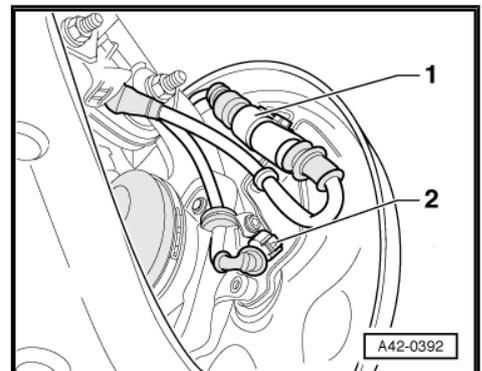
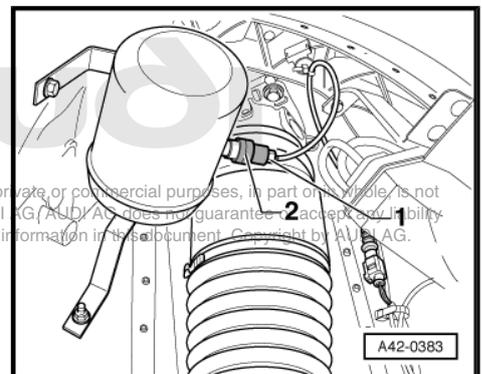
- Pull connector -1- for brake caliper wiring harness out of bracket and unplug connector.
- Detach connector -2- from speed sensor.
- Detach brake caliper and attach to body ⇒ Rep. gr. 46 .



**Note**

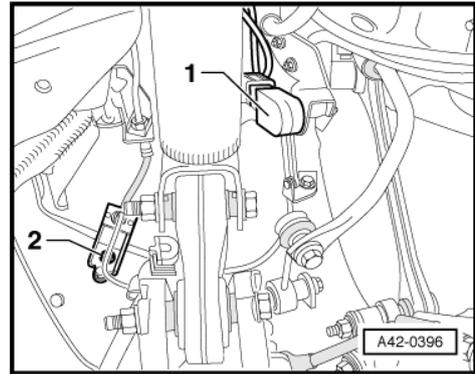
- ◆ Tie up brake caliper to body with wire.
- ◆ Do not suspend the brake caliper from the brake hose.

- Unscrew bolts -1- to -3- from splash plate -4- and detach splash plate.

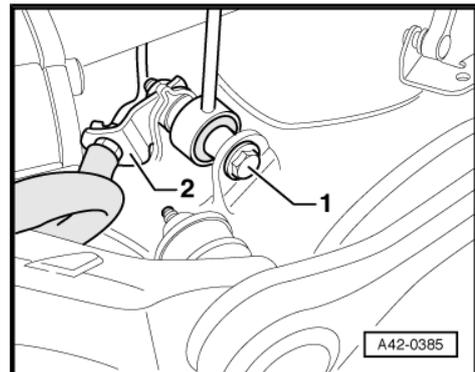




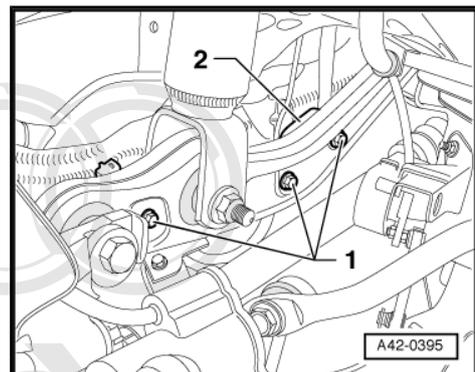
- Unplug connector for vehicle level sender -1-.
- Detach brake pipe bracket -2-.



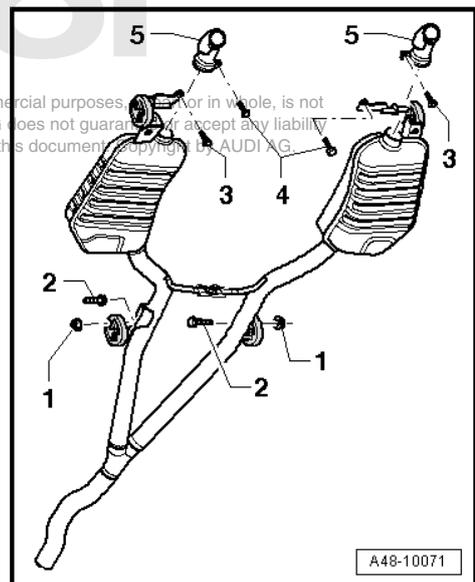
- Unscrew bolt -1- from coupling rod and disengage brake pipe bracket -2-.
- Swivel coupling rod to the rear.



- Unscrew bolts -1- securing duct -2-.
- Detach air spring strut from transverse link and swivel to the rear (reference position) => [page 92](#) .



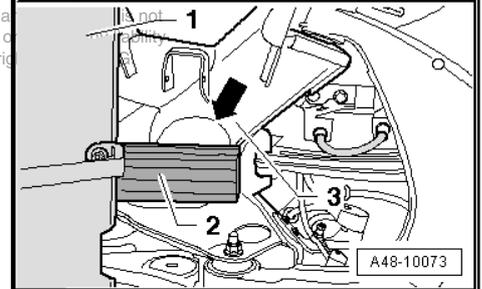
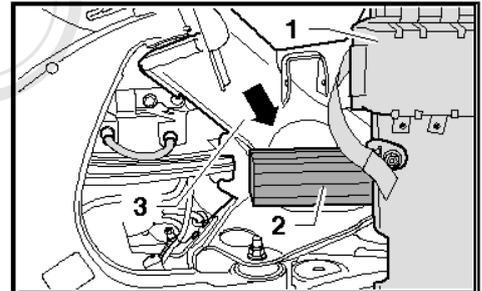
- Detach exhaust tailpipes -5-.
- Remove rear section of exhaust system. For this step, remove bolts -1- to -4- and take out the exhaust system (with the assistance of a second mechanic).
- Bring engine and gearbox jack -V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2- into position under subframe.



Not to be reproduced or copied in any form or by any means, electronic, mechanical, photocopying, recording, or in whole, is not permitted unless 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.

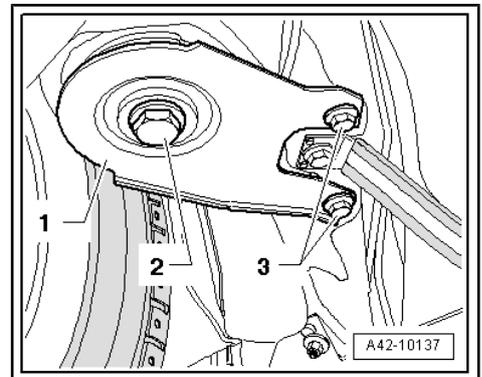
- Insert a block of hardwood -2- (700 x 60 x 110 mm) upright between subframe -3- and universal gearbox support -V.A.G 1359/2- -1-
- Ensure that wooden block -2- only makes contact at the recess -arrow- on the subframe.
- Secure subframe on universal gearbox support -V.A.G 1359/2- to prevent it from dropping.

Protected by copyright. Copying for private or commercial purposes, in part or in full, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee the accuracy of information with respect to the correctness of information in this document. Copyright © Audi AG 2011



**If fitted:**

- Remove subframe bolts -2- and bolts -3- and take off support -1-.



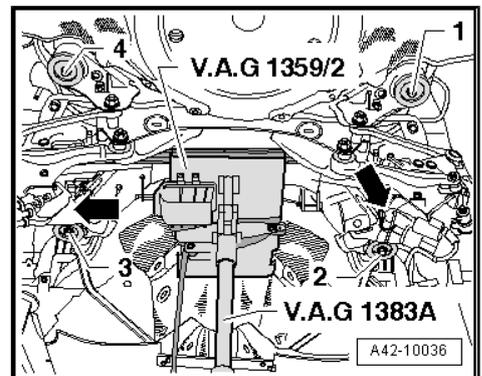
**All vehicles**

- Unscrew subframe bolts -1- to -4-.
- Carefully lower subframe. When doing this, guide brake calipers -arrows- through suspension components.

**Installing**

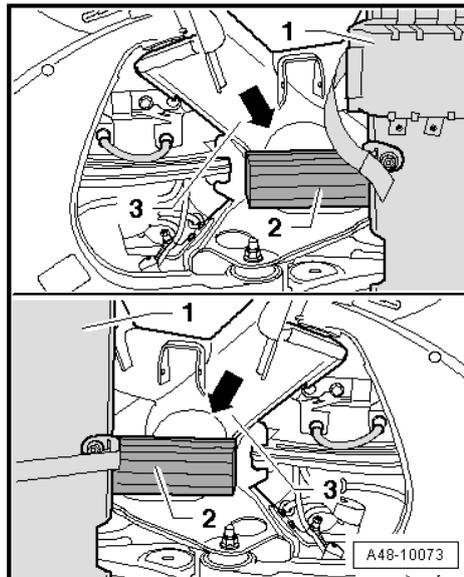
Installation is carried out in the reverse sequence. Note the following points:

- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts => [page 92](#) .
- Position subframe on engine and gearbox jack -V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2- .

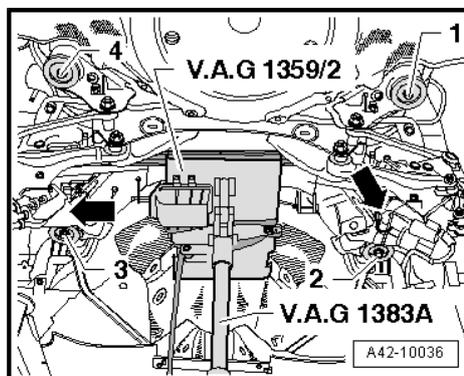




- Insert a block of hardwood -2- (700 x 60 x 110 mm) upright between subframe -3- and universal gearbox support -V.A.G 1359/2- -1-
- Ensure that wooden block -2- only makes contact at the recess -arrow- on the subframe.
- Secure subframe on universal gearbox support -V.A.G 1359/2- to prevent it from dropping.

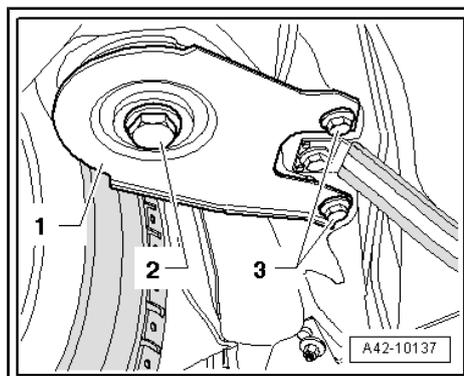


- Carefully raise subframe. When doing this, guide brake calipers -arrows- through suspension components.
- Centralise subframe by aligning four holes inside bushes with **tapped holes in body**.
- **Pay attention to installation position of washers -2- and -3- => Item 7 (page 96) .**



**If fitted:**

- Install support -1- and screw in subframe bolts -2- and bolts -3- hand-tight.

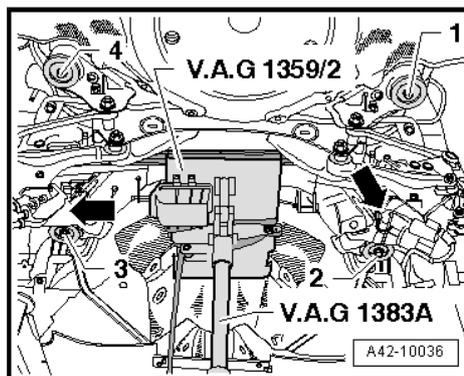


**All vehicles**

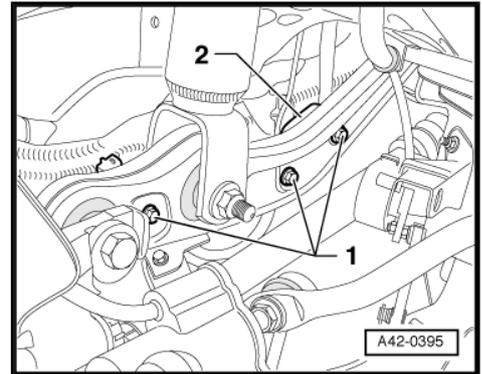
- Install new bolts with washers -1-...-4- to secure subframe.
- Tighten bolts -1-...-4- to specified torque setting, but do NOT turn further => Item 23 (page 97) .

Bolts -1-...-4- are tightened to torque and then turned through the specified angle only after wheel alignment has been performed => page 245 .

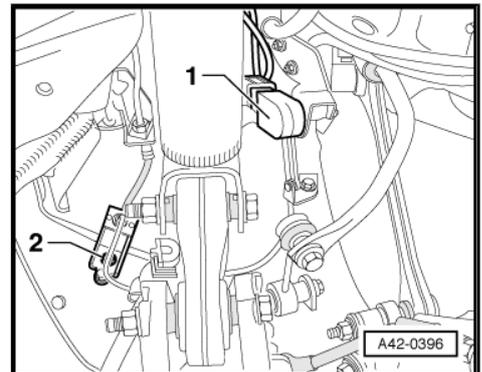
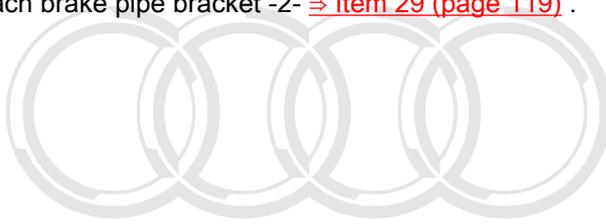
- Install and align exhaust system => Rep. gr. 26 .



- Tighten bolts -1- securing duct -2- ⇒ [Item 11 \(page 96\)](#) .



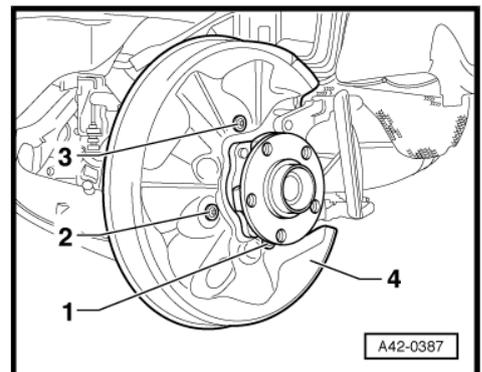
- Plug in connector for vehicle level sender -1-.
- Attach brake pipe bracket -2- ⇒ [Item 29 \(page 119\)](#) .



- Secure splash plate -4- with bolts -1- to -3- ⇒ [Item 9 \(page 133\)](#) .

 **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.

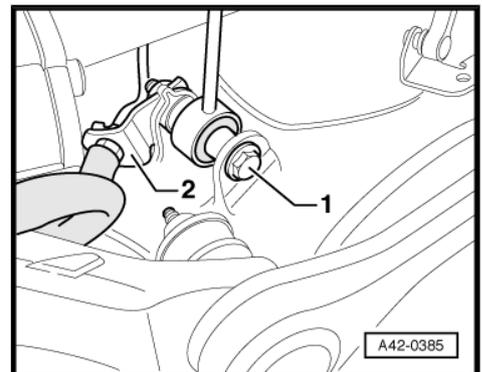
*Bolts -2- and -3- are used to secure wiring harness bracket behind splash plate to wheel bearing housing.*



- Bolt on brake caliper ⇒ Rep. gr. 46 .

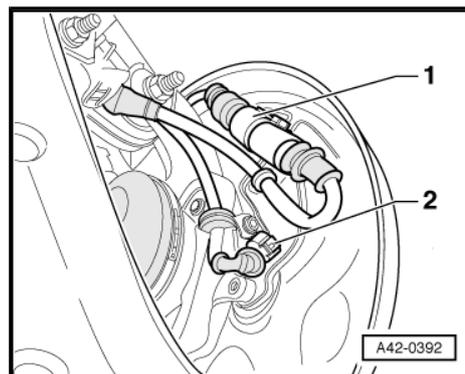
- Attach brake pipe bracket -2- and tighten bolted joint -1- of coupling rod ⇒ [Item 25 \(page 118\)](#) .

Wheel bearing housing must be raised into reference position for fitting and tightening bolts ⇒ [page 92](#) .

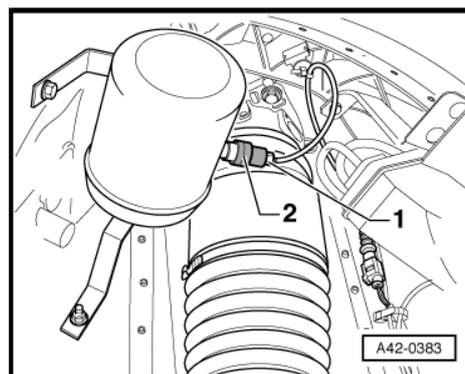




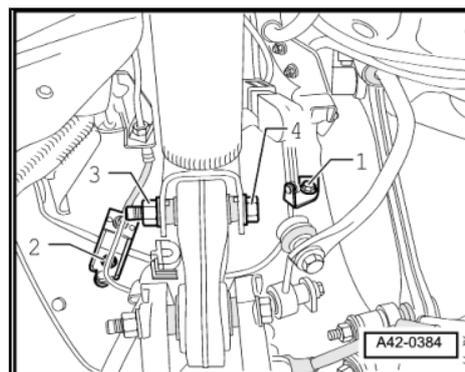
- Plug connector -2- onto speed sensor.
- Insert electrical connector -1- for brake caliper in bracket and plug in connector.



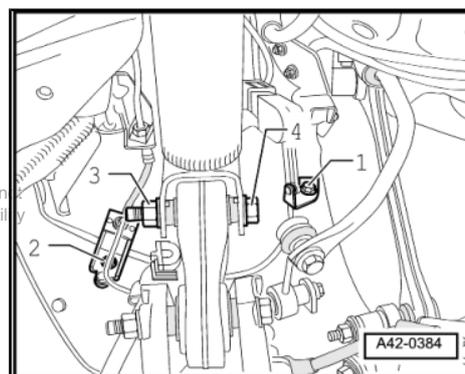
- Screw on connection piece -1- at residual pressure valve -2- ⇒ [Item 37 \(page 135\)](#) .
- Fit wheel housing liner ⇒ Rep. gr. 66 .



- Install bolt for vehicle level sender -1- ⇒ [Item 25 \(page 97\)](#) . Sender lever must face inwards.
- Press down wheel bearing housing by hand and insert bolt -4- in air spring strut/transverse link.
- Only hand-tighten nut -3-.
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .

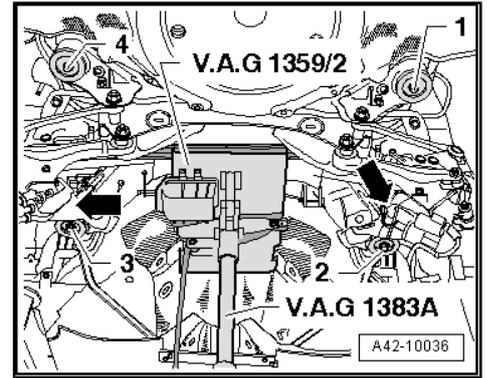


- With vehicle standing on ground at „normal level“, tighten bolt -4- ⇒ [Item 6 \(page 117\)](#) . When doing this, counterhold nut -3-.
- Check and adjust wheel alignment ⇒ [page 245](#) .



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

- Tighten subframe bolts -1-...-4- to specified torque setting and then turn through specified angle ⇒ [Item 23 \(page 97\)](#) .
- Re-adapt reference position ⇒ [page 202](#) .



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

⇒ „3.1 Exploded view of subframe - four-wheel drive“, page 106

⇒ „3.2 Removing and installing subframe - four-wheel drive“, page 108

#### 3.1 Exploded view of subframe - four-wheel drive

##### 1 - Subframe

- Removing and installing ⇒ [page 108](#)
- Cannot be repaired; there is no provision for renewing the bonded rubber bush



##### Note

##### 2 - Guard plate

- Arrow on guard plate points in direction of travel

##### 3 - Bolt, 3 Nm

##### 4 - Speed nut

##### 5 - Washer

##### 6 - Washer

##### 7 - Locking washer

- Always renew
- Retaining edges face bolt head

##### 8 - Bolt



##### Note

- Initially tighten all bolts to 50 Nm. Then tighten all bolts fully to specified torque.
- 150 Nm and turn 90° further
- Always renew
- Threaded plate in body can be renewed

##### 9 - Self-locking nut

- Always renew

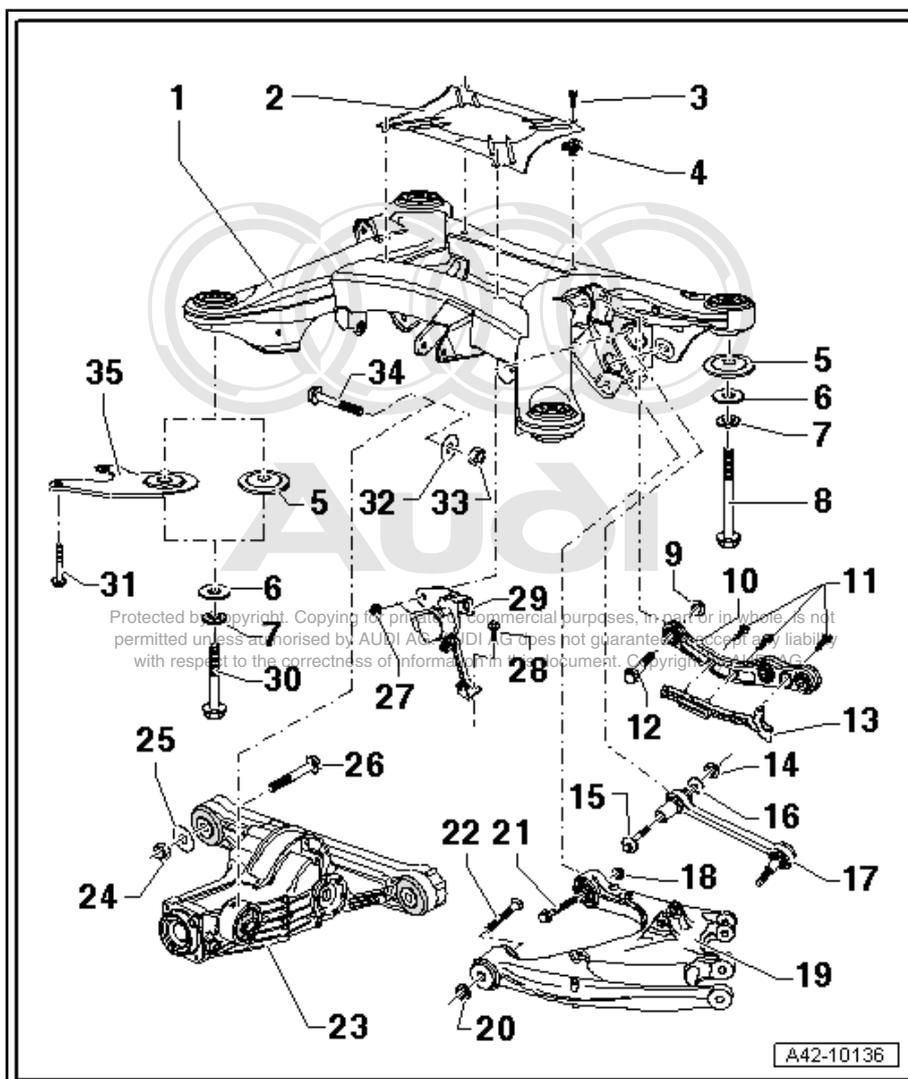
##### 10 - Transverse link

- Removing and installing ⇒ [page 122](#)

##### 11 - Bolt, 4 Nm

##### 12 - Bolt

- 80 Nm and turn 90° further
- Always renew



**13 - Cable duct**

**14 - Self-locking nut, 95 Nm**

- Always renew
- Raise wheel bearing housing before tightening ⇒ [page 92](#) (except when performing wheel alignment)

**15 - Eccentric bolt**

- Adjusting toe after slackening off ⇒ [page 255](#)
- Do not turn more than 90° in either direction (i.e. from minimum to maximum adjustment position)

**16 - Eccentric washer**

- With lug on inner bore

**17 - Track rod**

- Removing and installing ⇒ [page 124](#)
- Must be renewed if track rod is detached from coupling rod ⇒ [Item 20 \(page 118\)](#)

**18 - Self-locking nut**

- 80 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 92](#)

**19 - Trapezium link**

**20 - Self-locking nut**

- Always renew

**21 - Bolt**

- Always renew

**22 - Bolt**

- 80 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 92](#)

**23 - Rear final drive**

- Removing and installing ⇒ Rep. gr. 39

**24 - Self-locking nut**

- Always renew

**25 - Washer**

**26 - Bolt, 40 Nm**

**27 - Self-locking nut, 10 Nm**

- Always renew

**28 - Bolt, 10 Nm**

**29 - Rear left vehicle level sender -G76- and rear right vehicle level sender -G77-**

- Note different versions with „long“ and „short“ levers.

**Always install senders of the same version. Mixed installation of different versions on the same vehicle is not permissible.**

- Renew only as complete unit ⇒ [page 197](#)
- Sender lever must face inwards

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

**30 - Bolt**



**Note**

- Initially tighten all bolts to 50 Nm. Then tighten all bolts fully to specified torque.
- 150 Nm and turn 90° further
- Always renew

- Threaded plate in body can be renewed

**31 - Bolt, 50 Nm**

- Not installed in all vehicles



**Note**

**32 - Washer**

**33 - Self-locking nut, 40 Nm**

- Always renew

**34 - Bolt**

**35 - Support**

- Not installed in all vehicles

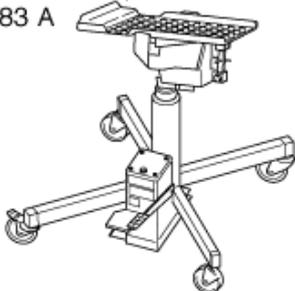


**Note**

**3.2 Removing and installing subframe - four-wheel drive**

**Special tools and workshop equipment required**

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2-
- ◆ Hexagon bolt M10 x 100 10.9

<p>V.A.G 1331</p> 	<p>V.A.G 1332</p> 
<p><small>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</small></p>	
<p>V.A.G 1383 A</p> 	
	<p>G42-10000</p>

## Removing

### Note

- ◆ *The following steps describe the procedure for removing the subframe as a complete unit (i.e. including rear final drive, hub carriers/wheel bearing housings, trapezium links, etc.).*
- ◆ *Check and adjust wheel alignment after completing repair ⇒ [page 245](#).*



### WARNING

***Before slackening off subframe bolts, secure vehicle to stop it tipping over (e.g. load of at least 100 kg in luggage compartment).***

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

– Position vehicle on lifting platform ⇒ [page 7](#)

The following operations must be performed on both sides of the vehicle.

### Note:

- Slacken off flange bolt -arrow- first if:
  - ◆ drive shaft is to be renewed
  - ◆ or if other components necessitating removal of flange bolt are to be renewed.



### WARNING

***The vehicle must be standing on its wheels when loosening and tightening the flange bolt.***

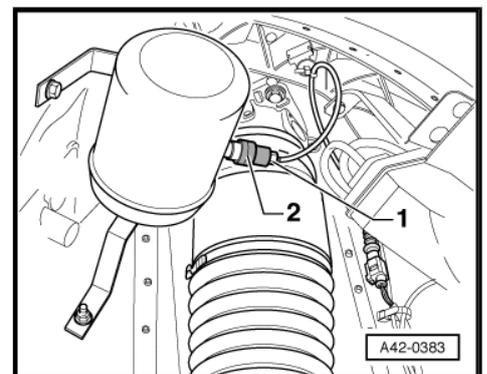
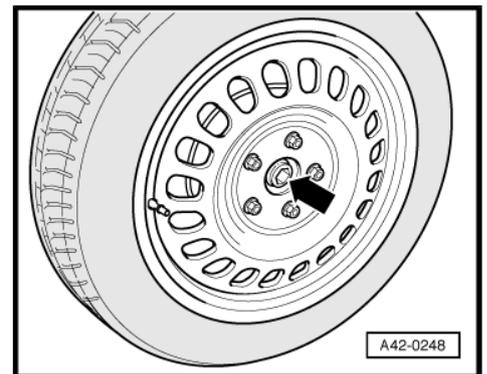
***-Accident risk-***

- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Secure brake disc with one wheel bolt.
- Remove wheel housing liner ⇒ Rep. gr. 66 .
- Clean area around air connection.
- Unscrew connection piece -1- on residual pressure valve -2-. This will allow air to escape.

### Note

***The residual pressure valve -2- MUST NOT be loosened or removed.***

- Seal both connections. Take care to prevent dirt entering the connections.



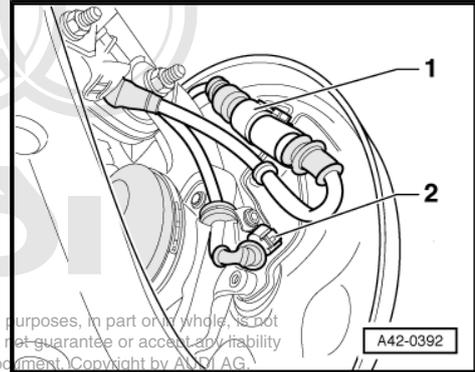


- Pull connector -1- for brake caliper wiring harness out of bracket and unplug connector.
- Unplug connector -2- from wheel speed sensor -2-.
- Detach brake caliper and attach to body => Rep. gr. 46 .

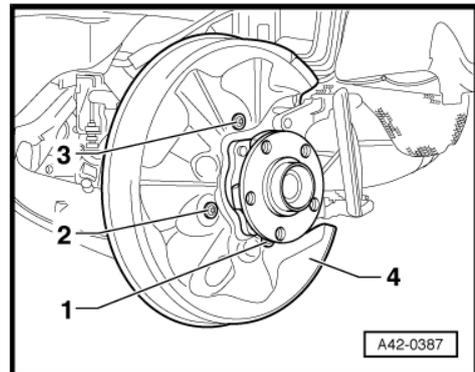


Note

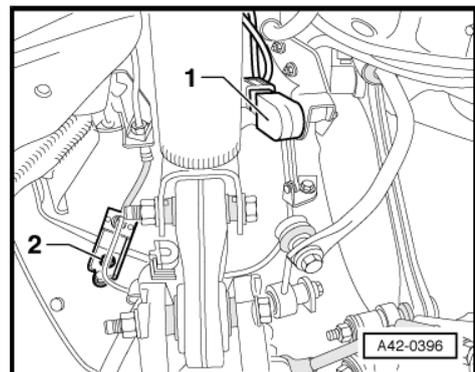
- ◆ Tie up brake caliper to body with wire.
- ◆ Do not suspend the brake caliper from the brake hose.



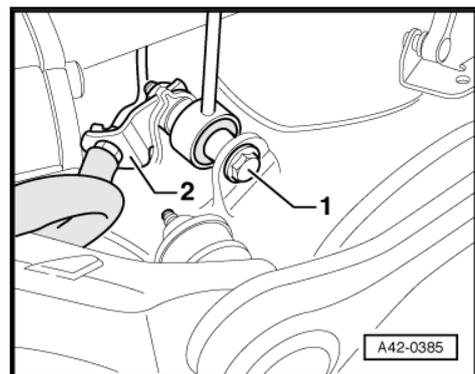
- Unscrew bolts -1- to -3- from splash plate -4- and detach splash plate.



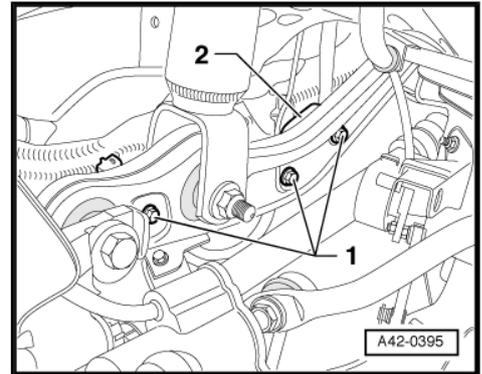
- Unplug connector for vehicle level sender -1-.
- Detach brake pipe bracket -2-.



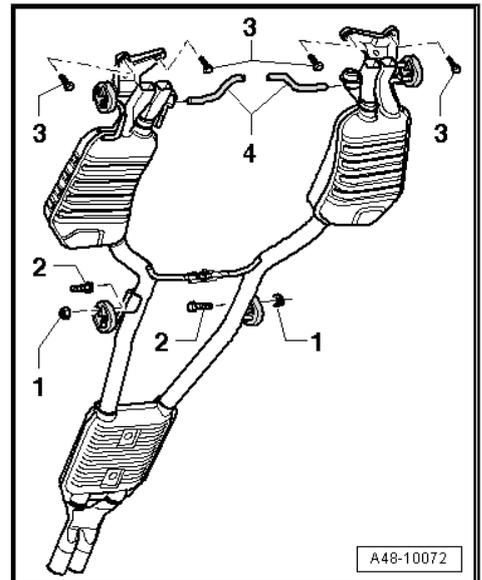
- Unscrew bolt -1- from coupling rod and disengage brake pipe bracket -2-.
- Swivel coupling rod to the rear.



- Unscrew bolts -1- securing duct -2-.
- Detach air spring strut from transverse link and swivel to the rear (reference position) ⇒ [page 92](#) .

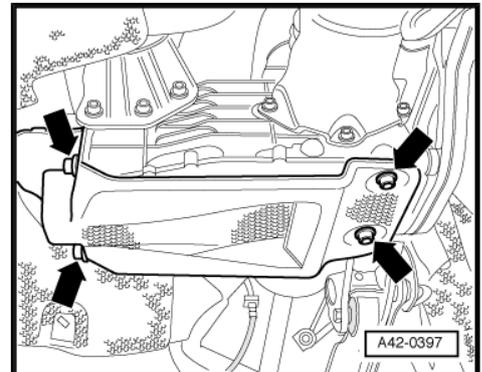


- Detach pipes -4- on exhaust system.
- Remove rear section of exhaust system. For this step, remove bolts -1- to -3- and take out the exhaust system (with the assistance of a second mechanic).

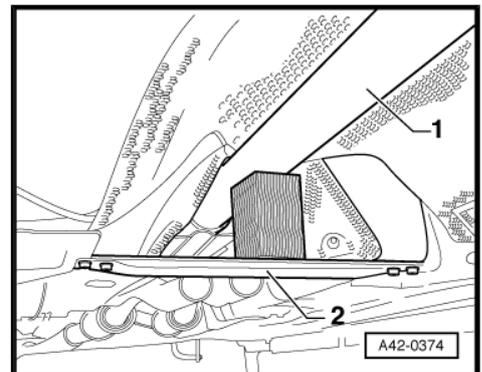


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Unscrew bolts -arrows- securing air duct at rear final drive and detach air duct.

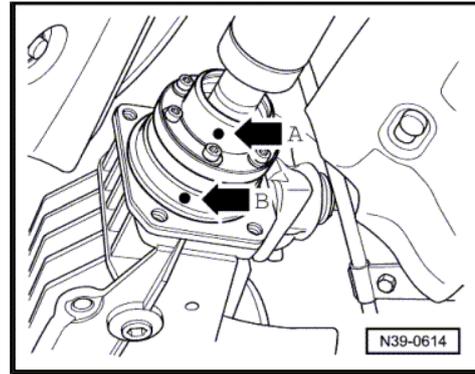


- Before detaching propshaft -1- at rear final drive, position a wooden block on cross member -2- to support propshaft.

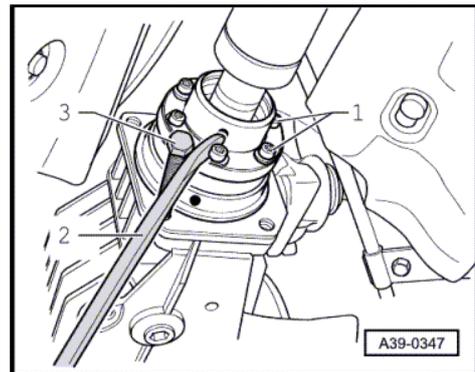




- Make coloured mark to indicate position of propshaft at rear final drive.

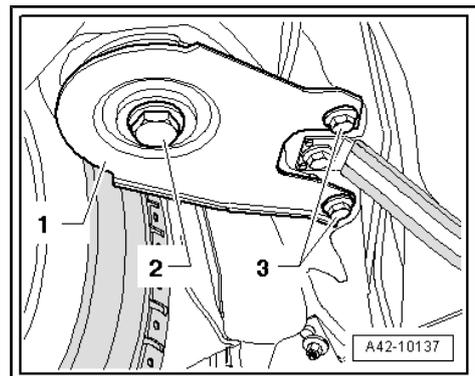


- Screw hexagon bolt M10 x 100 10.9 -3- into rear final drive.
- Use suitable lever -2- to counterhold when slackening off propshaft bolts -1-.
- Unscrew propshaft bolts -1-.
- Bring engine and gearbox jack -V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2- into position under subframe with rear final drive.
- Secure subframe with rear final drive on universal gearbox support -V.A.G 1359/2- to prevent it from dropping.



**If fitted:**

- Remove subframe bolts -2- and bolts -3- and take off support -1-.



**All vehicles**

- Unscrew subframe bolts -1- to -4-.
- Carefully lower subframe. When doing this, guide brake calipers -arrows- through suspension components.

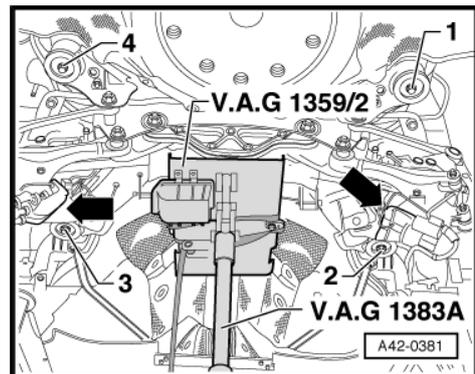
**Installing**

Installation is carried out in the reverse sequence. Note the following points:

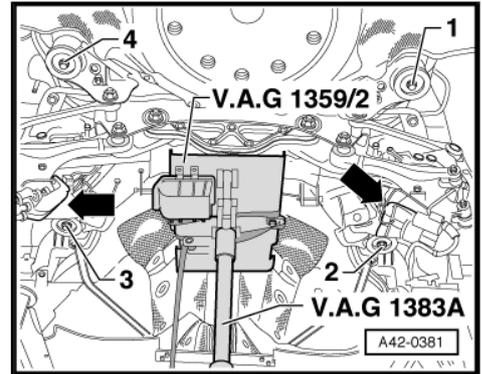
- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts

Prohibited from being copied, printed, reproduced, disseminated, sold, distributed, stored in retrieval systems, transmitted, or otherwise made available to the public without the prior written permission of Audi AG. Audi AG accepts no liability for the correctness of information in this document. Copyright by AUDI AG.

[page 92](#)

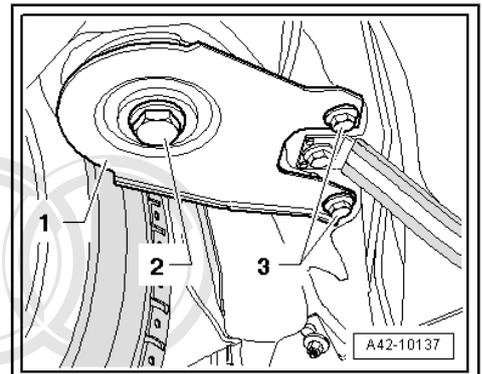


- Position subframe with rear final drive on engine and gearbox jack -V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2- .
- Secure subframe with rear final drive on universal gearbox support -V.A.G 1359/2- to prevent it from dropping.
- Carefully raise subframe. When doing this, guide brake callipers -arrows- through suspension components.
- Centralise subframe by aligning four holes inside bushes with tapped holes in body.



**If fitted:**

- Install support -1- and screw in subframe bolts -2- and bolts -3- hand-tight.

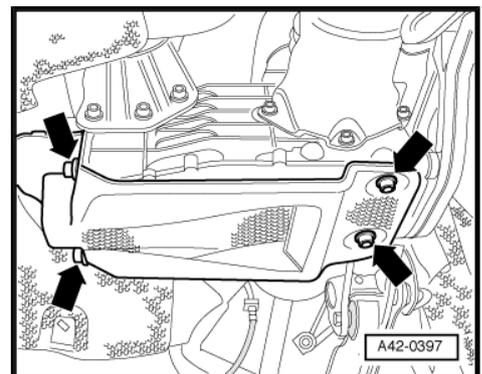
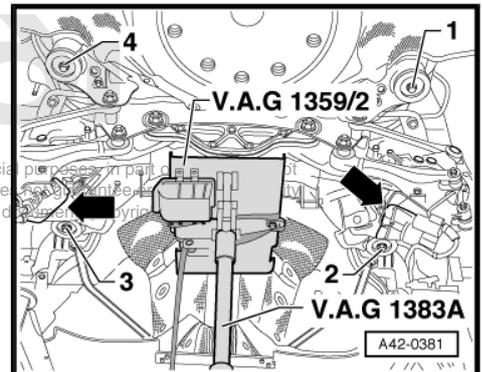


**All vehicles**

- Pay attention to installation position of washers -2- and -3- => [Item 7 \(page 106\)](#) .
- Install new bolts with washers -1-...-4- to secure subframe.
- Tighten bolts -1-...-4- to specified torque setting, but do NOT turn further => [Item 30 \(page 107\)](#) .

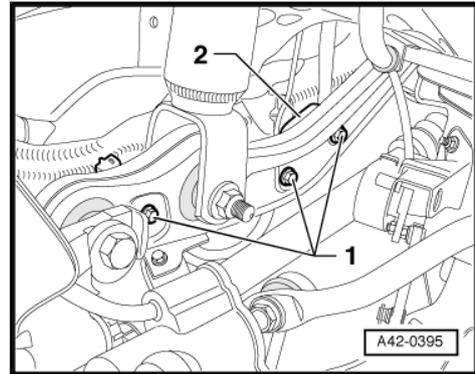
Bolts -1-...-4- are tightened to torque and then turned through the specified angle only after wheel alignment has been performed => [page 245](#) .

- Bolt propshaft onto rear final drive => Rep. gr. 39 .
- Fit air duct in position at rear final drive and tighten bolts -arrows- => Rep. gr. 39 .
- Install and align exhaust system => Rep. gr. 26 .

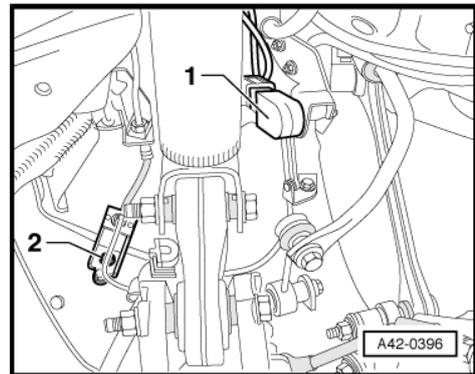




- Tighten bolts -1- securing duct -2- ⇒ [Item 11 \(page 106\)](#) .



- Plug in connector for vehicle level sender -1-.
- Attach brake pipe bracket -2- ⇒ [Item 29 \(page 119\)](#) .



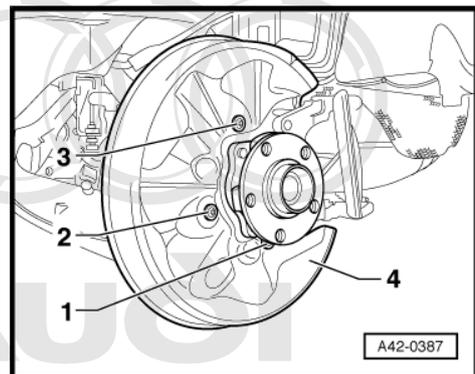
- Secure splash plate -4- with bolts -1- to -3- ⇒ [Item 9 \(page 133\)](#) .



**Note**

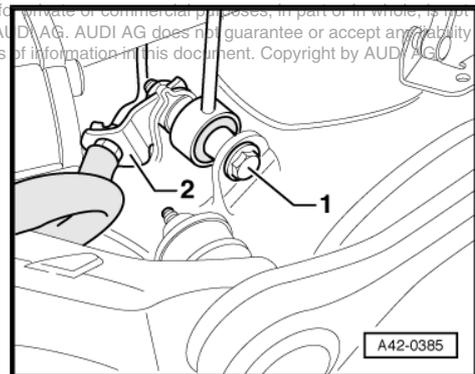
*Bolts -2- and -3- are used to secure wiring harness bracket behind splash plate to wheel bearing housing.*

- Bolt on brake caliper ⇒ Rep. gr. 46 .

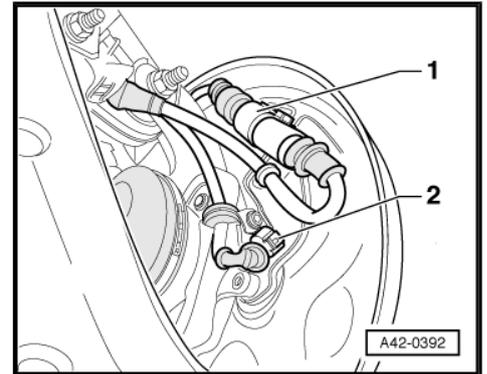


- Attach brake pipe bracket -2- and tighten bolted joint -1- of coupling rod ⇒ [Item 25 \(page 118\)](#) .

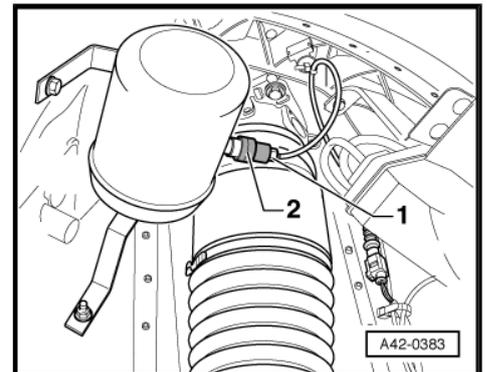
Wheel bearing housing must be raised into reference position for fitting and tightening bolts ⇒ [page 92](#) .



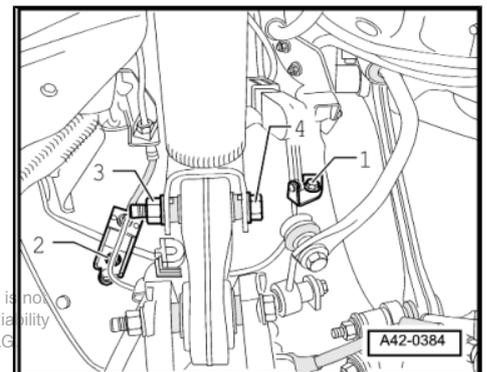
- Plug connector -2- onto speed sensor.
- Insert electrical connector -1- for brake caliper in bracket and plug in connector.



- Screw on connection piece -1- at residual pressure valve -2- ⇒ [Item 37 \(page 135\)](#) .
- Fit wheel housing liner ⇒ Rep. gr. 66 .



- Install bolt for vehicle level sender -1- ⇒ [Item 28 \(page 107\)](#) . Sender lever must face inwards.
- Press down wheel bearing housing by hand and insert bolt -4- in air spring strut/transverse link.
- Only hand-tighten nut -3-.
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .



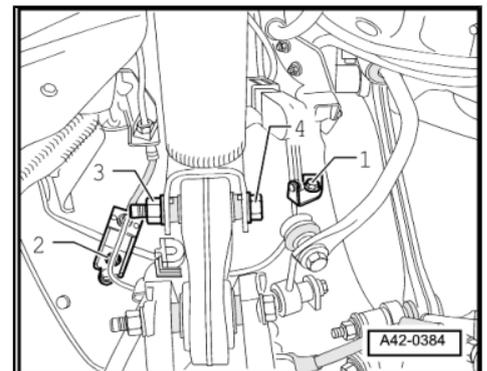
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG

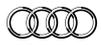
- With vehicle standing on ground at „normal level“, tighten bolt -4- ⇒ [Item 6 \(page 117\)](#) . When doing this, counterhold nut -3-.

Only if flange bolt has been loosened:

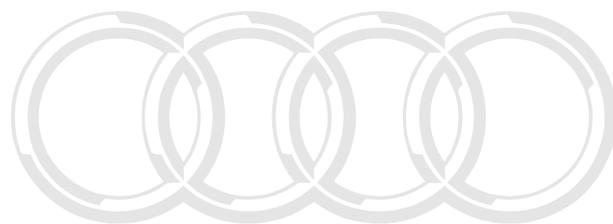
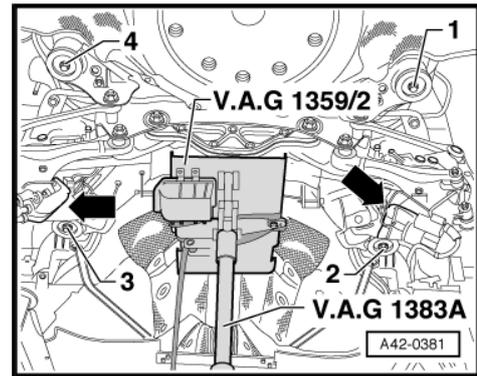
Always install a new flange bolt.

- Tighten flange bolt for drive shaft ⇒ [page 161](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .





- Tighten subframe bolts -1-...-4- to specified torque setting and then turn through specified angle ⇒ [Item 23 \(page 97\)](#) and ⇒ [Item 7 \(page 96\)](#) .
- Re-adapt reference position ⇒ [page 202](#) .



**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.

## 4 Anti-roll bar, transverse link, track rod, coupling rods, trapezium link, vehicle level sender

⇒ „4.1 Exploded view of anti-roll bar, transverse link, track rod, coupling rods, trapezium link, vehicle level senders“, page 117

⇒ „4.2 Removing and installing anti-roll bar“, page 120

⇒ „4.3 Removing and installing transverse link“, page 122

⇒ „4.4 Removing and installing track rod“, page 124

⇒ „4.5 Removing and installing coupling rod (for anti-roll bar)“, page 125

⇒ „4.6 Removing and installing coupling rod (for track rod/trapezium link)“, page 127

⇒ „4.7 Removing and installing trapezium link“, page 128

⇒ „3.3 Removing and installing rear vehicle level senders“, page 197

### 4.1 Exploded view of anti-roll bar, transverse link, track rod, coupling rods, trapezium link, vehicle level senders

#### 1 - Subframe

#### 2 - Anti-roll bar

- With vulcanised bushes
- Note different running gear versions  
⇒ [page 246](#)
- Removing and installing  
⇒ [page 120](#)

#### 3 - Clamp

#### 4 - Bolt, 25 Nm

- Tighten evenly on both sides

#### 5 - Bolt

- 65 Nm and turn 90° further
- Always renew

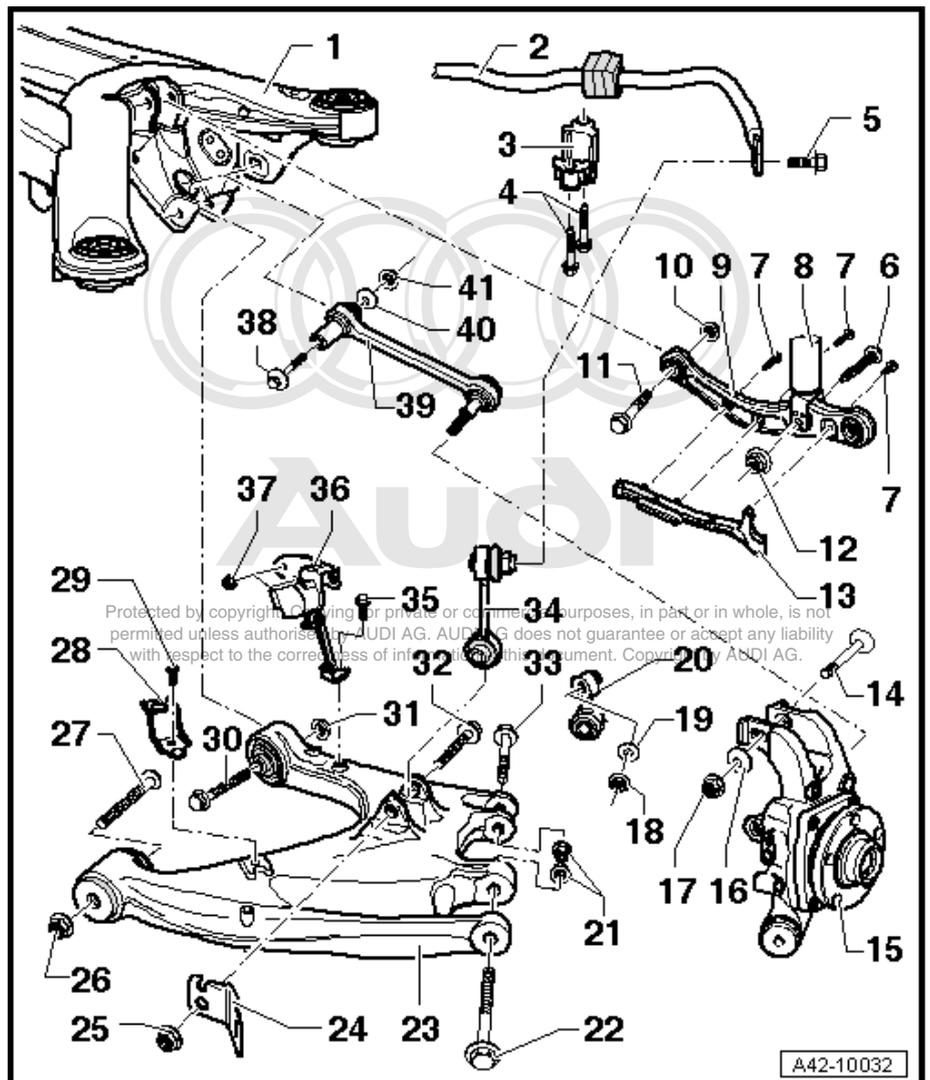
#### 6 - Bolt

- 80 Nm and turn 90° further
- Always renew
- Position vehicle on its wheels (normal level) before tightening

#### 7 - Bolt, 4 Nm

#### 8 - Air spring strut

- Boot must be free of indentations; eliminating indentations  
⇒ [page 135](#)
- Note different running gear versions





[⇒ page 246](#)

- Removing and installing [⇒ page 136](#)
- Servicing [⇒ page 141](#)

#### 9 - Transverse link

- Removing and installing [⇒ page 122](#)

#### 10 - Self-locking nut

- Always renew

#### 11 - Bolt

- 80 Nm and turn 90° further
- Always renew

#### 12 - Self-locking nut

- Always renew

#### 13 - Cable duct

#### 14 - Eccentric bolt

- Adjust camber after slackening off [⇒ page 254](#)
- Do not turn more than 90° in either direction (i.e. from minimum to maximum adjustment position)

#### 15 - Wheel bearing housing

- Removing and installing [⇒ page 144](#)
- Servicing [⇒ page 153](#)

#### 16 - Eccentric washer

- With lug on inner bore

#### 17 - Self-locking nut, 95 Nm

- Always renew
- Raise wheel bearing housing before tightening [⇒ page 92](#) (except when performing wheel alignment)

#### 18 - Self-locking nut

- 75 Nm and turn 45° further
- Always renew

#### 19 - Washer

#### 20 - Coupling rod

- Connects track rod to wheel bearing housing and trapezium link
- Removing and installing [⇒ page 127](#)

#### 21 - Self-locking nut

- Always renew

#### 22 - Bolt

- 80 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing [⇒ page 92](#)

#### 23 - Trapezium link

- Removing and installing [⇒ page 128](#)

#### 24 - Bracket

- For brake line

#### 25 - Self-locking nut

- 50 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing [⇒ page 92](#)

**26 - Self-locking nut**

- Always renew

**27 - Bolt**

- 80 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 92](#)

**28 - Bracket**

- For brake line

**29 - Self-locking bolt, 10 Nm**

- Always renew

**30 - Bolt**

- Always renew

**31 - Self-locking nut**

- 80 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 92](#)

**32 - Bolt**

- Always renew

**33 - Bolt**

- 80 Nm and turn 90° further
- Always renew
- Before tightening, raise wheel bearing housing ⇒ [page 92](#)

**34 - Coupling rod**

- Connects anti-roll bar to trapezium link
- Removing and installing ⇒ [page 125](#)

**35 - Bolt, 10 Nm**

**36 - Rear left vehicle level sender -G76- and rear right vehicle level sender -G77-**

- Note different versions with „long“ and „short“ levers.

**Always install senders of the same version. Mixed installation of different versions on the same vehicle is not permissible.**

- Remove/install and renew only as a complete assembly ⇒ [page 197](#)
- Sender lever must face inwards

**37 - Self-locking nut, 10 Nm**

- Always renew

**38 - Eccentric bolt**

- Adjusting toe after slackening off ⇒ [page 255](#)
- Do not turn more than 90° in either direction (i.e. from minimum to maximum adjustment position)

**39 - Track rod**

- Removing and installing ⇒ [page 124](#)
- Must be renewed if track rod is detached from coupling rod ⇒ [Item 20 \(page 118\)](#)

**40 - Eccentric washer**

- With lug on inner bore

**41 - Self-locking nut, 95 Nm**

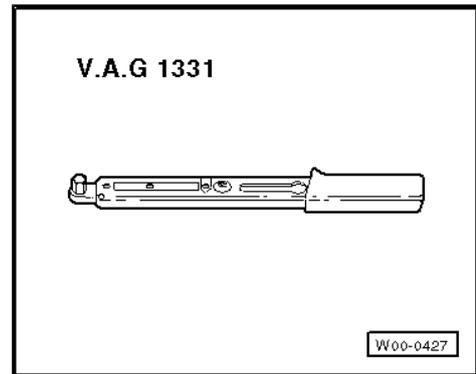
- Always renew
- Raise wheel bearing housing before tightening ⇒ [page 92](#) (except when performing wheel alignment)

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

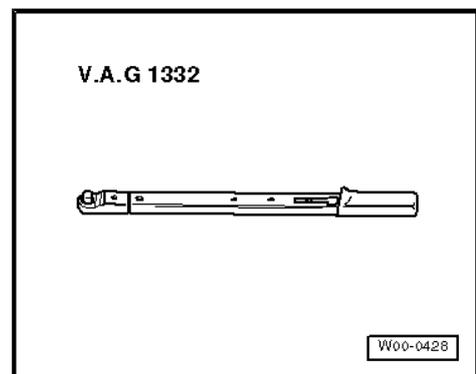
## 4.2 Removing and installing anti-roll bar

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-



- ◆ Torque wrench -V.A.G 1332-

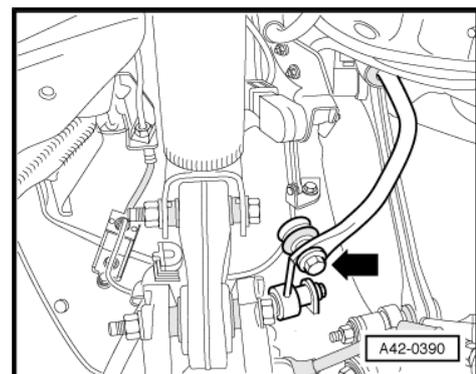


### Removing

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove rear wheels.
- Remove rear section of exhaust system ⇒ Rep. gr. 26 .
- Detach anti-roll bar from coupling rods -arrow-.

### Left side

- Detach air spring strut from transverse link and swivel to the rear (reference position) ⇒ [page 92](#) .
- Mark position of eccentric washer at subframe.

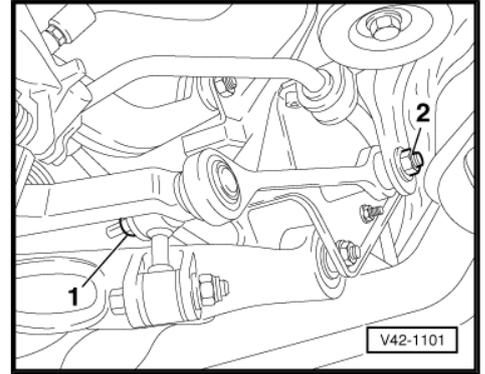


- Unscrew nut -2-. Take out eccentric washer and eccentric bolt.

 **Note**

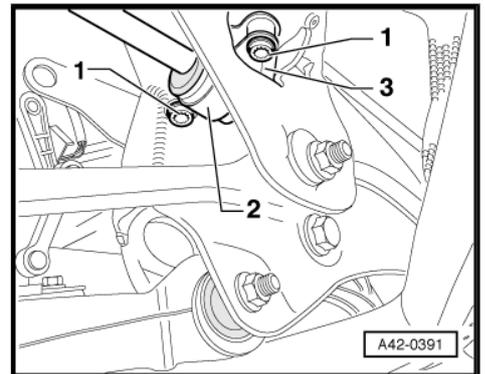
*Do not loosen track rod nut -1-.*

- Swivel down track rod.



**Both sides (continued):**

- Unscrew bolts -1- evenly.
- Take clamp -2- out of recess -3- at subframe.
- Detach clamps from rubber bushes.
- Turn anti-roll bar so that bushes for coupling rods are facing downwards.
- Take out anti-roll bar with rubber bushes towards the right side.
- Check rubber bushes for cracks. Renew anti-roll bar if bushes are damaged.



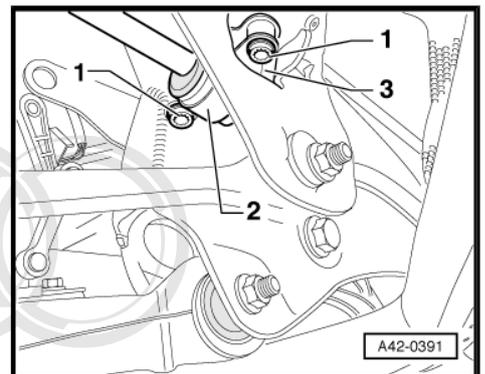
**Installing**

Installation is carried out in the reverse sequence. Note the following points:

- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts  
 => [page 92](#) .
- Insert anti-roll bar with rubber bushes from the right side.
- Swivel anti-roll bar in subframe into installation position.
- Press clamps onto rubber bushes.
- Engage clamp -2- on both sides in recess -3- at subframe.
- Evenly screw in and hand-tighten bolts -1- on both sides.

**Left side**

- Tighten bolts -1- evenly => [Item 4 \(page 117\)](#) .

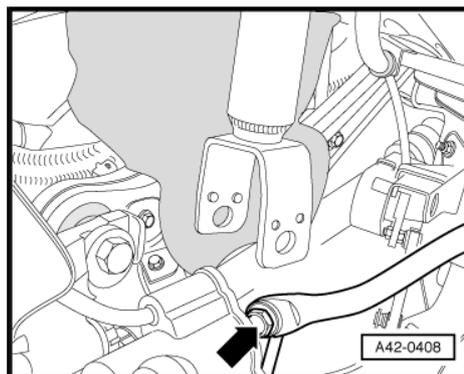




- Secure anti-roll bar to coupling rod -arrow- ⇒ [Item 5 \(page 117\)](#) .

Proceed as follows to install track rod:

- Swivel track rod into subframe.
- Insert eccentric bolt and eccentric washer.

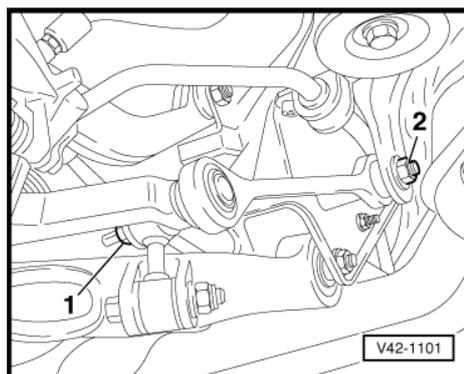


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

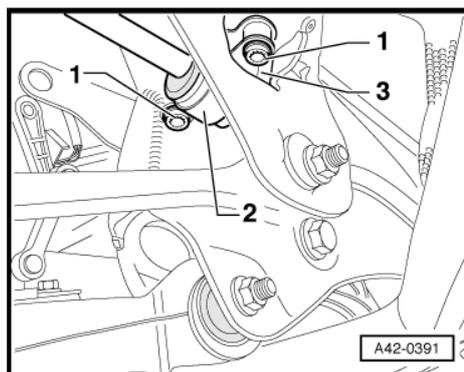
- Turn eccentric washer to mark made on subframe and tighten nut -2- ⇒ [Item 14 \(page 96\)](#) .
- Detach support -T10149- and engine/gearbox jack -V.A.G 1383 A- .

#### Right side

- Raise suspension into reference position before tightening bolts in the following steps ⇒ [page 92](#) .



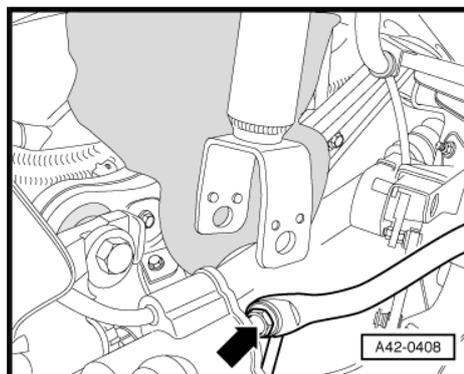
- Tighten bolts -1- evenly ⇒ [Item 4 \(page 117\)](#) .



- Secure anti-roll bar to coupling rod -arrow- ⇒ [Item 5 \(page 117\)](#) .
- Detach support -T10149- and engine/gearbox jack -V.A.G 1383 A- .

#### Both sides (continued):

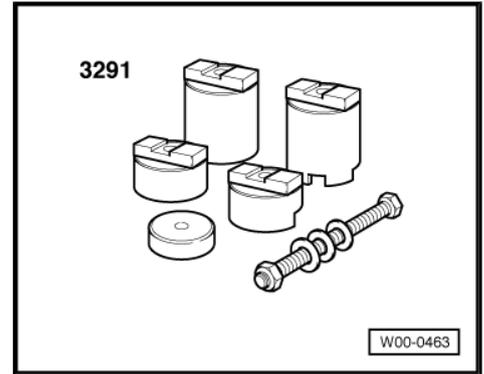
- For further assembly procedure refer to instructions on ⇒ [page 94](#) onwards.
- Fit and secure wheels ⇒ Wheels and tyres; Rep. gr. 44 .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .



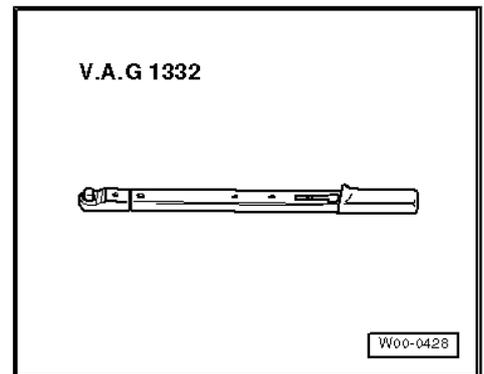
### 4.3 Removing and installing transverse link

Special tools and workshop equipment required

◆ Sleeve -3291/2-



◆ Torque wrench -V.A.G 1332-

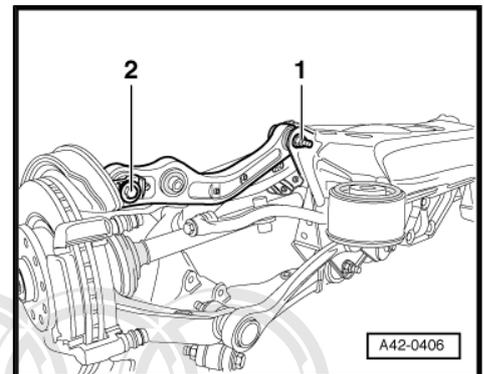


Note

- ◆ As inner bolt -1- is inaccessible, transverse link can only be removed after taking out subframe.
- ◆ Check and adjust wheel alignment after completing repair ⇒ [page 245](#).

Removing

- Remove subframe: four-wheel drive ⇒ [page 108](#) ; front-wheel drive ⇒ [page 98](#) .
- Use felt-tip pen or similar to mark position of eccentric bolt -2- in relation to wheel bearing housing.
- Unscrew bolt connections -1- and -2-.

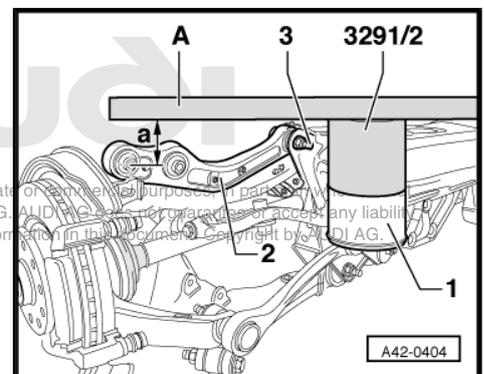


Installing

- Insert transverse link -2- with new bolt and nut -3- in subframe.

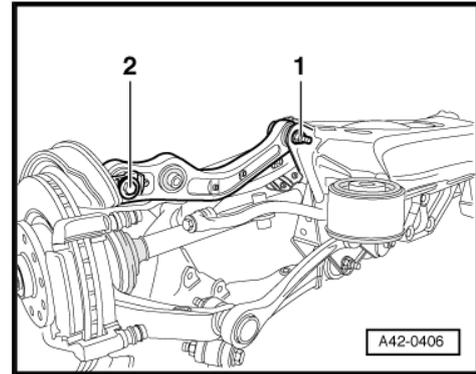
Installation position of transverse link -2- at subframe:

- Attach transverse link -2- to subframe (hand-tight).
- Position sleeve -3291/2- on rear bush -1- of subframe.
- Lay straightedge or straight bar -A- flat on sleeve -3291/2- .
- Position transverse link so that dimension -a- =  $96 \pm 1$  mm is attained between bottom of straightedge and centre of outer hole.
- Tighten bolt -3- securing transverse link to subframe in this position ⇒ [Item 12 \(page 96\)](#) .





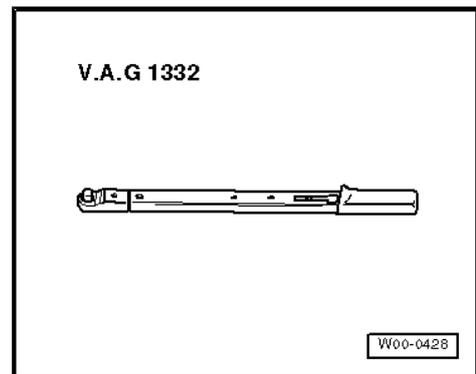
- Attach wheel bearing housing to transverse link and tighten new nut to 20 Nm only. Note mark made for position of eccentric bolt -2- in relation to wheel bearing housing.
- Install subframe ⇒ [page 108](#) .
- Tighten bolted joint -2- ⇒ [Item 17 \(page 118\)](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .



## 4.4 Removing and installing track rod

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



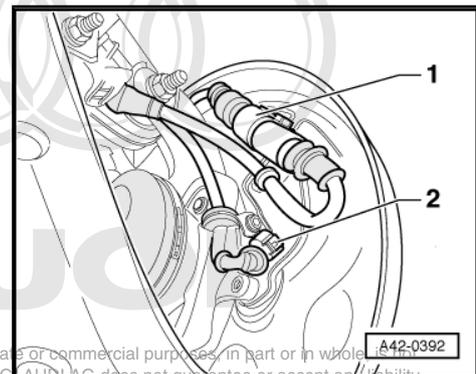
### Removing

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Pull connector -1- for brake caliper wiring harness out of bracket and unplug connector.
- Detach brake caliper and attach to body ⇒ Rep. gr. 46 .



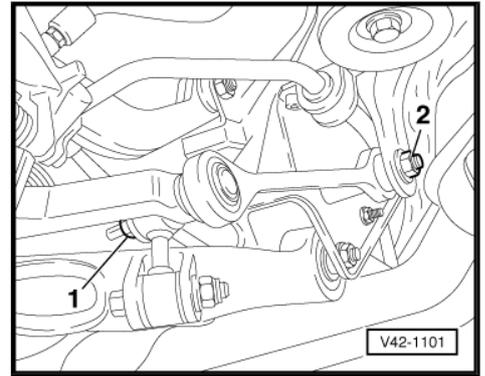
### Note

- ◆ Tie up brake caliper to body with wire.
- ◆ Do not suspend the brake caliper from the brake hose.
- Mark position of eccentric washer at subframe.



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

- Remove nut -1-. Counterhold at hexagon flats.
- Unscrew nut -2-. Take out eccentric washer and eccentric bolt.
- Before removing track rod, wheel bearing housing must be raised into reference position => [page 92](#) .
- Swivel down track rod.
- Pull track rod out of coupling rod/wheel bearing housing mount.



### Installing

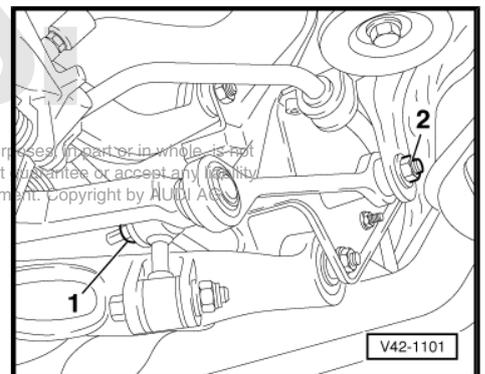
Installation is carried out in the reverse sequence. Note the following points:

- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts => [page 92](#) .

### Note

*The track rod must be renewed if it has been unfastened or removed at the coupling rod.*

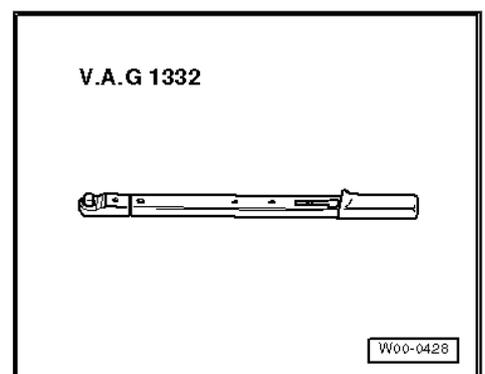
- Insert new track rod in coupling rod/wheel bearing housing mount.
- Swivel track rod upwards into subframe.
- Insert eccentric bolt and eccentric washer.
- Turn eccentric washer to mark made on subframe and tighten nut -2- => [Item 41 \(page 119\)](#) .
- Tighten nut -1- => [Item 18 \(page 118\)](#) . Counterhold at hexagon flats.
- Bolt on brake caliper => [Rep. gr. 46](#)
- For further assembly procedure refer to instructions on => [page 94](#) onwards.
- Set down vehicle on its wheels => [page 7](#) .
- Check and adjust wheel alignment => [page 245](#) .



## 4.5 Removing and installing coupling rod (for anti-roll bar)

### Special tools and workshop equipment required

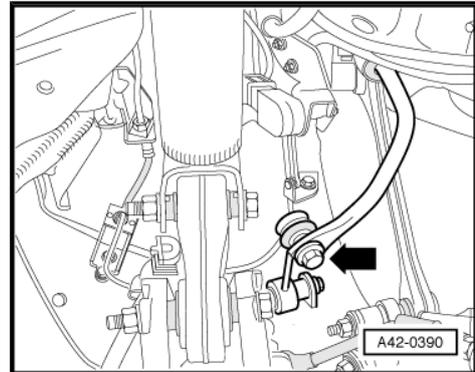
- ◆ Torque wrench -V.A.G 1332-





## Removing

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Detach coupling rod from anti-roll bar -arrow-.

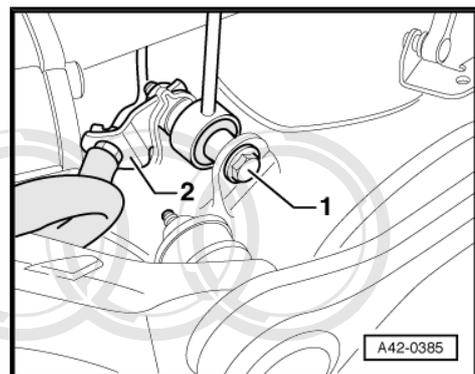
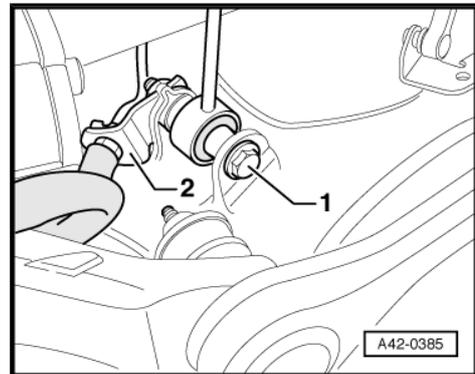


- Unscrew bolted joint -1- securing coupling rod/trapezium link and detach brake pipe bracket -2-.
- Press down wheel bearing housing slightly to pull bolt out of coupling rod.
- Take out coupling rod.

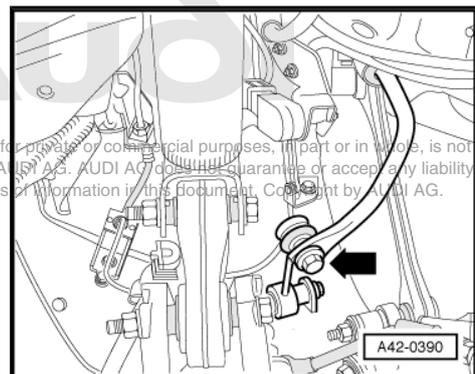
## Installing

Installation is carried out in the reverse sequence. Note the following points:

- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts ⇒ [page 92](#) .
- Attach coupling rod to trapezium link.
- To do this, install new bolt -1- and at the same time fit brake pipe bracket -2-.
- Tighten new nut hand-tight.



- Secure coupling rod to anti-roll bar with new bolt -arrow-.
- Tighten bolt -arrow- securing coupling rod/anti-roll bar to specified torque ⇒ [Item 5 \(page 117\)](#) .
- Tighten nut securing coupling rod/trapezium link/brake pipe bracket to specified torque ⇒ [Item 25 \(page 118\)](#) .
- Detach support -T10149- and engine/gearbox jack -V.A.G 1383 A- .
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .



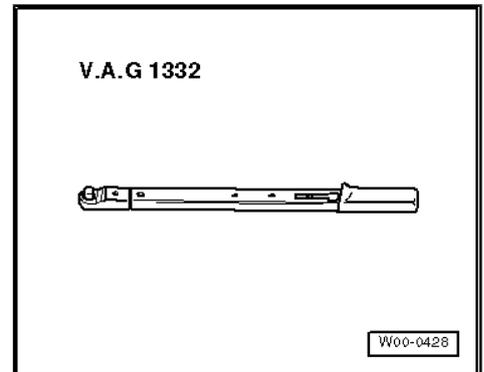
## 4.6 Removing and installing coupling rod (for track rod/trapezium link)

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



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



### Note

The track rod must be renewed if it has been unfastened or removed at the coupling rod.

### Removing

- Remove track rod ⇒ [page 124](#) .
- Remove nut -2-.
- Remove bolt -5- from trapezium link/coupling rod.

### Note

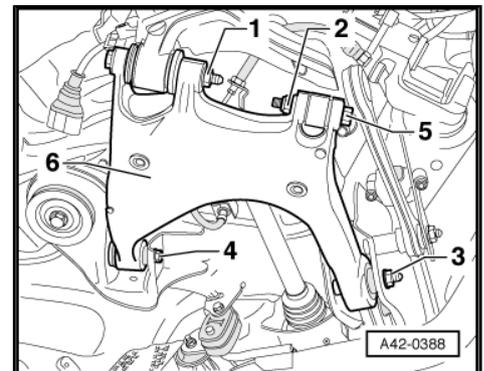
Items 1, 3 and 4 in the illustration can be disregarded.

- Take coupling rod out of trapezium link -6-.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

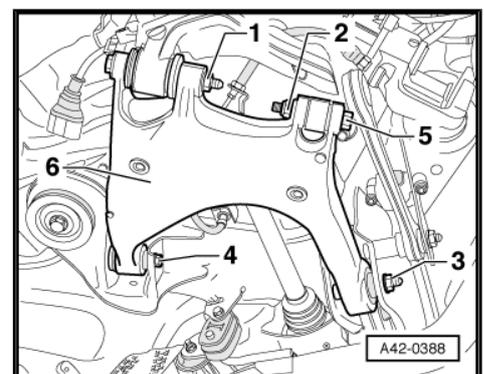
- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts ⇒ [page 92](#) .
- Fit coupling rod in trapezium link -6-.
- Tighten bolt -5- and nut -2- only hand-tight.



### Note

Items 1, 3 and 4 in the illustration can be disregarded.

- Install new track rod ⇒ [page 124](#) .
- Tighten bolt -5- ⇒ [Item 33 \(page 119\)](#) .

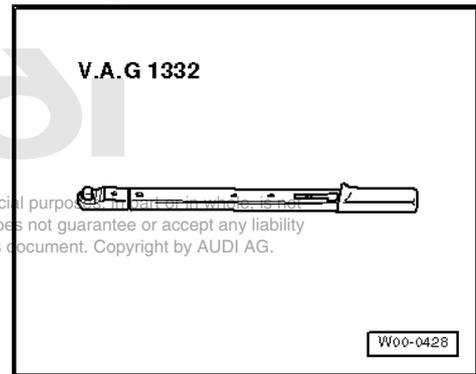




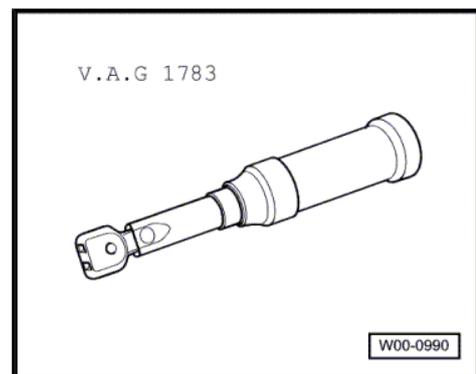
## 4.7 Removing and installing trapezium link

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-

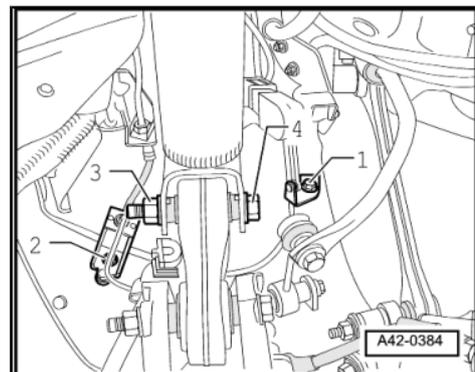


- ◆ Torque wrench -V.A.G 1783-



### Removing

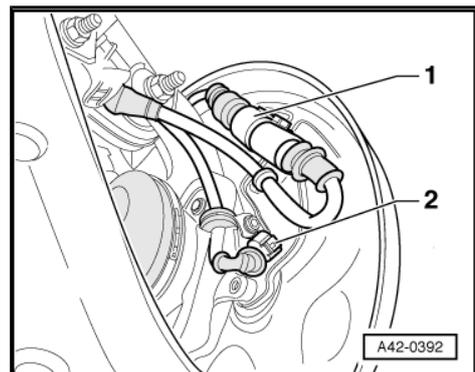
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Unscrew bolt -1- on vehicle level sender.
- Detach brake pipe bracket -2-.
- Detach air spring strut from transverse link and swivel to the rear (reference position) ⇒ [page 92](#) .
- Lower wheel bearing housing.



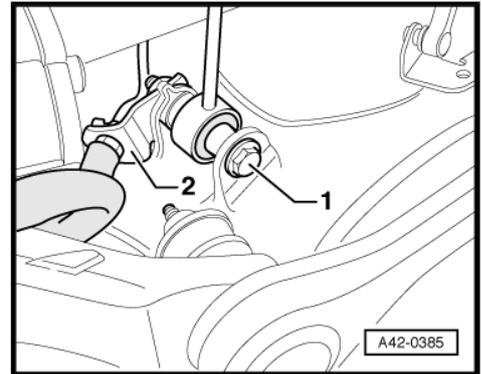
- Pull connector -1- for brake caliper wiring harness out of bracket and unplug connector.
- Detach brake caliper and attach to body ⇒ Rep. gr. 46 .

### Note

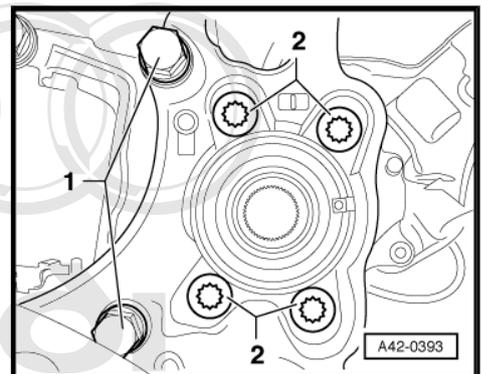
- ◆ Tie up brake caliper to body with wire.
- ◆ Do not suspend the brake caliper from the brake hose.
- Take brake pads out of brake carrier.



- Unscrew bolted joint -1- securing coupling rod/trapezium link and detach brake pipe bracket -2-.
- Press down wheel bearing housing slightly to pull bolt out of coupling rod.

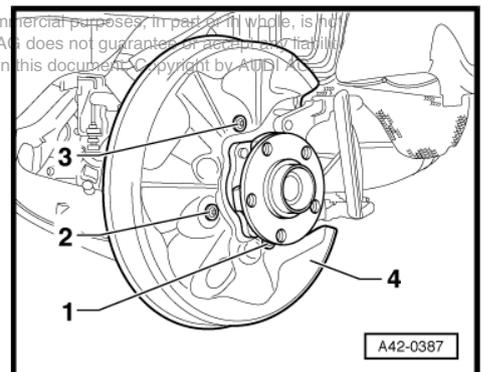


- Detach brake carrier -1- and brake disc.

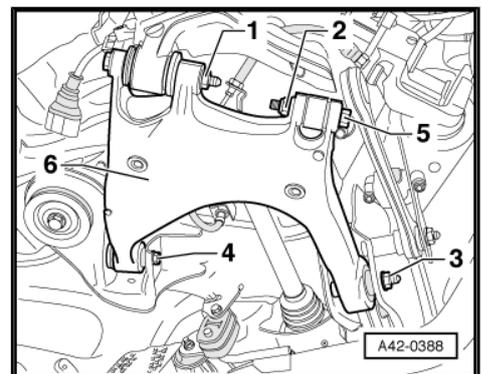


- Unscrew bolts -1- to -3- from splash plate -4- and detach splash plate.

... private or commercial purposes. In part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee the accuracy, reliability with respect to the correctness of information in this document. Copyright by AUDI AG.



- Unscrew nuts of bolt connections -1- to -4- for trapezium link -6-.
- Take out bolt -5- securing trapezium link/coupling rod.
- Wheel bearing housing must be raised into reference position again for further removal of bolts => [page 92](#) .
- Unscrew bolt -3- and then bolt -4-.
- Pull trapezium link downwards out of mounts at subframe and swivel it downwards.



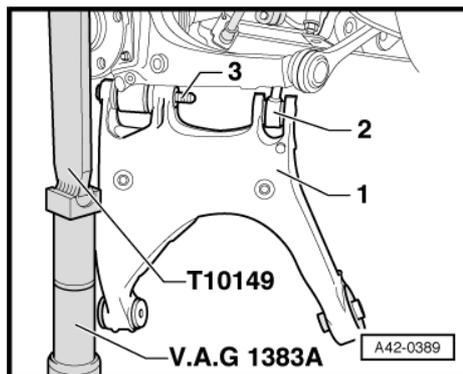


- Disengage trapezium link -1- from coupling rod -2- and pull out bolt -3-.

**Installing**

- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts

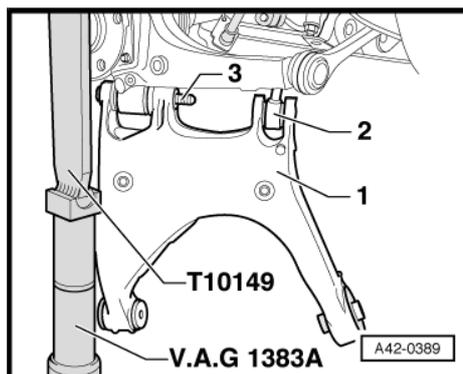
⇒ [page 92](#) .



- Engage trapezium link -1- in wheel bearing housing and coupling rod -2- and insert bolt -3-.

- Swivel trapezium link upwards and press it into mounts on subframe.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 bolt -4- and then bolt -3-.



**Note**

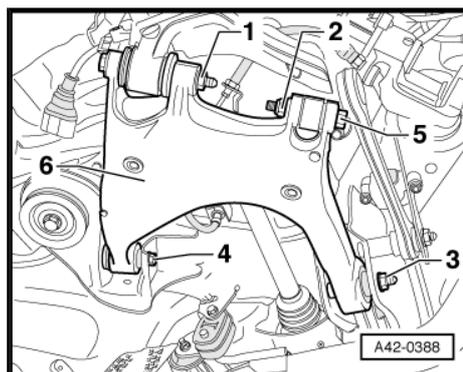
*Holes in bushes must be aligned with subframe when fitting bolts.*

- Pull track rod downwards and insert bolt -5- in trapezium link and coupling rod.



**Note**

*Holes in trapezium link and coupling rod must be aligned when fitting bolt.*



- Tighten bolted joints -1- to -5- for trapezium link -6- with suspension in reference position. Tightening torques

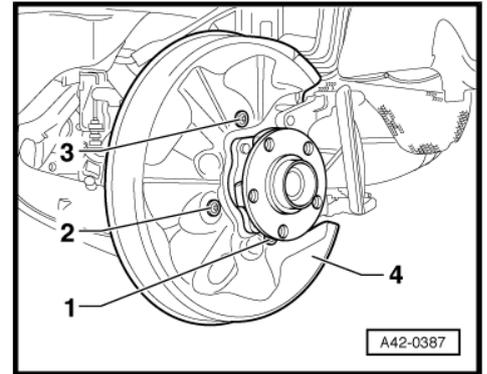
⇒ [page 117](#) .

- Secure splash plate -4- with bolts -1- to -3-  
⇒ [Item 9 \(page 133\)](#) .

 **Note**

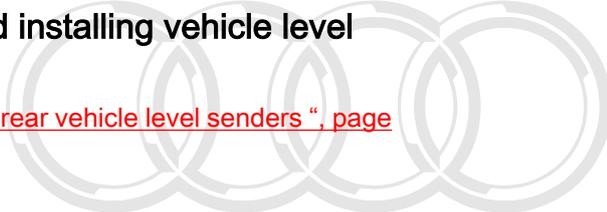
*Bolts -2- and -3- are used to secure wiring harness bracket behind splash plate to wheel bearing housing.*

- Bolt brake carrier and brake caliper to wheel bearing housing  
⇒ Rep. gr. 46 .
- For further assembly procedure refer to instructions on  
⇒ [page 94](#) onwards.
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .



## 4.8 Removing and installing vehicle level sender

⇒ [„3.3 Removing and installing rear vehicle level senders “](#), [page 197](#)

  
**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 Air spring strut, wheel bearing housing, wheel bearing unit, bonded rubber bush for wheel bearing housing

⇒ [„5.1 Exploded view of air spring strut, wheel bearing housing, wheel bearing unit, bonded rubber bush for wheel bearing housing“, page 133](#)

⇒ [„5.2 Eliminating indentations in boot“, page 135](#)

⇒ [„5.3 Removing and installing air spring strut“, page 136](#)

⇒ [„5.4 Charging air spring strut“, page 139](#)

⇒ [„5.5 Servicing air spring strut“, page 141](#)

⇒ [„5.6 Removing and installing wheel bearing housing“, page 144](#)

⇒ [„5.7 Removing and installing wheel bearing unit“, page 147](#)

⇒ [„5.8 Renewing wheel bearing“, page 149](#)

⇒ [„5.9 Renewing bonded rubber bush for wheel bearing housing“, page 153](#)

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

## 5.1 Exploded view of air spring strut, wheel bearing housing, wheel bearing unit, bonded rubber bush for wheel bearing housing

### 1 - Wheel bearing housing

- Removing and installing ⇒ [page 144](#)
- Servicing ⇒ [page 153](#)

### 2 - Eccentric bolt

- Adjust camber after slackening off ⇒ [page 254](#)
- Do not turn more than 90° in either direction (i.e. from minimum to maximum adjustment position)

### 3 - Wheel bearing

- Renewing ⇒ [page 149](#)

### 4 - Track rod

- Removing and installing ⇒ [page 124](#)
- Must be renewed if track rod is detached from coupling rod ⇒ [Item 20 \(page 118\)](#)

### 5 - Deflector ring

- Always renew together with wheel bearing ⇒ [Item 3 \(page 133\)](#) or wheel hub ⇒ [Item 6 \(page 133\)](#)
- Renewing deflector ring for 85 mm Ø wheel bearing ⇒ [page 151](#)
- Renewing deflector ring for 92 mm Ø wheel bearing ⇒ [page 152](#)

### 6 - Wheel hub

- Renewing ⇒ [page 149](#)

### 7 - Wheel bearing unit

- Comprising: Wheel bearing ⇒ [Item 3 \(page 133\)](#), deflector ring ⇒ [Item 5 \(page 133\)](#) and wheel hub ⇒ [Item 6 \(page 133\)](#)
- Removing and installing ⇒ [page 147](#)

### 8 - Splash plate

### 9 - Bolt, 10 Nm

### 10 - Flange bolt

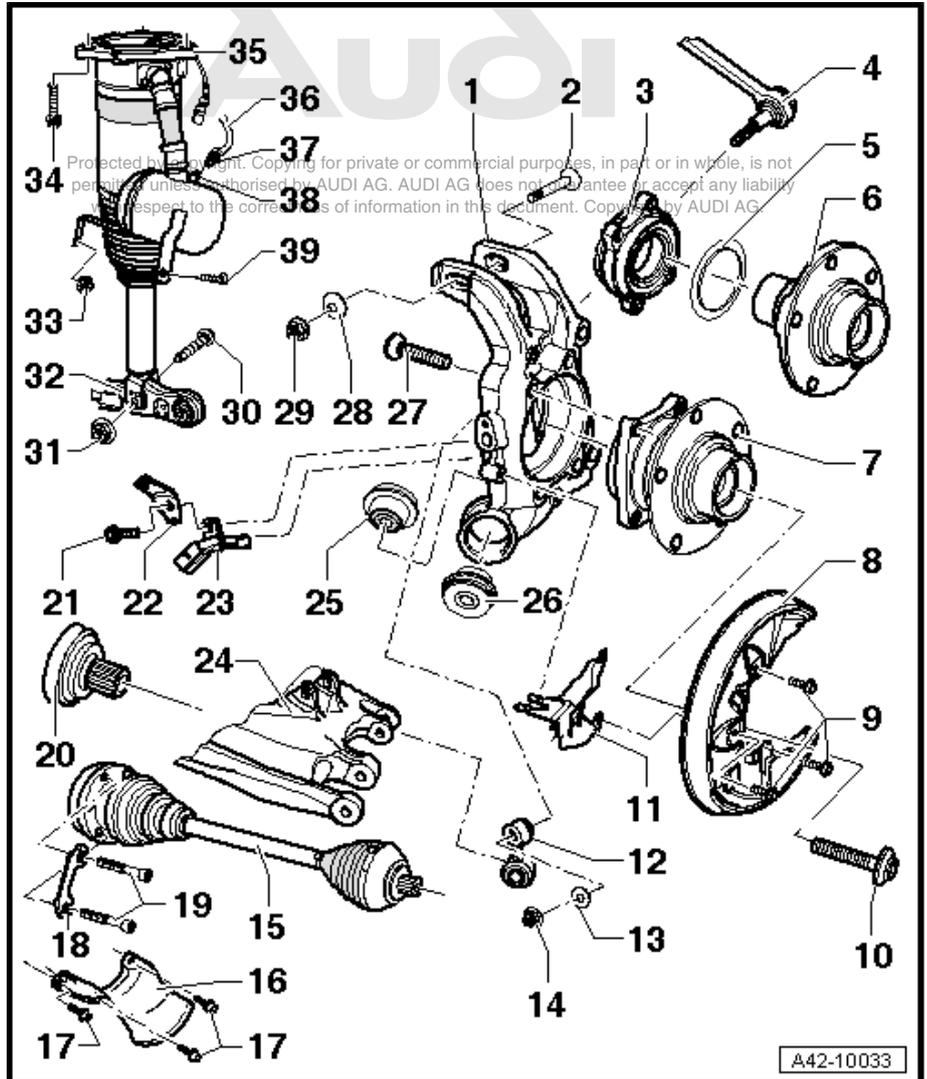
- Always renew

Keep to specified sequence when slackening off ⇒ [page 158](#) and tightening ⇒ [page 161](#)

- Tightening torque ⇒ [page 161](#)

### 11 - Bracket

- For brake caliper wiring harness
- Bolt onto wheel bearing housing ⇒ [Item 15 \(page 118\)](#) together with splash plate ⇒ [Item 8 \(page 133\)](#)



**12 - Coupling rod**

- Connects track rod to wheel bearing housing and trapezium link
- Removing and installing ⇒ [page 127](#)

**13 - Washer****14 - Self-locking nut**

- 75 Nm and turn 45° further
- Always renew

**15 - Drive shaft**

- Removing and installing ⇒ [page 158](#)
- Servicing (version with 88 mm Ø outer constant velocity joint) ⇒ [page 166](#)
- Servicing (version with 100 mm Ø outer constant velocity joint) ⇒ [page 178](#)
- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**16 - Guard plate****17 - Bolt, 23 Nm****18 - Lock plate****19 - Bolt, 70 Nm**

- Initially tighten all bolts to 15 Nm. Then tighten all bolts fully to specified torque.

**20 - Stub axle****21 - Bolt, 8 Nm****22 - Bracket**

- For speed sensor wiring harness

**23 - Speed sensor**

- With O-ring

**24 - Trapezium link**

- Removing and installing ⇒ [page 128](#)

**25 - Bonded rubber bush**

- Bush with large contact surface
- Always renew bushes on both sides of vehicle
- Must not be interchanged with bonded rubber bush ⇒ [Item 26 \(page 134\)](#)
- Removing and installing ⇒ [page 153](#)

**26 - Bonded rubber bush**

- Bush with small contact surface
- Always renew bushes on both sides of vehicle
- Must not be interchanged with bonded rubber bush ⇒ [Item 25 \(page 134\)](#)
- Removing and installing ⇒ [page 153](#)

**27 - Countersunk bolts**

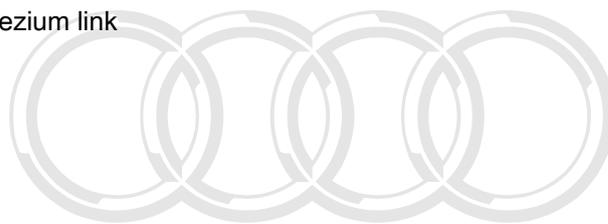
- Observe correct tightening sequence:
- 80 Nm and turn 135° further
- Back off bolt 360°
- 80 Nm and turn 90° further
- Always renew
- Wheel bearing housing must be raised to reference position before removing bottom bolts

**28 - Eccentric washer**

- With lug on inner bore

**29 - Self-locking nut, 95 Nm**

- Always renew



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.

- Raise wheel bearing housing before tightening ⇒ [page 92](#) (except when performing wheel alignment)

### 30 - Bolt

- 80 Nm and turn 90° further
- Always renew
- Position vehicle on its wheels (normal level) before tightening

### 31 - Self-locking nut

- Always renew

### 32 - Transverse link

- Removing and installing ⇒ [page 122](#)

### 33 - Self-locking nut, 9 Nm

- Always renew

### 34 - Bolt, 28 Nm

- 3x

### 35 - Air spring strut

- Boot must be free of indentations; eliminating indentations ⇒ [page 135](#)
- Note different running gear versions ⇒ [page 246](#)
- Removing and installing ⇒ [page 136](#)
- Servicing ⇒ [page 141](#)

### 36 - Air pipe

- Colours: Rear left - black; rear right - blue
- Servicing air pipe ⇒ [page 208](#)
- Renewing connection piece if leakage occurs ⇒ [page 213](#)

### 37 - Connection piece, 3 Nm

- Important: Always keep to specified tightening torque.
- Only to be unscrewed with vehicle raised and no load on air spring strut (otherwise danger of injury due to vehicle dropping)
- In the event of leaks: service air pipe ⇒ [page 208](#) or renew connection piece ⇒ [page 213](#)
- Clean pipe connection before loosening
- Air will escape when this component is unscrewed
- Protect pipe connection from dirt

### 38 - Residual pressure valve

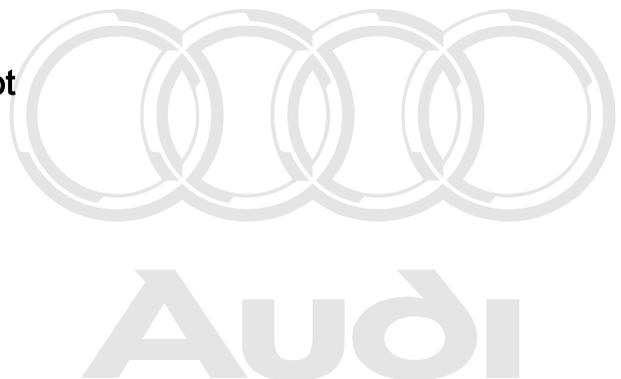
- MUST NOT be loosened

### 39 - Bolt, 9 Nm

## 5.2 Eliminating indentations in boot

### Special tools and workshop equipment required

- ◆ Commercially available compressed-air gun
- ◆ Cloth



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



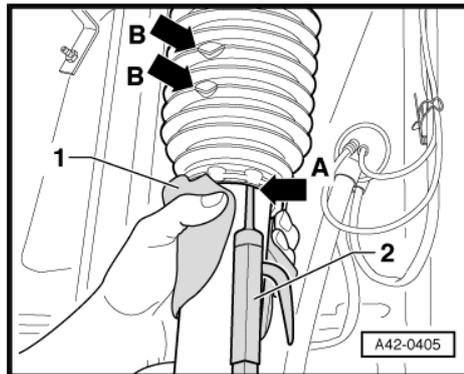
- Wrap cloth -1- around lower joint and use compressed-air gun (thin nozzle) -2- to blow in compressed air through vent slot -arrow A-.



**Note**

*Only increase pressure to the extent required to slightly inflate the boot. This will smooth out indentations -arrows B-.*

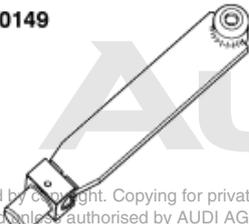
- If indentations are not eliminated, smooth them out by hand. This may involve sliding dust boot upwards out of lower fastener.



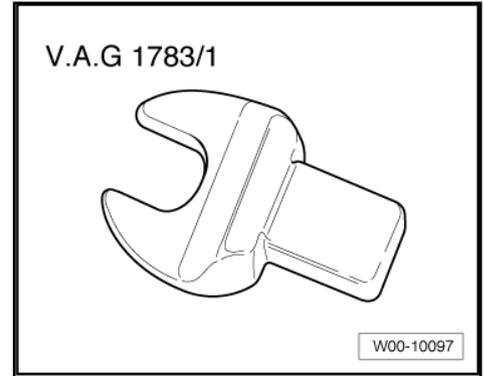
### 5.3 Removing and installing air spring strut

#### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Torque wrench -V.A.G 1783-
- ◆ Support -T10149-

<p><b>V.A.G 1331</b></p> 	<p><b>V.A.G 1332</b></p> 
<p><b>V.A.G 1383 A</b></p> 	<p><b>V.A.G 1783</b></p> 
<p><b>T10149</b></p>  <p>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</p> <p style="text-align: right;"><b>G42-0028</b></p>	

- ◆ Open end spanner insert, 10 mm -V.A.G 1783/1-



- ◆ Wooden block (hardwood) 30 x 50 x 1000 mm

### Removing

- Position vehicle on lifting platform → [page 7](#) .

**Take care to prevent indentations forming in boot on air spring strut during assembly work.**

- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Secure brake disc with one wheel bolt.
- Remove wheel housing liner → Rep. gr. 66 .
- Clean area around air connection.
- Unscrew connection piece -1- on residual pressure valve -2-. This will allow air to escape.



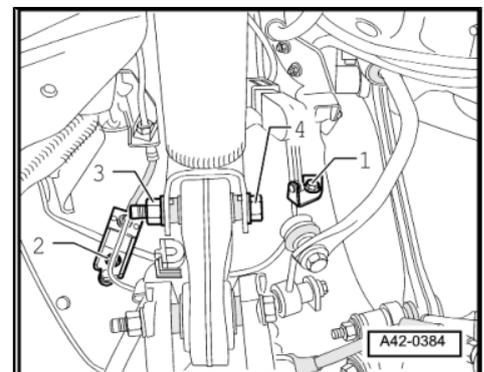
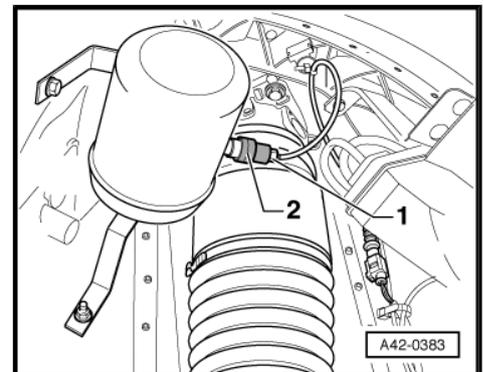
### Note

*The residual pressure valve -2- MUST NOT be loosened or removed.*

- Seal both connections. Take care to prevent dirt entering the connections.

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

- Unscrew bolt -1- from vehicle level sender.
- Remove nut -3-.
- Press down wheel bearing housing by hand and pull out bolt -4- on air spring strut/transverse link.

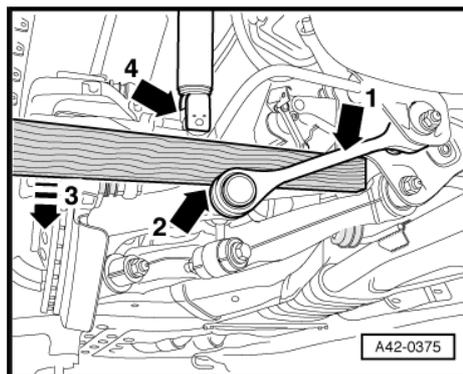




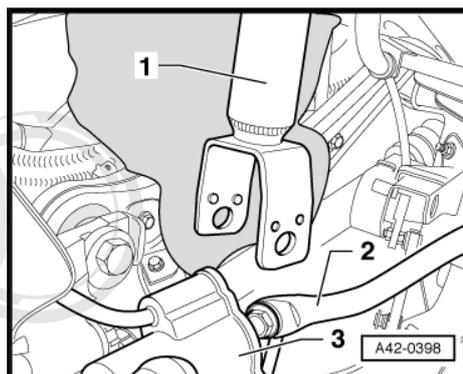
- Insert wooden block in subframe -arrow 1- and support against wheel bearing housing -arrow 2-.
- Use wooden block to press down wheel bearing housing -arrow 3- until fork -arrow 4- of air spring strut can be detached to the rear.

This requires a second mechanic to pull fork of air spring strut out to the rear.

- Place folded cloth between air spring strut and transverse link.



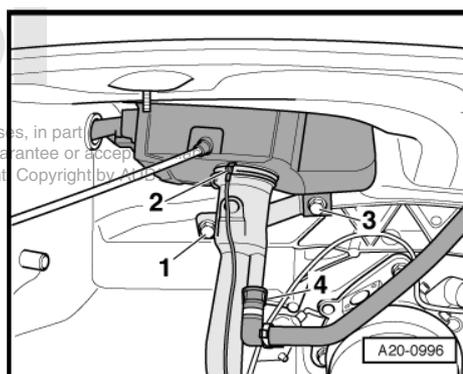
- Slowly relieve load on wheel bearing housing. When doing this, do not allow air spring strut -1- to rest on housing of parking brake -3- or anti-roll bar -2-.



### Removing air spring strut (right-side)

- Detach breather hose connection -4- from filler neck.

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



### Both sides (continued):

- Unplug connector -3-.
- Unscrew nut -4- and bolt -5-.
- Unscrew bolts -6- (3x) and detach air spring strut.

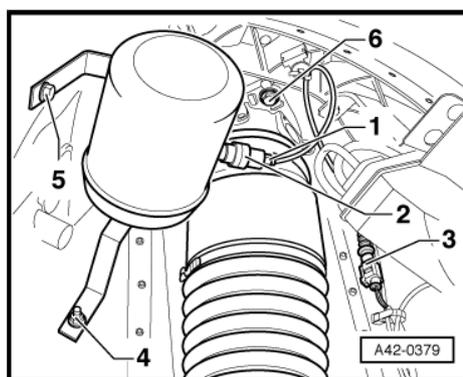
Refer to ⇒ [page 139](#) if air spring strut is to be renewed.

### Installing

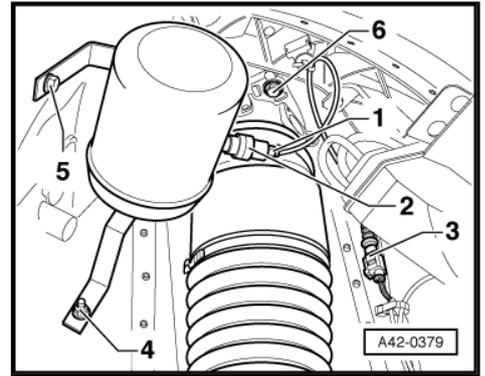
Installation is carried out in the reverse sequence. Note the following points:

#### Note

*On installation, take care not to damage boot and to avoid creating indentations.*

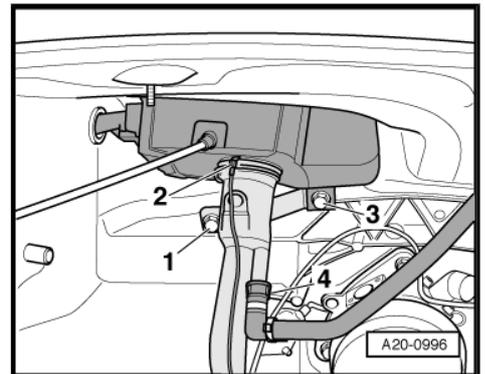


- Fit air spring strut and tighten bolts -6- (3x) ⇒ [Item 34 \(page 135\)](#) .
- Tighten bolt -5- ⇒ [Item 39 \(page 135\)](#) .
- Tighten nut -4- ⇒ [Item 33 \(page 135\)](#) .
- Plug in connector -3-.
- Screw on connection piece -1- at residual pressure valve -2- ⇒ [Item 37 \(page 135\)](#) .



#### Installing air spring strut (right-side)

- Attach breather hose connection -4- at filler neck.



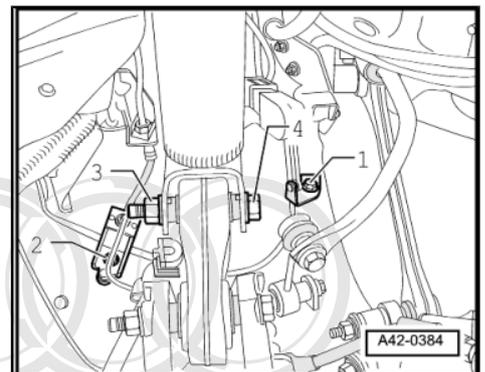
#### Both sides (continued):

- Attach bolt for vehicle level sender -1- ⇒ [Item 25 \(page 97\)](#) . Sender lever must face inwards.
- Press down wheel bearing housing by hand and insert bolt -4- in air spring strut/transverse link.
- Only hand-tighten nut -3-.



#### Note

*Bolt -4- cannot be tightened while suspension is in reference position. This operation must therefore be performed with vehicle standing on ground.*



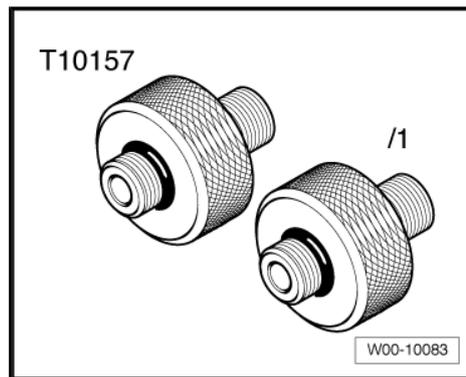
- Fit wheel housing liner ⇒ Rep. gr. 66 .
- Fit and secure wheel ⇒ Wheels and tyres; Rep. gr. 44 .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- With vehicle standing on ground at „normal level“, tighten bolt -4- ⇒ [Item 30 \(page 135\)](#) . When doing this, counterhold nut -3-.
- Re-adapt reference position ⇒ [page 202](#) .

## 5.4 Charging air spring strut

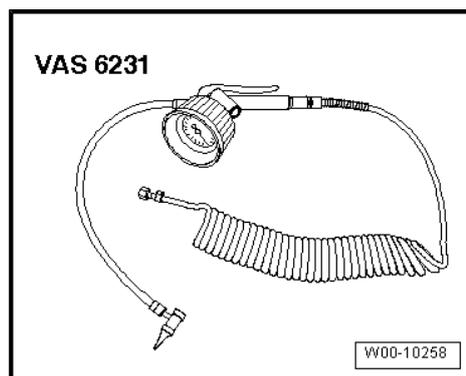
### Special tools and workshop equipment required



## ◆ Adapter -T10157-



## ◆ Air suspension strut charger unit -VAS 6231-

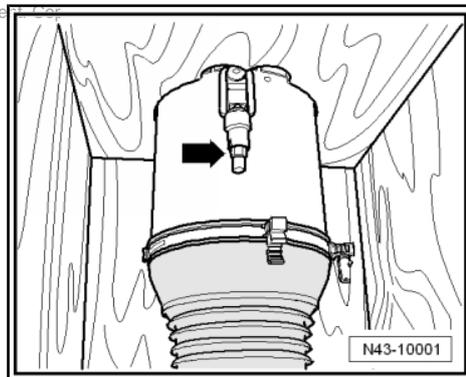


## ◆ Gas cylinder: Argon or Corgon

**Note**

Replacement air spring struts are supplied with a minimum gas filling. After a period of storage, the struts can lose some of this initial pressure (in the same way as a tyre). The minimum pressure must therefore be checked, and if necessary »recharged« to the required level before the air spring struts are taken out of their packaging. If the strut is taken out of its packaging without checking and recharging the pressure, this can cause indentations or kinks to form in the U-bellows before it reaches its normal shape. This will damage the bellows and can cause premature failure.

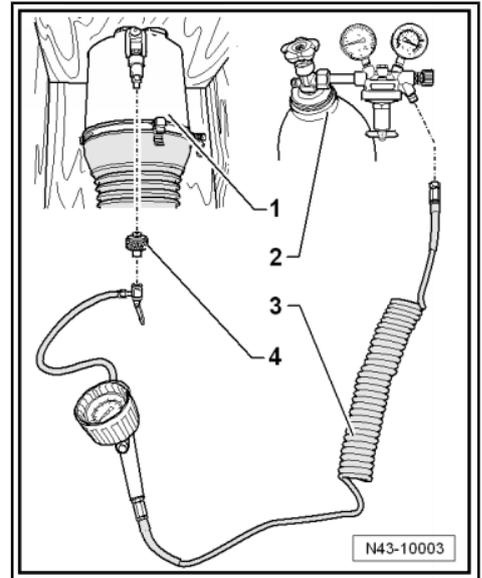
- Remove cover from packaging.
- Remove union screw -arrow- from residual pressure valve.
- Close valve on gas cylinder.
- Make sure that you are familiar with the relevant safety instructions for the use of pressurised containers and industrial gases.



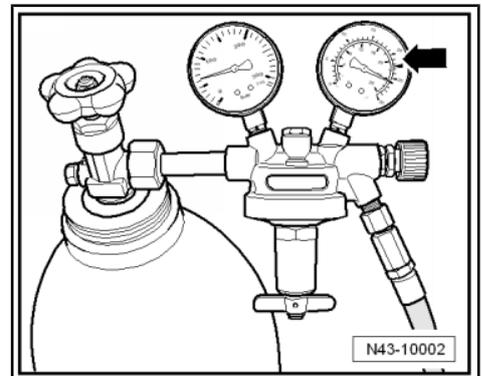
- Connect air suspension strut charger unit -VAS 6231- and adapter -T10157- as illustrated.
- 1 - Air spring strut in its packaging
- 2 - Gas cylinder for argon or Corgon with fittings
- 3 - Air suspension strut charger unit -VAS 6231-
- 4 - Adapter -T10157-

 **Note**

*To prevent „contaminated air“ from entering the air spring system, the suspension strut (air suspension) must only be »recharged« with the types of gas listed above.*



- Set restrictor valve to 2.0 ltr./min -arrow-.
- Now charge the air spring strut with gas, using several separate bursts of pressure.

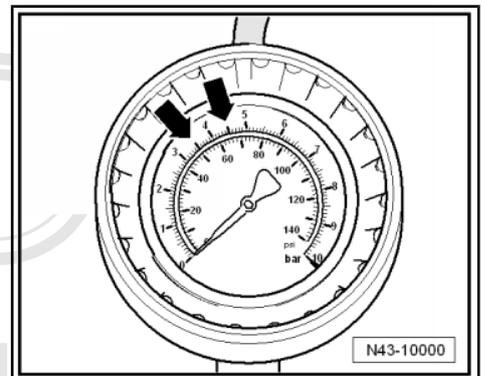


The display will only show the correct pressure when the »back pressure« in the residual pressure valve has been overcome. The »back pressure« is approx. 3.5 bar. The air spring strut is adequately filled when the indicated pressure reaches 3.5...4.5 bar.

- Make sure pressure does not exceed 4.5 bar while charging.
- Disconnect air suspension strut charger unit -VAS 6231- from adapter -T10157- ; gas pressure in excess of 3.5 bar will then be released.

The minimum pressure has now been restored. You can take the air spring strut out of the packaging.

- After installation, set the suspension to the raised level setting and then back to the normal level. Repeat this procedure once more.



Most of the gas will be replaced with the filtered air from the air supply unit once the suspension has twice moved up and down to these settings.

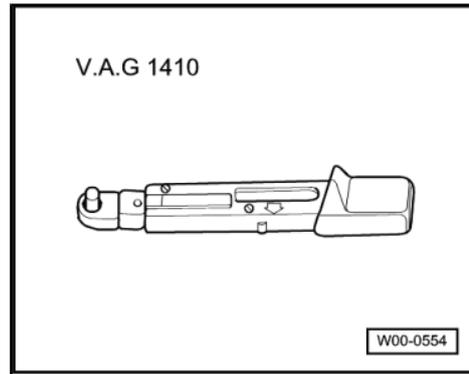
- Install air spring strut => [page 138](#) .

## 5.5 Servicing air spring strut

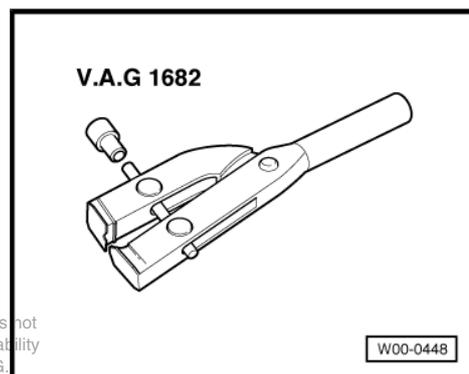
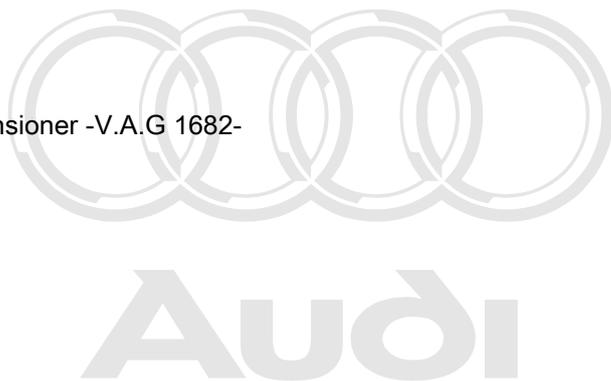
Special tools and workshop equipment required



- ◆ Torque wrench -V.A.G 1410-



- ◆ Clamp tensioner -V.A.G 1682-



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

- Air spring strut assembly must be renewed if rear left shock absorber damping adjustment valve -N338- or rear right shock absorber damping adjustment valve -N339- is defective

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted. All rights reserved by AUDI 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 - Hose clip

- Always renew
- Tightening => [page 144](#)

### 3 - Boot

- Must not be kinked, eliminate indentations => [page 135](#)
- Installation position:
- Slide top over air spring strut as far as end of grooves
- Bottom must be engaged in retaining ring => [Item 4 \(page 143\)](#)

### 4 - Retaining ring

- For securing bottom of dust boot

### 5 - Piston

- Clean if dirty

### 6 - Rubber boot

- Visual inspection => [page 144](#)

### 7 - Residual pressure valve

- DO NOT unfasten, as this would damage air spring strut

### 8 - Auxiliary air reservoir

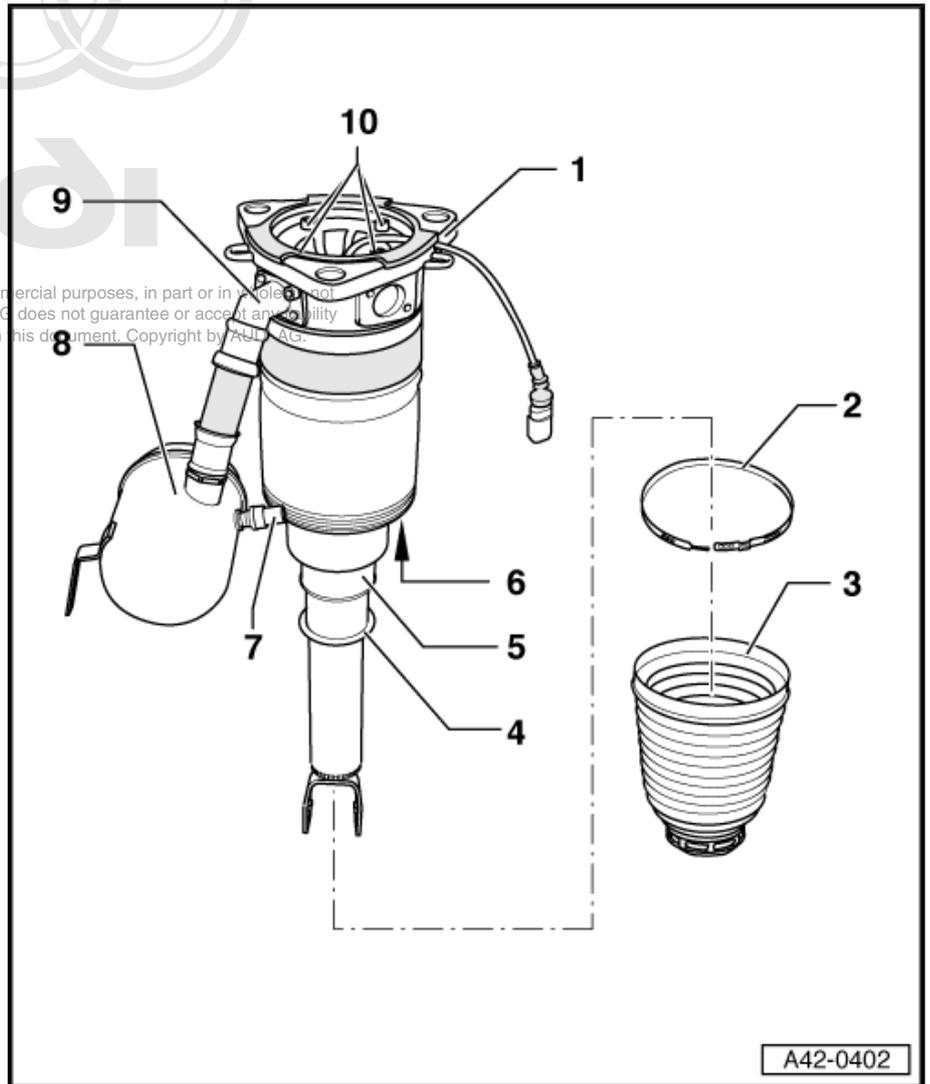
- Must not be detached

### 9 - Connection

- Must not be detached

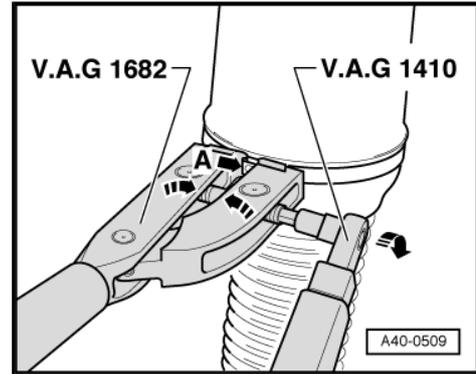
### 10 - Bolts

- Must not be removed



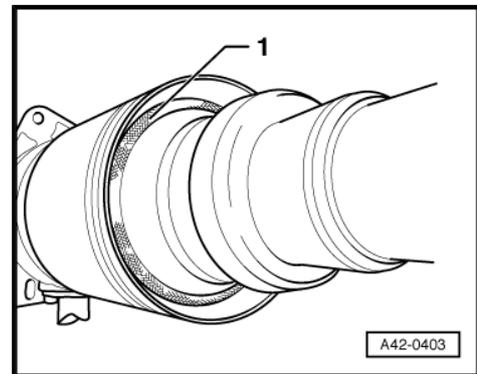
### Tightening hose clip on air spring strut

- Apply clamp tensioner -V.A.G 1682- as shown. Make sure tips of tool are applied centrally -arrow A- to clip.
- Tighten hose clip by turning spindle with torque wrench (take care to keep tool straight).
- ◆ Tightening torque: 8 Nm
- ◆ Use torque wrench with 4...20 Nm adjustment range (e.g. - V.A.G 1410- ).
- ◆ Make sure thread of spindle on tool -A- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.



### Visual inspection

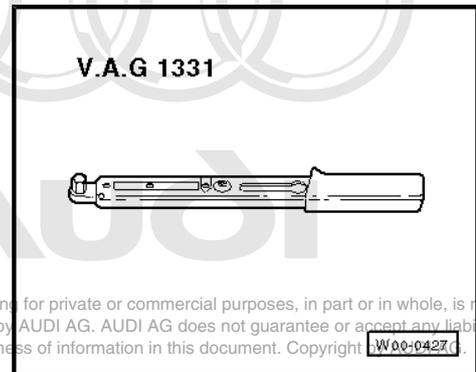
- Check rubber boot -1- for damage.
- Surface must be regular and even.
- Replace air spring strut if damaged.



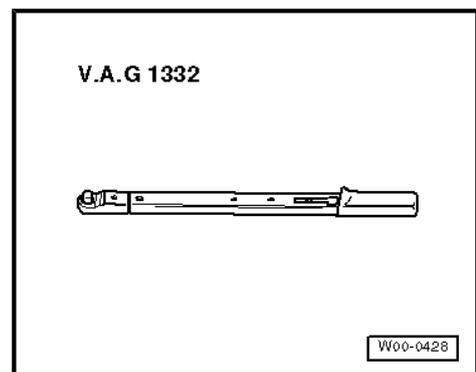
## 5.6 Removing and installing wheel bearing housing

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-



- ◆ Torque wrench -V.A.G 1332-



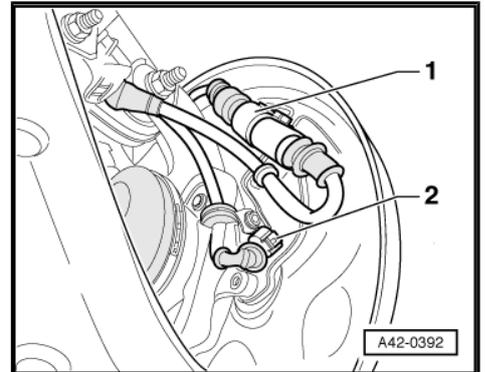
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright W00-0427

## Removing

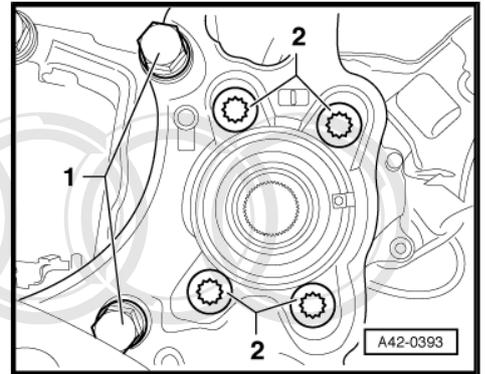
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Unscrew flange bolt securing drive shaft ⇒ [page 158](#) .
- Pull connector -1- for brake caliper wiring harness out of bracket and unplug connector.
- Remove bolt from bracket for wheel speed sensor -2-. Pull speed sensor out of wheel bearing housing.
- Detach brake caliper and attach to body ⇒ Rep. gr. 46 .

### Note

- ◆ Tie up brake caliper to body with wire.
- ◆ Do not suspend the brake caliper from the brake hose.

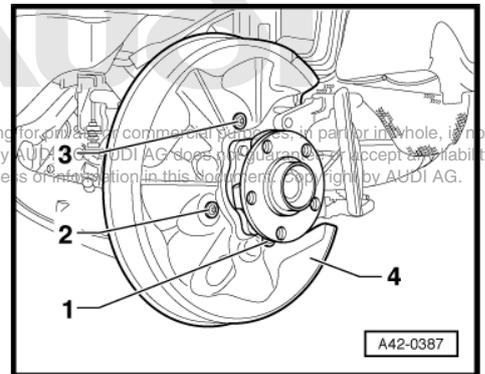


- Detach brake carrier -1- and brake disc.



- Unscrew bolts -1- to -3- from splash plate -4- and detach splash plate.
- Detach air spring strut from transverse link and swivel to the rear (reference position) ⇒ [page 92](#) .

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

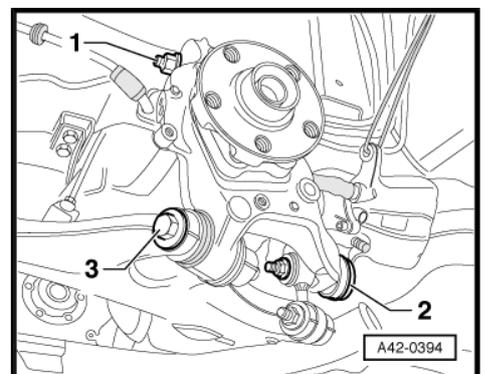


- Remove track rod -2- ⇒ [page 124](#) .

### Note

*The track rod must be renewed if it has been unfastened or removed at the coupling rod.*

- Mark position of eccentric bolt -1- at transverse link.
- Unscrew bolt -1- from transverse link.
- Unscrew bolt -3- from trapezium link.
- Pull wheel bearing housing off drive shaft and out of suspension.
- If wheel bearing unit is to be removed, clamp wheel bearing housing in vice with soft jaws.



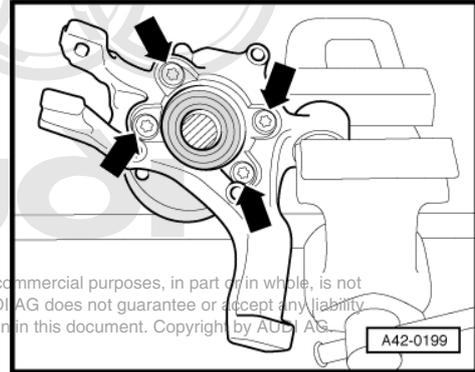


- To remove wheel bearing unit, unscrew bolts -arrows-.

**Caution**

- *Avoid dirtying or damaging the seal when laying down or storing the wheel bearing.*

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



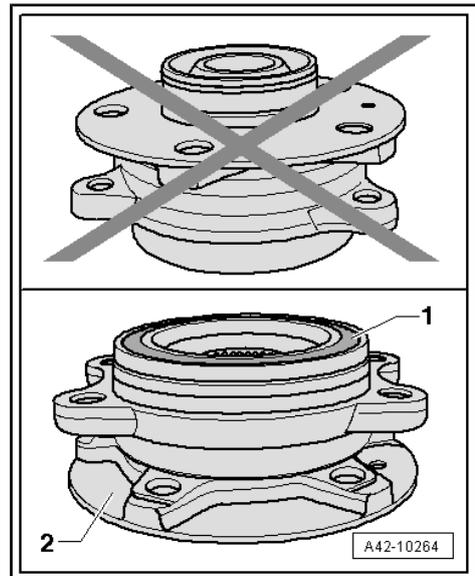
The wheel bearing -1- must always be pointing upwards.

- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.

**Installing**

Installation is carried out in the reverse sequence. Note the following points:

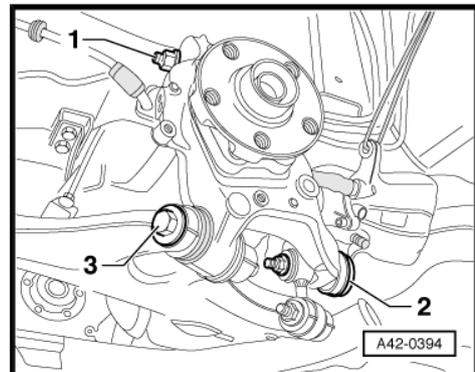
- Refer to notes on tightening bolts ⇒ [Item 27 \(page 134\)](#) if wheel bearing unit has been removed.
- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts ⇒ [page 92](#) .



- Fit new track rod -2- ⇒ [page 124](#) .
- Tighten bolt -3- for trapezium link ⇒ [Item 22 \(page 118\)](#) .
- Turn eccentric bolt to mark made at transverse link and tighten bolted joint -1- ⇒ [Item 29 \(page 134\)](#) .

**Note**

*Do not turn eccentric bolt more than 90° in either direction (i.e. from minimum to maximum adjustment position)*

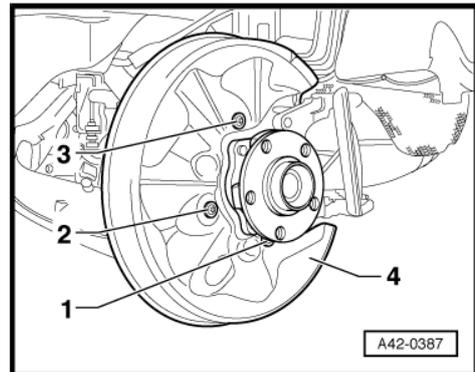


- Secure splash plate -4- with bolts -1- to -3- ⇒ [Item 9 \(page 133\)](#) .

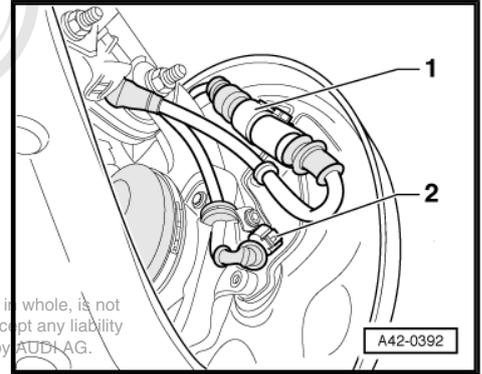
**Note**

*Bolts -2- and -3- are used to secure wiring harness bracket behind splash plate to wheel bearing housing.*

- Bolt brake carrier and brake caliper to wheel bearing housing ⇒ Rep. gr. 46 .



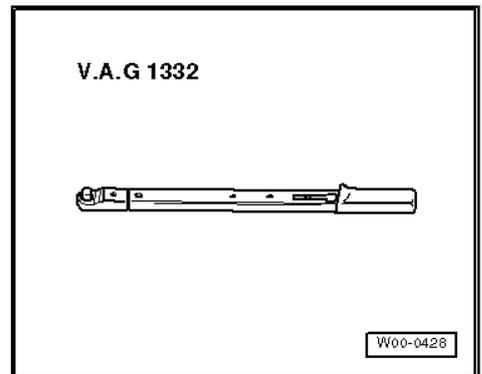
- Fit wheel speed sensor -2- in wheel bearing housing and tighten bolt for bracket ⇒ [Item 21 \(page 134\)](#) .
- Insert electrical connector -1- for brake caliper in bracket and plug in connector.
- For further assembly procedure refer to instructions on ⇒ [page 94](#) onwards.
- Tighten flange bolt for drive shaft ⇒ [page 161](#) .
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .



## 5.7 Removing and installing wheel bearing unit

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



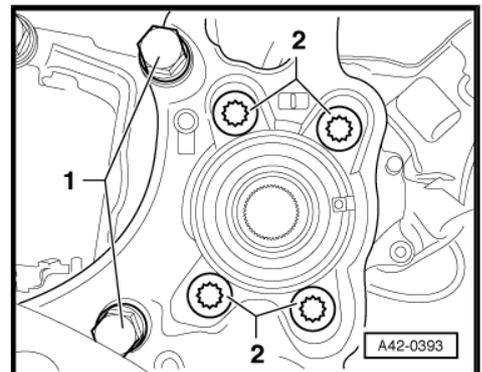
### Removing

- Remove drive shaft ⇒ [page 158](#) .
- Unscrew bolts -1- and detach brake carrier and brake disc.
- Unscrew top bolts -2-.
- Suspension must be raised before removing bottom bolts.
- Unscrew bottom bolts -2-.
- Pull wheel bearing unit out of wheel bearing housing.



#### Caution

- *Avoid dirtying or damaging the seal when laying down or storing the wheel bearing.*



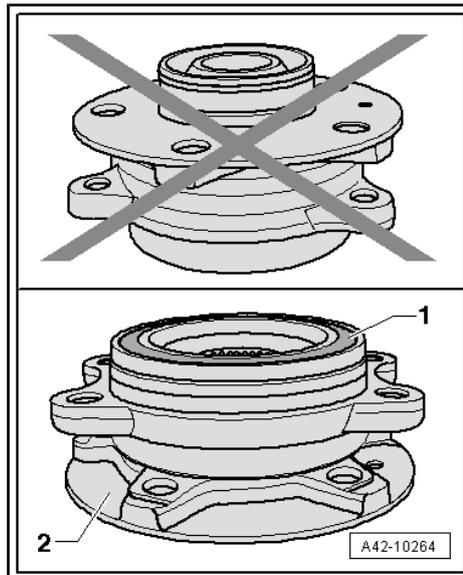


The wheel bearing -1- must always be pointing upwards.

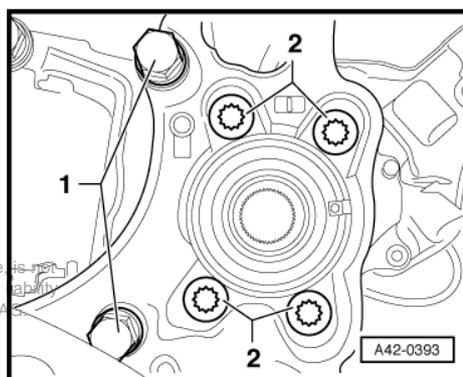
- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.

### Installing

Installation is carried out in the reverse sequence.



- Insert wheel bearing unit in wheel bearing housing and tighten bolts -2- => [Item 27 \(page 134\)](#) .
- Install brake carrier and brake disc and tighten bolts -1- => Rep. gr. 46 .
- Install drive shaft => [page 161](#) .

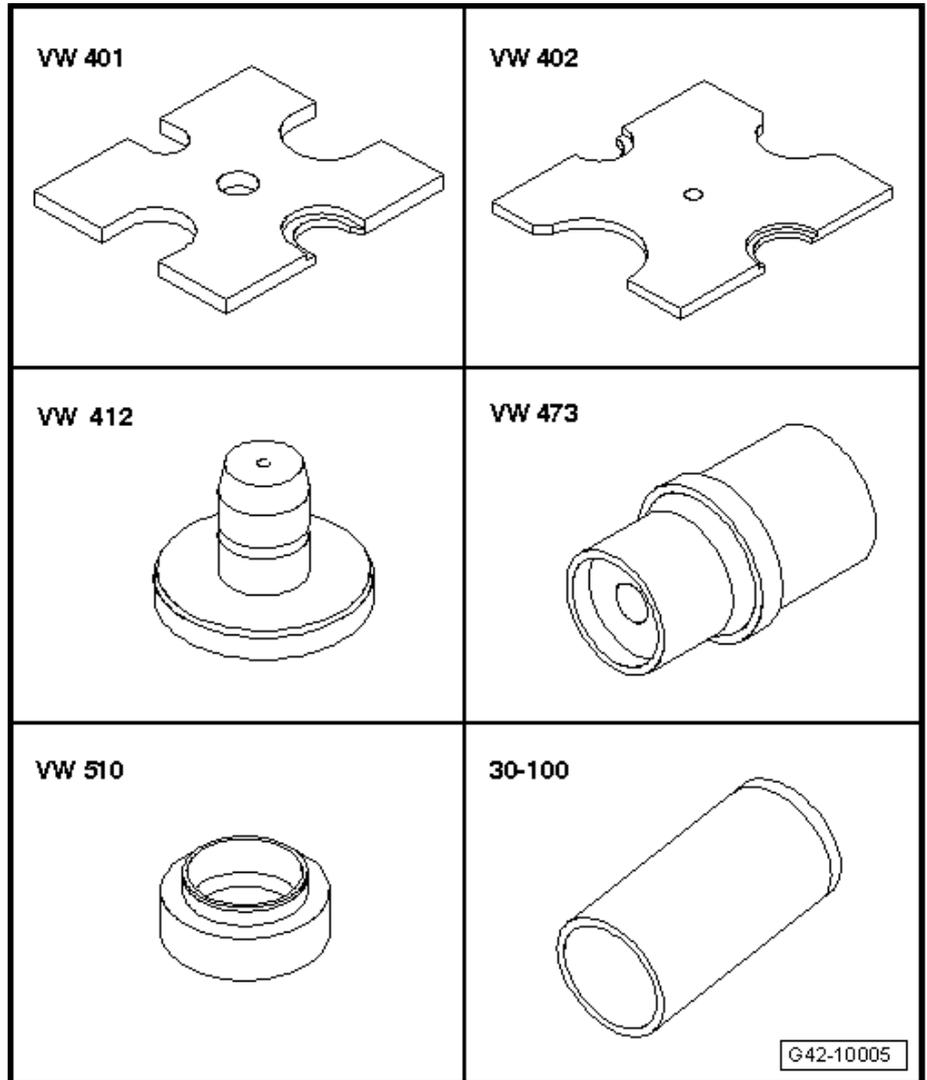


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

## 5.8 Renewing wheel bearing

### Special tools and workshop equipment required

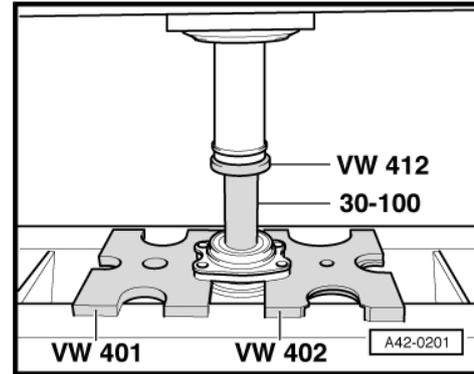
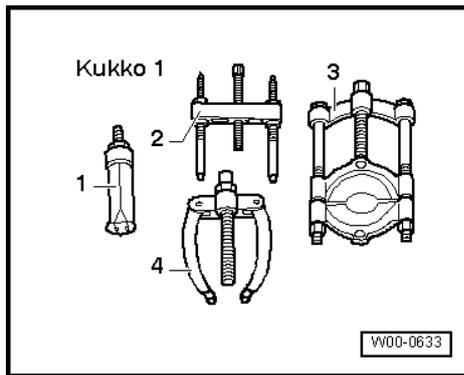
- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 412-
- ◆ Press tool -VW 473-
- ◆ Thrust pad -VW 510-
- ◆ Drift sleeve -30-100-



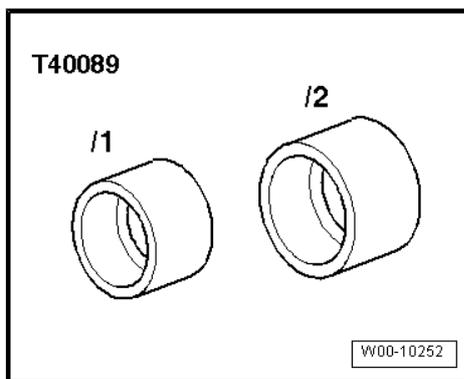
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- ◆ -3- Splitter -Kukko 17/2-



- ◆ Assembly tool - T40089/1- , for 85 mm Ø wheel bearings
- ◆ Assembly tool - T40089/2- , for 92 mm Ø wheel bearings



**Pressing wheel hub out of 85 mm Ø wheel bearing**

**Pressing inner bearing race off wheel hub**

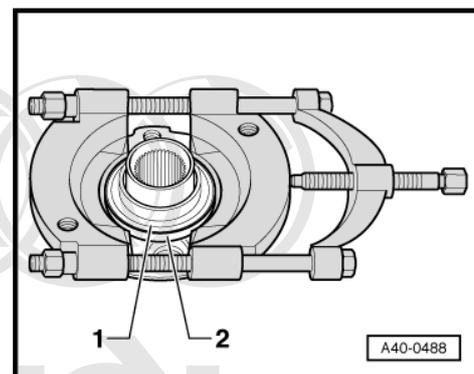
- Apply splitter between inner bearing race -1- and deflector ring -2-, and tighten spindle.



**Note**

*Use commercially available splitter , e.g. -Kukko 17/2- .*

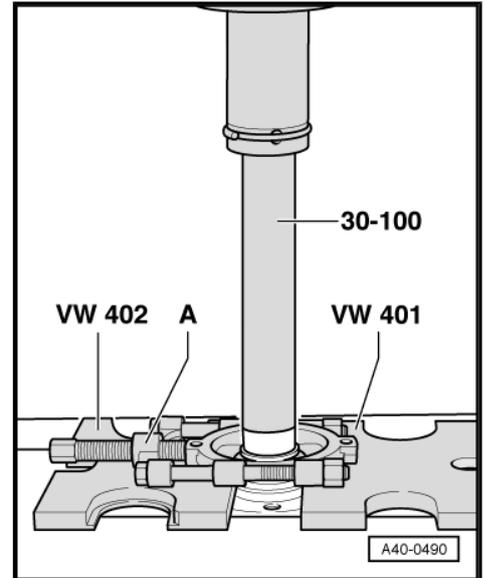
The deflector ring becomes deformed in this process and must then be renewed.



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

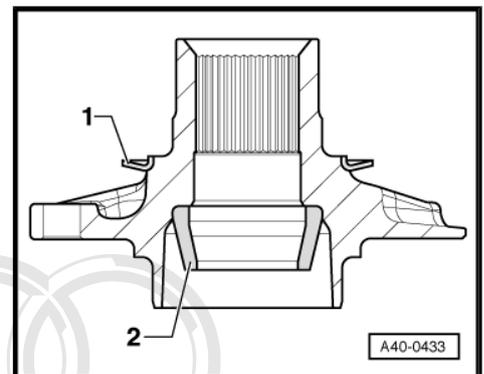
- Press inner bearing race off wheel hub (85 mm Ø wheel bearing).

A - Splitter , 22...115 mm, e.g. -Kukko 17/2-



### Renewing deflector ring for 85 mm Ø wheel bearing

- Carefully prise off old deflector ring -1- using a screwdriver.
- Fit new deflector ring on wheel hub.



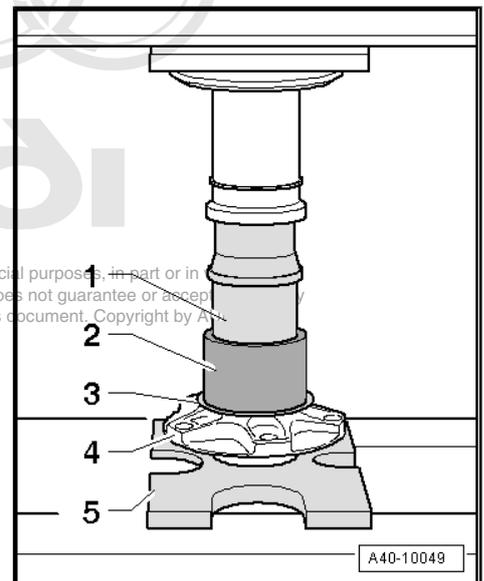
- Apply special tools as shown in illustration.

- 1 - Press tool -VW 473-
- 2 - Assembly tool -T40089/1- , for 85 mm Ø wheel bearings
- 3 - Deflector ring
- 4 - Wheel hub
- 5 - Thrust plate -VW 401-

 **Note**

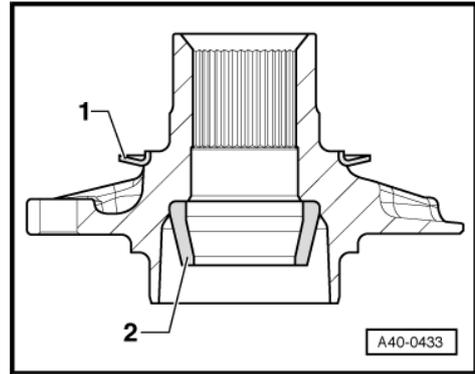
*The deflector ring must be pressed on until it is seated against the radius on the wheel hub.*

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



### Renewing deflector ring for 92 mm Ø wheel bearing

- Carefully prise off old deflector ring -1- using a screwdriver.
- Fit new deflector ring on wheel hub.

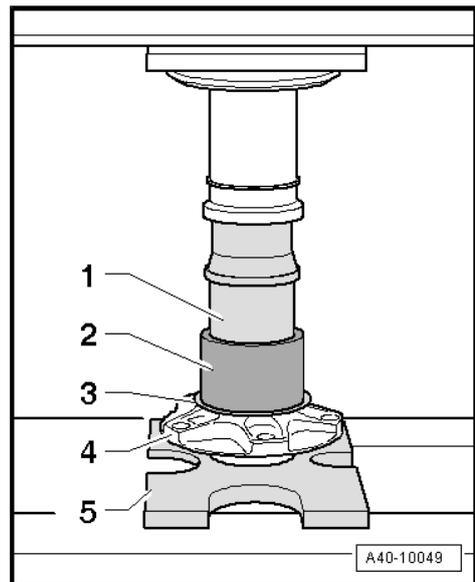


- Apply special tools as shown in illustration.
- 1 - Press tool -VW 473-
- 2 - Assembly tool -T40089/2- , for 92 mm Ø wheel bearings
- 3 - Deflector ring
- 4 - Wheel hub
- 5 - Thrust plate -VW 401-



**Note**

*The deflector ring must be pressed on until it is seated against the radius on the wheel hub.*



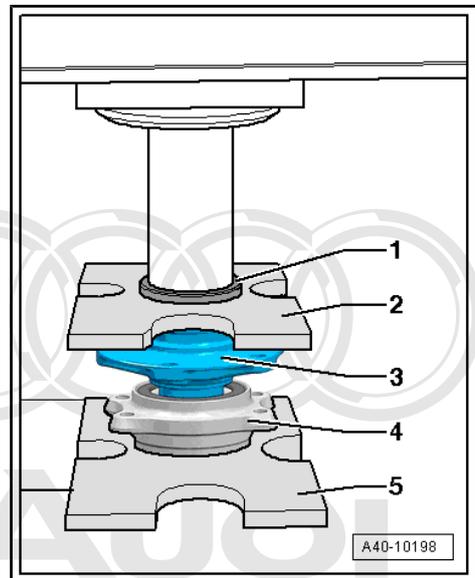
### Pressing wheel hub into 85 mm Ø or 92 mm Ø wheel bearing

- Apply special tools as shown in illustration.
- 1 - Press tool -VW 412-
- 2 - Thrust plate -VW 402-
- 3 - Wheel hub
- 4 - Ball bearing
- 5 - Thrust plate -VW 401-



**Note**

*The machined surface of the wheel bearing outer race faces downwards.*



**Caution**

***Make sure no dirt gets between thrust plate -VW 401- -5- and ball bearing -4- when pressing in the hub or when the parts are placed on a workbench, etc.***

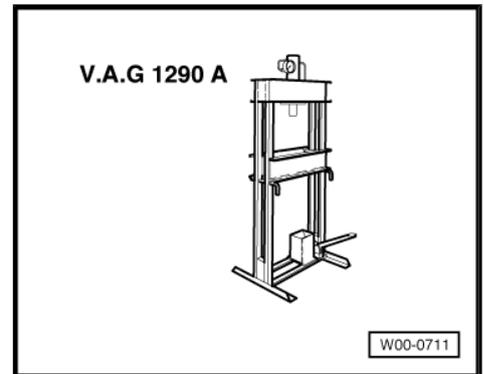
- Press wheel hub into wheel bearing.

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

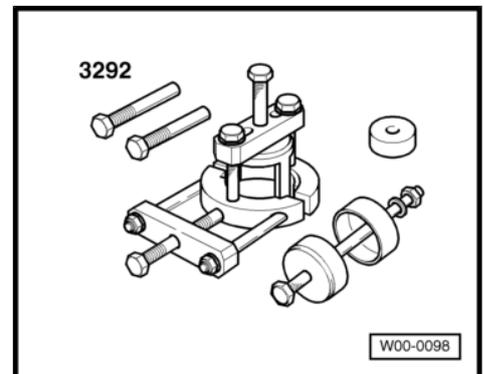
## 5.9 Renewing bonded rubber bush for wheel bearing housing

### Special tools and workshop equipment required

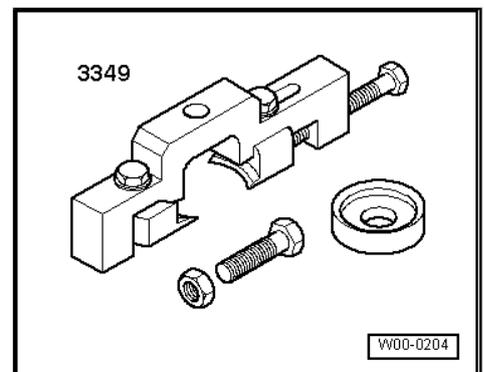
- ◆ Workshop press -V.A.G 1290A-



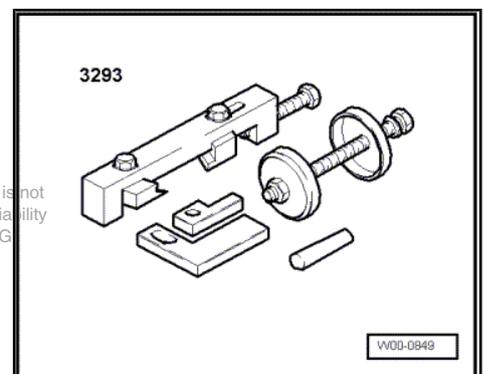
- ◆ Assembly tool -3292-



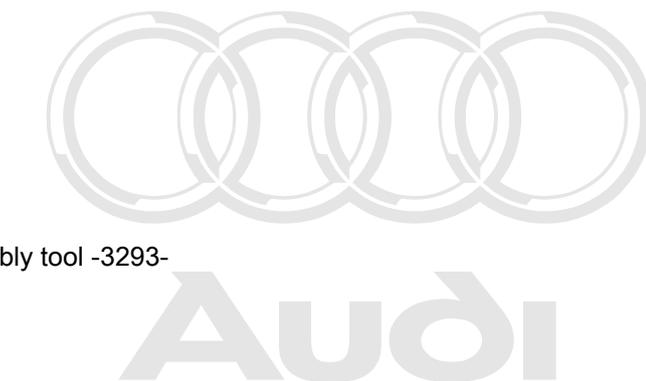
- ◆ 2x puller -3349- ; if a second puller -3349- is not available, use splitter -20/10- with puller hooks 1-80



- ◆ Assembly tool -3293-



- ◆ Splitter -20/10- with puller hooks 1-80
- Wheel bearing housing removed ⇒ [page 144](#)



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

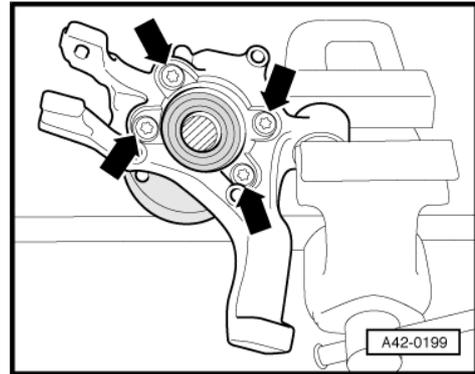


- Clamp wheel bearing housing in vice; use protective jaw covers.
- Remove bolts -arrows- and carefully take off wheel bearing unit.



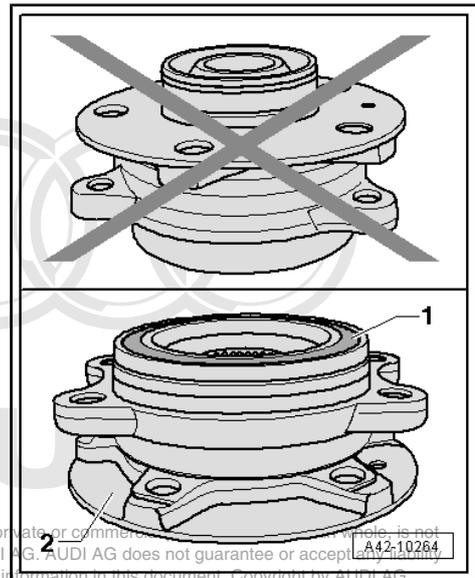
**Caution**

- *Avoid dirtying or damaging the seal when laying down or storing the wheel bearing.*



The wheel bearing -1- must always be pointing upwards.

- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.



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

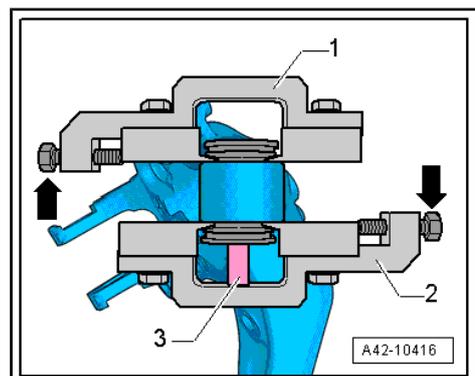
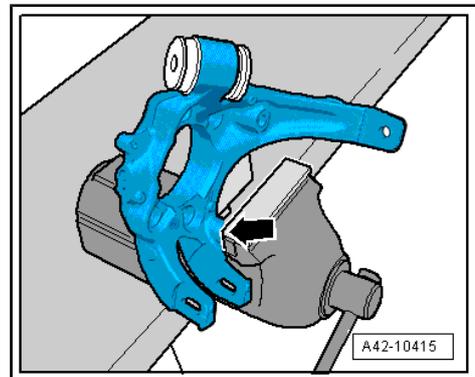
**Pressing out bonded rubber bush (part 1)**



**Note**

- ◆ *The bonded rubber bush in the wheel bearing housing consists of 2 parts. Removal and installation therefore involves two operations.*
- ◆ *If a second puller -3349- is not available, splitter -20/10- with puller hooks 1-80 can be used as an alternative. The following description shows details of how to use the two tools.*

- Clamp wheel bearing housing in vice (apply jaws at mounting lug for brake carrier -arrow-). Use protective jaw covers.
- Apply pullers -3349- -1- and -2- so that claws engage between flanges of bonded rubber bushes and wheel bearing housing.
- Screw in spindles -arrows- until tools make contact with bonded rubber bushes. This lifts bonded rubber bushes slightly off wheel bearing housing.
- Insert pin -3293/1- -3- from assembly tool -3293- into bonded rubber bush.



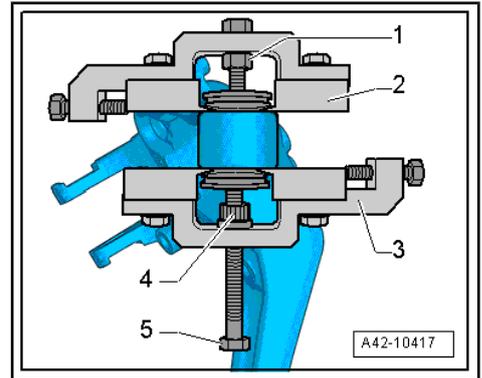
- Set up remaining tools as shown in illustration and pull out one bonded rubber bush by turning nut -4-.

- 1 - Bolt and nut from puller -3349-
- 2 - Puller -3349-
- 3 - Puller -3349-
- 4 - Nut and washer from assembly tool -3293-
- 5 - Spindle from assembly tool -3293-

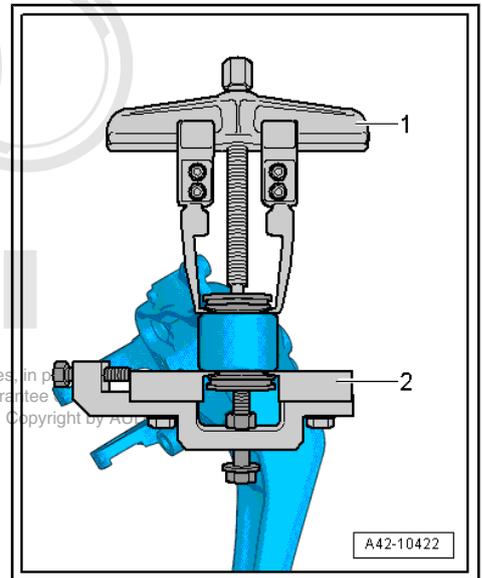
 **Note**

*If a second puller -3349- is not available, splitter -Kukko 20/10- with puller hooks 1-80 can be used as an alternative.*

- Fold over metal collars of both bushes slightly.
- Apply puller -3349- -2- so that claws engage between flange of bonded rubber bush and wheel bearing housing.
- Screw in threaded spindle as far as stop. This lifts bonded rubber bush slightly off wheel bearing housing.
- Insert pin -3293/1- from assembly tool -3293- into bonded rubber bush.
- Apply splitter -1-, e.g. splitter -Kukko 20/10- with puller hooks 1-80 , and threaded spindle -3290- with washer and nut.
- Pull off one bonded rubber bush by turning spindles.



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



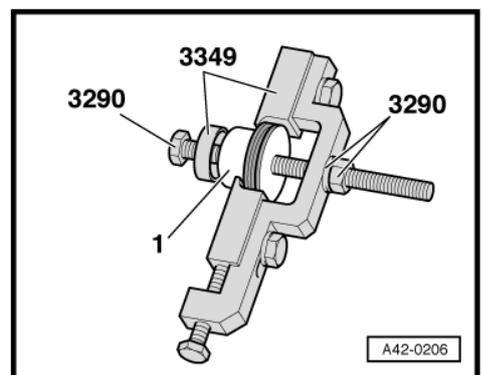
**Pressing out bonded rubber bush (part 2)**

Arrangement of tools

- 1 - Bonded rubber bush

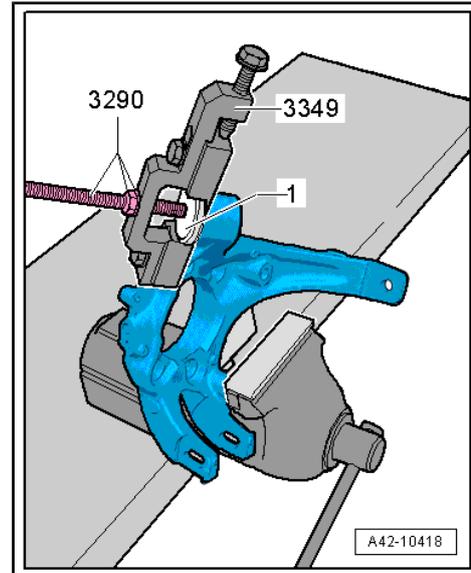
 **Note**

*Arrangement of tools is shown here without wheel bearing housing. Next illustration shows actual operation.*





- Insert press tool -3349/1- and threaded spindle -3290- .
- Apply puller -3349- at bonded rubber bush -1-.
- Extract bonded rubber bush by turning nut on threaded spindle.

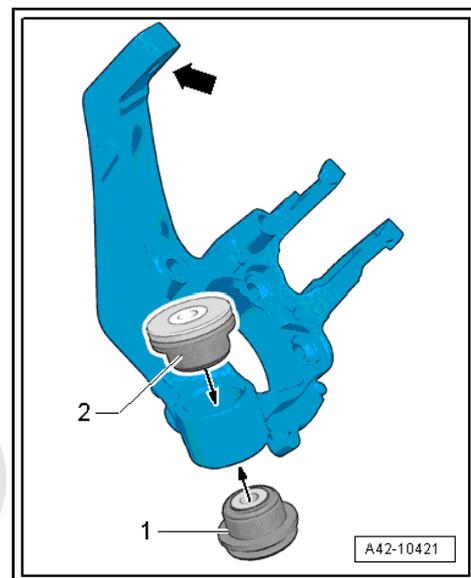


### Installing bonded rubber bush (part 1)

Note correct installation position:

Bonded rubber bush -1- with smaller contact surface faces away from wheel bearing housing.

Bonded rubber bush -2- with larger contact surface faces steering arm -arrow- of wheel bearing housing.

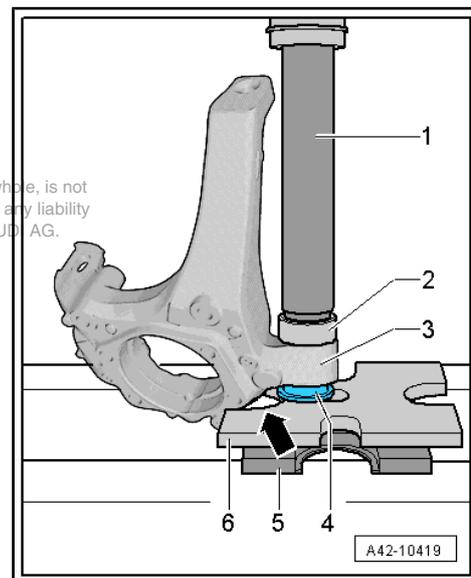


- Fit first bonded rubber bush in wheel bearing housing, taking care to keep it straight.

- Set up special tools as shown in illustration:

- 1 - Press tool -VW 407-
- 2 - Assembly tool -3350/2-
- 3 - Wheel bearing housing
- 4 - Bonded rubber bush
- 5 - Thrust plate -VW 401-
- 6 - Thrust plate -VW 402-

Copyright for private or 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.



### Note

- ◆ Do not use lubricant.
- ◆ While pressing in the part, make sure that the wheel bearing housing does not come into contact with the thrust plate -VW 402- -arrow-.

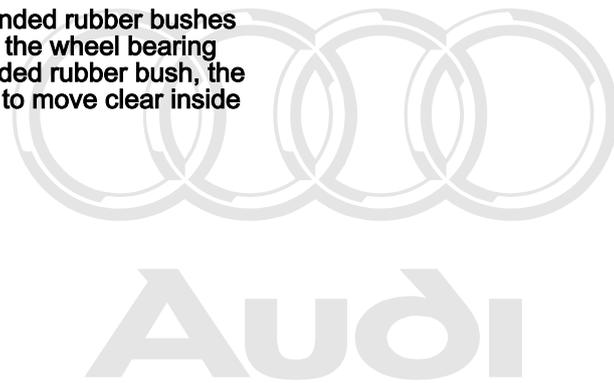
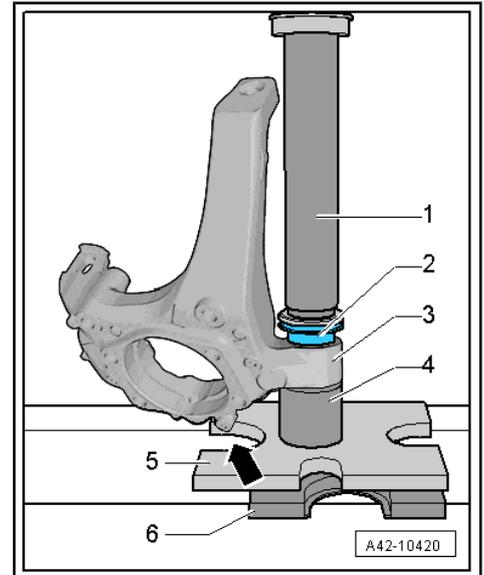
### Installing bonded rubber bush (part 2)

- Fit second bonded rubber bush in wheel bearing housing, taking care to keep it straight.
- Set up special tools as shown in illustration:
  - 1 - Press tool -VW 407-
  - 2 - Bonded rubber bush
  - 3 - Wheel bearing housing
  - 4 - Tube -3296-
  - 5 - Thrust plate -VW 401-
  - 6 - Thrust plate -VW 402-

 **Note**

- ◆ *Do not use lubricant.*
- ◆ *While pressing in the part, make sure that the wheel bearing housing does not come into contact with the thrust plate -VW 402- -arrow-.*

The collars on the outer sleeves of both bonded rubber bushes must not be deformed and must lie against the wheel bearing housing. When pressing in the second bonded rubber bush, the inner section of the first bush must be able to move clear inside the tube -3296- .



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

## 6 Drive shaft

⇒ „6.1 Removing and installing drive shaft“, page 158

⇒ „6.2 Exploded view of drive shaft with 88 mm Ø outer constant velocity joint and 108 mm Ø inner constant velocity joint“, page 164

⇒ „6.3 Servicing drive shaft with 88 mm Ø outer constant velocity joint“, page 166

⇒ „6.4 Exploded view of drive shaft with 100 mm Ø outer constant velocity joint and 108 mm Ø inner constant velocity joint“, page 176

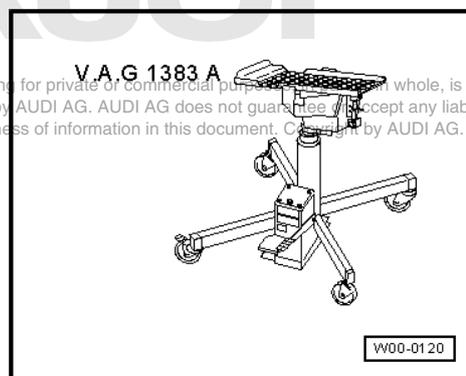
⇒ „6.5 Servicing drive shaft with 100 mm Ø outer constant velocity joint“, page 178

### 6.1 Removing and installing drive shaft

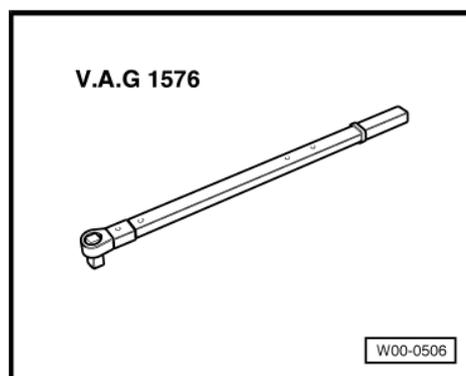
#### Special tools and workshop equipment required

◆ Engine and gearbox jack -V.A.G 1383 A-

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



◆ Torque wrench -V.A.G 1576-



#### Removing



#### Note

*Suspension must be in reference position when detaching drive shafts from rear final drive.*

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).

- Loosen the flange bolt -arrow- only 90°, otherwise the wheel bearing will be damaged.

**WARNING**

*The vehicle must be standing on its wheels when loosening and tightening the flange bolt.*

*-Accident risk-*

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

- ~~Remove wheel~~
- Screw in and hand-tighten all 5 wheel bolts again.
- Actuate electric parking brake.
- Remove flange bolt.

If electric parking brake cannot be actuated, this operation requires a second mechanic.

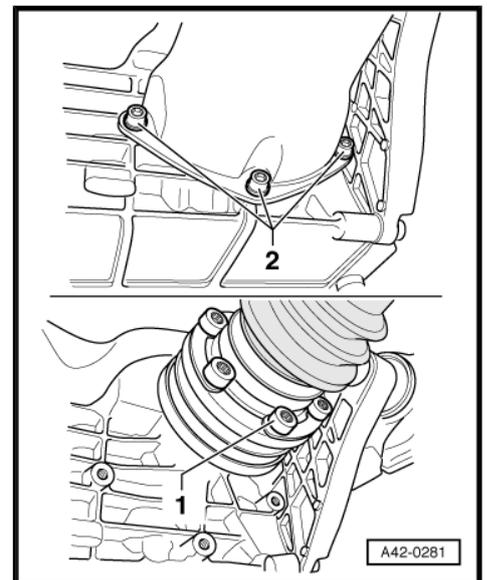
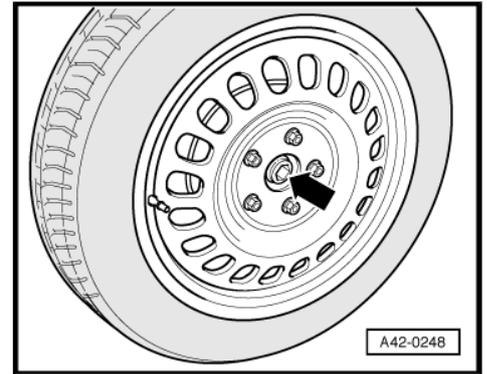
- 1st mechanic gets into vehicle and presses brake pedal.
- 2nd mechanic unscrews flange bolt for drive shaft.

The wheel bearings must not be subjected to load after the flange bolt has been slackened or removed.

If the wheel bearings are subjected to the full weight of the vehicle they will be overloaded, resulting in reduced service life.

If a vehicle has to be moved after removing the drive shaft, first install an outer joint in place of the drive shaft and tighten to 200 Nm. Otherwise the wheel bearing will be damaged.

- Unscrew bolts with washers -2- and detach heat shield.
- Remove bolts -1-.





- Pull connector -1- for brake caliper wiring harness out of bracket and unplug connector.
- Detach brake caliper and attach to body => Rep. gr. 46 .



**Note**

- ◆ Tie up brake caliper to body with wire.
- ◆ Do not suspend the brake caliper from the brake hose.
- Take brake pads out of brake carrier.
- Unscrew bolted joint -1- securing coupling rod/trapezium link and detach brake pipe bracket -2-.
- Pivot coupling rod to the rear.



**Note**

*Suspension must be in reference position when detaching drive shafts from rear final drive.*

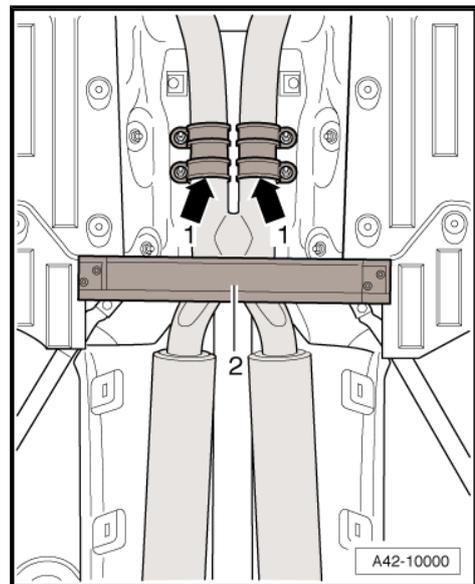
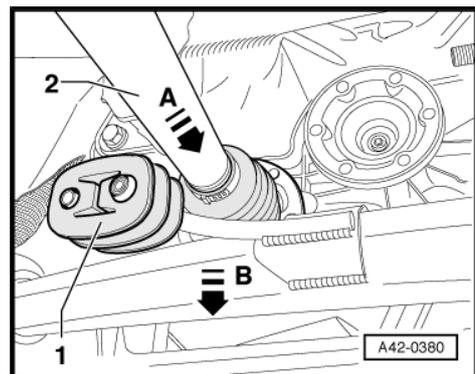
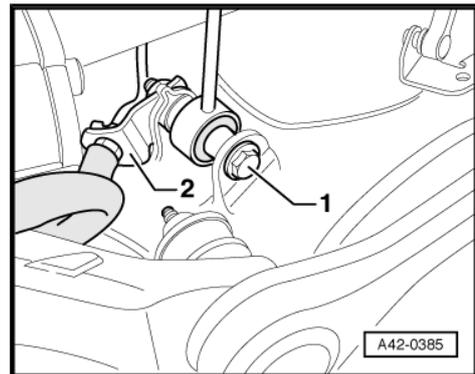
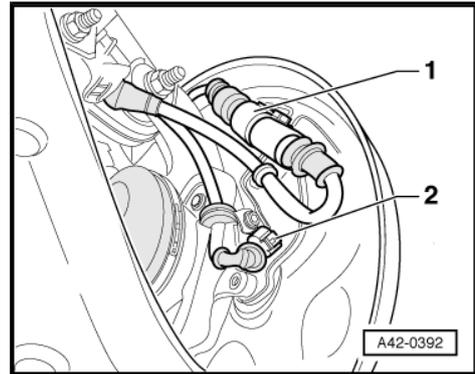
- Detach air spring strut from transverse link and swivel to the rear (reference position) => [page 92](#) .

**Vehicles with 8-cyl. diesel engine**

- Remove bolt for bracket -1- from retainer on both sides of vehicle and turn bracket -1- towards the front.

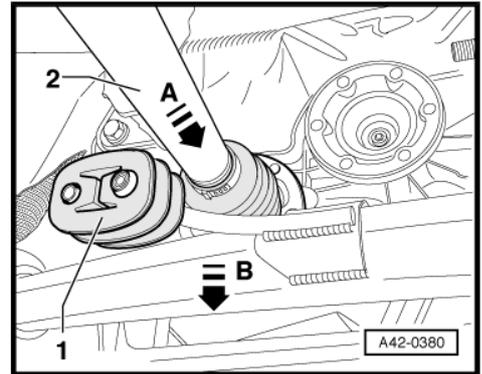
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Unscrew bolts securing cross member -2- as far as last three turns.
- Slacken off bolts of clamps -1-, slide clamps forwards and disconnect exhaust system.
- Set down rear silencer on unfastened cross member -2-.



**All vehicles (continued):**

- Remove bolt for bracket -1- from retainer and turn bracket -1- towards the front.
- With wheel bearing housing raised, press down exhaust pipe slightly -arrow B- and push drive shaft -2- inwards -arrow A- until it can be taken out of wheel hub.
- Lower wheel bearing housing with engine/gearbox jack -V.A.G 1383 A- .

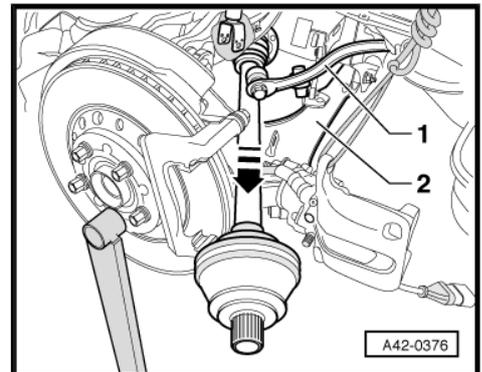


- Pull out drive shaft between anti-roll bar -1- and trapezium link -2- diagonally towards the rear -arrow-.

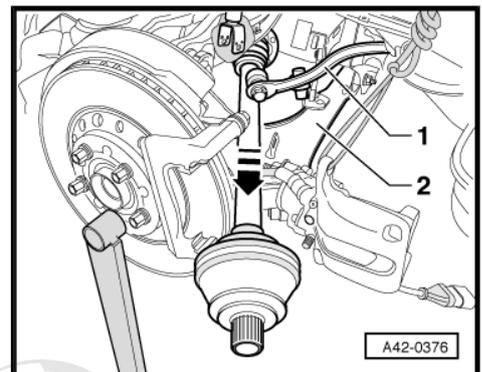
**Installing**

Installation is carried out in the reverse sequence. Note the following points:

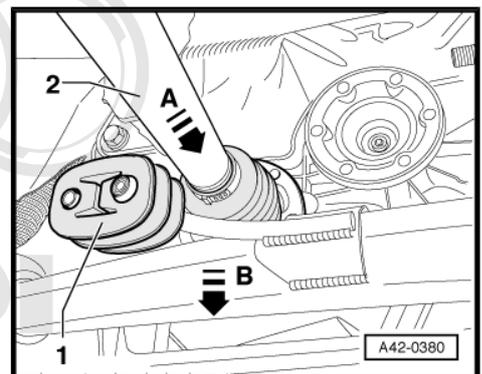
- Initially only hand-tighten bolts/nuts for components with bonded rubber bush. Wheel bearing housing must first be raised (to reference position) before tightening bolts/nuts [⇒ page 92](#) .



- Insert drive shaft between anti-roll bar -1- and trapezium link -2- in direction opposite to -arrow-.
- Insert drive shaft as far as it will go into wheel hub.
- Wheel bearing housing must be raised into reference position for fitting and tightening bolts [⇒ page 92](#) .



- With wheel bearing housing raised, press down exhaust pipe slightly -arrow B- and slide drive shaft -2- onto drive flange.



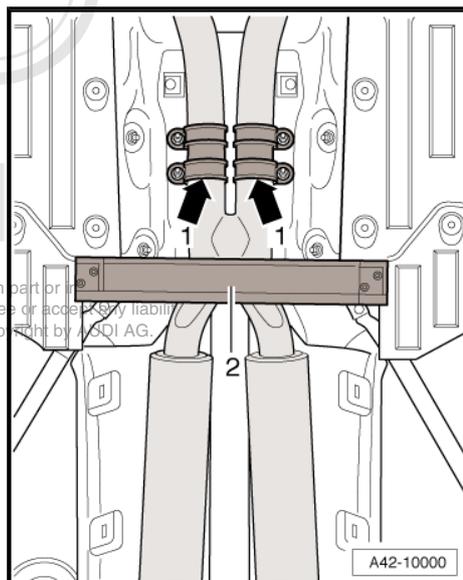
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



**Vehicles with 8-cyl. diesel engine**

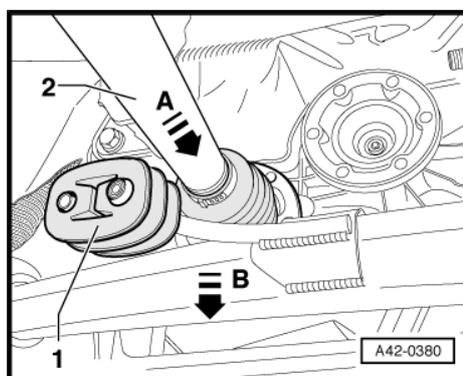
- Connect up exhaust system and tighten bolts securing cross member -2- to 23 Nm.
- Tighten bolts on clamps -1- => Rep. gr. 26 .

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

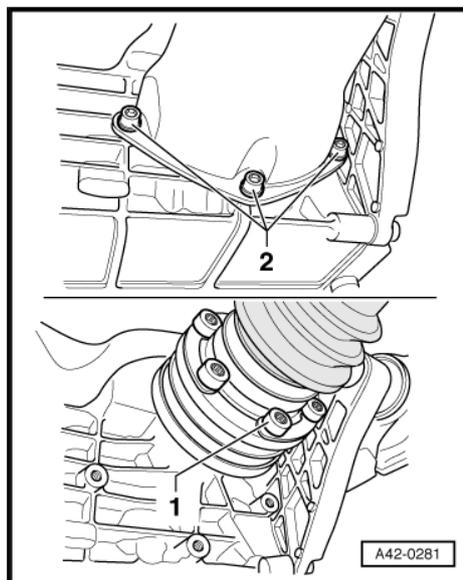


**All vehicles (continued):**

- Install bracket -1- and attach exhaust pipe => Rep. gr. 26 .



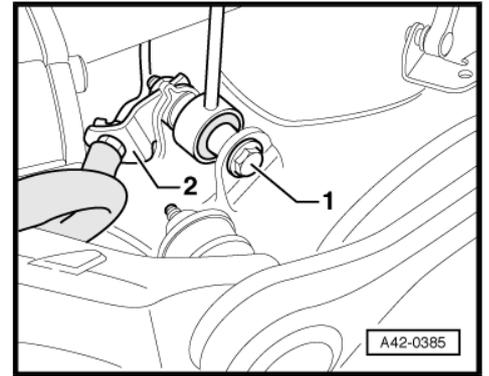
- Align holes on drive shaft with holes on flange shaft (gearbox). Screw in and tighten bolts -1- => [Item 19 \(page 134\)](#) .
- Install heat shield; fit and tighten bolts with washers -2- => [Item 17 \(page 134\)](#) .
- Bolt on brake caliper => Rep. gr. 46 .



- Attach bracket for brake pipe -2- to bolted joint -1- for coupling rod/trapezium link.
- Tighten bolt -1- ⇒ [Item 25 \(page 118\)](#) .
- For further assembly procedure refer to instructions on ⇒ [page 94](#) onwards.
- Actuate electric parking brake.
- Tighten flange bolt for drive shaft to 200 Nm.

If electric parking brake cannot be actuated, this operation requires a second mechanic.

- 1st mechanic gets into vehicle and presses brake pedal.
- 2nd mechanic tightens flange bolt for drive shaft ONLY to 200 Nm.
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Fully tighten flange bolt by turning through specified angle of 180°.



**WARNING**

*The vehicle must be standing on its wheels when loosening and tightening the flange bolt.*

*-Accident risk-*



**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.

## 6.2 Exploded view of drive shaft with 88 mm $\varnothing$ outer constant velocity joint and 108 mm $\varnothing$ inner constant velocity joint

### 1 - Cover

- Prise off with screwdriver  $\Rightarrow$  [page 167](#)
- Always renew
- Before attaching to constant velocity joint, renew gasket  $\Rightarrow$  [Item 2 \(page 164\)](#)
- Pressing on  $\Rightarrow$  [page 169](#)

### 2 - Gasket

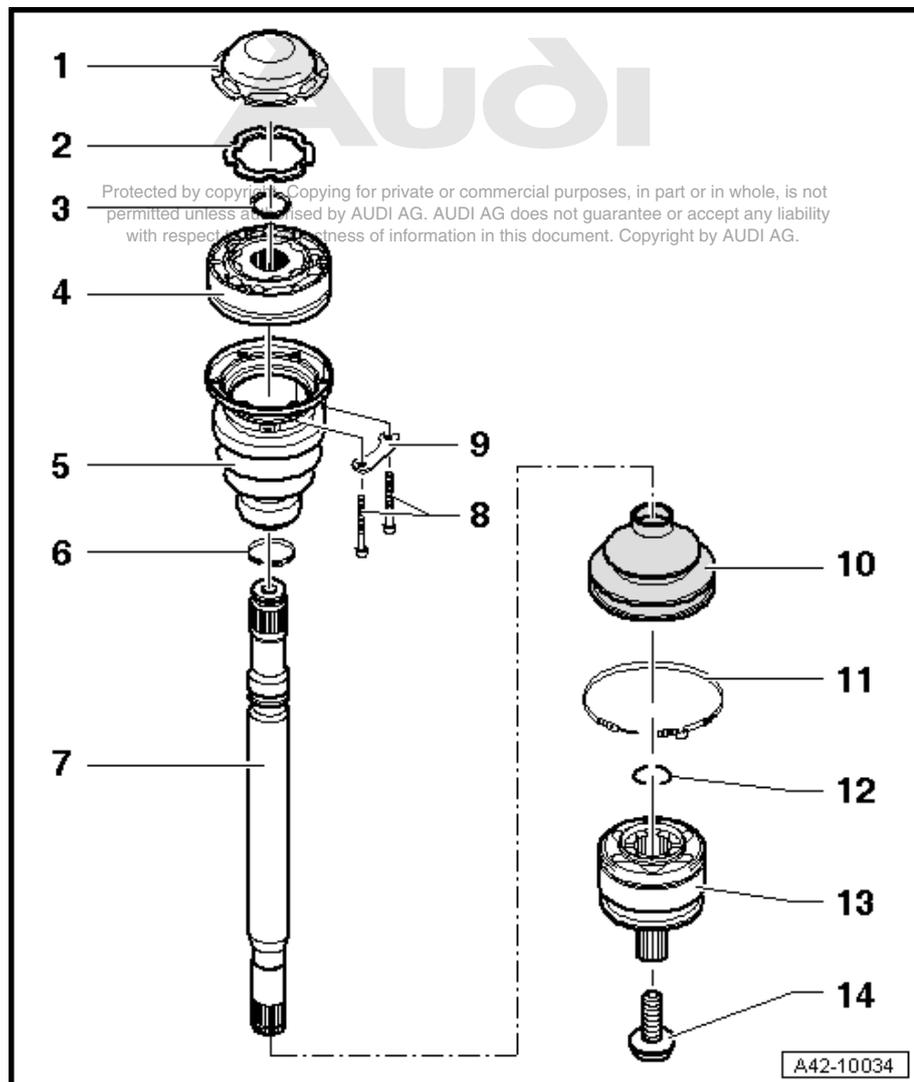
- Always renew

### 3 - Circlip

- Use normal commercial circlip pliers when removing and installing
- Always renew

### 4 - Inner constant velocity joint

- Outside diameter: 108 mm
- Renew only as complete unit
- Checking  $\Rightarrow$  [page 171](#)
- Pressing off  $\Rightarrow$  [page 167](#)
- Pressing on  $\Rightarrow$  [page 169](#)
- Greasing  $\Rightarrow$  [page 165](#)
- Adhesive surfaces must be free of oil and grease
- Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft



### 5 - Boot with cap for inner constant velocity joint

- Without vent hole
- Drive cap off carefully with drift
- Always renew
- Check inner constant velocity joint if boot is damaged  $\Rightarrow$  [page 171](#)
- Before attaching to constant velocity joint, apply sealant -D 454 300 A2- to sealing surface  $\Rightarrow$  [page 169](#)
- Align cover with bolt holes
- Sealing surfaces between boot and drive shaft must be free from grease on assembly
- Briefly lift boot to equalise pressure before tightening hose clip

### 6 - Hose clip

- Always renew
- Tightening  $\Rightarrow$  [page 171](#)

### 7 - Drive shaft

- Removing and installing  $\Rightarrow$  [page 158](#)

**8 - Bolt**

- Tightening torque ⇒ [Item 19 \(page 134\)](#)

**9 - Lock plate**

**10 - Boot for outer constant velocity joint**

- Without vent hole
- Check for splits and chafing, renew if necessary
- Check outer constant velocity joint if boot is damaged ⇒ [page 174](#)
- Sealing surfaces between boot and joint must be free from grease on assembly
- Briefly lift boot to equalise pressure before tightening hose clip

**11 - Hose clip**

- Always renew
- Tightening ⇒ [page 174](#)

**12 - Circlip**

- Always renew
- Insert in groove on shaft
- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Before fitting constant velocity joint, align circlip centrally with opening facing upwards.

**13 - Outer constant velocity joint**

- Outside diameter: 88 mm
- Renew only as complete unit
- Checking ⇒ [page 174](#)
- Driving off ⇒ [page 173](#)
- Installing: drive onto shaft with plastic hammer until compressed circlip seats
- Circlip must fit in chamfer on joint when installing; guide with pliers if necessary
- Greasing ⇒ [page 165](#)
- Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft

**14 - Flange bolt**

- Always renew

Observe instructions for removal ⇒ [page 158](#)

Observe instructions for installation ⇒ [page 161](#)

- Tightening torque ⇒ [page 161](#)

**Grease quantity and type**

Regrease joint when renewing boot.

Refer to ⇒ Electronic parts catalogue „ETKA“ for grease filling in joints.



**Note**

*Note that different types of grease are required for outer and inner joints.*

Outer joint	Grease quantity	of which in:	
		Joint	Boot
[mm]	[g]	[g]	[g]
88	90	40	50



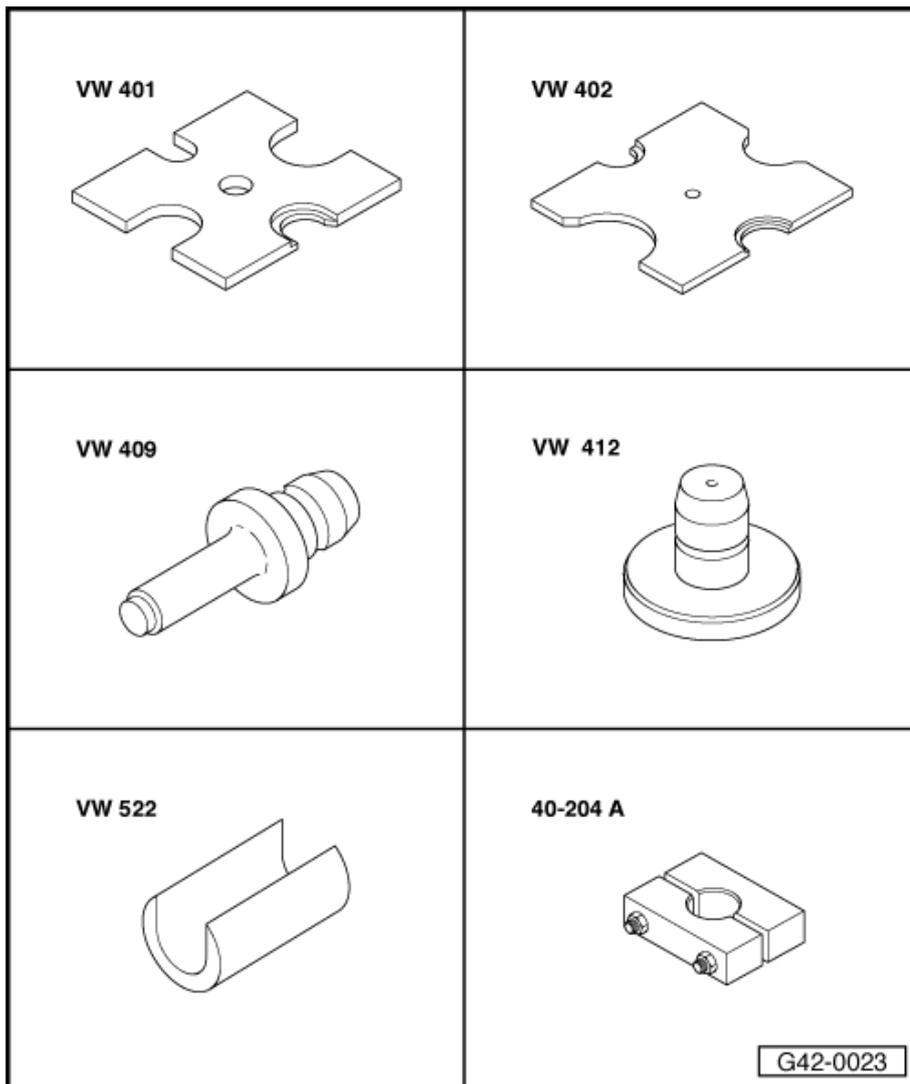
Outer joint	Grease quantity	of which in:
Inner joint		Put in grease through ball bearing races
108	120	

### 6.3 Servicing drive shaft with 88 mm Ø outer constant velocity joint

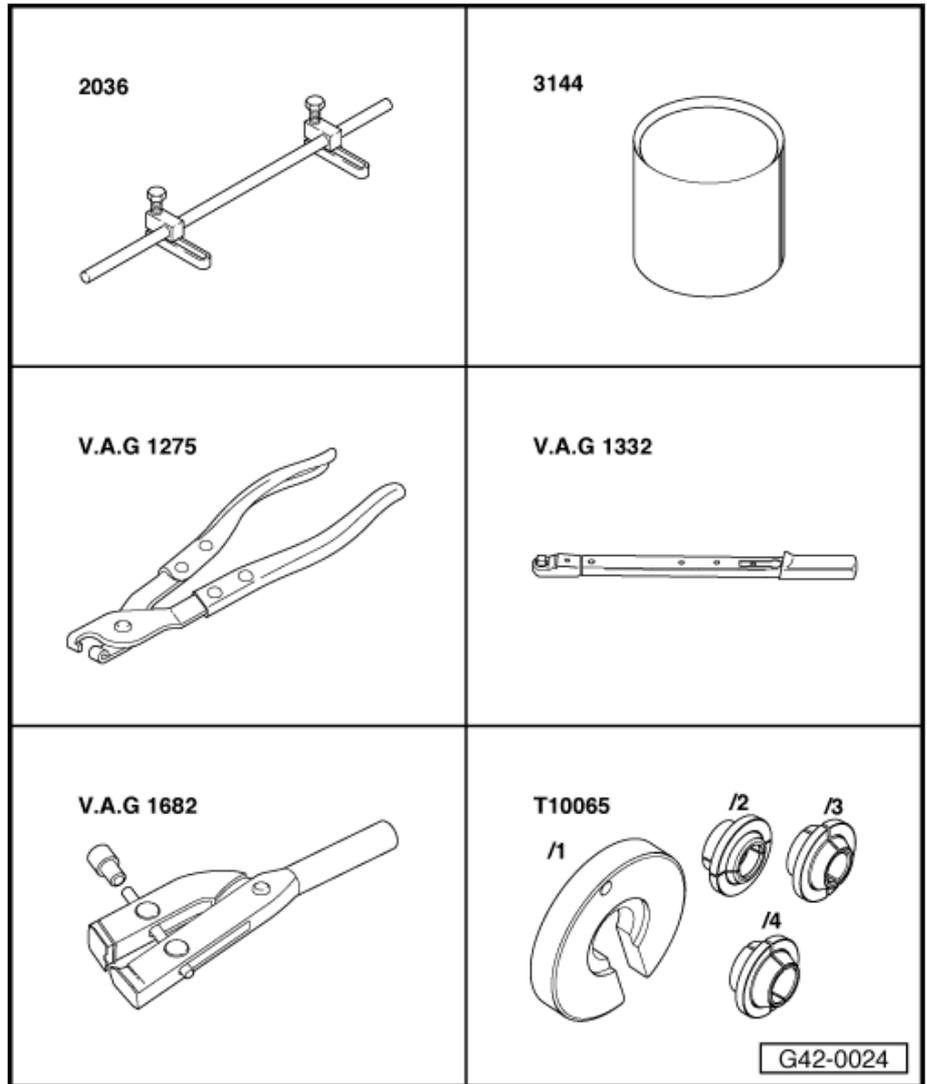
Exploded view of drive shaft with 88 mm Ø outer constant velocity joint and 108 mm Ø inner constant velocity joint ⇒ [page 164](#)

#### Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 409-
- ◆ Press tool -VW 412-
- ◆ Support sleeve -VW 522-
- ◆ Clamp -40-204 A-
- ◆ Assembly tool -40-204 A- can also be used instead of tensioner -T10065-



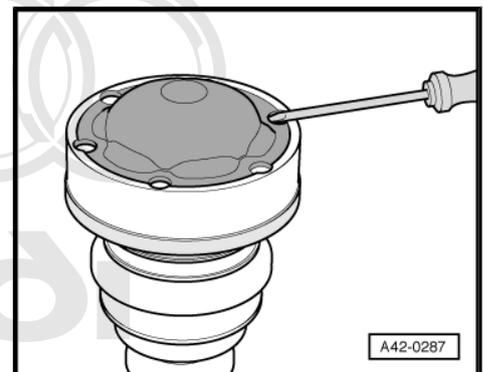
- ◆ Bracket -2036/1-
- ◆ Sleeve -3144-
- ◆ Hose clip pliers -V.A.G 1275-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Clamp tensioner -V.A.G 1682-
- ◆ Assembly tool -T10065-
- ◆ Sealant => ETKA - Electronic parts catalogue
- ◆ Circlip pliers (commercially available)



### Servicing inner constant velocity joint

#### Removing inner constant velocity joint

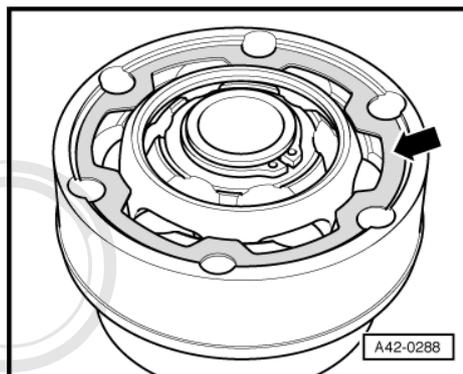
- Clamp drive shaft in vice using protective jaw covers.
- Pry off cover using a screwdriver or similar.



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



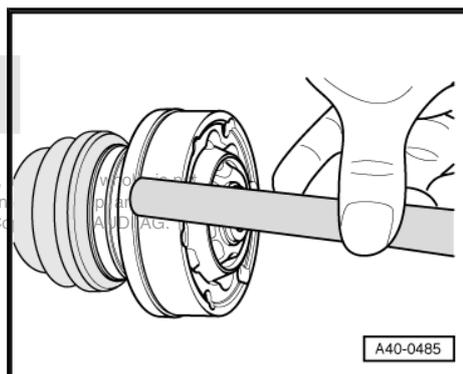
- Use brass or copper drift to drive off cap of boot.



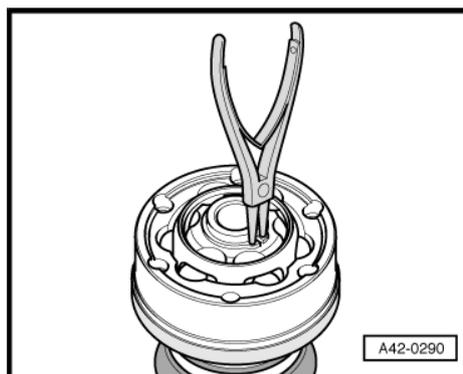
**Note**

*Do not open hose clip.*

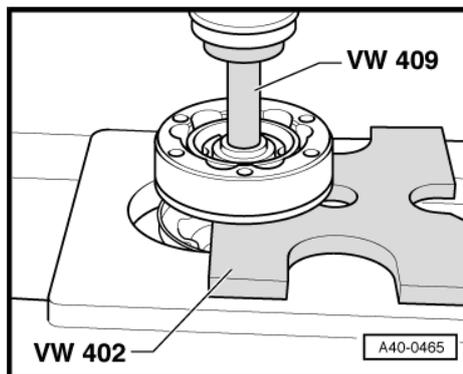
Protected by copyright. Copying for private or commercial purposes, permitted unless authorised by AUDI AG. AUDI AG does not guarantee with respect to the correctness of information in this document. Copyright © Audi AG.



- Remove circlip.

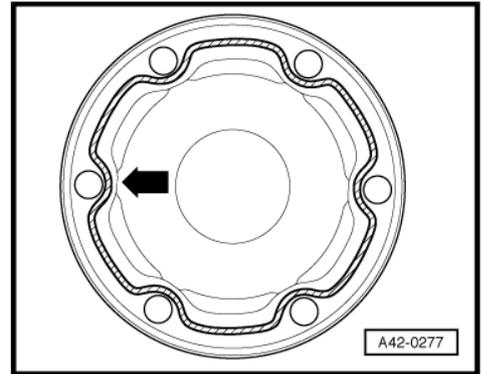


- Press inner constant velocity joint off drive shaft using special tools shown in illustration.
- Unfasten small hose clip on drive shaft and pull boot off drive shaft.



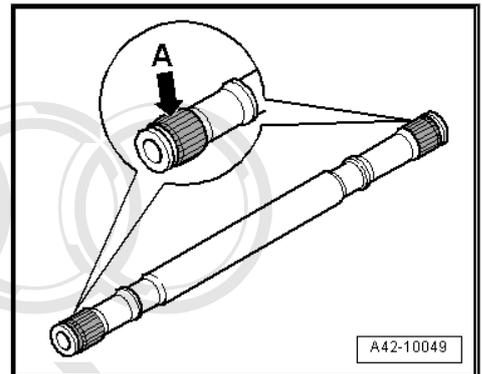
**Fitting inner constant velocity joint**

- Apply sealant (hatched area) to clean surface on inside of boot cover. Route continuous bead of sealant (2..3 mm Ø) around inside of holes -arrow-.
- Use sealant => ETKA - Electronic parts catalogue .
- Push boot with small hose clip onto drive shaft.



- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint onto drive shaft.

Boot and contact surface of cap must be free of grease.



- Press on joint as far as stop.

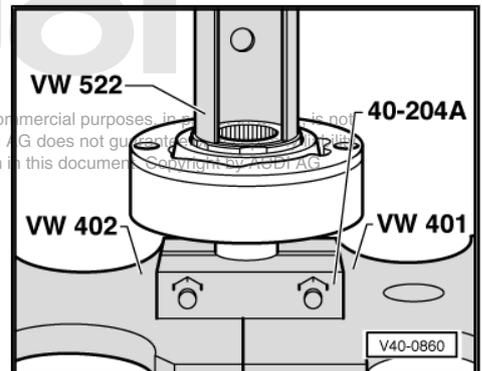
Chamfer on internal diameter of ball hub (splines) must face contact collar of drive shaft.

Use the special tools shown in the illustration.

Assembly tool -40-204 A- can also be used instead of tensioner -T10065-

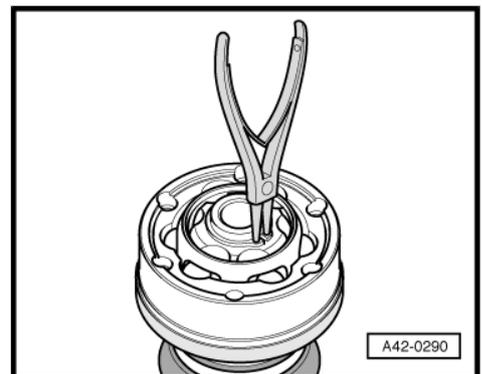
Tensioner -40-204 A- or assembly tool -T10065- and clamping surface on drive shaft must be free of grease.

Always renew circlip.



- Fit circlip.
- Check that circlip is properly seated.
- Before fitting cover, apply 60 g of drive shaft grease to constant velocity joint through ball tracks.

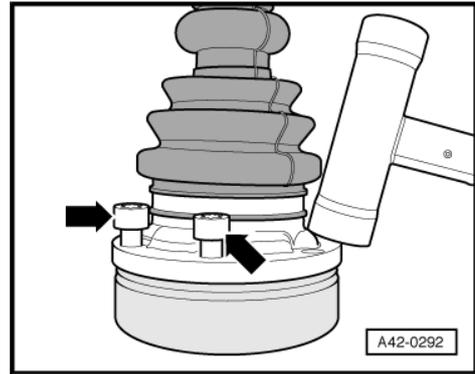
Take care not to damage sealant bead.



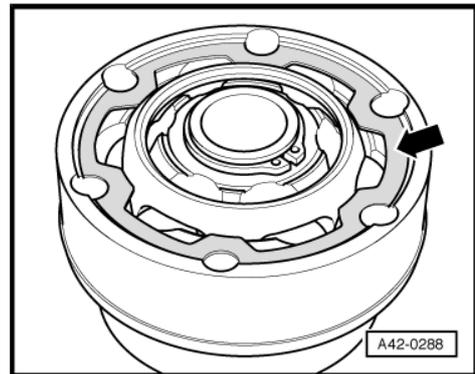
- Align cover and bolts -arrows- with bolt holes.

The alignment must be very accurate, because no further alignment is possible once the part has been hammered on.

- Drive on cover using a plastic hammer.
- Wipe off surplus sealant.
- Pack 60 g of drive shaft grease into joint through ball races.
- Degrease contact surface for seal.



- Remove adhesive foil from gasket and glue into constant velocity joint.

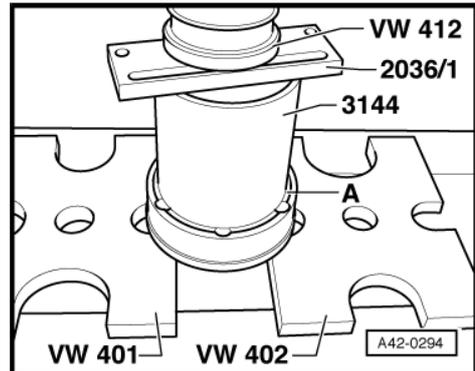


- Align new cover -A- with bolt holes.

The alignment must be very accurate, because no further alignment is possible once the cover has been pressed on.

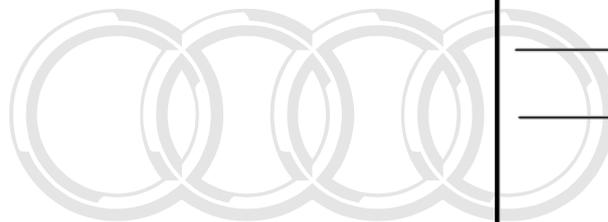
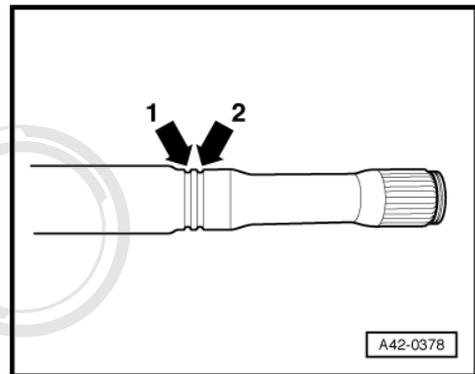
- Use special tools shown to press on cover -A-.

A flat steel bar of appropriate size can be used instead of bracket -2036/1- .



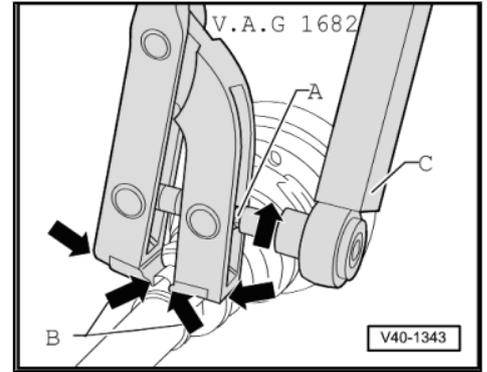
- Position boot in outer groove -arrow 2-.

The inner groove -arrow 1- must remain visible („identification groove“ for correct boot assembly).



### Fitting and tightening hose clips on inner joint

- Apply clamp tensioner -V.A.G 1682- as shown. Ensure jaws of clamp tensioner make contact with both sides of lug -arrows B- on hose clip.
- Tighten clip by turning spindle with torque wrench -C- (take care to keep tool straight).
- ◆ Due to the hard material of the CV joint boot (as opposed to rubber), a stainless steel hose clip is required; this can only be tightened using clamp tensioner -V.A.G 1682- .
- ◆ Tightening torque: 20 Nm.
- ◆ Use torque wrench with 5...50 Nm adjustment range (e.g. - V.A.G 1331- ).
- ◆ Make sure thread of spindle on tool -A- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.



### Checking inner constant velocity joint

The joint should be dismantled to renew dirty grease or for checking the balls and ball races for wear and damage.

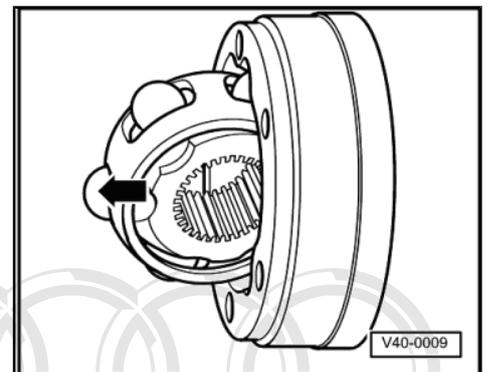
#### Dismantling



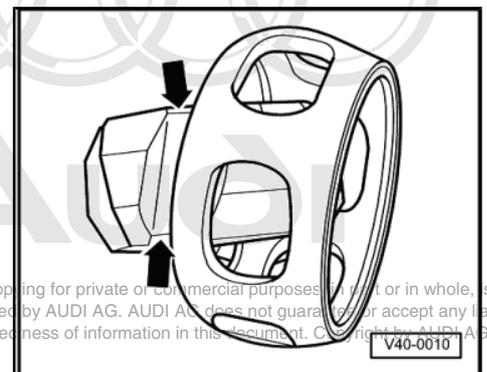
#### Note

*Ball hub and joint body are paired and must be marked before dismantling. Ensure that the balls run in the same races after assembly.*

- Swivel ball hub and ball cage.
- Push out joint body in direction of arrow.
- Push balls out of cage.



- Align ball hub with cage as shown -arrows- and pivot hub out of cage.
- Check joint, ball hub, ball cage and balls for pitting and signs of seizure.



#### Note

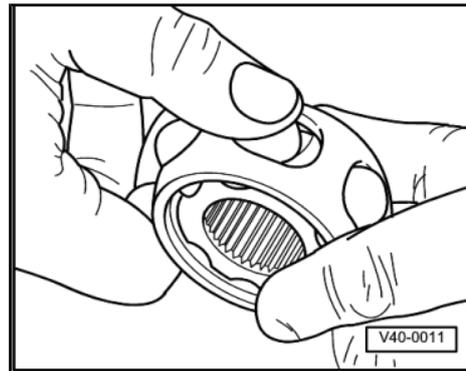
*Excessive backlash in the joint will cause knocking or jolts under load change. In such cases the joint must be renewed. Polished areas and visible tracks in the ball races are not a reason for renewing the joint.*

Copyright © 2011 Audi AG. All rights reserved. Copying for private or commercial purposes in part or in whole, is not permitted without the express authorisation by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright © 2011 Audi AG.

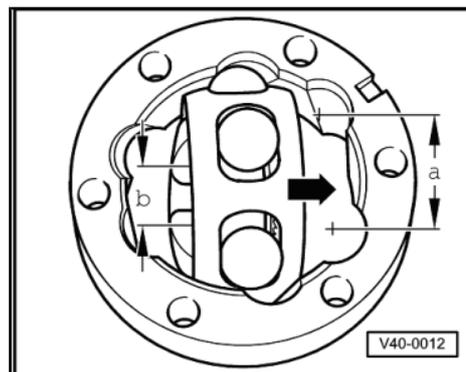


### Assembling

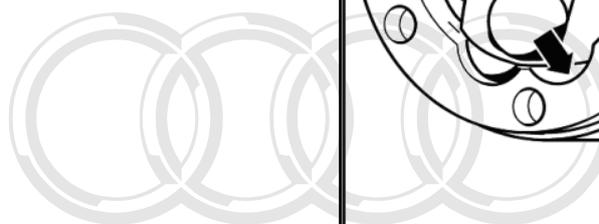
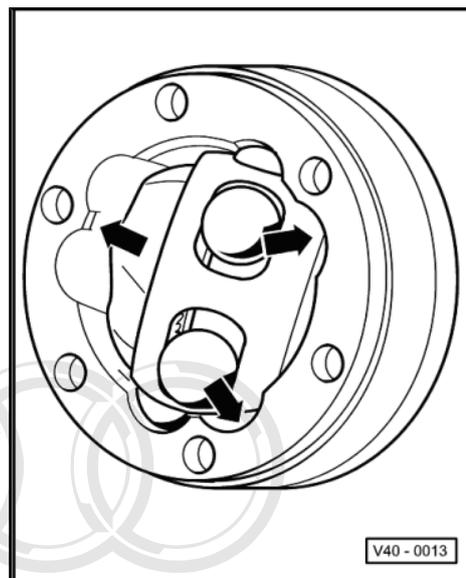
- Insert hub into cage via the two chamfers. No specific installation position is required. Push balls into cage.
- Insert hub with cage and balls at a right angle to the joint body.



- ◆ When inserting, ensure that the wide spacing -a- on the joint body is aligned with the narrow spacing -b- on the hub after swivelling in.
- ◆ Chamfer on internal diameter of ball hub (splines) must face drive shaft.



- Swivel the hub into the joint body; at the same time the hub must be swivelled out of the cage -arrows- far enough to allow the balls to fit into the ball races.



# 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.

- Swivel in the hub with balls by applying firm pressure on the cage -arrow-.

### Checking function of constant velocity joint

The constant velocity joint has been correctly assembled if the ball hub can be moved by hand backwards and forwards over its entire axial range of movement.

- Pack required amount of grease into joint body.

Quantities and type of grease for drive shaft with 88 mm  $\varnothing$  outer constant velocity joint => [page 165](#)

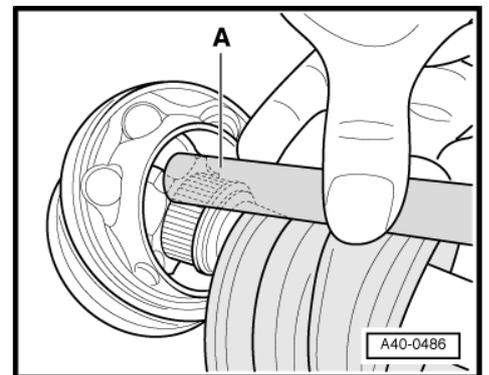
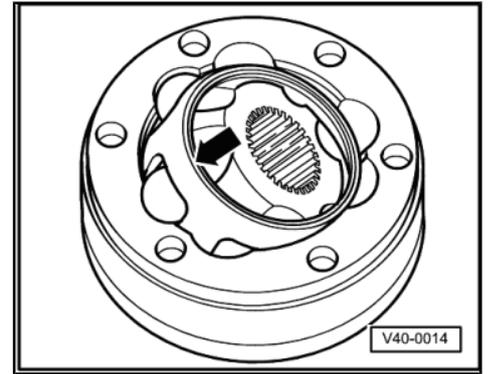
### Servicing outer constant velocity joint

#### Removing outer constant velocity joint

- Clamp drive shaft in vice using protective jaw covers.
- Unfasten both clips and detach boot from outer joint.
- Use hammer to tap copper or brass drift -A- against inner race of constant velocity joint.
- Detach joint and boot.

#### Installing outer constant velocity joint

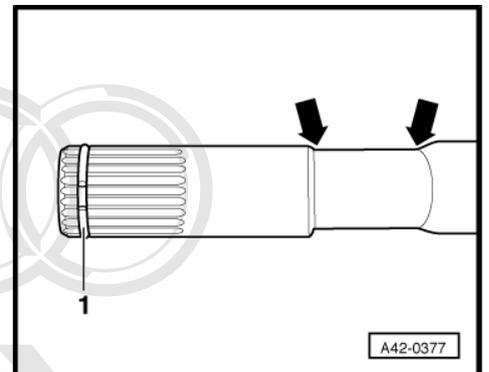
- Push joint boot onto drive shaft.



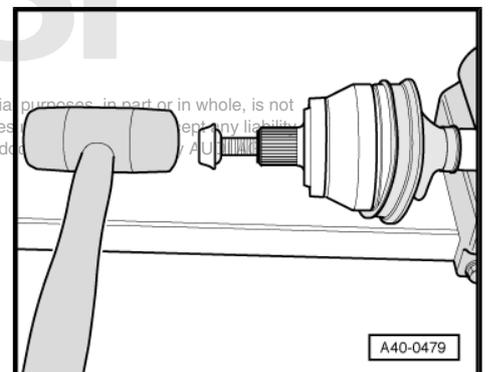
Boot and drive shaft must be free from grease.

1 - Circlip (always renew)

- Position boot between -arrows-.
- Pack 40 g of drive shaft grease inside joint body.



- Screw old drive shaft bolt into joint body as shown.
- Use plastic-headed hammer to drive joint onto shaft until circlip engages.
- Pack 50 g of drive shaft grease into joint (boot 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 accept any liability for errors or omissions with respect to the correctness of information in this document.

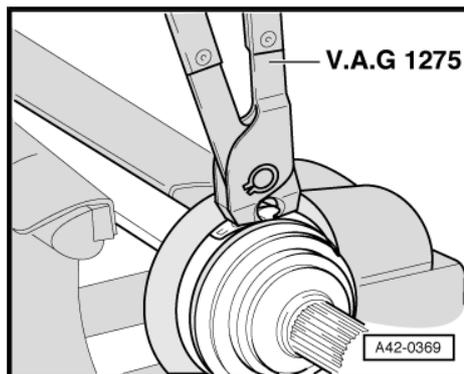


### Fitting and tightening hose clip on outer joint

- Fit hose clip on outer joint.
- Vent air from boot.
- Use hose clip pliers -V.A.G 1275- to tighten hose clip.

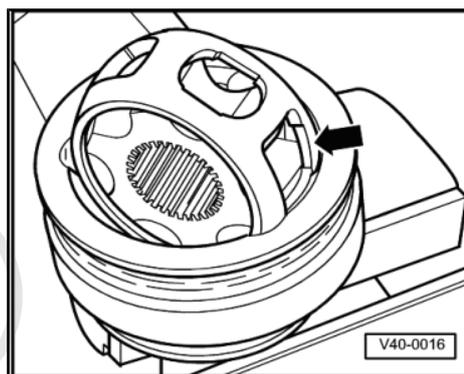
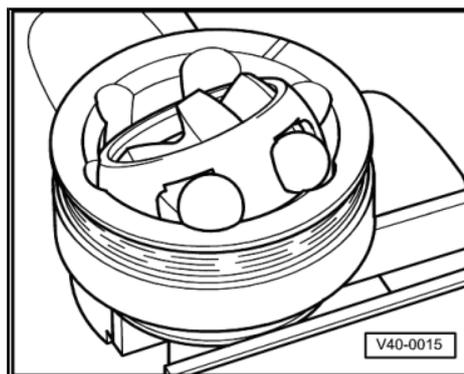
### Checking outer constant velocity joint

The joint should be dismantled to renew dirty grease or for checking the balls and ball races for wear and damage.



### Dismantling

- Before dismantling, mark position of ball hub in relation to ball cage and joint body with an electric scribe or oil stone.
  - Swivel ball hub and ball cage.
  - Take out balls one after the other.
- 
- Turn the cage until the two rectangular openings -arrow- are level with the joint body.
  - Lift out cage together with hub.



# 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.

- Swivel segment of hub with short lobe into square cage opening.
- Pivot hub out of cage.

### Checking

The 6 balls in each joint belong to one tolerance group. Check stub axle, hub, cage and balls for pitting and signs of seizure. Excessive backlash in the joint will cause knocking or jolts under load change; in such cases the joint must be renewed. Polished areas and visible tracks in the ball races do not justify renewal of the joint.

### Assembling

- Fit cage with hub into joint body.

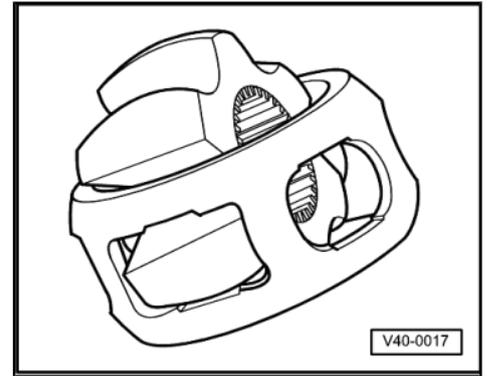


### Note

*Make sure cage is inserted in correct position (i.e. sides facing in same direction as original position).*

- Press in balls one after the other from opposite sides, taking care to re-establish original position of hub relative to cage and joint body.
- Pack required amount of grease into joint body.

Quantities and type of grease for drive shaft with 88 mm  $\varnothing$  outer constant velocity joint [=> page 165](#)



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.

## 6.4 Exploded view of drive shaft with 100 mm Ø outer constant velocity joint and 108 mm Ø inner constant velocity joint

### 1 - Cover

- Prise off with screwdriver => [page 179](#)
- Always renew
- Before attaching to constant velocity joint, renew gasket => [Item 2 \(page 176\)](#)
- Pressing on => [page 181](#)

### 2 - Gasket

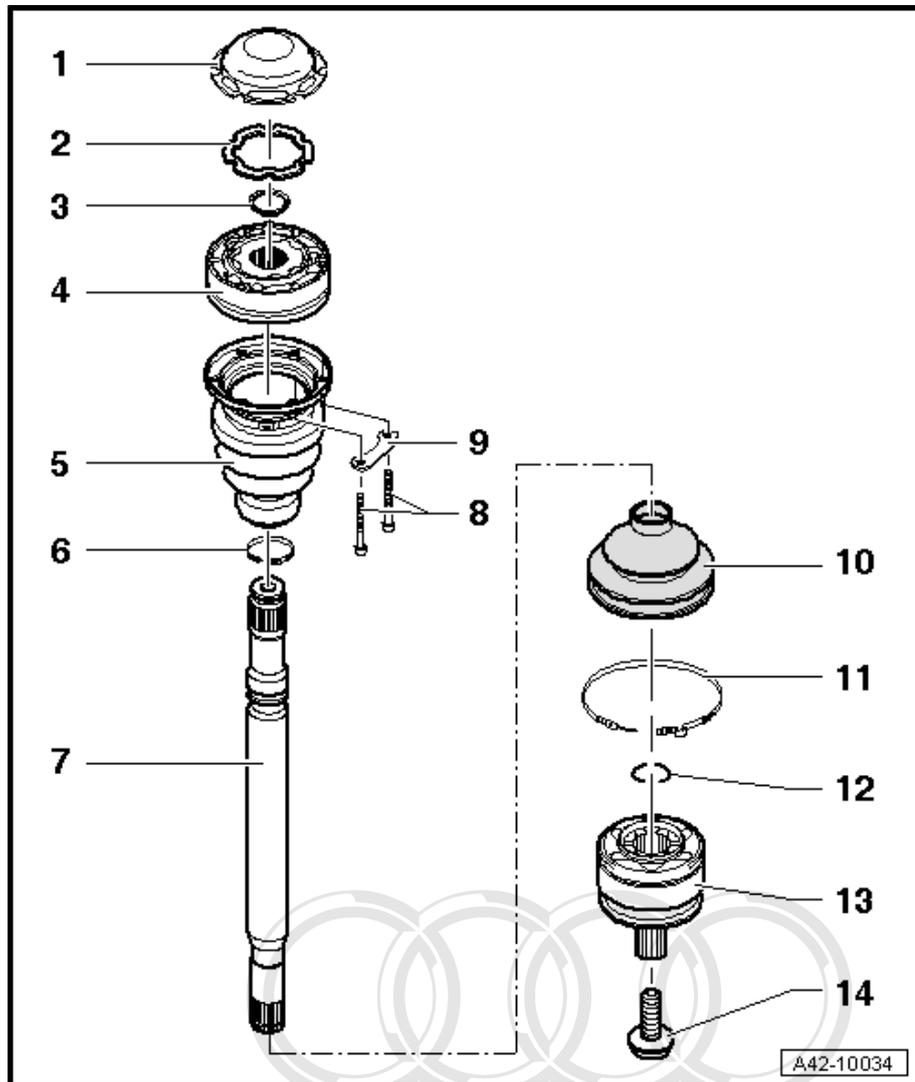
- Always renew

### 3 - Circlip

- Use normal commercial circlip pliers when removing and installing
- Always renew

### 4 - Inner constant velocity joint

- Outside diameter: 108 mm
- Renew only as complete unit
- Checking => [page 183](#)
- Pressing off => [page 179](#)
- Pressing on => [page 181](#)
- Greasing => [page 177](#)
- Adhesive surfaces must be free of oil and grease
- Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft



### 5 - Boot with cap for inner constant velocity joint

- Without vent hole
- Drive cap off carefully with drift
- Always renew
- Check inner constant velocity joint if boot is damaged => [page 171](#)
- Before attaching to constant velocity joint, apply sealant - D 454 300 A2 - to sealing surface => [page 181](#)
- Align cover with bolt holes
- Sealing surfaces between boot and drive shaft must be free from grease on assembly
- Briefly lift boot to equalise pressure before tightening hose clip

### 6 - Hose clip

- Always renew
- Tightening => [page 183](#)

### 7 - Drive shaft

- Removing and installing => [page 158](#)

### 8 - Bolt

- Tightening torque ⇒ [Item 19 \(page 134\)](#)

### 9 - Lock plate

#### 10 - Boot for outer constant velocity joint

- Without vent hole
- Check for splits and chafing, renew if necessary
- Check outer constant velocity joint if boot is damaged ⇒ [page 186](#)
- Sealing surfaces between boot and joint must be free from grease on assembly
- Briefly lift boot to equalise pressure before tightening hose clip

#### 11 - Hose clip

- Always renew
- Tightening ⇒ [page 186](#)

#### 12 - Circlip

- Always renew
- Insert in groove on shaft
- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Before fitting the constant velocity joint, align the circlip centrally with the opening facing upwards

#### 13 - Outer constant velocity joint

- Outside diameter: 100 mm
- Renew only as complete unit
- Checking ⇒ [page 174](#)
- Driving off ⇒ [page 185](#)
- Installing: drive onto shaft with plastic hammer until compressed circlip seats
- Circlip must fit in chamfer on joint when installing; guide with pliers if necessary
- Greasing ⇒ [page 177](#)
- Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft

#### 14 - Flange bolt

- Always renew

Observe instructions for removal ⇒ [page 158](#)

Observe instructions for installation ⇒ [page 161](#)

- Tightening torque ⇒ [page 161](#)

### Grease quantity and type

Regrease joint when renewing boot.

Refer to ⇒ Electronic parts catalogue „ETKA“ for grease filling in joints.



#### Note

*Note that different types of grease are required for outer and inner joints.*

Outer joint	Grease quantity	of which in:	
		Joint	Boot
[mm]	[g]	[g]	[g]
100	120	70	50



Outer joint	Grease quantity	of which in:
Inner joint		Put in grease through ball bearing races
108	120	

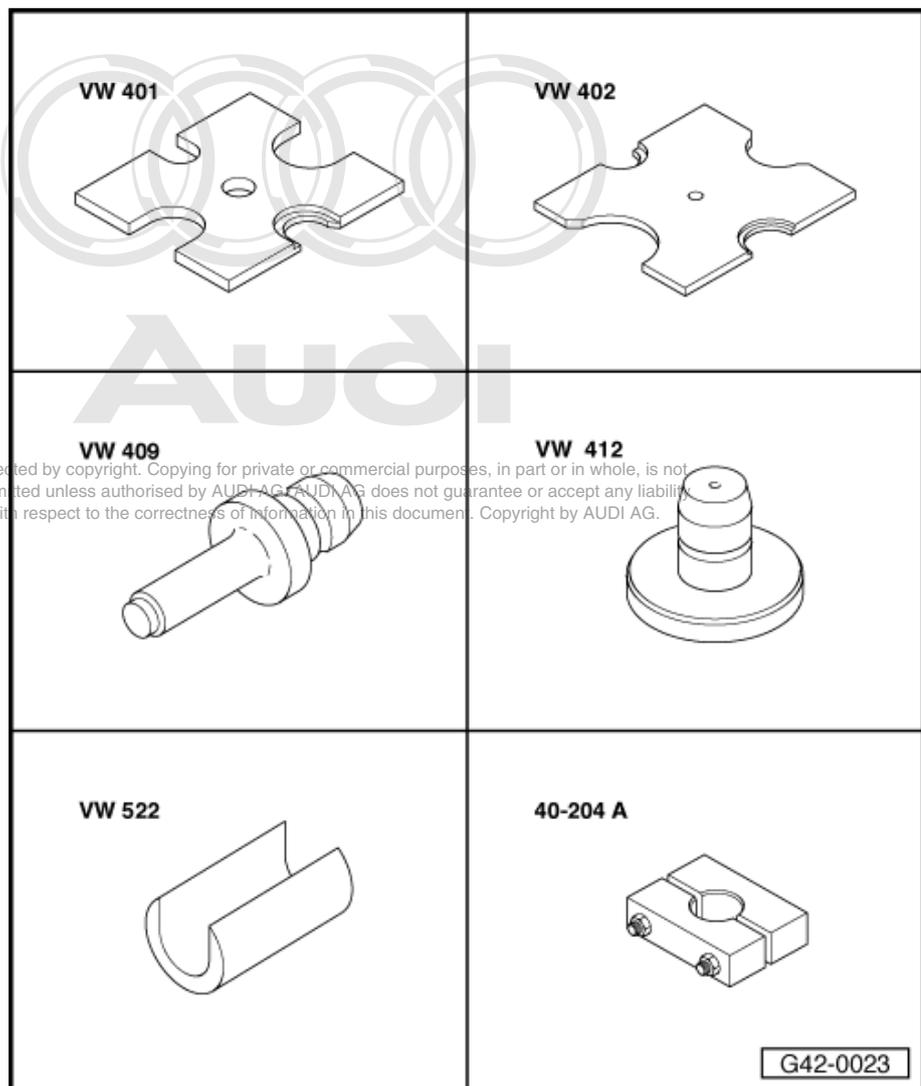
## 6.5 Servicing drive shaft with 100 mm Ø outer constant velocity joint

Exploded view of drive shaft with 100 mm Ø outer constant velocity joint and 108 mm Ø inner constant velocity joint

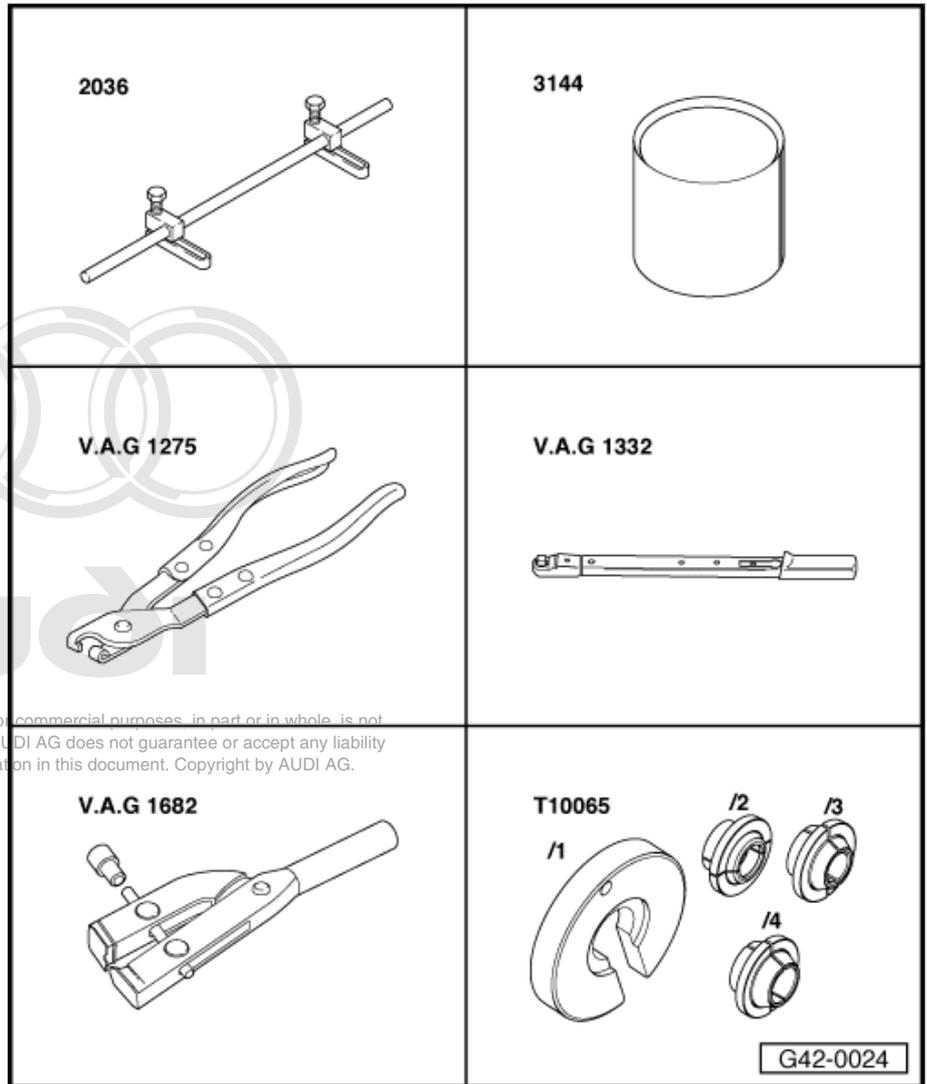
⇒ [page 176](#) .

### Special tools and workshop equipment required

- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 409-
- ◆ Press tool -VW 412-
- ◆ Support sleeve -VW 522-
- ◆ Clamp -40-204 A-
- ◆ Assembly tool -40-204 A- can also be used instead of tensioner -T10065-

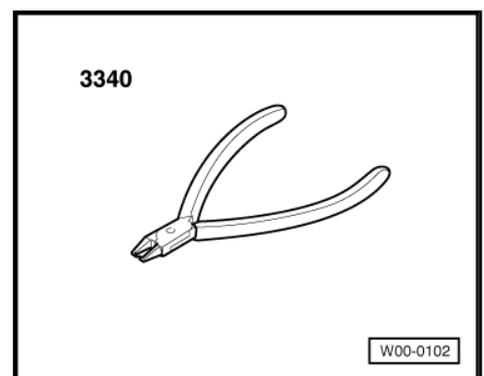


- ◆ Bracket -2036/1-
- ◆ Sleeve -3144-
- ◆ Hose clip pliers -V.A.G 1275-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Clamp tensioner -V.A.G 1682-
- ◆ Assembly tool -T10065-
- ◆ Sealant => ETKA - Electronic parts catalogue



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

- ◆ Pliers -3340-



- ◆ Circlip pliers (commercially available)

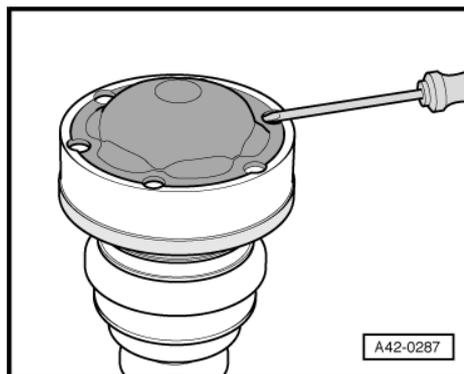
### Servicing inner constant velocity joint

### Removing inner constant velocity joint

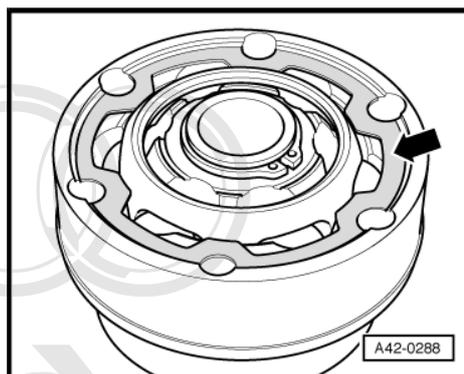
- Clamp drive shaft in vice using protective jaw covers.



- Pry off cover using a screwdriver or similar.



- Remove gasket -arrow-.



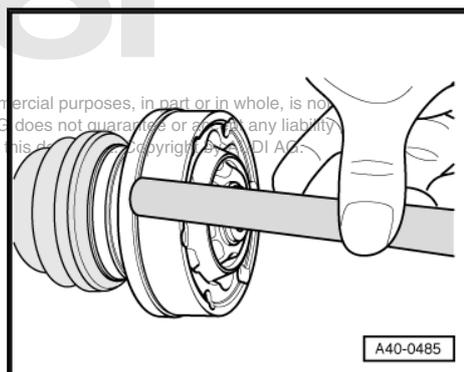
- Use brass or copper drift to drive off cap of boot.



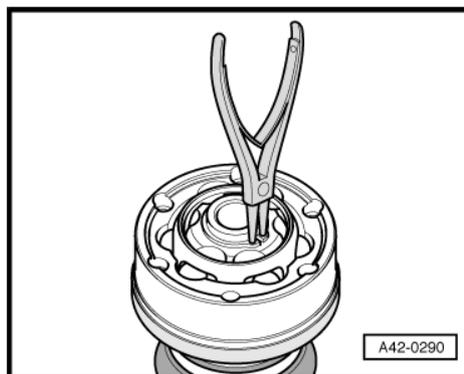
**Note**

*Do not open hose clip.*

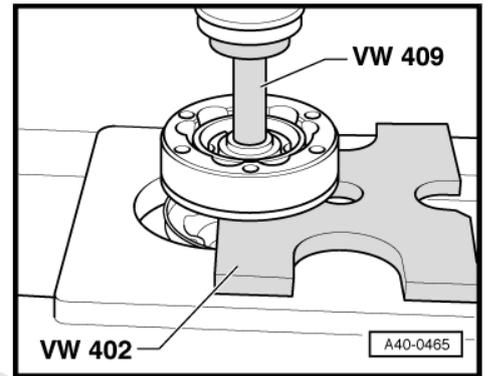
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright © AUDI AG.



- Remove circlip.

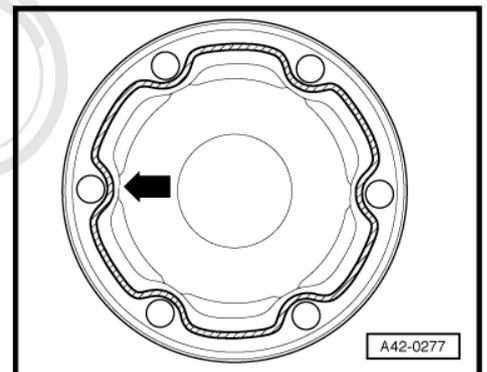


- Press inner constant velocity joint off drive shaft using special tools shown in illustration.
- Unfasten small hose clip on drive shaft and pull boot off drive shaft.



### Fitting inner constant velocity joint

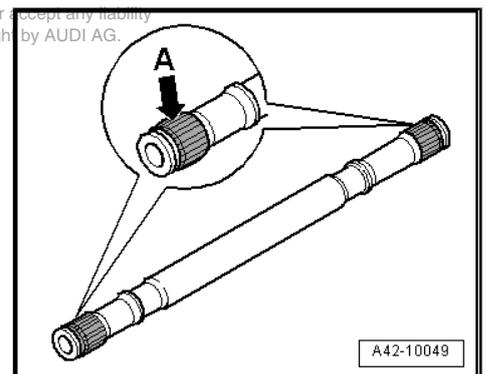
- Apply sealant (hatched area) to clean surface on inside of boot cover. Route continuous bead of sealant (2..3 mm Ø) around inside of holes -arrow-.
- Use sealant → ETKA - Electronic parts catalogue .
- Push boot with small hose clip onto drive shaft.



- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint onto drive shaft.

Boot and contact surface of cap must be free of grease.

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



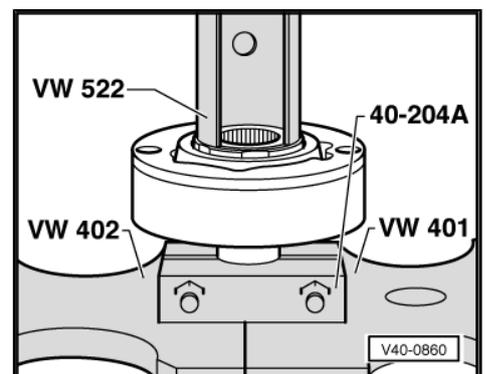
- Press on joint as far as stop.

Chamfer on internal diameter of ball hub (splines) must face contact collar of drive shaft.

Use the special tools shown in the illustration.

Assembly tool -40-204 A- can also be used instead of tensioner -T10065-

Tensioner -40-204 A- or assembly tool -T10065- and clamping surface on drive shaft must be free of grease.





- Fit circlip.
- Check that circlip is properly seated.

Always renew circlip.

- Before fitting cover, apply 60 g of drive shaft grease to constant velocity joint through ball tracks.

Take care not to damage sealant bead.

- Align cover and bolts -arrows- with bolt holes.

The alignment must be very accurate, because no further alignment is possible once the part has been hammered on.

- Drive on cover using a plastic hammer.
- Wipe off surplus sealant.
- Pack 60 g of drive shaft grease into joint through ball races.
- Degrease contact surface for seal.

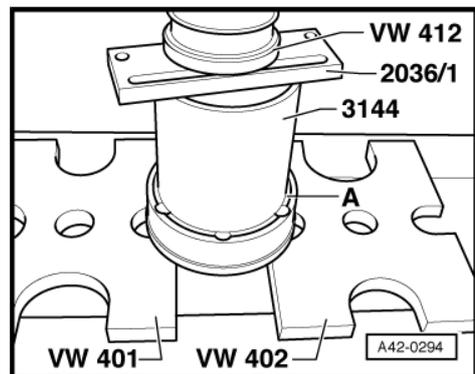
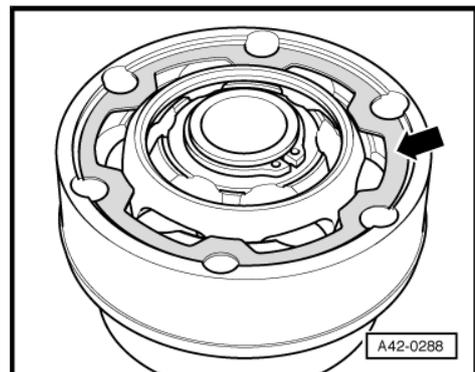
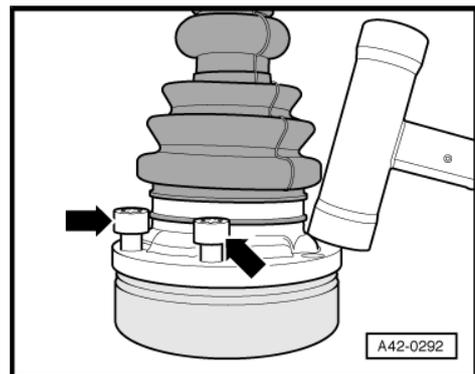
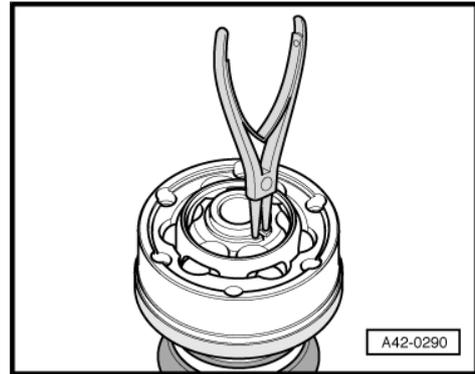
- Remove adhesive foil from gasket and glue into constant velocity joint.

- Align new cover -A- with bolt holes.

The alignment must be very accurate, because no further alignment is possible once the cover has been pressed on.

- Use special tools shown to press on cover -A-.

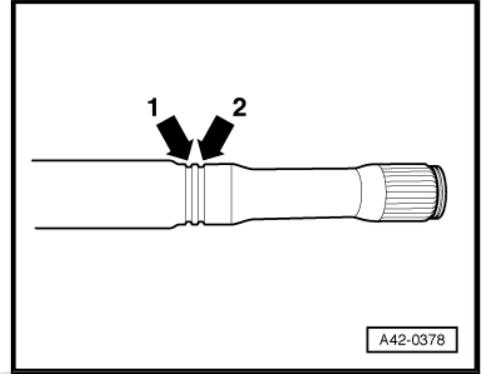
A flat steel bar of appropriate size can be used instead of bracket -2036/1-.



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

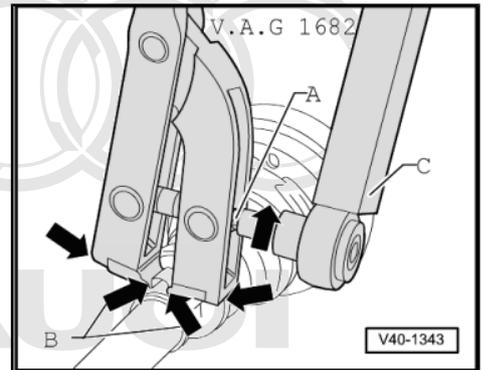
- Position boot in outer groove -arrow 2-.

The inner groove -arrow 1- must remain visible („identification groove“ for correct boot assembly).



**Fitting and tightening hose clips on inner joint**

- Apply clamp tensioner -V.A.G 1682- as shown. Ensure jaws of clamp tensioner make contact with both sides of lug -arrows B- on hose clip.
- Tighten clip by turning spindle with torque wrench -C- (take care to keep tool straight).
- ◆ Due to the hard material of the CV joint boot (as opposed to rubber), a stainless steel hose clip is required; this can only be tightened using clamp tensioner -V.A.G 1682- .
- ◆ Tightening torque: 20 Nm.
- ◆ Use torque wrench with 5...50 Nm adjustment range (e.g. -V.A.G 1331- ).
- ◆ Make sure thread of spindle on tool -A- turns freely. Lubricate with MoS<sub>2</sub> grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.



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.

**Checking inner constant velocity joint**

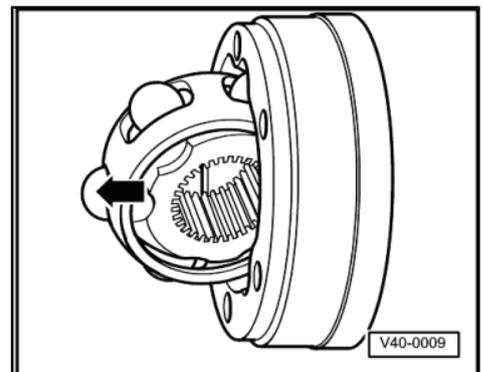
The joint should be dismantled to renew dirty grease or for checking the balls and ball races for wear and damage.

**Dismantling**

 **Note**

*Ball hub and joint body are paired and must be marked before dismantling. Ensure that the balls run in the same races after assembly.*

- Swivel ball hub and ball cage.
- Push out joint body in direction of arrow.
- Push balls out of cage.





- Align ball hub with cage as shown -arrows- and pivot hub out of cage.
- Check joint, ball hub, ball cage and balls for pitting and signs of seizure.



**Note**

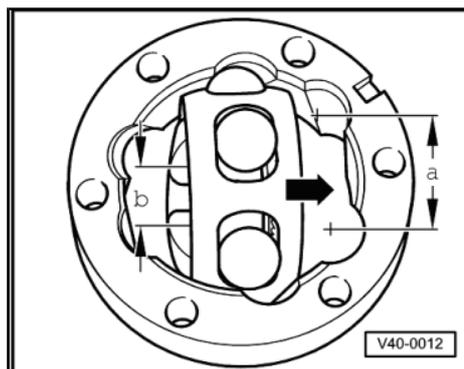
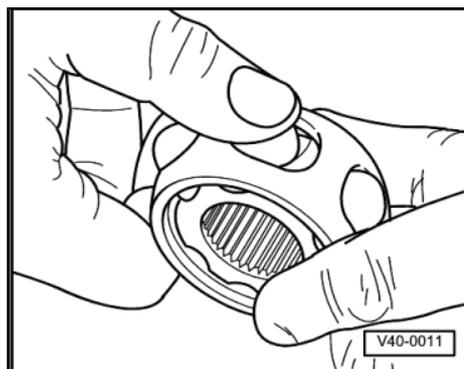
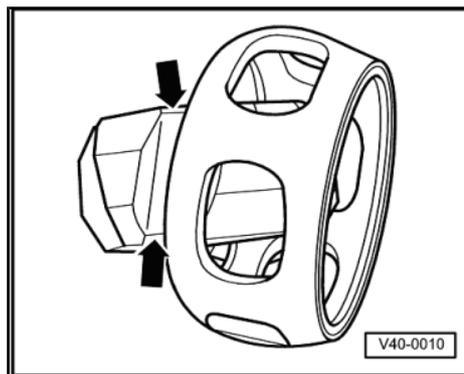
*Excessive backlash in the joint will cause knocking or jolts under load change. In such cases the joint must be renewed. Polished areas and visible tracks in the ball races are not a reason for renewing the joint.*

**Assembling**

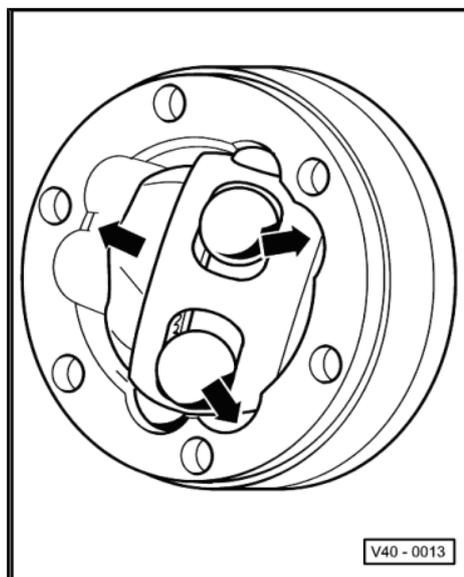
- Insert hub into cage via the two chamfers. No specific installation position is required. Push balls into cage.
- Insert hub with cage and balls at a right angle to the joint body.

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

- ◆ When inserting, ensure that the wide spacing -a- on the joint body is aligned with the narrow spacing -b- on the hub after swivelling in.
- ◆ Chamfer on internal diameter of ball hub (splines) must face drive shaft.



- Swivel the hub into the joint body; at the same time the hub must be swivelled out of the cage -arrows- far enough to allow the balls to fit into the ball races.



- Swivel in the hub with balls by applying firm pressure on the cage -arrow-.

**Checking function of constant velocity joint**

The constant velocity joint has been correctly assembled if the ball hub can be moved by hand backwards and forwards over its entire axial range of movement.

- Pack required amount of grease into joint body.

Quantities and type of grease for drive shaft with 100 mm Ø outer constant velocity joint => [page 177](#)

**Servicing outer constant velocity joint**

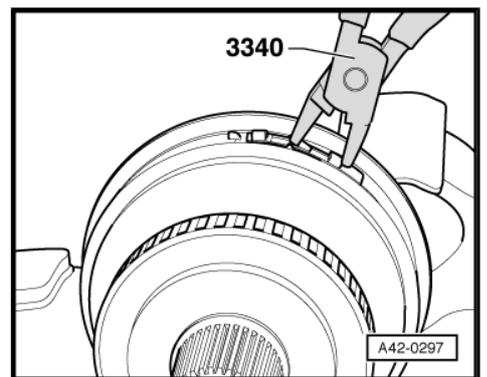
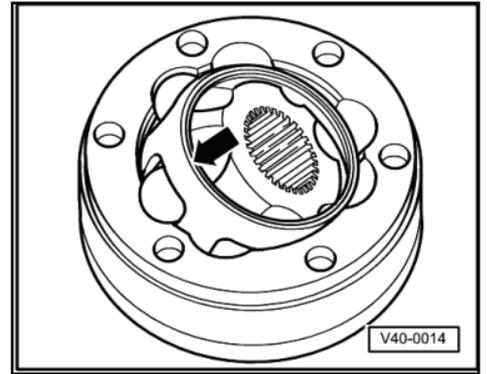
**Removing outer constant velocity joint**

- Clamp drive shaft in vice using protective jaw covers.

- Use pliers -3340- to unfasten hose clip.

Pliers -3340- must be applied as shown to back of hose clip.

- Push back boot.

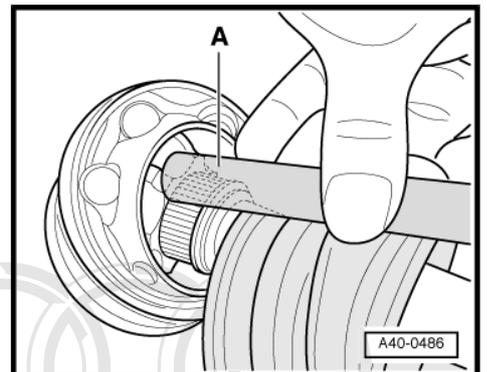


- Use hammer to tap copper or brass drift -A- against inner race of constant velocity joint.

- Detach joint and boot.

**Installing outer constant velocity joint**

- Push joint boot onto drive shaft.

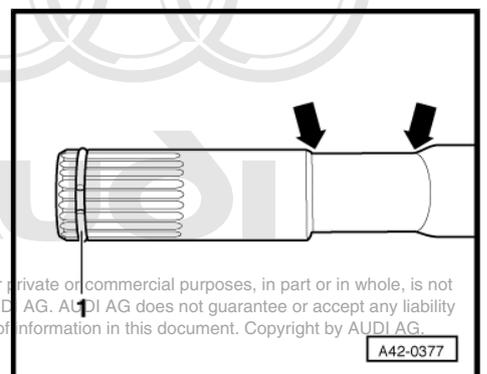


Boot and drive shaft must be free from grease.

1 - Circlip (always renew)

- Position boot between -arrows-.

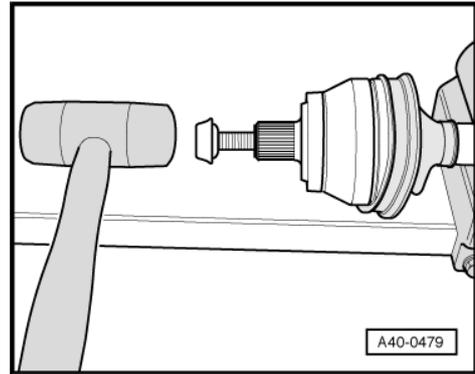
- Pack 70 g of drive shaft grease inside joint body.



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

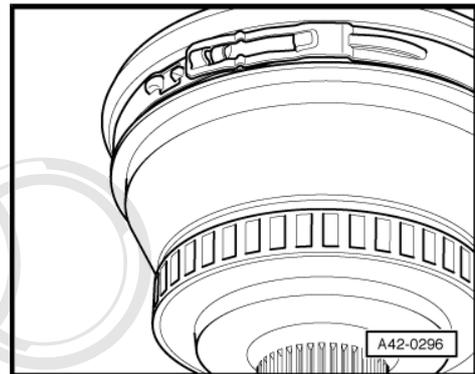


- Screw old drive shaft bolt into joint body as shown.
- Use plastic-headed hammer to drive joint onto shaft until circlip engages.
- Pack 50 g of drive shaft grease into joint (boot side).



### Fitting and tightening hose clip on outer joint

- Fit hose clip on outer joint.
- Vent air from boot.
- Engage hose clip by hand at first lug.

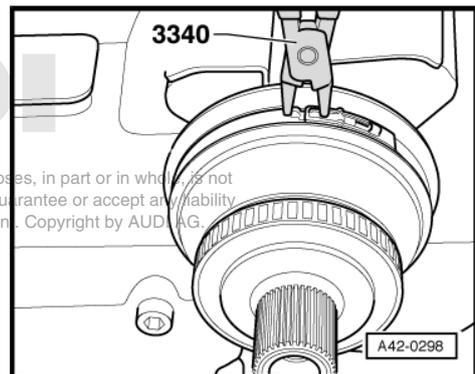


- Use pliers -3340- to fasten hose clip.
- Pliers -3340- must be applied as shown to front of clip.

### Checking outer constant velocity joint

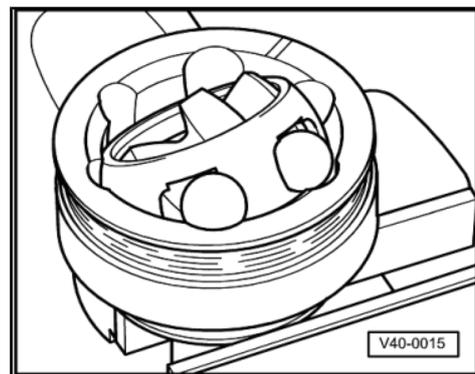
The joint should be dismantled to renew dirty grease or for checking the balls and ball races for wear and damage.

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

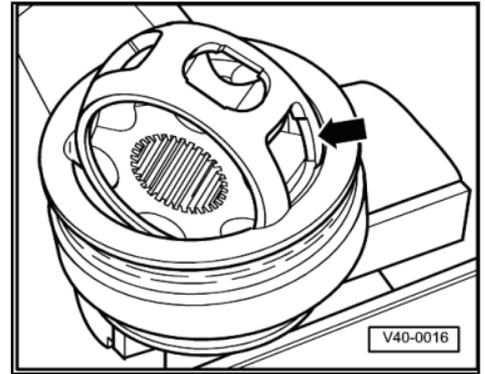


### Dismantling

- Before dismantling, mark position of ball hub in relation to ball cage and joint body with an electric scribe or oil stone.
- Swivel ball hub and ball cage.
- Take out balls one after the other.



- Turn the cage until the two rectangular openings -arrow- are level with the joint body.
- Lift out cage together with hub.



- Swivel segment of hub with short lobe into square cage opening.
- Pivot hub out of cage.

### Checking

The 6 balls in each joint belong to one tolerance group. Check stub axle, hub, cage and balls for pitting and signs of seizure. Excessive backlash in the joint will cause knocking or jolts under load change; in such cases the joint must be renewed. Polished areas and visible tracks in the ball races do not justify renewal of the joint.

### Assembling

- Fit cage with hub into joint body.



### Note

*Make sure cage is inserted in correct position (i.e. sides facing in same direction as original position).*

- Press in balls one after the other from opposite sides, taking care to re-establish original position of hub relative to cage and joint body.
- Pack required amount of grease into joint body.

Quantities and type of grease for drive shaft with 100 mm  $\varnothing$  outer constant velocity joint => [page 177](#)

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

## 43 – Self-levelling suspension

### 1 Operation of self-levelling suspension

⇒ „1.1 Possible level settings“, page 188 .

⇒ „1.2 Setting vehicle level“, page 188 .

⇒ „1.3 Jacking mode“, page 188 .

⇒ „1.4 Towing mode“, page 189 .

⇒ „1.5 Shipping mode“, page 189 .

#### 1.1 Possible level settings

Four different levels can be set by the driver:

- ◆ Automatic
- ◆ Dynamic
- ◆ Comfort
- ◆ Lift



#### Note

*The automatic control processes are subject to speed and time factors. Thus for example, it is not possible to raise the suspension to the high (raised) level above certain speed thresholds.*

For further details on level settings, refer to ⇒ Owner's Manual

#### 1.2 Setting vehicle level

The vehicle level has to be set via the MMI system.

- **Switch on ignition.**
- Press function key „CAR“. Central menu „adaptive air suspension“ appears.
- Use rotary pushbutton to select required level.



#### Note

*Please note that some level settings are not available in certain driving situations.*

Please refer to the ⇒ Owner's manual for further details on the operation of the various vehicle level settings.

#### 1.3 Jacking mode

Before raising the vehicle with a jack or lifting platform, the jacking mode must be activated to prevent automatic air suspension control processes impeding the operation of the jack or lifting platform.



## Note

- ◆ *The jacking mode is deactivated automatically at speeds above 10 km/h.*
- ◆ *When the jacking mode is activated a warning lamp lights up in the instrument cluster.*

### Activation

- Switch on ignition.
- Press function key „CAR“. Central menu „adaptive air suspension“ appears.
- Press function key „SETUP“. Menu „adaptive air suspension“ appears.
- Turn rotary pushbutton to required mode and select „ON“.
- Switch off ignition.

### Deactivation

- Switch on ignition.
- Press function key „CAR“. Central menu „adaptive air suspension“ appears.
- Press function key „SETUP“. Menu „adaptive air suspension“ appears.
- Turn rotary pushbutton to „jacking mode“ and select „OFF“ to deactivate jacking mode.
- Switch off ignition.

## 1.4 Towing mode

When the towing mode is active, certain level settings cannot be fully utilised.

### Activation

- Switch on ignition.
- Press function key „CAR“. Central menu „adaptive air suspension“ appears.
- Press function key „SETUP“. Menu „adaptive air suspension“ appears.
- Turn rotary pushbutton to required mode and select „ON“.
- Switch off ignition.

### Deactivation

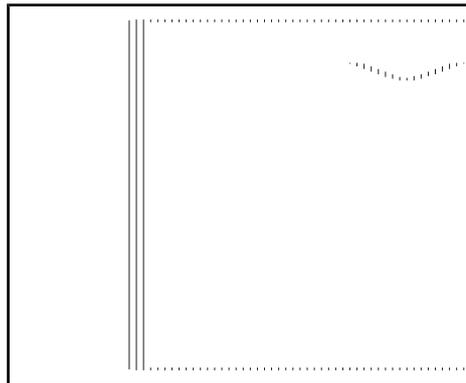
- Switch on ignition.
- Press function key „CAR“. Central menu „adaptive air suspension“ appears.
- Press function key „SETUP“. Menu „adaptive air suspension“ appears.
- Turn rotary pushbutton to „towing mode“ and select „OFF“ to deactivate towing mode.
- Switch off ignition.

## 1.5 Shipping mode

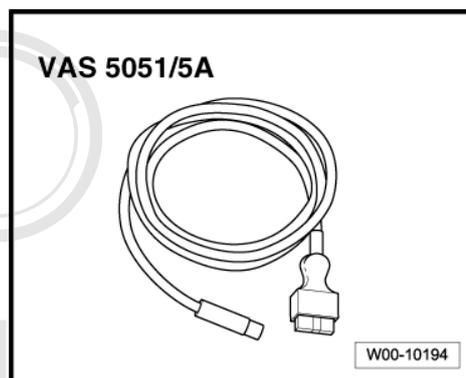
Special tools and workshop equipment required



- ◆ Vehicle diagnostic, testing and information system -VAS 5051 A-



- ◆ Diagnosis cable -VAS 5051/5A-



Shipping mode can only be activated and deactivated using vehicle diagnostic, testing and information system -VAS 5051 A-

... purposes, in part or in whole, is not guaranteed or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

When the shipping mode is active, it is not possible to move to other levels using the MMI.

- Connecting vehicle diagnostic, testing and information system -VAS 5051 A- and selecting functions => [page 191](#)

#### Activation

- Switch on ignition.
- Self-diagnosis function
- Address word „34“ (adaptive suspension)
- „Function 16 Access authorisation“
- Enter „code 10273“ via keypad and confirm by pressing

Yellow fault lamp in instrument cluster lights up and fault „00219 Loading level active“ is entered in fault memory.

#### Deactivation

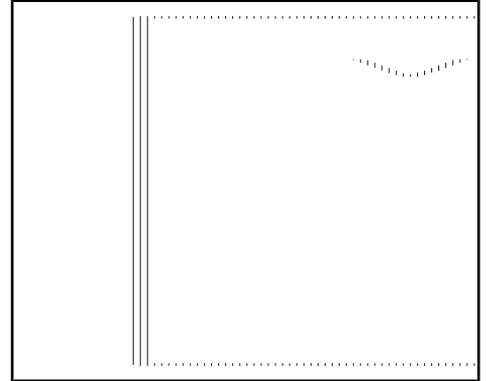
- Switch on ignition.
- Self-diagnosis function
- Address word „34“ (adaptive suspension)
- „Function 16 Access authorisation“
- Enter „code 41172“ via keypad and confirm by pressing

Yellow fault lamp in instrument cluster goes out and fault „00219 Loading level active“ is automatically erased in fault memory.

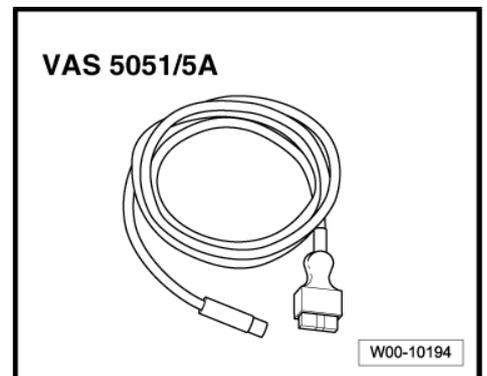
## 2 Connecting -VAS 5051 A- and selecting functions

### Special tools and workshop equipment required

- ◆ Vehicle diagnostic, testing and information system -VAS 5051 A-



- ◆ Diagnosis cable -VAS 5051/5A-



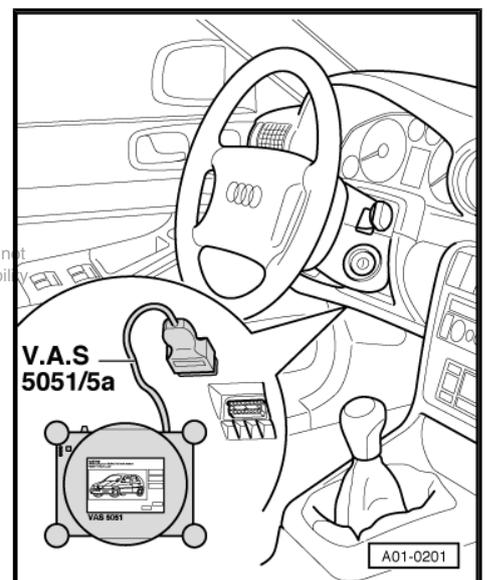
### WARNING

- ◆ *Test equipment must always be secured to the rear seat when road-testing the vehicle.*
- ◆ *While the vehicle is moving this equipment must be operated by a second person; NOT by the driver.*

- Plug in connector of diagnosis cable -VAS 5051/5A- at diagnostic connection.

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.





- Switch on the tester -arrow-.

The tester is ready for operation when the selector „buttons“ for the operating modes appear on the screen.

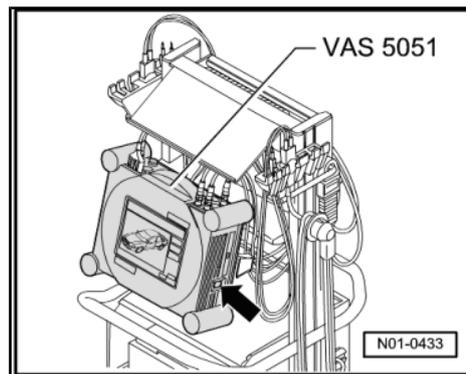
- Switch on ignition.



**Note**

*When control units or other electrical/electronic components have been renewed, the relevant component(s) must normally be „adapted“ via the Guided Fault Finding function.*

- Touch the **Guided Fault Finding** button on the display screen.
- Select the following:
  - ◆ Make
  - ◆ Model
  - ◆ Model year
  - ◆ Version
  - ◆ Engine code letters
- Confirm the entered information.



**Note**

*Wait until the tester has interrogated all the control units in the vehicle.*

- Press the **Go to** button and select the option „Function/component selection“.
- Then press:
  - „Running gear (Rep. Gr. 01; 40 - 49)“
  - „Adaptive suspension (Repair group 01; 43; 44)“
  - „01 - Self-diagnosis compatible systems“
  - „34 - Adaptive suspension control unit“
  - „J197 - Functions, adaptive suspension control unit“

**or**

- „Running gear (Rep. Gr. 01; 40 - 49)“
- „Adaptive suspension (Repair group 01; 43; 44)“
- „01 - Self-diagnosis compatible systems“
- „34 - Adaptive suspension control unit“
- „Electrical components“

### 3 Servicing self-levelling suspension (adaptive suspension)

⇒ [„3.1 Electrical/electronic components - overview and fitting locations“, page 194](#)

⇒ [„3.2 Removing and installing front vehicle level senders“, page 195](#)

⇒ [„3.3 Removing and installing rear vehicle level senders“, page 197](#)

⇒ [„3.4 Removing and installing front body acceleration senders G341 and G342“, page 198](#)

⇒ [„3.5 Removing and installing rear body acceleration sender G343“, page 199](#)

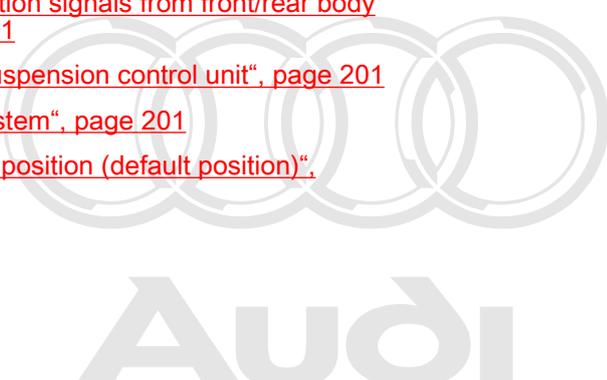
⇒ [„3.6 Removing and installing adaptive suspension control unit J197“, page 200](#)

⇒ [„3.8 Checking body acceleration signals from front/rear body acceleration senders“, page 201](#)

⇒ [„3.7 Re-adapting adaptive suspension control unit“, page 201](#)

⇒ [„3.9 Bleeding or charging system“, page 201](#)

⇒ [„3.10 Re-adapting reference position \(default position\)“, page 202](#)



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.

### 3.1 Electrical/electronic components - overview and fitting locations

#### 1 - Air supply unit

- Removing and installing air supply unit (vehicles with 6-cylinder and 8-cylinder petrol engines) ⇒ [page 219](#)
- Removing and installing air supply unit (vehicles with 6-cylinder and 8-cylinder diesel engines, 10-cylinder and 12-cylinder petrol engines) ⇒ [page 224](#)
- If air supply unit is renewed, adaptive suspension compressor relay -J403- must also be renewed. Fitting location: ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

#### 2 - Front right vehicle level sender -G289-

- Removing and installing ⇒ [page 195](#)
- Re-adapting reference position (default position) following disconnection ⇒ [page 202](#)
- Can be checked via „Guided Fault Finding“ with -VAS 5051 A-

#### 3 - Air spring strut (front right)

- With front right shock absorber damping adjustment valve -N337-
- Removing and installing ⇒ [page 16](#)
- Charging ⇒ [page 20](#)

#### 4 - Front right body acceleration sender -G342-

- Removing and installing ⇒ [page 198](#)
- Can be checked via „Guided Fault Finding“ with -VAS 5051 A-

#### 5 - Adaptive suspension control unit -J197-

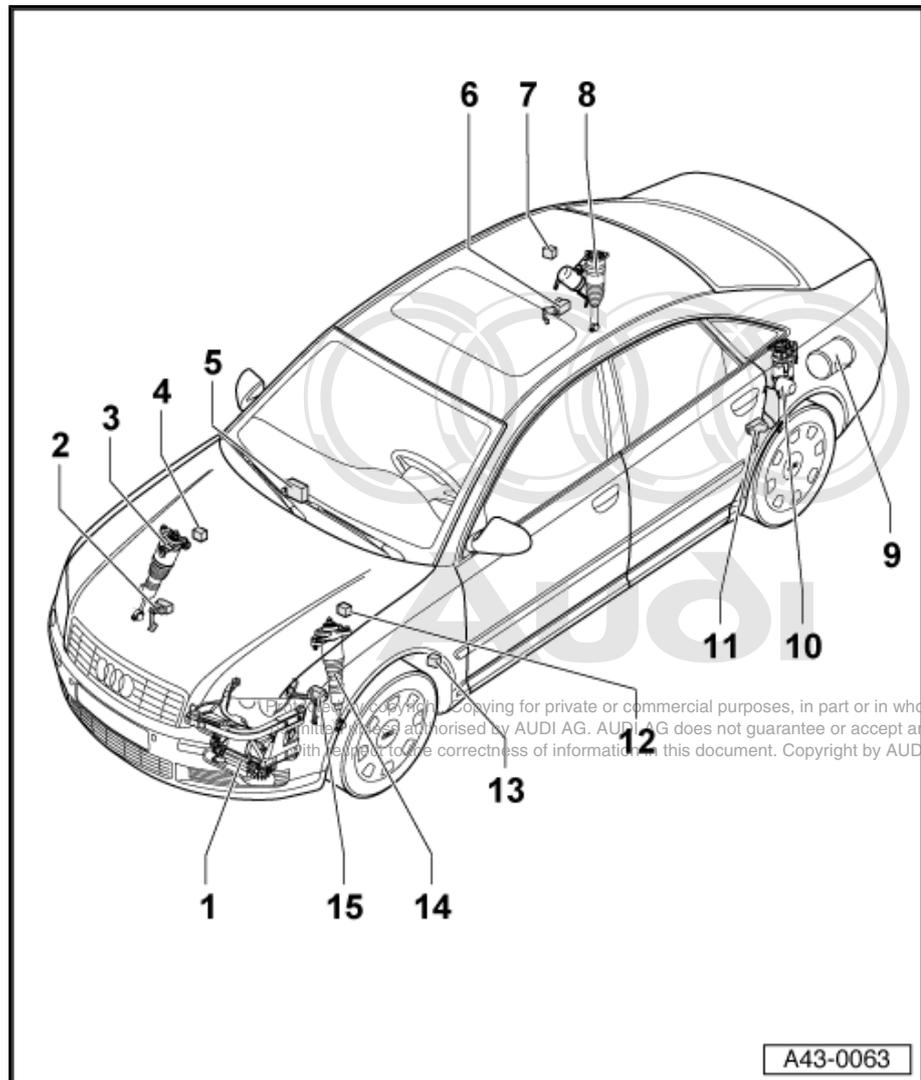
- Removing and installing ⇒ [page 200](#)
- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

#### 6 - Rear right vehicle level sender -G77-

- Removing and installing ⇒ [page 197](#)
- Re-adapting reference position (default position) following disconnection ⇒ [page 202](#)
- Can be checked via „Guided Fault Finding“ with -VAS 5051 A-

#### 7 - Rear body acceleration sender -G343-

- Removing and installing ⇒ [page 199](#)
- Can be checked via „Guided Fault Finding“ with -VAS 5051 A-



### 8 - Air spring strut (rear right)

- With rear right shock absorber damping adjustment valve -N339-
- Removing and installing ⇒ [page 136](#)

### 9 - Accumulator

- Before removing accumulator, system must be bled using -VAS 5051 A- and „Guided Fault Finding“ routine
- Removing and installing ⇒ [page 236](#)

### 10 - Air spring strut (rear left)

- With rear left shock absorber damping adjustment valve -N338-
- Removing and installing ⇒ [page 136](#)

### 11 - Rear left vehicle level sender -G76-

- Removing and installing ⇒ [page 197](#)
- Re-adapting reference position (default position) following disconnection ⇒ [page 202](#)
- Can be checked via „Guided Fault Finding“ with -VAS 5051 A-

### 12 - Front left body acceleration sender -G341-

- Removing and installing ⇒ [page 198](#)
- Can be checked via „Guided Fault Finding“ with -VAS 5051 A-

### 13 - Solenoid valve block

- Removing and installing ⇒ [page 215](#)

### 14 - Air spring strut (front left)

- With front left shock absorber damper adjustment valve -N336-
- Removing and installing ⇒ [page 16](#)

### 15 - Front left vehicle level sender -G78-

- Removing and installing ⇒ [Item 9 \(page 32\)](#)
- Re-adapting reference position (default position) following disconnection ⇒ [page 202](#)
- Can be checked via „Guided Fault Finding“ with -VAS 5051 A-

## 3.2 Removing and installing front vehicle level senders

### General notes:

Vehicles with adaptive suspension and/or gas discharge lamps have automatic headlight range control fitted as standard equipment ⇒ Rep. gr. 94 .

The adaptive suspension and the automatic headlight range control functions require information on the compression and rebound travel at the front and rear suspension.

For this purpose, the position of the lower left link in relation to the body is transferred to the vehicle level sender (front, left) -G78- via a coupling rod. This transmits electrical signals to the gas discharge light control unit (left/right) -J343/344- .

Servicing left/right gas discharge bulb control unit -J343/344- ⇒ Rep. gr. 94

On the rear axle these signals are supplied by the vehicle level sender (rear, left) -G76- and vehicle level sender (rear, right) -G77- to the gas discharge light control units (left/right) -J343/344- .

These signals are required for calculating the current attitude of the vehicle.

The automatic headlight range control reacts to changes in the suspension height (attitude of the vehicle).

The following situations may produce a change in the suspension height:

- ◆ Towing a trailer/caravan
- ◆ Different loads (vehicle unladen, partly laden or fully laden)

**WARNING**

**Headlight setting; setting of adaptive suspension!**

The reference position (default setting) of the suspension must always be adapted and the basic headlight setting must always be checked when:

- ◆ Track control link has been removed and installed or renewed,
- ◆ Work has been performed on the vehicle level sender,
- ◆ Vehicle level sender has been renewed,
- ◆ Coupling rod for vehicle level sender has been detached from track control link.

Re-adapting reference position ⇒ [page 202](#)

- If the reference position has been re-adapted on vehicles with lane departure warning, the lane departure warning control unit -J759- must be recalibrated ⇒ [page 276](#) .

Basic setting of headlights ⇒ Rep. gr. 94

**Removing**

Note different versions with „long“ and „short“ levers.

**Always install senders of the same version. Mixed installation of different versions on the same vehicle is not permissible.**

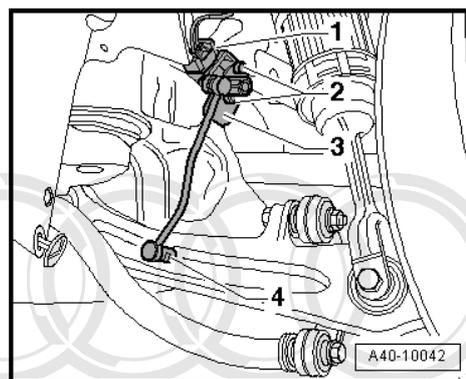
- Unplug connector -1-.
- Unscrew hexagon nut on coupling rod (not visible in illustration). When doing this, counterhold mounting -4-.
- Remove bolts -2-.
- Detach vehicle level sender -3-.

**Installing**

Installation is carried out in the reverse sequence. Note the following points:

Lever of sender must face forwards.

- Tighten bolts -2- to 5 Nm.
- Tighten new hexagon nut on coupling rod (not visible in illustration) to 8 Nm. When doing this, counterhold mounting -4-.
- Re-adapt reference position ⇒ [page 202](#) .
- If the reference position has been re-adapted on vehicles with lane departure warning, the lane departure warning control unit -J759- must be recalibrated ⇒ [page 276](#) .
- Perform basic setting of headlights ⇒ Rep. gr. 94 .



protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 rear vehicle level senders

#### General notes:

Vehicles with adaptive suspension and/or gas discharge lamps have automatic headlight range control fitted as standard equipment ⇒ Rep. gr. 94 .

The adaptive suspension and the automatic headlight range control functions require information on the compression and rebound travel at the front and rear suspension.

For this purpose, the position of the lower left link in relation to the body is transferred to the vehicle level sender (front, left) -G78- via a coupling rod. This transmits electrical signals to the gas discharge light control unit (left/right) -J343/344- .

Servicing left/right gas discharge bulb control unit -J343/344- ⇒ Rep. gr. 94

On the rear axle these signals are supplied by the vehicle level sender (rear, left) -G76- and vehicle level sender (rear, right) -G77- to the gas discharge light control units (left/right) -J343/344- .

These signals are required for calculating the current attitude of the vehicle.

The automatic headlight range control reacts to changes in the suspension height (attitude of the vehicle).

The following situations may produce a change in the suspension height:

- ◆ Towing a trailer/caravan
- ◆ Different loads (vehicle unladen, partly laden or fully laden)

	<b>WARNING</b>
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not <b>Headlight setting; setting of adaptive suspension!</b> accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.	

The reference position (default setting) of the suspension must always be adapted and the basic headlight setting must always be checked when:

- ◆ Track control link has been removed and installed or renewed,
- ◆ Work has been performed on the vehicle level sender,
- ◆ Vehicle level sender has been renewed,
- ◆ Coupling rod for vehicle level sender has been detached from track control link.

Re-adapting reference position ⇒ [page 202](#)

- If the reference position has been re-adapted on vehicles with lane departure warning, the lane departure warning control unit -J759- must be recalibrated ⇒ [page 276](#) .

Basic setting of headlights ⇒ Rep. gr. 94



### Removing

- Unplug connector -2-.
- Unscrew hexagon bolt -4- from coupling rod.
- Remove nuts -1-.
- Detach vehicle level sender -3-.

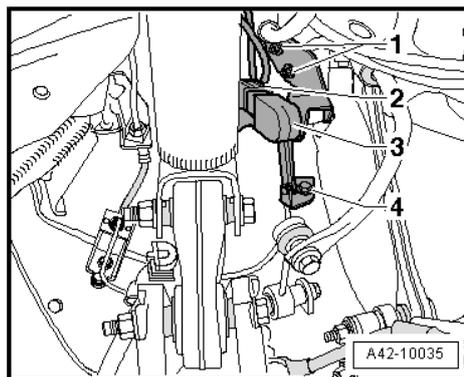
### Installing

Installation is carried out in the reverse sequence. Note the following points:

Lever of sender must face forwards.

- Tighten new nuts -1- to 10 Nm.
- Tighten hexagon bolt -4- on coupling rod -3- to 10 Nm.
- Re-adapt reference position ⇒ [page 202](#) .
- If the reference position has been re-adapted on vehicles with lane departure warning, the lane departure warning control unit -J759- must be recalibrated ⇒ [page 276](#) .

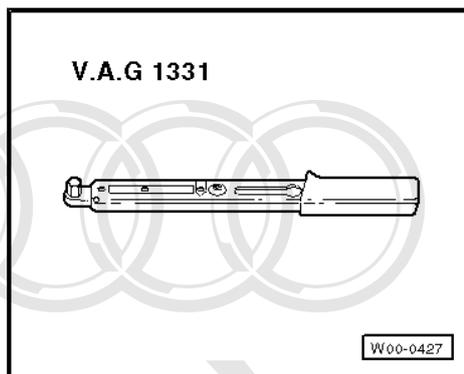
Basic setting of headlights ⇒ Rep. gr. 94



## 3.4 Removing and installing front body acceleration senders -G341- and -G342-

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-

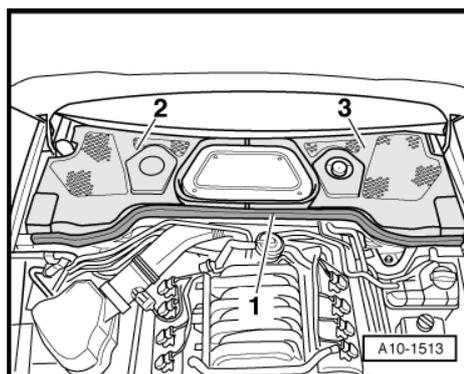


### Removing



*The front body acceleration senders are installed on the right and left suspension turrets.*

- Detach seal -1-.
- Detach plenum chamber covers -2- and -3-.



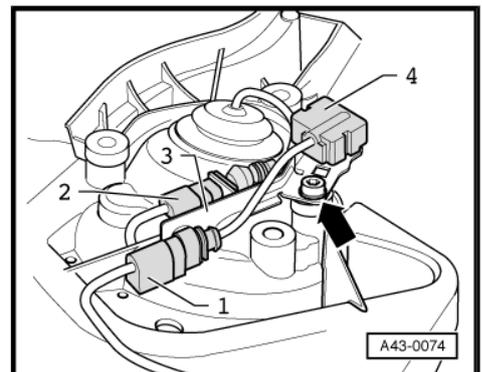
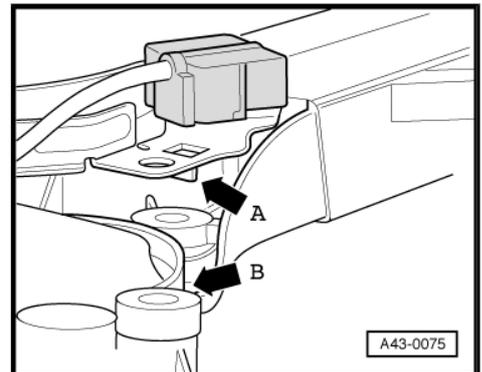
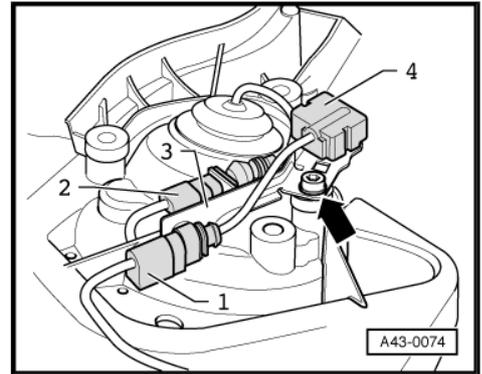
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Unplug connector -1-.
- Unplug connector -2- from holder -3-.
- Unscrew bolt -arrow- and take out body acceleration sender -4-.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

- Fit body acceleration sender so that locating element -arrow A- engages in brace in body -arrow B-.
- Tighten bolt -arrow- for body acceleration sender -4- [⇒ Item 3 \(page 13\)](#).
- Plug connector -2- to holder -3-.
- Plug in connector -1-.
- Check body acceleration signal [⇒ page 201](#).

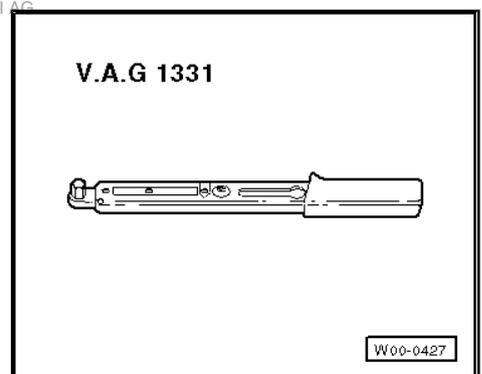


## 3.5 Removing and installing rear body acceleration sender -G343-

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-

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



## Removing



### Note

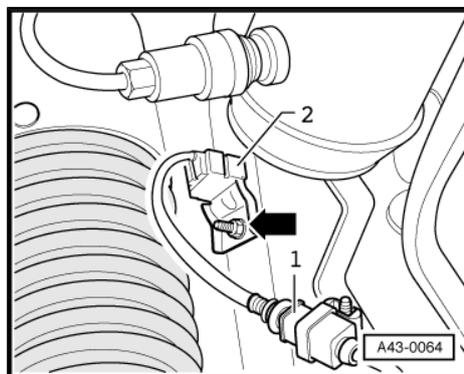
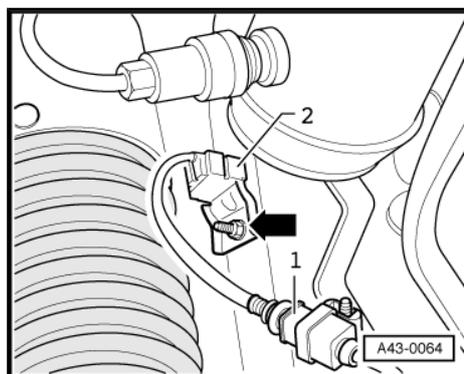
The rear body acceleration sender -G343- is installed behind the right wheel housing liner near the air spring strut.

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Secure brake disc with one wheel bolt.
- Remove rear right wheel housing liner ⇒ [Rep. gr. 66](#) .
- Unplug connector -1-.
- Unscrew nut -arrow- and take out rear body acceleration sender -G343- -2-.

## Installing

Installation is carried out in the reverse sequence. Note the following points:

- Tighten nut -arrow- for rear body acceleration sender -G343- -2- to 9 Nm.
- Plug in connector -1-.
- Check body acceleration signal ⇒ [page 201](#) .
- Install rear right wheel housing liner ⇒ [Rep. gr. 66](#) .
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .



## 3.6 Removing and installing adaptive suspension control unit -J197-

### Removing

- When renewing control unit, select „Replacement“ function for relevant control unit in „Guided Fault Finding“ routine.

Use vehicle diagnostic, testing and information system -VAS 5051 A- .



### Note

Adaptive suspension control unit -J197- is installed on plenum chamber partition panel behind glove box.

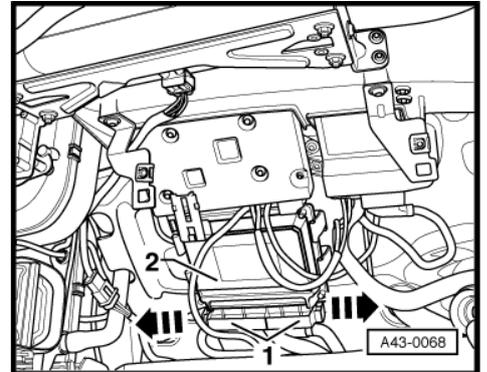
Observe safety instructions for battery disconnection ⇒ [Rep. gr. 27](#) .

- Disconnect battery earth strap with ignition switched off ⇒ Rep. gr. 27 .
- Remove glove box ⇒ Rep. gr. 68 .
- Remove air duct in front of control unit ⇒ Rep. gr. 87 .
- Release connector -1- from control unit in -direction of arrow- and unplug.
- Take out control unit -2-.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

- Re-adapt adaptive suspension control unit -J197- ⇒ [page 201](#) .
- Fit air duct in front of control unit ⇒ Rep. gr. 87 .
- Install glove box ⇒ Rep. gr. 68 .



## 3.7 Re-adapting adaptive suspension control unit

- Connect -VAS 5051 A- and select function test (for „function/component“) ⇒ [page 191](#) .

Then

- „J197 - Functions, adaptive suspension control unit“
- „J197 - Replace control unit“



### Note

*If the reference position has been re-adapted, on vehicles with lane departure warning function the lane departure warning control unit -J759- with integral camera must be recalibrated ⇒ [page 276](#) .*

## 3.8 Checking body acceleration signals from front/rear body acceleration senders

- Connect -VAS 5051 A- and select function test (for „function/component“) ⇒ [page 191](#) .

Then

- „J197 - Functions, adaptive suspension control unit“
- „G341 - Front left body acceleration sender“

or

- „G342 - Front right body acceleration sender“

or

- „G343 - Rear body acceleration sender“

## 3.9 Bleeding or charging system

- Connect -VAS 5051 A- and select function test (for „function/component“) ⇒ [page 191](#) .

Then

- „J197 - Functions, adaptive suspension control unit“



- „J197 - Bleeding or charging system“

### 3.10 Re-adapting reference position (default position)

- Connect -VAS 5051 A- and select function test (for „function/component“) => [page 191](#) .

Then

- „J197 - Functions, adaptive suspension control unit“
- „J197 - Re-adapting reference position“ (default position)



#### Note

*On vehicles with lane departure warning function, the lane departure warning control unit -J759- with integral camera must be re-calibrated if the reference position has been re-adapted => [page 276](#) .*



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

## 4 Self-levelling suspension (adaptive air suspension)

⇒ „4.1 Overview of air pipes“, page 203

⇒ „4.2 Servicing air pipe“, page 208

⇒ „4.3 Renewing connection piece“, page 213

⇒ „4.4 Removing and installing solenoid valve block“, page 215

⇒ „4.5 Exploded view of air supply unit (vehicles with 6-cylinder and 8-cylinder petrol engines)“, page 217

⇒ „4.6 Removing and installing air supply unit (vehicles with 6-cylinder and 8-cylinder petrol engines)“, page 219

⇒ „4.7 Exploded view of air supply unit (vehicles with 6-cylinder and 8-cylinder diesel engines, 10-cylinder and 12-cylinder petrol engines)“, page 223

⇒ „4.8 Removing and installing air supply unit (vehicles with 6-cylinder and 8-cylinder diesel engines, 10-cylinder and 12-cylinder petrol engines)“, page 224

⇒ „4.9 Removing and installing accumulator“, page 236

### 4.1 Overview of air pipes

#### 1 - Air supply unit

- If air supply unit is renewed, adaptive suspension compressor relay -J403- must also be renewed. Fitting location: ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

#### 2 - Air spring strut (front right)

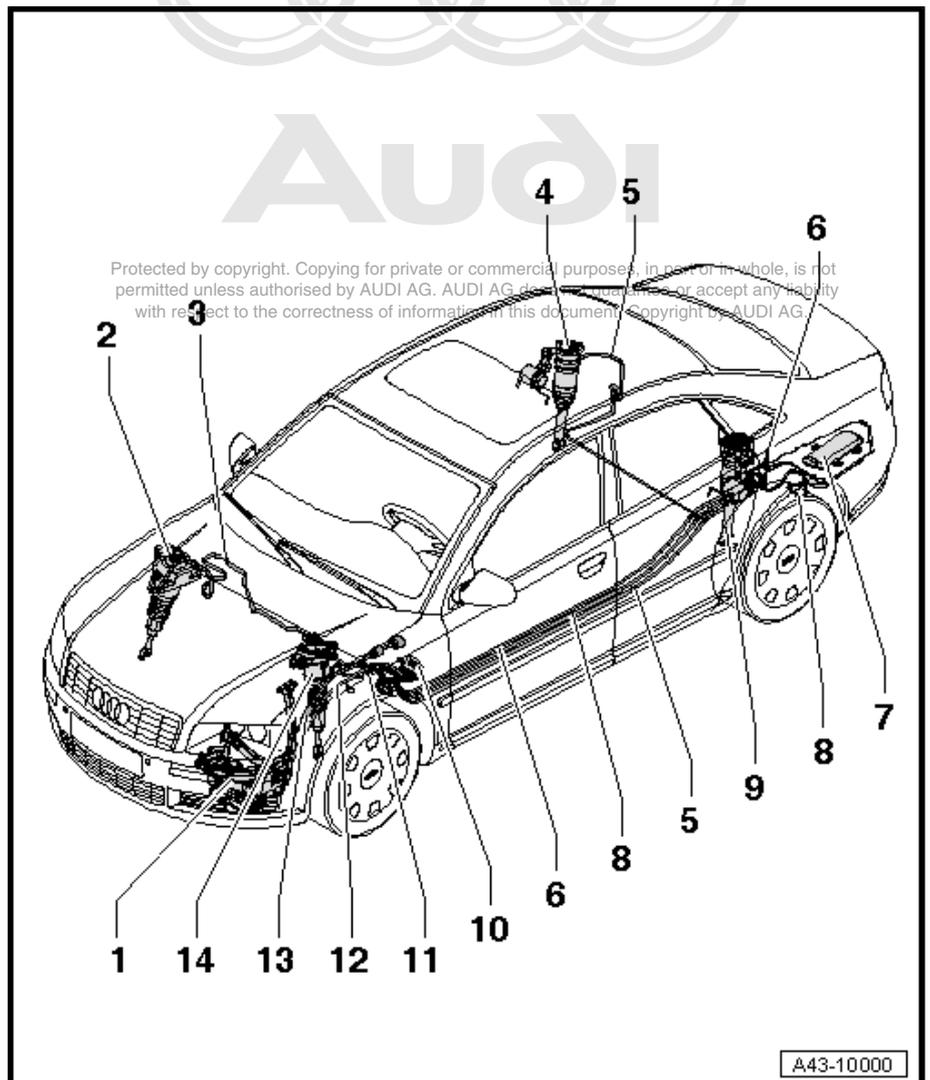
#### 3 - Air pipe „green“

- From solenoid valve block to air spring strut (front right)
- Routing of air pipe ⇒ [page 206](#) .
- Servicing air pipe ⇒ [page 208](#)
- Renewing connection piece ⇒ [page 213](#)

#### 4 - Air spring strut (rear right)

#### 5 - Air pipe „blue“

- From solenoid valve block to air spring strut (rear right)
- Routing of air pipe in interior ⇒ [page 206](#) .
- Routing of air pipe (rear) ⇒ [page 207](#) .
- Servicing air pipe ⇒ [page 208](#)
- Renewing connection



piece ⇒ [page 213](#)

## 6 - Air pipe „black“

- From solenoid valve block to air spring strut (rear left)
- Routing of air pipe in interior ⇒ [page 206](#) .
- Routing of air pipe (rear) ⇒ [page 207](#) .
- Servicing air pipe ⇒ [page 208](#)
- Renewing connection piece ⇒ [page 213](#)

## 7 - Accumulator

## 8 - Air pipe „purple“

- From solenoid valve block to accumulator
- Routing of air pipe in interior ⇒ [page 206](#) .
- Routing of air pipe (rear) ⇒ [page 207](#) .
- Servicing air pipe ⇒ [page 208](#)
- Renewing connection piece ⇒ [page 213](#)

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 guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

## 9 - Air spring strut (rear left)

## 10 - Solenoid valve block

- Identification of pipes on solenoid valve block ⇒ [page 204](#)
- Identification of pipes and connections on solenoid valve block ⇒ [page 205](#)

## 11 - Air pipe „red“

- From solenoid valve block to air spring strut (front left)
- Routing of air pipe ⇒ [page 206](#) .
- Servicing air pipe ⇒ [page 208](#)
- Renewing connection piece ⇒ [page 213](#)

## 12 - Air pipe „brown“

- From air supply unit to solenoid valve block
- Note different versions ⇒ Electronic parts catalogue
- Connection on air supply unit ⇒ [page 205](#)
- Routing of air pipe to solenoid valve block ⇒ [page 205](#) .
- Servicing air pipe ⇒ [page 208](#)
- Renewing connection piece ⇒ [page 213](#)

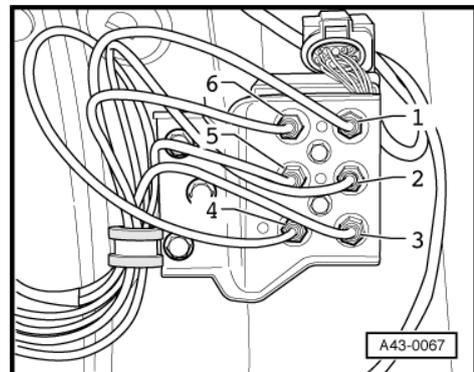
## 13 - Air intake pipe

## 14 - Air spring strut (front left)

### Identification of pipes on solenoid valve block

The air pipes are colour-coded:

- 1 - Air pipe „blue“: to air spring strut (rear right)
- 2 - Air pipe „black“: to air spring strut (rear left)
- 3 - Air pipe „green“: to air spring strut (front right)
- 4 - Air pipe „brown“: from air supply unit
- 5 - Air pipe „red“: to air spring strut (front left)
- 6 - Air pipe „purple“: to accumulator

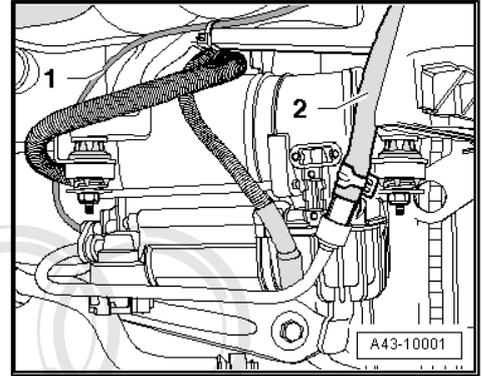


### „Brown“ air pipe on air supply unit

The „brown“ air pipe -1- is located on the right side of the air supply unit.

It is routed to the front left wheel housing together with air intake pipe -2-.

Note different versions => Electronic parts catalogue

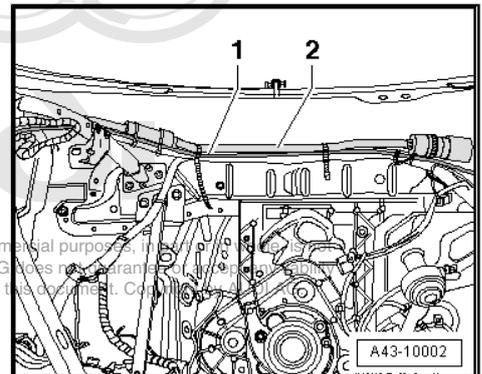


### Routing of „brown“ air pipe to solenoid valve block

Illustration shows front left wheel housing without suspension and engine.

- 1 - Air pipe „brown“: different versions possible. Refer to => Electronic parts catalogue
- 2 - Air intake pipe

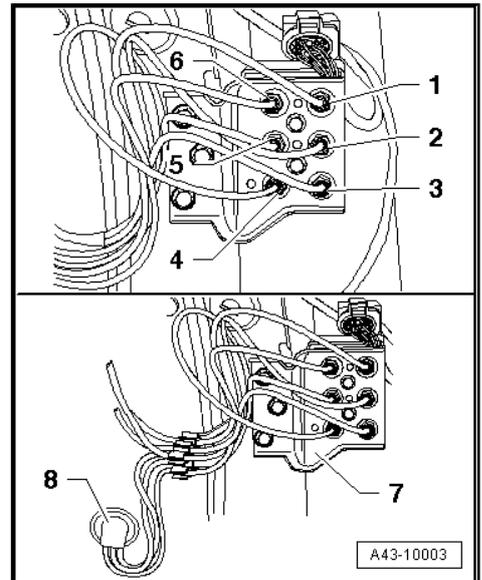
Protected by copyright. Copying for private or commercial purposes, in whole or in part, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee the accuracy of the information with respect to the correctness of information in this document. Copyright © 2011 Audi AG



### Routing of pipes on solenoid valve block

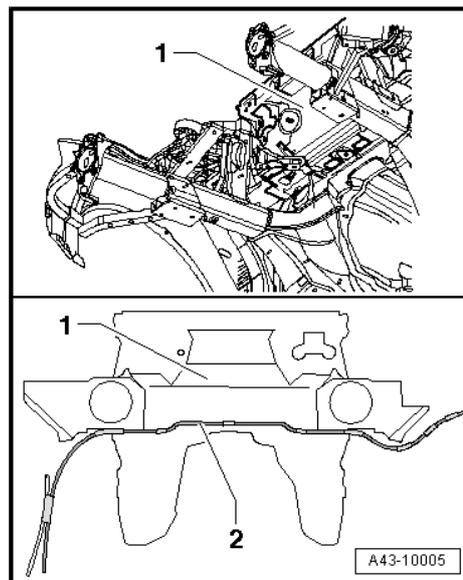
Identification of pipes -1- to -6- on solenoid valve block  
 => [page 204](#)

- 7 - Solenoid valve block
- 8 - Pipes routed to interior
- For air pipes to air spring struts (rear left and right) and accumulator



### Routing of „green“ air pipe to air spring strut (front right)

„Green“ air pipe -2- is routed along noise insulation (engine compartment/interior) -1- from solenoid valve block to air spring strut.

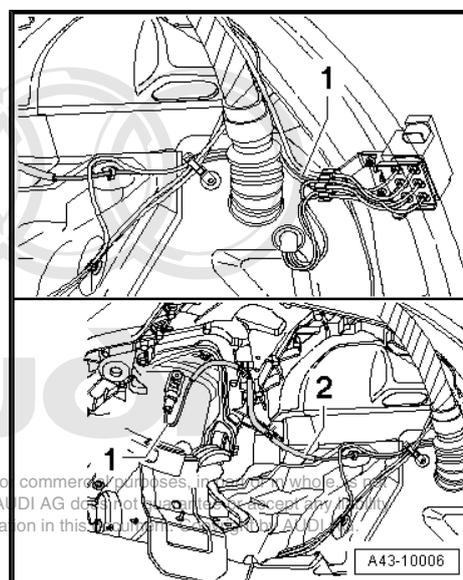


### Routing of „red“ air pipe to air spring strut (front left)

1 - Air pipe „red“

2 - Protective hose

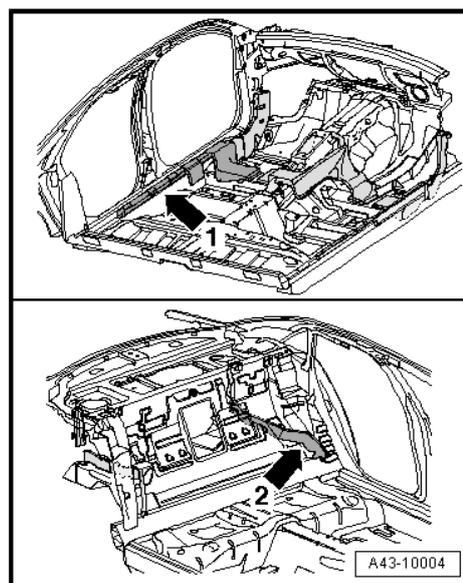
Pipe -1- is routed along noise insulation (engine compartment/interior) -2- from solenoid valve block to air spring strut.



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

### Routing of air pipes in interior

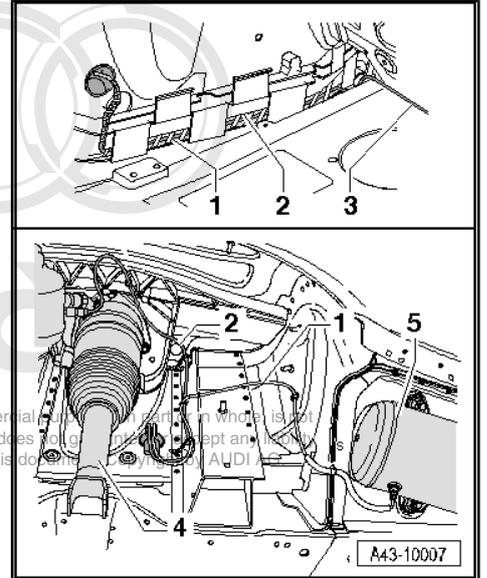
Air pipes are routed along left side of vehicle in front cable duct -1- and rear cable duct -2-.



### Routing of „black “ and „purple“ air pipes to air spring strut (rear left) and accumulator

„Black“ and „purple“ air pipes are routed along left side of luggage compartment to cable duct leading to vehicle interior ⇒ [page 206](#) .

- 1 - Air pipe „purple“ to accumulator
- 2 - Air pipe „black “ to air spring strut (rear left)
- 3 - Air pipe „blue“ to air spring strut (rear right)
- 4 - Air spring strut (rear left)
- 5 - Accumulator

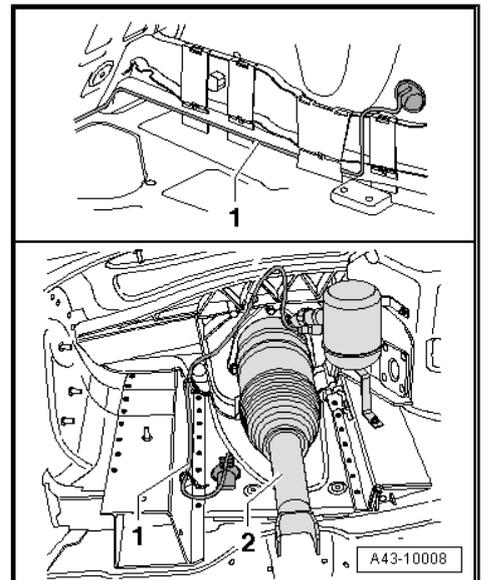


Protected by copyright. Copying for private or commercial use without the express written permission of Audi AG is prohibited. Audi AG does not accept any liability with respect to the correctness of information in this document.

### Routing of „blue“ air pipe to air spring strut (rear right)

„Blue“ air pipe is routed along right side of luggage compartment to rear seat bench, and along rear seat bench to cable duct leading to vehicle interior ⇒ [page 206](#) .

- 1 - Air pipe „blue“ to air spring strut (rear right)
- 2 - Air spring strut (rear right)

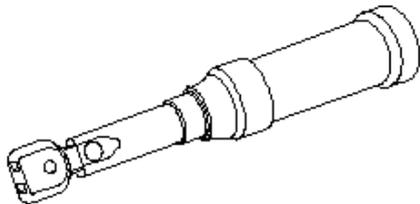
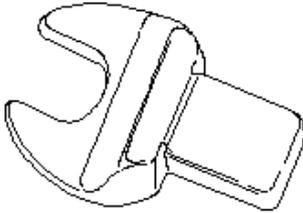
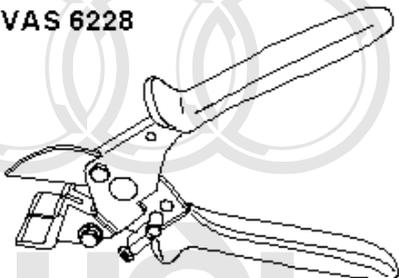




## 4.2 Servicing air pipe

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1783-
- ◆ Open end spanner insert (10 mm) -V.A.G 1783/1-
- ◆ Cutting pliers -VAS 6228-

<p><b>V.A.G 1783</b></p> 	<p><b>V.A.G 1783/1</b></p> 
<p><b>VAS 6228</b></p> 	
<p>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</p> <div style="text-align: right; border: 1px solid black; padding: 2px;">G43-10001</div>	

If the air pipe is damaged, the damaged section can be renewed.

In the event of leakage at the connection, the air pipe can be shortened by 10 mm and a new connection piece fitted

⇒ [page 213](#) .

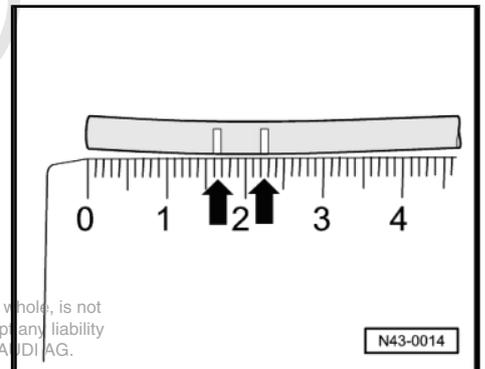
**i** Note

- ◆ *The air pipe between the air supply unit and the solenoid valve block is replaced completely with a new pipe (same as original equipment). Note different versions ⇒ Electronic parts catalogue The air pipe between the air supply unit and the solenoid valve block is routed parallel to the electrical wiring harness.*
- ◆ *The air pipe between the air spring strut (front left) and the solenoid valve block is replaced completely with a new pipe (same as original equipment). The air pipe between the air supply unit and the solenoid valve block is routed parallel to the electrical wiring harness.*
- ◆ *The air pipe between the solenoid valve block and the air spring strut (front right) is replaced with a new pipe (same as original equipment) in the right-side wheel housing only. The new pipe must be shortened accordingly. The pipe on the left side is replaced with parts from the repair kit.*
- ◆ *Damaged air pipes in the vehicle interior are replaced completely with new pipes (same as original equipment). Route new air pipe along existing pipe/electrical harness. Secure new air pipes at the positions marked. Renew cable ties where necessary.*
- ◆ *Clean the area around the cutting point before cutting the air pipe. Overview of cutting locations ⇒ [page 210](#).*
- ◆ *Any dirt entering the connections can cause malfunctions or failure of the system.*

- Clean sections in vicinity of connection piece and relevant cutting location.
- Cut through air pipe at cutting location (at a right angle) using cutting pliers -VAS 6228- ⇒ [page 210](#).
- Unscrew connection piece and remove air pipe.
- Then use waterproof pen to mark end of air pipe in vehicle and both ends of new air pipe.

Use 17 mm/22 mm marks to check whether air pipe has been properly inserted in connection piece.

- Fit sponge rubber insulation to both pipes.
- Fit new pipe connector.



**i** 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.

N43-0014

*The connection pieces in the pipe connector are already tightened to torque. The air pipes only need to be pushed in.*

- Remove transport protection cap.



- Push old air pipe through seals -1- and -2-.
- Then push air pipe through sealing edges -3- and -4- of cutting ring in pipe connector as far as stop -5-, exerting more force as required.
- Fit sponge rubber insulation over connection pieces.
- Repeat this procedure with the new pipe.
- Renew connection piece => [page 213](#) .

#### Overview of cutting locations:

#### Cutting location for air spring strut (front right) in right wheel housing

- 1 - Air pipe: new pipe, shortened (same as original equipment)
- 2 - Sponge rubber insulation (length 10 - 15 mm)
- 3 - Pipe connector
- 4 - Cable tie with retainer, secures pipe connector to wiring harness



#### Note

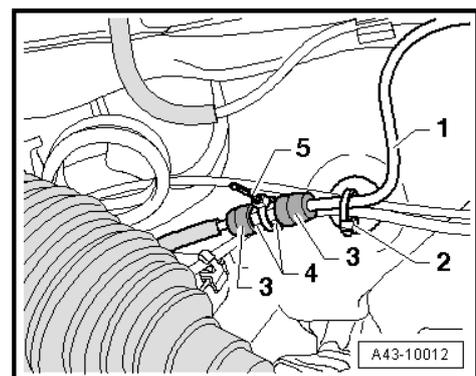
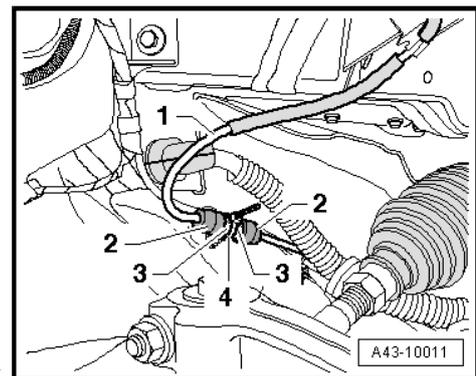
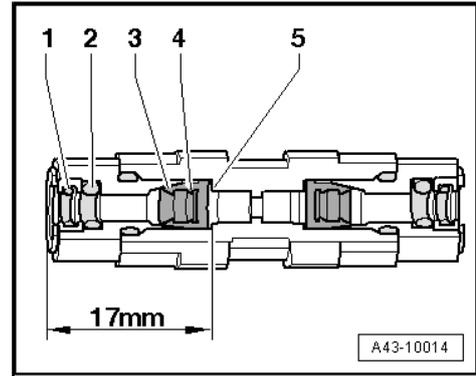
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the prior written consent of AUDI AG. AUDI AG does not accept any liability for errors or omissions. © Audi AG.

*The new (original equipment) part has to be used as a replacement here because it is fitted with an important sponge rubber insulation piece that is otherwise not available. The new part is also shaped with a very small radius in the vicinity of the air spring strut connection. This radius cannot be achieved with the air pipe from the repair kit.*

- Using a new cable tie, secure pipe connector -3- with retainer -4- as illustrated.

#### Cutting location for air spring strut (front right) in left wheel housing

- 1 - Air pipe
  - 2 - Cable tie with retainer
  - 3 - Sponge rubber insulation (length 10 - 15 mm)
  - 4 - Pipe connector
  - 5 - Cable tie, secures pipe connector to wiring harness
- Fit new air pipe -1- in retainer with new cable tie -2-.
  - Using cable tie -5-, secure pipe connector -4- to wiring harness as illustrated.

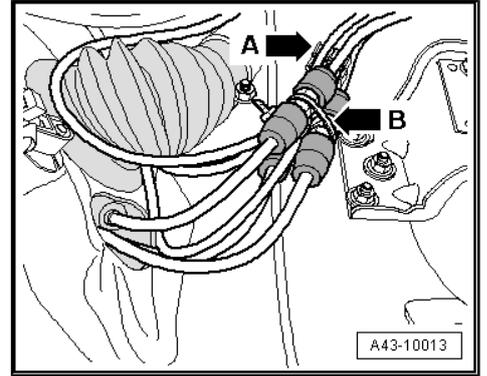


**Cutting locations in vicinity of solenoid valve block for air pipes leading to rear of vehicle**

 **Note**

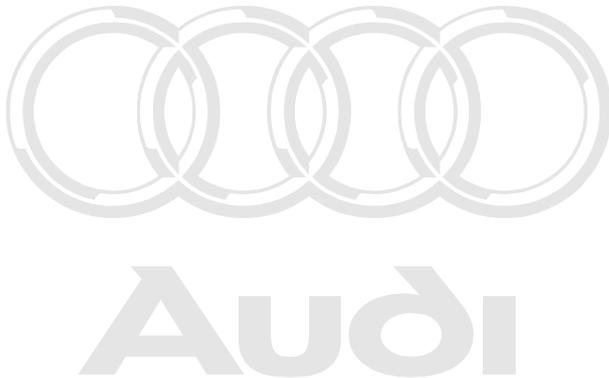
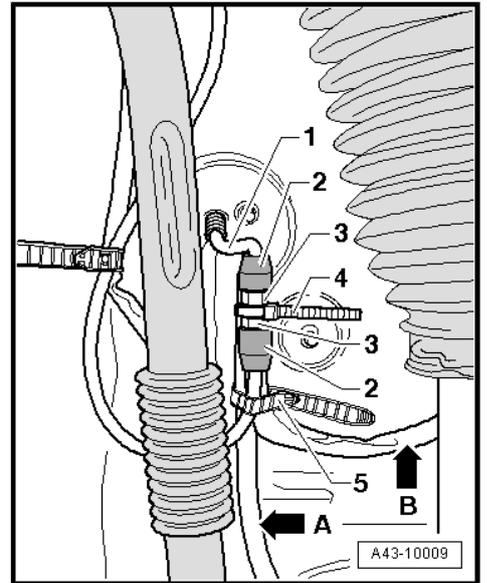
*The illustration shows all three pipe connectors for the air pipes routed through the interior.*

- Use cable tie -arrow B- as shown in illustration to secure one, two or three pipe connectors to each other and to the existing air pipes as required.
- Fit air pipes in pipe retainer -arrow A-.



**Cutting location for air spring strut (rear right)**

- 1 - Air pipe
  - 2 - Sponge rubber insulation (length 10 - 15 mm)
  - 3 - Pipe connector
  - 4 - Cable tie, secures pipe connector to wiring harness
  - 5 - Cable tie
- Using cable tie -4-, secure pipe connector -3- to wiring harness -arrow A- and -arrow B- as illustrated.



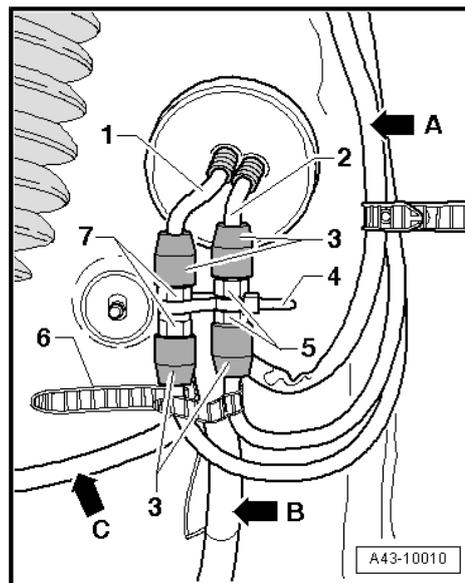
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### Cutting location for air spring strut (rear left) and accumulator

**i** Note

The illustration shows the two pipe connectors for the air pipes (rear left)

- 1 - Air pipe (purple) for accumulator: new pipe, shortened (same as original equipment)
- 2 - Air pipe (black): for air spring strut (rear left)
- 3 - Sponge rubber insulation (length 10 - 15 mm)
- 4 - Cable tie, secures pipe connector to wiring harness
- 5 - Pipe connector for air pipe (black)
- 6 - Cable tie
- 7 - Pipe connector for air pipe (purple)



**i** Note

The new (original equipment) part has to be used as a replacement for the purple air pipe because it is fitted with an important sponge rubber insulation piece.

- Using cable tie -4- as illustrated, secure one or two pipe connectors -5- and -7- as required to the main wiring harness (made up of harnesses -arrow A-, -arrow B- and -arrow C-).

### Tightening torques

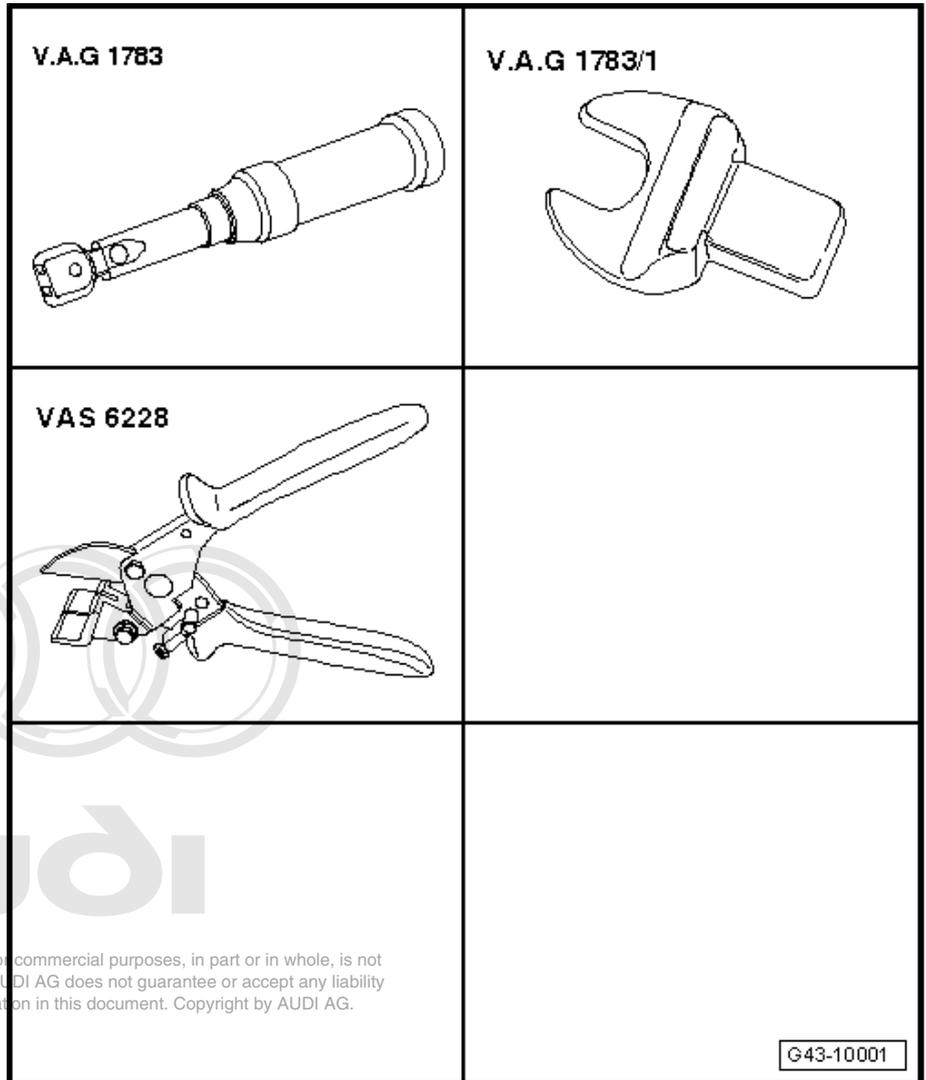
Component	
Connection piece in solenoid valve block	2 Nm
Connection piece in air supply unit	2 Nm
Connection piece in air spring strut	3 Nm
Connection piece in accumulator	5 Nm
Connection piece in pipe connector	5 Nm

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.

### 4.3 Renewing connection piece

#### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1783-
- ◆ Open end spanner insert (10 mm) -V.A.G 1783/1-
- ◆ Cutting pliers -VAS 6228-



In the event of leakage at the connection, the air pipe can be shortened by 10 mm (if sufficient length is available) and a new connection piece fitted.

#### Note

- ◆ *Clean the area around the cutting point before cutting the air pipe.*
  - ◆ *Any dirt entering the connections can cause malfunctions or failure of the system.*
- Clean area around connection piece.
  - Unscrew connection piece and detach air pipe.
  - Detach cutting ring from air pipe.



- Use cutting tool -VAS 6228- to cut through the air pipe at a right angle behind the impression made by the cutting ring.
- Then use waterproof pen to mark end of air pipe in vehicle.

Use 17 mm/22 mm marks to check whether air pipe has been properly inserted in connection piece.

- Always renew connection piece.

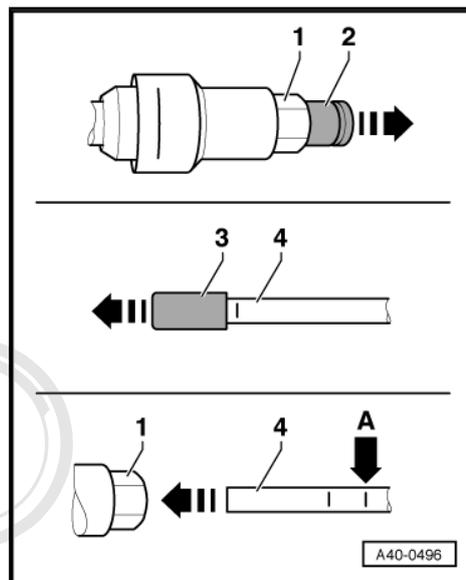
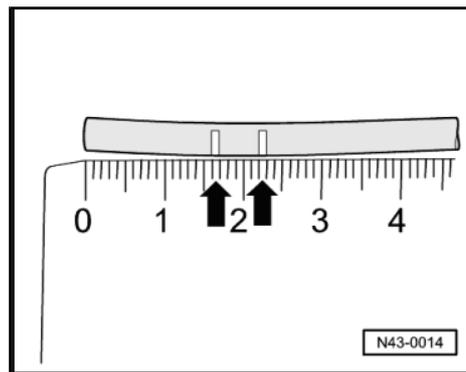
Important: Always keep to specified tightening torque.

- Screw in and tighten new connection piece by hand  
⇒ [page 212](#) .

Only remove transport protection caps -2- and -3- immediately prior to attachment of air pipe -4-.

- Install and secure air pipe in vehicle with appropriate clips and/or grommets. Renew cable ties that have been cut open as required.
- Detach transportation caps -2- and -3-.
- Exerting moderate pressure, push air pipe -4- all the way into connection piece -1-.

Air pipes have been properly fitted if only one of the two marks is visible -arrow A-.

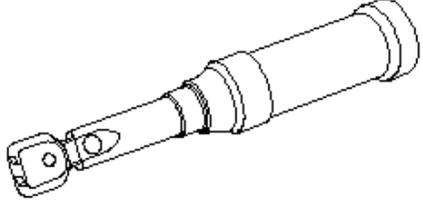
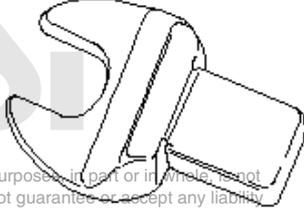


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

## 4.4 Removing and installing solenoid valve block

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1783-
- ◆ Open end spanner insert (10 mm) -V.A.G 1783/1-

<p>V.A.G 1331</p> 	<p>V.A.G 1783</p> 
<p>V.A.G 1783/1</p> 	
	<p>G43-10000</p>

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

#### Note

*Solenoid valve block is installed at A-pillar on left behind wheel housing trim.*

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Bleed system ⇒ [page 201](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove wheel.
- Secure brake disc with one wheel bolt.
- Remove wheel housing liner ⇒ Rep. gr. 66 .



- Unplug connector -1-.
- Unscrew and disconnect air pipes -arrows-.
- Protect air pipes from dirt.

There are two different types of solenoid valve block:

- ◆ With bolts -2- (3x)
- ◆ With Silentbloc rubber/metal mountings (3x) and nuts (3x)
- Unscrew bolts -2- or nuts and take out solenoid valve block with bracket.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

- Fit solenoid valve block.

There are two different types of solenoid valve block:

- ◆ With bolts -2- (3x), tightening torque 18 Nm
- ◆ With Silentbloc rubber/metal mountings (3x) and nuts (3x); tightening torque for Silentbloc mountings 5 Nm; tightening torque for nuts 5 Nm
- Install bolts -2- or nuts and tighten to specified torque.

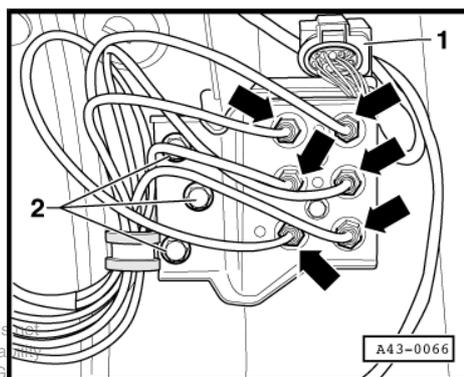
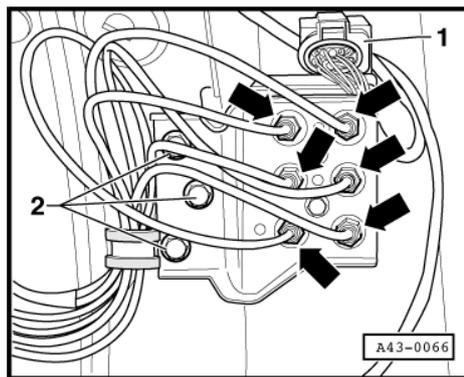


### Note

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

*Counterhold hexagon flats of Silentbloc mountings when tightening nuts.*

- Attach air pipes -arrows- to solenoid valve block and tighten connections to 2 Nm.
- Plug in connector -1-.
- Charge system using -VAS 5051 A- ⇒ [page 201](#) .
- Fit wheel housing liner ⇒ Rep. gr. 66 .
- Fit and secure wheel ⇒ Wheels and tyres; Rep. gr. 44 .



## 4.5 Exploded view of air supply unit (vehicles with 6-cylinder and 8-cylinder petrol engines)

### 1 - Air supply unit

- Removing and installing ⇒ [page 219](#)
- If air supply unit is renewed, adaptive suspension compressor relay -J403- must also be renewed. Fitting location: ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

### 2 - Spring-type clip

### 3 - Silencer

- Fitting location: in wheel housing (left-side)

### 4 - Air cleaner

- Fitting location: on A-pillar (left-side) above solenoid valve block

### 5 - Bracket

### 6 - Washer

### 7 - Bolt, 20 Nm

### 8 - Bolt, 4 Nm

### 9 - Connection piece, 2 Nm

Refer to note ⇒ [page 218](#)

- Only to be unscrewed with vehicle raised and no load on air spring strut (otherwise danger of injury due to vehicle dropping)

- Renew air pipe in the event of leakage ⇒ [page 208](#)
- Clean pipe connection before loosening
- Air will escape when this component is unscrewed
- Protect pipe connection from dirt

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

- Between solenoid valve block and air supply unit
- Renew air pipe in the event of leakage ⇒ [page 208](#)

### 11 - Connecting piece for intake hose

### 12 - Rubber bush

### 13 - Spring

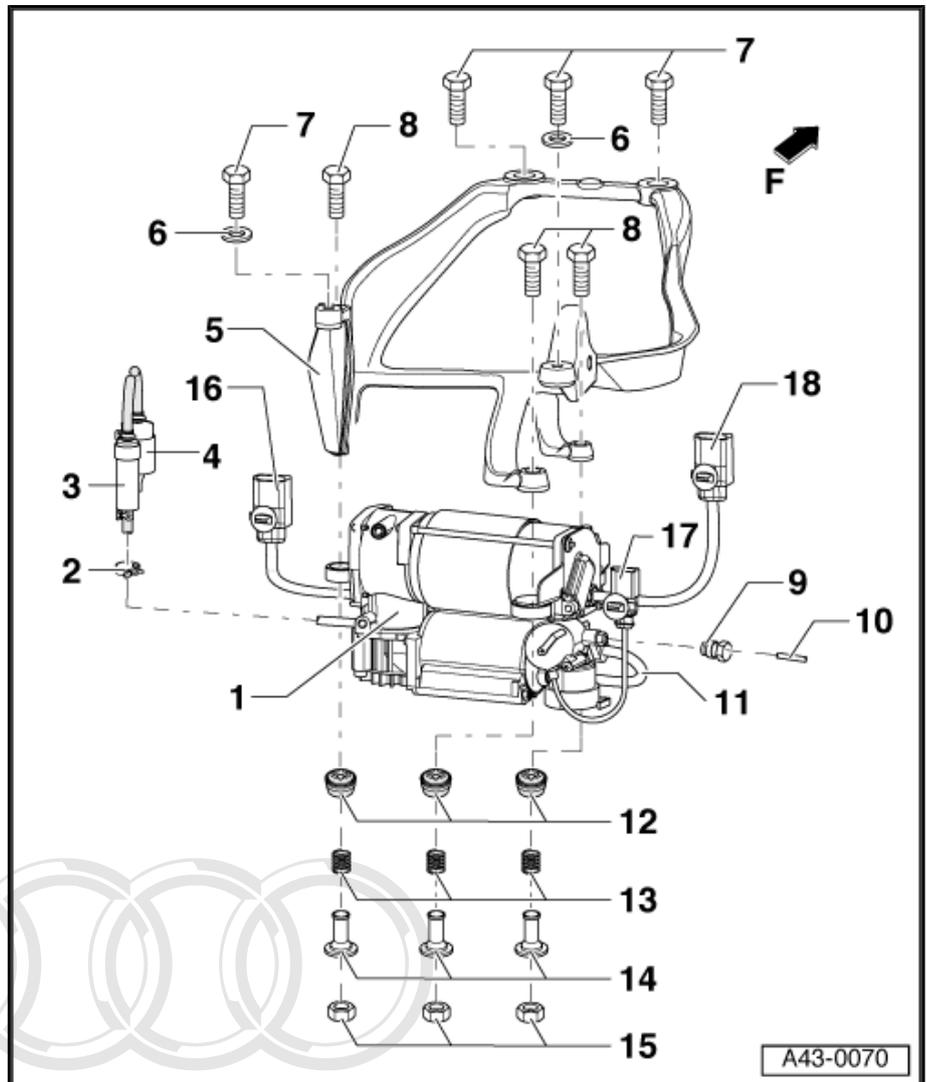
### 14 - Sleeve

### 15 - Self-locking nut, 4 Nm

- Always renew if removed

### 16 - Connector

- For compressor temperature sender for adaptive suspension -G290-



A43-0070



- Compressor temperature sender for adaptive suspension -G290- is installed in air supply unit and cannot be renewed separately

#### 17 - Connector

- For drain valve
- Drain valve is installed in air supply unit and cannot be renewed separately

#### 18 - Connector

- To motor connection

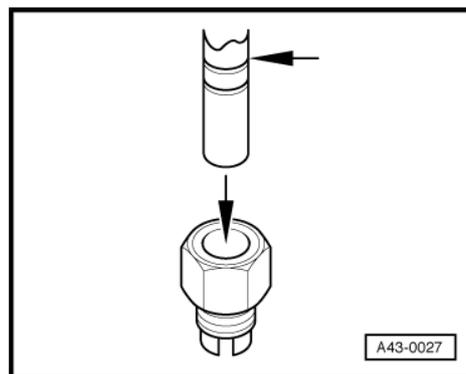
#### Plug-in system

- Air pipes have been properly connected if only one of the two marks -arrow- is visible.
- ◆ Air pipes can be disconnected by unscrewing connection piece.
- ◆ Route air pipes before removing transport protection caps (immediately prior to making connection).



#### Note

- ◆ *Connection piece can be renewed in the event of leakage ⇒ [page 213](#).*
- ◆ *Renewing air pipe ⇒ [page 208](#)*

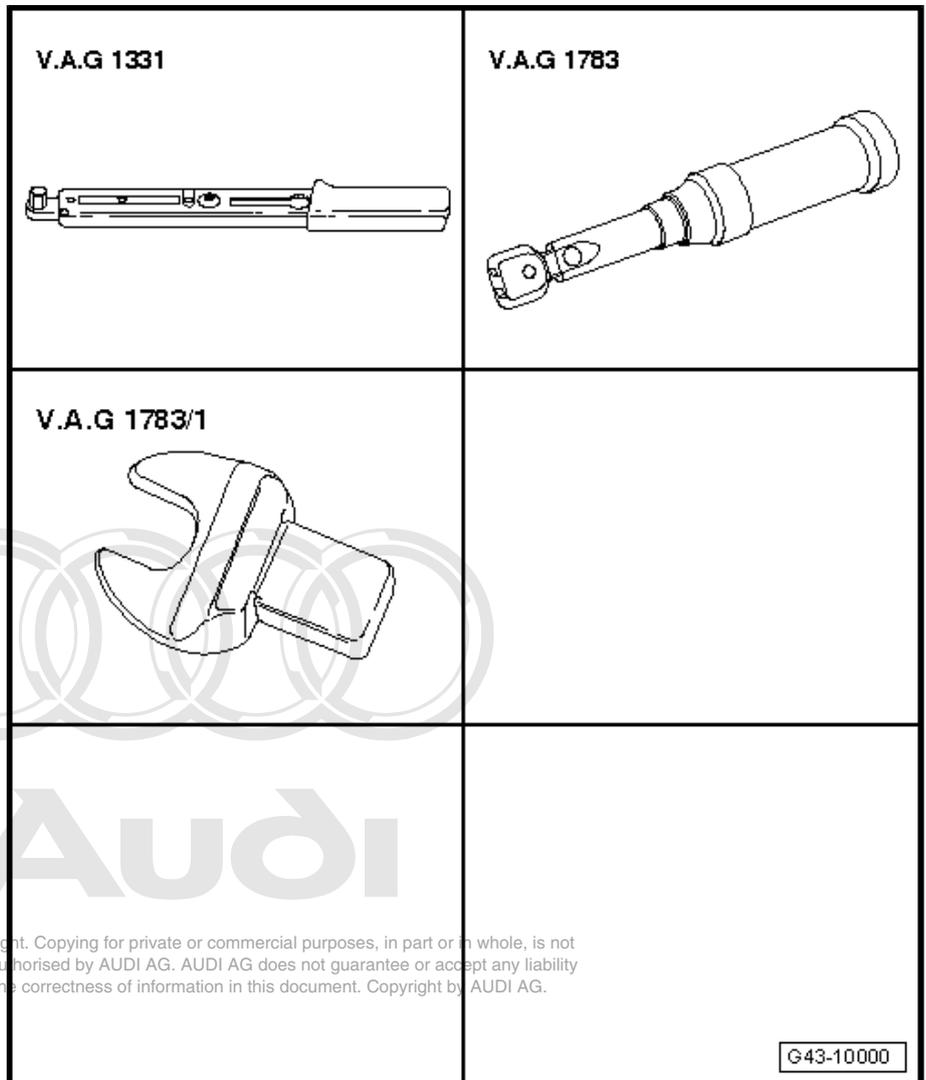


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

## 4.6 Removing and installing air supply unit (vehicles with 6-cylinder and 8-cylinder petrol engines)

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1783-
- ◆ Open end spanner insert (10 mm) -V.A.G 1783/1-



### Removing

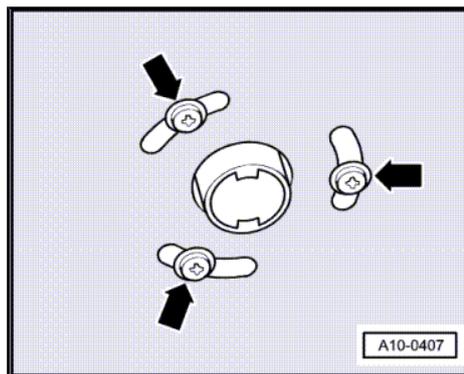
#### Note

*The air supply unit is installed on the left side behind the front bumper.*

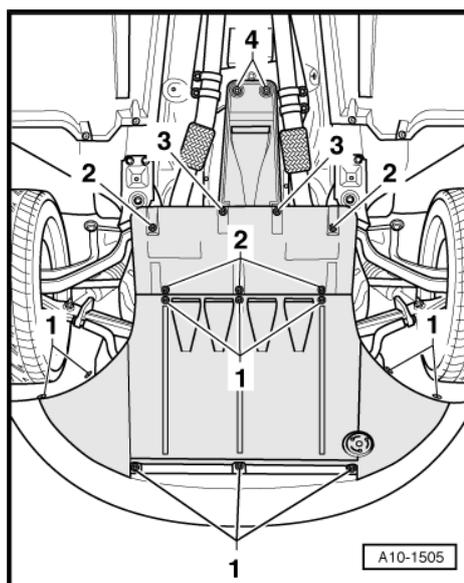
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Bleed system ⇒ [page 201](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove front left wheel.
- Secure brake disc with one wheel bolt.



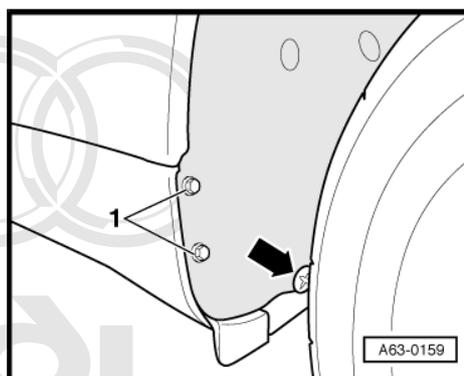
- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.



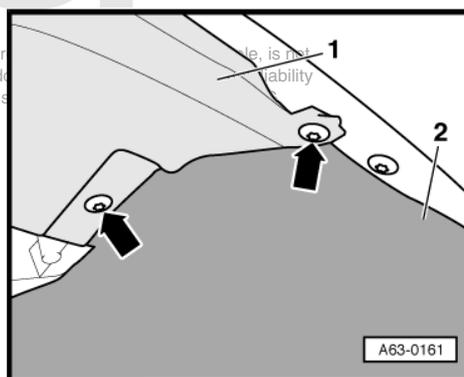
- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.



- Unscrew bolts -1- from wheel housing liner (front section).



- Unscrew two bolts -arrows- from wheel housing liner (front section).



Wheel housing liner (rear section) -2- does not need to be removed.

Protected by copyright. Copying for private or commercial use is not permitted unless authorised by AUDI AG. AUDI AG does not accept any liability for information in this document.

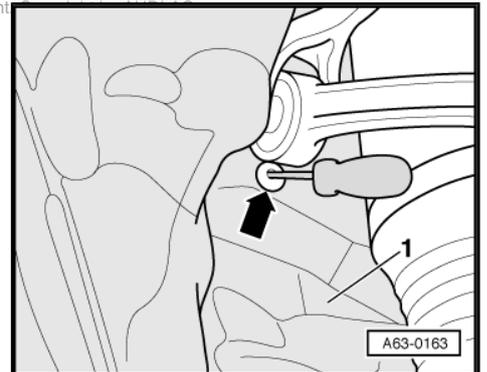
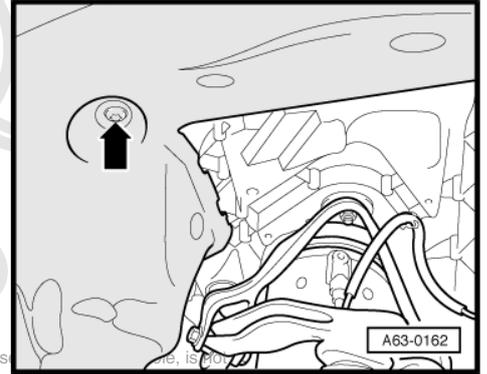
- Unscrew top bolt -arrow- from wheel housing liner (front section).

 Note

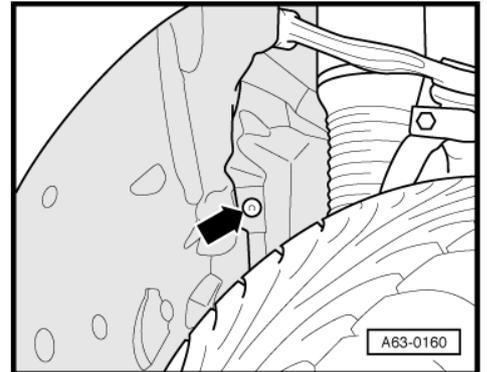
- ◆ Press in clamping pins on wheel housing liners only approx. 5 mm into expanding clips, and not all the way through.
- ◆ This releases the expanding clip so it can be pulled out.
- ◆ On installation, the clamping pin is pushed back and the expanding clip can be reused.

Protected by copyright. Copying for private or commercial purposes is prohibited without the written permission of Audi AG. Audi AG does not guarantee or accept any liability with respect to the correctness of information in this document.

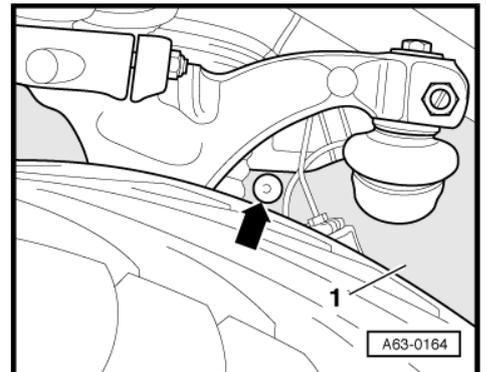
- Using a screwdriver, press clamping pins of expanding clips -1- on wheel housing liner (front section) approx. 5 mm deep into expanding clips.
- Pull out expanding clip.



- Remove expanding clip -arrow- in upper section of wheel housing liner (front) in the same way.

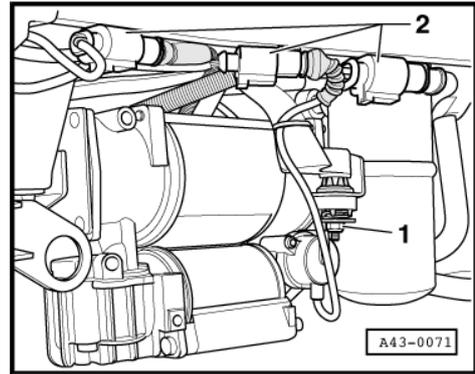


- Remove expanding clip -arrow- in rear section of wheel housing liner (front) -1- in the same way.





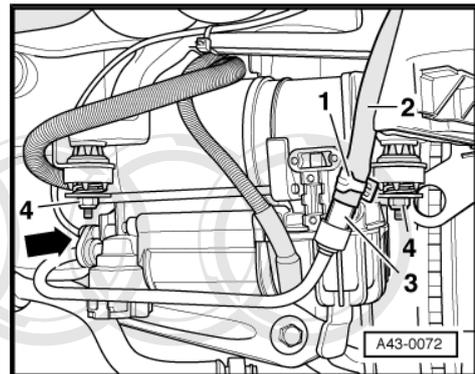
- Remove nut -1-.
- Unplug connectors -2-.



- Unfasten clip -1- and detach intake hose -2- from connecting piece -3-.
- Unscrew air pipe from air supply unit -arrow-.
- Unscrew nuts -4- and take out air supply unit.

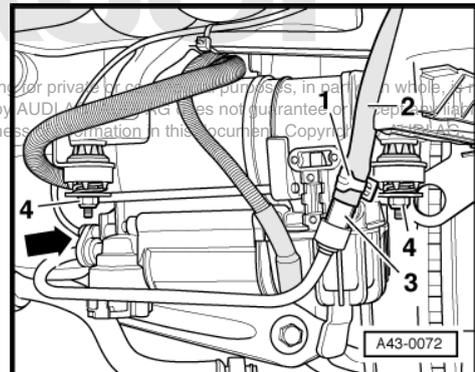
**Note**

*Shown with bumper removed for ease of illustration.*

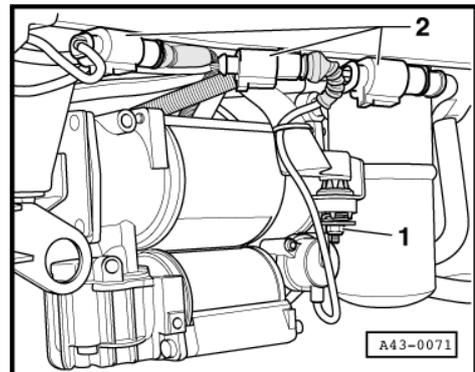
**Installing**

Installation is carried out in the reverse sequence. Note the following points:

- Screw on nuts -4- for air supply unit ⇒ [Item 15 \(page 217\)](#) .
- Screw on air pipe -arrow- at air supply unit ⇒ [Item 9 \(page 217\)](#) .
- Fasten clip -1- and attach intake hose -2- to connecting piece -3-.



- Install nut -1- ⇒ [Item 15 \(page 217\)](#) .
- Plug in connectors -2-.
- Install front noise insulation ⇒ Rep. gr. 50 .
- Fit wheel housing liner ⇒ Rep. gr. 66 .
- Fit and secure wheel ⇒ Wheels and tyres; Rep. gr. 44 .
- Charge system ⇒ [page 201](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .



If air supply unit has been renewed, adaptive suspension compressor relay -J403- must also be renewed. Fitting location:  
⇒ Current flow diagrams, Electrical fault finding and Fitting locations

## 4.7 Exploded view of air supply unit (vehicles with 6-cylinder and 8-cylinder diesel engines, 10-cylinder and 12-cylinder petrol engines)

### 1 - Air supply unit

- Can only be replaced as complete unit
- If air supply unit is renewed, adaptive suspension compressor relay -J403- must also be renewed. Fitting location: ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Removing and installing ⇒ [page 224](#)

### 2 - Air intake hose

- From silencer in wheel housing (left-side) to air supply unit

### 3 - Spring-type clip

- Use spring-type clip pliers -VAS 5024 A- when removing and installing

### 4 - Bolt, 4 Nm

### 5 - Washer

### 6 - Rubber bush

- Renew

### 7 - Spring

- Renew

### 8 - Sleeve

### 9 - Bracket

- Remove and install together with air supply unit

### 10 - Washer

### 11 - Bolt, 20 Nm

### 12 - Retaining plate

- For the three plug connectors

### 13 - Bolt, 20 Nm

### 14 - Clip

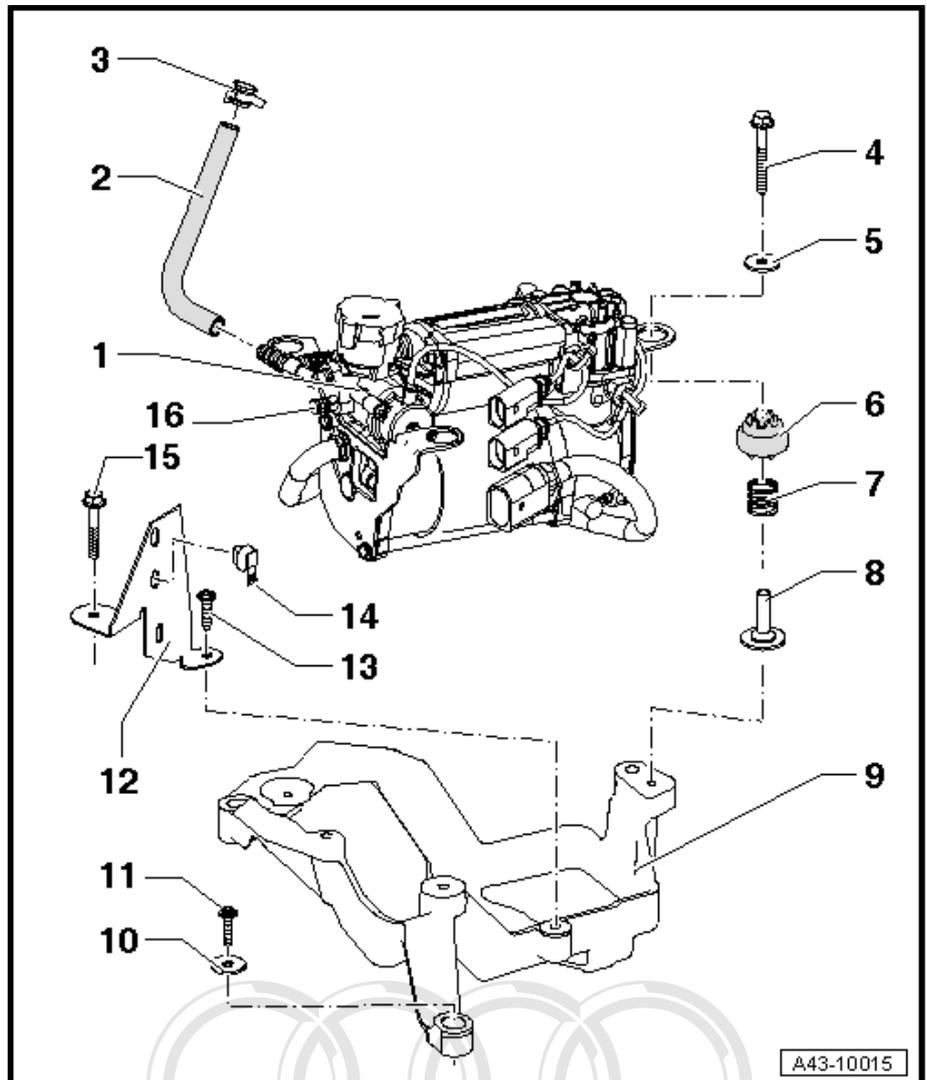
- Secures plug connector to retaining plate

### 15 - Bolt, 20 Nm

### 16 - Connection piece, 2 Nm

Refer to note ⇒ [page 224](#)

- Only to be unscrewed with vehicle raised and no load on air spring strut (otherwise danger of injury due to vehicle dropping)
- Renew air pipe in the event of leakage ⇒ [page 208](#)
- Clean pipe connection before loosening



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



- Air will escape when this component is unscrewed
- Protect pipe connection from dirt

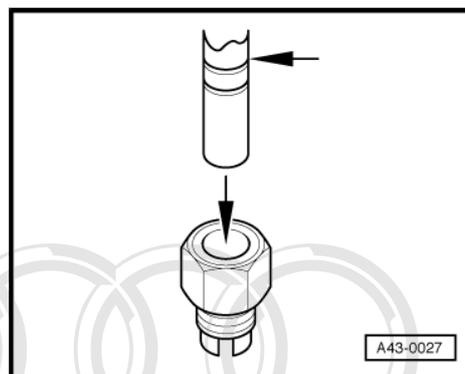
### Plug-in system

- Air pipes have been properly connected if only one of the two marks -arrow- is visible.
- ◆ Air pipes can be disconnected by unscrewing connection piece.
- ◆ Route air pipes before removing transport protection caps (immediately prior to making connection).



### Note

- ◆ *Connection piece can be renewed in the event of leakage*  
⇒ [page 213](#).
- ◆ *Renewing air pipe* ⇒ [page 208](#)

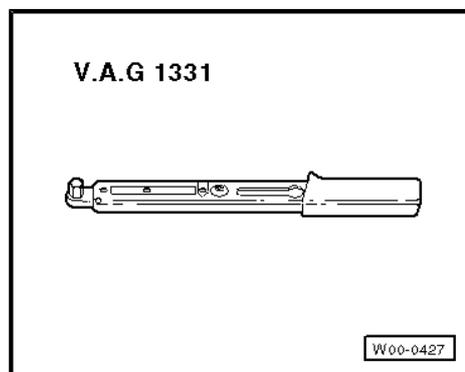


## 4.8 Removing and installing air supply unit (vehicles with 6-cylinder and 8-cylinder diesel engines, 10-cylinder and 12-cylinder petrol engines)

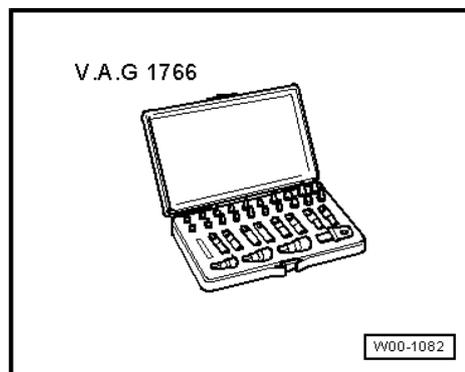
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### Special tools and workshop equipment required

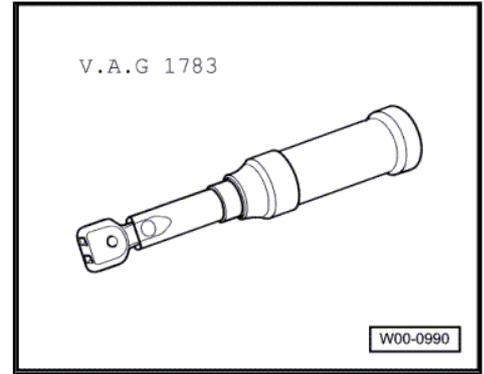
- ◆ Torque wrench -V.A.G 1331-



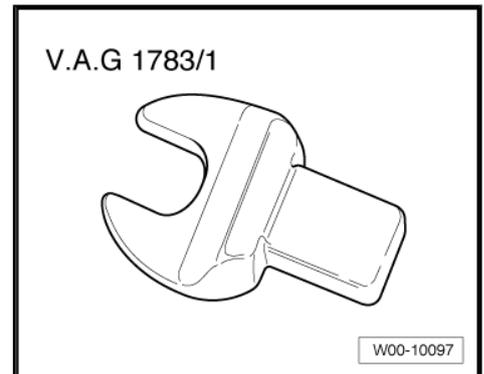
- ◆ Torx screwdriver bit T45 -V.A.G 1766/1-



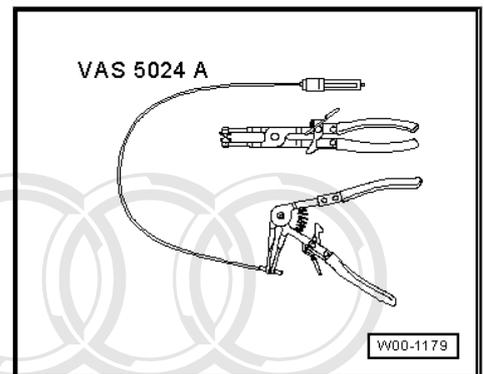
- ◆ Torque wrench -V.A.G 1783-



- ◆ Open end spanner insert (10 mm) -V.A.G 1783/1-



- ◆ Spring-type clip pliers -VAS 5024 A-



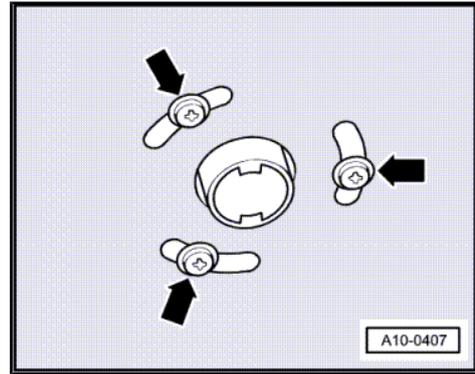
## Removing

### Note

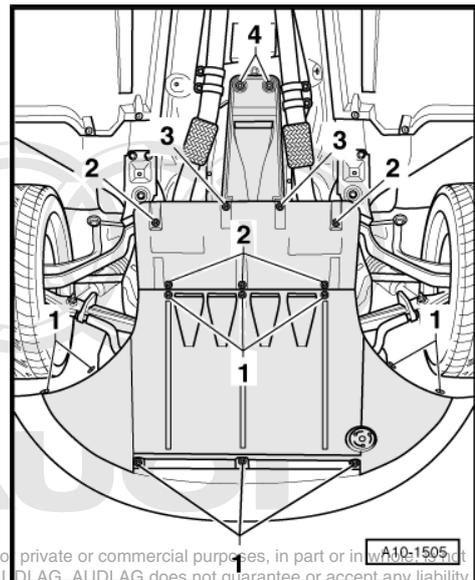
- ◆ *The air supply unit is installed on the left side behind the front bumper.*
- ◆ *All cable ties unfastened or cut open when removing the air supply unit must be re-attached in same position on installation.*
- ◆ *Clean area around air connection before disconnecting.*
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Bleed system ⇒ [page 201](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove front left wheel.
- Secure brake disc with one wheel bolt.



- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.

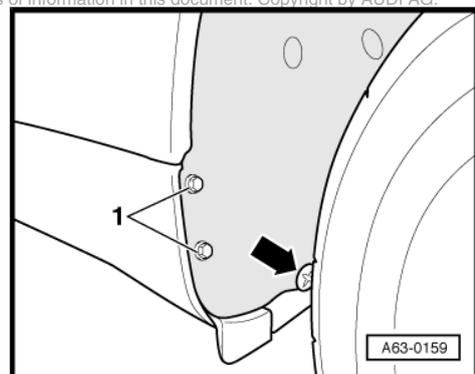


- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.



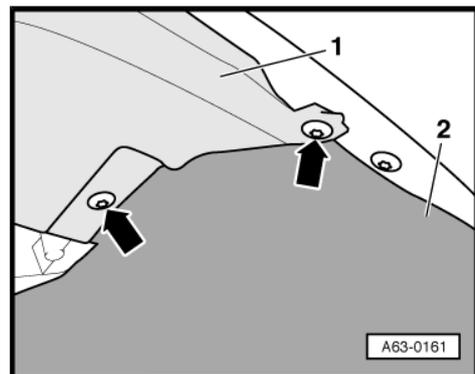
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Unscrew bolts -1- from wheel housing liner (front section).



- Unscrew two bolts -arrows- from wheel housing liner (front section).

Wheel housing liner (rear section) -2- does not need to be removed.



- Unscrew top bolt -arrow- from wheel housing liner (front section).

 **Note**

- ◆ *Press in clamping pins on wheel housing liners only approx. 5 mm into expanding clips, and not all the way through.*
- ◆ *This releases the expanding clip so it can be pulled out.*
- ◆ *On installation, the clamping pin is pushed back and the expanding clip can be reused.*

- Using a screwdriver, press clamping pins of expanding clips -1- on wheel housing liner (front section) approx. 5 mm deep into expanding clips.
- Pull out expanding clip.

- Remove expanding clip -arrow- in upper section of wheel housing liner (front) in the same way.



- Remove expanding clip -arrow- in rear section of wheel housing liner (front) -1- in the same way.

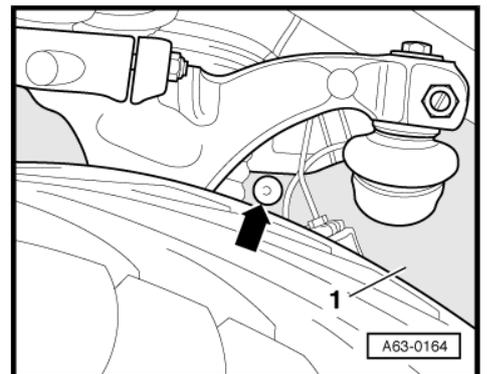
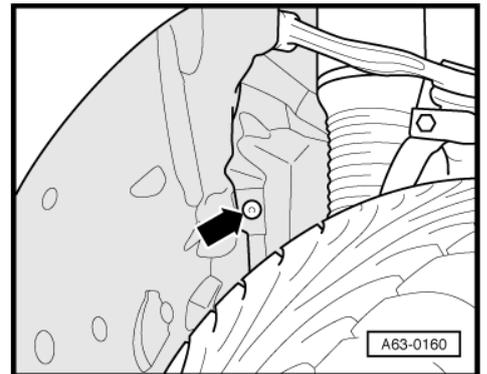
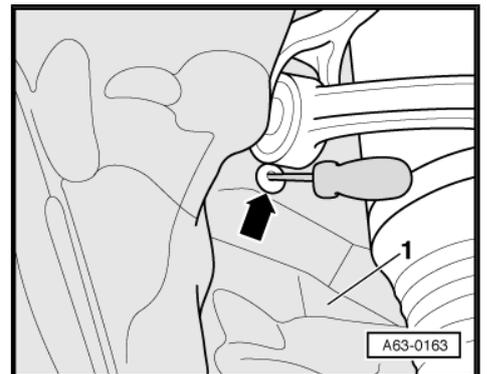
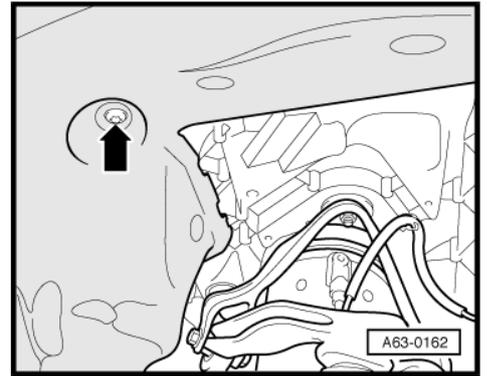
Observe safety instructions for battery disconnection ⇒ Rep. gr. 27 .

- Disconnect battery earth strap with ignition switched off ⇒ Rep. gr. 27 .

- **Remove front bumper cover ⇒ Rep. gr. 63**

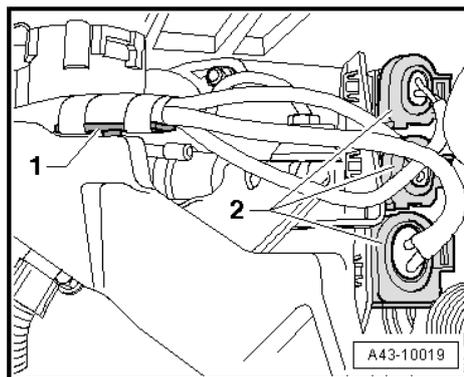
- Move lock carrier to service position ⇒ Rep. gr. 50 .

- Remove headlight (left-side) ⇒ Rep. gr. 94 .

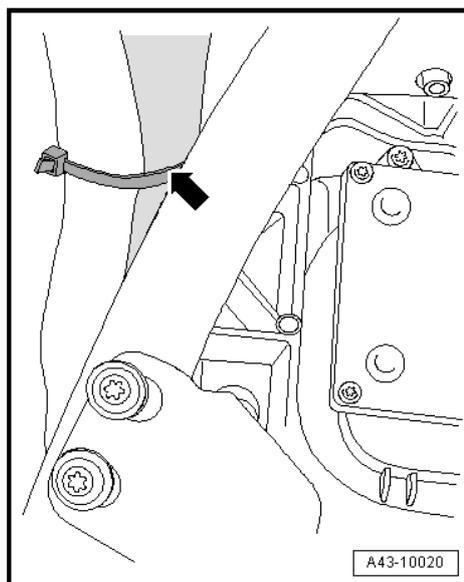




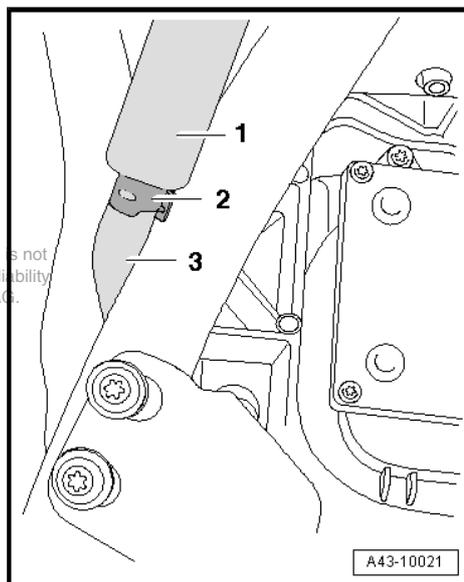
- Pull bracket for wiring harness -1- out of bracket for air supply unit.
- Unplug connectors -2-.



- Carefully cut through cable tie -arrow- on air intake hose.



- Release spring clip -2- on air intake hose -3- using spring-type clip pliers -VAS 5024 A- .
- Disconnect air intake hose -3- from air hose/silencer -1-.
- Clean area around air connection before disconnecting.

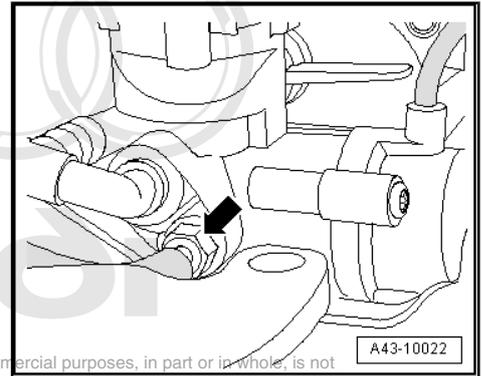


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Unscrew connection piece -arrow- on air supply unit . This will allow air to escape.

 **Note**

*The air supply unit is removed together with the bracket that secures it.*



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 bolts -1- ... -3- to remove air supply unit with bracket.

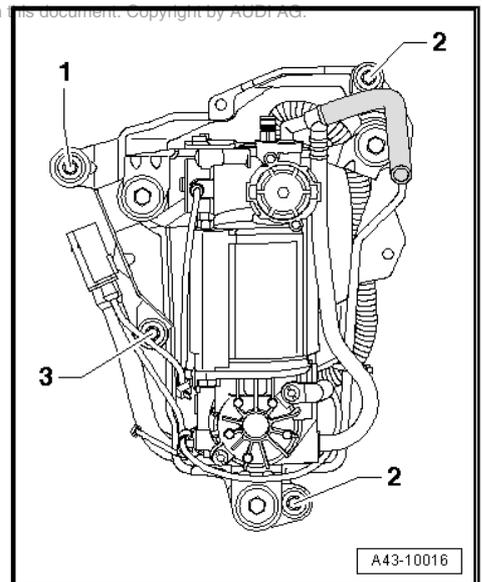
1 - Bolt with washer

2 - Bolt without washer

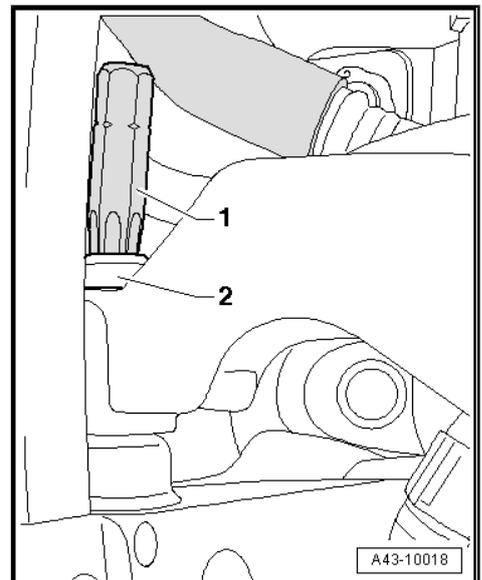
- To remove and install, use Torx screwdriver bit T45 -V.A.G 1766/1- and open-end spanner.

3 - Bolt without washer

- For retaining plate for electrical connectors and bracket for reservoir

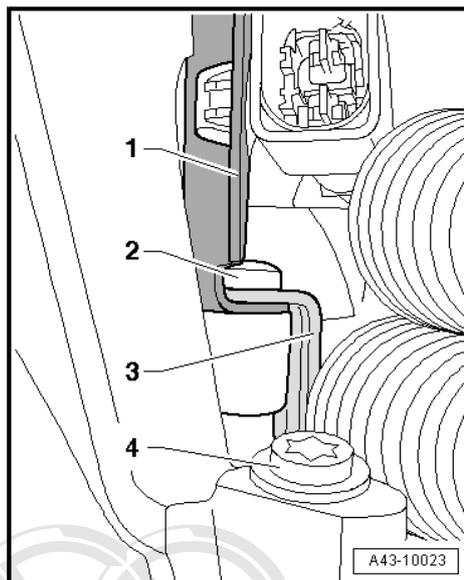


- Remove bolt -2- on wing panel using Torx screwdriver bit T45 -V.A.G 1766/1- -1-.

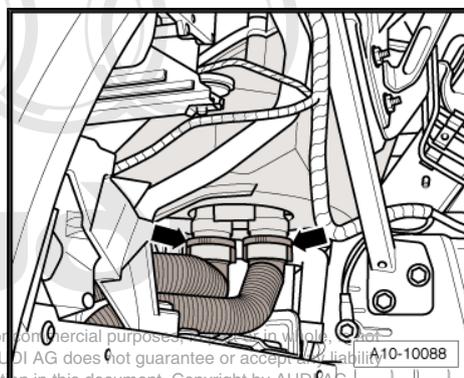




- Remove bolts -2- and -4-.



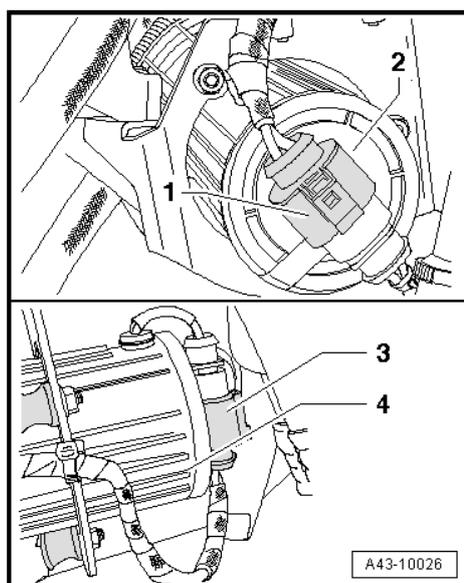
- Disconnect both air intake hoses -arrows- at bottom of air cleaner housing (bottom section, left-side). Press release tabs together to disconnect.
- Disconnect both air intake hoses at bottom of secondary air pump -V101- and secondary air pump 2 -V189-. Press release tabs together to disconnect.
- Remove the two air intake hoses.



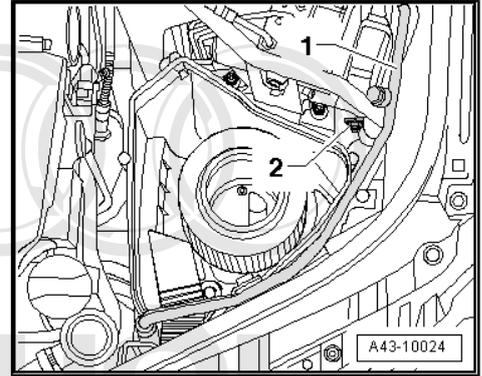
Note

- ◆ *Mark electrical connectors of secondary air pump -V101- and secondary air pump 2 -V189- accordingly before disconnecting.*
- ◆ *The connector housings are identical and can otherwise be interchanged by mistake when re-installing.*

- Mark electrical connector -1-, then release and disconnect from secondary air pump 2 -V189- -2-.
- Mark electrical connector -3-, then release and disconnect from secondary air pump -V101- -4-.

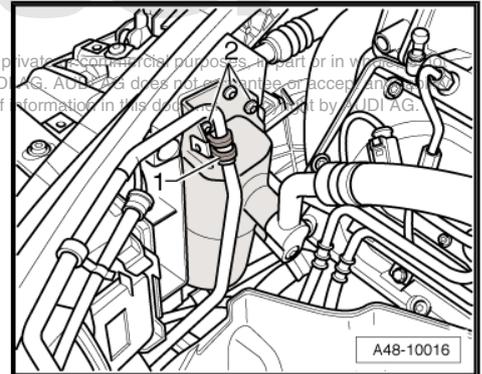


- Unscrew nut -2- and detach air conditioner line -1- from stud.

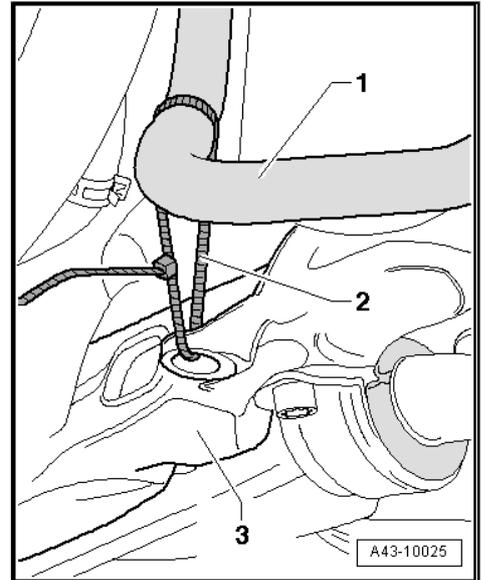


- If fitted, detach clip -1- at A/C reservoir.
- Remove bolts -2- from reservoir.

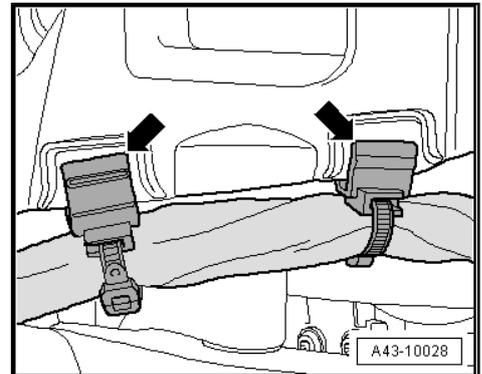
Protected by copyright. Copying for private or research purposes is permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. © AUDI AG.



- Detach line -1- from reservoir to the right and secure to sub-frame -3- with cable tie -2-.
- If fitted, detach cable tie securing wiring harness to bracket for air supply unit.

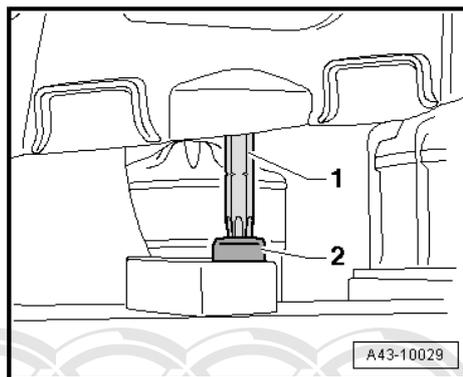


- Detach retainers -arrows- on lock carrier.

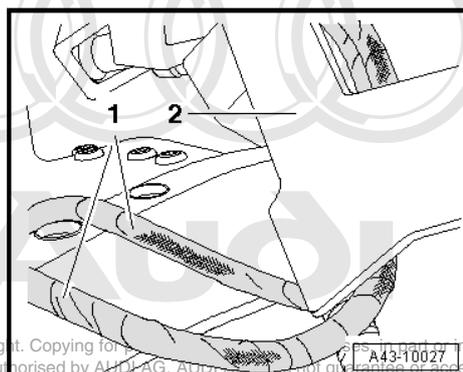




- Remove front bolt -2- using Torx screwdriver bit T45 -V.A.G 1766/1- -1-.
- Pull air supply unit with bracket slightly towards the rear and into wheel housing.

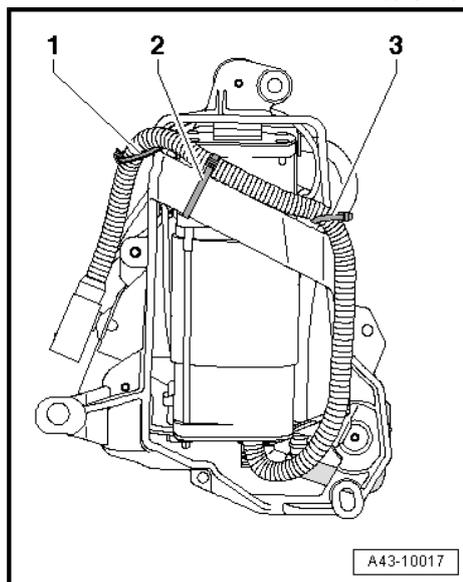


- Detach two electrical wires -1- for secondary air pump -V101- and secondary air pump 2 -V189- from bracket for air supply unit -2-.
- Take out air supply unit with bracket.



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

- If you need to separate air supply unit from bracket, carefully cut through cable ties -1- ... -3-.

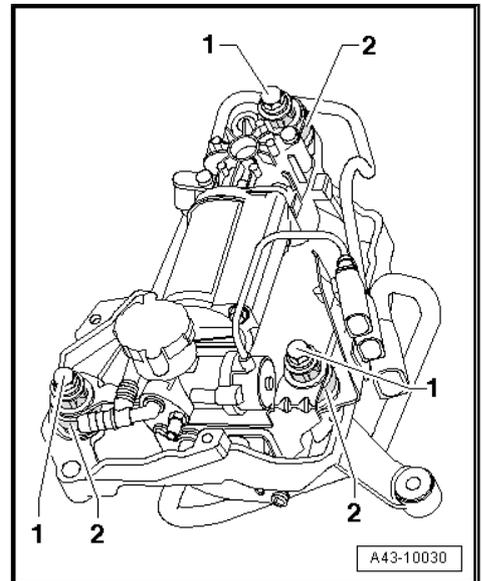
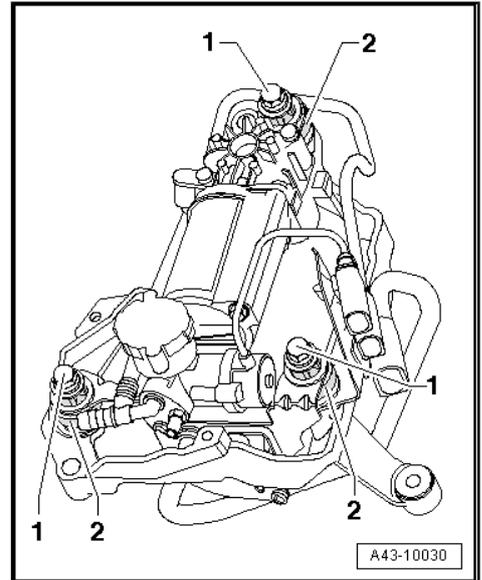


- Unscrew bolts -1- and take off air supply unit.
- Pull rubber bush -2- out of air supply unit.

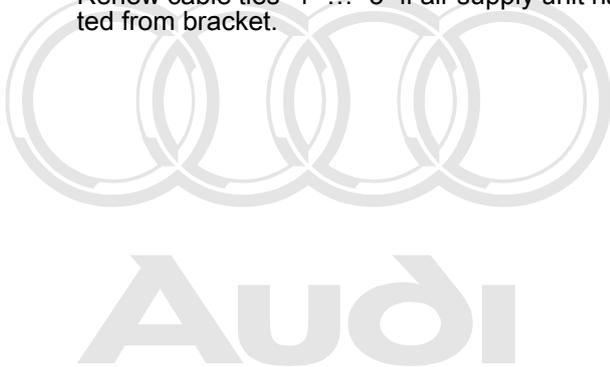
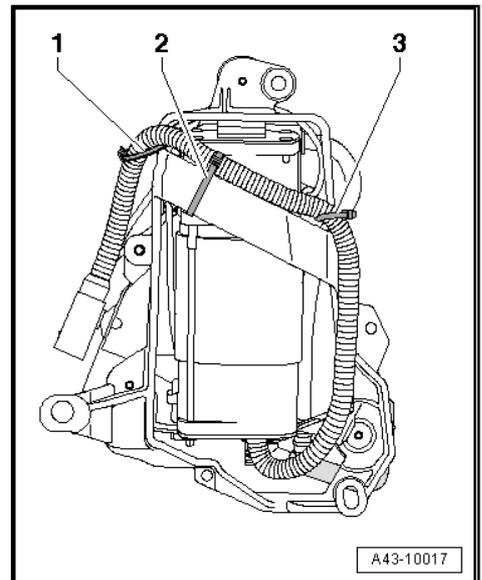
**Installing**

Installation is carried out in the reverse sequence. Note the following points:

- Fit new rubber bush -2- in air supply unit.
- Tighten bolts -1- for air supply unit => [Item 4 \(page 223\)](#) .



- Renew cable ties -1- ... -3- if air supply unit has been separated from bracket.



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

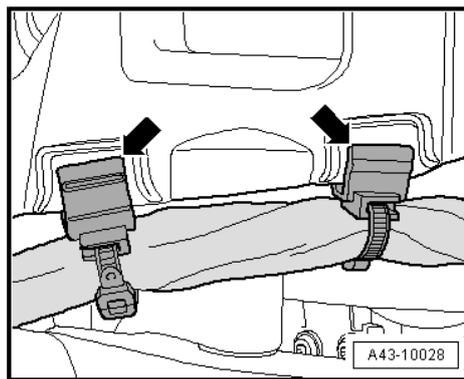


- Install retainers -arrows- on lock carrier.

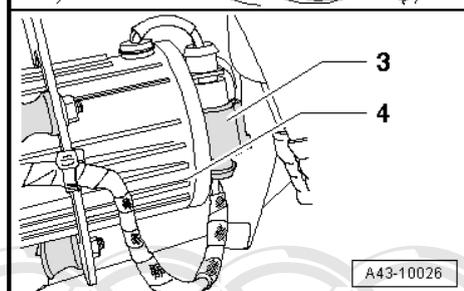
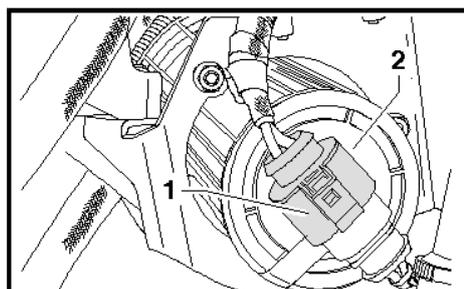


**Note**

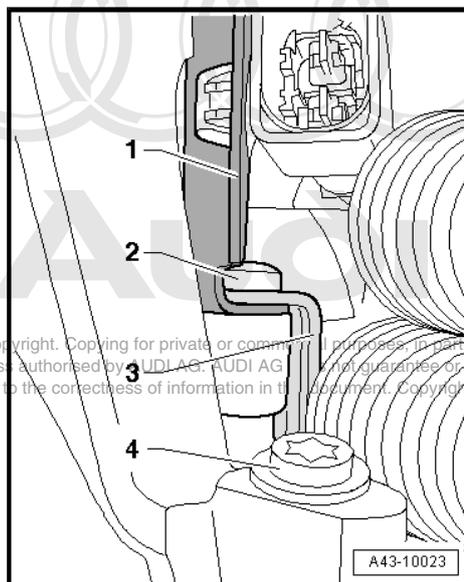
- ◆ Do not confuse connectors for secondary air pump -V101- and secondary air pump 2 -V189- .
- ◆ The connector housings are identical and can otherwise be interchanged by mistake when re-installing.



- Attach connector -1- for secondary air pump 2 -V189- -2- and connector -3- for secondary air pump -V101- -4-.



- Install bracket for air supply unit -1- and bracket for reservoir -3- as shown in illustration.
- Install and hand-tighten bolts -2- and -4-.



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.

- Tighten bolts -1- ... -3- for air supply unit  
⇒ [Item 15 \(page 223\)](#) .

1 - Bolt with washer

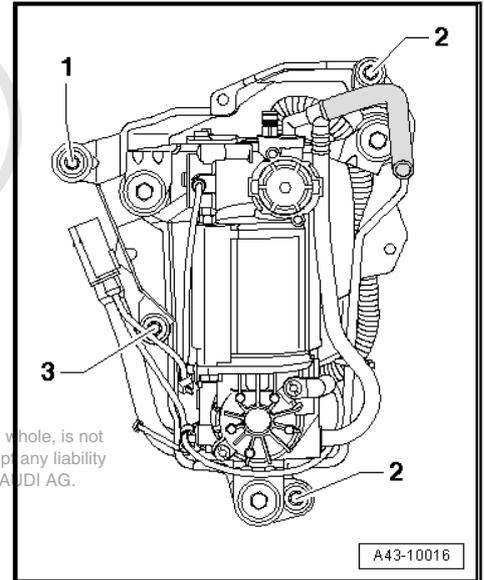
2 - Bolt without washer

- To remove and install, use Torx screwdriver bit T45 -V.A.G 1766/1- and open-end spanner.

3 - Bolt without washer

- For retaining plate for electrical connectors and bracket for reservoir

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



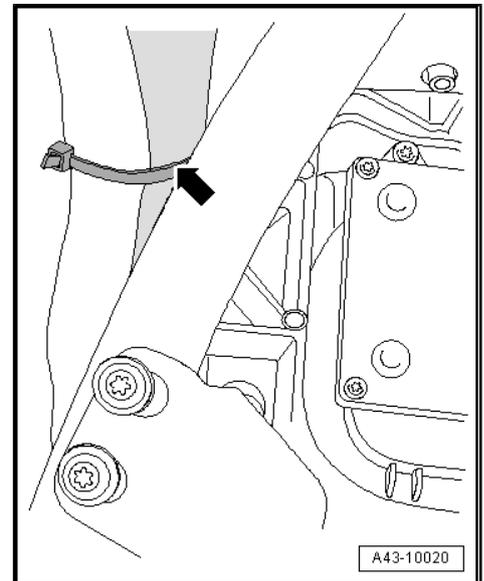
- Renew cable tie -arrow- on air intake hose.
- Attach air conditioner pipe and air conditioner reservoir ⇒ Rep. gr. 87 .
- Install wheel housing liner (front left) ⇒ Rep. gr. 66 .
- Install headlight (front left) ⇒ Rep. gr. 94 .
- Attach lock carrier ⇒ Rep. gr. 50 .
- Install front bumper cover ⇒ Rep. gr. 63 .

Observe safety instructions for connecting battery ⇒ Rep. gr. 27 .

- Connect battery earth strap with ignition switched off ⇒ Rep. gr. 27 .
- Fit and secure wheel ⇒ Wheels and tyres; Rep. gr. 44 .
- Charge system ⇒ [page 201](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .

If air supply unit has been renewed, adaptive suspension compressor relay -J403- must also be renewed. Fitting location:  
⇒ Current flow diagrams, Electrical fault finding and Fitting locations

- Perform adjustment of ACC ⇒ [page 260](#) .



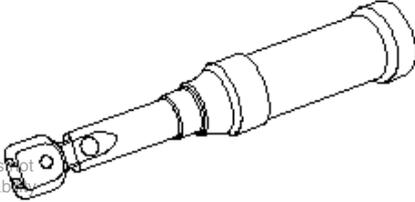
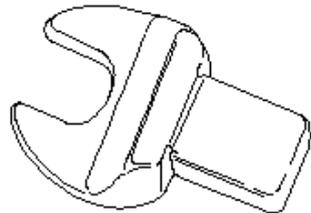


## 4.9 Removing and installing accumulator

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1783-
- ◆ Open end spanner insert (10 mm) -V.A.G 1783/1-

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

<p>V.A.G 1331</p> 	<p>V.A.G 1783</p> 
<p>V.A.G 1783/1</p> 	
	<p style="text-align: right;">G43-10000</p>

### Removing



#### Note

*The accumulator is located above the left rear silencer.*

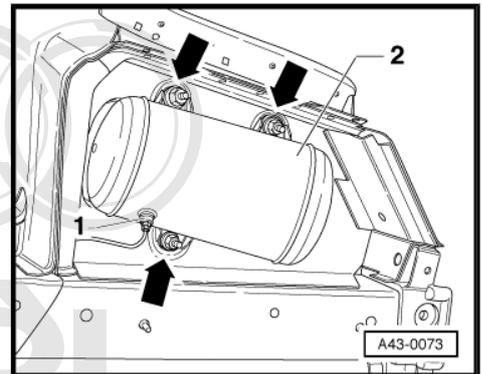
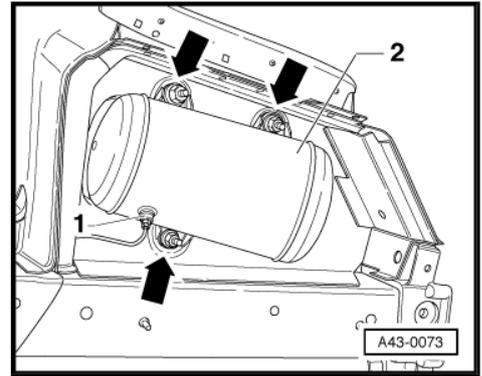
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Bleed system ⇒ [page 201](#) .
- Remove rear section of exhaust system ⇒ Rep. gr. 26 .
- Detach heat shield from underside of vehicle on left beneath accumulator.

- Slowly loosen air pipe -1- at accumulator -2- to dissipate air pressure. Unscrew air pipe -1- when air pressure has been dissipated.
- Unscrew nuts -arrows- and take out accumulator -2-.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

- Fit accumulator -2- and tighten nuts -arrows- to 9 Nm.
- Tighten air pipe connection at accumulator -1- to 5 Nm.
- Switch on ignition.
- Deactivate „jacking mode“ ⇒ [page 188](#) or ⇒ Owner's manual .
- Charge system using -VAS 5051 A- ⇒ [page 201](#) .
- Attach heat shield to underside of vehicle on left beneath accumulator.
- Install and perform stress-free alignment of exhaust system ⇒ Rep. gr. 26 .



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



## 44 – Wheels, tyres, vehicle geometry

### 1 General information on wheels and tyres

This information is contained in the Workshop Manual on Wheels and tyres ⇒ Wheels and tyres; Rep. gr. 44 .



**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.

## 2 Servicing tyre pressure monitoring system

⇒ „2.1 General notes“, page 239 .

⇒ „2.2 Overview of tyre pressure monitoring system components“, page 240 .

⇒ „2.3 Removing and installing tyre pressure monitor control unit J502“, page 240 .

⇒ „2.4 Removing and installing front reception aerials“, page 241 .

⇒ „2.5 Removing and installing rear reception aerials“, page 242 .

### 2.1 General notes

Please observe the instructions in the ⇒ Owner's Manual .

For safety reasons, damaged wheel electronics or valves must be renewed.

Do not use steam cleaners or a powerful jet of compressed air for cleaning wheel electronics.

The wheel electronics must be renewed if tyre sealant has been applied, as liquid deposits on the pressure sensor could lead to incorrect displays.

The tyre pressure monitoring system monitors the inflation pressure of the tyres on all four road wheels (and the spare wheel) while the vehicle is moving.

**A fault may be detected and registered in the fault memory:**

When transporting wheels fitted with wheel electronics

If fewer than three wheels are fitted with wheel electronics.



*Adaption of wheel electronics is implemented automatically by control unit on changing wheels fitted with wheel electronics (summer/winter tyres).*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Overview of tyre pressure monitoring system components

1 - Tyre pressure monitor aeri-als, front left -R59- and front right -R60-

- ❑ Removing and installing ⇒ [page 241](#)

2 - Tyre pressure monitor aeri-als, rear left -R61- and rear right -R62-

- ❑ Removing and installing ⇒ [page 242](#)

3 - Tyre pressure sensor, front left -G222- , front right -G223- , rear left -G224- and rear right -G225-

- ❑ Spare wheel tyre pressure sensor -G226-
- ❑ Removing and installing ⇒ [Wheels and tyres; Rep. gr. 44](#)

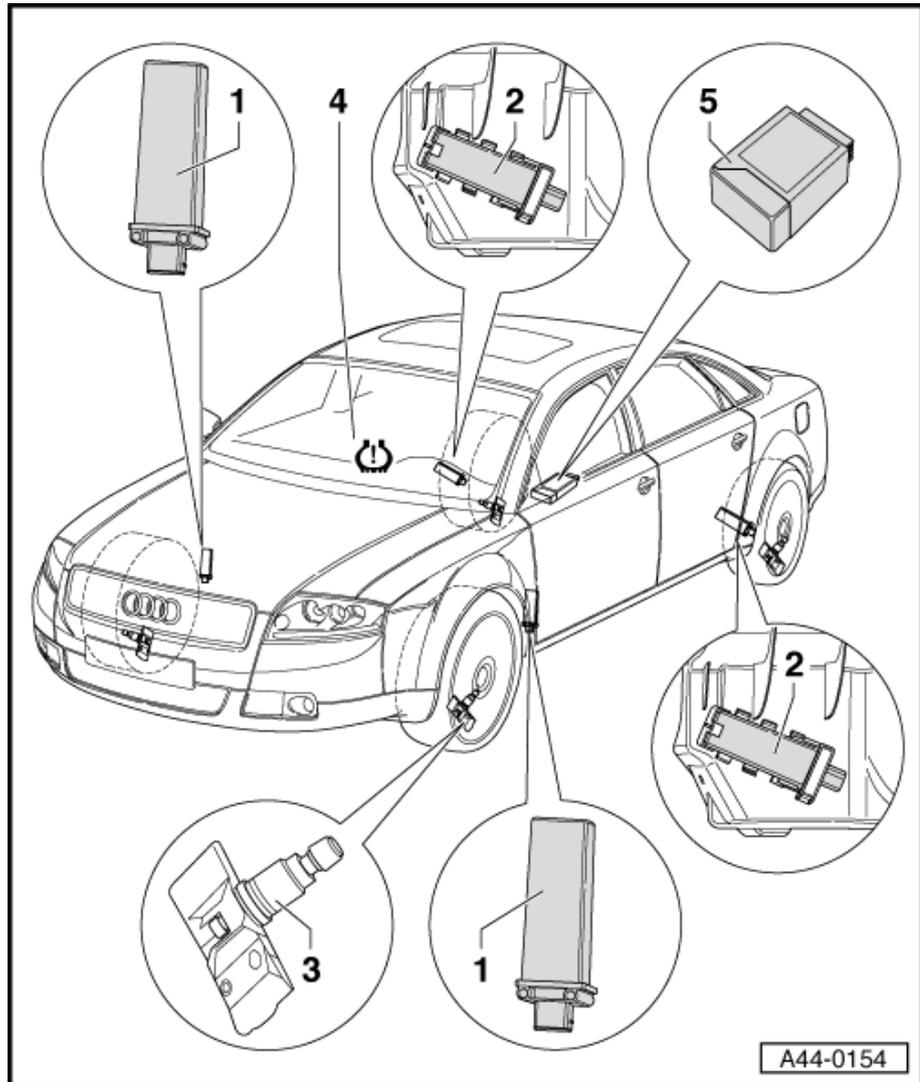
4 - Display in instrument cluster

- ❑ Refer to vehicle diagnostic, testing and information system -VAS 5051 A-

5 - Tyre pressure monitor control unit -J502-

Beneath rear seat bench on left side

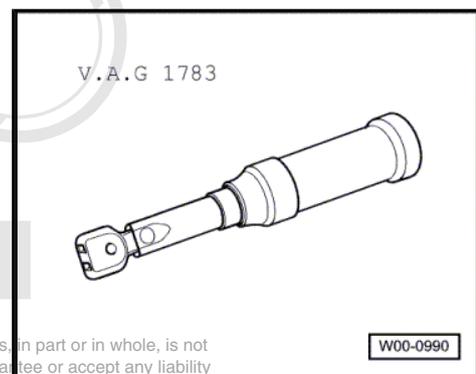
- ❑ Removing and installing ⇒ [page 240](#)



## 2.3 Removing and installing tyre pressure monitor control unit -J502-

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1783-



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

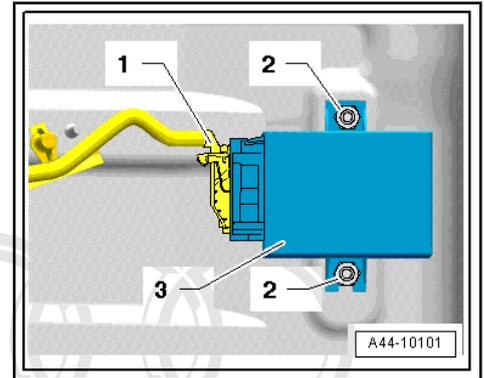
- Remove rear seat bench ⇒ [Rep. gr. 74](#) .

- Release and unplug connector -1-.
- Unscrew nuts -2- and take off tyre pressure monitor control unit -J502- -3-.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

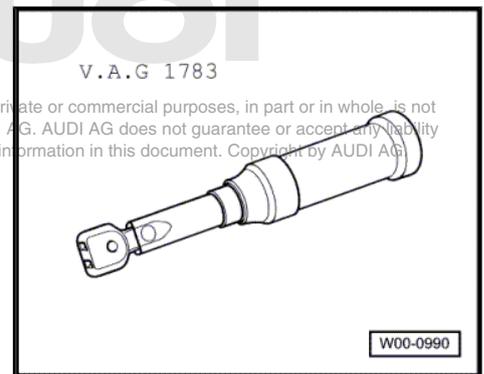
- Fit nuts -2- and tighten to 1.5 Nm.



## 2.4 Removing and installing front reception aerials

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1783-



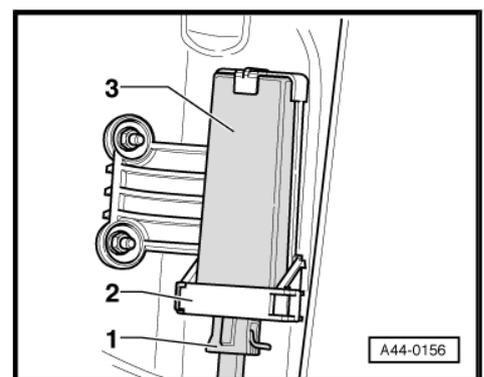
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### Removing

The reception aerials are located behind the wheel housing liners.

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Switch off ignition.
- Remove wheel housing liner ⇒ Rep. gr. 66 .
- Unplug connector -1-.
- Release clip -2-.
- Take out aerial -3-.

Remove front reception aerial with bracket.

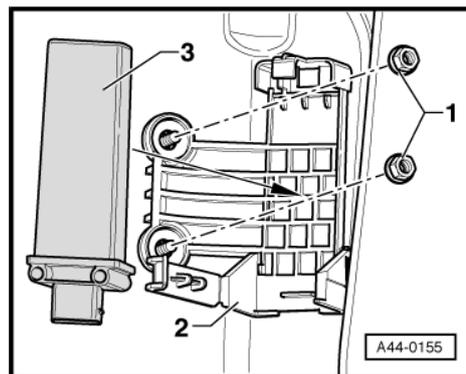




- Unscrew hexagon nut -1-.
- Take out aerial bracket -2-.

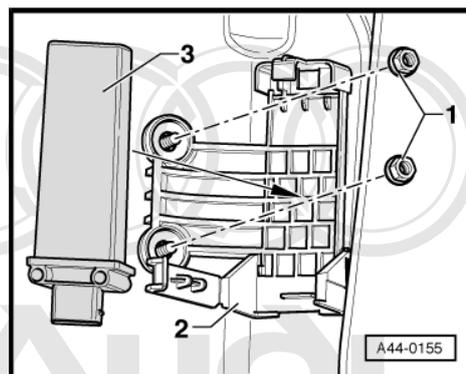
### Installing

Installation is carried out in the reverse sequence.



Fit front reception aerial with bracket -2-.

- Tighten hexagon nut -1- to 2 Nm.
- Fit wheel housing liner ⇒ Rep. gr. 66 .
- Set down vehicle on its wheels ⇒ [page 7](#) .

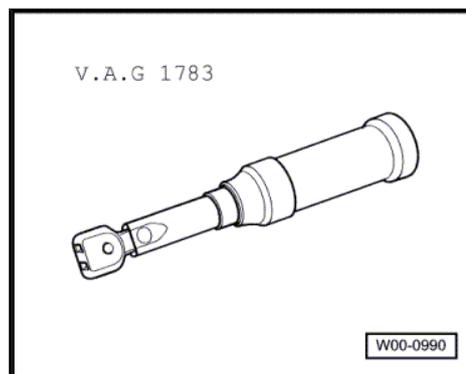


## 2.5 Removing and installing rear reception aerials

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

### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1783-

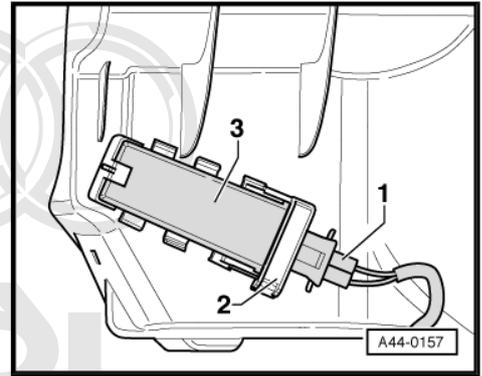


### Removing

The reception aerials are located behind the wheel housing liners.

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Switch off ignition.
- Remove wheel housing liner ⇒ Rep. gr. 66 .

- Unplug connector -1-.
- Release clip -2-.
- Take out aerial -3-.
- Remove bracket from rear reception aerial.
- Unclip aerial.

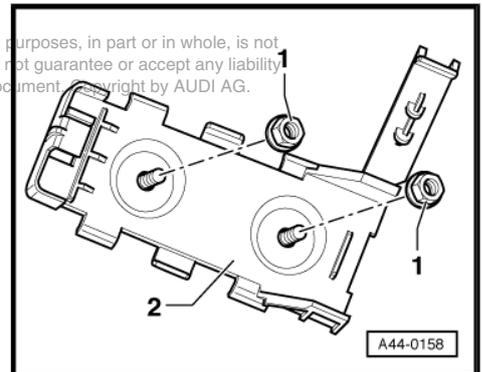


- Unscrew hexagon nuts -1-.
- Take out aerial bracket -2-.

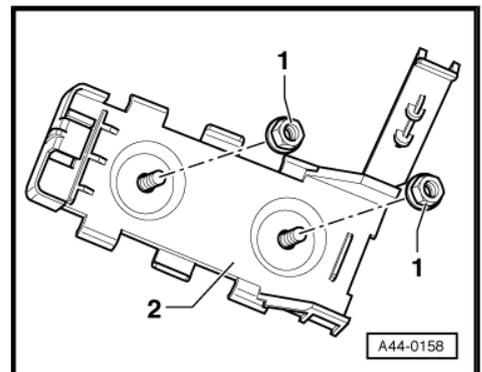
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

**Installing**

Installation is carried out in the reverse sequence.



- Tighten hexagon nuts -1- to 2 Nm.
- Fit wheel housing liner => Rep. gr. 66 .
- Set down vehicle on its wheels => [page 7](#) .



### 3 Operation of tyre pressure monitoring system

#### Activating/deactivating system:

The tyre pressure monitoring system is operated via the MMI.

- Switch on ignition.
- Press function key „CAR“.
- Select „Systems“ from „CAR“ menu.
- Select „Tyre pressure monitoring“.
- Select System "on" to activate tyre pressure monitoring system or "off" to deactivate system.

**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.

*Depending on the software installed, the system cannot be switched off on some vehicles.*

#### Function:

The tyre pressure monitoring system is operated via the MMI.

The system monitors the tyre inflation pressures that have been set by the operator and stored as reference values.

- Inflation pressures must be checked, corrected and stored beforehand.
- Start by checking and correcting inflation pressure of tyres on vehicle (including spare wheel) according to figures listed on sticker on fuel filler flap.

#### Storing tyre pressures:

To ensure reliable operation of the tyre pressure monitoring system, it is important to store the reference pressures correctly. The system will then automatically „learn“ the new figures.

Proceed as follows:

- Switch on ignition.
- Press function key „CAR“.
- Select „Systems“ from „CAR“ menu.
- Select „Tyre pressure monitoring“.
- Select „Store tyre pressures“.

The new tyre pressures must be stored as reference values whenever the inflation pressures are changed intentionally and after every wheel change.

## 4 Wheel alignment

Please refer to

⇒ [„4.1 General information on wheel alignment“, page 245](#) .

⇒ [„4.2 Explanatory notes on weight codes used in production \(PR Nos.\)“, page 246](#) .

⇒ [„4.3 Test requirements:“, page 247](#) .

⇒ [„4.5 Preparations for measurement“, page 249](#) .

⇒ [„4.6 Wheel runout compensation“, page 250](#) .

⇒ [„4.7 Checking centre position of steering rack“, page 250](#) .

⇒ [„4.8 Assignment of adapters to running gear versions \(for wheel alignment\)“, page 250](#) .

⇒ [„4.9 Sequence of operations for checking and adjusting wheel alignment“, page 250](#) .

⇒ [„4.10 Moving vehicle to initial position for wheel alignment \(running gear 1BK, 2MA and 2MB\)“, page 251](#) .

⇒ [„4.11 Wheel alignment specifications“, page 252](#) .

⇒ [„4.12 Centralising camber at front wheels“, page 252](#) .

⇒ [„4.13 Adjusting camber at rear wheels“, page 254](#) .

⇒ [„4.14 Adjusting toe setting at rear wheels“, page 255](#) .

⇒ [„4.15 Adjusting toe-in curve at front wheels“, page 255](#) .

⇒ [„4.16 Raising vehicle with running gear 1BK, 2MA and 2MB“, page 256](#) .

⇒ [„4.17 Adjusting toe-constant S “, page 257](#) .

⇒ [„4.18 Adjusting toe setting at front wheels“, page 257](#) .

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

### 4.1 General information on wheel alignment

Wheel alignment must always be performed using wheel alignment equipment approved by VW/Audi.

The alignment check must always include both the front and the rear axles.

This is important to achieve proper handling and road behaviour.



#### Note

- ◆ *To allow running gear to fully settle, wheel alignment should not be checked before the vehicle has completed 1000 to 2000 km.*
- ◆ *When making adjustments, try to obtain the specified settings as accurately as possible.*

Before checking the wheel alignment on vehicles with air suspension, the reference position/unladen position must be checked and, if necessary, re-adapted ⇒ [page 251](#) .

#### Vehicles pulling to one side; accident vehicles

This may be due to the rack in the steering box not being positioned exactly in the centre when driving in a straight line.

This is enough to result in slight hydraulic steering assistance in one direction, which causes the vehicle to pull to the left or right.



Always check centre position of steering rack when performing wheel alignment on a vehicle which „pulls to one side“.

The rack must be positioned exactly in the centre of the steering box when adjusting the toe setting or the toe-constant.

**WARNING**

***If adjustments are made to the suspension geometry, the steering angle sender -G85- must be calibrated on vehicles with ESP or ABS => vehicle diagnosis, testing and information system VAS 5051, Guided Functions***

Wheel alignment must be performed:

- ◆ In the event of handling problems
- ◆ Following accident damage
- ◆ If suspension components have been removed.
- ◆ If tyres are worn unevenly.

Front axle components	Wheel alignment check required		Rear axle components	Wheel alignment check required	
	Yes	No		Yes	No
Upper link (rear)		X	Air spring strut		X
Upper link (front)		X	Trapezium link	X	
Guide link with hydro-bush		X	Transverse link	X	
Track control link		X	Wheel bearing housing	X	
Air spring strut		X	Track rod	X	
Mounting bracket		X	Anti-roll bar		X
Wheel bearing housing	X				
Track rod ball joint	X				
Steering box	X				
Subframe	X				
Anti-roll bar		X			

## 4.2 Explanatory notes on weight codes used in production (PR Nos.)

The running gear version fitted in the vehicle is indicated by the PR No. on the vehicle data sticker.

The vehicle data sticker can be found in the spare wheel well and in the Service Schedule.

Vehicle data sticker (example)





- If necessary, contact the manufacturer for familiarisation with the proper use of the wheel alignment equipment.

#### 4.4 Preparations required before calibration/adjustment of driver assist systems

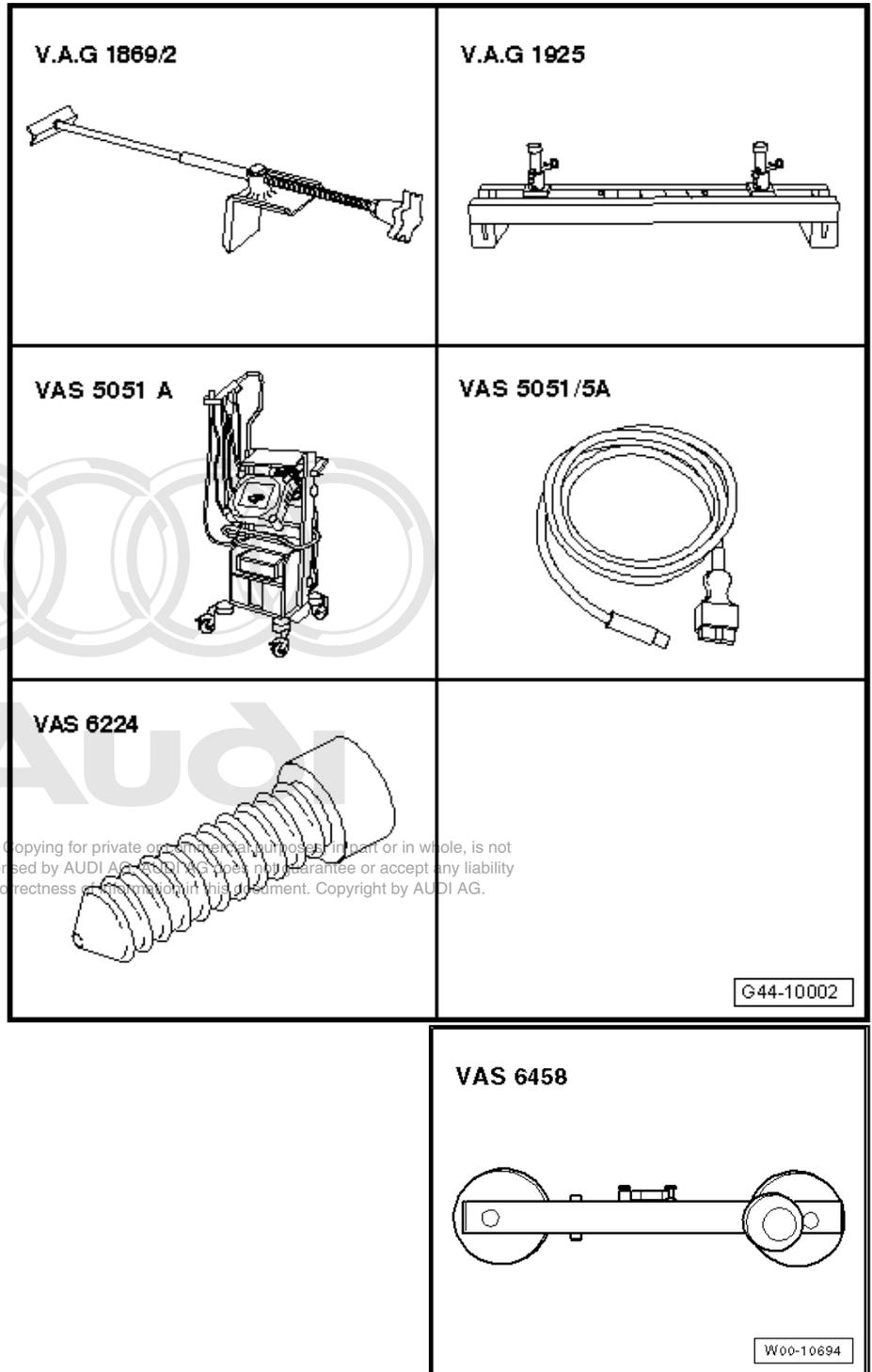
The following steps are required if one or more driver assist systems on the vehicle are to be calibrated or adjusted via the „Quick-start“ procedure (i.e. without first checking and adjusting the wheel alignment):

- Before driving the vehicle onto the alignment platform, make sure there is sufficient space between the vehicle and the setting device. The distance between the setting device and the vehicle must be 120 cm ± 2.5 cm.
- If the available space is not adequate, drive the vehicle backwards onto the alignment platform as required.
- Before commencing calibration/adjustment, interrogate event memory and rectify any faults.
- Vehicle accurately aligned, suspension bounced and rocked several times.
- Ensure that the sliding plates and turntables are not touching the end stop when checking the alignment.
- Activate Wheel change mode: see instructions in ⇒ Owner's Manual .
- Connect up battery charger ⇒ Rep. gr. 27 .
- Set front wheels to straight-ahead position.
- Connect up diagnostic tester to vehicle and run diagnostic cable out through open window.
- Exterior lighting switched off.
- All vehicle doors closed.
- Press button to select required calibration/adjustment on wheel alignment computer.

## 4.5 Preparations for measurement

### Special tools and workshop equipment required

- ◆ Brake pedal actuator - V.A.G 1869/2-
- ◆ Gap setting gauge -V.A.G 1925-
- ◆ Vehicle diagnostic, testing and information system - VAS 5051 A-
- ◆ Diagnosis cable -VAS 5051/5A-
- ◆ Steering centring bolt -VAS 6224-
- ◆ Adapter -V.A.G 1925/1-
- ◆ Wheel alignment computer approved by VW/Audi
- ◆ Steering wheel balance - VAS 6458-



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

- Drive vehicle onto wheel alignment unit and ensure that suspension is not under stress, if necessary by moving vehicle backwards and forwards several times.
- Before starting the initial measurement and before making any adjustments, make sure that the steering is returned correctly to the centre position by turning the steering wheel uniformly in both directions using the steering wheel balance -VAS 6458- .



- Sensors must be properly attached and adjusted; refer to operating instructions of equipment manufacturer.
- Ensure that the sliding plates and turntables are not touching the end stop when checking the alignment.

#### 4.6 Wheel runout compensation

The toe-in cannot be set correctly without performing wheel runout compensation.

**The existing lateral runout of the wheel rims must be compensated accordingly. Otherwise false results will be obtained.**

- A certain amount of axial runout at the wheel rims is permissible, but this may already exceed the specified toe-in tolerance. In such cases it is not possible to set the toe-in correctly without first compensating for the wheel runout.

Please observe the operating instructions provided by the manufacturer of the wheel alignment unit.

#### 4.7 Checking centre position of steering rack

Copyright by Audi AG. Copying for private or 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 content of this document. Copyright by AUDI AG.

- Centre the steering as described in the wheel alignment computer instructions.
- Insert steering centring bolt -VAS 6224- in order to hold steering rack in centre position ⇒ [page 296](#) .
- Check whether steering wheel is mounted horizontally on steering column with „wheels in straight ahead position“.

Otherwise, the steering rack may not be located in the central position.

#### 4.8 Assignment of adapters to running gear versions (for wheel alignment)

Adapter	Standard (1BK)	Sports running gear (2MA, 2MB)
-V.A.G 1925-	X	X
-V.A.G 1925/1-	X	X

#### 4.9 Sequence of operations for checking and adjusting wheel alignment



##### Note

- ◆ *The vehicle must always be in unladen condition when measuring wheel alignment ⇒ [page 247](#) .*
- ◆ *Exception: this does not apply when measuring toe-in curve as described in alignment program instructions.*
- ◆ *Check which running gear version is fitted in vehicle. This information is listed on the vehicle data sticker ⇒ [page 246](#)*

**Always keep to the following sequence of operations.**

1 - Drive vehicle onto wheel alignment unit and ensure that suspension is not under stress, if necessary by moving vehicle backwards and forwards several times.

2 - Before starting the initial measurement and before making any adjustments, make sure that the steering is returned correctly to

the centre position by turning the steering wheel uniformly in both directions using the steering wheel balance -VAS 6458- .

3 - Check camber at front wheels and centralise if necessary  
⇒ [page 252](#) .

4 - Check camber at rear wheels and adjust if necessary  
⇒ [page 254](#) .

5 - Check toe setting at rear wheels and adjust if necessary  
⇒ [page 255](#) .

6 - Check toe-in curve at front wheels if necessary.

7 - The table on ⇒ [page 252](#) and the description on ⇒ [page 255](#) indicate whether or not the toe-in curve (toe-constant „S“) requires adjustment.

8 - Check toe setting at front wheels with suspension in initial position and adjust if necessary ⇒ [page 257](#) .

If suspension settings have been changed, perform zero compensation of steering angle sender -G85- using ⇒ Vehicle diagnostic tester.

If any changes are made to the rear wheel alignment settings, the sensor must be adjusted (checked) on vehicles with ACC ⇒ [page 266](#) , the lane departure warning function must be recalibrated (checked) on vehicles with lane departure warning system ⇒ [page 276](#) and the reversing camera system must be recalibrated on vehicles with reversing camera ⇒ Rep. gr. 91 .

## 4.10 Moving vehicle to initial position for wheel alignment (running gear 1BK, 2MA and 2MB)

### Checking reference position for wheel alignment

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted. Copyright © 2011 Audi AG. All rights reserved. This document is a technical document and is not to be used for any other purpose without the written permission of Audi AG. Copyright by AUDI AG.

Connect -VAS 5051 A- and select function test (for „function/component“) ⇒ [page 191](#) .

Then

- „J197 - Functions, adaptive suspension control unit“
- „44 - Wheels, tyres, wheel alignment“
- „KD44 85 - Wheel alignment“



### Note

*Height dimensions must be checked and if necessary re-adapted before activating jacking mode.*

- Activate jacking mode ⇒ [page 188](#) .

### Running gear 1BK

- Front height dimension: 416 mm
- Rear height dimension: 398 mm

### Running gear 2MA, 2MB

- Front height dimension: 396 mm
- Rear height dimension: 378 mm

### Determining height dimension -x-

Height dimension -x- is the value in mm between the centre of the wheel and the bottom edge of the wing.



- Measure rim diameter.

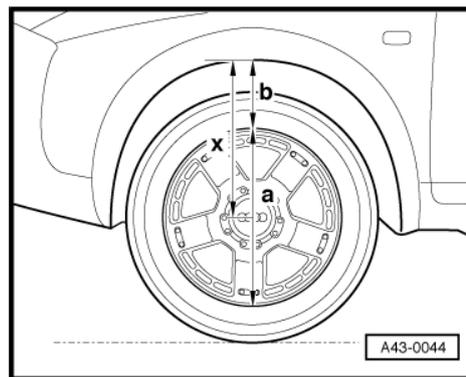
The measured value is dimension -a-.

- Measure vertical distance from top edge of rim to bottom edge of wing.

The measured value is dimension -b-.

The height dimension x is calculated as follows:

$$x = a : 2 + b$$



## 4.11 Wheel alignment specifications

These specifications are applicable to all engines.

Front axle	Standard 1BK	Sports running gear 2MA, 2MB
Camber	- 1° ± 25'	- 1°15' ± 25'
Maximum permissible difference between left and right	30'	30'
Toe angle at each wheel (specification when making adjustment, suspension in initial position)	+ 8' ± 4'	+ 8' ± 4'
Toe angle at each wheel (specification when checking adjustment, suspension in initial position)	+ 8' ± 6'	+ 8' ± 6'
Toe-constant for each wheel (specification when making adjustment)	- 5' ± 4'	- 5' ± 4'
Toe-constant for each wheel (specification when checking adjustment)	5' ± 6'	5' ± 6'
Toe-out on turns at 20° <sup>5)</sup>	1° 36' ± 30'	1° 36' ± 30'

5) The wheel on the outside of a curve is turned in less than the inside wheel. This value shows the difference in the steering angles. It can be displayed as a negative value on the wheel alignment computer, depending on the manufacturer.

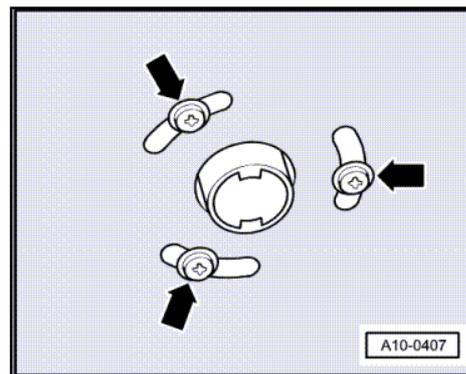
Rear axle	Standard 1BK	Sports running gear 2MA, 2MB
Camber	- 1°15' ± 20'	- 1°15' ± 20'
Maximum permissible difference between left and right	20'	20'
Toe setting for each wheel	+ 12' ± 4'	+ 12' ± 4'
Total toe	+ 24' ± 7.5'	+ 24' ± 7.5'
Maximum permissible deviation in direction of travel relative to longitudinal axis of vehicle	10'	10'

## 4.12 Centralising camber at front wheels

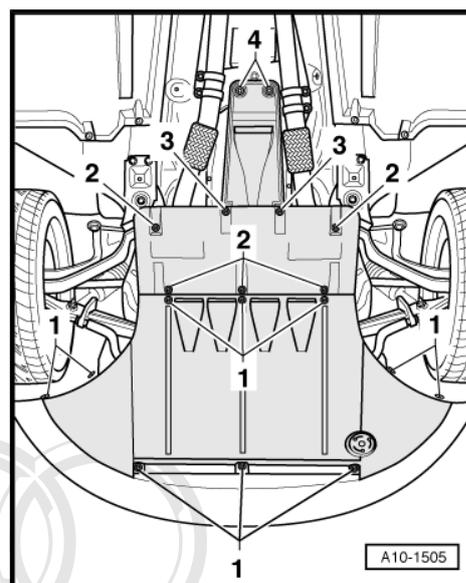
The camber cannot be adjusted.

By moving the subframe, it is possible to centralise the camber setting symmetrically within the specified tolerance range.

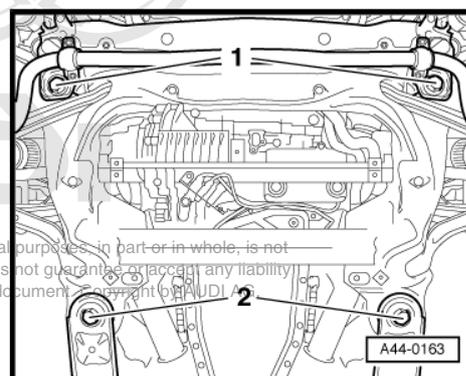
- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.



- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.

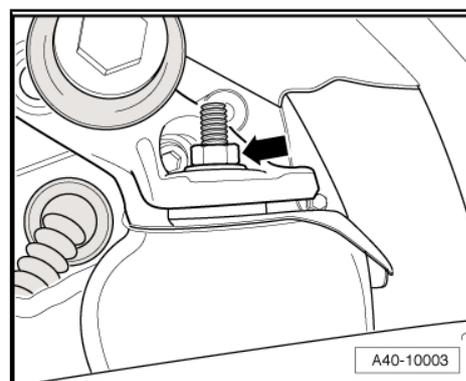


- Slacken off hexagon bolts -1- and -2-.



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 © AUDI AG

- Unfasten gearbox mounting/gearbox support nut at front left and right.





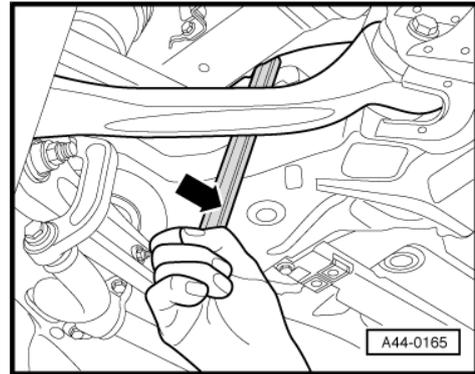
- Use plastic-coated tyre iron or similar -arrow- to move sub-frame to required position.

Apply pressure in centre of subframe between subframe and longitudinal member of body.

If no plastic-coated tyre iron is available, wrap adhesive tape around a conventional tyre iron.

**WARNING**

*Take care not to damage any components.*



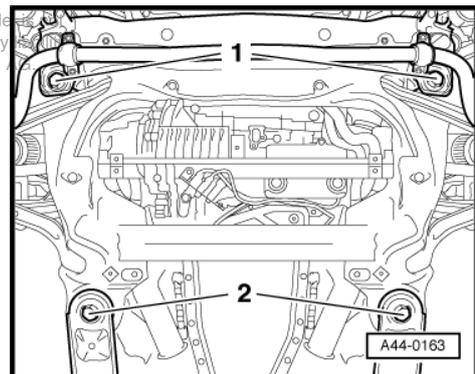
Wheel alignment specifications ⇒ [page 252](#)

- Screw in and tighten new hexagon bolts **1** and **2** ⇒ [Item 8 \(page 32\)](#) and ⇒ [Item 19 \(page 33\)](#)
- Tighten gearbox mounting/gearbox support nut at front left and right ⇒ Rep. gr. 37 .

**Please note:**

All wheel alignment settings must be checked if camber setting has been altered.

- Install front noise insulation ⇒ Rep. gr. 50 .



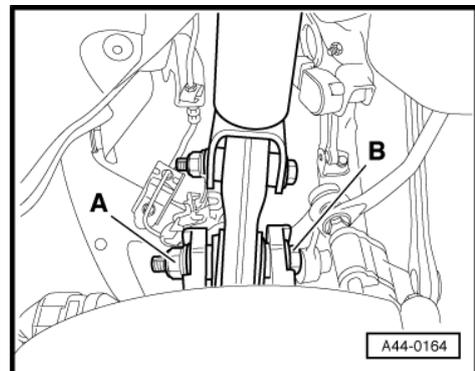
### 4.13 Adjusting camber at rear wheels

- Remove nut -A- on bolt connection between wheel bearing housing and transverse link.
- Adjust camber by turning eccentric bolt -B-.

Wheel alignment specifications ⇒ [page 252](#)

**Note**

- ◆ *The maximum adjustment range is 90° to the left or right of the centre position.*
- ◆ *For illustration purposes the camber adjustment is shown with the wheel removed.*



- Screw on and tighten new nut -A- ⇒ [Item 17 \(page 118\)](#) .
- Check camber value again after tightening nut -A- ⇒ [page 252](#) .

#### 4.14 Adjusting toe setting at rear wheels

- Unscrew nut -1- securing track rod -2- to subframe.
- Adjust toe setting by turning eccentric bolt -3-.

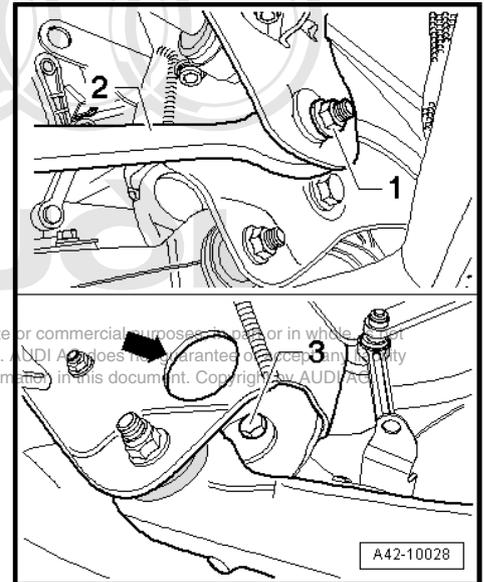
Access eccentric bolt through hole -arrow- in subframe.

- Fit new nut -1- and tighten ⇒ [Item 14 \(page 96\)](#) .

Wheel alignment specifications ⇒ [page 252](#)

##### Note

- ◆ *The maximum adjustment range is 90° to the left or right of the centre position.*
- ◆ *Adjusting the individual toe settings automatically alters the geometric running direction of the axle.*
- Check toe setting again after tightening nut -1-.



#### 4.15 Adjusting toe-in curve at front wheels

##### Explanatory notes:

The compression and rebound movement of the front wheels alters the toe value as a function of the compression/rebound travel. The resulting toe values are referred to as the toe-in curve.

The change in the toe-constant „S“ is adjusted by vertical adjustment of the track rod end with the vehicle lifted ⇒ [page 257](#) .

The electronic wheel alignment equipment determines the toe-constant „S“ by comparing one value measured with the suspension in the initial position and one value measured with the vehicle lifted. It compares the actual values with the specified values and displays them on the screen.

##### Note

- ◆ *Incorrect adjustment of the toe-constant will result in inaccurate steering when braking/accelerating or driving over an uneven surface.*
- ◆ *Depending on the type of wheel alignment equipment, it may be necessary to raise the front axle of the vehicle in order to insert gap setting gauge -V.A.G 1925- .*



- Insert gap setting gauge -V.A.G 1925- with adapters -V.A.G 1925/1- and screw out both spindles until they just make contact with front bolts -1- on subframe.

**This must not cause the vehicle to be raised.**

The suspension is now in the initial position.

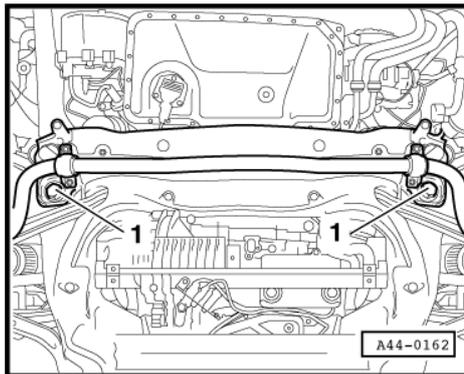
**All running gear versions**

In this position, the wheel alignment program checks whether the toe-in value for each wheel is as specified. If necessary, the toe-in must be corrected by adjusting the track rod length.

Adjusting toe setting at front wheels with suspension in initial position => [page 257](#) .

Wheel alignment specifications => [page 252](#)

The wheel alignment software will only show the relevant display if a correction is required.



### 4.16 Raising vehicle with running gear 1BK, 2MA and 2MB

When performing the next step, ensure that the wheels do not lose contact with the turntables when the vehicle is lifted.

If this does happen, do not move the turntables as this would give false results.

- Position axle lift under front jacking points and raise vehicle.

**i Note**

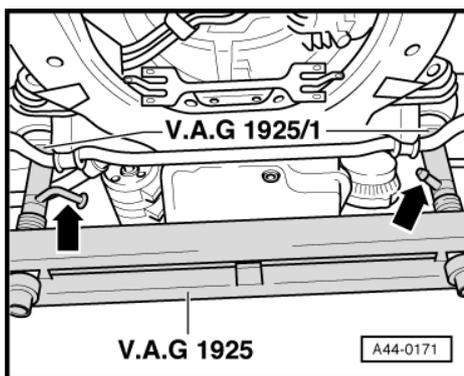
*The vehicle must be lifted 60 mm.*

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

- Push cylinders out of threaded spindles and secure in position with locking pins.

**Ensure that locking pins -arrows- are correctly positioned.**

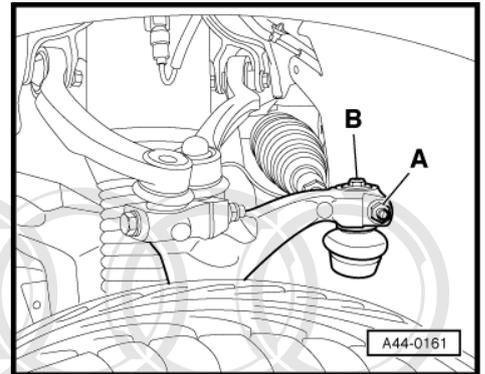
- Lower vehicle onto gap setting gauge -V.A.G 1925- .



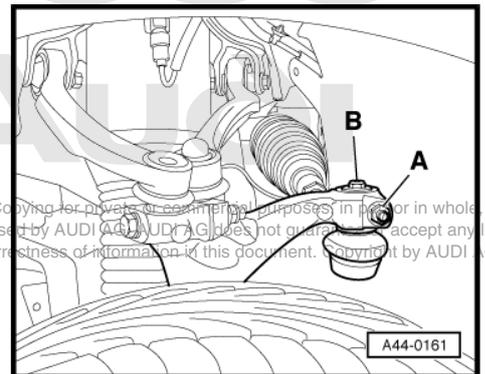
## 4.17 Adjusting toe-constant „S“

- Slacken off hexagon nut -A-.
- Unscrew bolt -B- approx. 4 mm.
- Push track rod ball joint downwards onto stop.

Wheel alignment specifications ⇒ [page 252](#)



- Screw in bolt -B- until exact specification is obtained.
- Tighten hexagon nut -A- ⇒ [Item 9 \(page 295\)](#) and check value.
- Tighten bolt -B- ⇒ [Item 7 \(page 295\)](#).
- Raise vehicle slightly with axle lift. Wheels must remain in contact with turntables.
- Remove locking pins from cylinders and retract threaded spin-dles into cylinders.
- Lower vehicle onto adapter -V.A.G 1925/1- with axle lift.
- Vehicle is in initial position.



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

### Checking toe-constant after adjusting

The wheel alignment equipment will then re-check the toe-constant.

If the second check shows that the values are within the tolerance (specification when checking adjustment), the setting is OK.

If the values are outside the tolerance (specification when checking adjustment), the setting must be adjusted again with the suspension in the raised position.

## 4.18 Adjusting toe setting at front wheels

- Loosen lock nut -B-.
- Adjust toe setting at left and right wheels via hexagon flats -A-.

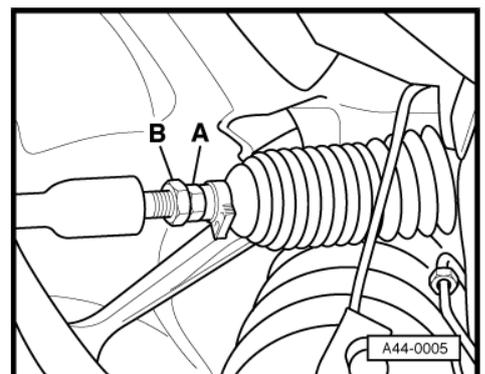
### Make sure boots are not twisted after turning track rods.

Twisted rubber boots wear out quickly.

- Tighten lock nut -B- ⇒ [Item 2 \(page 318\)](#) and check toe-in value again.

The setting may change slightly after tightening lock nut -B-.

However, the adjustment is correct if the measured toe value is still inside the tolerance.



## 5 Adaptive Cruise Control (ACC)

⇒ „5.1 Exploded view of sensor for adaptive cruise control G550“  
„page 258“ .

⇒ „5.2 General information on ACC“, page 259 .

⇒ „5.3 Adjustment procedure using ACC setting device VAS 6190“  
„page 260“ .

⇒ „5.4 Adjustment procedure using ACC setting device VAS 6430“  
„page 266“ .

⇒ „5.5 Removing and installing sensor for adaptive cruise control G550“, page 272 .

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

### 5.1 Exploded view of sensor for adaptive cruise control -G550-

#### 1 - Sensor for adaptive cruise control -G550-

- ❑ Removing and installing  
⇒ page 272

#### 2 - Mounting

- ❑ For stud

#### 3 - Stud

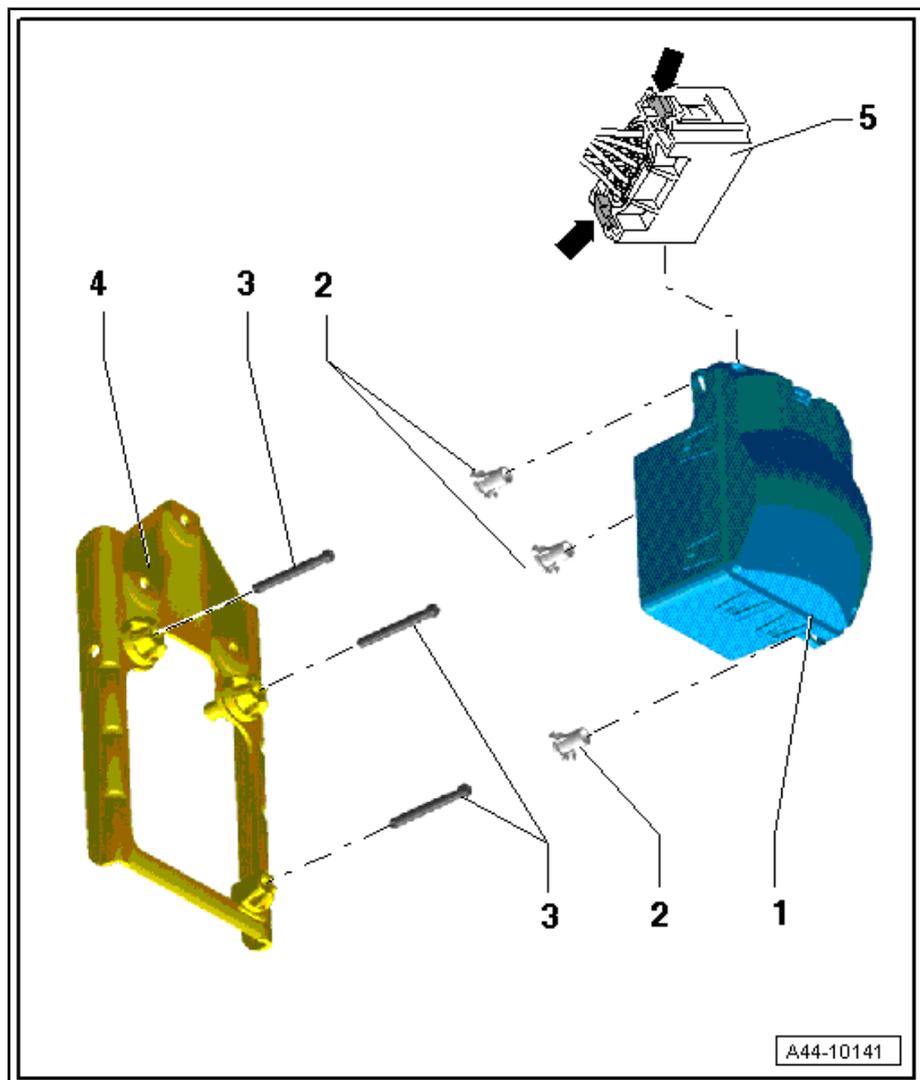


Note

#### 4 - Bracket

#### 5 - Connector

- ❑ Compress both catches  
-arrows- to release.



## 5.2 General information on ACC

The adaptive cruise control sensor and adaptive cruise control unit -J428- are installed together in a single housing. The entire unit has to be replaced if the sensor or the control unit are defective.

In the following description the combined sensor/control unit is referred to as the „sensor“.

The radar cover of the sensor is located behind the front bumper cover and is made of radar-transparent material. Any modifications, such as subsequent paint application or the affixing of stickers, can lead to malfunctions.

Malfunctions can also occur if the sensor is dirty. In this case, remove the ornamental grille or the radiator grille in front of the sensor as described in the Workshop Manual and clean the sensor and the inside of the grille.

Before performing ACC adjustment, read out fault memory and rectify faults as necessary.

„Measured value block 2“ of the ACC control unit indicates whether the sensor is only slightly misaligned; sensor re-adjustment is not necessary up to misalignment angles of 0.5°.

Use only wheel alignment and adjustment equipment approved by VW/Audi for ACC adjustment.

Correct adjustment is essential for proper ACC operation.

### Note

- ◆ *Re-adjustment is required:*
- ◆ *If rear axle toe setting is adjusted.*
- ◆ *If complete sensor for adaptive cruise control -G550- is renewed.*
- ◆ *If bumper cross member is unfastened or adjusted.*
- ◆ *If front end of vehicle is damaged.*
- ◆ *If misalignment angle is greater than 0.5°*



# Audi

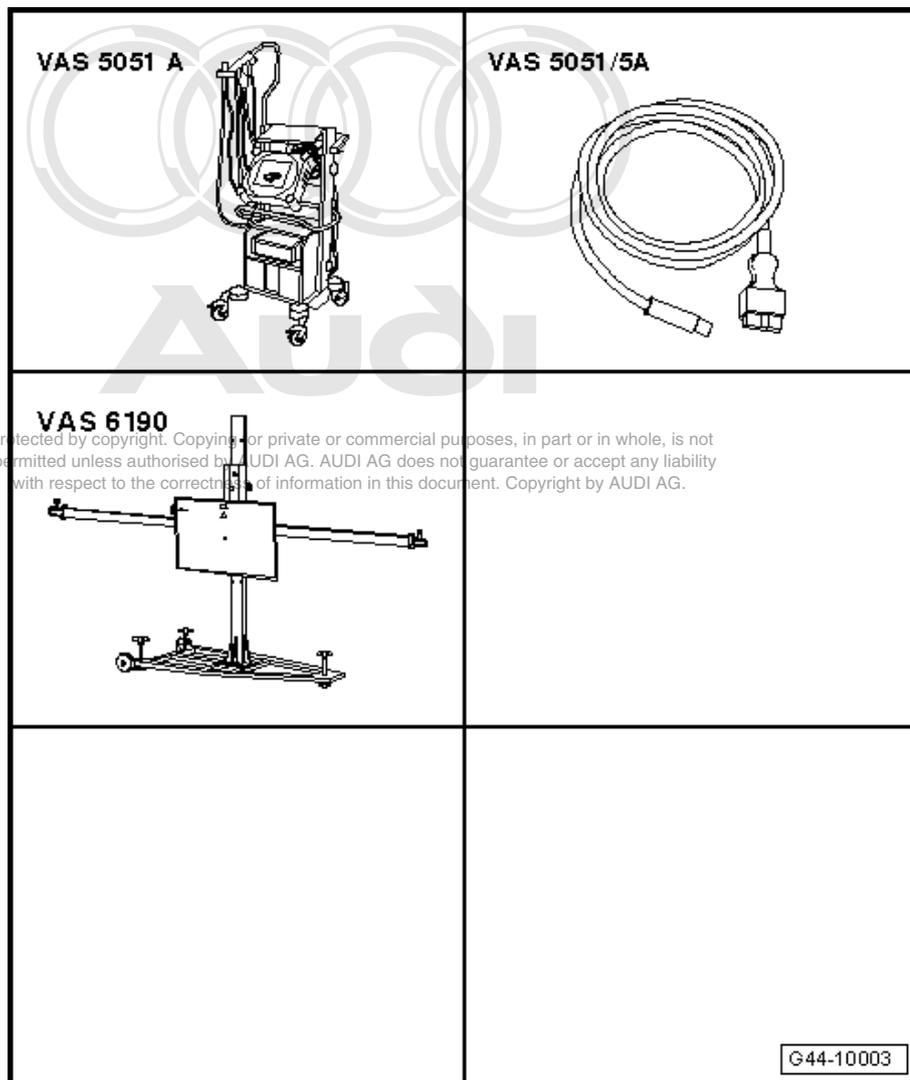
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



### 5.3 Adjustment procedure using ACC setting device -VAS 6190-

#### Special tools and workshop equipment required

- ◆ Vehicle diagnostic, testing and information system - VAS 5051 A-
- ◆ Diagnosis cable -VAS 5051/5A-
- ◆ ACC setting device -VAS 6190-
- ◆ Wheel alignment computer



#### Note

- ◆ *Before driving the vehicle onto the alignment platform, make sure there is sufficient space between the vehicle and the ACC setting device -VAS 6190-. The distance between the ACC setting device -VAS 6190- and the vehicle must be 120 cm ± 5 cm.*
- ◆ *If the available space is not adequate, drive the vehicle backwards onto the alignment platform as required.*
- Before starting adjustment, read out fault memory and rectify any faults.

The adjustment procedure described here is based on ACC setting device -VAS 6190-. However, you can also use ADC adjustment device -VAS 6041- and ACC reflective mirror -VAS 6041/1-.



#### Note

The steps listed under „Adjustment procedure (when wheel alignment has not been previously checked)“ are only required if no wheel alignment check has already been performed.

**Adjustment procedure (when wheel alignment has not been previously checked)**

- Connect battery charger ⇒ Rep. gr. 27 .
- Activate jacking mode ⇒ [page 188](#) .
- Press button to select ACC adjustment procedure in wheel alignment computer.
- Attach quick-release clamps to rear wheels.
- Attach wheel alignment sensors to rear wheels.
- Carry out wheel rim runout compensation for rear wheels.

**Adjustment procedure (irrespective of previous wheel alignment check)**

**Vehicles with ornamental grille**

- Remove ornamental grille -1- from front bumper cover ⇒ Rep. gr. 63 .

**Vehicles with radiator grille**



- Detach registration plate carrier and cover for sensor for adaptive cruise control -G550- from radiator grille -1- ⇒ Rep. gr. 63 .

**All vehicles (continued):**

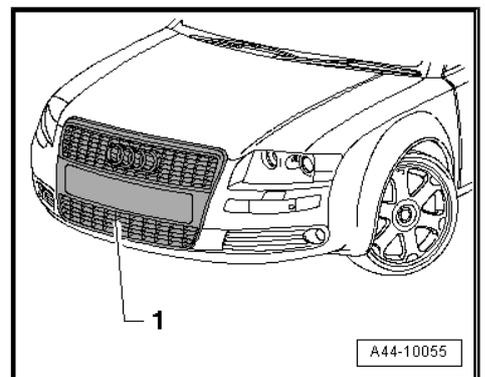
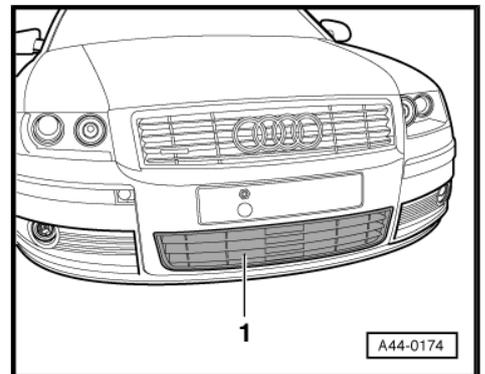
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the express permission of AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



**Note**

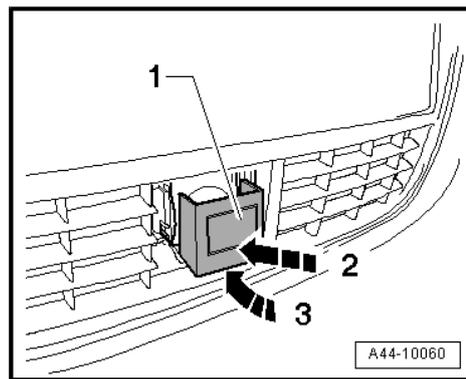
*Adjustment is described for a vehicle with ornamental grille. The method is the same for vehicles with radiator grille.*

- Remove any dirt from sensor lens and inside of radar cover.





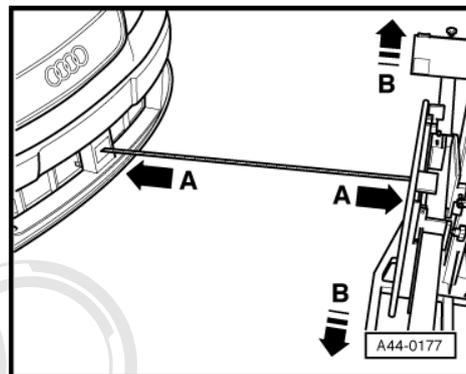
- Detach springs on coarse adjuster -1-.
- First guide in coarse adjuster -1- upwards through ornamental grille -arrow 3- and locate adjuster on sensor for adaptive cruise control -G550- .
- Then pivot coarse adjuster -1- and press adjuster onto sensor for adaptive cruise control -G550- -arrow 2-.



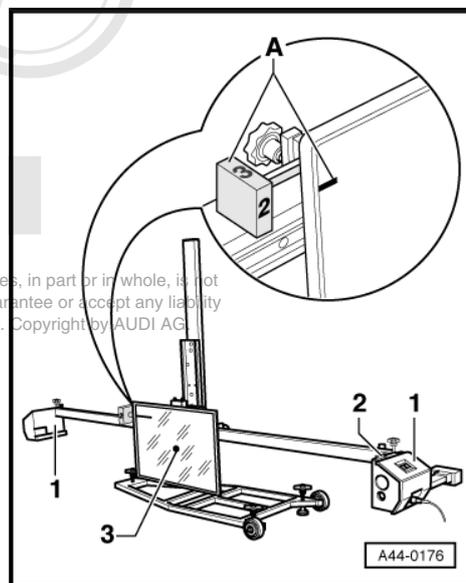
**i** Note

- ◆ Before driving the vehicle onto the alignment platform, make sure there is sufficient space between the vehicle and the ACC setting device -VAS 6190- . The distance between the ACC setting device -VAS 6190- and the vehicle must be  $120\text{ cm} \pm 5\text{ cm}$ .
- ◆ If the available space is not adequate, drive the vehicle backwards onto the alignment platform as required.

- Position ACC setting device -VAS 6190- so that distance -A- between coarse adjuster and surface of mirror is  $120\text{ cm} \pm 5\text{ cm}$ .

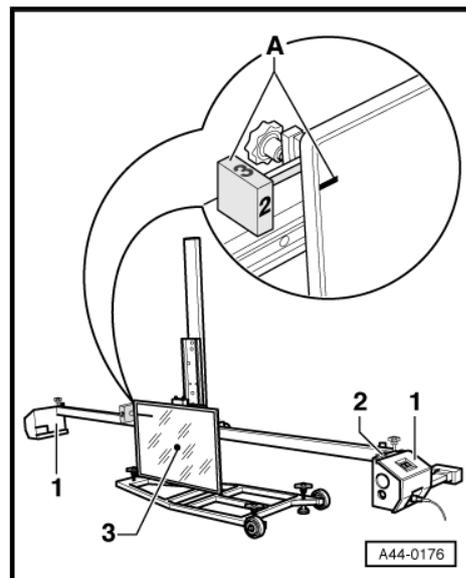


- Attach front wheel alignment sensors -1- to -VAS 6190- .

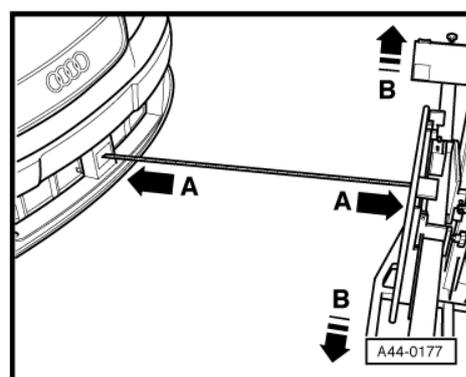


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

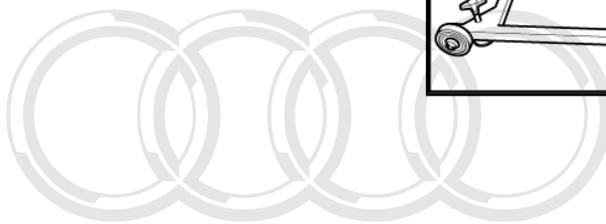
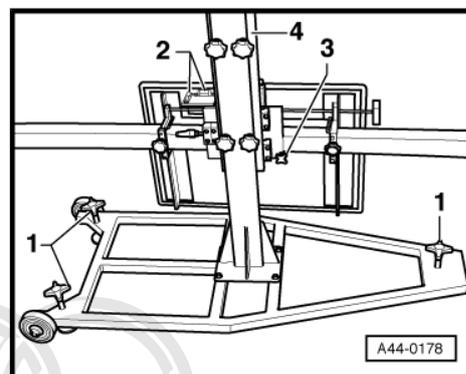
- In area -A-, align number -2- on rotary knob with mark on mirror (number 2 on rotary knob must face vehicle).



- By moving it sideways -arrows B-, set -VAS 6190- so that laser beam coincides with centre of horizontal section of coarse adjuster.



- Use adjusting screws -1- to bring spirit levels -2- on -VAS 6190- into horizontal position.
- Set vertical slide -4- of -VAS 6190- so that laser beam coincides with centre of vertical section of coarse adjuster.
- Set identical individual front axle toe values with fine adjustment screw -3-.
- Difference between individual toe values must be less than 6' or equal.

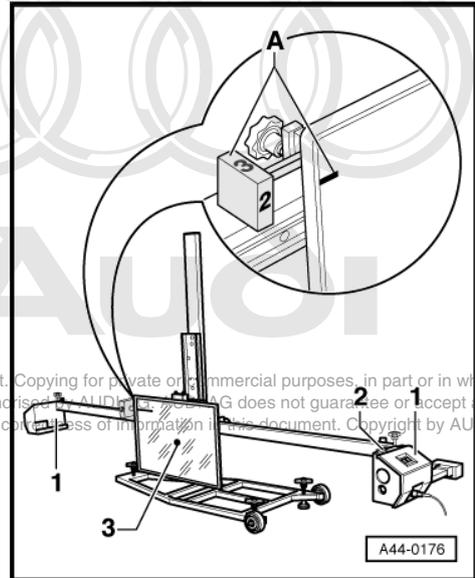


Audi

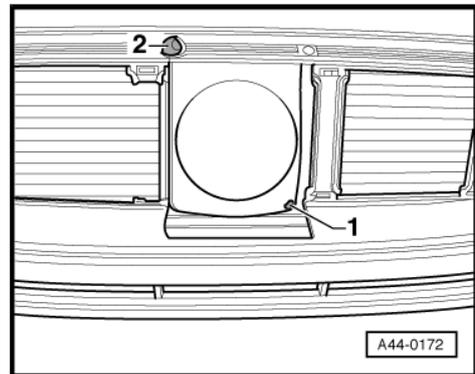
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- Balance out spirit levels -2- on wheel alignment sensors -1-.
- Then use laser beam -3- to check pre-adjustment at -VAS 6190- .
- Reflected laser beam must strike laser exit point -3- of -VAS 6190- again.
- If this is not the case, pre-adjustment must be performed.



- Use long Allen key (3 mm) to set reflected laser beam to laser exit point by way of screws -1- and -2-.
- Detach coarse adjuster on completion of pre-adjustment.
- Connect vehicle diagnostic, testing and information system - VAS 5051/B- .



- Plug in connector of diagnosis cable -VAS 5051/5A- at diagnostic connection.
- Switch on vehicle diagnostic, testing and information system .

The vehicle diagnostic, testing and information system is ready for operation when the selector buttons for the operating modes appear on the screen.

- Switch on ignition.
- Touch the **Guided Fault Finding** button on the display screen.
- Select the following:
  - ◆ Make
  - ◆ Model
  - ◆ Model year
  - ◆ Version
  - ◆ Engine code letters
- Confirm the entered information.

Wait until the vehicle diagnostic, testing and information system has interrogated all the control units in the vehicle.

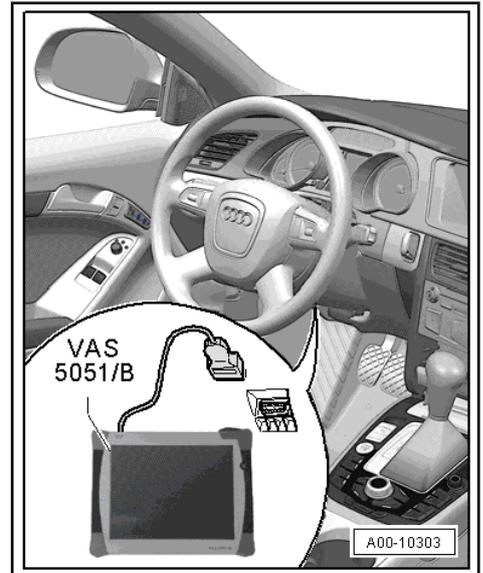
- Press the **Go to** button and select the option „Function/component selection“.

Then

- „Body (repair group 01; 27; 50 - 97)“
- „Electrical system (Rep. Gr. 01; 27; 90 - 97)“
- „01 - Self-diagnosis compatible systems“
- „13 - Adaptive cruise control“ (Distance regulation)
- „J428 - Adaptive cruise control unit, functions“
- „J428 - Adaptive cruise control adjustment“

Then follow adjustment instructions on screen.

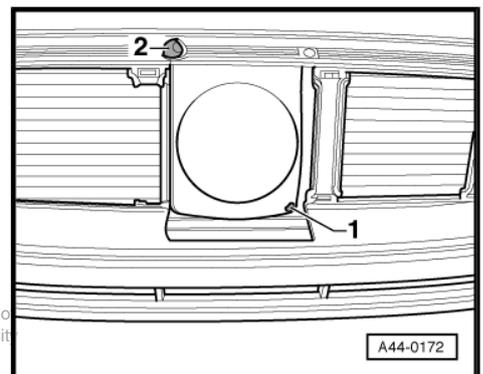
- For fine adjustment in „Guided Fault-Finding“ routine, use screws -1- and -2-.



 **WARNING**

*ACC adjustment is not completed until -VAS 5051 A- displays „Control element test ended“.*

- Switch off ignition.
- Detach connector of diagnosis cable -VAS 5051/5A- at diagnostic connection.
- Disconnect battery charger => Rep. gr. 27 .

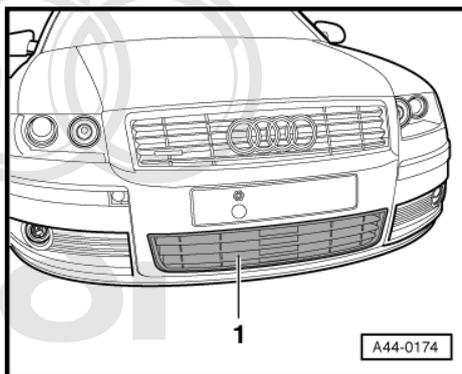


**Vehicles with ornamental grille**



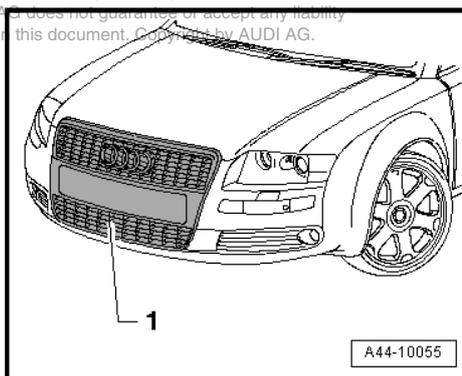
- Install ornamental grille -1- in front bumper cover => Rep. gr. 63 .

**Vehicles with radiator grille**



- Install radiator grille -1- => Rep. gr. 63 .

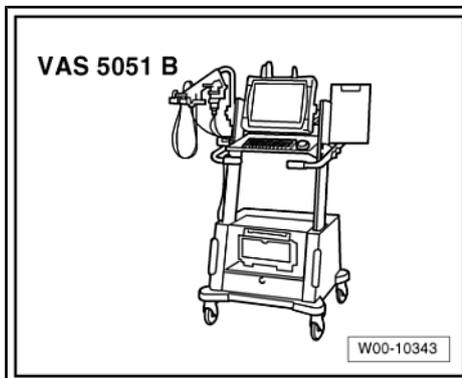
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



### 5.4 Adjustment procedure using ACC setting device -VAS 6430-

**Special tools and workshop equipment required**

- ◆ Vehicle diagnostic, testing and information system -VAS 5051 B- with appropriate diagnosis cable



- ◆ Wheel alignment computer
- ◆ -VAS 6430-



**Note**

- ◆ *Before driving the vehicle onto the alignment platform, make sure there is sufficient space between the vehicle and the ACC setting device -VAS 6430-. The distance between the ACC setting device -VAS 6430- and the vehicle must be 120 cm ± 5 cm.*
- ◆ *If the available space is not adequate, drive the vehicle backwards onto the alignment platform as required.*
- Before starting adjustment, read out fault memory and rectify any faults.

The adjustment procedure described here is based on ACC setting device -VAS 6430- .

**i** Note

The steps listed under „Adjustment procedure (when wheel alignment has not been previously checked)“ are only required if no wheel alignment check has already been performed.

**Adjustment procedure (when wheel alignment has not been previously checked)**

- Connect battery charger ⇒ Rep. gr. 27 .
- Activate jacking mode ⇒ [page 188](#) .
- Press button to select ACC adjustment procedure in wheel alignment computer.
- Attach quick-release clamps to rear wheels.
- Attach wheel alignment sensors to rear wheels.
- Carry out wheel rim runout compensation for rear wheels.

**i** Note

*Do not take hold of the cross bar when moving the -VAS 6430- unit.*

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

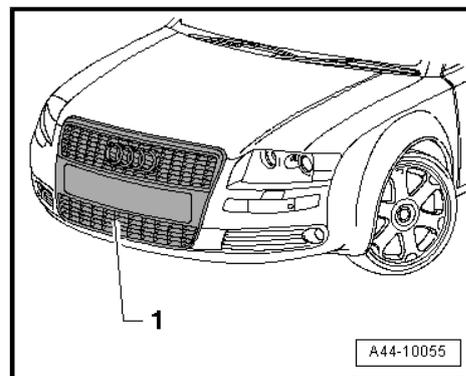
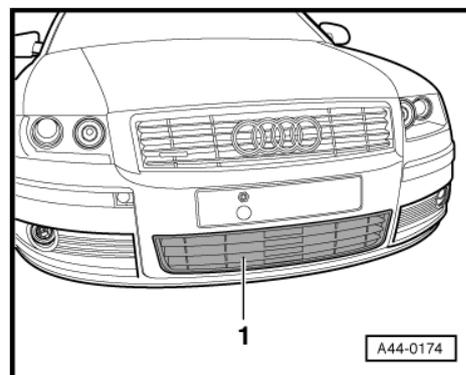
**Adjustment procedure (irrespective of previous wheel alignment check)**

**Vehicles with ornamental grille**

- Remove ornamental grille -1- from front bumper cover ⇒ Rep. gr. 63 .

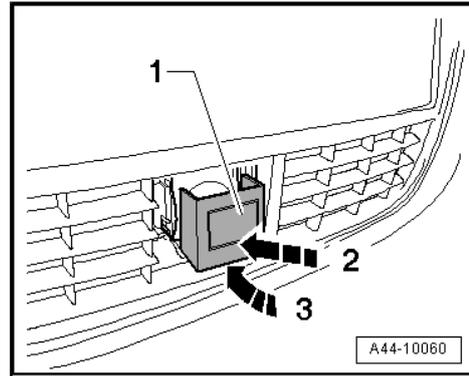
**Vehicles with radiator grille**

- Detach registration plate carrier and cover for sensor for adaptive cruise control -G550- from radiator grille -1- ⇒ Rep. gr. 63 .
- Remove any dirt from sensor lens and inside of radar cover.





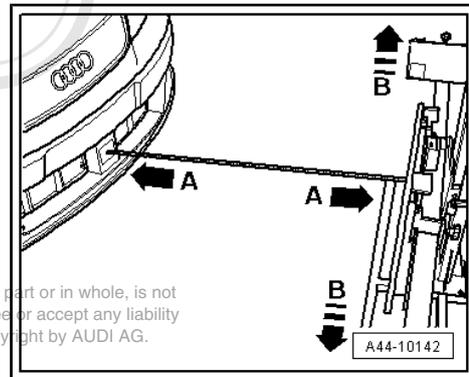
- Detach springs on coarse adjuster -1-.
- First guide in coarse adjuster -1- upwards through ornamental grille -arrow 3- and locate adjuster on sensor for adaptive cruise control -G550- .
- Then pivot coarse adjuster -1- and press adjuster onto sensor for adaptive cruise control -G550- -arrow 2-.



**i** Note

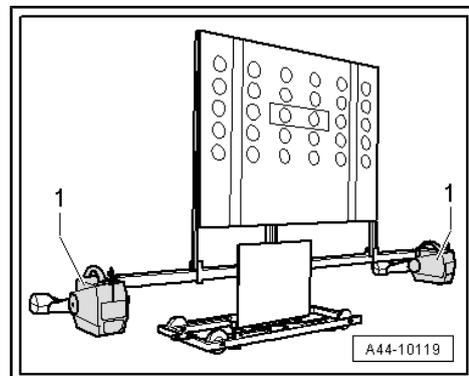
- ◆ Before driving the vehicle onto the alignment platform, make sure there is sufficient space between the vehicle and the ACC setting device -VAS 6430- . The distance between the ACC setting device -VAS 6430- and the vehicle must be  $120\text{ cm} \pm 5\text{ cm}$ .
- ◆ If the available space is not adequate, drive the vehicle backwards onto the alignment platform as required.

- Position ACC setting device -VAS 6430- so that distance -A- between coarse adjuster and surface of mirror is  $120\text{ cm} \pm 5\text{ cm}$ .

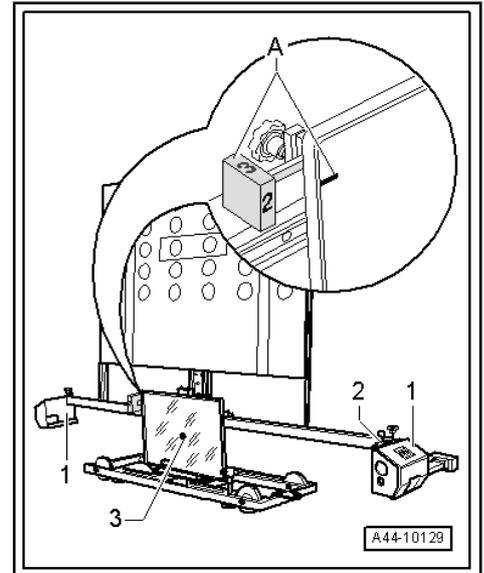


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

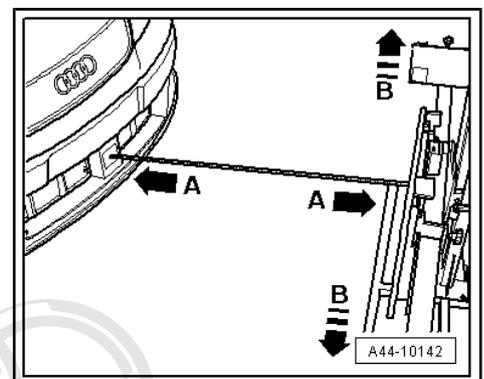
- Attach front wheel alignment sensors -1- to -VAS 6430- .



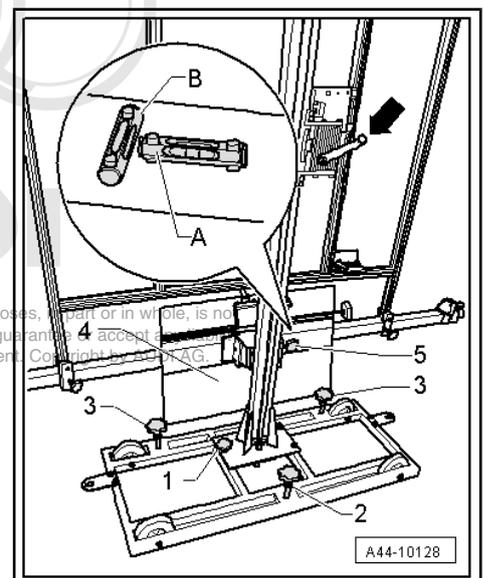
- In area -A-, align number -2- on rotary knob with mark on mirror (number 2 on rotary knob must face vehicle).



- By moving it sideways -arrows B-, set -VAS 6430- so that laser beam coincides with centre of horizontal section of coarse adjuster.



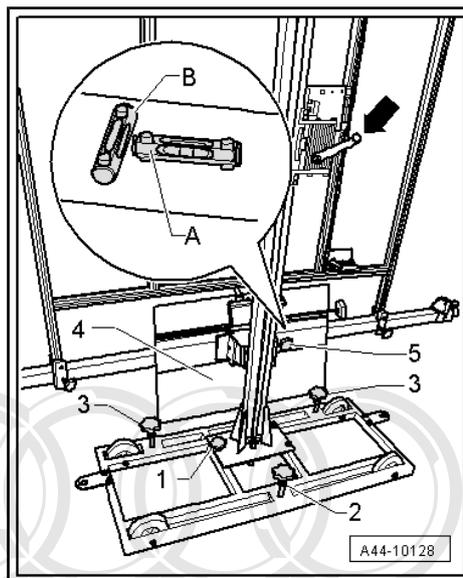
- Use adjusting screws -1-, -2- and -3- to bring spirit levels -A- and -B- on -VAS 6430- into horizontal position.



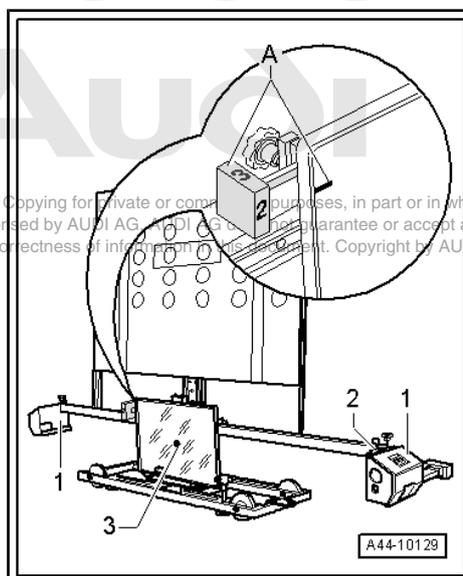
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee the accuracy of the information with respect to the correctness of information in this document. Copyright © Audi AG.



- Using crank handle -arrow- on -VAS 6430- , set mirror -4- so that laser beam coincides with centre of coarse adjuster in vertical plane.
- Set identical individual front axle toe values with fine adjustment screw -5-.
- Difference between individual toe values must be less than 6' or equal.

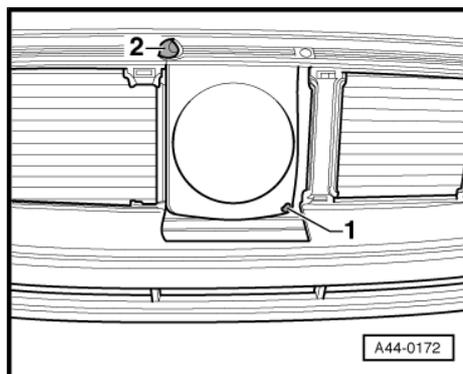


- Balance out spirit levels -2- on wheel alignment sensors -1-.
- Then use laser beam -3- to check pre-adjustment at -VAS 6430- .
- Reflected laser beam must strike laser exit point -3- of -VAS 6430- again.
- If this is not the case, pre-adjustment must be performed.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG or AUDI AG licensee. No warranty or accept any liability with respect to the correctness of information or its content. Copyright by AUDI AG.

- Use long Allen key (3 mm) to set reflected laser beam to laser exit point by way of screws -1- and -2-.
- Detach coarse adjuster on completion of pre-adjustment.
- Connect vehicle diagnostic, testing and information system - VAS 5051/B- .



- Plug in connector of diagnosis cable -VAS 5051/5A- at diagnostic connection.
- Switch on vehicle diagnostic, testing and information system .

The vehicle diagnostic, testing and information system is ready for operation when the selector buttons for the operating modes appear on the screen.

- Switch on ignition.
- Touch the **Guided Fault Finding** button on the display screen.
- Select the following:
  - ◆ Make
  - ◆ Model
  - ◆ Model year
  - ◆ Version
  - ◆ Engine code letters
- Confirm the entered information.

Wait until the vehicle diagnostic, testing and information system has interrogated all the control units in the vehicle.

- Press the **Go to** button and select the option „Function/component selection“.

Then

- „Body (repair group 01; 27; 50 - 97)“
- „Electrical system (Rep. Gr. 01; 27; 50 - 97)“
- „01 - Self-diagnosis compatible systems“
- „13 - Adaptive cruise control“ (Distance regulation)
- „J428 - Adaptive cruise control unit, functions“
- „J428 - Adaptive cruise control adjustment“

Then follow adjustment instructions on screen.

- For fine adjustment in „Guided Fault-Finding“ routine, use screws -1- and -2-.

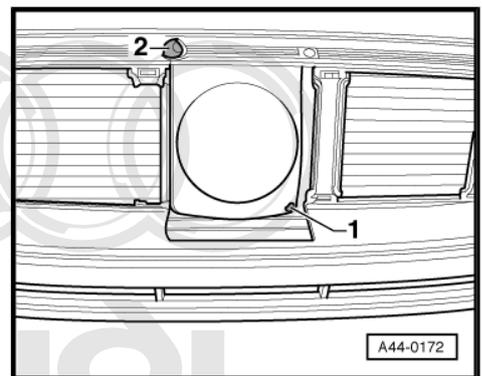
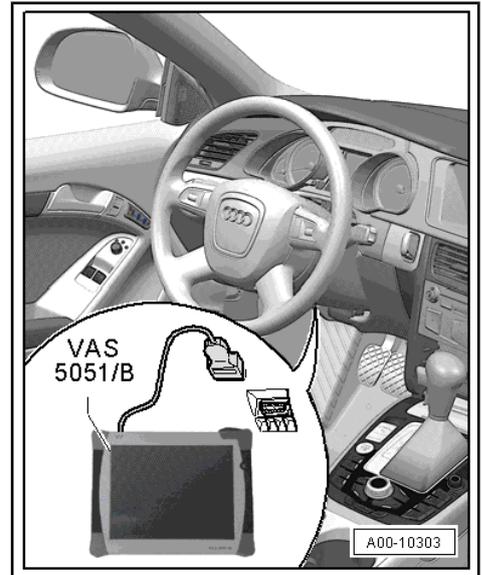
 **WARNING**

*ACC adjustment is not completed until -VAS 5051/B- displays „Control element test ended“.*

- Switch off ignition.
- Detach connector of diagnosis cable -VAS 5051/5A- at diagnostic connection.
- Disconnect battery charger => Rep. gr. 27 .

**Vehicles with ornamental grille**

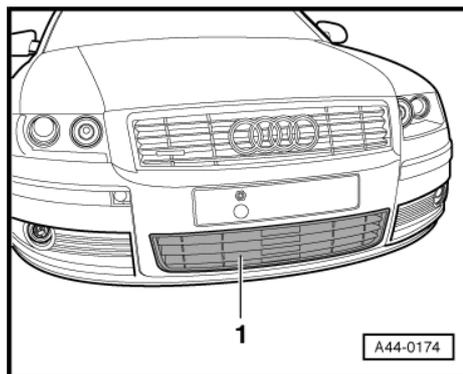
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



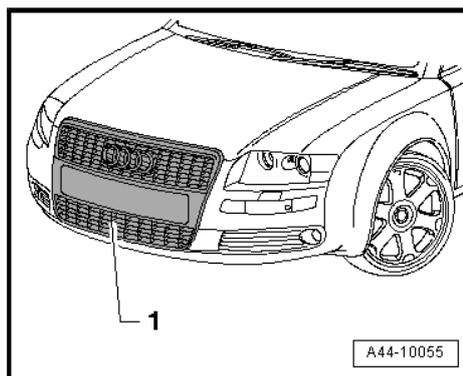


- Install ornamental grille -1- in front bumper cover ⇒ Rep. gr. 63 .

**Vehicles with radiator grille**



- Install radiator grille -1- ⇒ Rep. gr. 63 .

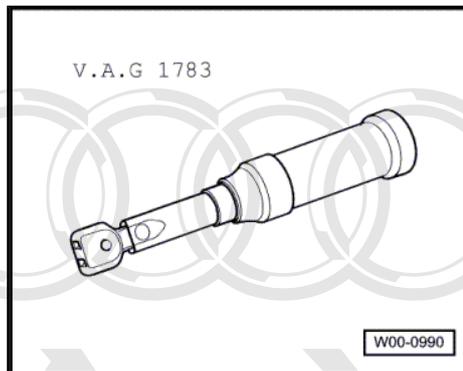


### 5.5 Removing and installing sensor for adaptive cruise control -G550-

The sensor for adaptive cruise control -G550- is located behind the front bumper cover.

**Special tools and workshop equipment required**

- ◆ Torque wrench -V.A.G 1783-

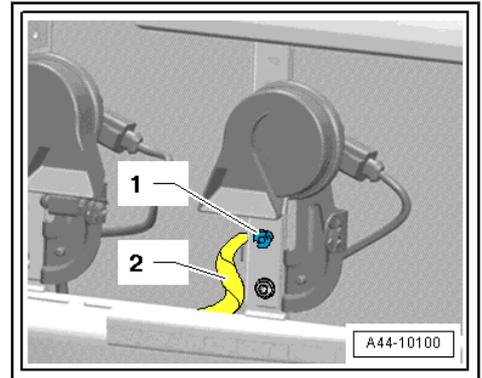


**Removing**

- Detach front bumper cover ⇒ Rep. gr. 63 .

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 clip -1- for wiring harness -2-.



- Unscrew hexagon bolts -1-.
- Detach sensor for adaptive cruise control -G550- together with bracket and unplug connector.
- If necessary, detach sensor for adaptive cruise control -G550- from bracket.

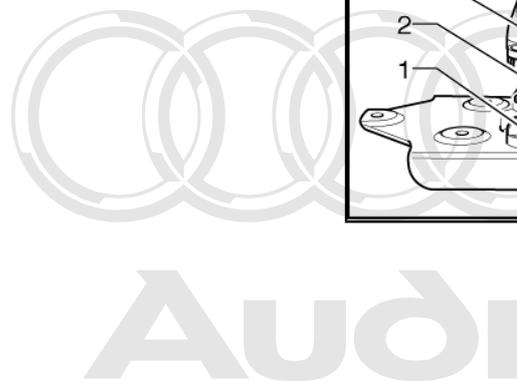
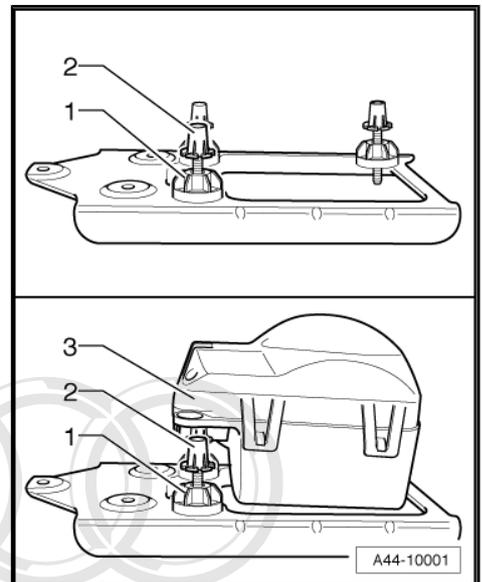
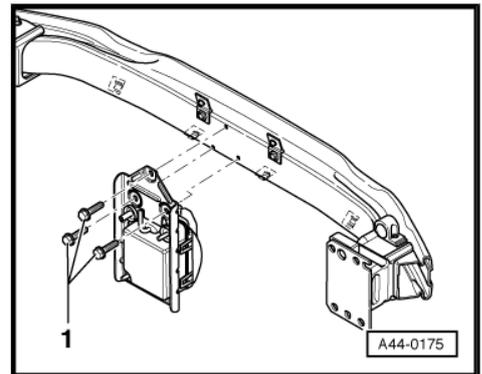
### Installing



#### Note

*The studs in the bracket are pre-adjusted. This setting must not be altered.*

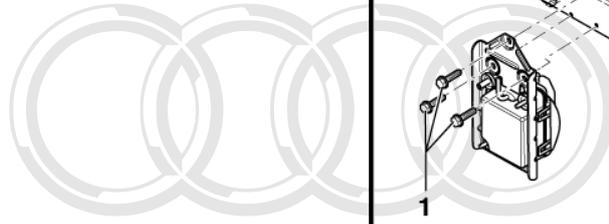
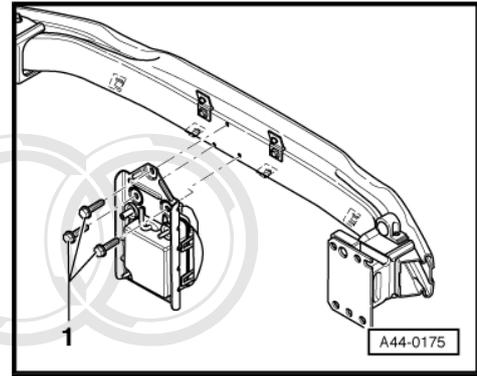
- Place bracket on a flat surface.
- Align clips -2- on studs -1-.
- Carefully press on sensor for adaptive cruise control -G550- -3- by hand until clips -2- engage in sensor.



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



- Install hexagon bolts -1- and tighten to 8 Nm.
- Attach front bumper cover ⇒ Rep. gr. 63 .
- Perform adjustment of ACC ⇒ [page 258](#) .



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.

## 6 Lane departure warning (Audi lane assist)

⇒ „6.1 General notes on lane departure warning function“, page 275

⇒ „6.2 Calibration procedure“, page 276

⇒ „6.3 Removing and installing lane departure warning control unit J759 and backlight masking screen“, page 283

### 6.1 General notes on lane departure warning function

The lane departure warning function assists the driver in keeping the vehicle in its lane. If the vehicle approaches one of the detected lane markings while the system is active, the steering wheel vibrates to warn the driver that the vehicle might be about to cross one of the markings. If the driver operates the turn signal before crossing one of the lane markings (while the system is active), the system will detect that the lane change is intended and will not warn the driver.

The steering wheel is equipped with a vibration motor to generate the required warning vibration. The vibration motor is located under a layer of foam in the lower right spoke of the steering wheel. The vibration in the steering wheel is generated by an eccentric weight that is rotated by the motor. The motor cannot be renewed separately. The complete steering wheel must be renewed if the vibration motor is defective. ⇒ page 285 The duration of the steering wheel vibration is normally approx. one second, but varies according to the driver's reaction.

The camera and the lane departure warning control unit -J759- are installed together in a single housing. The entire unit has to be replaced if the camera or the control unit are defective.

The lane departure warning control unit -J759- is located at the top of the windscreen in the centre, level with the interior mirror. It is attached to a bracket which is bonded to the windscreen.

Anything that restricts the view of the camera, such as stone chips or stickers applied to the windscreen, can cause malfunctions of the system.

The lane departure warning button -E517- is integrated in the turn signal switch lever. The system can be switched on and off by pressing the button. The turn signal switch lever with lane departure warning button -E517- must be replaced as a complete unit if the button is defective ⇒ Rep. gr. 94 .



#### Note

*The message „Audi lane assist not available: currently no sensor vision“ will appear in the display if the camera is not able to detect the lane markings for longer than a defined period. This can be caused by the following:*

- ◆ Camera vision is obstructed by dirt or ice, etc. This should be rectified accordingly.
- ◆ Camera vision is obstructed by condensation. Wait for condensation to clear.
- ◆ Lane markings not visible for long periods due to road conditions (e.g. snow-covered surface).

If the condensation does not clear by itself, or if the inside of the windscreen is very dirty (in the camera's range of vision), the rel-



event area must be cleaned by hand. To do this, remove the control unit and the backlight masking screen and clean the windscreen with cleaning fluid -D 009 401 04-. Removing control unit and backlight masking screen ⇒ [page 283](#) .

The lane departure warning must be calibrated correctly to ensure proper function.

**Re-calibration is required when:**

- ◆ The fault „No or incorrect basic setting / adaption“ is registered in the fault memory.
- ◆ The lane departure warning control unit -J759- is renewed.
- ◆ The windscreen is removed or renewed.
- ◆ The rear axle toe setting is changed.
- ◆ The running gear of the vehicle is modified in any way – e.g. conversion from standard running gear to sports running gear.
- ◆ The vehicle level senders are re-adapted on vehicles with electronic damping control or air suspension.



**Note**

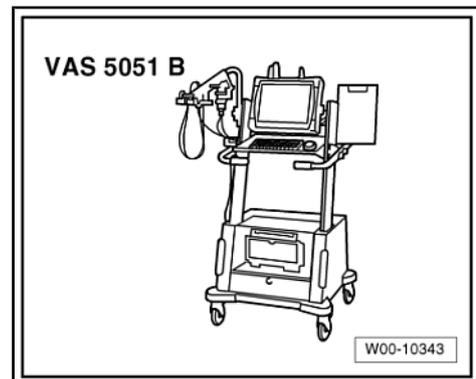
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

*Before performing a calibration of the lane departure warning system, read out the fault memory and rectify any faults as necessary. The direction of travel of the vehicle must be determined in order to provide the reference position of the setting device - VAS 6430- when calibrating the lane departure warning system. Calibration of the lane departure warning system may only be performed using VW/Audi-approved wheel alignment equipment. Always use the setting device -VAS 6430- for calibrating the lane departure warning system.*

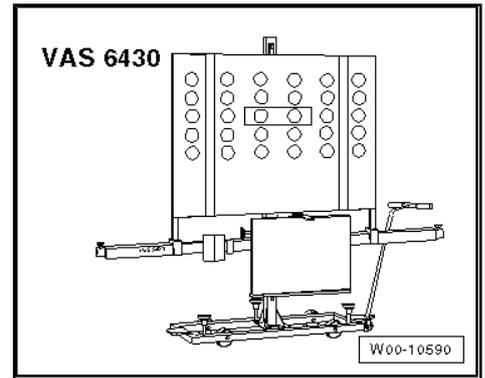
## 6.2 Calibration procedure

### Special tools and workshop equipment required

- ◆ Vehicle diagnostic, testing and information system -VAS 5051 B- with appropriate diagnosis cable



◆ Setting device -VAS 6430-



◆ Wheel alignment computer

**i** Note

- ◆ *Check that the lane departure warning control unit -J759- is seated correctly in the bracket.*
- ◆ *Check that the camera vision is unobstructed (visual inspection).*
- ◆ *Before commencing calibration, interrogate fault memory and rectify any faults.*
- ◆ *Before driving the vehicle onto the alignment platform, make sure there is sufficient space between the hub centres of the front wheels and the setting device -VAS 6430-. The distance between -VAS 6430- and the hub centres of the front wheels must be 150 cm ± 2.5 cm.*
- ◆ *If the available space is not adequate, drive the vehicle backwards onto the alignment platform as required.*
- ◆ *Check the position of the calibration screen on the cross bar and align the calibration screen centrally if necessary.*
- Observe test requirements for wheel alignment check ⇒ [page 247](#) .
- Connect battery charger ⇒ Rep. gr. 27 .
- Connect diagnostic tester to vehicle. (Run diagnosis cable through open window).

**i** Note

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted.  
***During the calibration, make sure that all doors are closed on the vehicle and that the exterior lights are switched off.*** by AUDI AG.

- On vehicles with air suspension, activate jacking mode in comfort level setting ⇒ [page 188](#) .
- Set front wheels to straight-ahead position.
- Select calibration procedure for lane departure warning system in wheel alignment computer.
- Attach quick-release clamps to all four wheels.
- Attach wheel alignment sensors to rear wheels.
- Carry out wheel rim runout compensation for rear wheels.

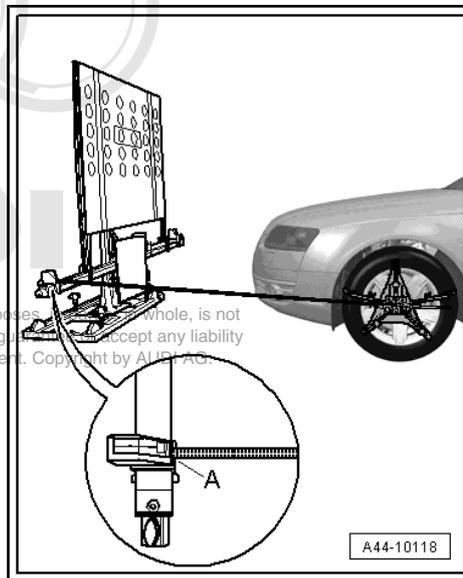


Note

Do not take hold of the cross bar when moving the -VAS 6430- unit.

- Set up -VAS 6430- as shown in illustration so that distance -A- measured from hub centres of front wheels to cross bar of -VAS 6430- is 150 cm  $\pm$  2.5 cm.

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

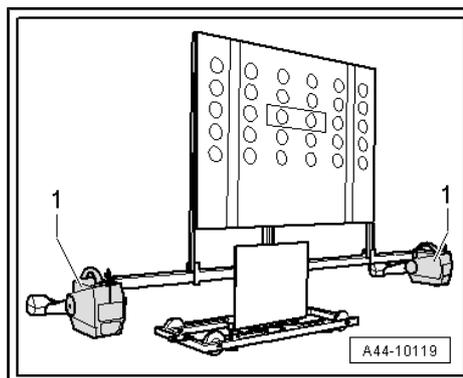


- Attach front wheel alignment sensors -1- to -VAS 6430- .

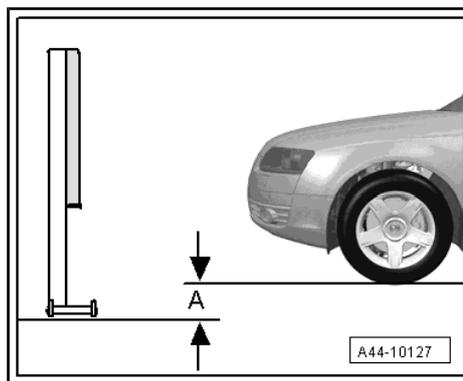


Note

For the next step the wheel alignment platform must be set at the lowest available position.



- Determine height difference -A- between floor level where -VAS 6430- is set up and tyre contact surface as shown in illustration and enter this value in the wheel alignment computer.

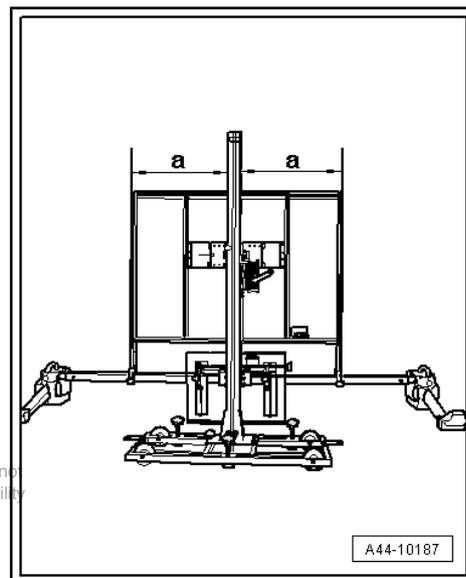


- Check the position of the calibration screen on the cross bar and align the calibration screen centrally if necessary.

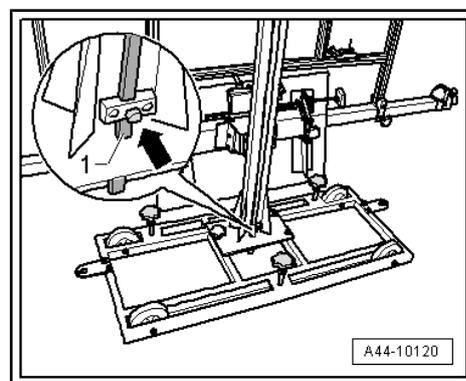
a = a



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



- Loosen bolt -arrow- and set measuring bar -1- on floor.

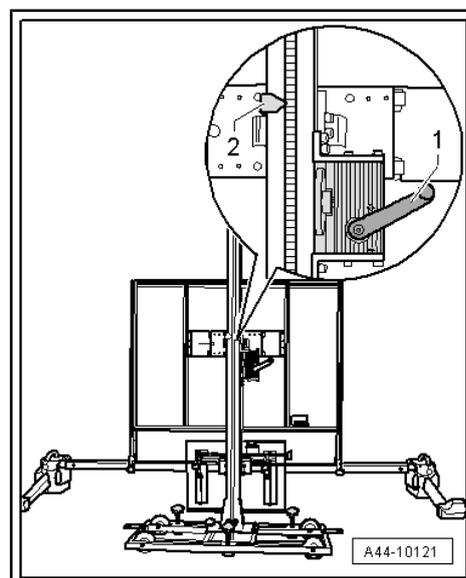


- Using crank -1-, adjust calibration screen to specified height -2- as indicated by wheel alignment computer.

When specified height -2- has been set, move measuring bar up slightly and tighten securing bolt.

**i** Note

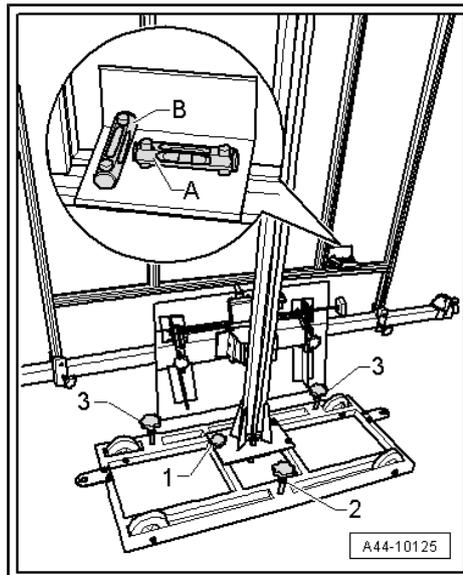
*If the height of the calibration screen has to be corrected at a later stage of the procedure, the measuring bar must be set on the floor when making the adjustment.*



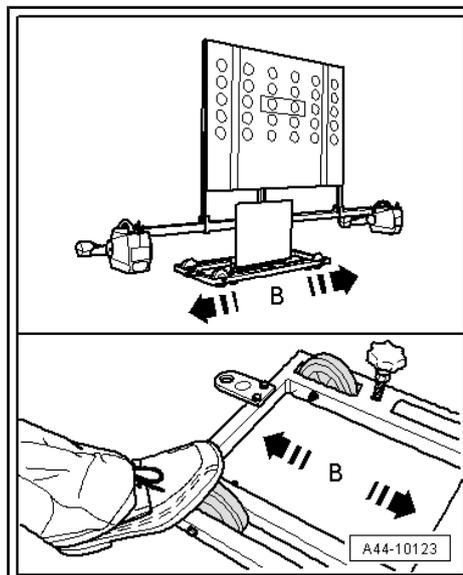


- Set spirit level -A- to horizontal position with adjuster screw -1-.

The spirit level -A- has to be adjusted at this point to compensate for any floor irregularities.

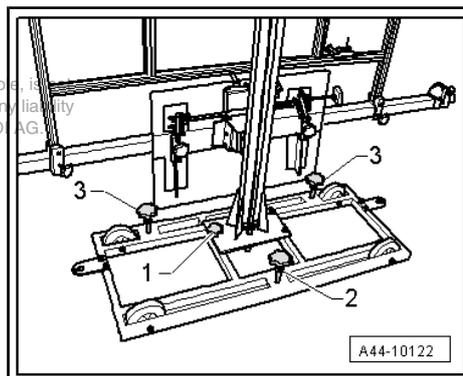


- Move -VAS 6430- sideways -arrow B- until display on wheel alignment computer is within tolerance.

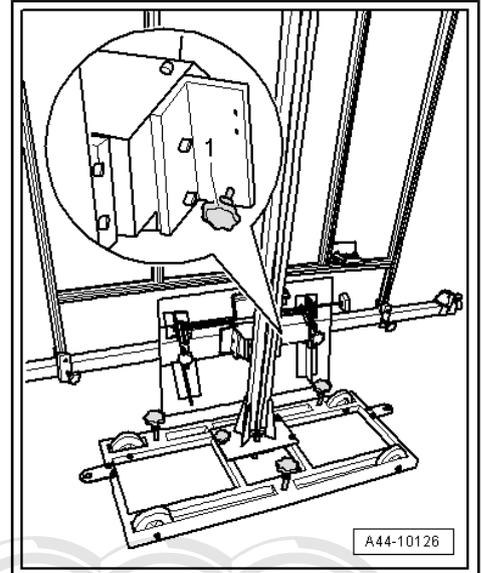


- Secure by tightening bolts -2- and -3- -VAS 6430- lightly. (This will prevent the -VAS 6430- from rolling away.)

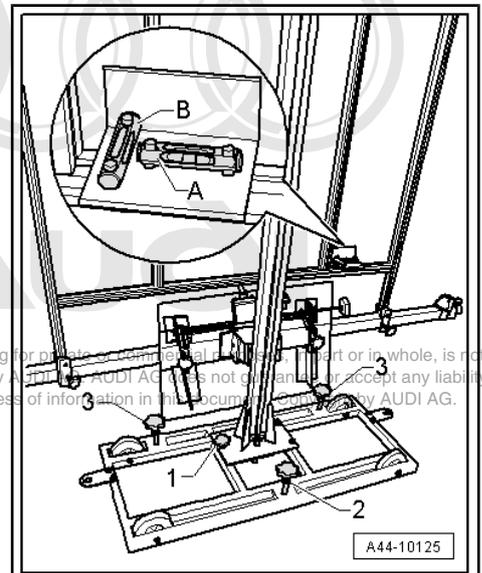
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- Turn fine adjustment screw -1- until display on wheel alignment computer is within tolerance.



- Set spirit level -A- to horizontal position with adjuster screw -1-.



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



- Set spirit level -B- to horizontal position with adjuster screw -2-.

The remaining steps are now performed via the diagnostic tester.

- Switch on ignition.
- Touch the **Guided Fault Finding** button on the display screen.
- Select the following:
  - ◆ Make
  - ◆ Model
  - ◆ Model year
  - ◆ Version
  - ◆ Engine code letters
- Confirm the entered information.

Wait until the vehicle diagnostic, testing and information system has interrogated all the control units in the vehicle.

- Press the **Go to** button and select the option „Function/component selection“.

Then

- „Body (repair group 01; 27; 50 - 97)“
- „Electrical system (Rep. Gr. 01; 27; 50 - 97)“
- „01 - Self-diagnosis compatible systems“
- „5C - Lane departure warning“
- „J759 - Lane departure warning control unit, functions“
- „J759 - Calibration“

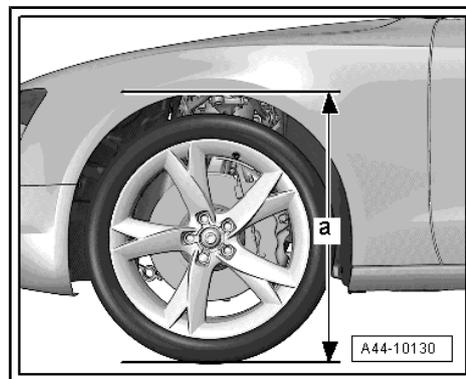
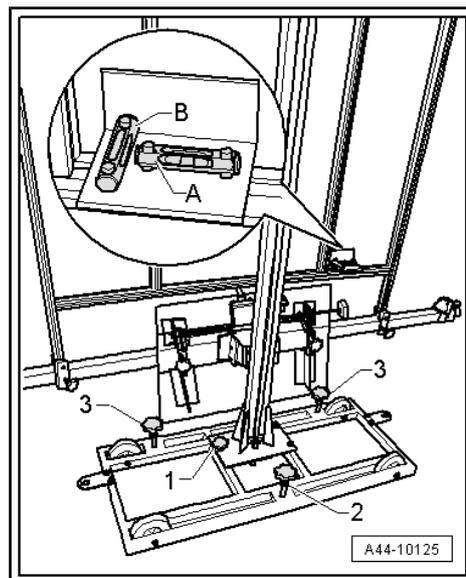
Then follow the instructions on the screen to perform the calibration.



**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 next step required in the Guided Fault Finding program is to measure the height of the body.

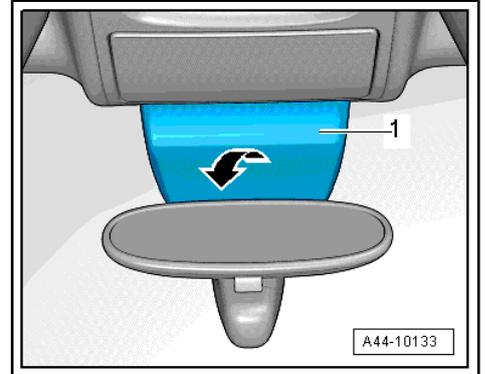
- Measure height of body -a- at all four wheels between tyre contact surface and bottom edge of wing panel at centre of wheel.



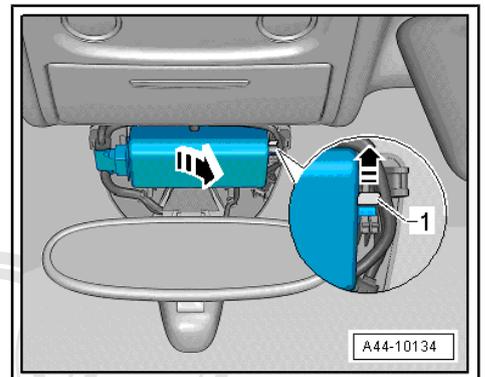
## 6.3 Removing and installing lane departure warning control unit -J759- and backlight masking screen

### Removing

- Detach cover panel -1- from bracket by pulling down in direction indicated by arrow.



- Press retaining clip -1- forwards in direction of -arrow- and detach lane departure warning control unit -J759- from bracket by moving it downwards and to one side.
- Unplug electrical connector and take out lane departure warning control unit -J759- .



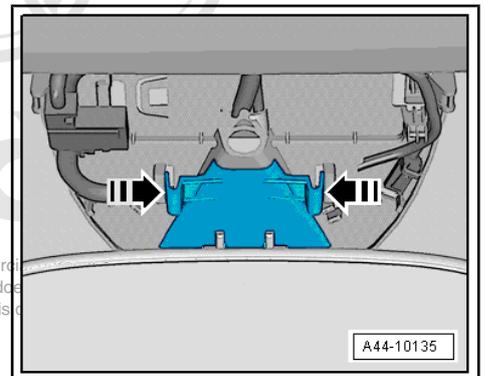
- Press clips -arrows-, pull backlight masking screen out of bracket and remove towards the rear.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

#### Note

- ◆ *The camera's area of vision on the inside of the windscreen must not be obstructed by condensation or dirt. If necessary, clean this part of the glass by hand using cleaning fluid -D 009 401 04- .*
- ◆ *If the lane departure warning control unit -J759- is renewed, the camera and the lane departure warning control unit -J759- must be re-calibrated => [page 276](#) .*



## 48 – Steering

### 1 Steering wheel with airbag

⇒ „1.1 Exploded view of steering wheel with airbag“, page 284

⇒ „1.2 Removing and installing steering wheel with airbag“, page 285

#### 1.1 Exploded view of steering wheel with airbag

##### 1 - Steering wheel

- Removing and installing ⇒ page 285
- Different versions available
- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

##### 2 - Torx bolts T30 (2x)

- Tightening torque ⇒ Rep. gr. 69 ; Removing and installing driver's airbag unit -N95-

##### 3 - Cap

##### 4 - Multi-point socket head bolt

- Removing and installing ⇒ Rep. gr. 69

##### 5 - Airbag unit

- Observe safety precautions ⇒ Rep. gr. 69
- Removing and installing ⇒ Rep. gr. 69

##### 6 - Multi-function coupling

- For multi-function steering wheel

##### 7 - Connector for airbag unit

- Mechanically encoded to prevent interchange

##### 8 - Plug for coil connector

##### 9 - Connector for airbag unit

- Mechanically encoded to prevent interchange

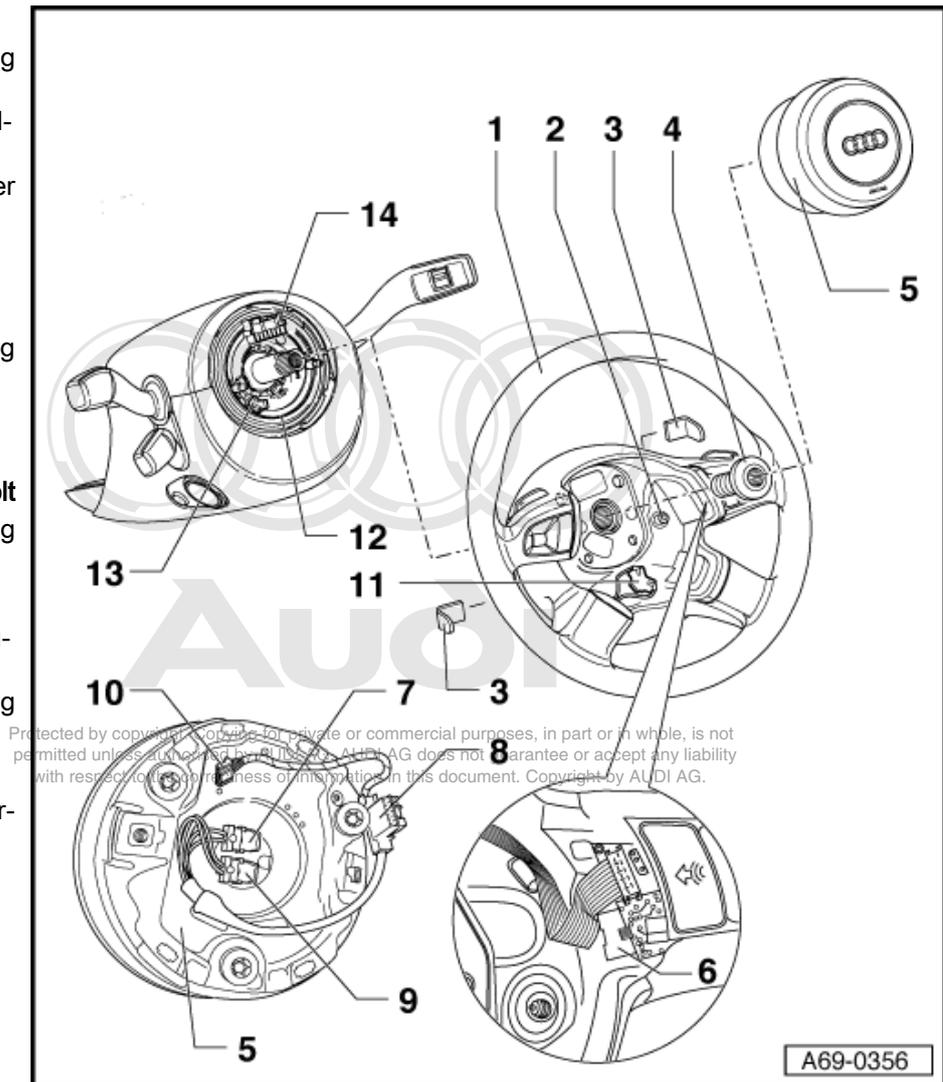
##### 10 - Connector for multi-function steering wheel

##### 11 - Connector for heated steering wheel

##### 12 - Return ring with slip ring

##### 13 - Connector coupling for heated steering wheel

##### 14 - Connector coupling for airbag 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.

## 1.2 Removing and installing steering wheel with airbag

### Removing

- Turn wheels to straight ahead position.
- Remove airbag unit ⇒ Rep. gr. 69 .
- Unscrew multi-point socket head bolt.

### Installing

#### Note the following points when installing:

Before fitting steering wheel, make sure wheels are in straight ahead position.

- Install steering wheel.
- Fit steering wheel in position and tighten multi-point socket head bolt ⇒ Rep. gr. 69 .
- Install airbag unit ⇒ Rep. gr. 69 .



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

## 2 Steering column

⇒ „2.1 Exploded view of steering column“, page 286

⇒ „2.2 Handling and transporting steering column“, page 287

⇒ „2.3 Removing and installing steering column“, page 288

⇒ „2.4 Electrical adjustment of steering wheel position“, page 292

⇒ „2.5 Checking steering column for damage“, page 292

⇒ „2.6 Easy-entry facility for vehicles with seat memory“, page 293

### 2.1 Exploded view of steering column

The replacement steering column is only supplied as a complete unit. Repair is not possible.

#### 1 - Steering column

- With mechanical height adjustment
- Can only be replaced as complete unit
- Removing and installing ⇒ page 288

#### 2 - Bolt, 22 Nm

- Observe correct tightening sequence ⇒ page 291

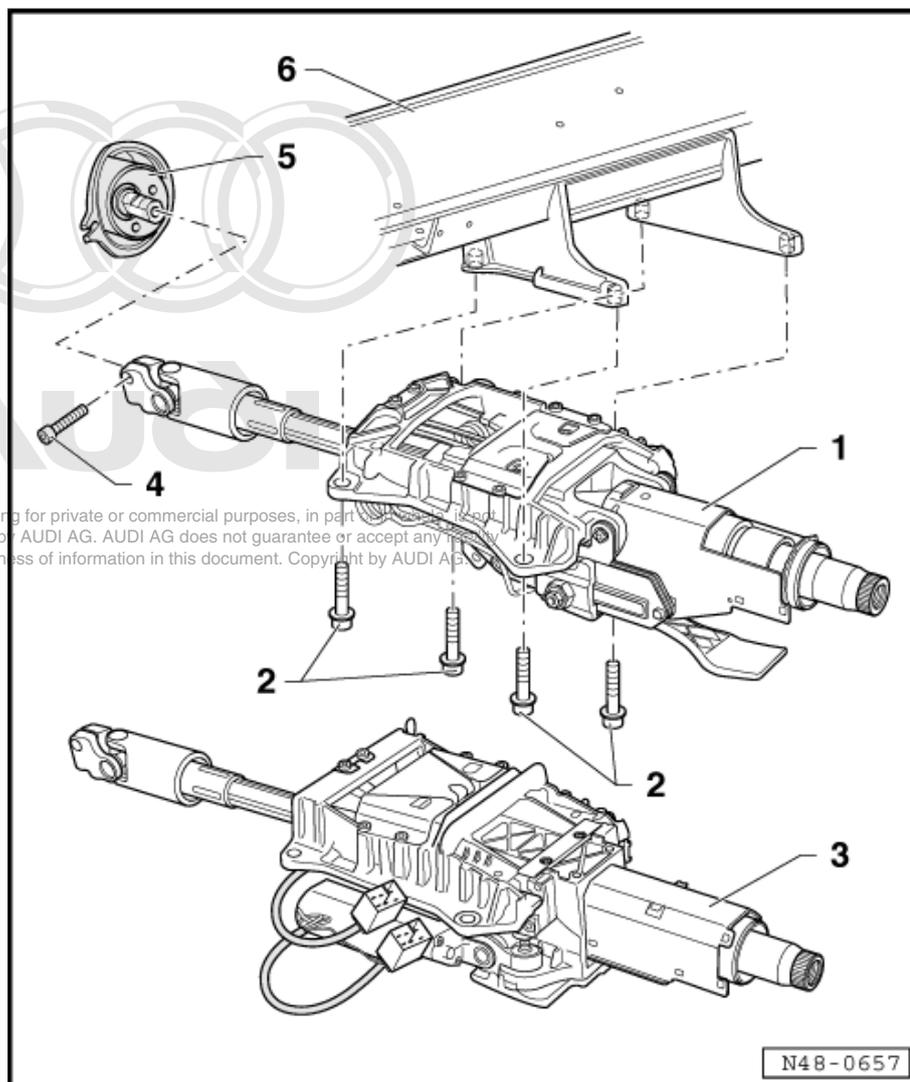
#### 3 - Steering column

- With electrical height adjustment
- Can only be replaced as complete unit
- Removing and installing ⇒ page 288

#### 4 - Bolt, 30 Nm

#### 5 - Steering box pinion

#### 6 - Cross member for steering column



## 2.2 Handling and transporting steering column

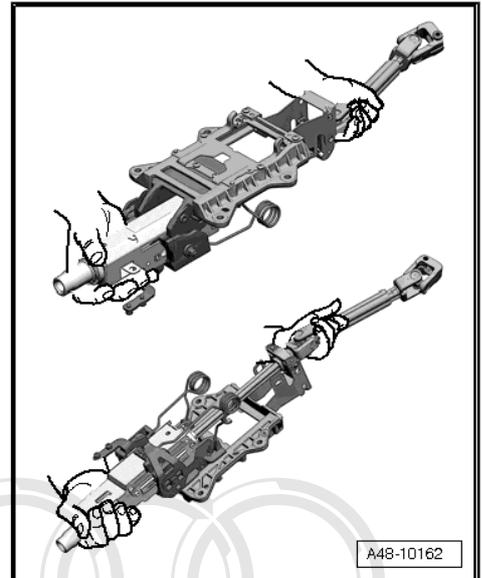


### WARNING

- ◆ *These instructions for handling the steering column MUST be observed at all times.*
- ◆ *Incorrect handling can damage the steering column and thus cause a safety risk.*

### Correct handling and transportation of steering column

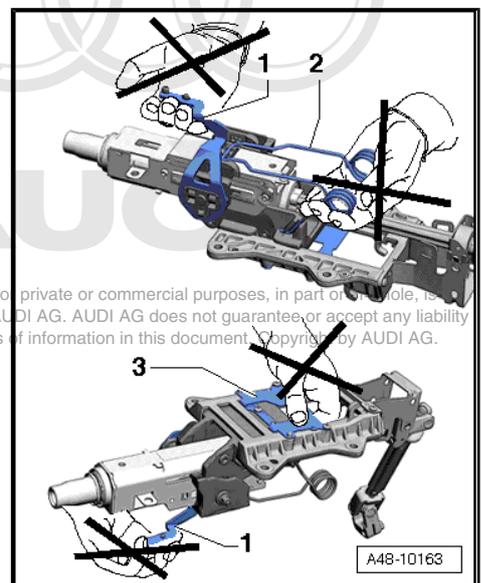
- ◆ Use both hands to carry the steering column.
- ◆ Take hold of the steering column at the top column tube and the upper universal joint.



### Incorrect handling of steering column

Carrying the steering column by the following parts will cause damage:

- 1 - Clamping lever
- 2 - Balance springs
- 3 - Deformation element

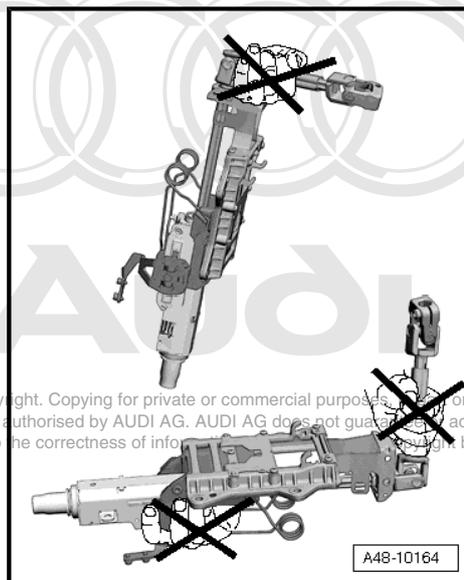


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



The bushes of the universal joint at the lower steering column bearing will be damaged by:

- ◆ Picking up and carrying the steering column by the jointed shaft with one hand.
- ◆ Bending the universal joints further than 90°.



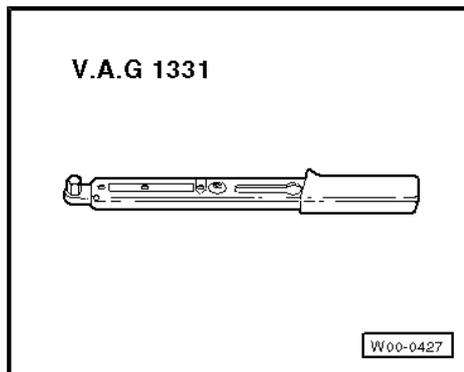
Protected by copyright. Copying for private or commercial purposes, in whole or in part, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information published by AUDI AG.

### 2.3 Removing and installing steering column

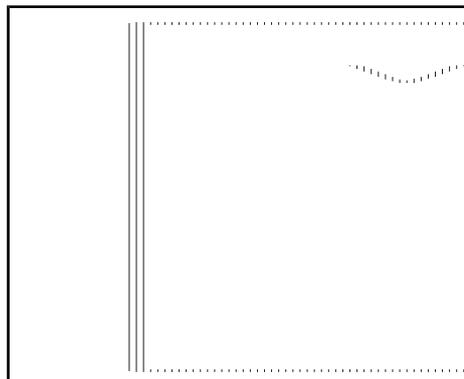
The replacement steering column is only supplied as a complete unit. Repair is not possible.

#### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-



- ◆ Vehicle diagnostic, testing and information system -VAS 5051 A-



- ◆ Diagnosis cable -VAS 5051/5A-

The replacement steering column is only supplied as a complete unit. Repair is not possible.

#### Removing

- Remove driver's airbag unit => Rep. gr. 69 .

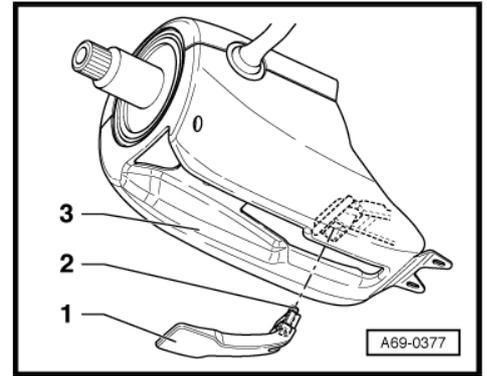
- Slacken off bolt -2-.
- Remove handle -1-.
- 3 - Steering column trim
- Remove steering wheel with airbag ⇒ [page 285](#) .
- Remove trim for steering column switch and switch itself ⇒ Rep. gr. 94 .
- Remove driver's storage compartment ⇒ Rep. gr. 68 .
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove front left wheel.
- Secure brake disc with one wheel bolt.
- Remove front left wheel housing liner ⇒ Rep. gr. 66 .

To prevent them being pulled apart, the upper and lower sections of the steering column must be held together when they are detached from steering box.

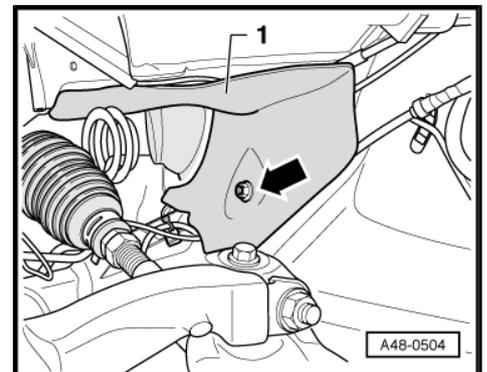
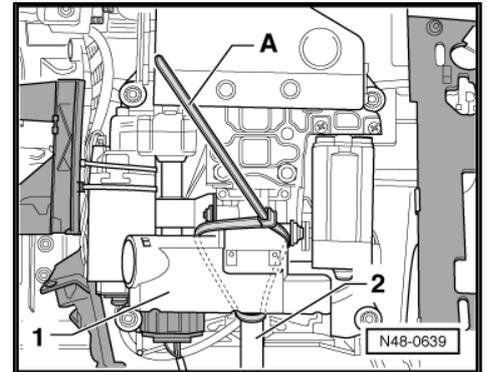
**The splines will separate if the top and bottom sections of the steering column are pulled apart or telescoped together too far.**

**Rattling noise may develop while driving if the splines are no longer engaged in their original position.**

- Use cable tie -A- to secure universal joint -2- at steering column.



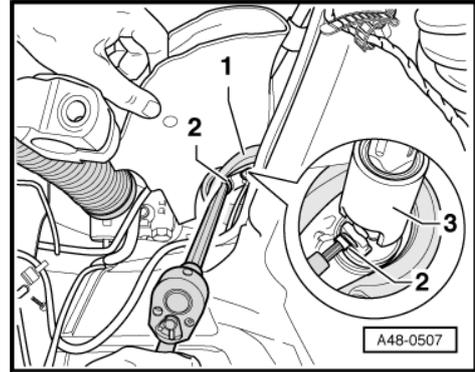
- Unscrew nut -arrow- and fold trim -1- upwards.



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



- Move aside bulkhead seal -1-.
- Unscrew bolt -2- from universal joint -3-.



**Note**

- ◆ Always renew bulkhead seal => *Item 4 (page 295)* if damaged.
- ◆ Make sure bulkhead seal is properly positioned in bulkhead.
- ◆ Unplug connector -A-.

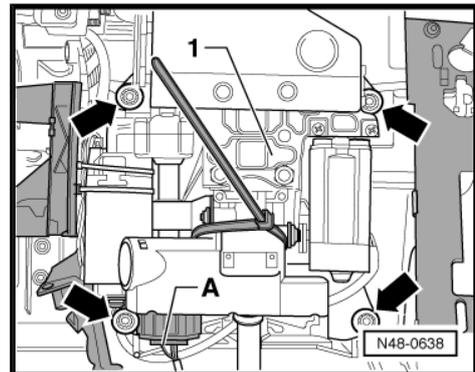
**Vehicles with electrical height adjustment**

- Unplug connectors (2x behind dash panel) for electrical height adjustment.

**All vehicles (continued):**

- Unscrew mountings -arrows- for steering column -1-.

- Take out steering column.



**Installing**

Installation is carried out in the reverse sequence, when doing this note the following:



**Note**

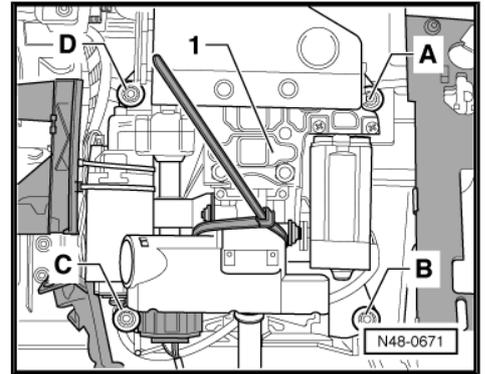
*When a new key set is being fitted, and the vehicle is thus being assigned a new "identity", the steering column lock control element -N360- (electronic steering column lock) can only be adapted when the entry and start authorisation control unit -J518- has already learned the new identity. If the electronic steering column lock is adapted before this is done, it will not be able to learn the new identity and therefore cannot be used.*

New replacement steering columns are fitted with a transport lock.

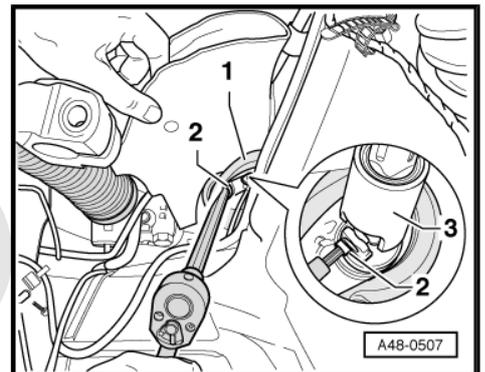
- Remove transport lock after installing steering column.
- Position steering column at cross member.
- Fit and hand-tighten all bolts.
- Fully tighten bolts.

### Tightening sequence:

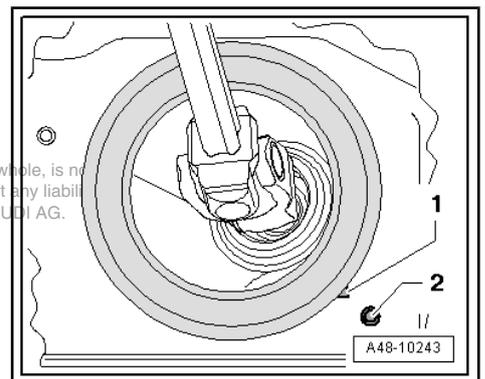
- Start by tightening bolt -A- ⇒ [Item 2 \(page 286\)](#) .
- Then tighten bolts -B- and -D- ⇒ [Item 2 \(page 286\)](#) .
- Finally tighten bolt -C- to torque ⇒ [Item 2 \(page 286\)](#) .
- Fit universal joint onto steering box pinion.



- Tighten bolt -2- on universal joint -3- ⇒ [Item 4 \(page 286\)](#) .
- Insert bulkhead seal -1- in bulkhead.
- Note installation position of bulkhead seal.



- Pointed tab -1- on bulkhead seal faces pin -2-.
- Fit wheel housing liner ⇒ Rep. gr. 66 .
- Fit and secure wheel ⇒ Wheels and tyres; Rep. gr. 44 .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Install driver's storage compartment ⇒ Rep. gr. 68 .
- Install trim for steering column switch and switch itself ⇒ Rep. gr. 94 .
- Install steering wheel with airbag ⇒ [page 285](#) .
- Install lever for steering column adjustment.
- Install driver's airbag unit ⇒ Rep. gr. 69 .
- Electric steering column lock, steering angle sender -G85- and „basic setting“ in onboard power supply control unit -J519- must be (re-)adapted in next operation.
- Connect -VAS 5051 A- and select function test (for „function/ component“) ⇒ [page 191](#) .



### Then

- „Running gear (Rep. Gr. 01; 34 - 65)“
- „Steering (Rep. Gr. 48)“
- „Steering column assembly, functions“
- „Steering column replacement“

## 2.4 Electrical adjustment of steering wheel position



### Note

The height and axial position of the steering wheel can be adjusted electrically.

#### Height adjustment

- Press switch -B- up or down. Height is adjusted as long as switch is pressed.

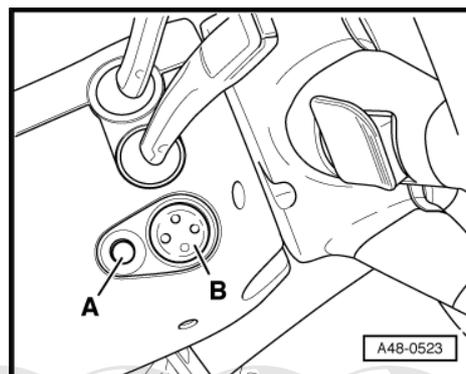
#### Axial adjustment

- Press switch -B- forwards or pull it towards you. The axial position is adjusted as long as the switch is operated.



### Note

- ◆ The steering column can also be electrically adjusted with the ignition switched off.
- ◆ On vehicles with seat memory, the corresponding steering column setting can be stored together with the seat position.



## 2.5 Checking steering column for damage

#### Visual inspection

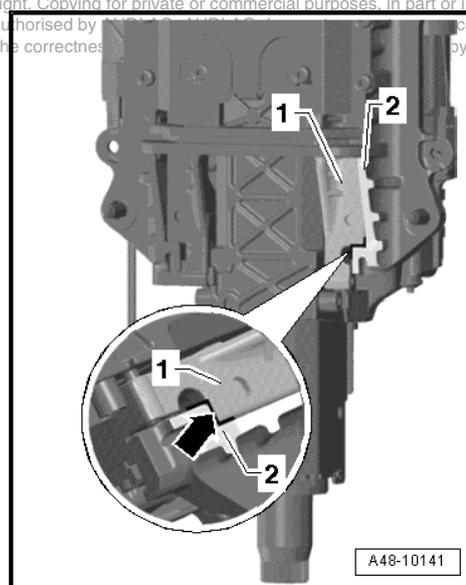
- Check all parts of steering column for damage.

#### Checking function

- Check that steering column turns easily and smoothly.
- Check that steering column can be adjusted for height and reach without sticking.
- Check whether there is a gap -arrow- between slide -1- and bracket -2-.

If the steering column is undamaged the gap -arrow- should be 0 mm.

- The steering column must be renewed if the gap is greater than 0.5 mm.

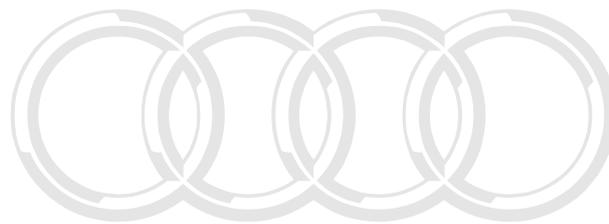
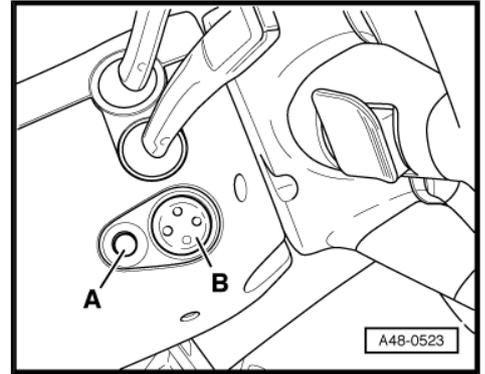


## 2.6 Easy-entry facility for vehicles with seat memory

 **Note**

*This function provides automatic steering column adjustment to facilitate getting into and out of the vehicle.*

- Press button -A- to activate/deactivate easy-entry facility.
- ◆ With easy-entry facility activated (button -A- pressed), steering column moves into park position, i.e. upwards, when ignition is switched off.
- ◆ After driver gets into vehicle, steering column returns to stored position as soon as ignition is switched on.
- ◆ Stored steering wheel position can only be called up if driver's seat memory button is set to „ON“ (pressed).
- ◆ With easy entry facility deactivated, steering column adopts stored position as soon as seat memory button is pressed.



**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.



### 3 Power steering box

⇒ [„3.1 Exploded view of power steering box“, page 294](#)

⇒ [„3.2 Centralising steering“, page 296](#)

⇒ [„3.3 Removing and installing power steering box \(LHD vehicles\)“, page 298](#)

⇒ [„3.4 Removing and installing power steering box \(RHD vehicles\)“, page 307](#)

⇒ [„3.5 Servicing power steering box“, page 316](#)

⇒ [„3.6 Removing and installing servotronic solenoid valve N119“, page 319](#)

⇒ [„3.7 Adjusting power steering box“, page 319](#)

⇒ [„3.8 Removing and installing track rod ball joint“, page 320](#)

⇒ [„3.9 Removing and installing track rods“, page 323](#)

#### 3.1 Exploded view of power steering box

Steering box in RHD vehicles is symmetrically opposite. Attachment of hydraulic lines on steering box ⇒ [page 296](#)



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 power steering box is removed and installed complete with track rods.

**1 - Power steering box with track rods**

- Removing and installing (LHD) ⇒ [page 298](#)
- Removing and installing (RHD) ⇒ [page 307](#)
- Right-hand drive version ⇒ [page 296](#)
- Servicing ⇒ [page 316](#)
- Different versions possible. Refer to ⇒ Electronic parts catalogue „ETKA“

**2 - Bolt, 30 Nm**

**3 - Steering column**

**4 - Bulkhead seal**

- Check for splits and chafing

**5 - Bolt, 95 Nm**

- Observe correct tightening sequence (LHD) ⇒ [page 303](#)
- Observe correct tightening sequence (RHD) ⇒ [page 313](#)

When tightening bolt, set torque wrench -V.A.G 1332- to 70 Nm.

This tightening torque only applies when using insert tool -T40037-

**6 - Bolt, 95 Nm**

- Observe correct tightening sequence (LHD) ⇒ [page 303](#)
- Observe correct tightening sequence (RHD) ⇒ [page 313](#)

**7 - Bolt, 5 Nm**

**8 - Bolt**

**9 - Self-locking nut, 50 Nm**

- Always renew if removed

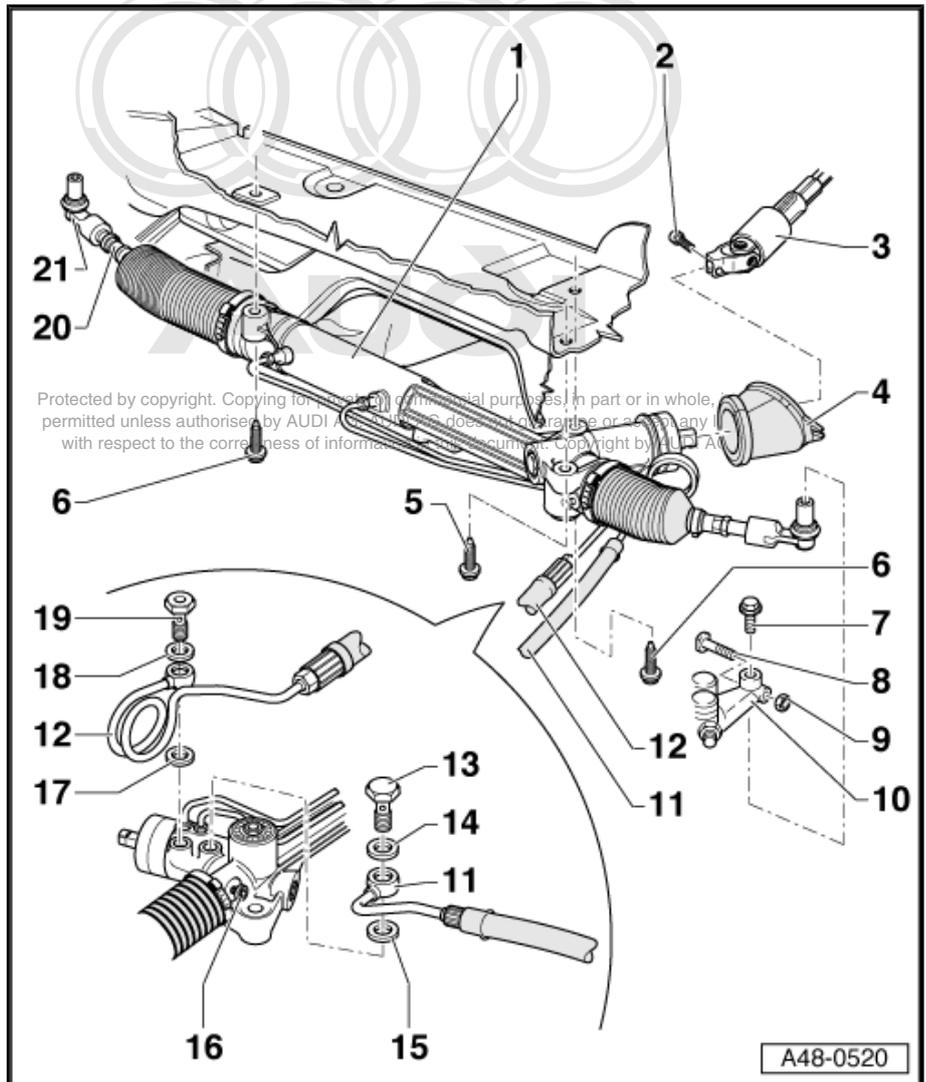
**10 - Hub carrier (steering arm)**

**11 - Return hose**

- RHD version only: detaching return hose from steering box ⇒ [page 296](#)
- Different versions possible. Refer to ⇒ Electronic parts catalogue „ETKA“
- Check engine version

**12 - Pressure line**

- RHD version only: detaching pressure line from steering box ⇒ [page 296](#)
- Different versions possible. Refer to ⇒ Electronic parts catalogue „ETKA“
- Check engine version



**13 - Banjo bolt, 35 Nm****14 - Seal**

- Always renew

**15 - Seal**

- Always renew

**16 - Socket head bolt, 22 Nm**

- Screw plug ⇒ [page 296](#)

**17 - Seal**

- Always renew

**18 - Seal**

- Always renew

**19 - Banjo bolt, 47 Nm****20 - Track rod**

- Removing and installing ⇒ [page 323](#)

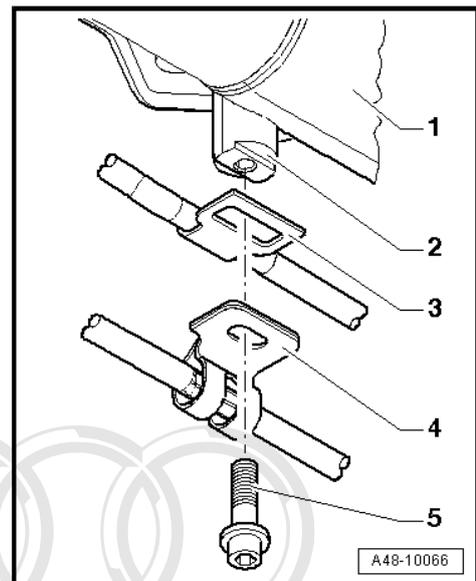
**21 - Track rod ball joint**

- Removing and installing ⇒ [page 320](#)

**RHD version only: Attachment of hydraulic lines on steering box (bottom)**

- Attach line -3- to steering box first, as illustrated. Then fit line -4-.

- 1 - Steering box
- 2 - Mounting
- 3 - Return line
- 4 - Expansion hose
- 5 - Bolt, 22 Nm



## 3.2 Centralising steering

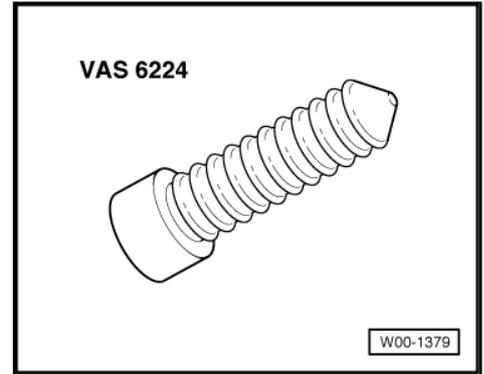
**Special tools and workshop equipment required**

- ◆ Torque wrench -V.A.G 1331-

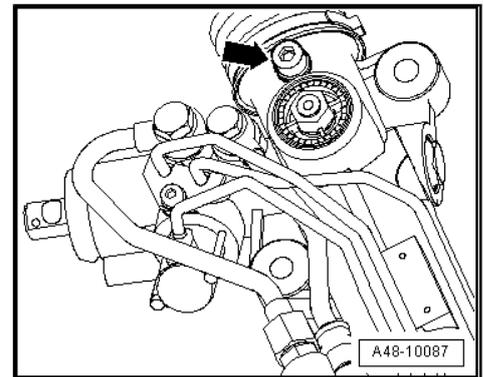
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



◆ Steering centring bolt -VAS 6224-

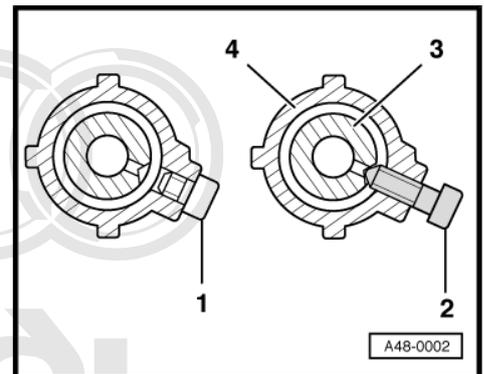


Screw plug -arrow- for centralising steering is located between rubber boot and adjuster unit



Steering box (sectional drawing)

- 1 - Screw plug, 22 Nm
- 2 - Screw in steering centring bolt -VAS 6224- as far as possible by hand.
- 3 - Steering rack
- 4 - Steering box housing
- Move steering wheel slightly to left and right of centre position.
- Have a second mechanic screw steering centring bolt -VAS 6224- -2- into the steering box until it is felt to engage in the centring hole.



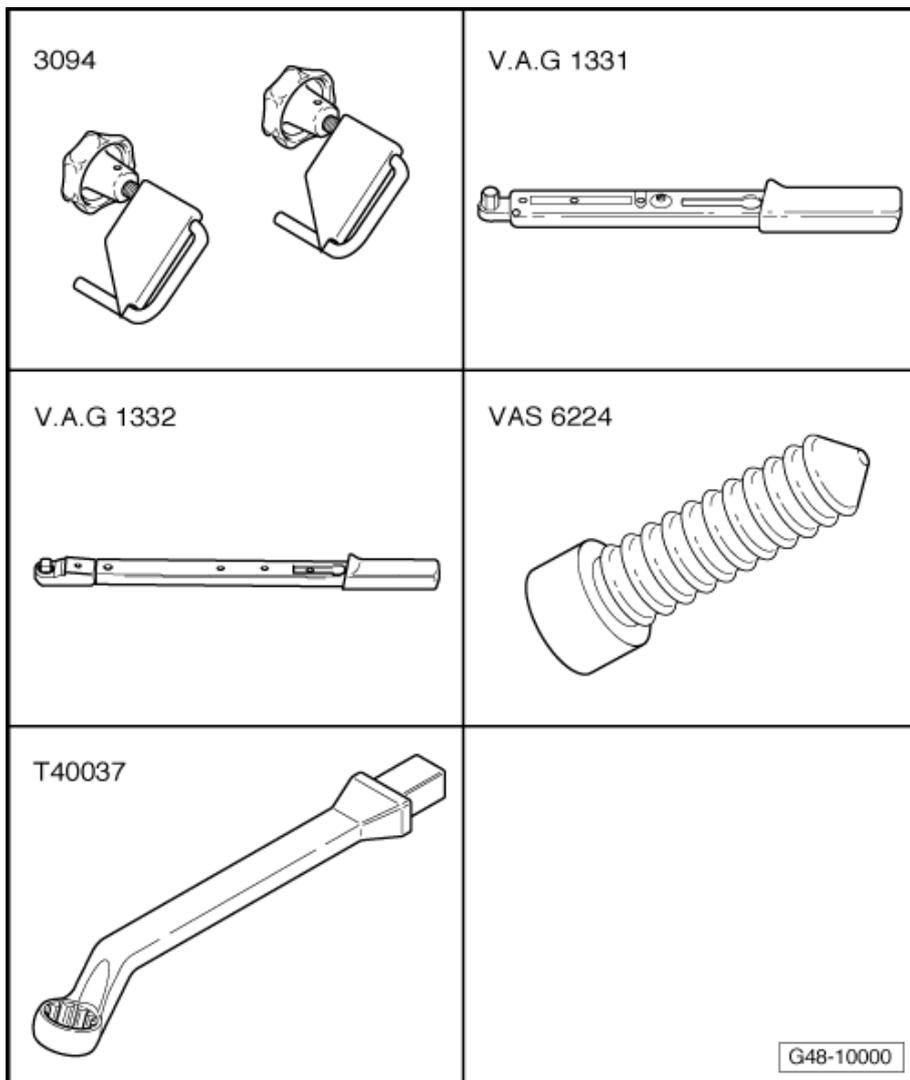
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



### 3.3 Removing and installing power steering box (LHD vehicles)

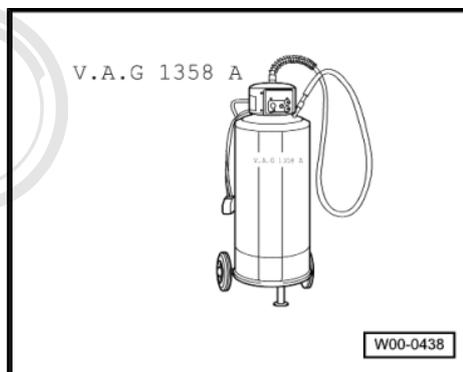
#### Special tools and workshop equipment required

- ◆ Hose clamp -3094-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Steering centring bolt -VAS 6224-
- ◆ Insert tool -T40037-



#### Special tools and workshop equipment required

- ◆ Oil extractor -V.A.G 1358 A- with oil extractor probe - V.A.G 1358 A/1-



#### 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.

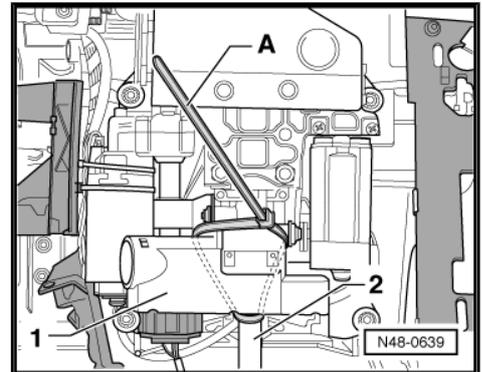
– Remove driver's storage compartment ⇒ Rep. gr. 68 .

To prevent them being pulled apart, the upper and lower sections of the steering column must be held together when they are detached from steering box.

The splines will separate if the top and bottom sections of the steering column are pulled apart or telescoped together too far.

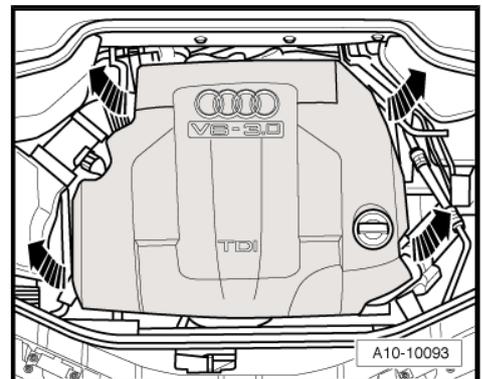
Rattling noise may develop while driving if the splines are no longer engaged in their original position.

- Use cable tie -A- to secure universal joint -2- at steering column.
- Position vehicle on lifting platform ⇒ [page 7](#) .



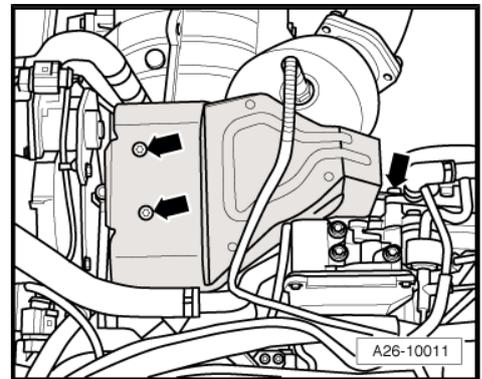
### Vehicles with 6-cyl. diesel engine

- Carefully pull engine cover panel off 4 mounting studs -arrows-.

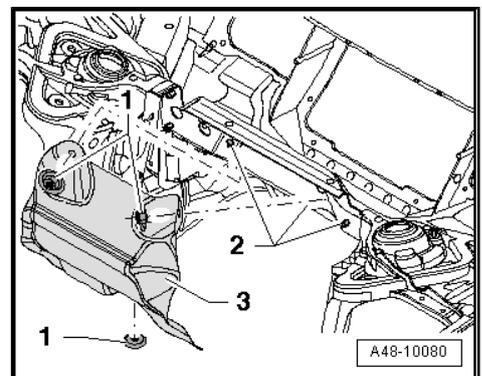


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Remove turbocharger heat shield -arrows-.



- Remove nuts -1-.
- Remove centre heat shield -3-.

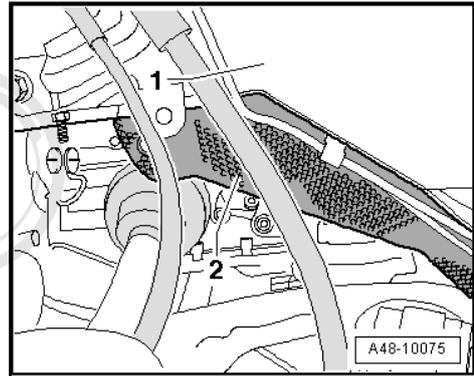




- Detach left heat shield -arrow 1- for steering box -arrow 2- and move clear to the bottom.
- Remove catalytic converter => Rep. gr. 26 .

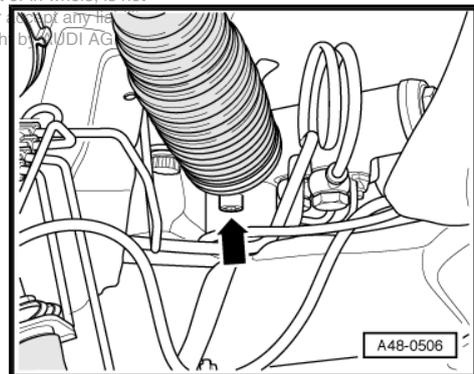
**All vehicles (continued):**

- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove front wheels.
- Secure brake disc with one wheel bolt.
- Remove wheel housing liners (front left and front right) => Rep. gr. 66 .
- Draw off hydraulic fluid from reservoir using oil extractor - V.A.G 1358 A- .

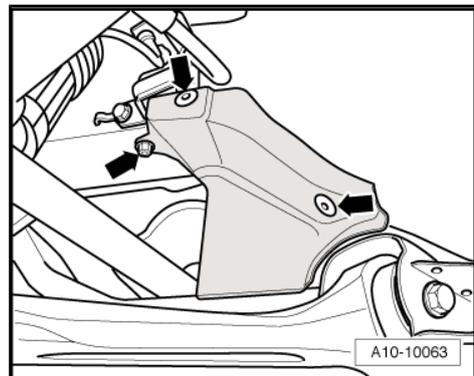


- Remove screw plug -arrow- from steering box.
- Set steering box to centre position => [page 296](#)

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the prior written consent of Audi 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 trim in wheel housings (left and right) -arrows-.

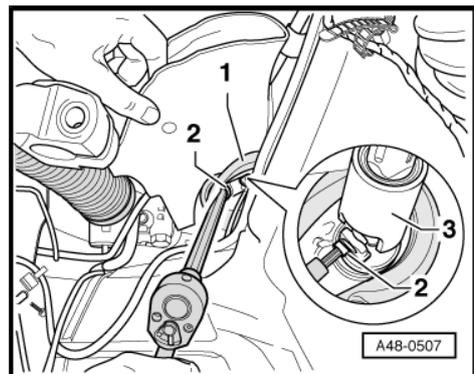


- Move aside bulkhead seal -1-.
- Unscrew bolt -2- from universal joint -3-.



**Note**

- ◆ Always renew bulkhead seal => [Item 4 \(page 295\)](#) if damaged.
- ◆ Make sure bulkhead seal is properly positioned in bulkhead.

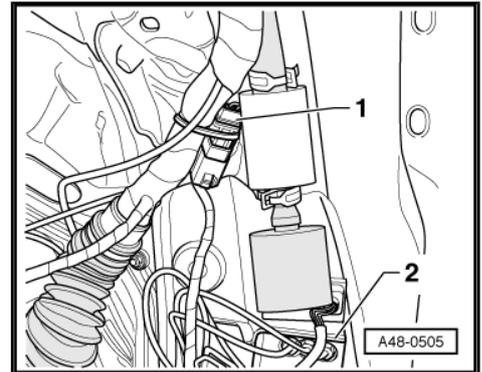


- Detach electrical connector for servotronic solenoid valve - N119- -1-.

 **Note**

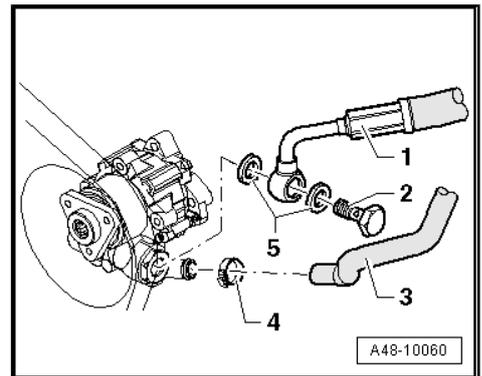
*Servotronic connector is located above solenoid valve block for air suspension -2- on A-pillar.*

- Place drip tray -V.A.G 1306- underneath to catch hydraulic fluid.



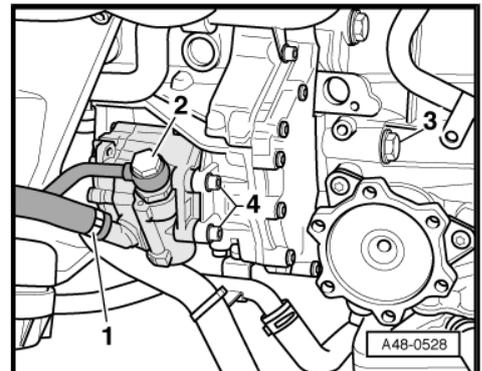
**Vehicles with power steering pump located at front of engine**

- Detach hose clip -4- from suction hose -3-.
- Disconnect suction hose -3- and move to one side.
- Remove banjo bolt -2- for expansion hose -1-.
- Allow hydraulic fluid to drain.
- Then close off connections at hydraulic pump, expansion hose and suction hose by fitting clean plugs.



**Vehicles with power steering pump located at rear of engine**

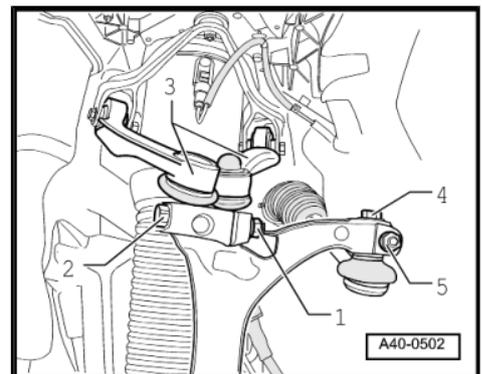
- Detach hose clip from suction hose -1-.
- Disconnect suction hose from power steering pump.
- Unscrew pressure pipe -2- from power steering pump.
- **Allow hydraulic fluid to drain.**
- Then close off connections at hydraulic pump, expansion hose and suction hose by fitting clean plugs.



**All vehicles (continued):**

- Unscrew bolt -4- and nut -5-.
- Pull or press track rod downwards out of steering arm.
- Unscrew nut -1-, take out bolt -2- and lift out both links -3-.

Do not attempt to enlarge slots in wheel bearing housing using a chisel or similar.





**Note**

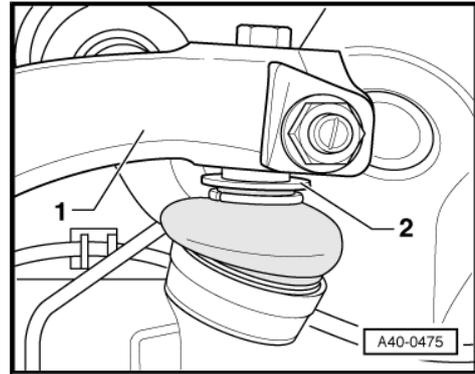
- ◆ Do not apply chisel or similar between steering arm -1- and seal -2- on track rod ball joint to press out track rod, as this would damage seal.
- ◆ When pressing track rod out of steering arm, apply pressure only to end of track rod ball joint, or knock out end of joint using a wooden or rubber mallet.

**Vehicles with 8-cyl. diesel engine**

- Remove encapsulation around track rod.

**All vehicles (continued):**

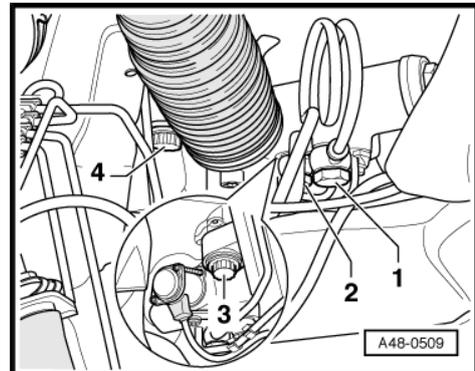
- Turn wheel bearing housing to left side and secure in position.
- Place a cloth underneath to catch hydraulic fluid.
- Remove banjo bolt -1-.
- Remove banjo bolt -2- using offset ring spanner (e.g. -Hazet 615-).
- Pull return pipe as far as possible towards right side in direction of bulkhead.
- Remove bolt -3- from steering box.



**Note**

*For illustration purposes, bolt -3- is shown from inside. It is located exactly behind banjo bolts -1- and -2- next to servotronic solenoid valve -N119-.*

- Remove bolt -4- from steering box.



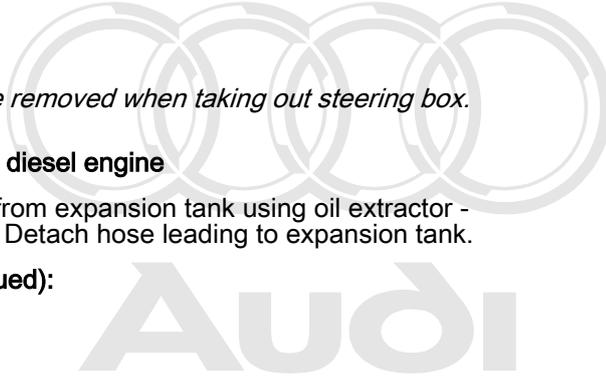
**Note**

*Bolt -4- can only be removed when taking out steering box.*

**Vehicles with 8-cyl. diesel engine**

- Extract coolant from expansion tank using oil extractor - V.A.G 1358 A- . Detach hose leading to expansion tank.

**All vehicles (continued):**

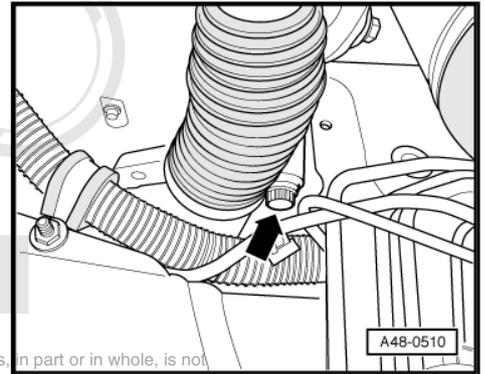


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Unscrew bolt -arrow-.
- Slide steering box slightly to right to permit removal of bolt -arrow- from steering box.

Two mechanics are required for the following operations.

- Guide steering box to left as far as possible and pivot 90° in anti-clockwise direction.
- Then guide steering box to left as far as possible once again and pivot a further 90° in anti-clockwise direction.



 **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.

*Ensure that bulkhead seal is not damaged by steering box pinion.*

- Take out steering box towards the left side.

**Installing**

Installation is carried out in the reverse sequence. Note the following points:

- Unclip wire for servotronic solenoid valve -N119- from transport retainers.
- Insert steering box from left side and at the same time fit front left bolt in steering box.
- Slide steering box towards right side until right bolt can be inserted in steering box.
- Position steering box on plenum chamber (2nd mechanic required).

 **Note**

*Make sure threads and contact surfaces of bolts are free from oil and grease.*

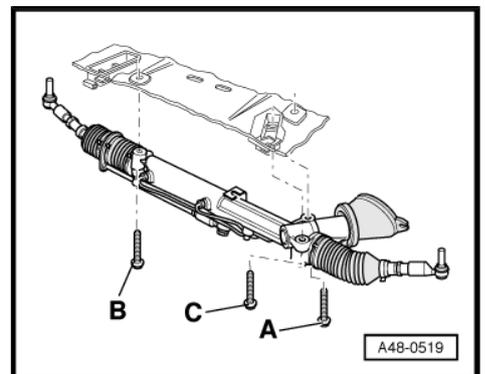
- Screw in but do not tighten bolts.

**Tightening sequence:**

- Start by tightening bolt -A- ⇒ [Item 6 \(page 295\)](#) .
- Then tighten bolt -B- ⇒ [Item 6 \(page 295\)](#) .
- Finally tighten bolt -C- ⇒ [Item 5 \(page 295\)](#) .

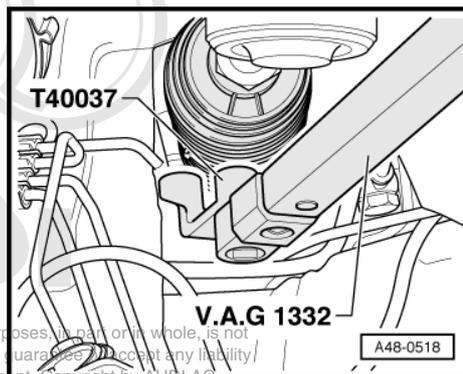
**When tightening bolt -C-, set torque wrench -V.A.G 1332- to 75 Nm.**

**This tightening torque only applies when using insert tool -T40037-**



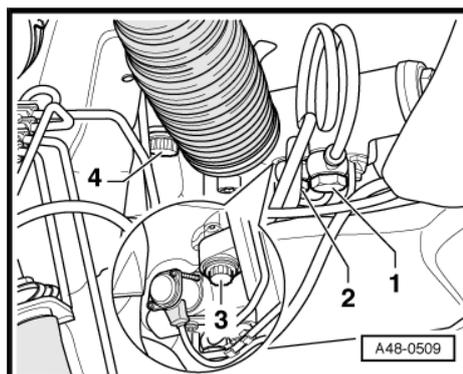


- Use insert tool -T40037- for tightening this bolt.
- Set steering wheel to centre position and then attach universal joint to steering pinion.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee to accept any liability with respect to the correctness of information in this document. Copyright © 2011 Audi AG

- Tighten banjo bolt -1- => [Item 19 \(page 296\)](#) .
- Tighten banjo bolt -2- using offset ring spanner (e.g. -Hazet 615- ) => [Item 13 \(page 295\)](#) .

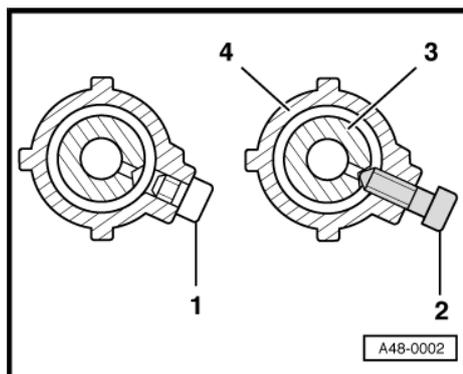


- Then unscrew steering centring bolt -VAS 6224- -2- from steering box.

Steering box (sectional drawing)

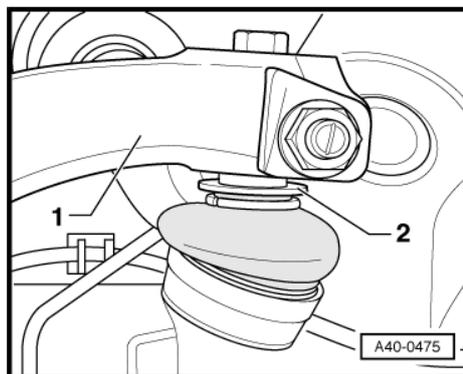
- 1 - Screw plug, 22 Nm
- 2 - Steering centring bolt -VAS 6224-
- 3 - Steering rack
- 4 - Steering box housing

- Seal steering box with screw plug -1-.
- Insert track rod as far as it will go in steering arm.

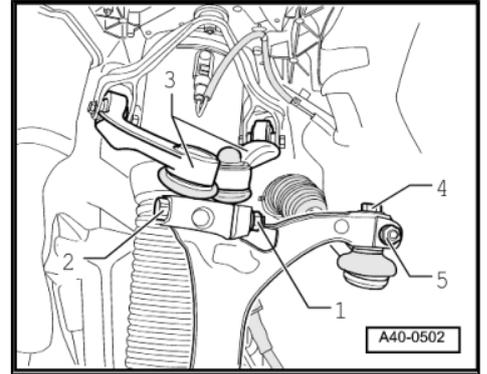


**i** Note

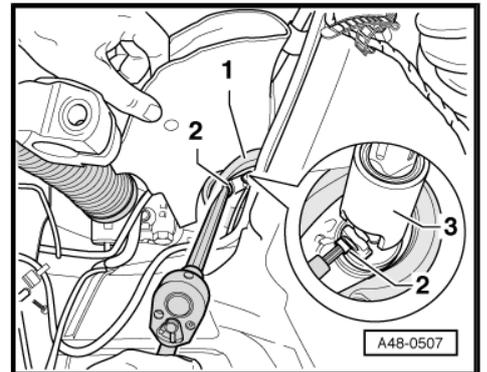
Only fit track rod by hand in steering arm -1-. Take care not to apply any force to seal -2- on track rod ball joint when doing so.



- Tighten bolt -4- ⇒ [Item 7 \(page 295\)](#) .
- Tighten nut -5- ⇒ [Item 9 \(page 295\)](#) .
- Tighten bolt -2- ⇒ [Item 11 \(page 14\)](#) .



- Tighten bolt -2- on universal joint -3- ⇒ [Item 4 \(page 286\)](#) .
- Insert bulkhead seal -1- in bulkhead.
- Remove assembly aid from steering column.

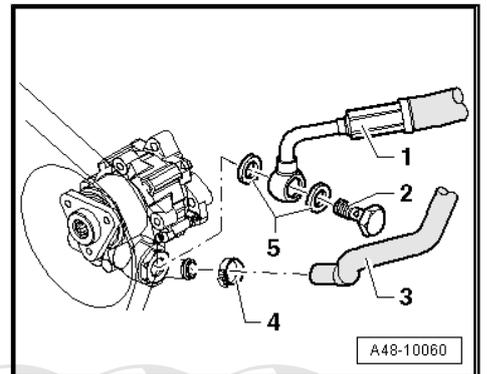


**Vehicles with power steering pump located at front of engine**

- Fit new seals -5- on banjo bolt.
- Tighten banjo bolt -2- to 47 Nm.
- Connect suction hose -3- and secure with new hose clip -4-. Note correct installation position.

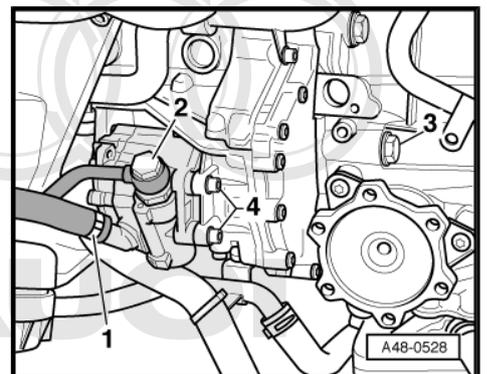
Marking „P“ on suction hose -3- must be aligned with seam on pump.

- Clean off fluid in engine compartment where necessary.



**Vehicles with power steering pump located at rear of engine**

- Connect pressure pipe -2- to power steering pump ⇒ [Item 5 \(page 382\)](#) .
- Tighten bolts -4- ⇒ [Item 10 \(page 382\)](#) .
- Tighten bolt -3- ⇒ Rep. gr. 37 .
- Connect suction hose -1- to power steering pump and secure with hose clip.
- Clean off fluid in engine compartment where 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.



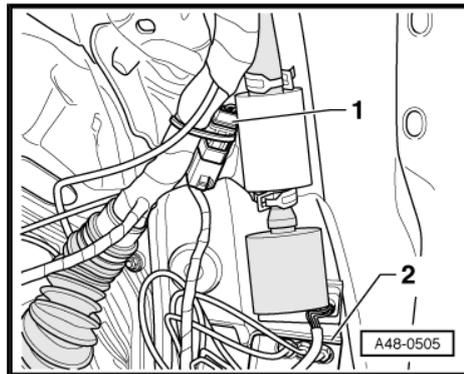
**All vehicles (continued):**

- Attach electrical connector for servotronic solenoid valve - N119- -1-.



**Note**

*Servotronic connector is located above solenoid valve block for air suspension -2- on A-pillar.*



**Vehicles with 6-cyl. diesel engine**

- Fit heat shields (centre and left-side) ⇒ Rep. gr. 26 .
- Install catalytic converter ⇒ Rep. gr. 26 .
- Fit turbocharger heat shield ⇒ Rep. gr. 26 .

**All vehicles (continued):**

- Install front wheel housing liners ⇒ Rep. gr. 66 .
- Fit and secure wheels ⇒ Wheels and tyres; Rep. gr. 44 .
- Set down vehicle on its wheels ⇒ [page 7](#) .

**Vehicles with 8-cyl. diesel engine**

- Fill up cooling system and connect hose to expansion tank ⇒ Rep. gr. 19 .

**All vehicles (continued):**

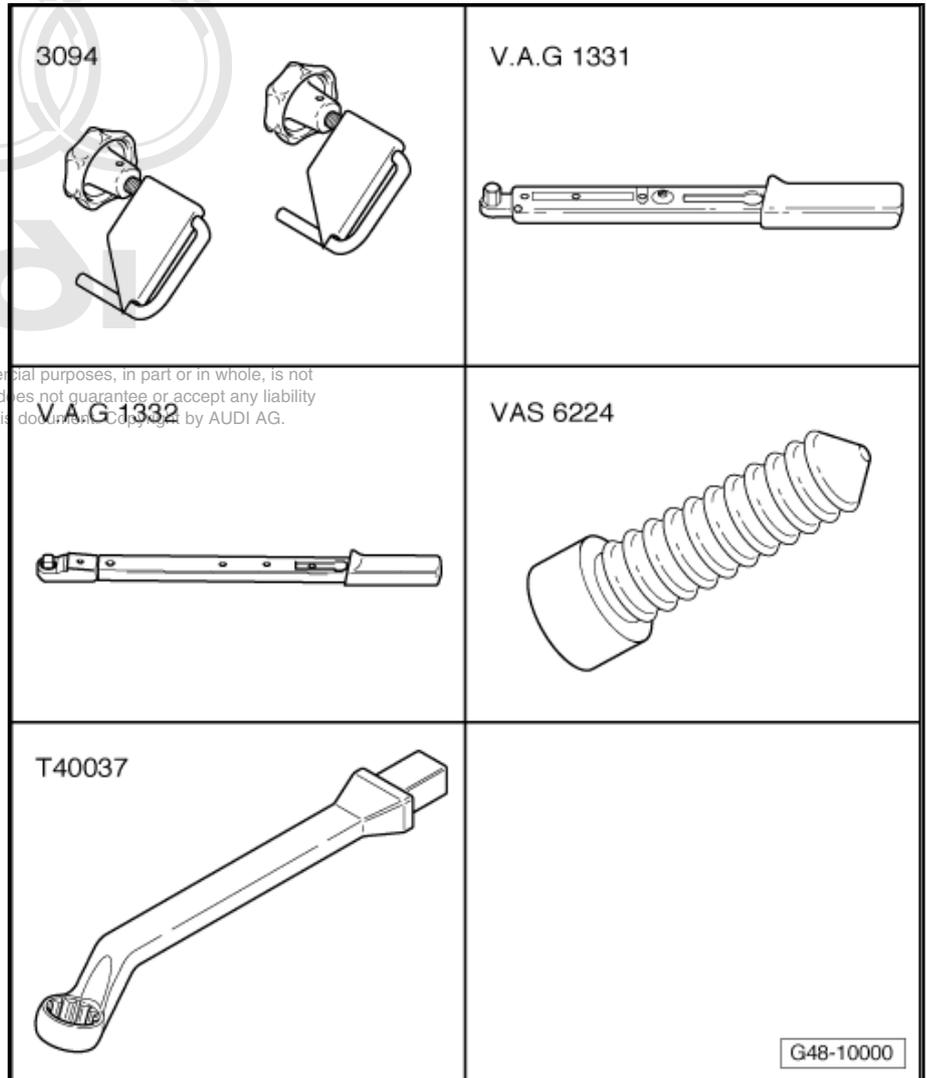
- Check hydraulic fluid level ⇒ [page 326](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .

### 3.4 Removing and installing power steering box (RHD vehicles)

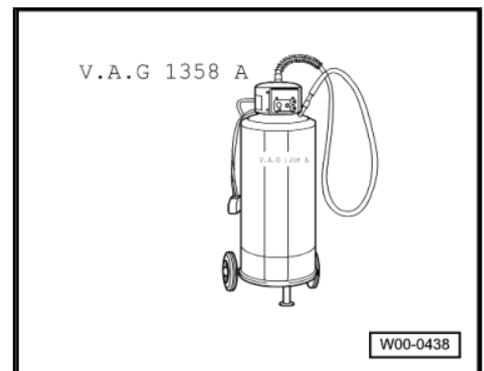
#### Special tools and workshop equipment required

- ◆ Hose clamp -3094-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Steering centring bolt -VAS 6224-
- ◆ Insert tool -T40037-

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



- ◆ Oil extractor -V.A.G 1358 A- with oil extractor probe -V.A.G 1358 A/1-



- ◆ Offset ring spanner e.g. -Hazet 615-

#### Removing

- Remove driver's storage compartment ⇒ Rep. gr. 68 .

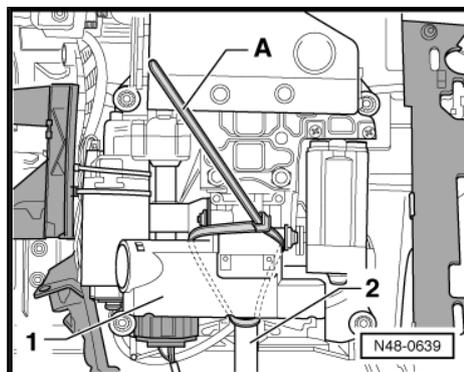


To prevent them being pulled apart, the upper and lower sections of the steering column must be held together when they are detached from steering box.

The splines will separate if the top and bottom sections of the steering column are pulled apart or telescoped together too far.

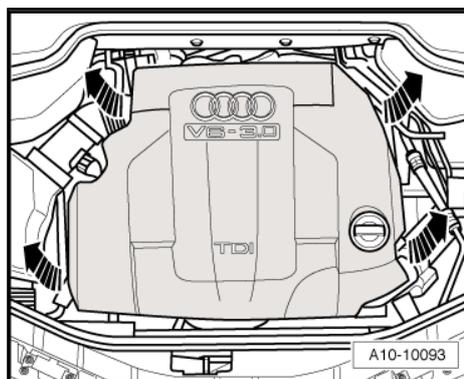
Rattling noise may develop while driving if the splines are no longer engaged in their original position.

- Use cable tie -A- to secure universal joint -2- at steering column.
- Position vehicle on lifting platform ⇒ [page 7](#) .

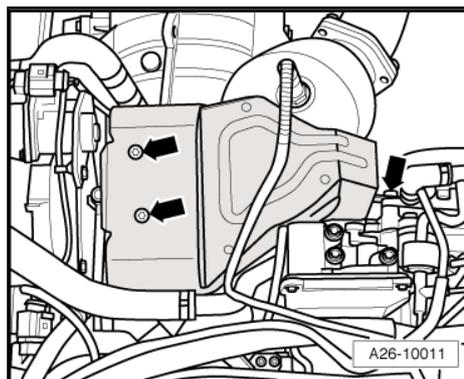


#### Vehicles with 6-cyl. diesel engine

- Carefully pull engine cover panel off 4 mounting studs -arrows-.



- Remove turbocharger heat shield -arrows-.



- Remove nuts -1-.
- Remove centre heat shield -3-.
- Detach left heat shield -arrow 1- for steering box -arrow 2- and move clear to the bottom.
- Remove catalytic converter ⇒ Rep. gr. 26 .

**All vehicles (continued):**

- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove front wheels.
- Secure brake disc with one wheel bolt.
- Remove wheel housing liners (front left and front right) ⇒ Rep. gr. 66 .

**Draw off hydraulic fluid from reservoir using oil extractor**  
 V.A.G 1358 A

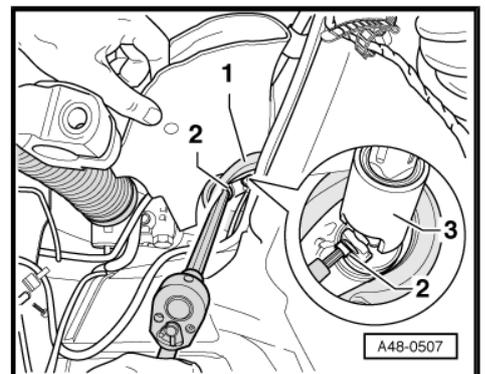
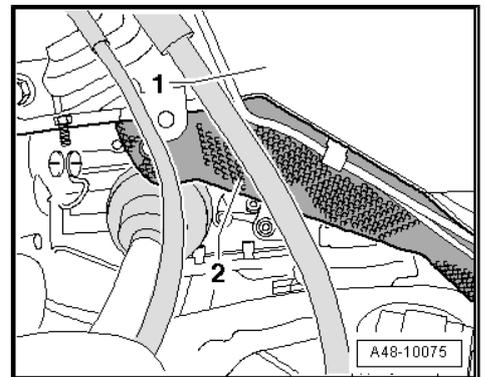
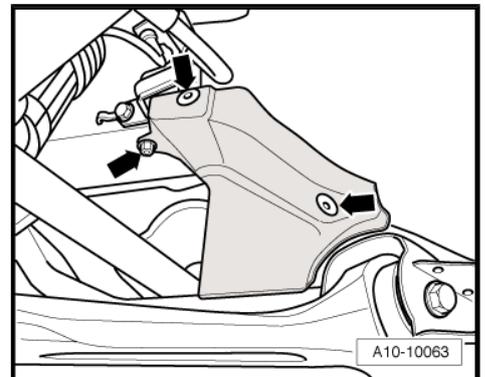
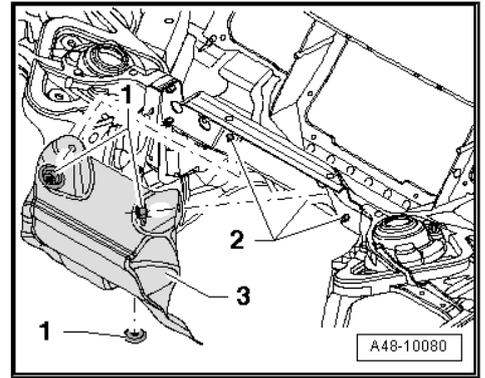
- If fitted, remove trim in wheel housings (left and right) -arrows-.

- Move heat shield on left side -2- as far as possible away from longitudinal member -1-.

- Move aside bulkhead seal -1-.
- Unscrew bolt -2- from universal joint -3-.

 **Note**

- ◆ *Illustration shows LHD version.*
- ◆ *Always renew bulkhead seal ⇒ [Item 4 \(page 295\)](#) if damaged.*
- ◆ *Make sure bulkhead seal is properly positioned in bulkhead.*



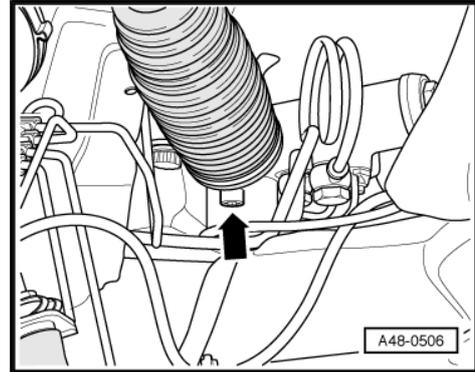


- Remove screw plug -arrow- from steering box.

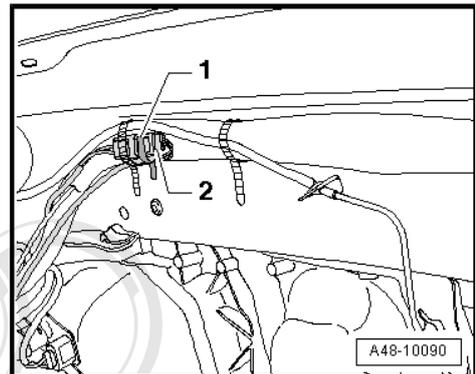
**Note**

Illustration shows LHD version.

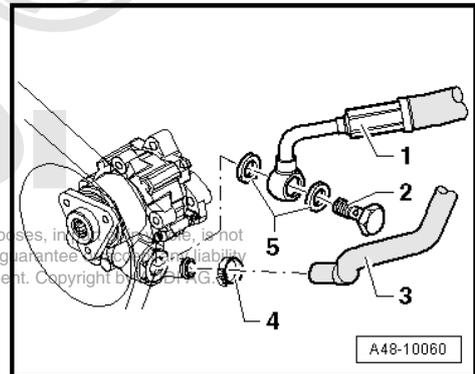
- Set steering box to centre position => [page 296](#)



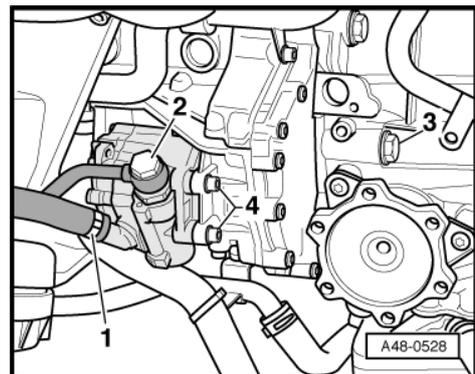
- Cut through cable tie -1-.
- Detach electrical connector for servotronic solenoid valve - N119- -2- in wheel housing (right-side).
- Place drip tray -V.A.G 1306- underneath to catch hydraulic fluid.

**Vehicles with power steering pump located at front of engine**

- Detach hose clip -4- from suction hose -3-.
- Disconnect suction hose -3- and move to one side.
- Remove banjo bolt -2- for expansion hose -1-.
- Allow hydraulic fluid to drain.
- Then close off connections at hydraulic pump, expansion hose and suction hose by fitting clean plugs.

**Vehicles with power steering pump located at rear of engine**

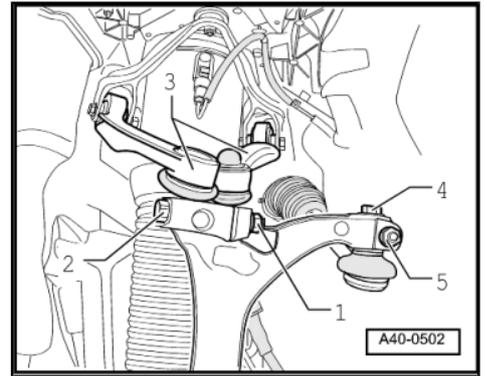
- Detach hose clip from suction hose -1-.
- Disconnect suction hose from power steering pump.
- Unscrew pressure pipe -2- from power steering pump.
- Allow hydraulic fluid to drain.
- Then close off connections at hydraulic pump, expansion hose and suction hose by fitting clean plugs.



**All vehicles (continued):**

- Unscrew bolt -4- and nut -5-.
- Pull or press track rod downwards out of steering arm.
- Unscrew nut -1-, take out bolt -2- and lift out both links -3-.

Do not attempt to enlarge slots in wheel bearing housing using a chisel or similar.

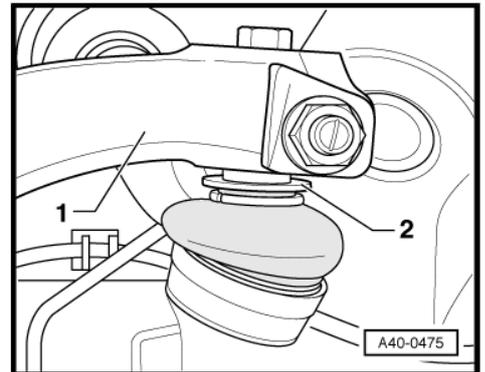


 **Note**

- ◆ Do not apply chisel or similar between steering arm -1- and seal -2- on track rod ball joint to press out track rod, as this would damage seal.
- ◆ When pressing track rod out of steering arm, apply pressure only to end of track rod ball joint, or knock out end of joint using a wooden or rubber mallet.

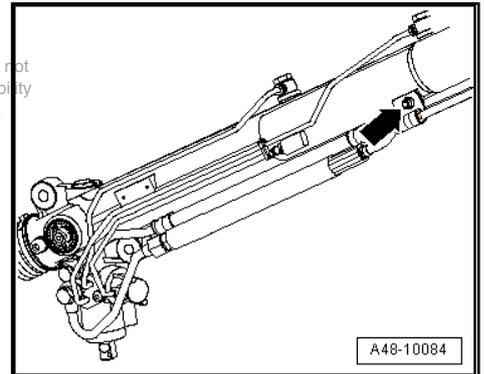
**Vehicles with 8-cyl. diesel engine**

- Remove encapsulation around track rod.



**All vehicles (continued):**

- Remove bolt -arrow- and detach pipes from mounting below steering box.
- Place a cloth underneath to catch hydraulic fluid.

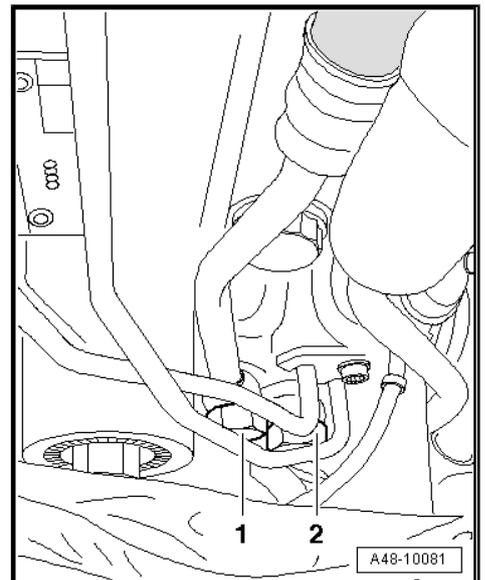


- Unscrew bolts -1- and -2- securing pipes.

If necessary, use offset ring spanner (e.g. -Hazet 615- ) to remove banjo bolts.

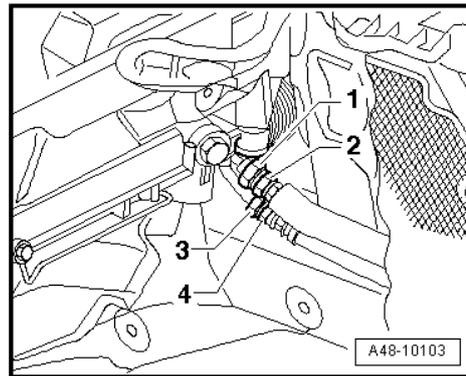
 **Note**

*Illustration shows pipes from engine compartment side.*

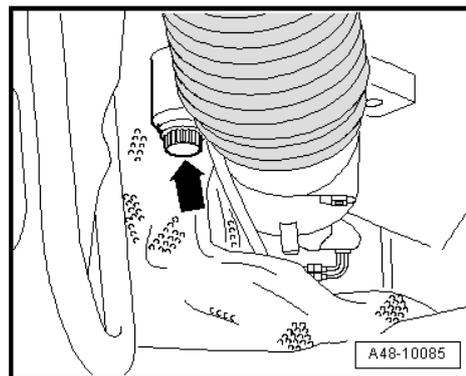




- Disconnect pipes -1- and -3- below track rod (left-side). When doing so, counterhold at flats -2- and -4-. (Place a cloth below the pipes.)
- Remove both pipes -1- and -3- towards left side.



- Remove bolt -arrow- (left-side) from steering box.



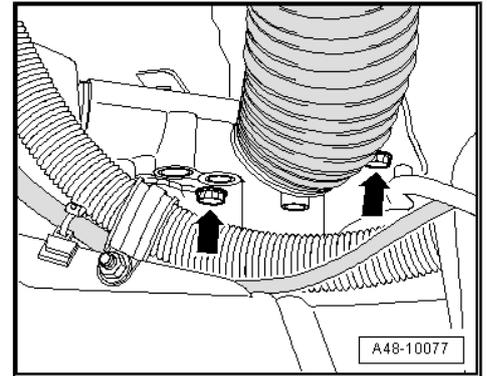
**Audi**

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.

- Remove bolts -arrows- from steering box.
- Two mechanics are required for the following operations.
- Guide steering box to right side as far as possible and pivot 90° in clockwise direction.
  - Then guide steering box to right side as far as possible once again and pivot a further 90° in clockwise direction.

 **Note**

*Ensure that bulkhead seal is not damaged by steering box pinion.*



- Take out steering box towards the right side.

**Installing**

Installation is carried out in the reverse sequence. Note the following points:

- Unclip wire for servotronic solenoid valve -N119- from transport retainers.
- Insert steering box from right side and at the same time fit front right bolt into steering box.
- Slide steering box towards left side until left bolt can be inserted in steering box.
- Position steering box on plenum chamber (2nd mechanic required).

 **Note**

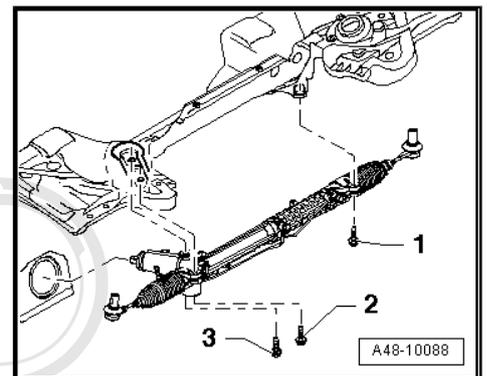
*Make sure threads and contact surfaces of bolts are free from oil and grease.*

- Screw in but do not tighten bolts.

**Tightening sequence:**

- First tighten bolt -3- ⇒ [Item 6 \(page 295\)](#) .
- Then tighten bolt -1- ⇒ [Item 6 \(page 295\)](#) .
- Finally tighten bolt -2- ⇒ [Item 5 \(page 295\)](#) .

**When tightening bolt -C-, set torque wrench -V.A.G 1332- to 75 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.



This tightening torque only applies when using insert tool - T40037-

- Use insert tool -T40037- for tightening this bolt.



**Note**

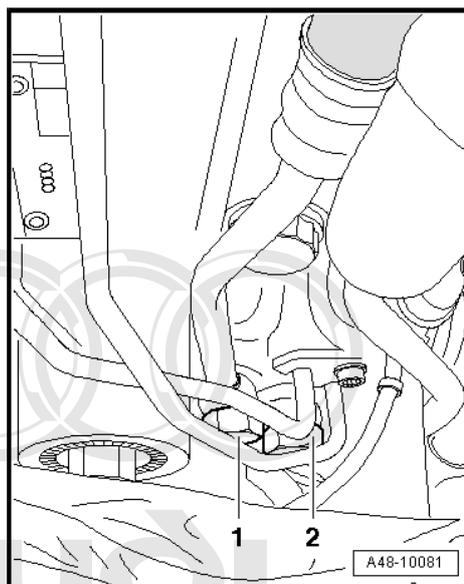
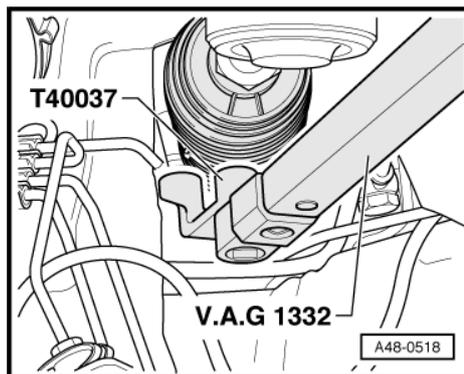
Illustration shows LHD version.

- Set steering wheel to centre position and then attach universal joint to steering pinion.

- Tighten banjo bolt -2- ⇒ [Item 19 \(page 296\)](#) .

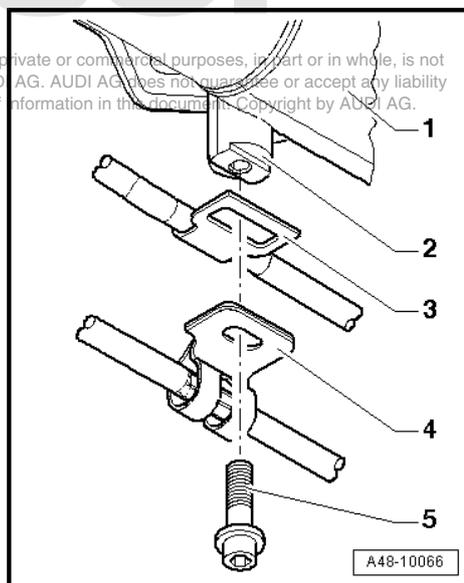
- Tighten banjo bolt -1- ⇒ [Item 13 \(page 295\)](#) .

If necessary, use offset ring spanner (e.g. -Hazet 615- ) to tighten banjo bolts.



- Fit hydraulic pipes -3- and -4- at bottom of steering box ⇒ [page 296](#) .

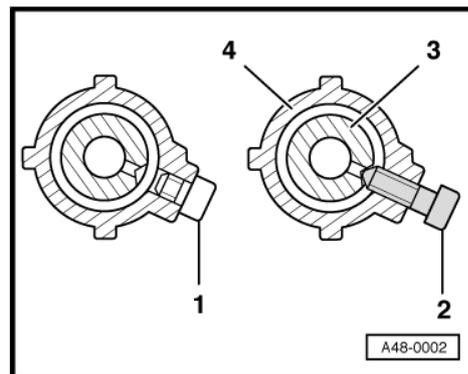
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- Then unscrew steering centring bolt -VAS 6224- -2- from steering box.

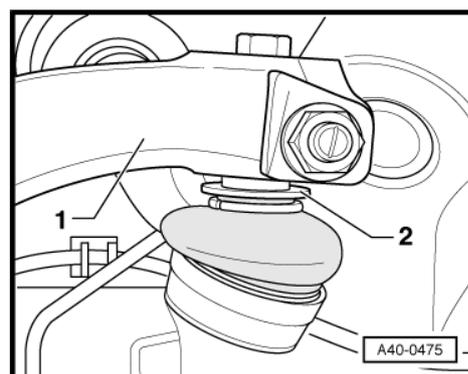
Steering box (sectional drawing)

- 1 - Screw plug, 22 Nm
- 2 - Unscrew steering centring bolt -VAS 6224- .
- 3 - Steering rack
- 4 - Steering box housing
- Seal steering box with screw plug -1-.
- Insert track rod as far as it will go in steering arm.

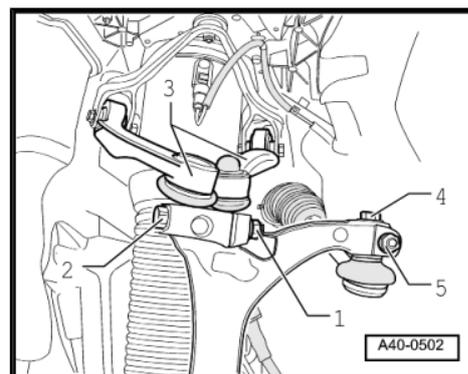


**i** Note

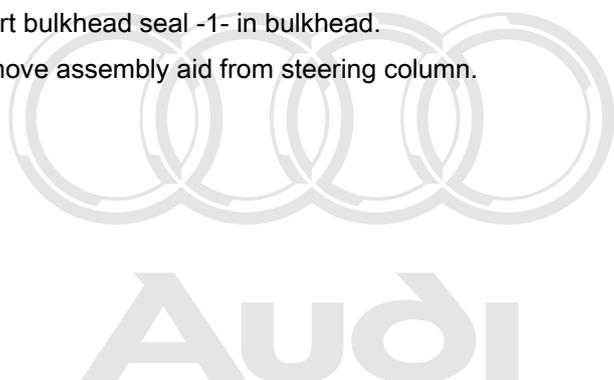
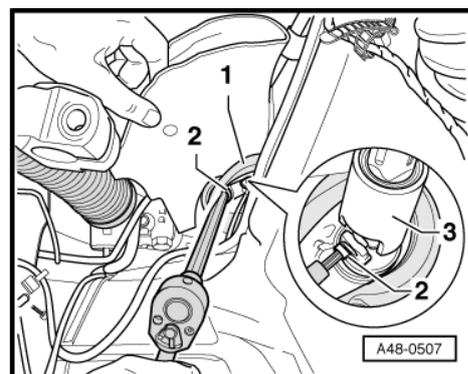
*Only fit track rod by hand in steering arm -1-. Take care not to apply any force to seal -2- on track rod ball joint when doing so.*



- Tighten bolt -4- ⇒ [Item 7 \(page 295\)](#) .
- Tighten nut -5- ⇒ [Item 9 \(page 295\)](#) .
- Tighten bolt -2- ⇒ [Item 11 \(page 14\)](#) .



- Tighten bolt -2- on universal joint -3- ⇒ [Item 4 \(page 286\)](#) .
- Insert bulkhead seal -1- in bulkhead.
- Remove assembly aid from steering column.



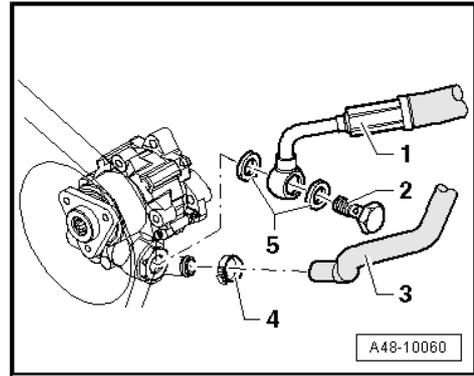
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

**Vehicles with power steering pump located at front of engine**

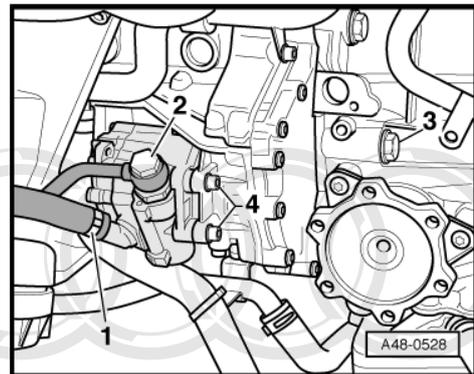
- Fit new seals -5- on banjo bolt.
- Tighten banjo bolt -2- to 47 Nm.
- Connect suction hose -3- and secure with new hose clip -4-. Note correct installation position.

Marking „P“ on suction hose -3- must be aligned with seam on pump.

- Clean off fluid in engine compartment where necessary.

**Vehicles with power steering pump located at rear of engine**

- Connect pressure pipe -2- to power steering pump  
⇒ [Item 5 \(page 382\)](#) .
- Tighten bolts -4- ⇒ [Item 10 \(page 382\)](#) .
- Tighten bolt -3- ⇒ Rep. gr. 37 .
- Connect suction hose -1- to power steering pump and secure with hose clip.
- Clean off fluid in engine compartment where necessary.

**All vehicles (continued):**

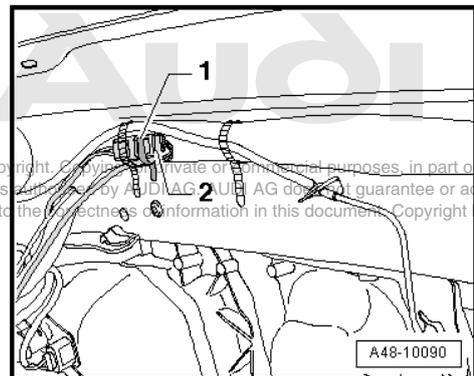
- Attach electrical connector for servotronic solenoid valve - N119- -1-.
- Renew cable tie -2-.

**Vehicles with 6-cyl. diesel engine**

- Fit heat shields (centre and left-side) ⇒ Rep. gr. 26 .
- Install catalytic converter ⇒ Rep. gr. 26 .
- Fit turbocharger heat shield ⇒ Rep. gr. 26 .

**All vehicles (continued):**

- Install front wheel housing liners ⇒ Rep. gr. 66 .
- Fit and secure wheels ⇒ Wheels and tyres; Rep. gr. 44 .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Check hydraulic fluid level ⇒ [page 326](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .

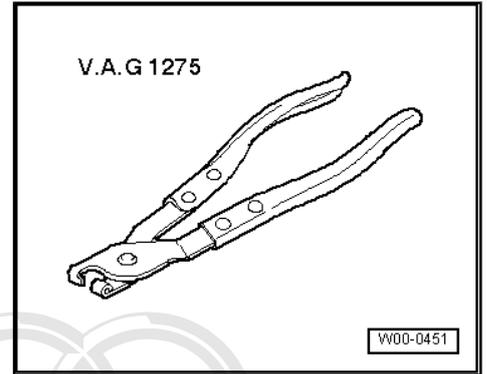


Protected by copyright. Copying, in whole or in part, for commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

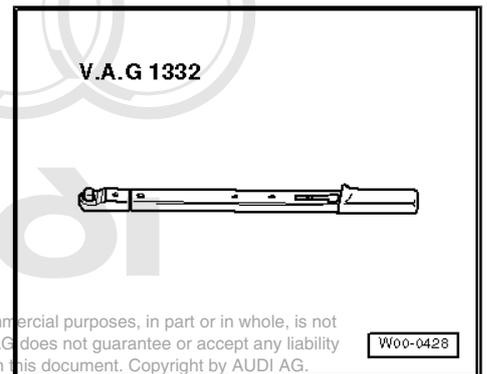
## 3.5 Servicing power steering box

### Special tools and workshop equipment required

- ◆ Hose clip pliers -V.A.G 1275-



- ◆ Torque wrench -V.A.G 1332-



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

- ◆ Steering box grease -AOF 063 000 04-

This overview is applicable to LHD and RHD vehicles (layout is similar).

 **Note**

- ◆ *Renew self-locking nuts and bolts.*
- ◆ *Welding and straightening work on steering components is not permitted.*
- ◆ *Use only steering box grease -AOF 063 000 04- for greasing steering rack.*

**1 - Track rod ball joint**

- Removing and installing  
⇒ [page 320](#)
- Check that dust caps are seated correctly and not damaged

**2 - Lock nut, 60 Nm****3 - Spring-type clip**

- Always renew
- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**4 - Boot**

- Check for damage
- Must not be twisted after adjusting toe setting
- Can be renewed with steering box installed
- Remove track rods to renew boot  
⇒ [page 323](#)

**5 - Hose clip**

- Always renew
- Tighten using hose clip pliers -V.A.G 1275-

**6 - Track rod, 100 Nm**

- Removing and installing  
⇒ [page 323](#)
- Grease joint with steering box grease -AOF 063 000 04-

**7 - O-ring**

- Always renew

**8 - Power steering box**

- Grease steering rack with steering box grease -AOF 063 000 04-
- Different versions possible. Refer to ⇒ Electronic parts catalogue „ETKA“

**9 - Bolt****10 - Servotronic solenoid valve -N119-**

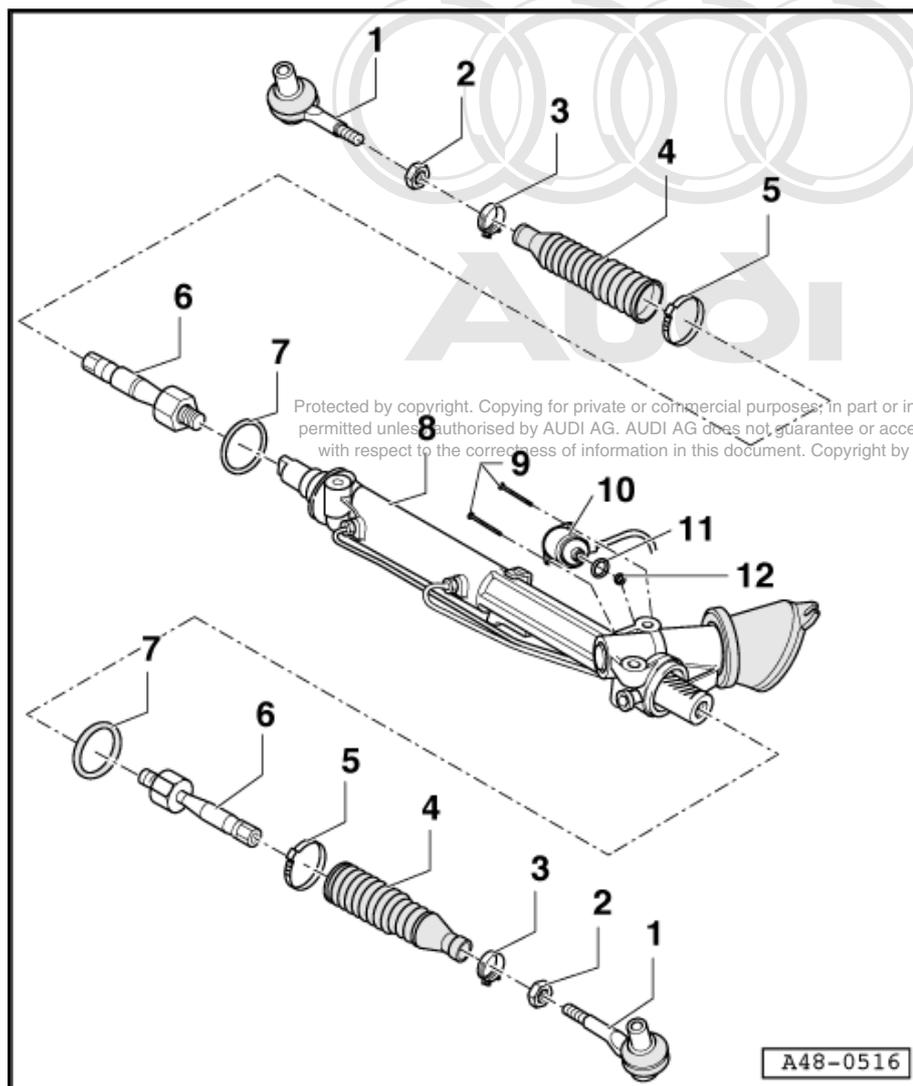
- Connect -VAS 5051 A- and select function test (for „function/component“) ⇒ [page 191](#) .
- Then „Running gear“
- „Steering“
- „01 - Self-diagnosis compatible systems“
- „N119...48 Servotronic valve“

**11 - O-ring**

- Always renew

**12 - O-ring**

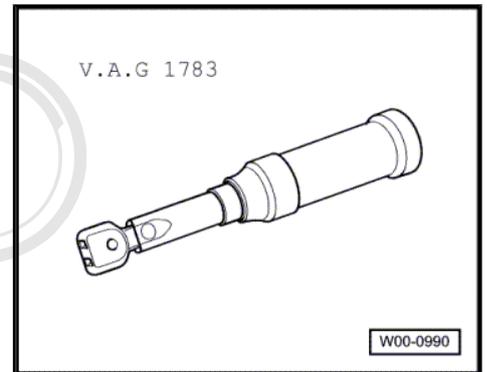
- Always renew



### 3.6 Removing and installing servotronic solenoid valve -N119-

#### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



- ◆ Steering box grease

#### 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.

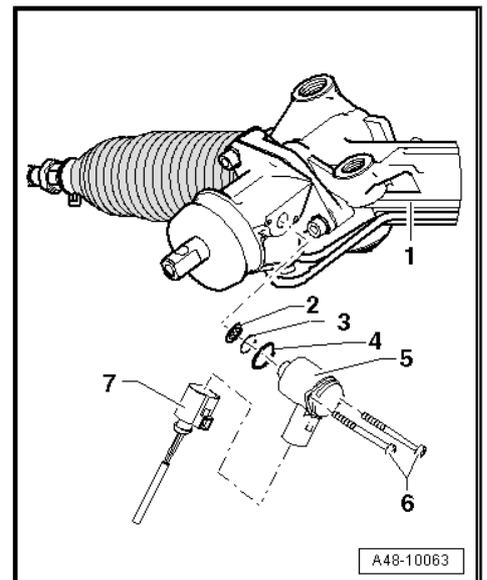
Steering box must be removed in order to renew this component.

- Remove steering box: left-hand drive vehicle ⇒ [page 298](#) , right-hand drive vehicle ⇒ [page 307](#) .
- Thoroughly clean steering box -1- in vicinity of solenoid valve -5-.
- Make sure that no dirt enters steering box.
- Unplug connector -7-.
- Remove bolts -6-.
- Pull solenoid valve -5- out of steering box -1-.
- Take strainer -2- out of steering box -1- and clean steering box if necessary.

#### Installing

Installation is carried out in the reverse sequence. Note the following points:

- Install new strainer -2-.
- Apply a small quantity of steering box grease to seals -3- and -4-.
- Insert solenoid valve -5- into steering box -1- as far as stop. Take care to keep solenoid valve straight when installing.
- Tighten bolts -6- alternately in stages to 0.5 Nm, 1.5 Nm and final torque of 3 Nm.
- Install steering box: left-hand drive vehicle ⇒ [page 298](#) , right-hand drive vehicle ⇒ [page 307](#) .



### 3.7 Adjusting power steering box



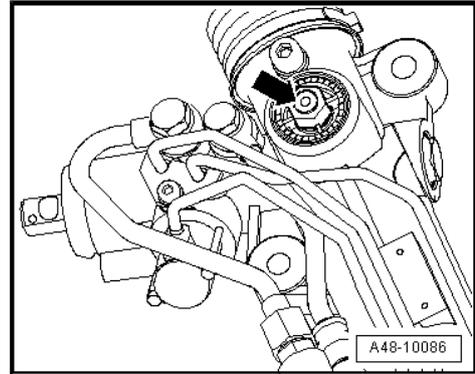
#### Note

*Two mechanics are required to perform adjustment. Perform adjustment with engine switched off.*

- Position vehicle on lifting platform ⇒ [page 7](#) .



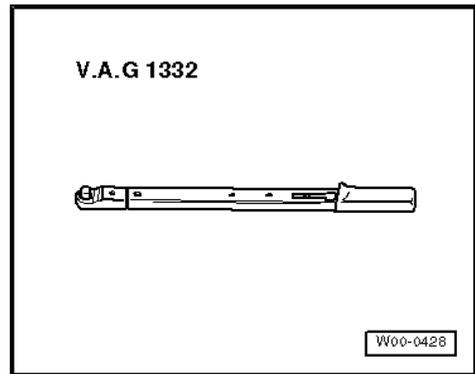
- Wheels in straight-ahead position.
- If there is excessive play in the steering, a knocking noise will be audible when the steering wheel is turned backwards and forwards (about 30° either side of centre position).
- In this case, have the second mechanic carefully screw in the adjusting screw -arrow- until the knocking noise can no longer be heard inside the vehicle.
- Set down vehicle on its wheels ⇒ [page 7](#) .
- **Road test vehicle.** Driving for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- **Check that the steering centres smoothly by itself back to the straight-ahead position after a turn. Correct the adjustment if necessary.**



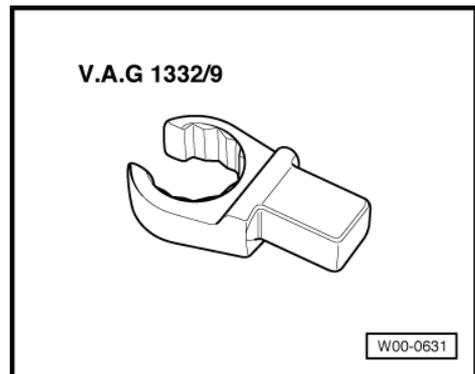
### 3.8 Removing and installing track rod ball joint

#### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



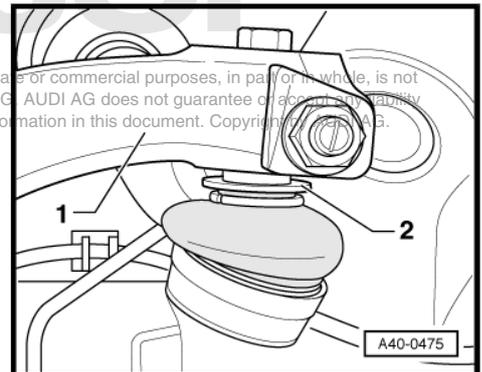
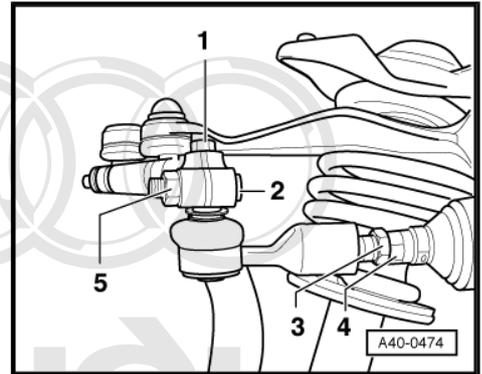
- ◆ Ring spanner insert -V.A.G 1332/9-



#### Removing

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel.

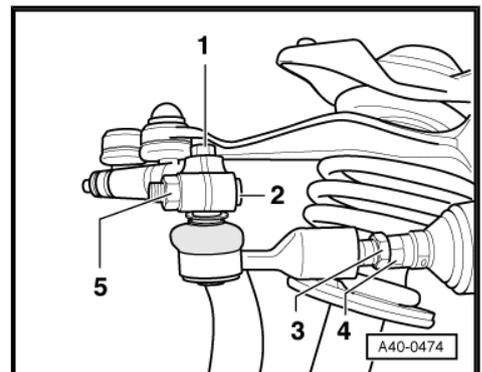
- Remove bolt -1-.
- Unscrew hexagon nut -5- and take out bolt -2-.



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 the accuracy of the information with respect to the correctness of information in this document. Copyright © 2011 AUDI AG.

**i** Note

- ◆ Do not attempt to enlarge slots in wheel bearing housing using a chisel or similar.
- ◆ Do not apply chisel or similar between steering arm -1- and seal -2- on track rod ball joint to press out track rod, as this would damage seal.
- ◆ When pressing track rod out of steering arm, apply pressure only to end of track rod ball joint, or knock out end of joint using a wooden or rubber mallet.
- ◆ Press out track rod downwards.
- ◆ Loosen hexagon nut -3- and unscrew track rod ball joint. Hexagon flats -4- serve to counterhold track rod.
- ◆ Remove all grease from track rod ball joint and clamping bore in wheel bearing housing.



**Installing**

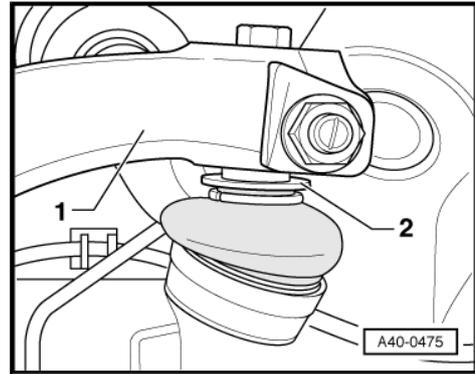
Installation is carried out in the reverse sequence. Note the following points:

- Screw track rod ball joint onto stop on track rod.
- Align track rod so that pin of track rod ball joint is in installation position.
- Insert track rod as far as it will go in steering arm.

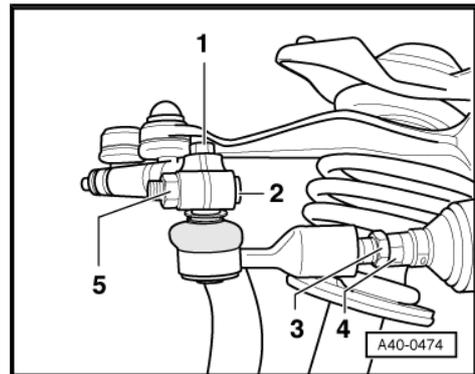


**Note**

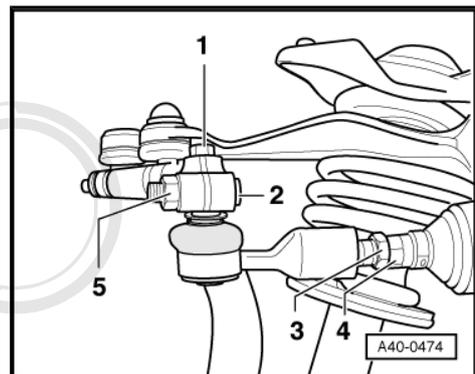
*Only fit track rod by hand in steering arm -1-. Take care not to apply any force to seal -2- on track rod ball joint when doing so.*



- Tighten lock nut -3- ⇒ [Item 2 \(page 318\)](#) . Use socket -V.A.G 1332/9- for this purpose. Counterhold track rod at hexagon flats -4- when tightening nut.



- Insert bolt -2- and tighten nut -5- ⇒ [Item 9 \(page 295\)](#) .
- Insert and tighten bolt -1- ⇒ [Item 7 \(page 295\)](#) .
- Fit and secure wheel ⇒ [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .

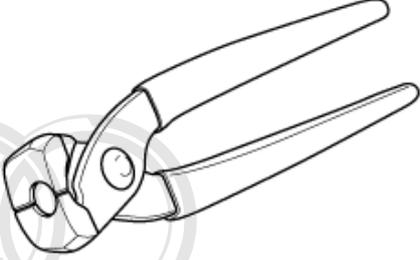


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### 3.9 Removing and installing track rods

#### Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-
- ◆ Open-end spanner attachment -V.A.G 1923-
- ◆ Locking pliers for steering box -VAS 6199-

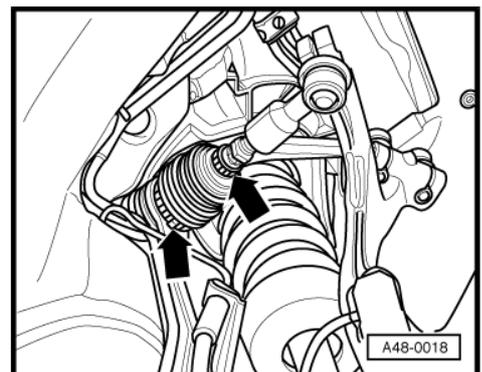
<p>V.A.G 1332</p> 	<p>V.A.G 1923</p> 
<p>VAS 6199</p> 	
	<p style="text-align: right;">G48-10001</p>

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

Left and right track rods are identical. They can be removed and installed with the steering box in the vehicle.

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove front wheel.
- Remove wheel housing liner ⇒ Rep. gr. 66 .
- Unfasten hose clip and spring-type hose clip at boot -arrows-

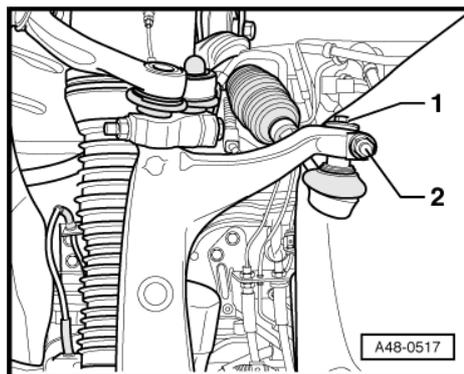




- Unscrew bolts -1- and -2- and pull out track rod ball joint downwards.

**Note**

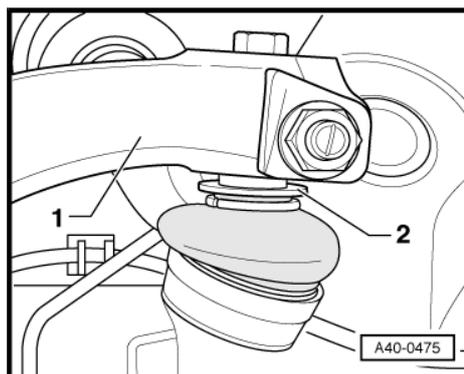
*Do not attempt to enlarge slots in wheel bearing housing using a chisel or similar.*

**Note**

◆ *Do not apply chisel or similar between steering arm -1- and seal -2- on track rod ball joint to press out track rod, as this would damage seal.*

◆ *When pressing track rod out of steering arm, apply pressure only to end of track rod ball joint, or knock out end of joint using a wooden or rubber mallet.*

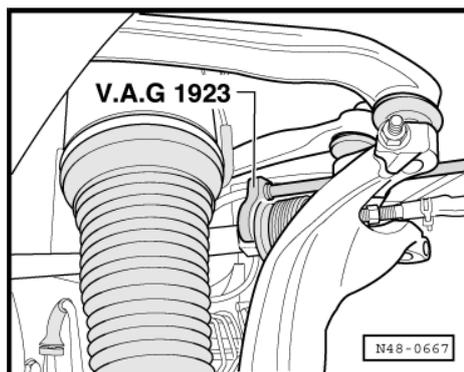
- Pull boot outwards as far as possible.



- Unscrew track rod using open-end spanner attachment -V.A.G 1923- .

**Installing**

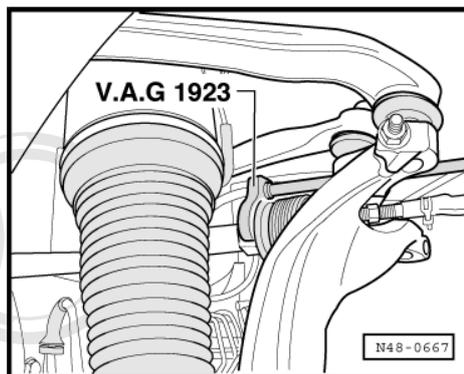
Installation is carried out in the reverse sequence. Note the following points:



- Use open-end spanner attachment -V.A.G 1923- to screw on track rod => [Item 6 \(page 318\)](#) .

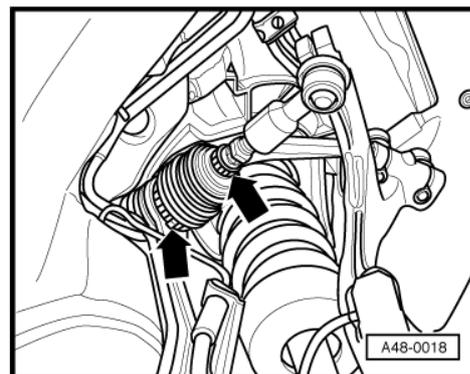
- When fitting the rubber boot, make sure that:

- ◆ Smaller diameter of boot snaps into groove on track rod
- ◆ Boot is not twisted



# Audi

- Renew spring-type hose clip and hose clip -arrows-.

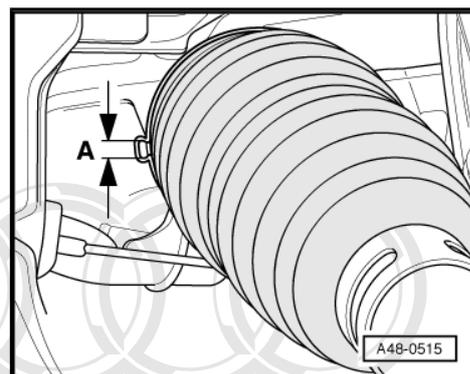


- Install new O-type hose clip and tighten using locking pliers for steering box -VAS 6199- .

**Make sure that dimension -A- is not greater than 5.7 mm.**

**Dimension -A- must never exceed 5.7 mm, as otherwise leakage can occur.**

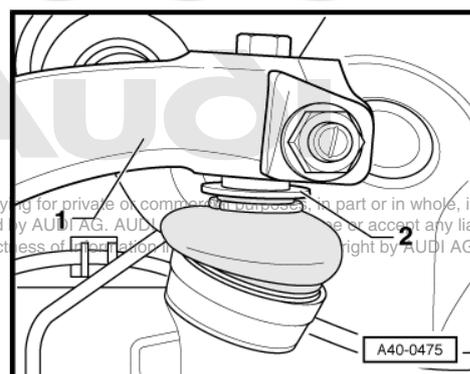
- Align track rod so that pin of track rod ball joint is in installation position.
- Insert track rod as far as it will go in steering arm.



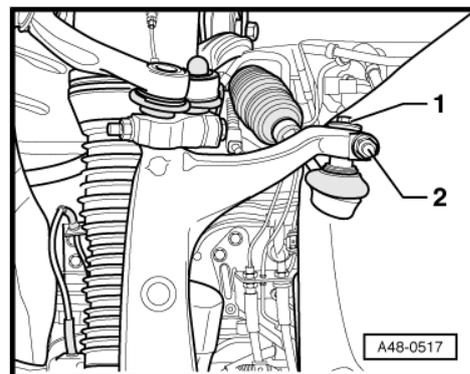
**i Note**

*Only fit track rod by hand in steering arm -1-. Take care not to apply any force to seal -2- on track rod ball joint when doing so.*

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



- Attach bolt connection -2- and tighten nut => [Item 9 \(page 295\)](#) .
- Screw in and tighten bolt -1- => [Item 7 \(page 295\)](#) .
- Fit and secure wheel => [Wheels and tyres; Rep. gr. 44](#) .
- Set down vehicle on its wheels => [page 7](#) .
- Check and adjust wheel alignment => [page 245](#) .



## 4 Checking fluid level, bleeding steering system and checking for leaks

⇒ „4.1 Checking power steering fluid level (all engine versions except V8 diesel and V10 and W12 petrol engines)“, page 326

⇒ „4.2 Checking power steering fluid level (V8 diesel and V10 and W12 petrol engines only)“, page 327

⇒ „4.3 Bleeding steering system after repairs“, page 330

⇒ „4.4 Checking steering system for leaks“, page 331

### 4.1 Checking power steering fluid level (all engine versions except V8 diesel and V10 and W12 petrol engines)

- Do not start engine. Set front wheels to straight-ahead position.

#### When fluid is cold:

- Unscrew filler cap.
- Wipe dipstick with a clean cloth.
- Screw filler cap on hand tight and unscrew again.



#### Note

*The cap must first be fully screwed on in order to obtain an accurate fluid level reading.*

- Checking fluid level: Level should be around „MIN“ mark (up to 2 mm above or below mark).

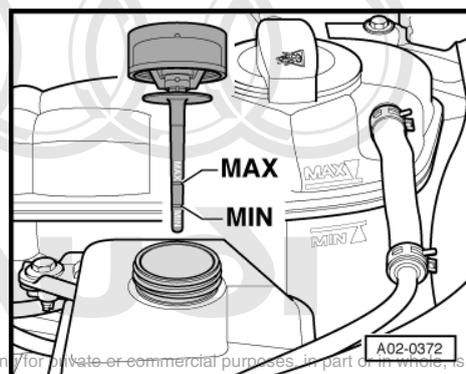
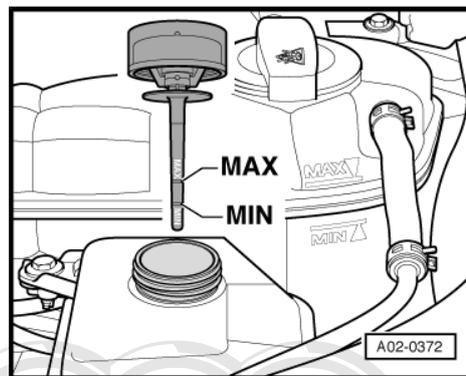
#### When fluid is warm (approx. 50°C and above):

- Check fluid level: Level should be between „MIN“ and „MAX“ marks.



#### Note

- ◆ *Excess fluid must be drained off if the level is above the range specified above.*
- ◆ *If the fluid level is below the range specified, the hydraulic system must be checked for leaks. In this case it is not sufficient to merely top up the fluid.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*



Copyright © 2009 Audi AG. All rights reserved. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Audi 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 Checking power steering fluid level (V8 diesel and V10 and W12 petrol engines only)

 **Note**

*Fluid reservoir is located below air cleaner housing (left-side). Air cleaner housing must be completely removed to check fluid level.*

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove left front wheel.

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

 **Note**

*Secure brake disc with one wheel bolt.*

- Open quick-release fasteners -arrows- on left and right at bottom of wheel housing liners.

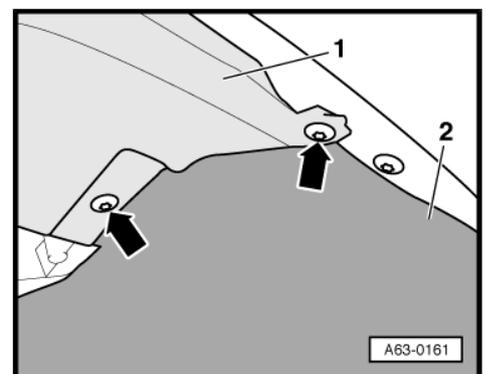
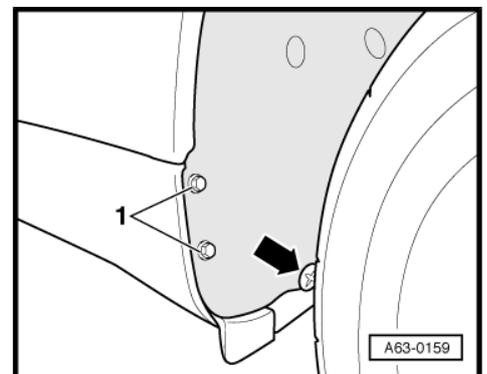
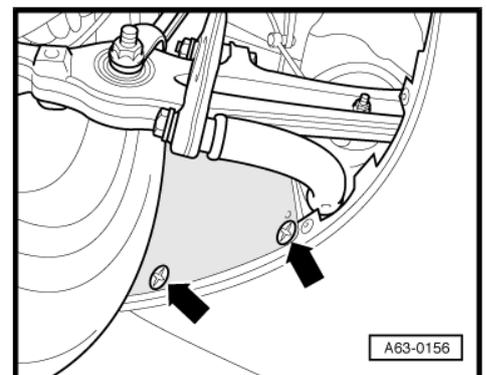
 **Note**

- ◆ *Press in clamping pins on wheel housing liners only approx. 5 mm into expanding clips, and not all the way through.*
- ◆ *This releases the expanding clip so it can be pulled out.*
- ◆ *On installation, the clamping pin is pushed back and the expanding clip can be reused.*

- Using a screwdriver, press clamping pins of expanding clips -1- on wheel housing liner (front) approx. 5 mm deep into expanding clips.
- Pull out expanding clip.
- Unscrew bolt -2- from wheel housing liner.

- Unscrew two bolts -arrows- from wheel housing liner (front section).

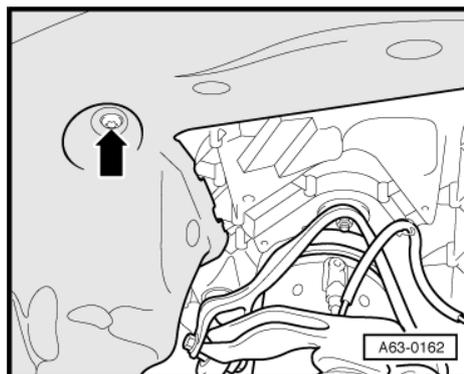
Wheel housing liner (rear section) -2- does not need to be removed.



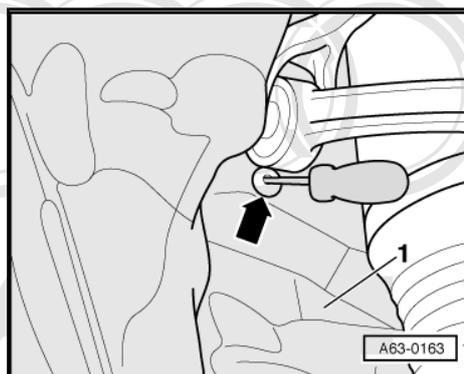
- Unscrew top bolt -arrow- from wheel housing liner (front).

**Note**

- ◆ Press in clamping pins on wheel housing liners only approx. 5 mm into expanding clips, and not all the way through.
- ◆ This releases the expanding clip so it can be pulled out.
- ◆ On installation, the clamping pin is pushed back and the expanding clip can be reused.

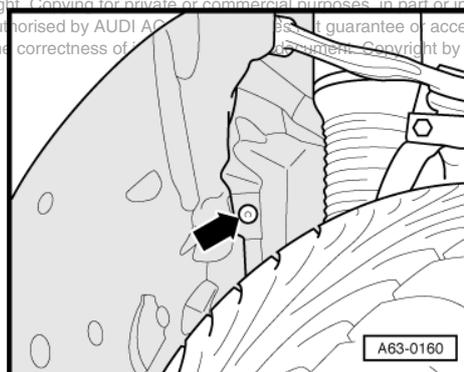


- Using a screwdriver, press clamping pins of expanding clips -arrow- on wheel housing liner (front) approx. 5 mm deep into expanding clips.
- Pull out expanding clip.

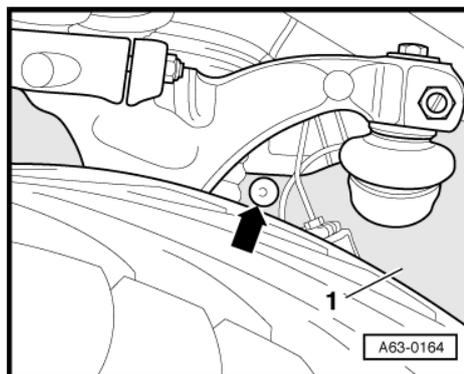


- Remove expanding clip -arrow- in upper section of wheel housing liner (front) in the same way.

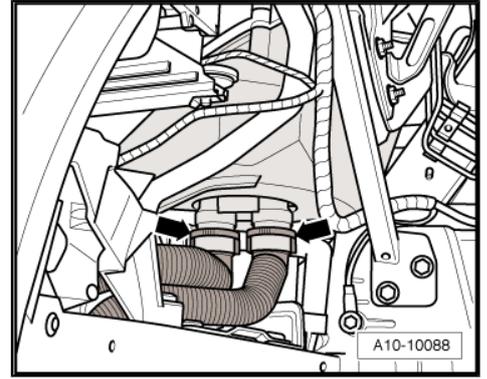
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of the information. Copyright by AUDI AG.



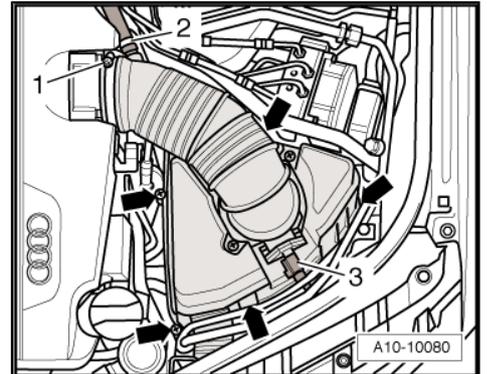
- Remove expanding clip -arrow- in rear section of wheel housing liner (front) -1- in the same way.



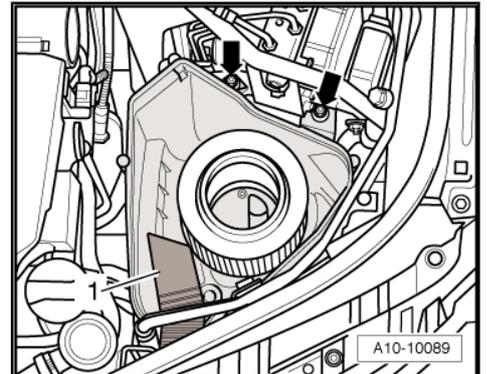
- Compress release tabs on both air intake hoses -arrows- and disconnect hoses from air cleaner housing (bottom section).



- Unplug electrical connector -3- for air mass meter 2 -G246- .
- Detach hose -2- from air intake hose.
- Detach air intake hose -1- at intake manifold.
- ~~Unscrew bolts -arrows-~~
- Detach top section of air cleaner housing (left-side).



- Remove air duct -1-.
- Unscrew bolts -arrows-.
- Take out bottom section of air cleaner housing (left-side).
- Do not start engine. Set front wheels to straight-ahead position.



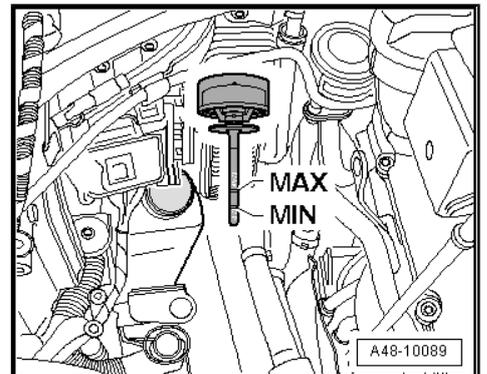
**When fluid is cold:**

- Unscrew filler cap.
- Wipe dipstick with a clean cloth.
- Screw filler cap on hand tight and unscrew again.

 **Note**

*The cap must first be fully screwed on in order to obtain an accurate fluid level reading.*

- Checking fluid level: Level should be around „MIN“ mark (up to 2 mm above or below mark).

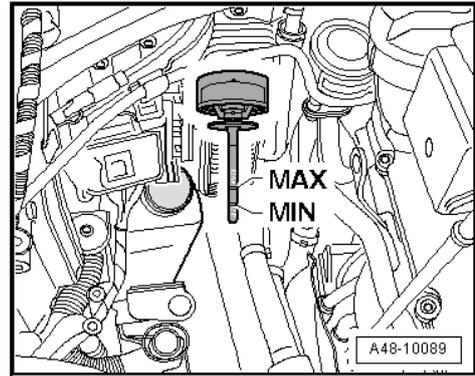


**When fluid is warm (approx. 50°C and above):**

- Check fluid level: Level should be between „MIN“ and „MAX“ marks.

**Note**

- ◆ *Excess fluid must be drained off if the level is above the range specified above.*
- ◆ *If the fluid level is below the range specified, the hydraulic system must be checked for leaks. In this case it is not sufficient to merely top up the fluid.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*



### 4.3 Bleeding steering system after repairs

Different bleeding procedures are required after repairs to the steering system, depending on which components have been removed or renewed.

**Bleeding system after replacement of entire steering system or steering box:**

- Fill reservoir completely.
- Raise vehicle so that all wheels are free.
- Engine switched off.
- With engine switched off, turn steering wheel 10 times from lock to lock.
- Fill reservoir completely.
- Start engine and let it run briefly (2 seconds maximum).

Pump must not draw in air. Steering wheel must not be turned.

Wait approx. 30 seconds between engine starts.

- Check hydraulic fluid level and top up if necessary.
- Keep repeating this procedure until fluid level remains constant.
- With engine switched off, turn steering wheel 10 times from lock to lock.
- Check hydraulic fluid level and top up if necessary.
- Start engine.
- Turn steering wheel 10 times from lock to lock.
- Check hydraulic fluid level and top up if necessary.

Any air remaining in the steering system will dissipate when the vehicle has been driven 10...20 km.

**Bleeding system after removing one or more steering system components with the exception of the steering box (i.e. pump, hoses, etc.):**

- Check hydraulic fluid level and top up if necessary.
- Start engine and let it run briefly (2 seconds maximum).

Pump must not draw in air; steering wheel must not be turned.

Wait approx. 30 seconds between engine starts.

- Check hydraulic fluid level and top up if necessary.

- Keep repeating this procedure until fluid level remains constant.
- Start engine and let it run for 2 - 3 minutes without turning steering wheel.

Any air remaining in the steering system will dissipate when the vehicle has been driven 10...20 km.

## 4.4 Checking steering system for leaks

### Note

*The steering system must be checked for leaks after repair work and if the hydraulic fluid level in the reservoir is low.*

- Start engine.
- Turn steering to full lock on both sides and hold briefly.

This builds up the maximum possible pressure.

### Note

*To avoid damaging the pump, the steering wheel must not be held on full lock for more than 10 seconds during this test.*

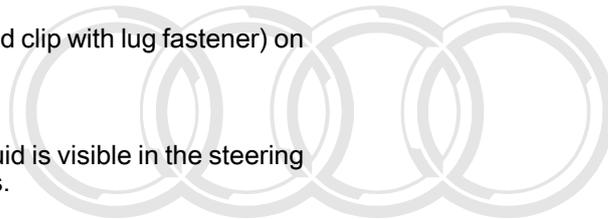
Check the following components for leaks with the steering in this position:

- ◆ Pinion seal on steering box valve housing
- ◆ All pipe connections
- ◆ Steering rack seals

This check can only be carried out when the rubber boots are pushed back.

- Open hose clips (spring-type clip and clip with lug fastener) on rubber boot.
- Push back boot.

The steering box must be renewed if fluid is visible in the steering box housing and/or in the rubber boots.



# 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 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 6-cylinder diesel engine)

⇒ [„5.1 Exploded view \(vehicles with 6-cylinder diesel engine\)“, page 332](#)

⇒ [„5.2 Checking delivery pressure of power steering pump \(vehicles with 6-cylinder diesel engine\)“, page 335](#)

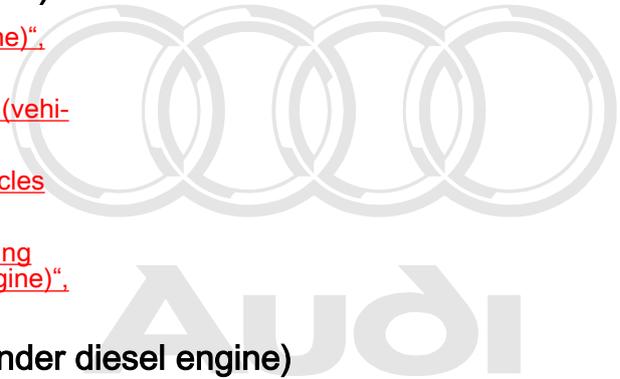
⇒ [„5.3 Removing and installing power steering pump \(vehicles with 6-cylinder diesel engine\)“, page 337](#)

⇒ [„5.4 Installation position of suction hoses at power steering pump and fluid reservoir \(vehicles with 6-cylinder diesel engine\)“, page 344](#)

### 5.1 Exploded view (vehicles with 6-cylinder diesel engine)

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

The hydraulic fluid circuit on right-hand drive vehicles is the same as on left-hand drive vehicles, except that the hydraulic pipes are extended from left to right on the steering box.



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

 Note

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

1 - Power steering box

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

2 - Pressure line

3 - Union nut, 45 Nm

4 - Non-return valve

- Pressed into expansion hose (pipe section)  
⇒ [Item 2 \(page 333\)](#)

5 - Bolt, 9 Nm

6 - Cap with dipstick

- Checking fluid level  
⇒ [page 326](#)

7 - Rubber mounting

- For reservoir

8 - Reservoir

- When filling system, put in hydraulic fluid

9 - Spring-type clip

- Use spring-type clip pliers -VAS 5024 A- when removing and installing

10 - Return hose

- Between reservoir and hydraulic fluid cooler
- Installation position on reservoir ⇒ [page 344](#)

11 - Return hose

- Between servotronic steering box and hydraulic fluid cooler
- Note attachment of return hose/expansion hose in vicinity of longitudinal member (front) ⇒ [page 334](#)
- Note attachment at front end ⇒ [page 334](#)

12 - Hose clip

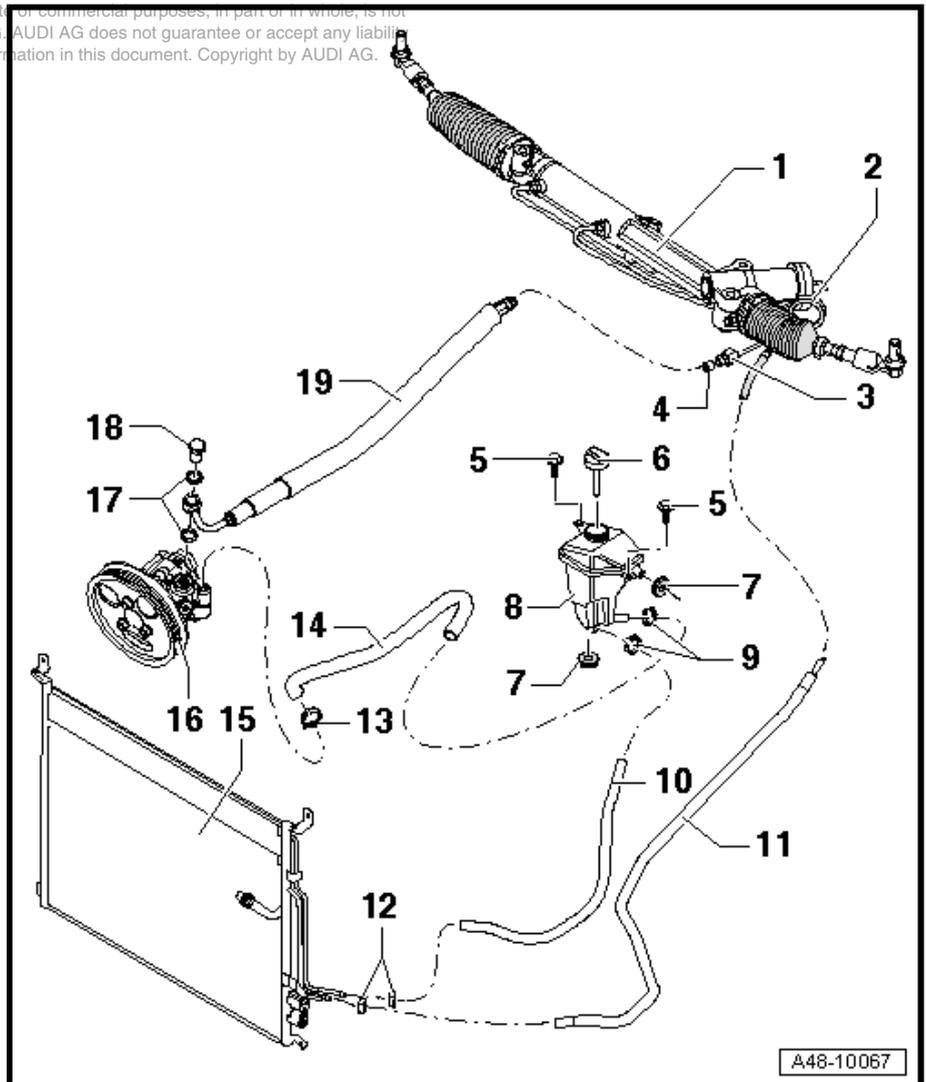
- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

13 - Spring-type clip

- Use spring-type clip pliers -VAS 5024 A- when removing and installing

14 - Suction hose

- Between reservoir and power steering pump
- Installation position on power steering pump and fluid reservoir ⇒ [page 344](#)



**15 - Hydraulic fluid cooler****16 - Power steering pump**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing
- After replacement, check alignment of pulley ⇒ [page 343](#)
- Checking delivery pressure ⇒ [page 335](#)
- Removing and installing ⇒ [page 337](#)

**17 - Seal**

- Always renew

**18 - Banjo bolt, 47 Nm****19 - Expansion hose**

- Note attachment of expansion hose/return hose in vicinity of longitudinal member (front) ⇒ [page 334](#)

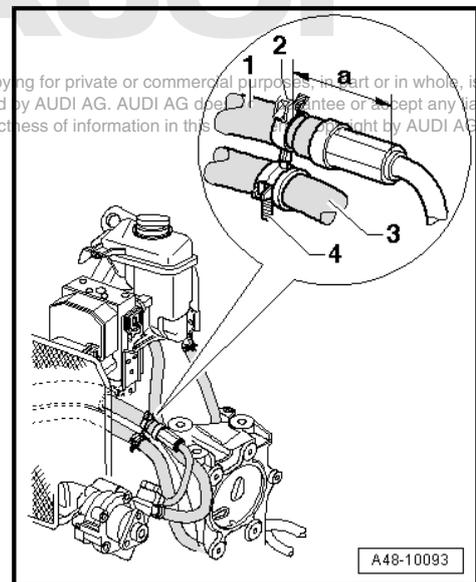
**Attachment of expansion hose/return hose in vicinity of longitudinal member (front)**

- Secure cable tie -2- on expansion hose -1-.

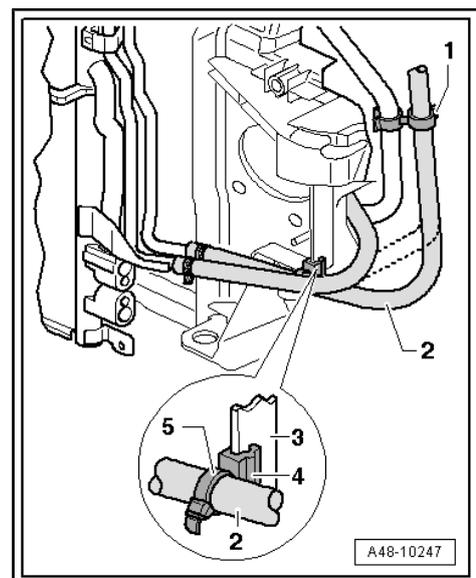
Dimension -a- must be 60 mm.

- Secure cable tie -4- on return hose -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 warrant or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG

**Attachment of return hose at front end**

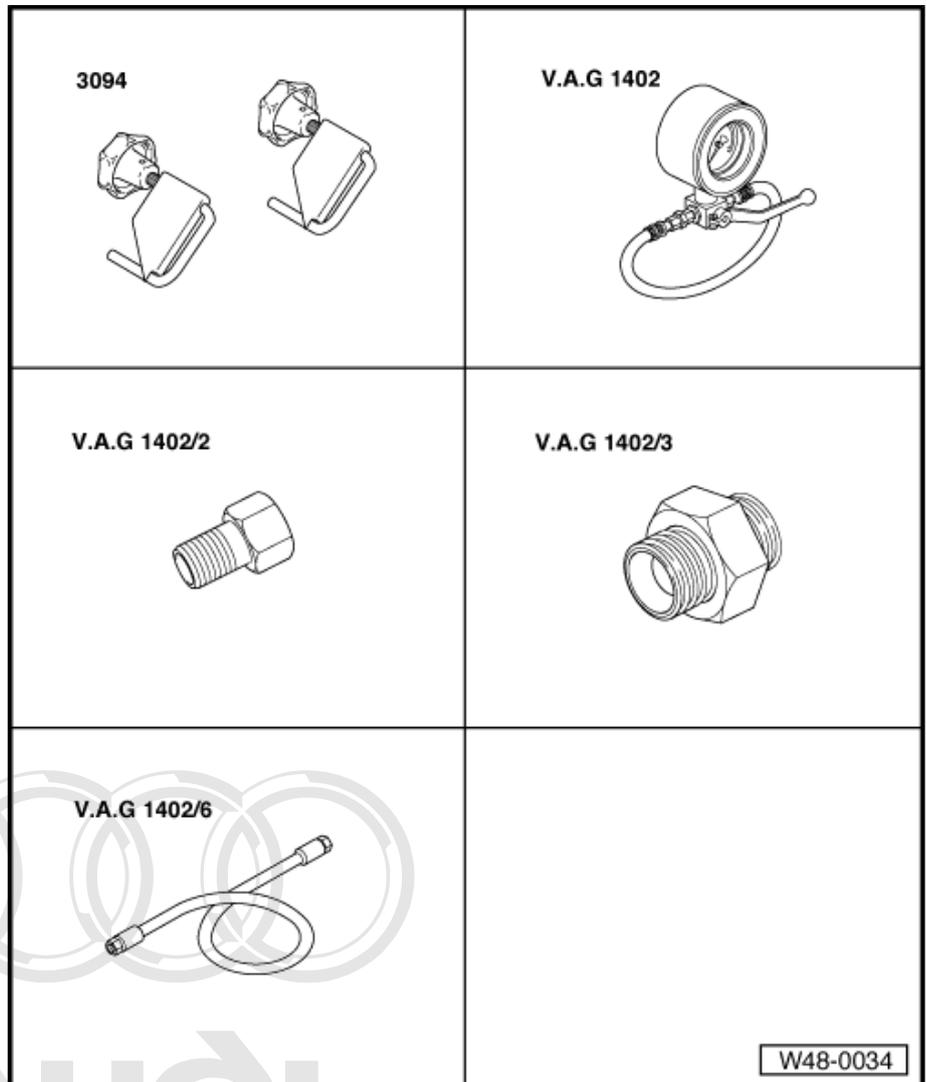
- Secure return hose -2- on front end -3- with bracket -4- and cable tie -5-.
- Secure return hose -2- on refrigerant line with clip -1-.



## 5.2 Checking delivery pressure of power steering pump (vehicles with 6-cylinder diesel engine)

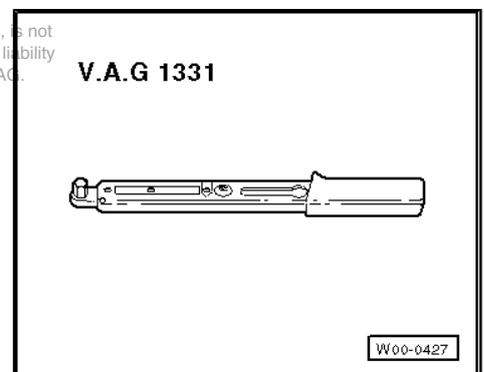
### Special tools and workshop equipment required

- ◆ Hose clamps -3094-
- ◆ Power steering tester - V.A.G 1402-
- ◆ Adapter -V.A.G 1402/2-
- ◆ Adapter -V.A.G 1402/3-
- ◆ Adapter set -V.A.G 1402/6-



- ◆ Torque wrench -V.A.G 1331-

Unauthorized copying or reuse of any part of this page is illegal. Copying or reuse of any part of this page is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



### Test requirements:

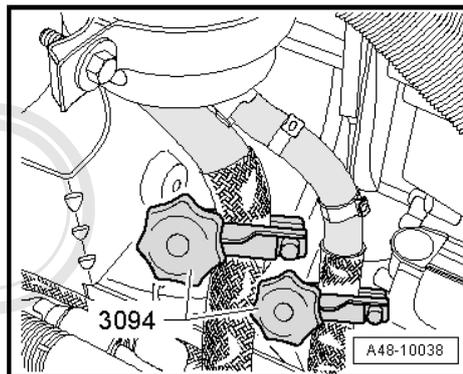
- Belt condition/ belt tension OK
- No leaks in system



- Hoses and pipes not kinked or constricted

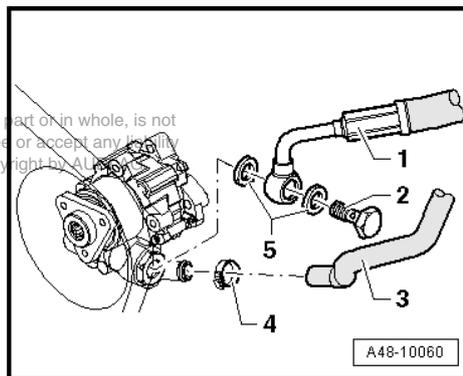
### Checking

- Clamp off suction hose and return hose at reservoir using hose clamps -3094- .
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove noise insulation ⇒ Rep. gr. 50 .
- Place a cloth under the union to catch escaping hydraulic fluid.



- Unscrew banjo bolt -2- and disconnect pressure hose -1- from power steering pump.

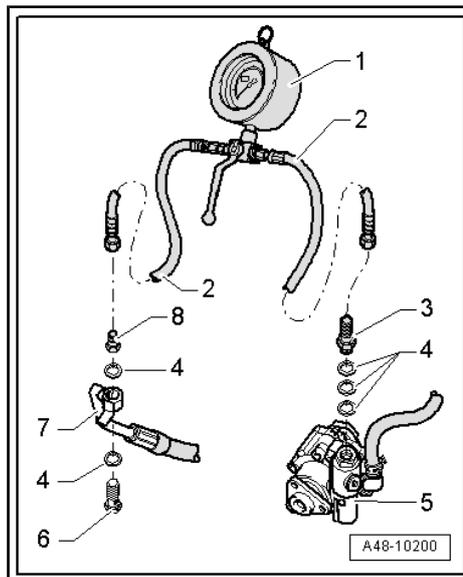
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- Connect power steering tester -V.A.G 1402- as shown.

- 1 - Power steering tester -V.A.G 1402-
- 2 - Hose from adapter set -V.A.G 1402/6-
- 3 - Adapter -V.A.G 1402/4-
- 4 - Seal
- 5 - Pressure line
- 6 - Banjo bolt
- 7 - Power steering pump
- 8 - Adapter -V.A.G 1402/2-

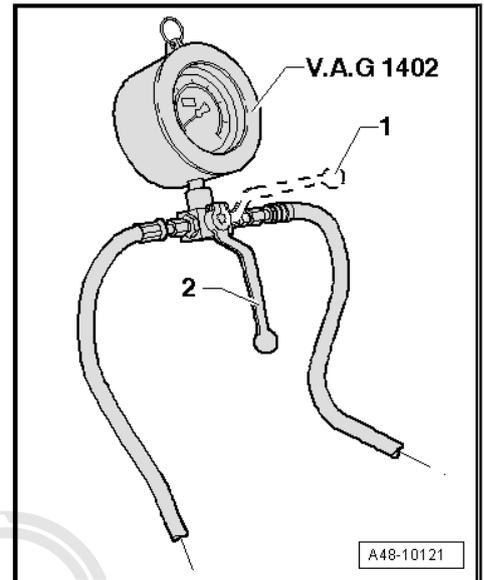
- Remove hose clamps -3094- .



- Make sure lever on pressure gauge is in position -2-.
- Start engine but do not press accelerator.
- Turn steering wheel approx. 10 times from lock to lock.
- Switch off engine and top up hydraulic fluid in reservoir if necessary.

 **Note**

- ◆ To avoid damaging the pump, please note the following points:
- ◆ Cut-off valve of pressure gauge must not remain closed for more than 10 seconds during this test.
- ◆ Start engine without pressing accelerator and leave it running at idling speed.
- ◆ Take pump pressure reading at idling speed immediately after starting engine (have second mechanic take reading).
- ◆ The pressure will drop during the test; take the highest pressure reading as the test value.

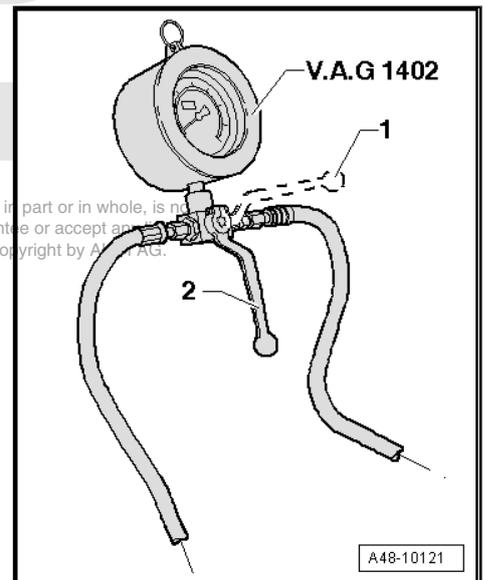


- Then check delivery pressure.
- Start engine, close cut-off valve (position -1-) with engine idling and read off pressure. Do not leave cut-off valve closed for longer than 10 seconds.

**Delivery pressure specification: 125...130 bar**

Renew power steering pump if specification is not attained  
 ⇒ [page 337](#) .

- Switch off engine.
- Remove power steering tester -V.A.G 1402- .
- Install banjo bolt with new seals ⇒ [Item 1 \(page 338\)](#) . When doing this, note correct position of expansion hose ⇒ [Item 3 \(page 338\)](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check hydraulic fluid level ⇒ [page 326](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Fit noise insulation ⇒ Rep. gr. 50 .
- Set down vehicle on its wheels ⇒ [page 7](#) .



### 5.3 Removing and installing power steering pump (vehicles with 6-cylinder diesel engine)

Power steering pump - exploded view:

 **Note**

- ◆ Renew seals.
- ◆ Do not re-use hydraulic fluid which has been drained off.
- ◆ Use only hydraulic fluid .



1 - Banjo bolt, 47 Nm

2 - Seal

- Always renew

3 - Expansion hose

- Note correct position:  
Angle between pipe  
connection and axis of  
pump is approx. 54°

4 - Suction hose

- Marking -P- on suction  
hose must be aligned  
with seam on pump.

5 - Hose clip

- Tighten using hose clip  
pliers -V.A.G 1275- or  
locking pliers for steer-  
ing box -VAS 6199-
- Always renew

6 - Power steering pump

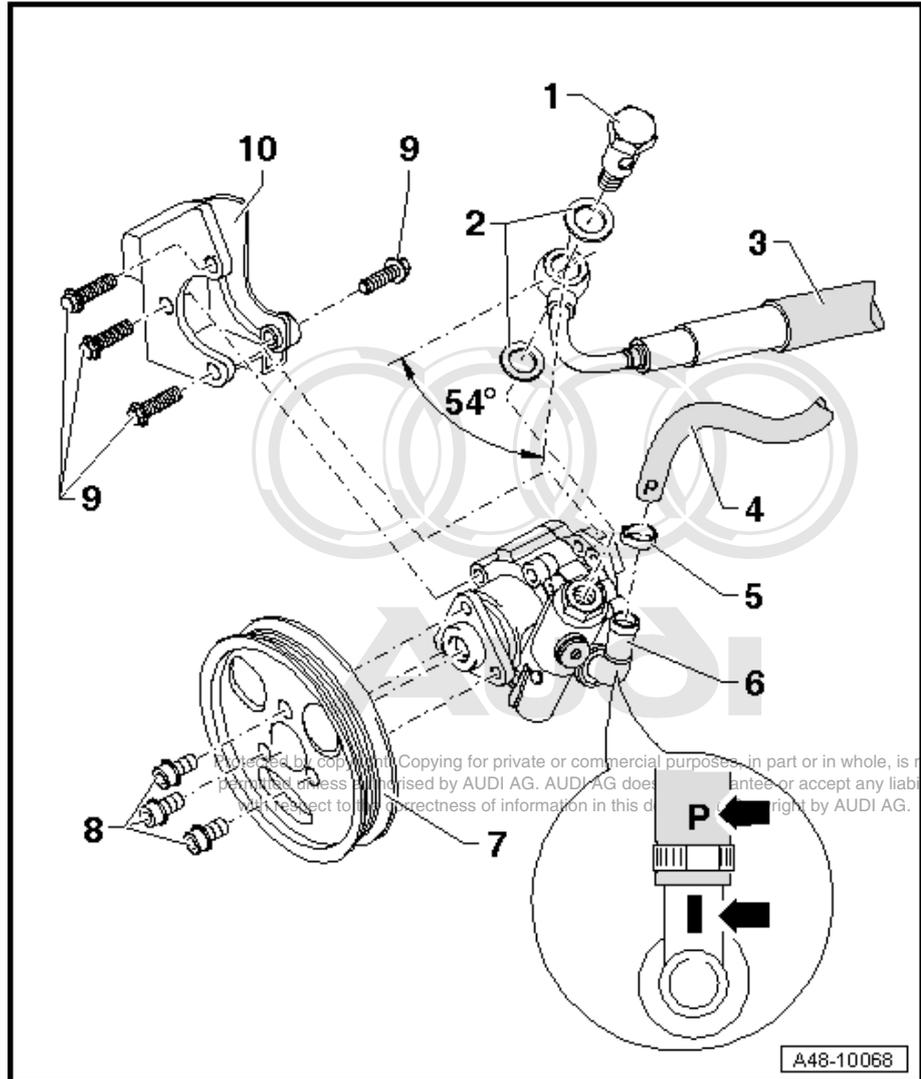
- For correct version refer  
to ⇒ Electronic parts  
catalogue „ETKA“
- Fill with hydraulic fluid  
before installing
- Checking delivery pres-  
sure ⇒ [page 335](#)
- Removing and installing  
⇒ [page 338](#)

7 - Belt pulley

8 - Bolt, 22 Nm

9 - Bolt, 20 Nm

10 - Bracket

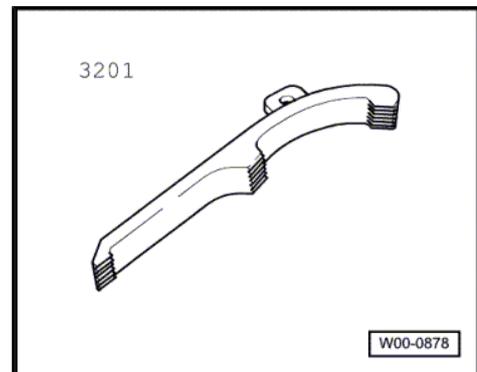


A48-10068

**Removing and installing power steering pump:**

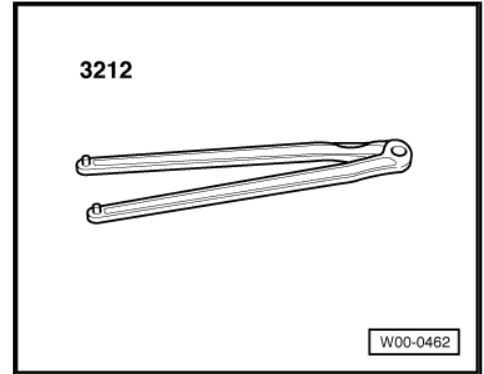
**Special tools and workshop equipment required**

- ◆ Aligning gauge -3201-

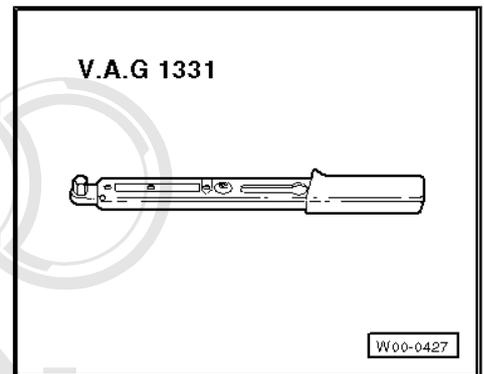


W00-0878

◆ Pin wrench -3212-

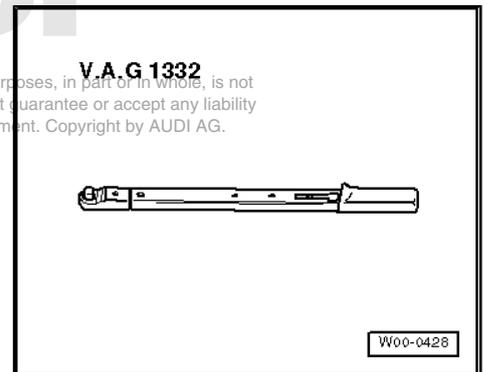


◆ Torque wrench -V.A.G 1331-

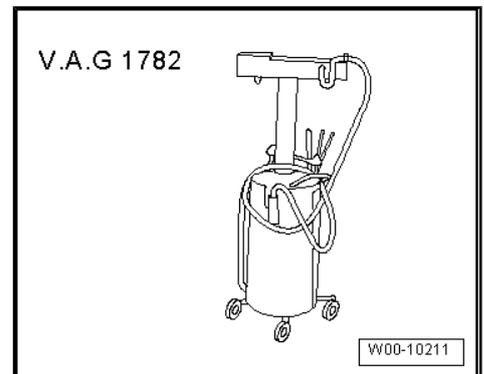


◆ Torque wrench -V.A.G 1332-

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

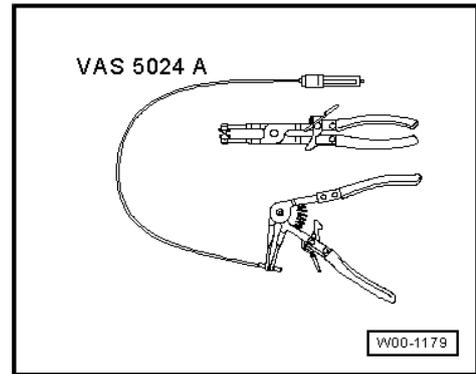


◆ Used oil collection and extraction unit -V.A.G 1782-

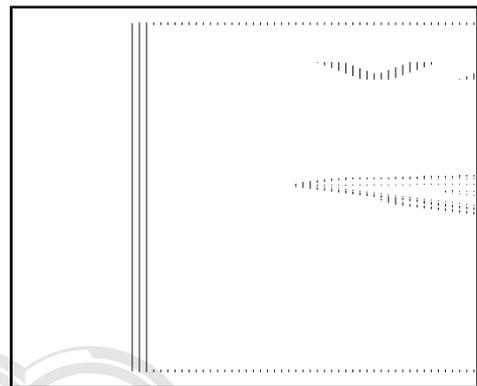




- ◆ Spring-type clip pliers -VAS 5024 A-



- ◆ Drip tray for workshop hoist -VAS 6208-



- ◆ Hydraulic fluid

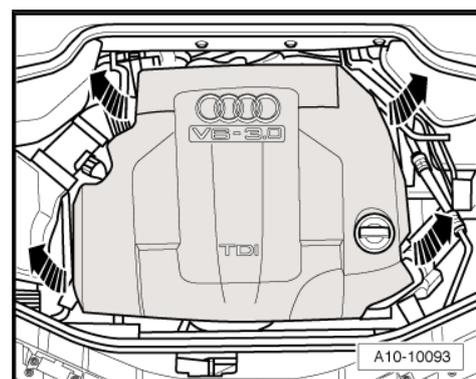
#### General notes

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

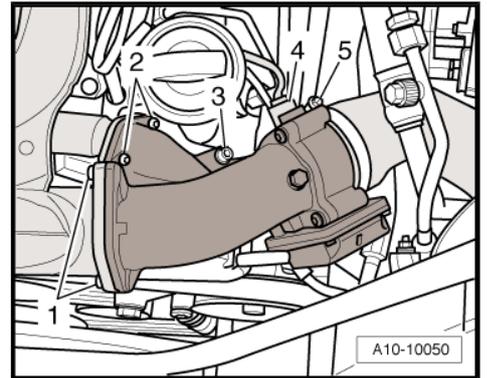
- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

#### Removing

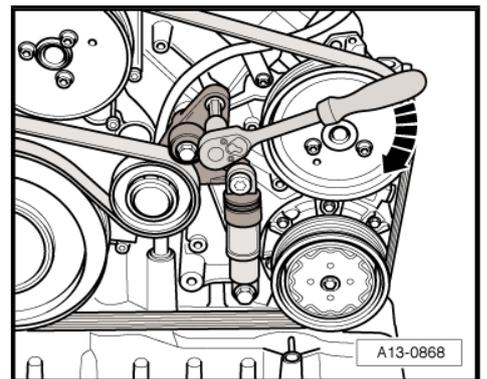
- Extract hydraulic fluid from reservoir with used oil collection and extraction unit -V.A.G 1782- .
- Carefully pull engine cover panel off 4 mounting studs (one at a time) -arrows-.
- Pull out oil dipstick.



- Disconnect air intake hose -5-.
- Detach electrical connector -4-.
- Remove bolts -1...3- and detach intake manifold flap motor -V157- with hose connection.



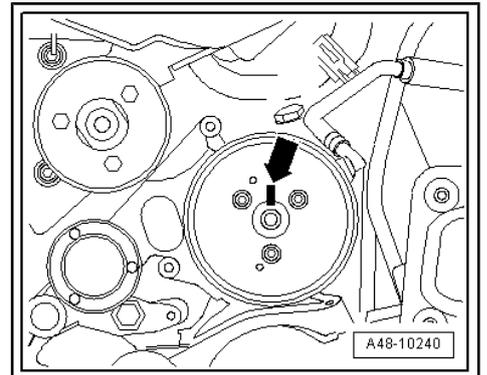
- Using suitable lever with TORX 60 attachment, turn belt tensioner in direction of -arrow- to slacken poly V-belt.
- Detach poly V-belt from power steering pump pulley.



- Mark position of pulley relative to hub -arrow-.

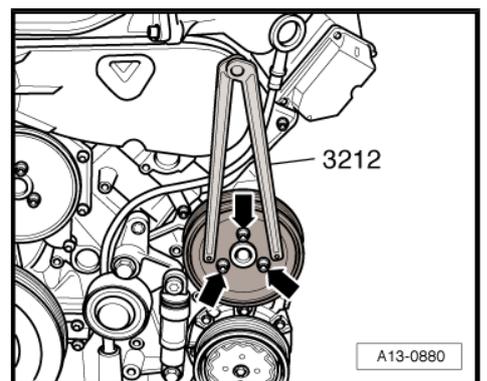
**i** Note

- ◆ *If the power steering pump is being renewed, transfer the marking on the hub from the old pump to the new pump.*
- ◆ *Due to limited space, it is not possible to see the positions of the holes in the pulley relative to the holes in the hub during installation.*



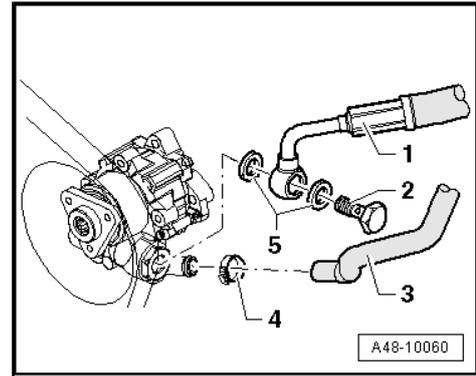
- Unbolt pulley from power steering pump -arrows- (counterhold pulley with pin wrench -3212- ).
- Place drip tray for workshop hoist -VAS 6208- underneath to catch hydraulic fluid.

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

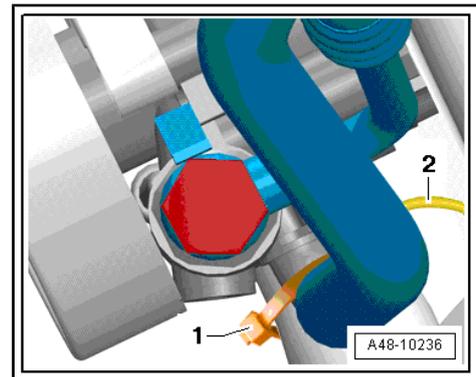




- Detach hose clip -4- from suction hose -3-.
- Disconnect suction hose and move hose to one side.
- Remove banjo bolt -2- for expansion hose -1-.
- Seal off connections with plugs.



- Cut through cable tie -1- for injector harness -2-.



- Remove bolts -1- and -3- and detach power steering pump from bracket.

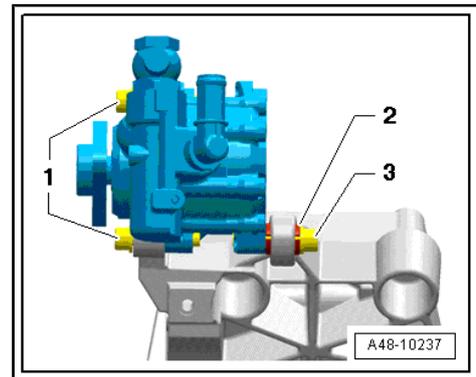
### Installing

Installation is carried out in the reverse sequence. Note the following points:



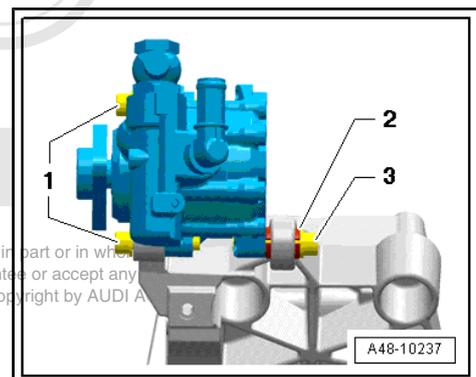
#### Note

- ◆ *Renew seals, gaskets and O-rings.*
- ◆ *Before fitting a new pump, put in hydraulic fluid at the inlet and turn pump by hand until fluid flows out at the pressure outlet.*
- ◆ *Hose connections and hoses for charge air system must be free of oil and grease before fitting.*
- ◆ *Secure all hose connections with the correct type of hose clips (same as original equipment) → Electronic parts catalogue „ETKA“.*



- Turn hub by hand until fluid comes out at pump outlet.
- To make it easier to fit power steering pump, knock back threaded bush -2- for bolt -3- in bracket slightly.
- Install power steering pump and tighten bolts -1- and -3- → [Item 9 \(page 338\)](#).

Installation position of suction hoses at power steering pump and fluid reservoir → [page 344](#)

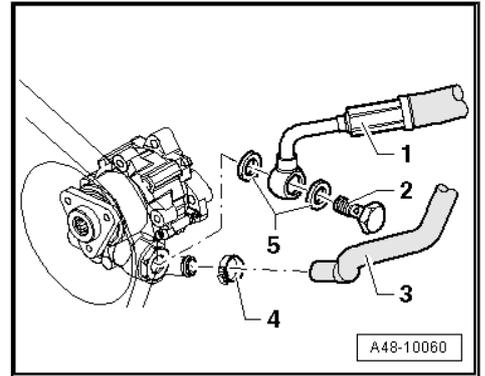


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Fit new seals -5- on banjo bolt.
- Tighten banjo bolt -2- for pressure line -1-  
⇒ [Item 1 \(page 338\)](#) .
- Connect suction hose -3- and secure with new hose clip -4-.  
Note correct installation position ⇒ [page 344](#) .

Marking -P- on suction hose -3- must be aligned with seam on pump.

- Fill up with hydraulic fluid .
- Clean off fluid in engine compartment where necessary.
- Secure pulley to power steering pump ⇒ [Item 8 \(page 338\)](#) .
- Fit poly V-belt ⇒ Rep. gr. 13 .

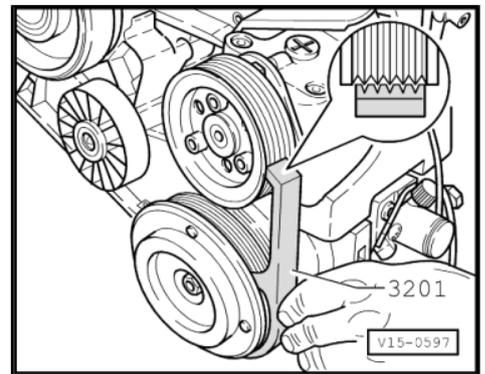


### Checking and adjusting pulley alignment

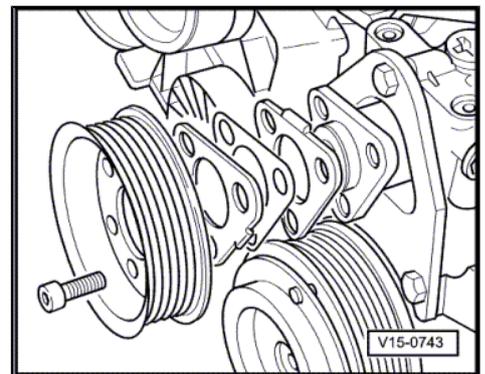
- Position aligning gauge -3201- on pulley of air conditioner compressor.
- Pulleys on pump and air conditioner compressor must be aligned.

If the two pulleys are not in alignment:

- Unbolt pump pulley.



- Use the shims listed in ⇒ Electronic parts catalogue „ETKA“ to adjust the gap so the two pulleys are aligned.



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



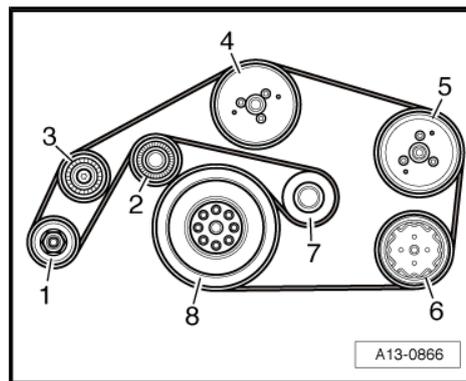
- Then re-check alignment of poly V-belt pulleys with aligning gauge -3201-. Repeat adjustment if necessary.



**Note**

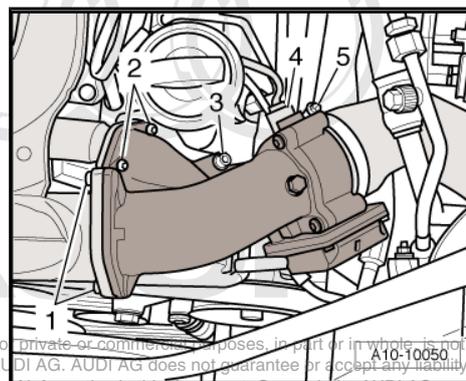
Ensure that the belt is properly seated in the pulleys when installing.

- 1 - Alternator
- 2 - Idler roller
- 3 - Idler roller
- 4 - Coolant pump
- 5 - Power steering pump
- 6 - Air conditioner compressor
- 7 - Tensioner for poly V-belt
- 8 - Crankshaft



**Installing (continued)**

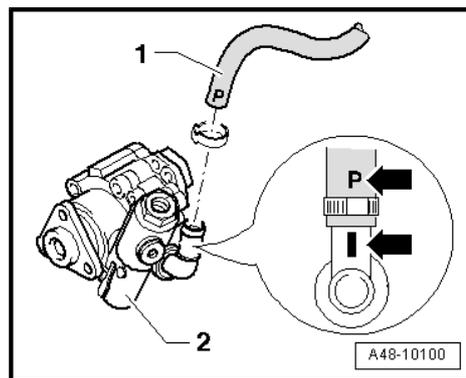
- Tighten bolts -1 ... 3- on hose connection to 9 Nm.
- Check hydraulic fluid level ⇒ [page 326](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check steering system for leaks ⇒ [page 331](#) .



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

**5.4 Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 6-cylinder diesel engine)**

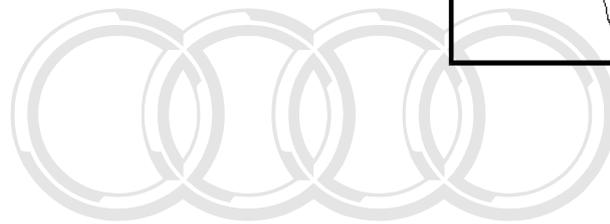
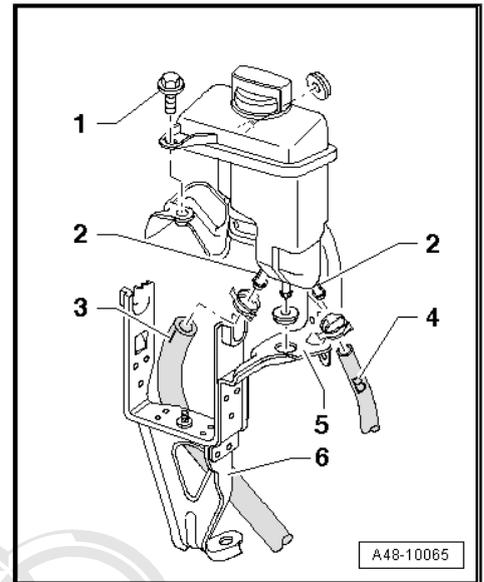
- Marking -P- on suction hose -1- must be aligned with seam on pump -2- -arrows-.



– Marking -3- on suction hose and marking -4- on return hose must be aligned with seam -2- on reservoir.

1 - Bolt, 9 Nm

Bracket -5- for reservoir is welded onto bracket for ESP unit -6- and cannot be renewed separately.



# 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.



## 6 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 6-cylinder MPI petrol engine)

⇒ [„6.1 Exploded view \(vehicles with 6-cylinder MPI petrol engine\)“, page 346](#)

⇒ [„6.2 Checking delivery pressure of power steering pump \(vehicles with 6-cylinder MPI petrol engine\)“, page 350](#)

⇒ [„6.3 Removing and installing power steering pump \(vehicles with 6-cylinder MPI petrol engine\)“, page 352](#)

⇒ [„6.4 Installation position of suction hoses on power steering pump and fluid reservoir \(vehicles with 6-cylinder MPI petrol engine\)“, page 358](#)

### 6.1 Exploded view (vehicles with 6-cylinder MPI petrol engine)

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.



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

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

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

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**2 - Expansion hose**

**3 - Return hose**

- Between servotronic steering box and hydraulic fluid cooler
- Note attachment in vicinity of longitudinal member (front) ⇒ [page 348](#)
- Note attachment on radiator/air conditioner line ⇒ [page 349](#)

**4 - Cap with dipstick**

- Checking fluid level ⇒ [page 326](#)

**5 - Bolt, 5 Nm**

**6 - Reservoir**

- When filling system, put in hydraulic fluid

**7 - Rubber mounting**

- For reservoir

**8 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**9 - Return hose**

- Between reservoir and cooling pipe
- Note attachment in vicinity of longitudinal member (front) ⇒ [page 348](#)
- Note attachment on radiator/air conditioner line ⇒ [page 349](#)
- Note correct position on reservoir ⇒ [page 358](#)

**10 - Hose clip**

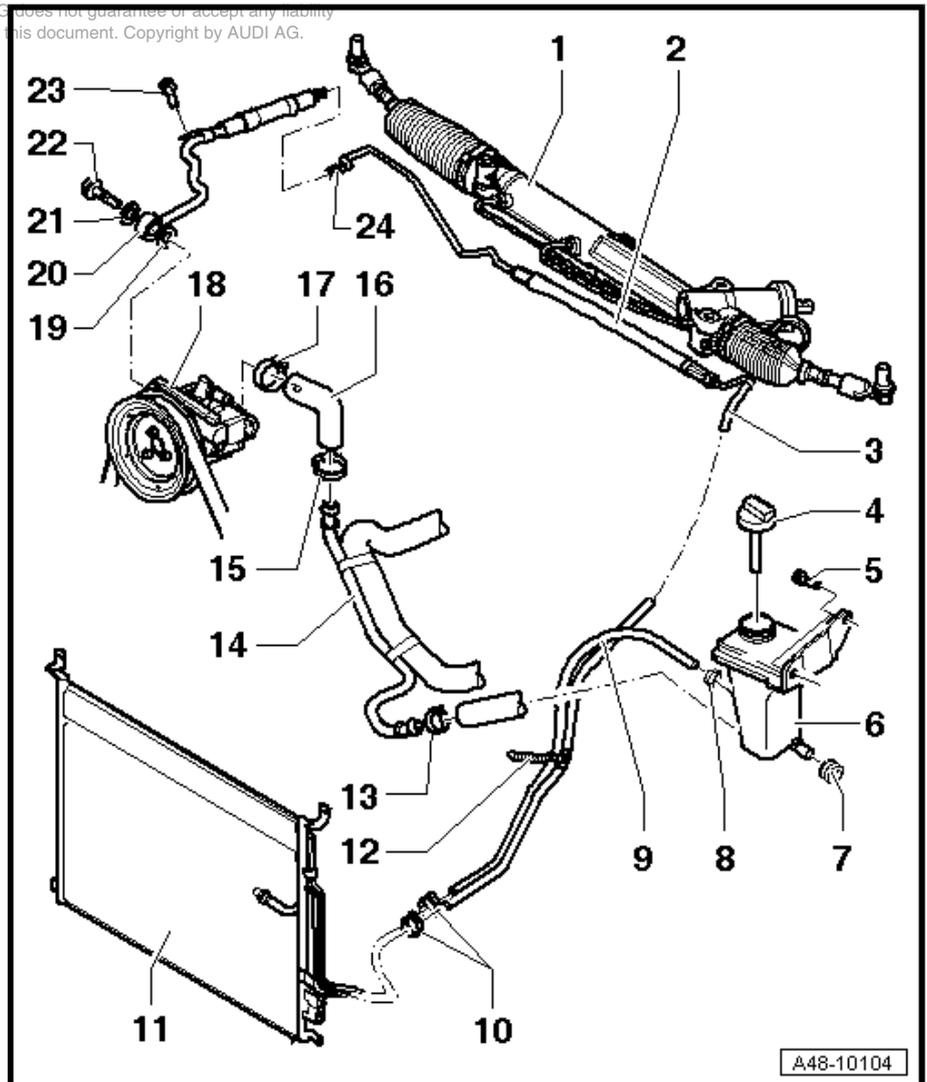
- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**11 - Hydraulic fluid cooler**

**12 - Cable tie**

**13 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-



- Always renew

#### 14 - Suction hose

- Between reservoir and hydraulic fluid cooler
- Note correct installation position ⇒ [page 358](#)

#### 15 - Hose clip

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

#### 16 - Suction hose

- Between reservoir and hydraulic fluid cooler
- Note correct position on power steering pump ⇒ [page 358](#)

#### 17 - Hose clip

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

#### 18 - Power steering pump

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing
- Checking delivery pressure ⇒ [page 350](#)
- Removing and installing ⇒ [page 352](#)

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

#### 19 - Seal

- Always renew

#### 20 - Expansion hose

- Attachment to engine ⇒ [page 349](#)

#### 21 - Seal

- Always renew

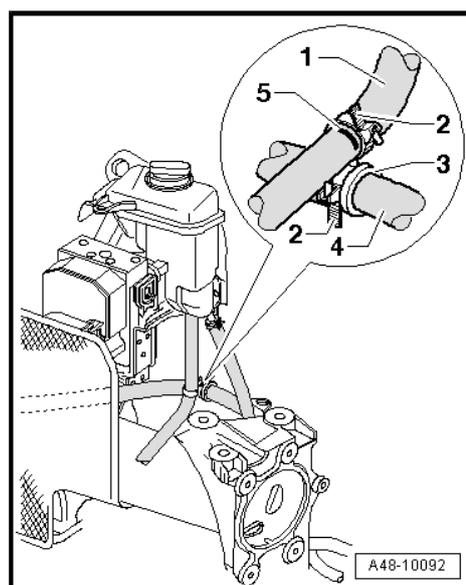
#### 22 - Banjo bolt, 47 Nm

#### 23 - Bolt, 8 Nm

#### 24 - Union nut, 40 Nm

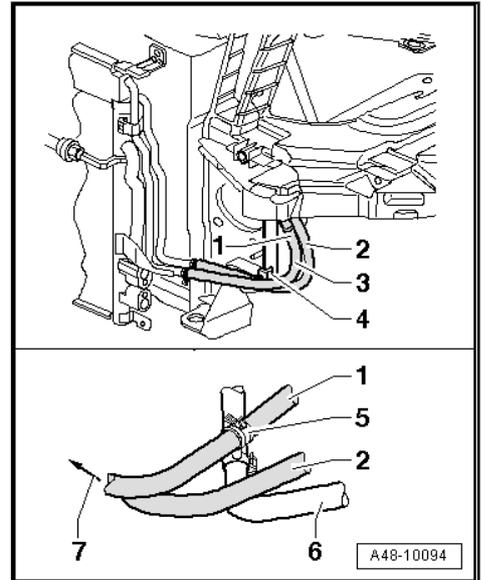
#### Attachment of return hose in vicinity of longitudinal member (front)

- Secure cable tie -2- on return hose -1-. Note marking -5-.
- Secure guide bush -3- on expansion hose -4- with cable tie -2-.



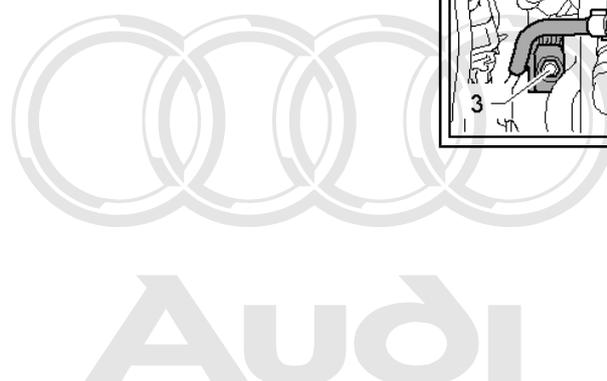
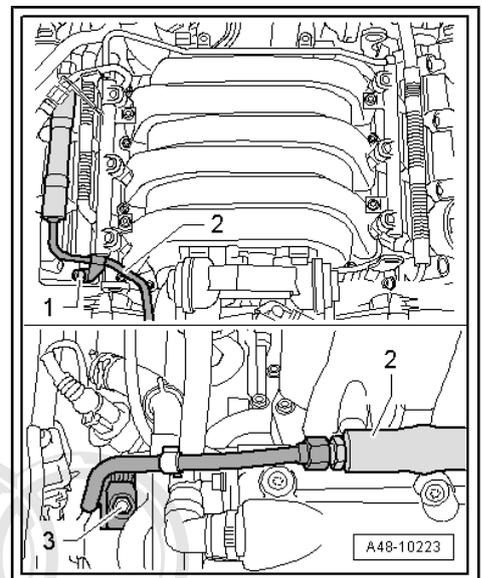
**Attachment of return hose on radiator and air conditioner line**

- Secure return hose -1- on air conditioner line -6- with cable tie -5-.
- Secure return hose -2- on radiator -3- with bracket -4-.
- 7 - To oil cooler



**Attachment of expansion hose to engine**

- Secure expansion hose -2- with bolt -1- at front right of engine.
- Secure expansion hose -2- with bolt -3- at rear right of engine.



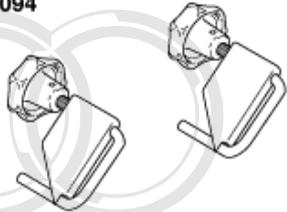
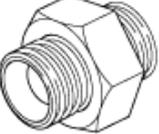
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



## 6.2 Checking delivery pressure of power steering pump (vehicles with 6-cylinder MPI petrol engine)

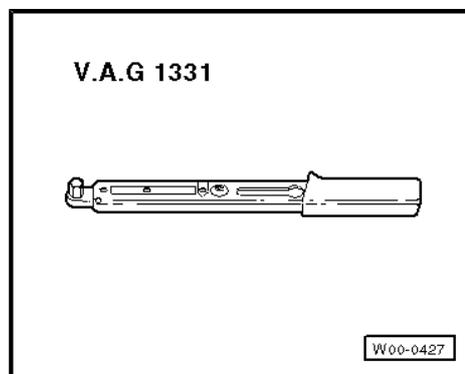
### Special tools and workshop equipment required

- ◆ Hose clamps -3094-
- ◆ Power steering tester - V.A.G 1402-
- ◆ Adapter -V.A.G 1402/2-
- ◆ Adapter -V.A.G 1402/3-
- ◆ Adapter set -V.A.G 1402/6-

<p><b>3094</b></p> 	<p><b>V.A.G 1402</b></p> 
<p><b>V.A.G 1402/2</b></p> 	<p><b>V.A.G 1402/3</b></p> 
<p><b>V.A.G 1402/6</b></p> 	<p style="text-align: right;"><b>W48-0034</b></p>

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright © 2011 by AUDI AG.

- ◆ Torque wrench -V.A.G 1331-



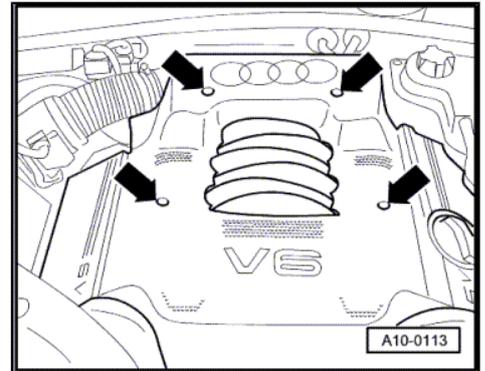
### Test requirements:

- Belt condition/ belt tension OK
- No leaks in system

- Hoses and pipes not kinked or constricted

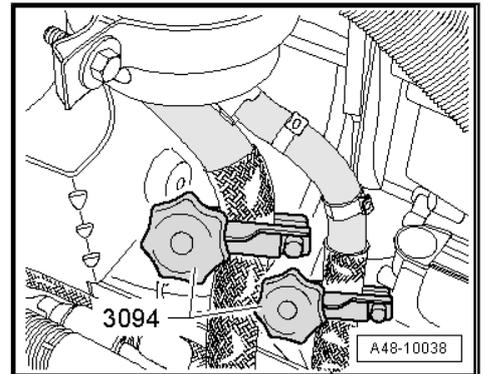
### Checking

- Unclip engine cover panel and remove.



Protected by copyright. Copying for private or 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.

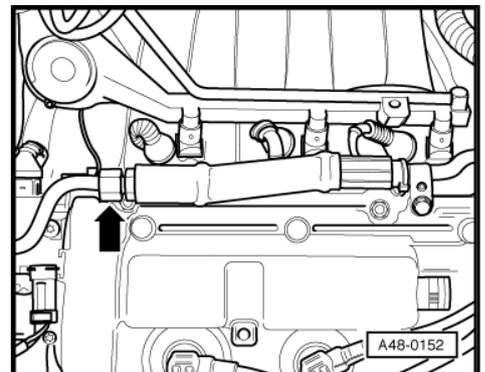
- Clamp off suction hose and return hose at reservoir using hose clamps -3094- .
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove noise insulation ⇒ Rep. gr. 50 .
- Place a cloth under the union to catch escaping hydraulic fluid.



- Unscrew pipe from expansion hose -arrow-. (Counterhold hex-agon flats on expansion hose.)

### Note

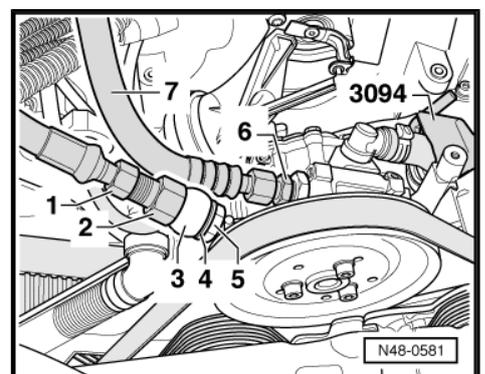
*If necessary, unbolt bracket for hydraulic line to give easier access.*



- Connect V.A.G adapters, banjo bolt and pressure line as shown in illustration.

- 1 - Adapter set -V.A.G 1402/6-
- 2 - Adapter -V.A.G 1402/2-
- 3 - Pressure line
- 4 - Seal (4x)
- 5 - Banjo bolt
- 6 - Adapter -V.A.G 1402/3-
- 7 - Line from power steering tester -V.A.G 1402-

- Remove hose clamps -3094- .



- Make sure lever on pressure gauge is in position -2-.
- Top up fluid in reservoir if necessary.
- Start engine but do not press accelerator.
- Turn steering wheel approx. 10 times from lock to lock.
- Switch off engine and top up hydraulic fluid in reservoir if necessary.



**Note**

- ◆ To avoid damaging the pump, please note the following points:
- ◆ Cut-off valve of pressure gauge must not remain closed for more than 10 seconds during this test.
- ◆ Start engine without pressing accelerator and leave it running at idling speed.
- ◆ Take pump pressure reading at idling speed immediately after starting engine (have second mechanic take reading).
- ◆ The pressure will drop during the test; take the highest pressure reading as the test value.

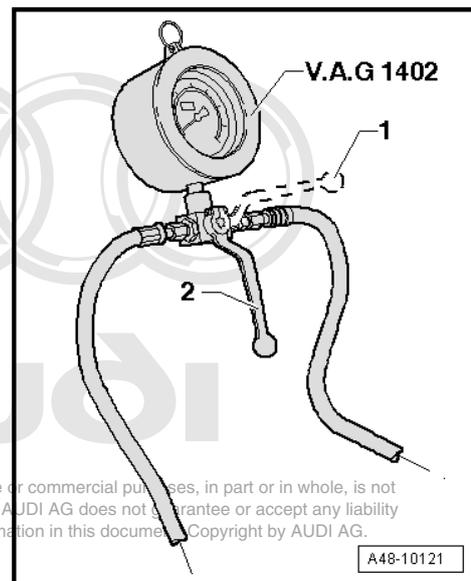
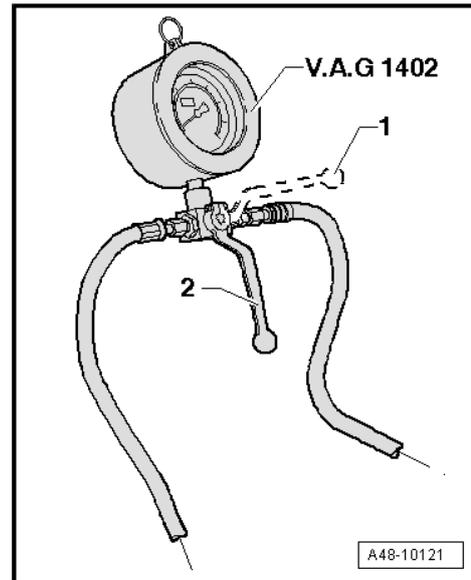
- Then check delivery pressure.

- Start engine, close cut-off valve (position -1-) with engine idling and read off pressure. Do not leave cut-off valve closed for longer than 10 seconds.

**Delivery pressure specification: 125...130 bar**

Renew power steering pump if specification is not attained  
⇒ [page 352](#) .

- Switch off engine.
- Remove power steering tester -V.A.G 1402- .
- Install banjo bolt with new seals ⇒ [Item 22 \(page 348\)](#) .
- Check hydraulic fluid level ⇒ [page 326](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Fit noise insulation ⇒ Rep. gr. 50 .
- Set down vehicle on its wheels ⇒ [page 7](#) .



### 6.3 Removing and installing power steering pump (vehicles with 6-cylinder MPI petrol engine)

**Power steering pump - exploded view:**



**Note**

- ◆ Renew seals.
- ◆ Do not re-use hydraulic fluid which has been drained off.
- ◆ Use only hydraulic fluid .

**1 - Seal**

- Always renew

**2 - Banjo bolt, 47 Nm**

**3 - Expansion hose**

**4 - Power steering pump**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing
- Checking delivery pressure ⇒ [page 350](#)
- Removing and installing ⇒ [page 353](#)

**5 - Seam**

- For installation position of suction hose

**6 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**7 - Suction hose**

- Note correct installation position ⇒ [page 358](#)

**8 - Nut, 22 Nm**

- Depending on engine code, may be fitted with stud ⇒ [Item 9 \(page 353\)](#)

**9 - Stud**

- Apply sealant when installing
- Depending on engine code, may be fitted with nut ⇒ [Item 8 \(page 353\)](#)

**10 - Bolt, 23 Nm**

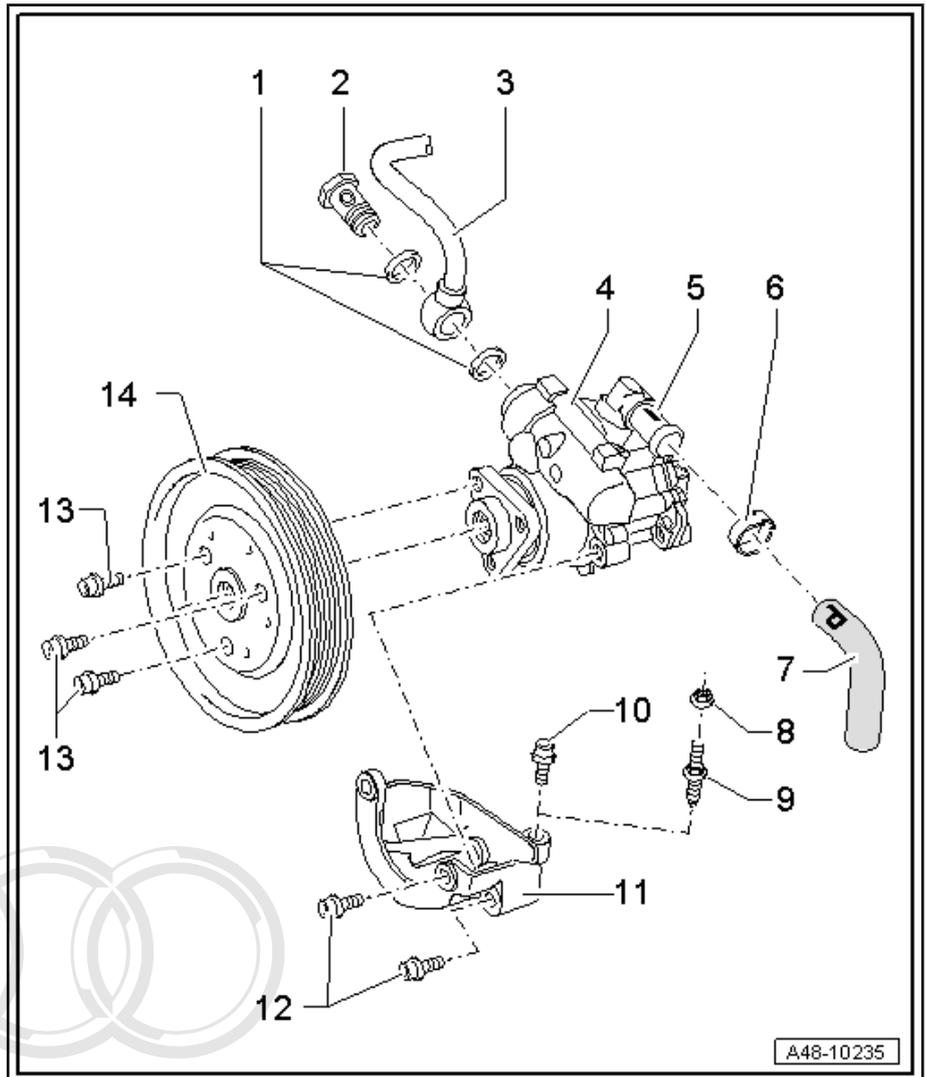
- Apply sealant when installing
- Depending on engine code, may be fitted instead of stud ⇒ [Item 9 \(page 353\)](#) and nut ⇒ [Item 8 \(page 353\)](#)

**11 - Bracket**

**12 - Bolt, 23 Nm**

**13 - Bolt, 23 Nm**

**14 - Belt pulley**

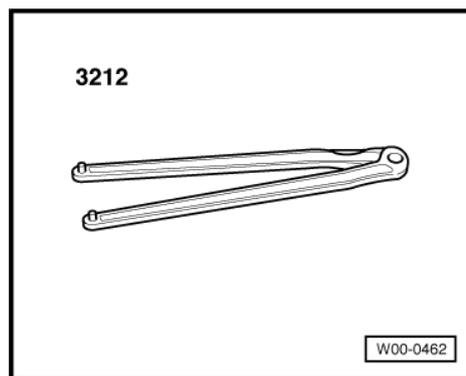


**Removing and installing power steering pump:**

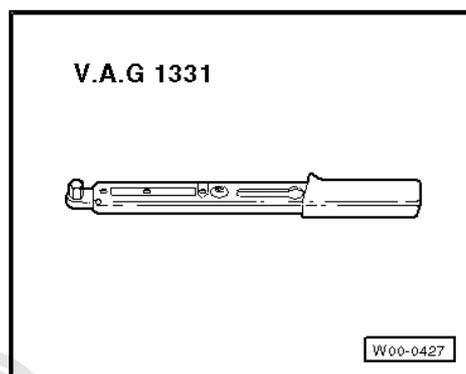
Special tools and workshop equipment required



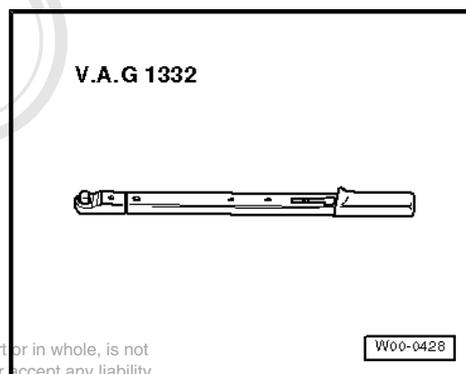
◆ Pin wrench -3212-



◆ Torque wrench -V.A.G 1331-

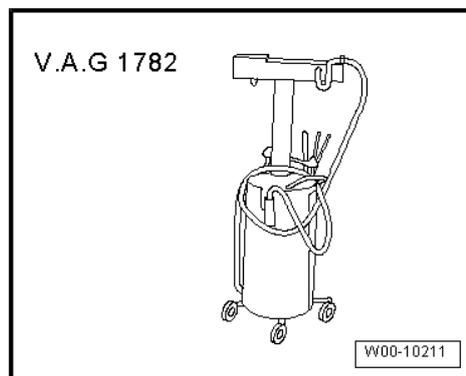


◆ Torque wrench -V.A.G 1332-

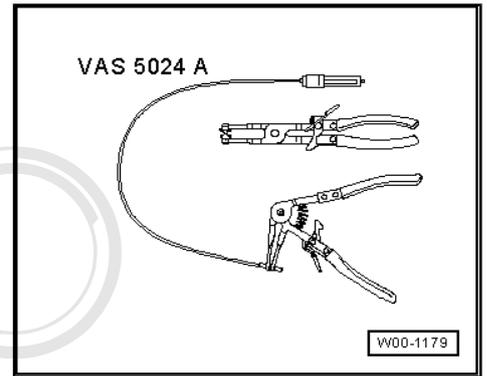


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

◆ Used oil collection and extraction unit -V.A.G 1782-



- ◆ Spring-type clip pliers -VAS 5024 A-



- ◆ Hydraulic fluid

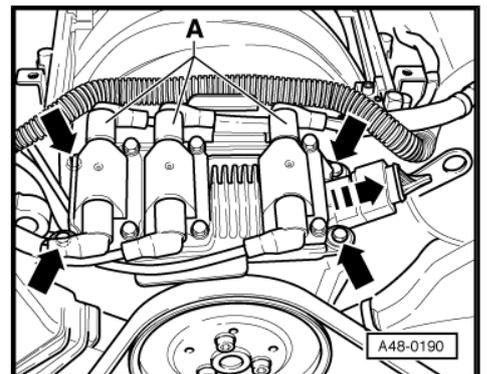
#### General notes

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

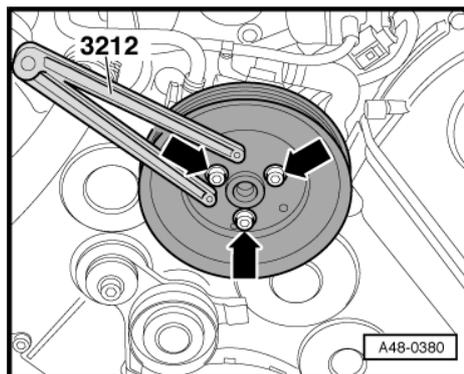
#### Removing

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Extract hydraulic fluid from reservoir with used oil collection and extraction unit -V.A.G 1782- .
- Remove poly V-belt ⇒ Rep. gr. 13 .
- Unplug connector at ignition coils in direction of -arrow-.
- Unplug three rear connectors -A- from ignition coils.
- Unscrew bolts -arrows-.
- Swivel ignition coil bracket to the rear.

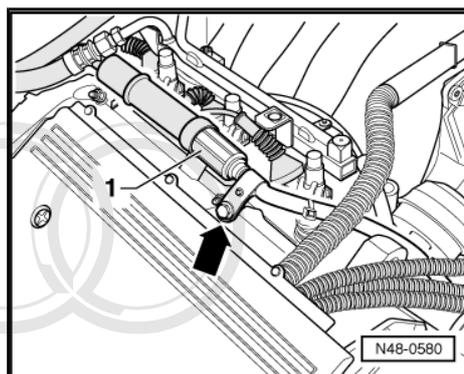




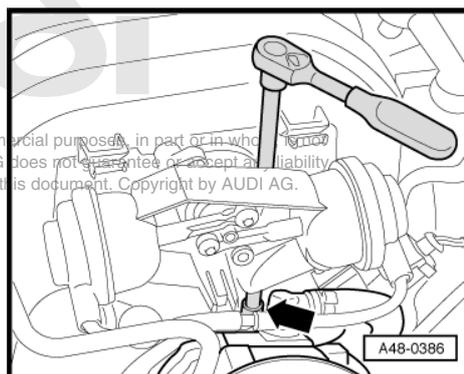
- Unbolt power steering pump pulley -arrows-. Use pin wrench -3212- to counterhold pulley.
- Detach ignition coil.



- Remove hexagon bolt -arrow- for pressure hose -1-.



- Unscrew rear power steering pump securing bolt using socket wrench and extension.
- Place cloth beneath hydraulic pipes to catch escaping hydraulic fluid.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 banjo bolt -1-.
- Open clip on suction hose -2-.
- Disconnect suction hose -2-.
- Seal off pressure hose with a plastic bag or similar.
- Unscrew bolts -arrows- and detach power steering pump with bracket.

### Installing

Installation is carried out in the reverse sequence. Note the following points when installing:

- ◆ Renew gaskets and seals.
- ◆ Before fitting a new pump, put in hydraulic fluid at the inlet and turn pump by hand until fluid flows out at the pressure outlet.
- ◆ Secure all hose connections with new hose clips ⇒ Electronic parts catalogue „ETKA“ .

Installation position of suction hoses at power steering pump and fluid reservoir ⇒ [page 358](#)

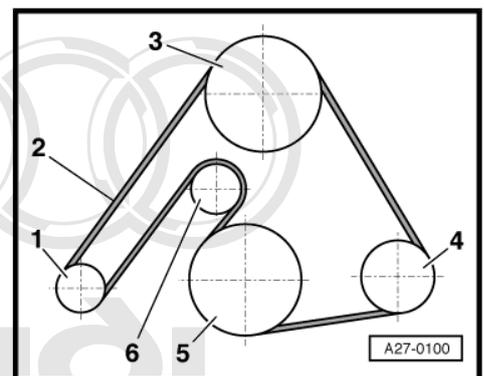
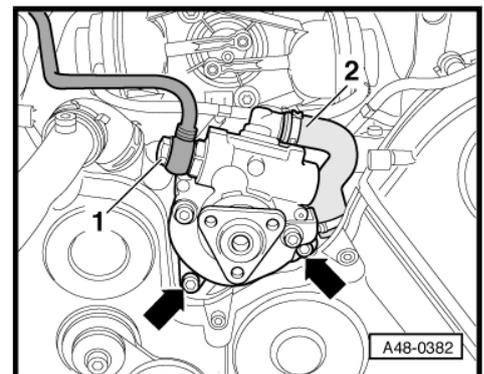
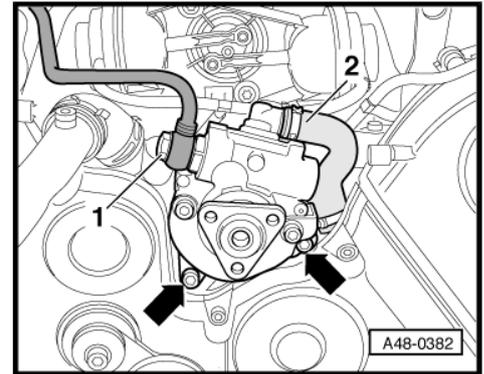
- Turn hub by hand until fluid comes out at pump outlet.
- Install power steering pump and tighten bolts -arrows- ⇒ [Item 10 \(page 353\)](#) .
- Fit new seals on banjo bolt -1-.
- Tighten banjo bolt -1- ⇒ [Item 2 \(page 353\)](#) .
- Renew hose clip and install suction hose -2- on power steering pump. Note correct installation position ⇒ [page 358](#) .
- Fill up with hydraulic fluid .
- Clean off fluid in engine compartment where necessary.
- Bolt on power steering pump pulley ⇒ Rep. gr. 13 .
- Fit poly V-belt ⇒ Rep. gr. 13 .

### Note

Ensure that the belt is properly seated in the pulleys when installing.

- 1 - Alternator
- 2 - Poly V-belt
- 3 - Power steering pump
- 4 - Air conditioner compressor
- 5 - Crankshaft
- 6 - Tensioning roller

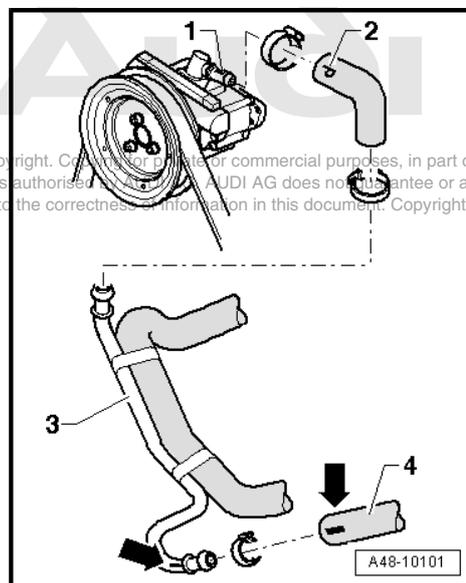
- Check hydraulic fluid level ⇒ [page 326](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Fit noise insulation ⇒ Rep. gr. 50 .
- Set down vehicle on its wheels ⇒ [page 7](#) .



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

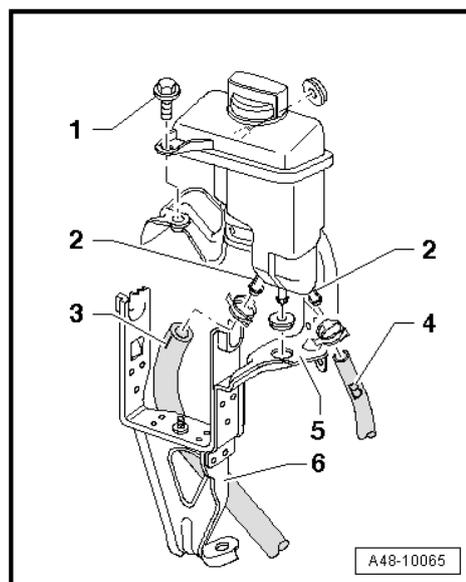
## 6.4 Installation position of suction hoses on power steering pump and fluid reservoir (vehicles with 6-cylinder MPI petrol engine)

- Marking -P- on suction hose -2- must be aligned with seam on pump -1-.
- Marking on suction hose/pipe -3- must be aligned with marking on suction hose -4- -arrows-.



- Marking -3- on suction hose and marking -4- on return hose must be aligned with seam -2- on reservoir.

1 - Bolt, 9 Nm



## 7 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 6-cylinder FSI petrol engine)

⇒ „7.1 Exploded view (vehicles with 6-cylinder FSI petrol engine)“, page 359

⇒ „7.2 Checking delivery pressure of power steering pump (vehicles with 6-cylinder FSI petrol engine)“, page 362

⇒ „7.3 Removing and installing power steering pump (vehicles with 6-cylinder FSI petrol engine)“, page 364

⇒ „7.4 Installation position of suction hoses on power steering pump and fluid reservoir (vehicles with 6-cylinder FSI petrol engine)“, page 371

### 7.1 Exploded view (vehicles with 6-cylinder FSI petrol engine)

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

The hydraulic fluid circuit on right-hand drive vehicles is the same as on left-hand drive vehicles, except that the hydraulic pipes are extended from left to right on the steering box.

**Note**

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

**1 - Power steering box**

- For correct version refer to ⇒ Electronic parts catalogue, ETKA

**2 - Expansion hose (pipe section)****3 - Union nut, 45 Nm****4 - Non-return valve**

- Pressed into expansion hose (pipe section)  
⇒ [Item 2 \(page 360\)](#)

**5 - Bolt, 9 Nm****6 - Cap with dipstick**

- Checking fluid level  
⇒ [page 326](#)

**7 - Rubber mounting**

- For reservoir

**8 - Reservoir**

- When filling system, put in hydraulic fluid

**9 - Spring-type clip**

- Use spring-type clip pliers -VAS 5024 A- when removing and installing

**10 - Return hose**

- Between reservoir and hydraulic fluid cooler
- Installation position on reservoir ⇒ [page 371](#)
- Note attachment at front end ⇒ [page 361](#)

**11 - Return hose**

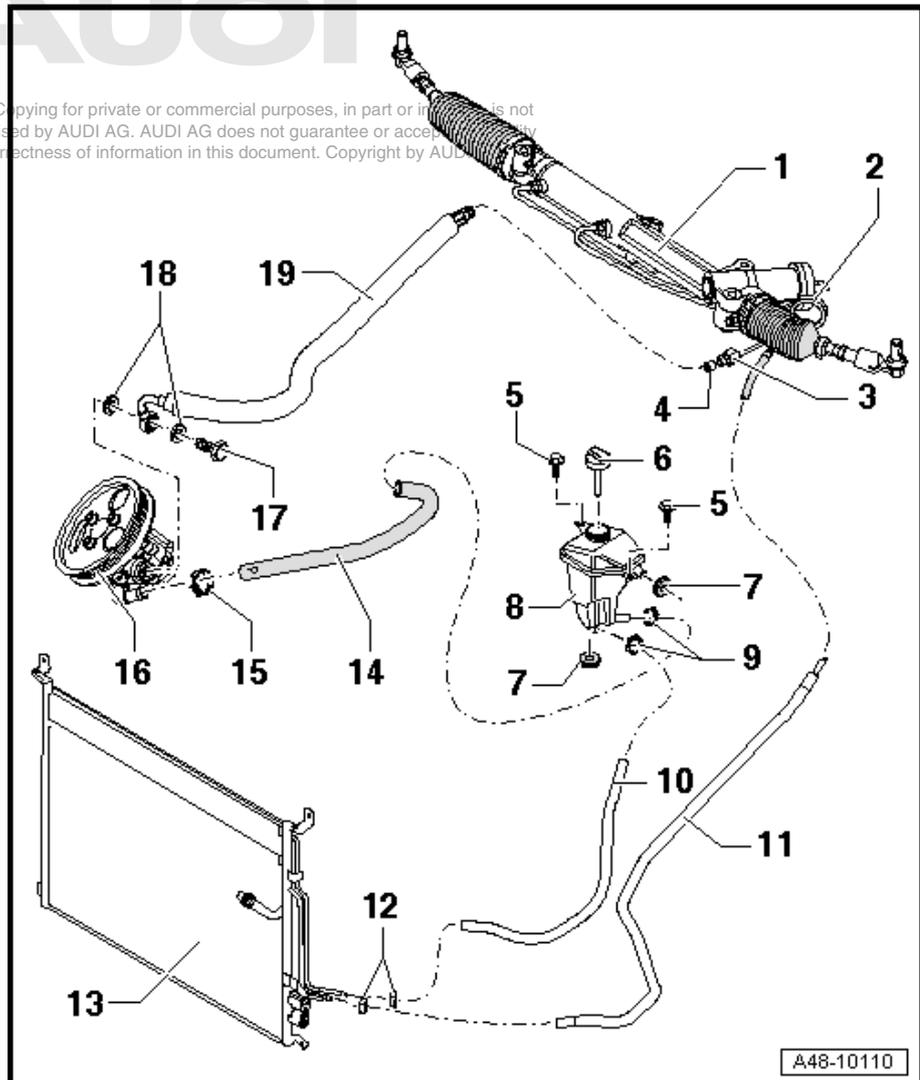
- Between servotronic steering box and hydraulic fluid cooler
- Note attachment in vicinity of longitudinal member (front) ⇒ [page 361](#)
- Note attachment at front end ⇒ [page 361](#)

**12 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**13 - Hydraulic fluid cooler****14 - Suction hose**

- Between reservoir and hydraulic fluid cooler
- Installation position on power steering pump and fluid reservoir ⇒ [page 371](#)



### 15 - Spring-type clip

- Use spring-type clip pliers -VAS 5024 A- when removing and installing

### 16 - Power steering pump

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing
- After replacement, check alignment of pulley ⇒ [page 370](#)
- Checking delivery pressure ⇒ [page 362](#)
- Removing and installing ⇒ [page 364](#)

### 17 - Banjo bolt, 47 Nm

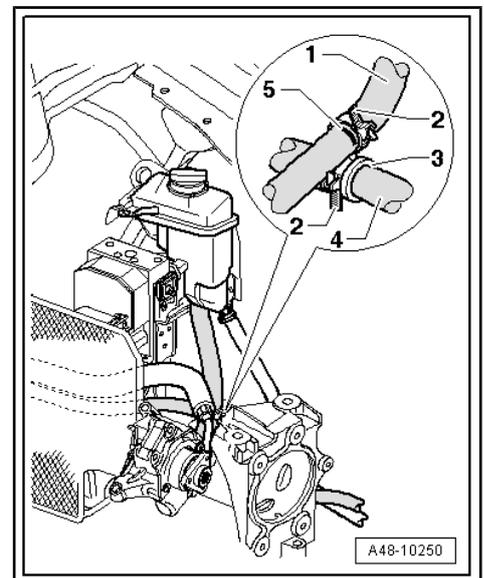
### 18 - Seal

- Always renew

### 19 - Expansion hose

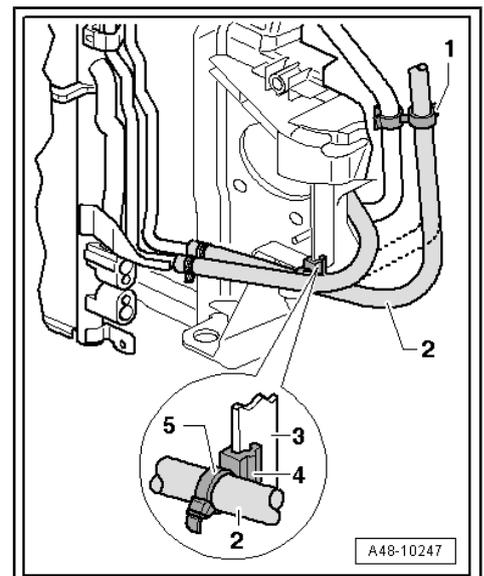
#### Attachment of return hose at front end

- Secure cable tie -2- on return hose -1-. Note marking -5-.
- Secure guide bush -3- on expansion hose -4- with cable tie -2-.



#### Attachment of return hose at front end

- Secure return hose -2- on front end -3- with bracket -4- and cable tie -5-.
- Secure return hose -2- on refrigerant line with clip -1-.

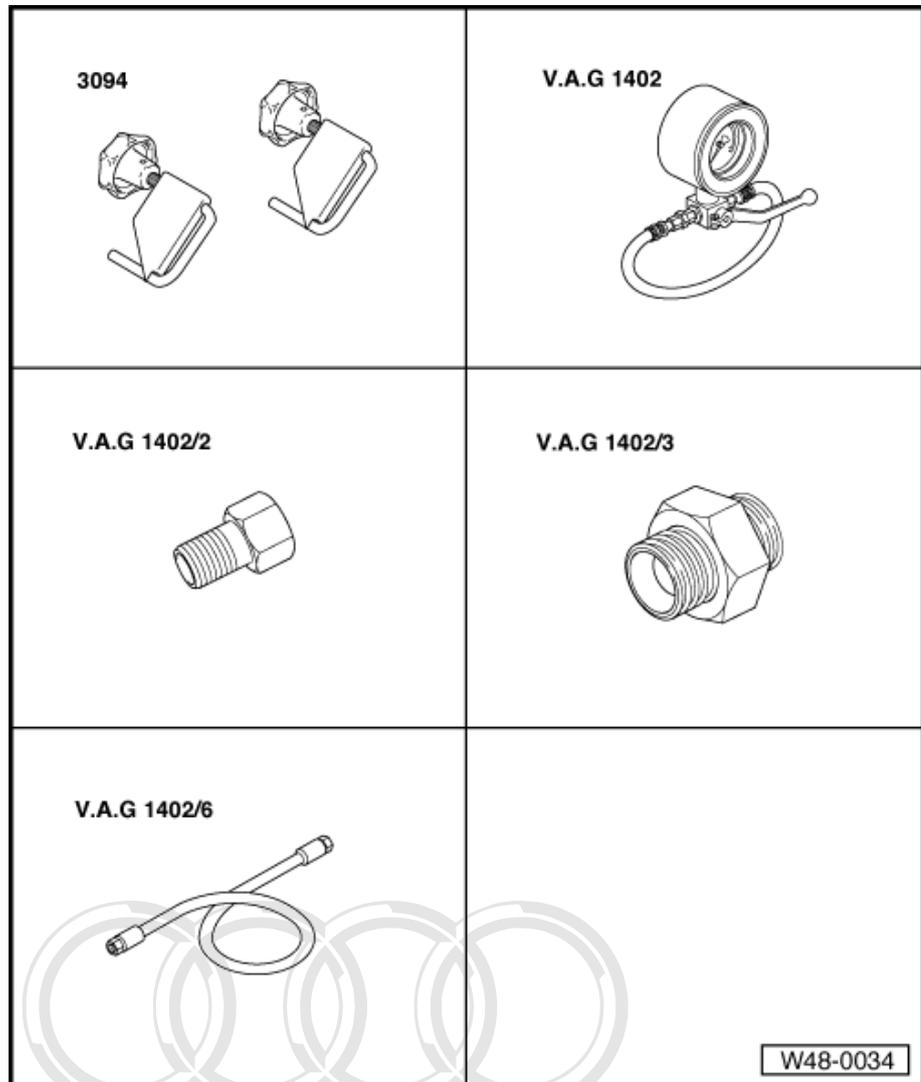


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

## 7.2 Checking delivery pressure of power steering pump (vehicles with 6-cylinder FSI petrol engine)

### Special tools and workshop equipment required

- ◆ Hose clamps -3094-
- ◆ Power steering tester - V.A.G 1402-
- ◆ Adapter -V.A.G 1402/2-
- ◆ Adapter -V.A.G 1402/3-
- ◆ Adapter set -V.A.G 1402/6-



- ◆ Torque wrench -V.A.G 1331-

# 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 the accuracy and reliability with respect to the correctness of information in this document. Copyright by AUDI AG.



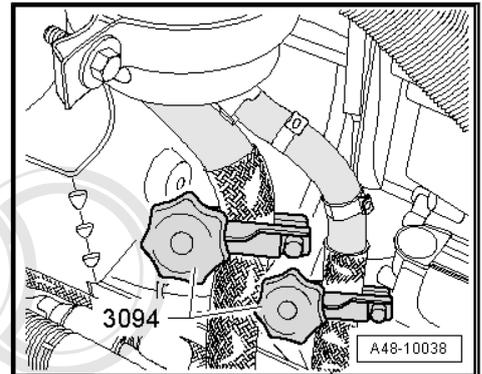
### Test requirements:

- Belt condition/ belt tension OK
- No leaks in system

- Hoses and pipes not kinked or constricted

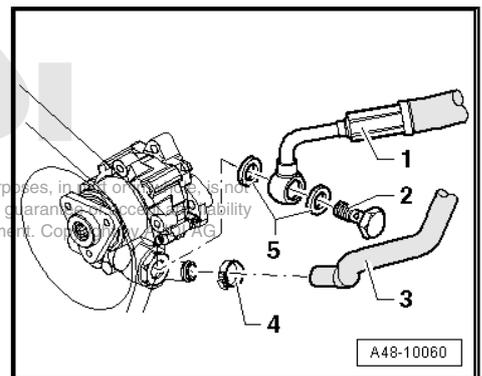
**Checking**

- Detach engine cover panel.
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove noise insulation ⇒ Rep. gr. 50 .
- Drain coolant ⇒ Rep. gr. 19 .
- Remove air conditioner compressor ⇒ Rep. gr. 87 .
- Clamp off suction hose and return hose at reservoir using hose clamps -3094- .
- Place a cloth under the union to catch escaping hydraulic fluid.



- Unscrew banjo bolt -2- and disconnect pressure hose -1- from power steering pump.

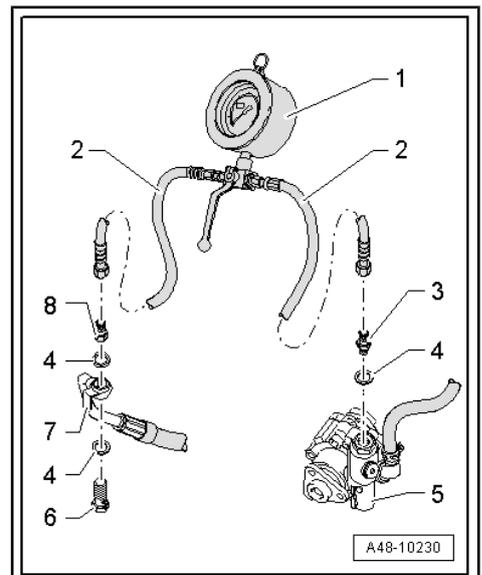
Protected by copyright. Copying for private or commercial purposes, in whole or in part, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee the accuracy or reliability with respect to the correctness of information in this document. Copyright © AUDI AG



- Connect power steering tester -V.A.G 1402- as shown.

- 1 - Pressure gauge -V.A.G 1402-
- 2 - Hose from adapter set -V.A.G 1402/6-
- 3 - Adapter -V.A.G 1402/3-
- 4 - Seal
- 5 - Power steering pump
- 6 - Banjo bolt
- 7 - Pressure line
- 8 - Adapter -V.A.G 1402/2-

- Remove hose clamps -3094- .

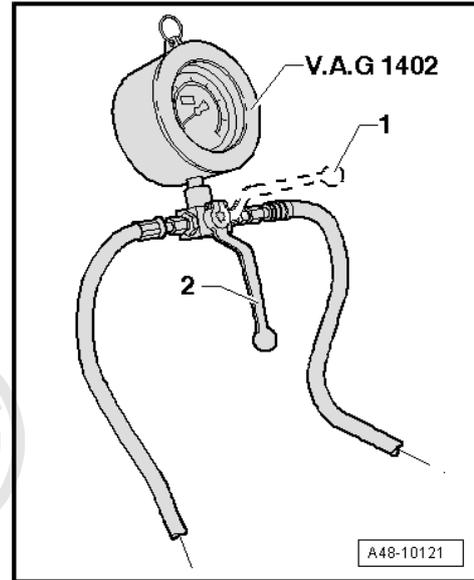


- Make sure lever on pressure gauge is in position -2-.
- Start engine but do not press accelerator.
- Turn steering wheel approx. 10 times from lock to lock.
- Switch off engine and top up hydraulic fluid in reservoir if necessary.



**Note**

- ◆ To avoid damaging the pump, please note the following points:
  - ◆ Cut-off valve of pressure gauge must not remain closed for more than 10 seconds during this test.
  - ◆ Start engine without pressing accelerator and leave it running at idling speed.
  - ◆ Take pump pressure reading at idling speed immediately after starting engine (have second mechanic take reading).
  - ◆ The pressure will drop during the test; take the highest pressure reading as the test value.
- Then check delivery pressure.

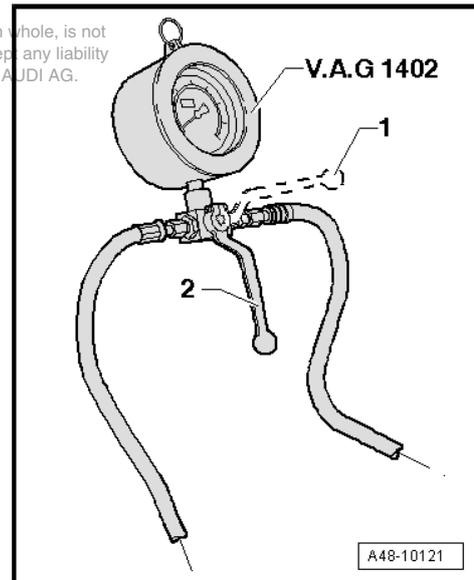


- Start engine, close cut-off valve (position -1-) with engine idling and read off pressure. Do not leave cut-off valve closed for longer than 10 seconds.

**Delivery pressure specification: 125...130 bar**

Renew power steering pump if specification is not attained  
 => [page 364](#) .

- Switch off engine.
- Remove power steering tester -V.A.G 1402- .
- Install banjo bolt and tighten to 47 Nm.
- Install air conditioner compressor => Rep. gr. 87 .
- Bleed steering system => [page 330](#) .
- Check hydraulic fluid level => [page 326](#) .
- Check steering system for leaks => [page 331](#) .
- Fit noise insulation => Rep. gr. 50 .
- Set down vehicle on its wheels => [page 7](#) .



### 7.3 Removing and installing power steering pump (vehicles with 6-cylinder FSI petrol engine)

Power steering pump - exploded view:



**Note**

- ◆ Renew seals.
- ◆ Do not re-use hydraulic fluid which has been drained off.
- ◆ Use only hydraulic fluid .

**1 - Pressure hose**

- Note correct position:  
Angle between pipe connection and axis of pump is approx. 73°

**2 - Banjo bolt, 47 Nm**

**3 - Seal**

- Always renew

**4 - Suction hose**

- Marking -P- on suction hose must be aligned with seam on pump.

**5 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**6 - Power steering pump**

- Fill with hydraulic fluid before installing
- Checking delivery pressure ⇒ [page 362](#)
- Removing and installing ⇒ [page 365](#)

**7 - Belt pulley**

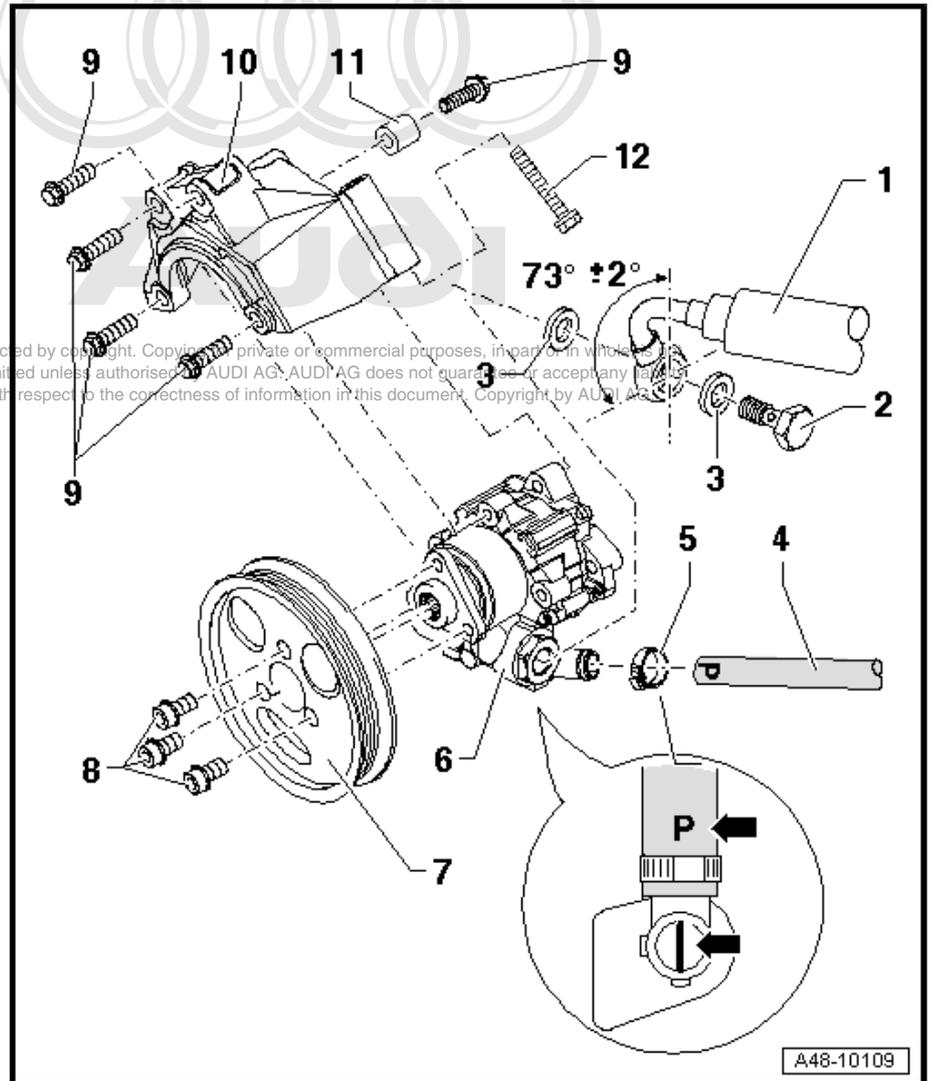
**8 - Bolt, 23 Nm**

**9 - Bolt, 20 Nm**

**10 - Bracket**

**11 - Sleeve**

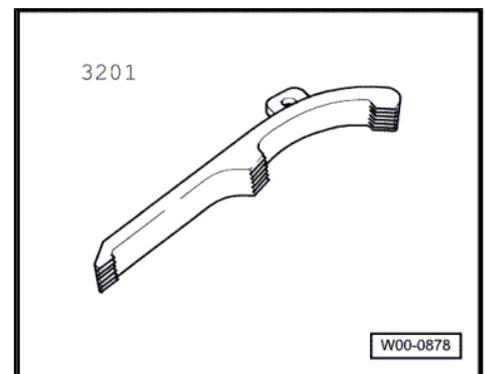
**12 - Bolt, 40 Nm**



**Removing and installing power steering pump:**

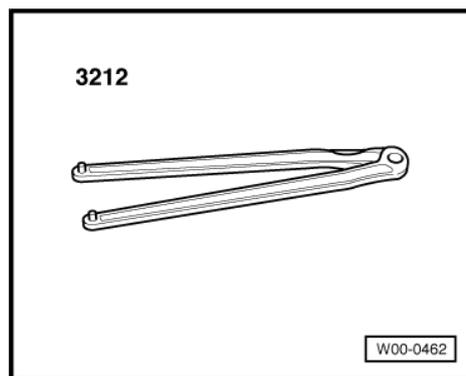
**Special tools and workshop equipment required**

- ◆ Aligning gauge -3201-

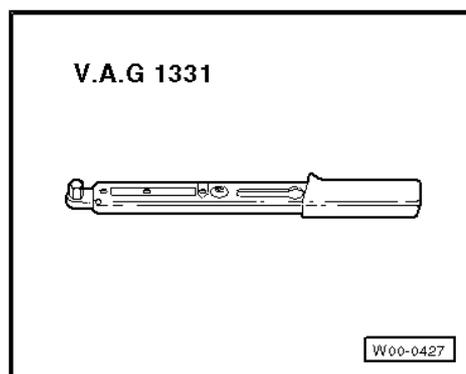




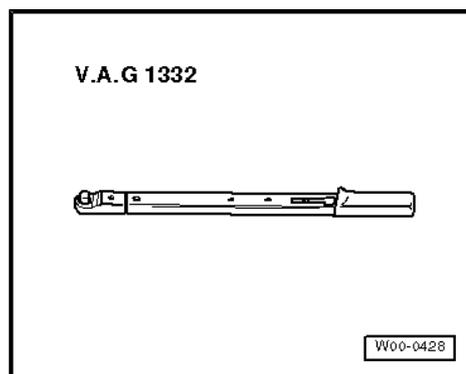
- ◆ Pin wrench -3212-



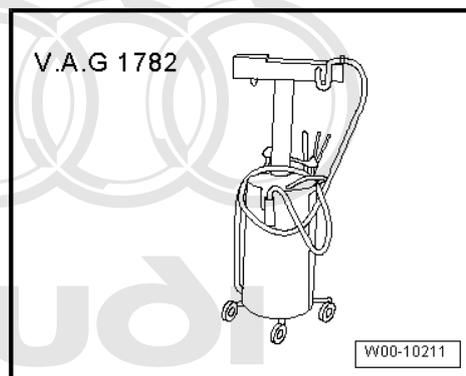
- ◆ Torque wrench -V.A.G 1331-



- ◆ Torque wrench -V.A.G 1332-

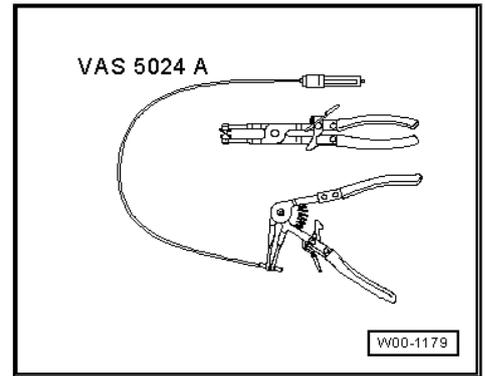


- ◆ Used oil collection and extraction unit -V.A.G 1782-

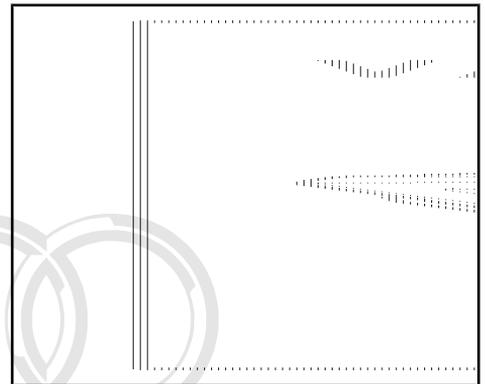


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- ◆ Spring-type clip pliers -VAS 5024 A-



- ◆ Drip tray for workshop hoist -VAS 6208-



- ◆ Hydraulic fluid

#### General notes

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

#### Removing

- Extract hydraulic fluid from reservoir with used oil collection and extraction unit -V.A.G 1782- .
- Remove noise insulation ⇒ Rep. gr. 50 .
- Detach poly V-belt for power steering pump ⇒ Rep. gr. 13 .



- Unplug electrical connector -1- for air conditioner compressor.

 **Caution**  
*Do not open refrigerant circuit of air conditioner.*

- Unbolt air conditioner compressor from bracket -arrows-.

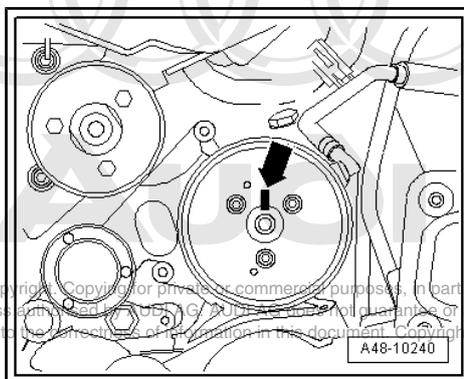
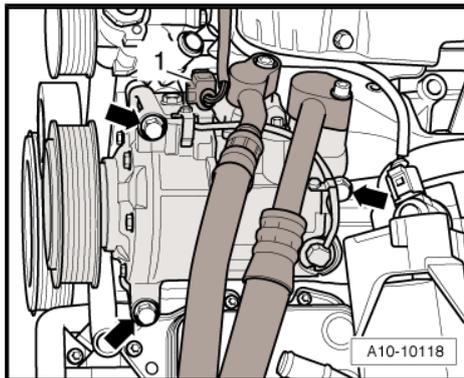
 **Note**

*To prevent damage to condenser and refrigerant pipes/hoses, take care to avoid straining, kinking or bending pipes and hoses.*

- Suspend air conditioner compressor on left side of vehicle with refrigerant lines connected.
- Mark position of pulley relative to hub -arrow-.

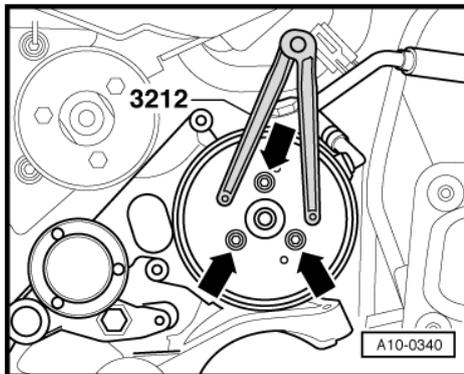
 **Note**

- ◆ *If the power steering pump is being renewed, transfer the marking on the hub from the old pump to the new pump.*
- ◆ *Due to limited space, it is not possible to see the positions of the holes in the pulley relative to the holes in the hub during installation.*

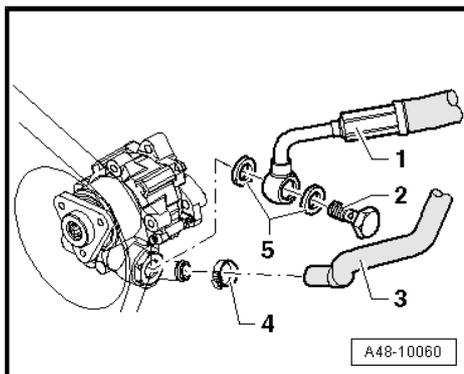


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness or information in this document. Copyright by AUDI AG.

- Remove bolts -arrows-.
- Unbolt power steering pump pulley. Use pin wrench -3212- to counterhold pulley.
- Place drip tray for workshop hoist -VAS 6208- underneath to catch hydraulic fluid.



- Detach hose clip -4- from suction hose -3-.
- Disconnect suction hose and move hose to one side.
- Remove banjo bolt -2- for expansion hose -1-.
- Seal off connections with plugs.



- Unbolt power steering pump from bracket -arrows- and take out pump.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

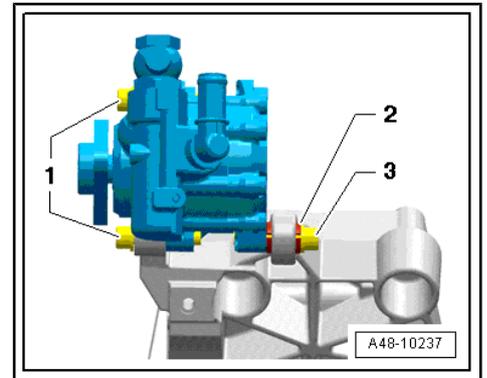
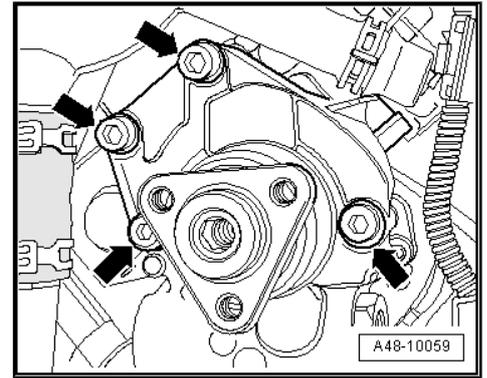
#### Note

- ◆ Renew gaskets and seals.
- ◆ Before fitting a new pump, put in hydraulic fluid at the inlet and turn pump by hand until fluid flows out at the pressure outlet.
- ◆ Secure all hose connections with new hose clips => Electronic parts catalogue „ETKA“.

- Turn hub by hand until fluid comes out at pump outlet.
- To make it easier to fit power steering pump, knock back threaded bush -2- for bolt -3- in bracket slightly.

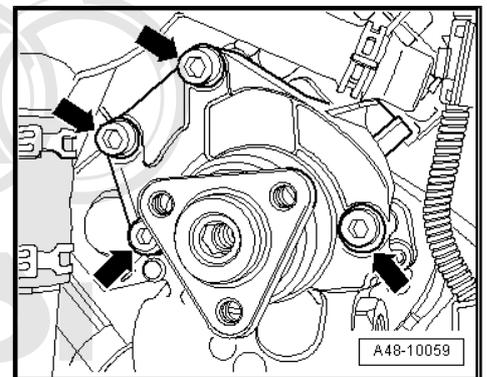
#### Note

Illustration shows bracket and pump for 6-cylinder diesel engine.

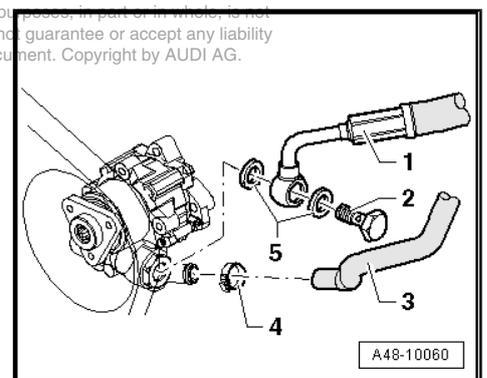


- Install power steering pump and tighten bolts -arrows- => [Item 9 \(page 365\)](#) .

Installation position of suction hoses at power steering pump and fluid reservoir => [page 371](#)

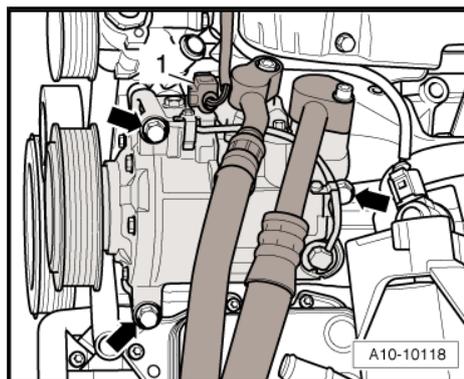


- Fit new seals -5- on banjo bolt.
- Tighten banjo bolt -2- => [Item 2 \(page 365\)](#) .
- Connect suction hose -3- and secure with new hose clip -4-. Note correct installation position => [page 371](#) .
- Fill up with hydraulic fluid .
- Clean off fluid in engine compartment where necessary.

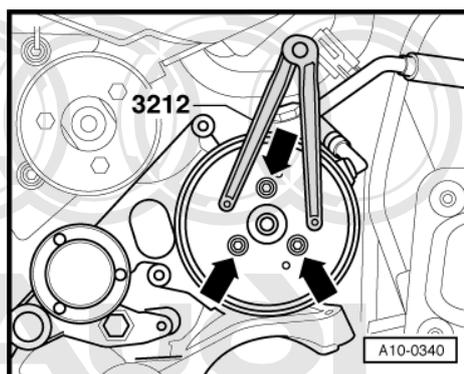




- Bolt air conditioner compressor onto bracket -arrows-.
- Plug in electrical connector -1- for air conditioner compressor.



- Tighten bolts for belt pulley => Rep. gr. 13 .
- Installing poly V-belt for power steering pump: => Rep. gr. 13



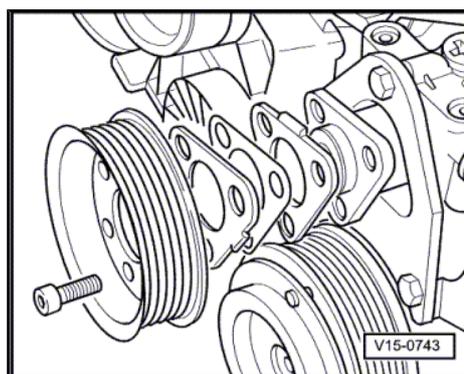
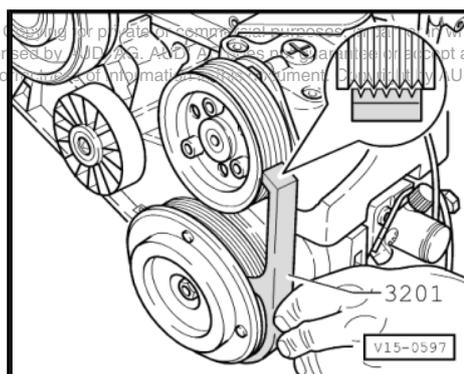
### Checking and adjusting pulley alignment

- Position aligning gauge -3201- on pulley of air conditioner compressor.
- Pulleys on pump and air conditioner compressor must be aligned.

If the two pulleys are not in alignment:

- Unbolt pump pulley.

- Use the shims listed in => Electronic parts catalogue „ETKA“ to adjust the gap so the two pulleys are aligned.



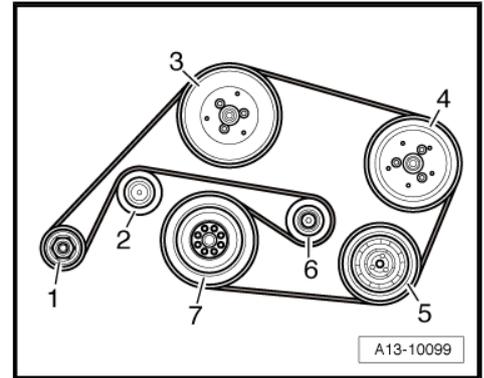
Protected by copyright. Use for private or commercial purposes is not permitted unless authorized by AUDI AG. AUDI AG does not assume any liability with respect to the correctness of information contained in this document. © AUDI AG.

- Then re-check alignment of poly V-belt pulleys with aligning gauge -3201- . Repeat adjustment if necessary.

**i Note**

Ensure that the belt is properly seated in the pulleys when installing.

- 1 - Alternator
- 2 - Idler roller
- 3 - Coolant pump
- 4 - Power steering pump
- 5 - Air conditioner compressor
- 6 - Tensioning roller
- 7 - Crankshaft

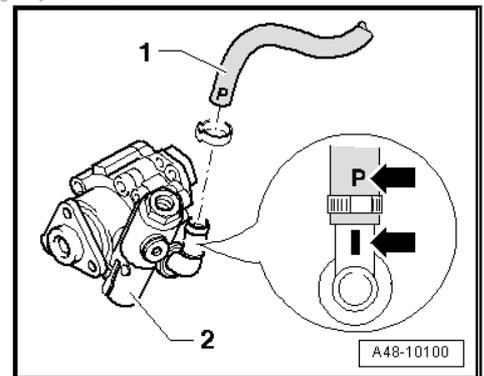


**Installing (continued)**

- Fit noise insulation ⇒ Rep. gr. 50 .
- Check hydraulic fluid level ⇒ [page 326](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check steering system for leaks ⇒ [page 331](#) .

**7.4 Installation position of suction hoses on power steering pump and fluid reservoir (vehicles with 6-cylinder FSI petrol engine)**

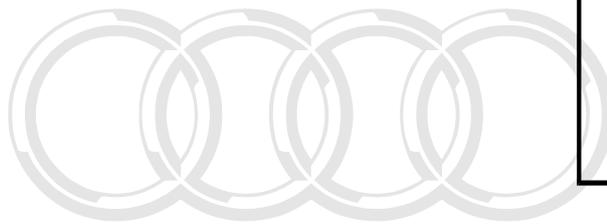
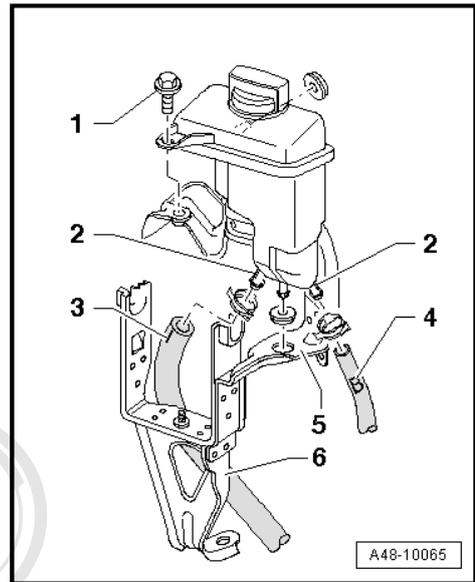
- Marking -P- on suction hose -1- must be aligned with seam on pump -2- -arrows-.





– Marking -3- on suction hose and marking -4- on return hose must be aligned with seam -2- on reservoir.

1 - Bolt, 9 Nm



**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.

## 8 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 8-cylinder diesel engine)

⇒ [„8.1 Exploded view \(vehicles with 8-cylinder diesel engine\)“, page 373](#)

⇒ [„8.2 Checking delivery pressure of power steering pump \(vehicles with 8-cylinder diesel engine\)“, page 377](#)

⇒ [„8.3 Removing and installing power steering pump \(vehicles with 8-cylinder diesel engine\)“, page 381](#)

⇒ [„8.4 Installation position of suction hoses at power steering pump and fluid reservoir \(vehicles with 8-cylinder diesel engine\)“, page 387](#)

### 8.1 Exploded view (vehicles with 8-cylinder diesel engine)

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

The hydraulic fluid circuit on right-hand drive vehicles is the same as on left-hand drive vehicles, except that the hydraulic pipes are extended from left to right on the steering box.

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



**Note**

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

**1 - Servotronic steering box**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**2 - Expansion hose (pipe section)**

**3 - Union nut, 45 Nm**

**4 - Return hose**

- Between servotronic steering box and hydraulic fluid cooler
- Note attachment in vicinity of longitudinal member (front) ⇒ [page 376](#)

**5 - Suction hose**

- Between reservoir and hydraulic fluid cooler
- Installation position on power steering pump and fluid reservoir ⇒ [page 344](#)

**6 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**7 - Bolt, 9 Nm**

**8 - Reservoir**

- When filling system, put in hydraulic fluid
- Location/renewing ⇒ [page 376](#)
- Fitting reservoir in bracket ⇒ [page 376](#)

**9 - Rubber mounting**

- For reservoir

**10 - Bolt, 20 Nm**

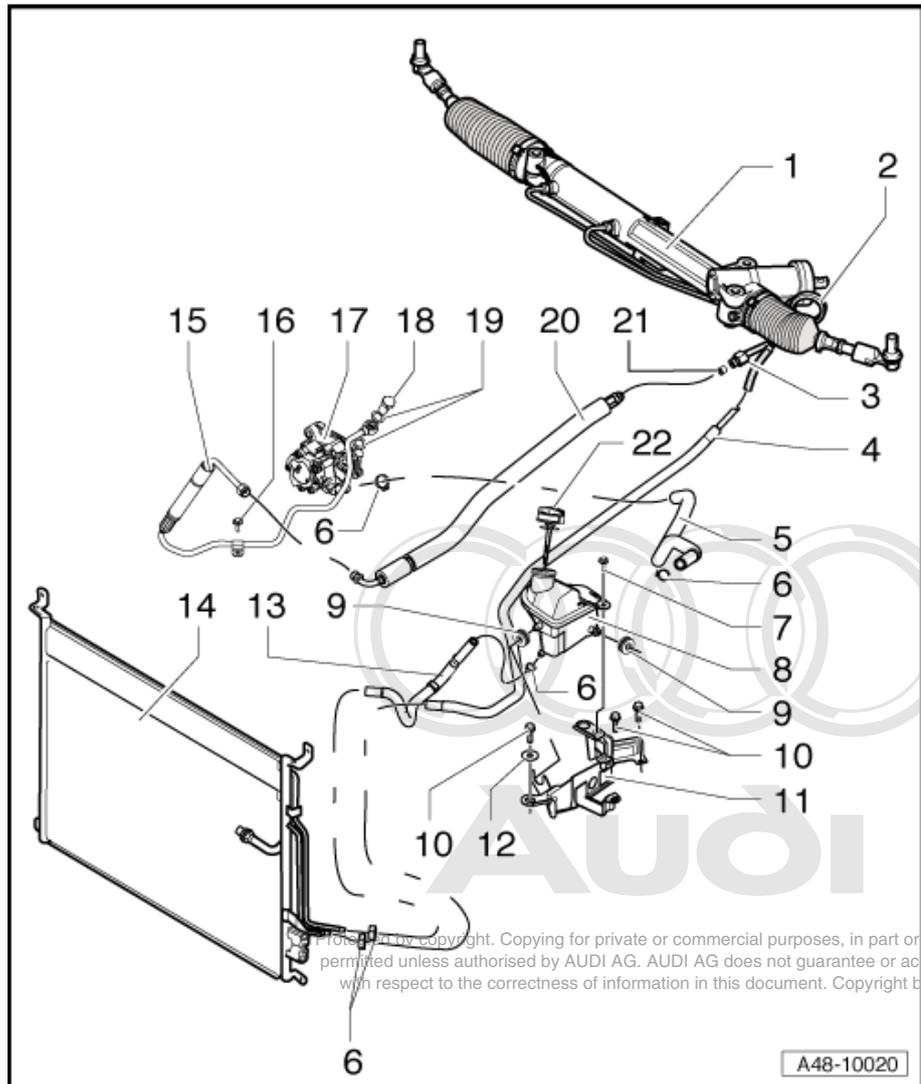
**11 - Bracket**

- For reservoir
- Location/renewing ⇒ [page 376](#)

**12 - Washer**

**13 - Return hose**

- Between reservoir and hydraulic fluid cooler



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

A48-10020

- Installation position on reservoir ⇒ [page 387](#)
- Note attachment at front end ⇒ [page 377](#)

#### 14 - Hydraulic fluid cooler

#### 15 - Expansion hose

- Tightening torque of union nut: 40 Nm

#### 16 - Bolt, 8 Nm

#### 17 - Power steering pump

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing
- Checking delivery pressure ⇒ [page 377](#)
- Removing and installing ⇒ [page 381](#)

#### 18 - Banjo bolt, 47 Nm

#### 19 - Seal

- Always renew

#### 20 - Expansion hose

- Note attachment in vicinity of longitudinal member (front) ⇒ [page 376](#)

#### 21 - Non-return valve

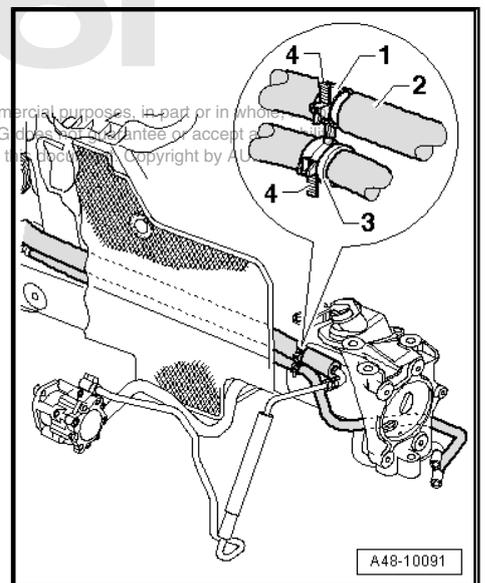
- Pressed into expansion hose (pipe section) ⇒ [Item 2 \(page 374\)](#)

#### 22 - Cap with dipstick

- Checking fluid level ⇒ [page 327](#)

#### Attachment of expansion hose/return hose in vicinity of longitudinal member (front)

- Fit bracket -1- in recess on expansion hose -2-.
- Secure cable ties -4- on bracket -1- and guide bush -3-.



### Location of bracket/reservoir

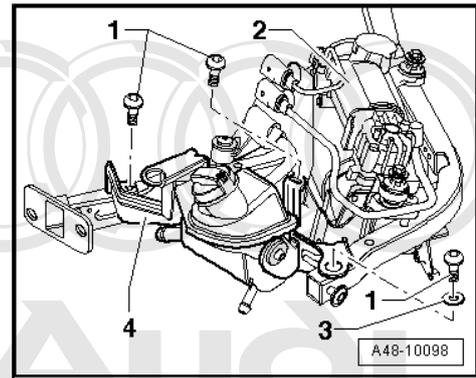
Bracket -4- with reservoir is located next to air supply unit -2- for self-levelling suspension.

1 - Bolt, 20 Nm

3 - Washer (only on front bolt)

Remove following components in order to renew reservoir:

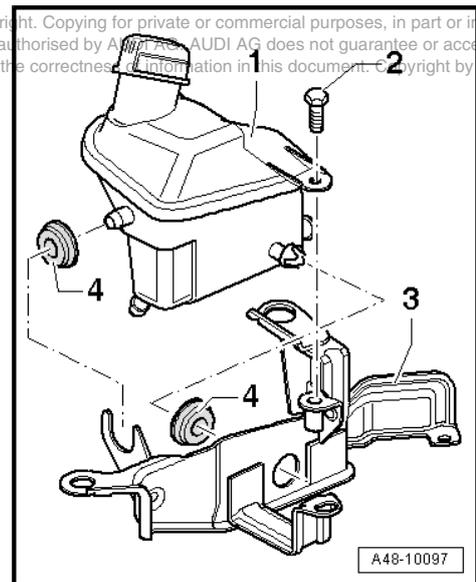
- ◆ Front wheel housing liner (front section, left-side) ⇒ Rep. gr. 66
- ◆ Air cleaner (left-side) ⇒ Rep. gr. 13
- ◆ Move lock carrier to service position ⇒ Rep. gr. 50



### Fitting reservoir in bracket

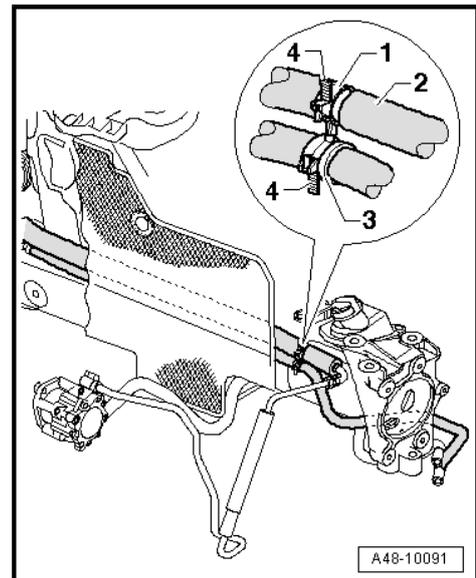
- Insert reservoir -1- with rubber grommets -4- into bracket -3-.
- Tighten bolt -2- to 9 Nm.

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 for the correctness of information in this document. Copyright by Audi AG.



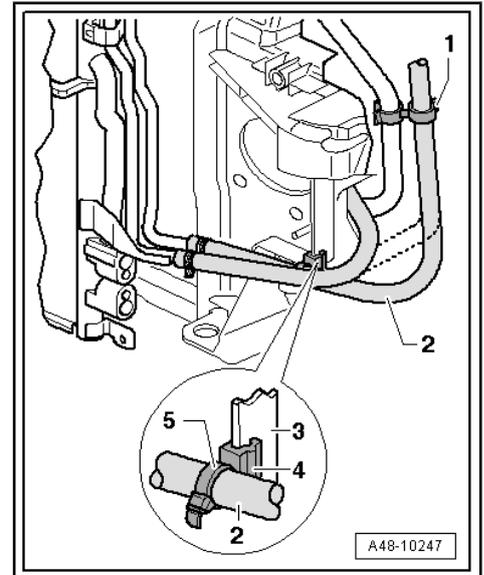
### Attachment of expansion hose/return hose in vicinity of longitudinal member (front)

- Fit bracket -1- in recess on expansion hose -2-.
- Secure cable ties -4- on bracket -1- and guide bush -3-.



**Attachment of return hose at front end**

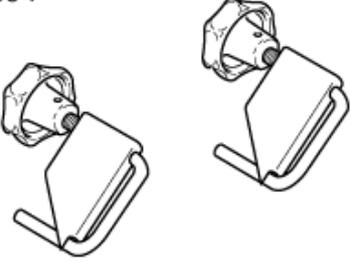
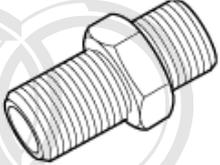
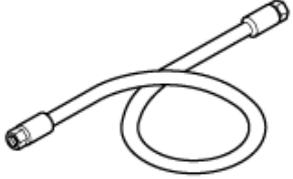
- Secure return hose -2- on front end -3- with bracket -4- and cable tie -5-.
- Secure return hose -2- on refrigerant line with clip -1-.



**8.2 Checking delivery pressure of power steering pump (vehicles with 8-cylinder diesel engine)**

**Special tools and workshop equipment required**

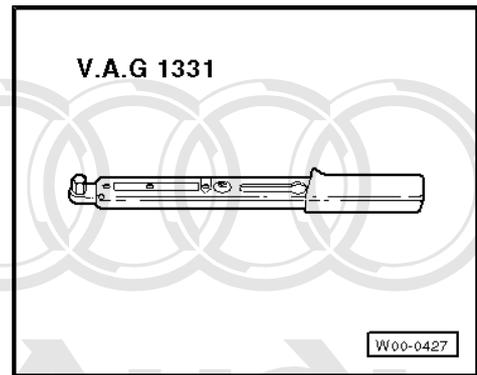
- ◆ Hose clamp -3094-
- ◆ Power steering tester - V.A.G 1402-
- ◆ Adapter -V.A.G 1402/2-
- ◆ Hose from adapter set - V.A.G 1402/6- (2x)

<p>3094</p> 	<p>V.A.G 1402</p> 
<p>V.A.G 1402/4</p> 	<p>V.A.G 1402/6</p> 
<p style="text-align: center; font-size: 2em; opacity: 0.5;">Audi</p> <p style="text-align: right;">G48-10002</p>	

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



- ◆ Torque wrench -V.A.G 1331-



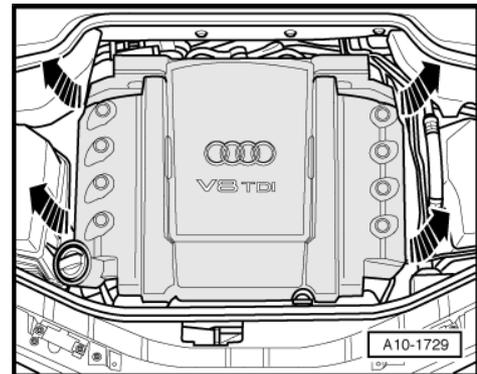
### Test requirements:

- No leaks in system
- Hoses and pipes not kinked or constricted

### Checking

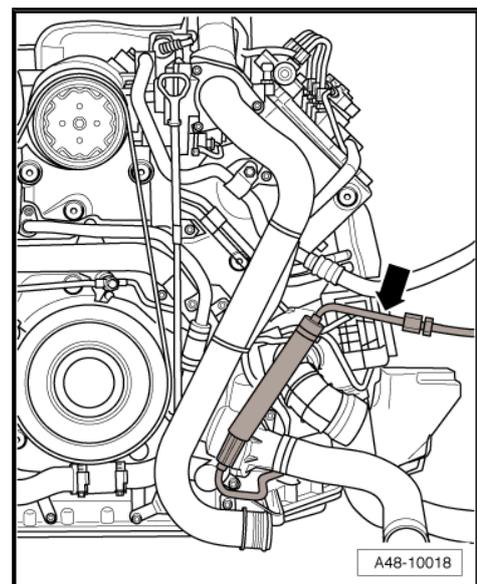
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Pull engine cover panel upwards off retainers (one at a time) -arrows-.
- Remove complete air cleaner housing ⇒ Rep. gr. 23 .
- Remove headlight (left-side) ⇒ Rep. gr. 94 .

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

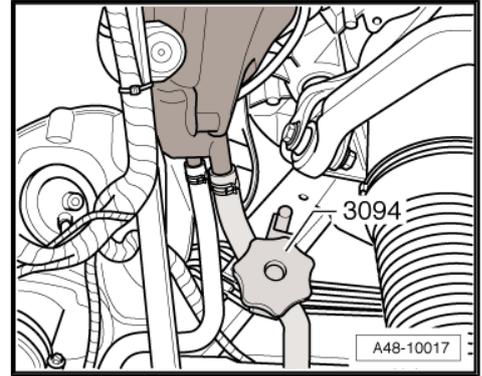


The pressure line is not detached at the power steering pump when checking delivery pressure. Power steering tester -V.A.G 1402- is connected to pipe -arrow- at front left of engine compartment.

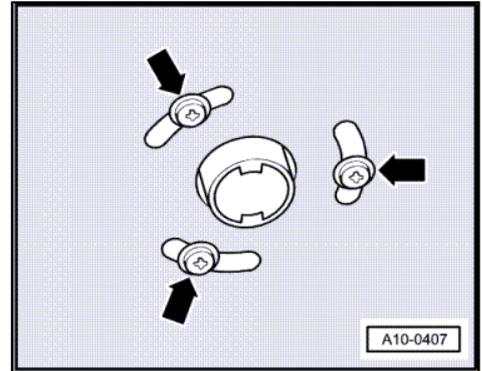
- Remove front left wheel housing liner ⇒ Rep. gr. 66 .



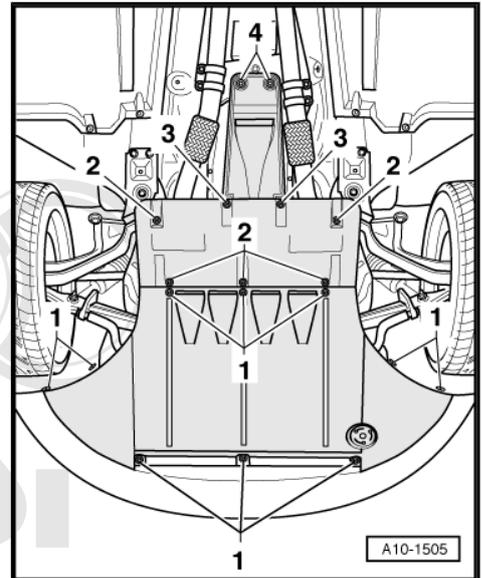
- Clamp off suction pipe with hose clamp -3094- .



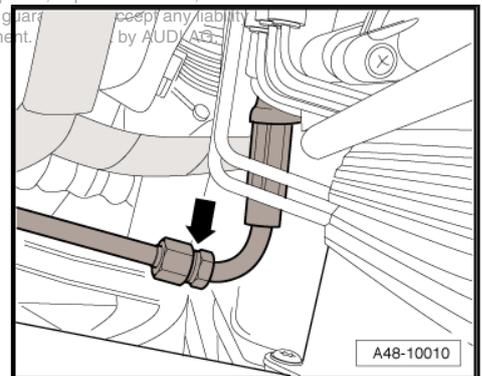
- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.



- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.
- Place a cloth under the union to catch escaping hydraulic fluid.



- Disconnect pipe connection -arrow- .



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the express authorisation by AUDI AG. AUDI AG does not guarantee the correctness of information in this document.



– Connect power steering tester -V.A.G 1402- as shown.

1 - Power steering tester -V.A.G 1402-

2 - Hose from adapter set -V.A.G 1402/6-

3 - Adapter -V.A.G 1402/3-

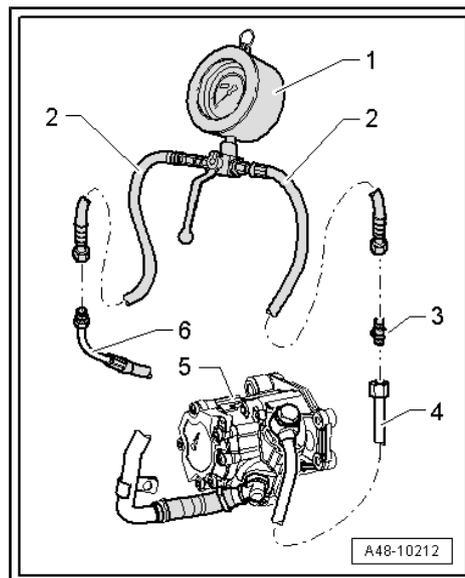
4 - Pressure line

5 - Power steering pump

6 - Pressure line

– Attach power steering tester so that there is sufficient clearance between hoses and fans.

– Detach hose clamp -3094- at suction hose.



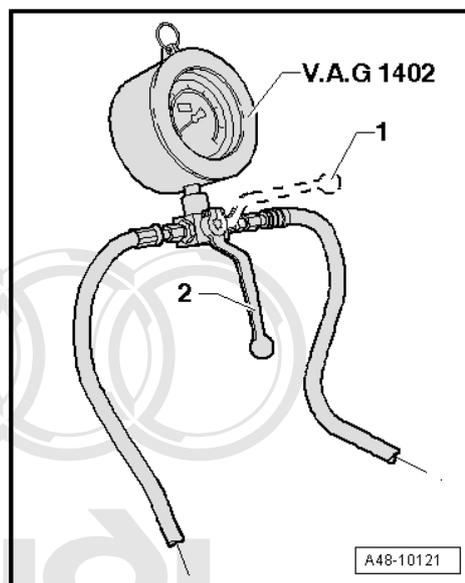
– Make sure lever on pressure gauge is in position -2-.

– Start engine but do not press accelerator.

– Turn steering wheel approx. 10 times from lock to lock.

– Switch off engine and top up hydraulic fluid in reservoir if necessary.

– Then check delivery pressure.

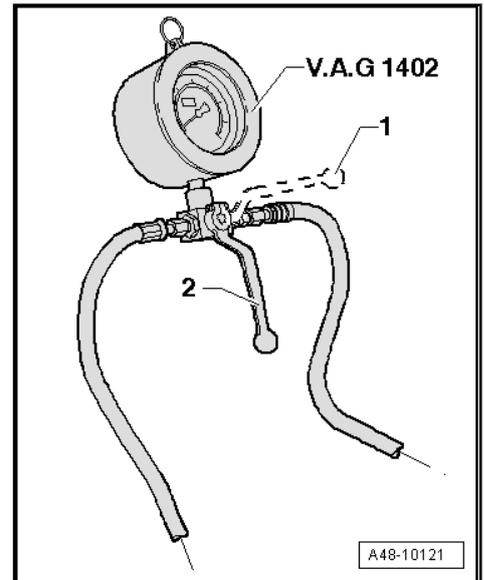


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Start engine, close cut-off valve (position -1-) with engine idling and read off pressure.

 **Note**

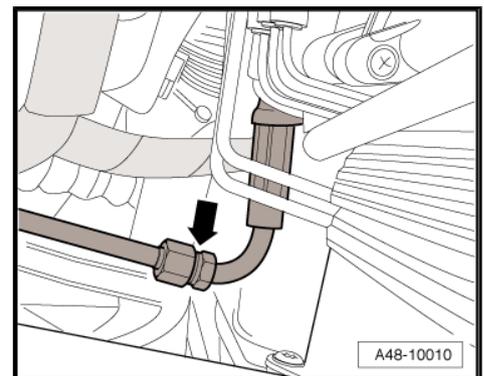
- ◆ *To avoid damaging the pump, please note the following points:*
  - ◆ *Cut-off valve of pressure gauge must not remain closed for more than 10 seconds during this test.*
  - ◆ *Start engine and let it idle without pressing accelerator.*
  - ◆ *Read off pump pressure at idling speed immediately after starting engine (have second mechanic take reading if necessary).*
  - ◆ *The pressure will drop during the test; the highest pressure reading is therefore the required test value.*
- Read off gauge pressure with engine running at idling speed (measurement must not take longer than 10 seconds).



**Delivery pressure specification: 125...130 bar**

Renew power steering pump if specification is not attained  
 ⇒ [page 395](#) .

- Switch off engine.
- Remove power steering tester -V.A.G 1402- .
- Connect pipe union -arrow- (40 Nm).
- Attach air conditioner pipe, clips and dryer ⇒ Rep. gr. 87 .
- Check hydraulic fluid level ⇒ [page 326](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Fit noise insulation ⇒ Rep. gr. 50 .
- Install noise insulation panels in engine compartment ⇒ Rep. gr. 10 .
- Set down vehicle on its wheels ⇒ [page 7](#) .



### 8.3 Removing and installing power steering pump (vehicles with 8-cylinder diesel engine)

**Power steering pump - exploded view:**

 **Note**

- ◆ *Renew seals.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*
- ◆ *Use only hydraulic fluid .*
- ◆ *When installing new power steering pump, always renew oil seal and O-ring for pump ⇒ Rep. gr. 13*

Protected by copyright. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Audi 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 - Power steering pump**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing
- Checking delivery pressure ⇒ [page 377](#)
- Removing and installing ⇒ [page 382](#)

**2 - Bolt**

- Securing bolt: gearbox/ engine/ power steering pump
- Tightening torque ⇒ Rep. gr. 37

**3 - Oil seal**

- Renewing ⇒ Rep. gr. 13

**4 - O-ring**

**5 - Banjo bolt, 47 Nm**

**6 - Expansion hose**

**7 - Seal**

- Always renew

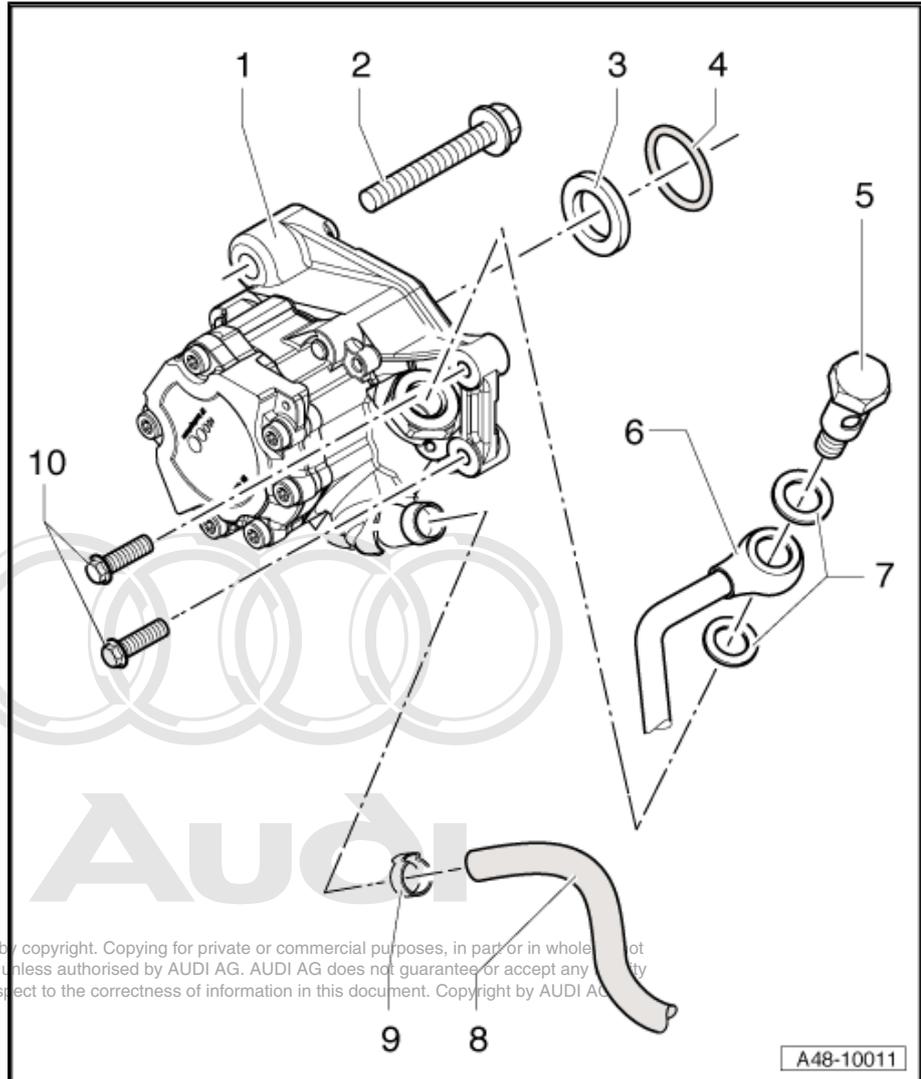
**8 - Suction hose**

- Marking -P- on suction hose must be aligned with seam on pump ⇒ [page 387](#)

**9 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**10 - Bolt, 22 Nm**

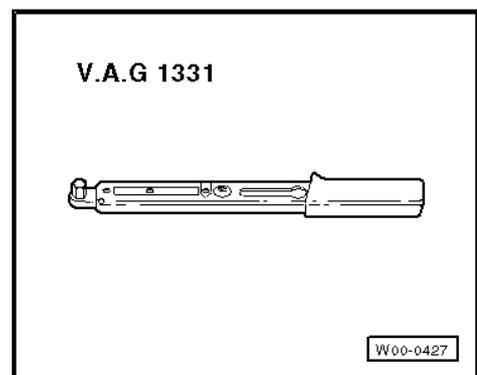


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

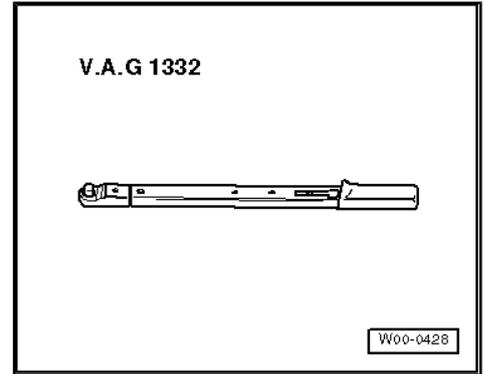
**Removing and installing power steering pump:**

**Special tools and workshop equipment required**

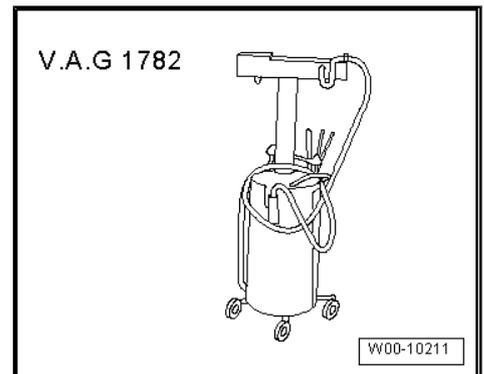
- ◆ Torque wrench -V.A.G 1331-



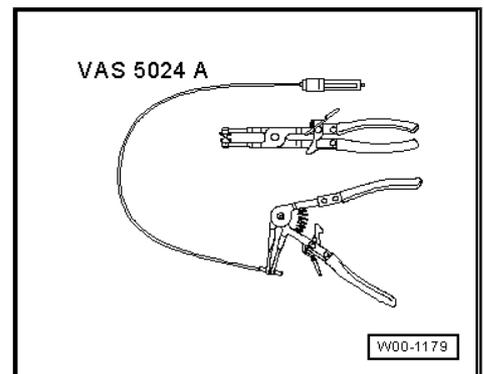
- ◆ Torque wrench -V.A.G 1332-



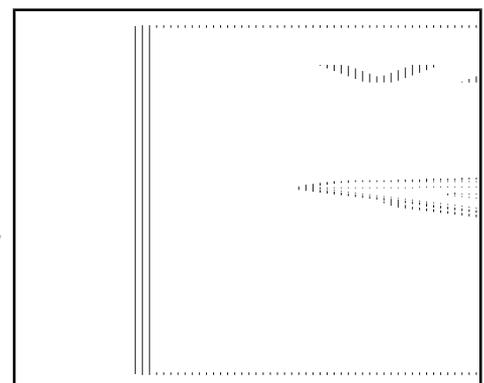
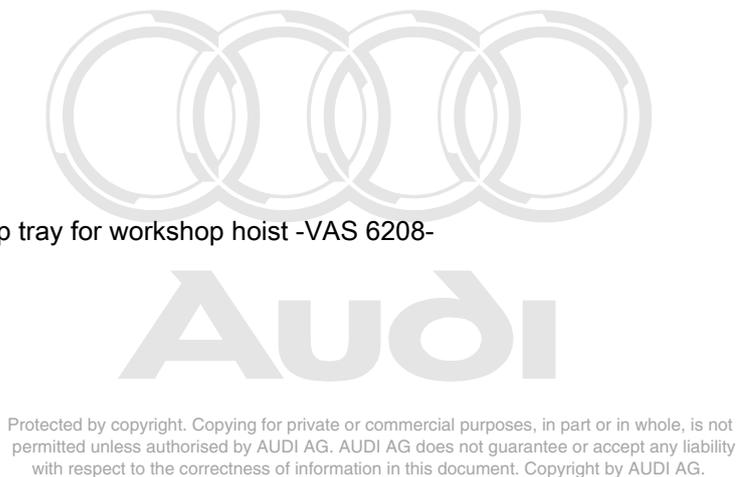
- ◆ Used oil collection and extraction unit -V.A.G 1782-



- ◆ Spring-type clip pliers -VAS 5024 A-



- ◆ Drip tray for workshop hoist -VAS 6208-



- ◆ Hydraulic fluid

#### General notes

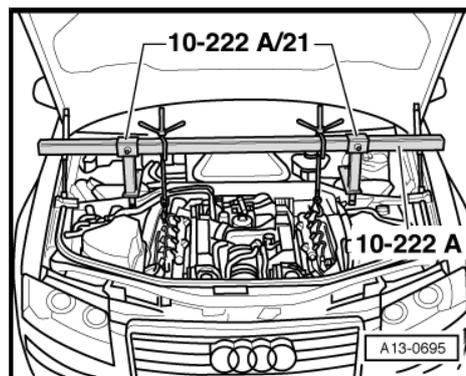
There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.



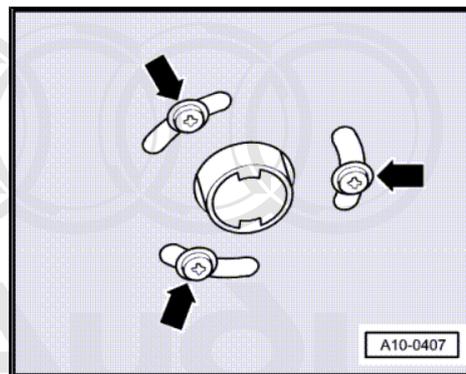
- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.
- ◆ Renew oil seal and O-ring for power steering pump prior to installation.

### Removing

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Extract hydraulic fluid from reservoir with used oil collection and extraction unit -V.A.G 1782- .
- Set up engine support bracket and take up weight of engine ⇒ Rep. gr. 13 .

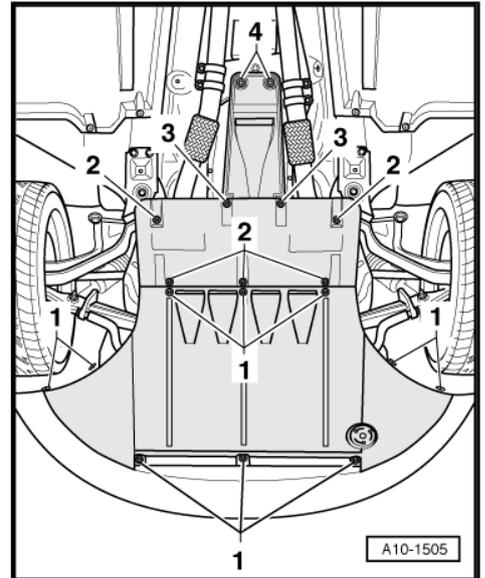


- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.

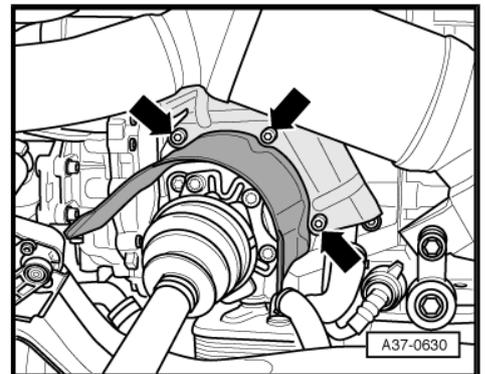


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.
- Lower subframe for assembly work => Rep. gr. 13 .

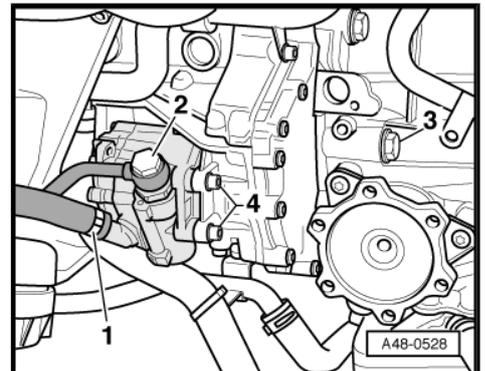


- Remove heat shields for drive shaft (left-side) -arrows-.
- Unbolt drive shaft from gearbox flange (left-side).
- Place drip tray for workshop hoist -VAS 6208- underneath to catch hydraulic fluid.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 hose clip from suction hose -1-.
- Disconnect suction hose from power steering pump.
- Unscrew pressure pipe -2- from power steering pump.
- Remove bolts -4-.
- Remove bolt -3-.
- Take out power steering pump.

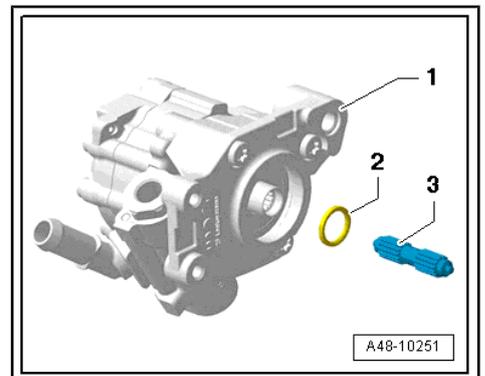


- If power steering pump -1- is renewed, seal -2- and drive shaft -3- must also be renewed.

### Installing

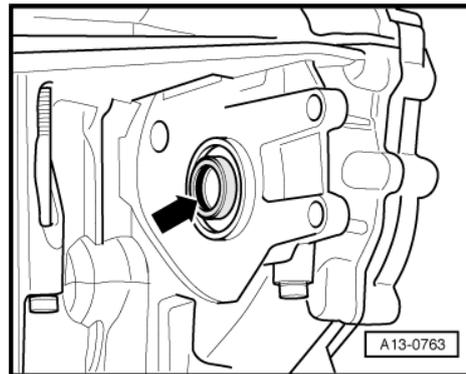
Installation is carried out in the reverse sequence. Note the following points when installing:

- ◆ Renew gaskets and seals => Rep. gr. 13 .
- ◆ Before fitting a new pump, put in hydraulic fluid at the inlet and turn pump by hand until fluid flows out at the pressure outlet.
- ◆ Secure all hose connections with new hose clips => Electronic parts catalogue „ETKA“ .



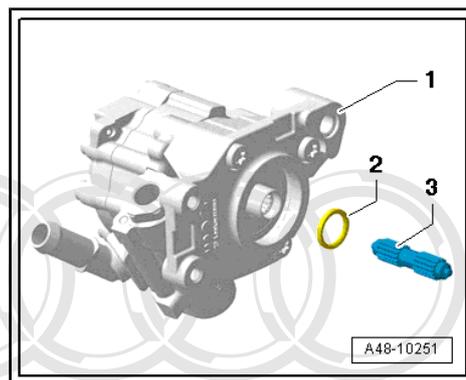


- Renew oil seal and O-ring for power steering pump -arrow- => Rep. gr. 13 .



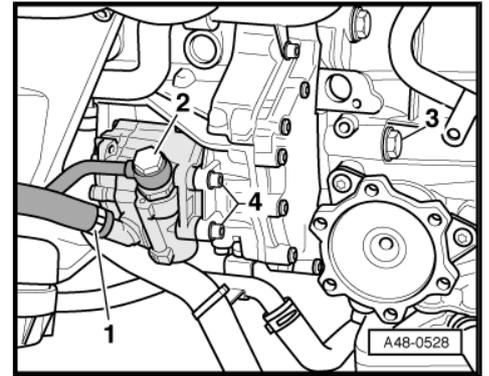
- Fit components of power steering pump as illustrated and install pump on engine.
- Grease splines of drive shaft all round on both ends before re-installing. For correct version, refer to => ETKA - Electronic parts catalogue .

Installation position of suction hoses at power steering pump and fluid reservoir => [page 387](#)



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

- Connect pressure pipe -2- to power steering pump  
⇒ [Item 5 \(page 382\)](#) .
- Tighten bolts -4- ⇒ [Item 10 \(page 382\)](#) .
- Tighten bolt -3- ⇒ Rep. gr. 37 .
- Connect suction hose -1- to power steering pump and secure with hose clip.
- Fill up with hydraulic fluid .
- Clean off fluid in engine compartment where necessary.
- Install drive shaft ⇒ [page 74](#) .
- Install subframe ⇒ [page 35](#) .
- Tighten subframe bolts to torque but not to extra angle (only tighten bolts fully after checking wheel alignment).



**WARNING**

*All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.*

- Check hydraulic fluid level ⇒ [page 326](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Bleed steering system ⇒ [page 330](#) .
- Fit noise insulation ⇒ Rep. gr. 50 .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .



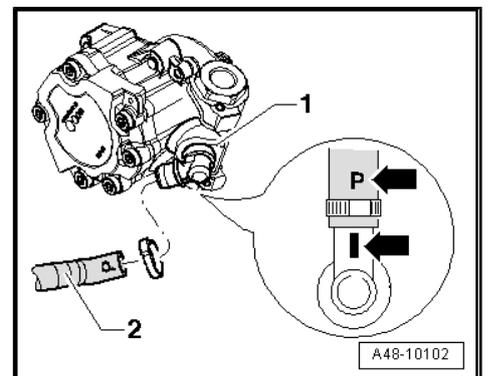
**WARNING**

*Tighten subframe bolts to final setting after checking wheel alignment.*

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

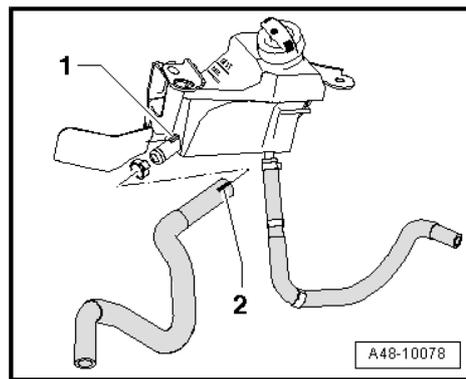
## 8.4 Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 8-cylinder diesel engine)

- Marking -P- on suction hose -2- must be aligned with seam on pump -1- -arrows-.

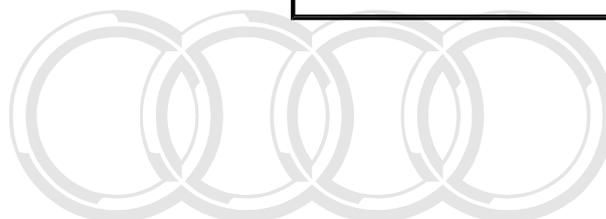
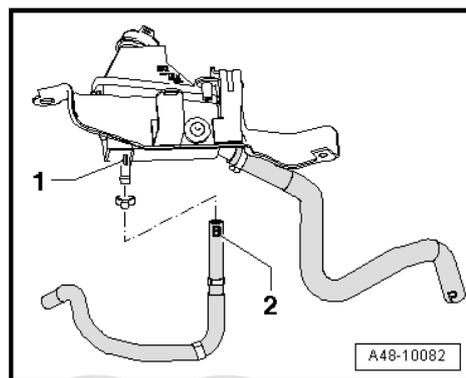




- Marking on suction hose -2- must be aligned with moulded seam -1- on reservoir.



- Marking on return hose -2- must be aligned with moulded seam -1- on reservoir.



# 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.

## 9 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 8-cylinder MPI petrol engine)

⇒ [„9.1 Exploded view \(vehicles with 8-cylinder MPI petrol engine\)“, page 389](#)

⇒ [„9.2 Checking delivery pressure of power steering pump \(vehicles with 8-cylinder MPI petrol engine\)“, page 392](#)

⇒ [„9.3 Removing and installing power steering pump \(vehicles with 8-cylinder MPI petrol engine\)“, page 395](#)

⇒ [„9.4 Installation position of suction hoses on power steering pump and fluid reservoir \(vehicles with 8-cylinder MPI petrol engine\)“, page 403](#)

### 9.1 Exploded view (vehicles with 8-cylinder MPI petrol engine)

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

The hydraulic fluid circuit on right-hand drive vehicles is the same as on left-hand drive vehicles, except that the hydraulic pipes are extended from left to right on the steering box.



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

**Note**

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

**1 - Power steering box**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**2 - Expansion hose (pipe section)****3 - Return hose**

- Between servotronic steering box and hydraulic fluid cooler
- Note attachment at front end ⇒ [page 391](#)

**4 - Cap with dipstick**

- Checking fluid level ⇒ [page 326](#)

**5 - Reservoir**

- When filling system, put in hydraulic fluid

**6 - Bolt, 9 Nm****7 - Rubber mounting**

- For reservoir

**8 - Spring-type clip**

- Use spring-type clip pliers -VAS 5024 A- when removing and installing

**9 - Suction hose**

- Between power steering pump and fluid reservoir
- Installation position on power steering pump and fluid reservoir ⇒ [page 403](#)

**10 - Return hose**

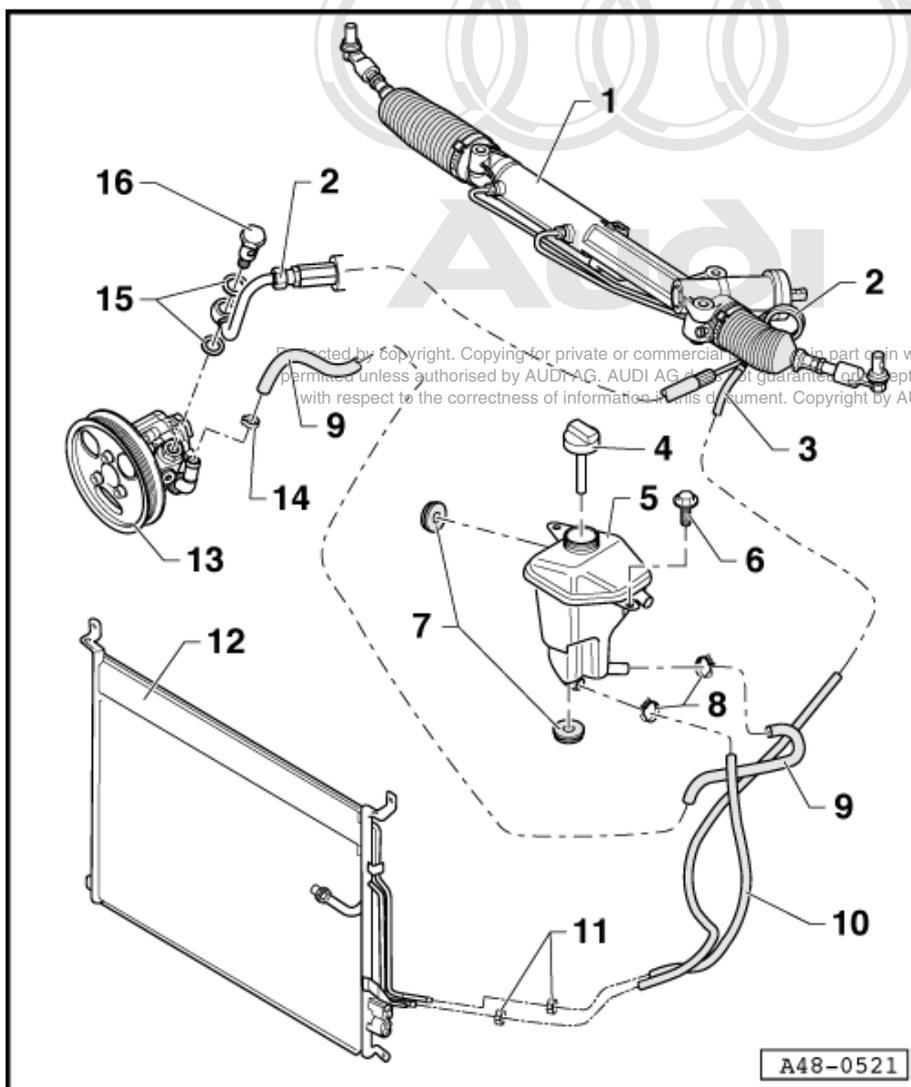
- Between reservoir and hydraulic fluid cooler
- Note correct position on reservoir and hydraulic fluid cooler ⇒ [page 403](#)

**11 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**12 - Hydraulic fluid cooler****13 - Power steering pump**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing
- After replacement, check alignment of pulley ⇒ [page 401](#)



- Checking delivery pressure ⇒ [page 392](#)
- Removing and installing ⇒ [page 395](#)

#### 14 - Hose clip

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

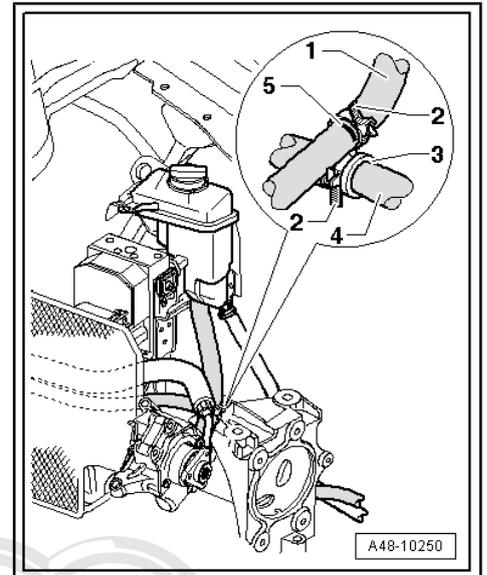
#### 15 - Seal

- Always renew

#### 16 - Banjo bolt, 47 Nm

#### Attachment of return hose at front end

- Secure cable tie -2- on return hose -1-. Note marking -5-.
- Secure guide bush -3- on expansion hose -4- with cable tie -2-.



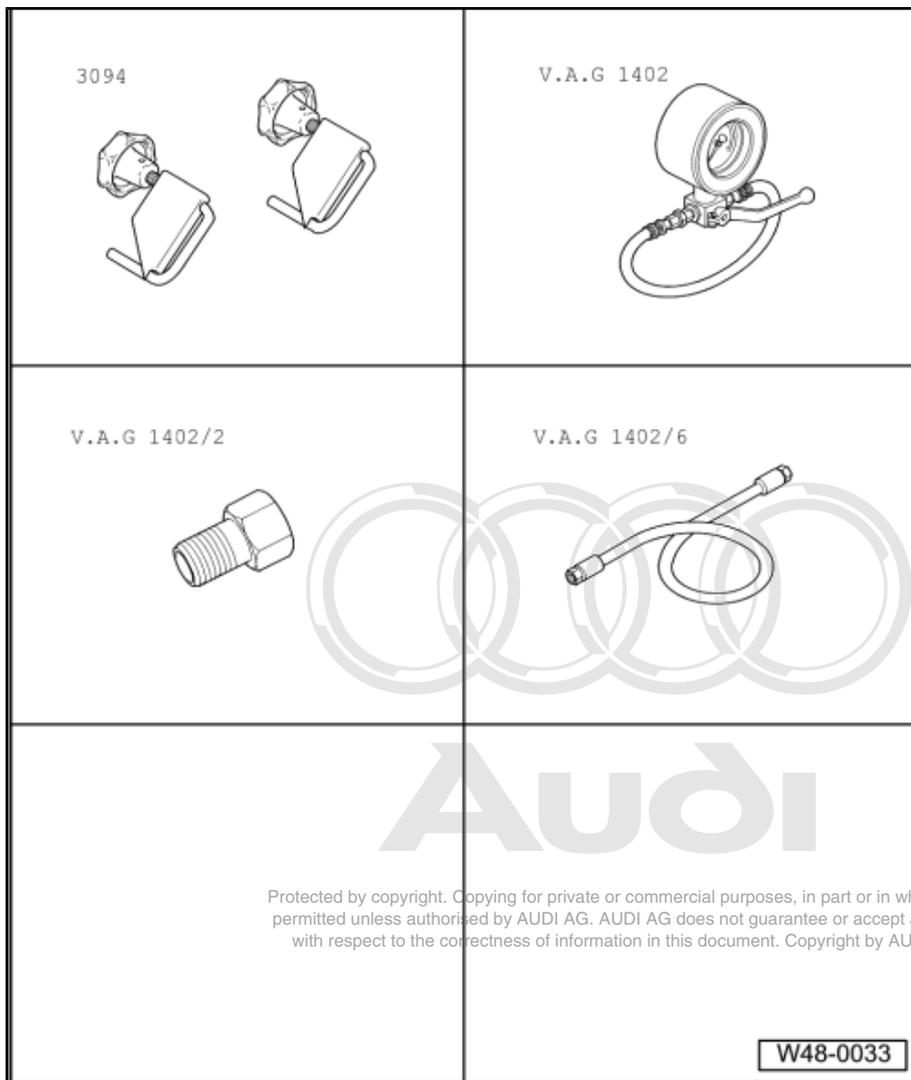
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



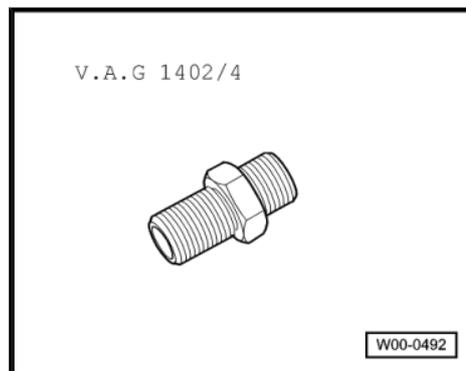
## 9.2 Checking delivery pressure of power steering pump (vehicles with 8-cylinder MPI petrol engine)

### Special tools and workshop equipment required

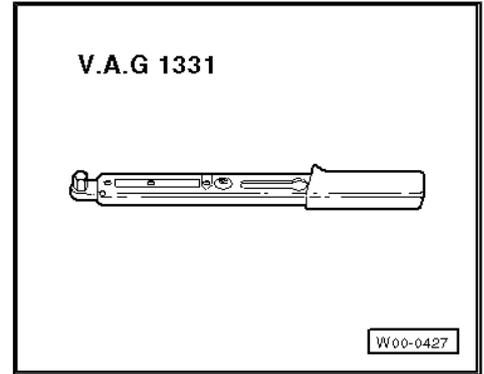
- ◆ Hose clamp -3094-
- ◆ Power steering tester - V.A.G 1402-
- ◆ Adapter -V.A.G 1402/2-
- ◆ Hose from adapter set - V.A.G 1402/6-



- ◆ Adapter -V.A.G 1402/4-



- ◆ Torque wrench -V.A.G 1331-

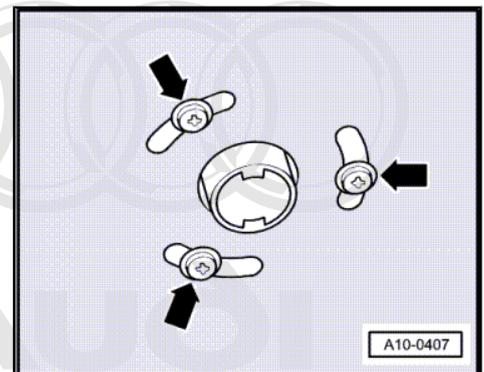


**Test requirements:**

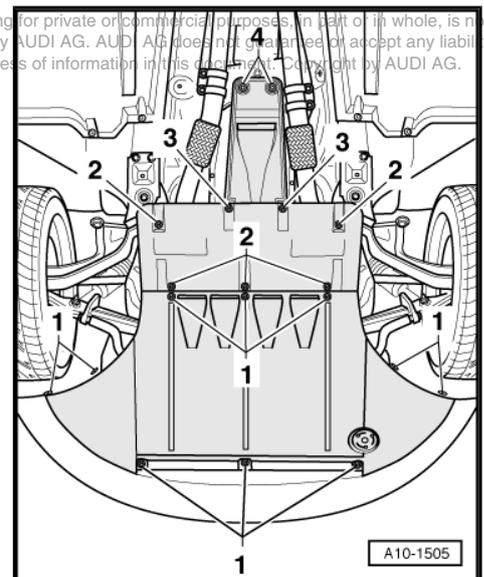
- Belt condition/ belt tension OK
- No leaks in system
- Hoses and pipes not kinked or constricted

**Checking**

- Position vehicle on lifting platform ⇒ [page 7](#) .
- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.

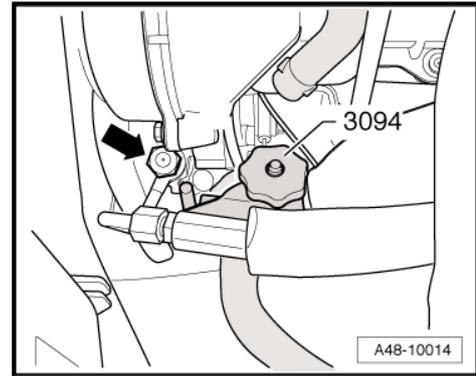


- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.



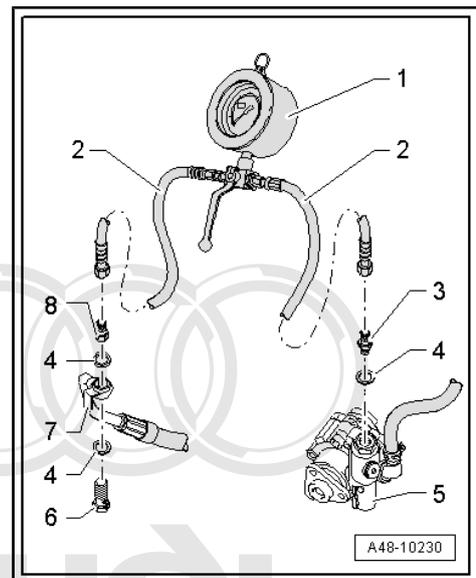
Copyright © Audi AG. All rights reserved. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Clamp off suction pipe with hose clamp -3094- .
- Place a cloth under the union to catch escaping hydraulic fluid.
- Unscrew banjo bolt -arrow-.

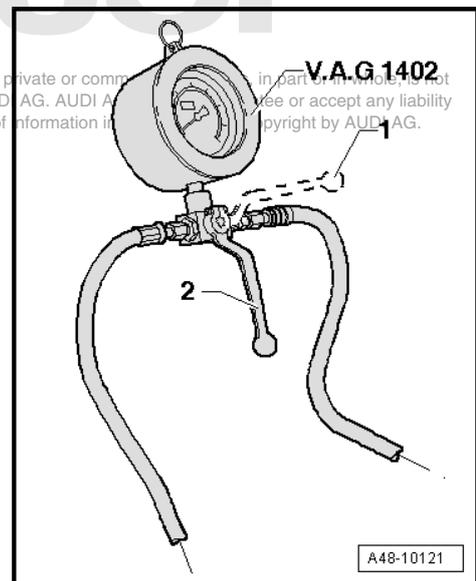


- Connect power steering tester -V.A.G 1402- as shown.

- 1 - Pressure gauge -V.A.G 1402-
  - 2 - Hose from adapter set -V.A.G 1402/6-
  - 3 - Adapter -V.A.G 1402/3-
  - 4 - Seal
  - 5 - Power steering pump
  - 6 - Banjo bolt
  - 7 - Pressure line
  - 8 - Adapter -V.A.G 1402/2-
- Detach hose clamp -3094- at suction hose.



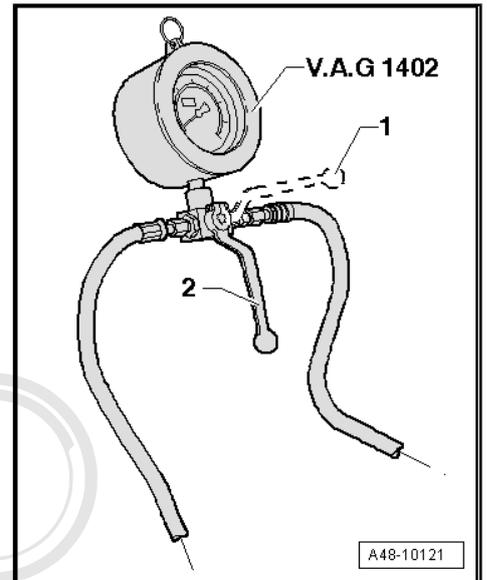
- Make sure lever on pressure gauge is in position -2-.
- Start engine but do not press accelerator.
- Turn steering wheel approx. 10 times from lock to lock.
- Switch off engine and top up hydraulic fluid in reservoir if necessary.
- Then check delivery pressure.



- Start engine, close cut-off valve (position -1-) with engine idling and read off pressure.

 **Note**

- ◆ *To avoid damaging the pump, please note the following points:*
  - ◆ *Cut-off valve of pressure gauge must not remain closed for more than 10 seconds during this test.*
  - ◆ *Start engine and let it idle without pressing accelerator.*
  - ◆ *Read off pump pressure at idling speed immediately after starting engine (have second mechanic take reading if necessary).*
  - ◆ *The pressure will drop during the test; the highest pressure reading is therefore the required test value.*
- Read off gauge pressure with engine running at idling speed (measurement must not take longer than 10 seconds).



**Delivery pressure specification: 125...130 bar**

Renew power steering pump if specification is not attained  
 ⇒ [page 395](#) .

- Switch off engine.
- Remove power steering tester -V.A.G 1402-
- Install banjo bolt with new seals ⇒ [Item 1 \(page 396\)](#) . When doing this, note correct position of expansion hose ⇒ [Item 3 \(page 396\)](#) .
- Check hydraulic fluid level ⇒ [page 326](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Fit noise insulation ⇒ Rep. gr. 50 .
- Set down vehicle on its wheels ⇒ [page 7](#) .

### 9.3 Removing and installing power steering pump (vehicles with 8-cylinder MPI petrol engine)

**Power steering pump - exploded view:**

 **Note**

- ◆ *Renew seals.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*
- ◆ *Use only hydraulic fluid .*
- ◆ *When renewing power steering pump or bracket for power steering pump, always check alignment of pulleys on A/C compressor and steering pump.*

**1 - Banjo bolt, 47 Nm****2 - Seal**

- Always renew

**3 - Expansion hose**

- Note correct position:  
Angle between pipe  
connection and axis of  
pump is approx. 17°

**4 - Suction hose**

- Marking -P- on suction  
hose must be aligned  
with seam on pump.

**5 - Hose clip**

- Tighten using hose clip  
pliers -V.A.G 1275- or  
locking pliers for steer-  
ing box -VAS 6199-

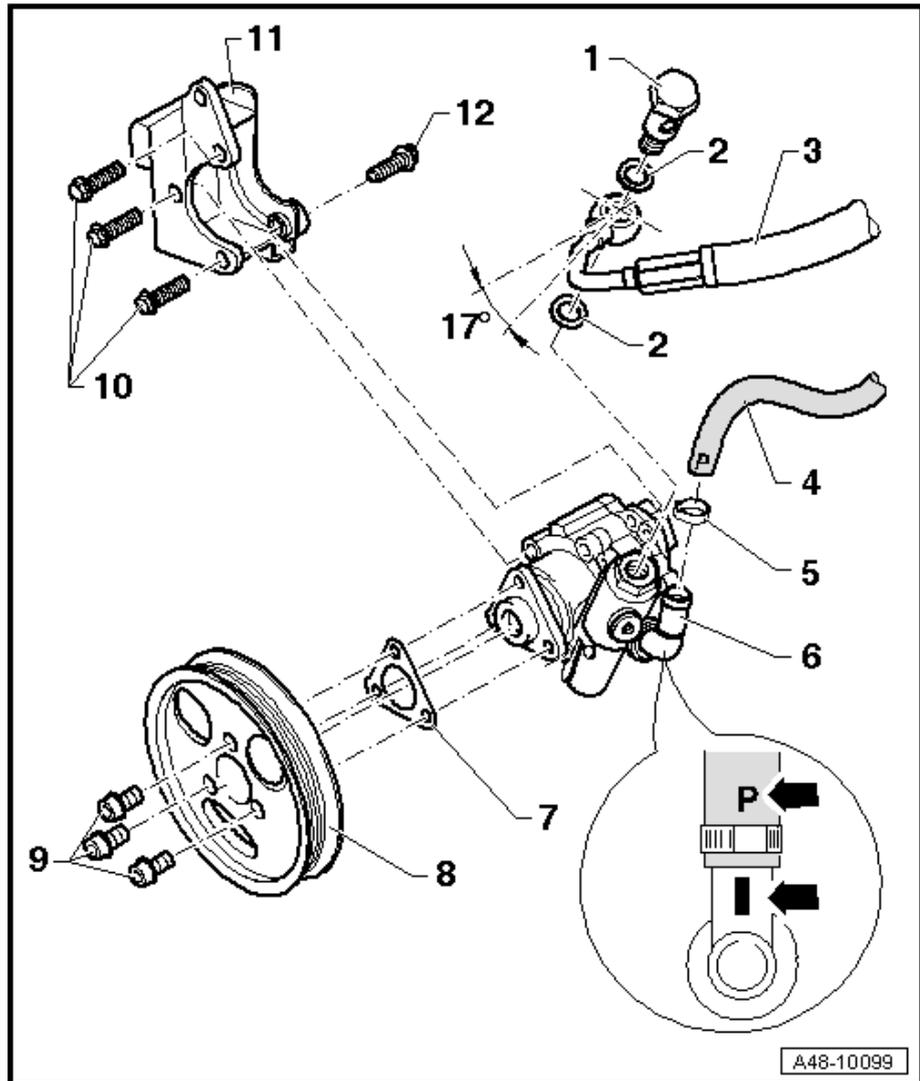
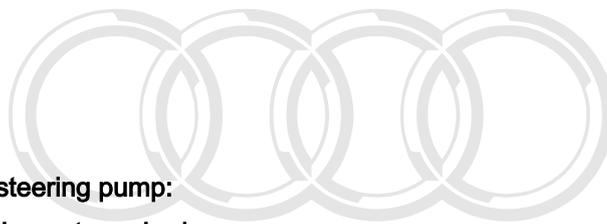
- Always renew

**6 - Power steering pump**

- For correct version refer  
to ⇒ Electronic parts  
catalogue „ETKA“
- Fill with hydraulic fluid  
before installing
- Checking delivery pres-  
sure ⇒ [page 392](#)
- Removing and installing  
⇒ [page 396](#)

**7 - Shim**

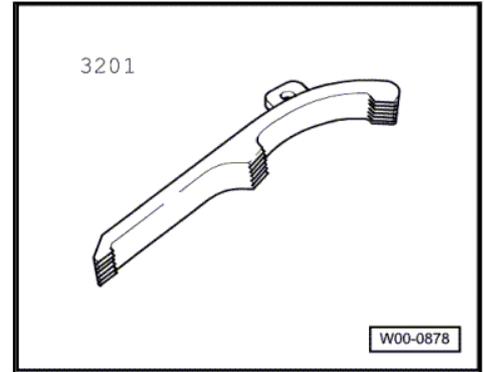
- Different versions possi-  
ble. Refer to ⇒ Electron-  
ic parts catalogue „ET-  
KA“

**8 - Belt pulley****9 - Hexagon socket head bolt, 25 Nm****10 - Bolt, 25 Nm****11 - Bracket****12 - Bolt, 25 Nm****Removing and installing power steering pump:****Special tools and workshop equipment required**

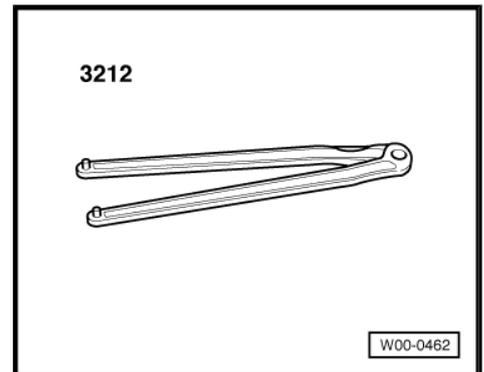
# Audi

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.

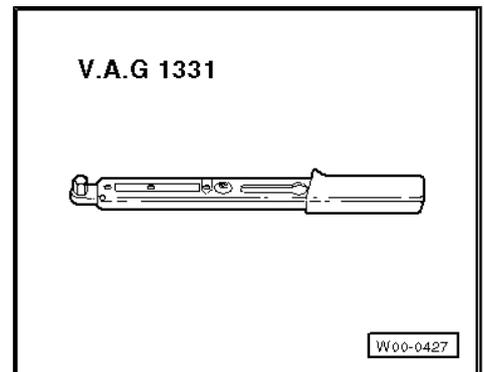
◆ Aligning gauge -3201-



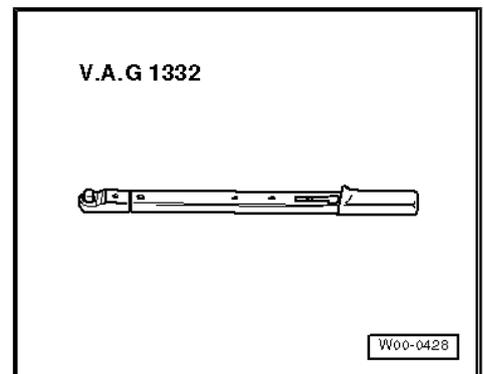
◆ Pin wrench -3212-



◆ Torque wrench -V.A.G 1331-



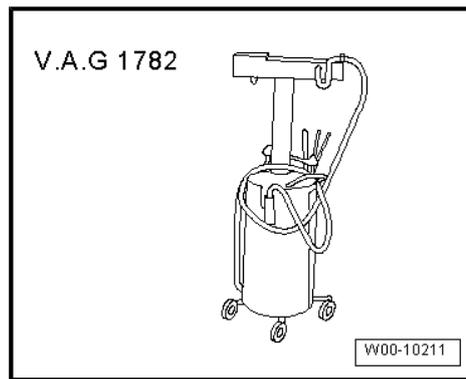
◆ Torque wrench -V.A.G 1332-



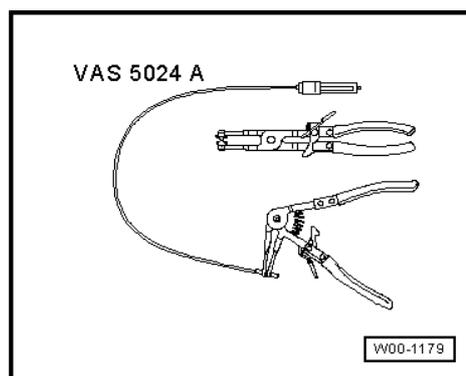
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



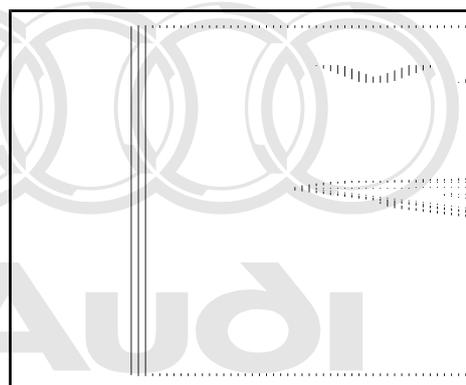
- ◆ Used oil collection and extraction unit -V.A.G 1782-



- ◆ Spring-type clip pliers -VAS 5024 A-



- ◆ Drip tray for workshop hoist -VAS 6208-



- ◆ Hydraulic fluid

**General notes**

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

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

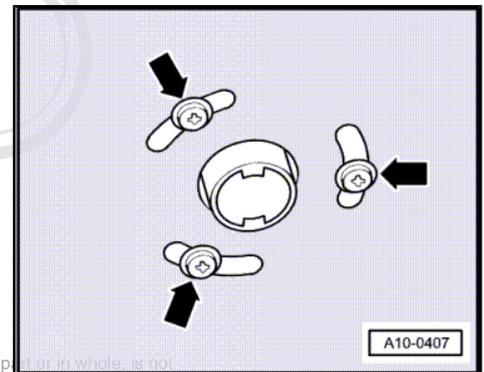


### Note

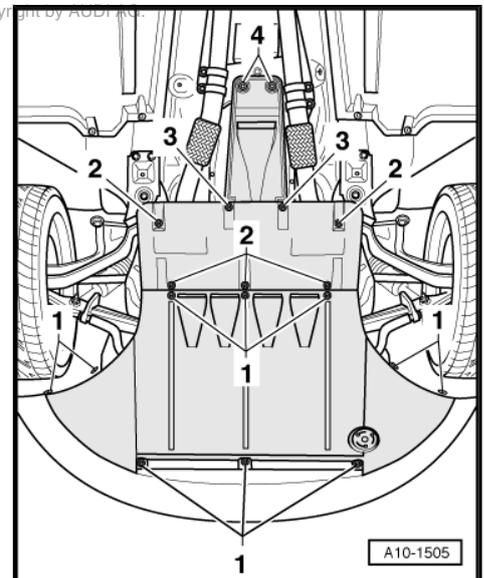
To prevent any damage to the poly V-belt, it is important to check the alignment of the pulleys on the air conditioner compressor and the power steering pump.

After replacing the following components you must check the alignment of the poly V-belt.

- ◆ Power steering pump
- ◆ Bracket for power steering pump
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Extract hydraulic fluid from reservoir with used oil collection and extraction unit -V.A.G 1782- .
- Vehicles with auxiliary heater: Unscrew bolts -arrows- from exhaust pipe at noise insulation.

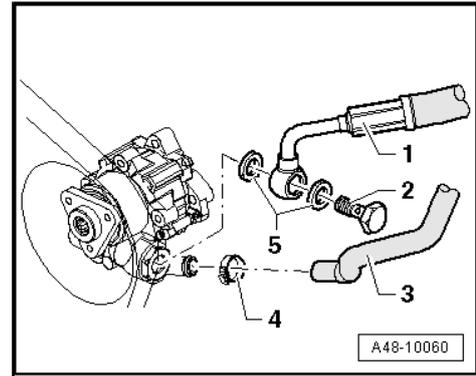


- Unfasten quick-release fasteners -1- and -2- and remove noise insulation.
- Remove front bumper ⇒ Rep. gr. 63 .
- Move lock carrier to service position ⇒ Rep. gr. 50 .
- Slacken off poly V-belt ⇒ Rep. gr. 13 .
- Remove poly V-belt from power steering pump pulley.
- Place drip tray for workshop hoist -VAS 6208- underneath to catch hydraulic fluid.

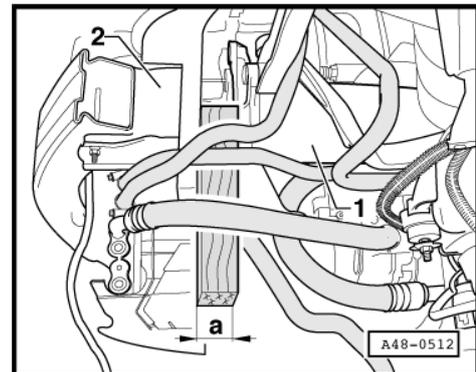




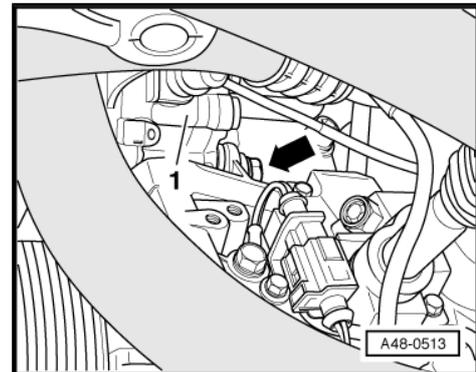
- Detach hose clip -4- from suction hose -3-.
- Disconnect suction hose and move hose to one side.
- Remove banjo bolt -2- for expansion hose -1-.
- Seal off connections with plugs.



- Insert wooden block (width a = 50 mm) between longitudinal member -1- and lock carrier -2-.



- Unscrew bolt -arrow- on back of power steering pump -1-.

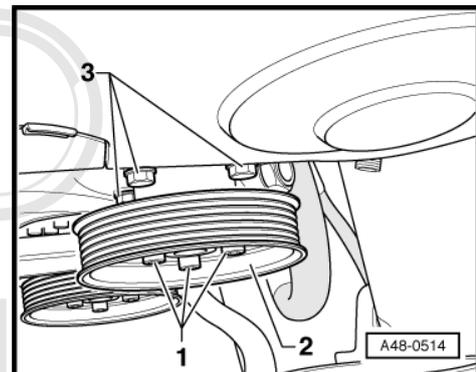


- Unscrew bolts -1- for pulley -2- on power steering pump.
- Unscrew bolts -3- for power steering pump.
- Take out power steering pump.

### Installing

Installation is carried out in the reverse sequence. Note the following points when installing:

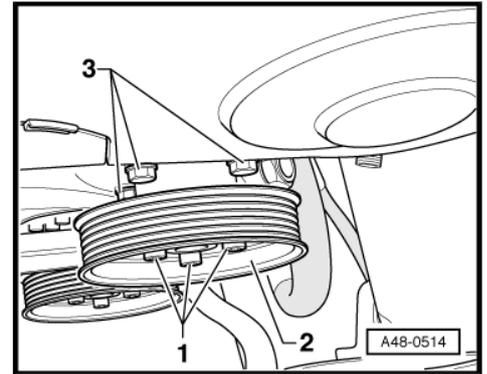
- ◆ Renew gaskets and seals.
- ◆ Before fitting a new pump, put in hydraulic fluid at the inlet and turn pump by hand until fluid flows out at the pressure outlet.
- ◆ Secure all hose connections with new hose clips ⇒ Electronic parts catalogue „ETKA“
- Turn hub by hand until fluid comes out at pump outlet.



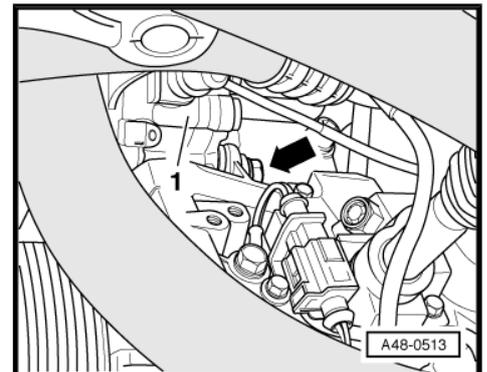
Installation position: marking „vorne“ (front) on poly V-belt pulley faces in direction of travel

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

- Tighten bolts -3- securing power steering pump  
⇒ [Item 10 \(page 396\)](#) .
- Tighten bolts -1- securing pulley -2- on power steering pump  
⇒ [Item 9 \(page 396\)](#) .



- Tighten bolt -arrow- on back of power steering pump -1-  
⇒ [Item 10 \(page 396\)](#) .

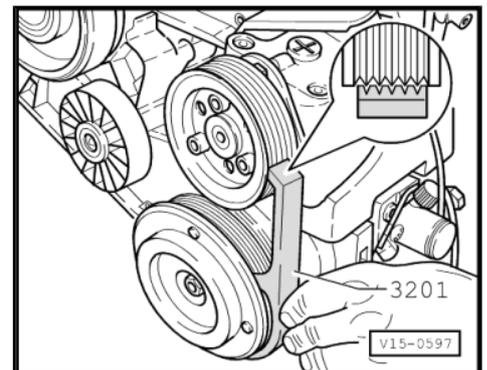


### Checking and adjusting pulley alignment

- Position aligning gauge -3201- on pulley of air conditioner compressor.
- Pulleys on pump and air conditioner compressor must be aligned.

If the two pulleys are not in alignment:

- Unbolt pump pulley.

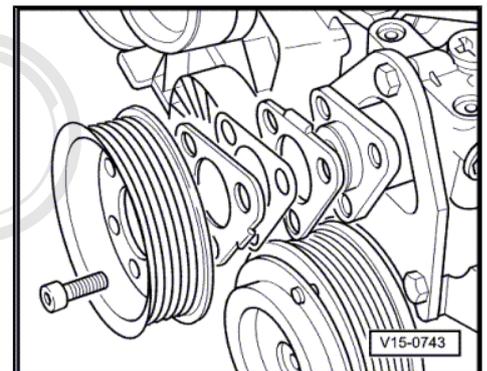


- Use the shims listed in ⇒ Electronic parts catalogue „ETKA“ to adjust the gap so the two pulleys are aligned.
- Then re-check alignment of poly V-belt pulleys with aligning gauge -3201- . Repeat adjustment if necessary.

### Installing (continued)

Installation position of suction hoses at power steering pump and fluid reservoir ⇒ [page 403](#)

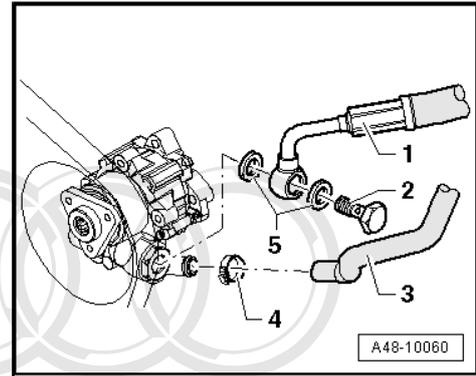
- Attach suction hose and secure at power steering pump with hose clip. Note correct position of hose ⇒ [page 403](#) .



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



- Fit new seals -5- on banjo bolt.
- Tighten banjo bolt -2- ⇒ [Item 1 \(page 396\)](#) .
- Connect suction hose -3- and secure with new hose clip -4-.  
Note correct installation position ⇒ [page 403](#) .
- Fill up with hydraulic fluid .
- Clean off fluid in engine compartment where necessary.
- Fit poly V-belt ⇒ Rep. gr. 13 .

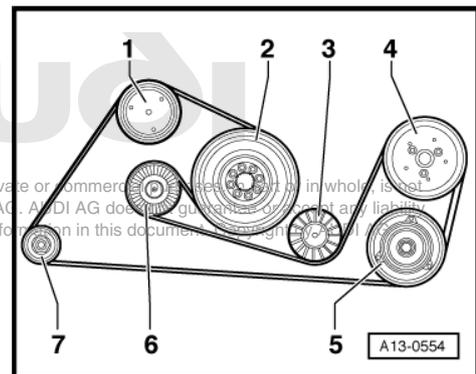


Ensure that the belt is properly seated in the pulleys when installing.

**Note**

*Ensure that the belt is properly seated in the pulleys when installing.*

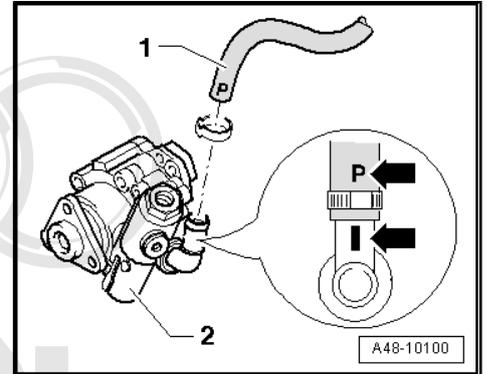
Protected by copyright. Copying for private or commercial purposes without the written permission of Audi AG is prohibited. Audi AG does not guarantee the accuracy of the information with respect to the correctness of information in this document.



- 1 - Idler roller (top)
  - 2 - Crankshaft
  - 3 - Idler roller (bottom)
  - 4 - Power steering pump
  - 5 - Air conditioner compressor
  - 6 - Tensioner for poly V-belt
  - 7 - Alternator
- Attach lock carrier ⇒ Rep. gr. 50 .
  - Install bumper ⇒ Rep. gr. 63 .
  - Start engine and check that belt runs properly.
  - Check hydraulic fluid level ⇒ [page 326](#) .
  - Check steering system for leaks ⇒ [page 331](#) .
  - Bleed steering system ⇒ [page 330](#) .
  - Fit noise insulation ⇒ Rep. gr. 50 .
  - Set down vehicle on its wheels ⇒ [page 7](#) .
  - Perform adjustment of ACC ⇒ [page 260](#) .

## 9.4 Installation position of suction hoses on power steering pump and fluid reservoir (vehicles with 8-cylinder MPI petrol engine)

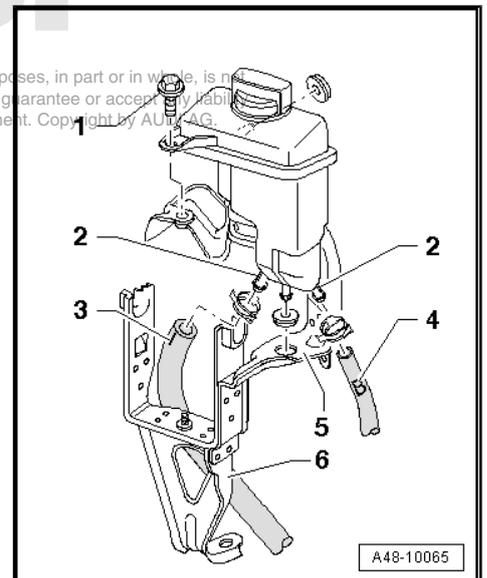
- Marking -P- on suction hose -1- must be aligned with seam on pump -2- -arrows-.



- Marking -3- on suction hose and marking -4- on return hose must be aligned with seam -2- on reservoir.

- 1 - Bolt, 9 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.



## 10 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 8-cylinder FSI petrol engine)

⇒ „10.1 Exploded view (vehicles with 8-cylinder FSI petrol engine)“, page 404

⇒ „10.2 Checking delivery pressure of power steering pump (vehicles with 8-cylinder FSI petrol engine)“, page 408

⇒ „10.3 Removing and installing power steering pump (vehicles with 8-cylinder FSI petrol engine)“, page 411

⇒ „10.4 Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 8-cylinder FSI petrol engine)“, page 416

### 10.1 Exploded view (vehicles with 8-cylinder FSI petrol engine)

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

The hydraulic fluid circuit on right-hand drive vehicles is the same as on left-hand drive vehicles, except that the hydraulic pipes are extended from left to right on the steering box.

This document is not intended for commercial purposes, in part or in whole, is not permitted to be reproduced or transmitted by AUDI 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**

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

**1 - Power steering box**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**2 - Pressure line**

**3 - Return hose**

- Between servotronic steering box and hydraulic fluid cooler
- Note attachment of return hose/expansion hose in vicinity of longitudinal member (front) ⇒ [page 407](#)

**4 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**5 - Return hose**

- Between reservoir and hydraulic fluid cooler
- Installation position ⇒ [page 416](#)
- Note attachment at front end ⇒ [page 407](#)

**6 - Hose clip for non-return valve**

- Hose clamps up to Ø 25 mm -3094- must not be fitted in the vicinity of the non-return valve

**7 - Bolt, 9 Nm**

**8 - Cap with dipstick**

- Checking fluid level ⇒ [page 326](#)

**9 - Reservoir**

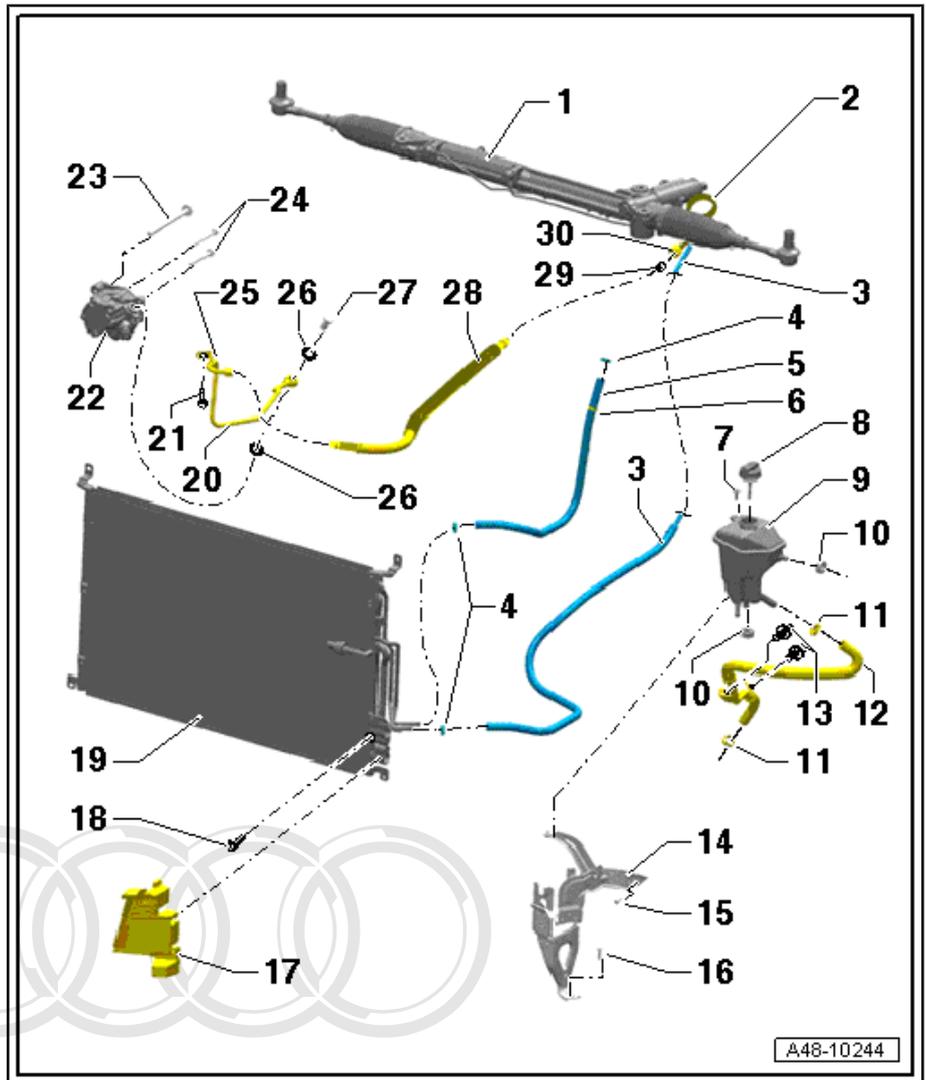
- When filling system, put in hydraulic fluid

**10 - Rubber mounting**

- For reservoir

**11 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew



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

- Attaching to engine ⇒ [page 407](#)
- Installation position on reservoir ⇒ [page 416](#)
- Installation position on power steering pump ⇒ [page 416](#)

## 13 - Bolt, 9 Nm

## 14 - Bracket

- For reservoir

## 15 - Bolt, 9 Nm

## 16 - Bolt, 9 Nm

## 17 - Cover

## 18 - Bolt, 9 Nm

## 19 - Hydraulic fluid cooler

## 20 - Pressure line

- Attaching to engine ⇒ [page 407](#)

## 21 - Bolt, 9 Nm

## 22 - Power steering pump

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing
- Checking delivery pressure ⇒ [page 408](#)
- Removing and installing ⇒ [page 411](#)

## 23 - Bolt

- Tightening torque ⇒ [Item 3 \(page 412\)](#)

## 24 - Bolt

- Tightening torque ⇒ [Item 6 \(page 412\)](#)

## 25 - Union nut, 40 Nm

## 26 - Seal

- Always renew

## 27 - Banjo bolt, 47 Nm

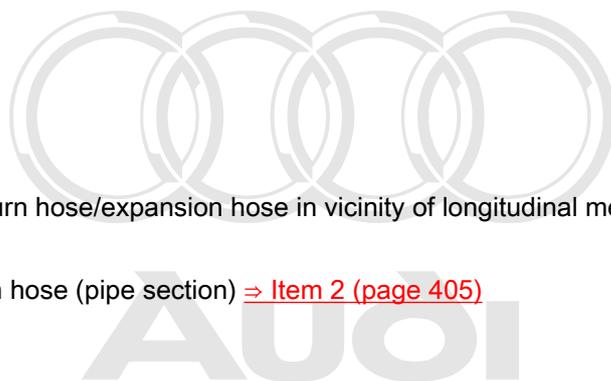
## 28 - Expansion hose

- Note attachment of return hose/expansion hose in vicinity of longitudinal member (front) ⇒ [page 407](#)

## 29 - Non-return valve

- Pressed into expansion hose (pipe section) ⇒ [Item 2 \(page 405\)](#)

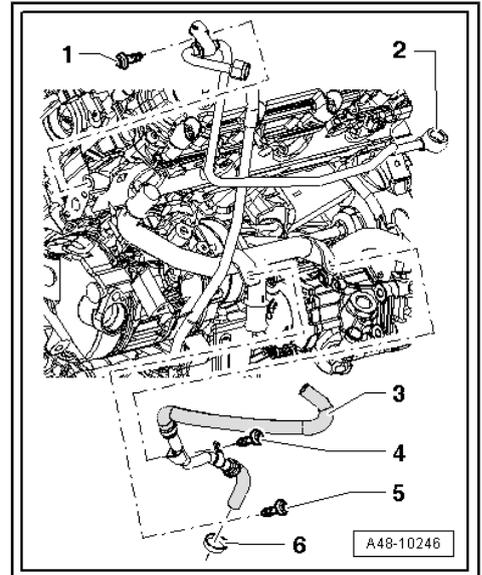
## 30 - Union nut, 45 Nm



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.

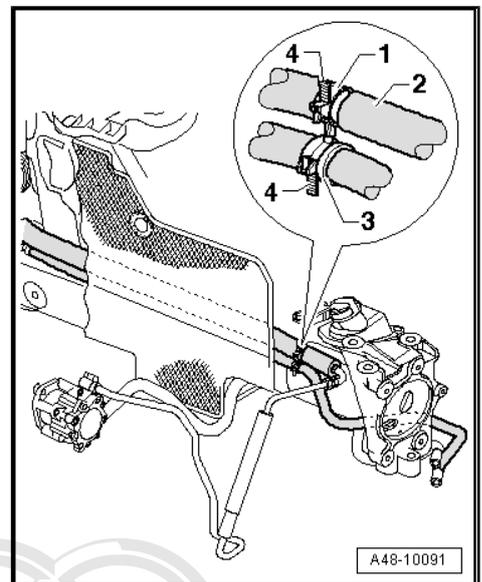
### Attachment of pressure line and suction hose to engine

- Secure pressure line -2- to front end of engine (top left) with bolt -1-.
- Secure suction hose -3- to coolant pipe with bolts -4- and -5-.
- Secure suction hose -3- to power steering pump with hose clip -6- ⇒ [page 416](#) .



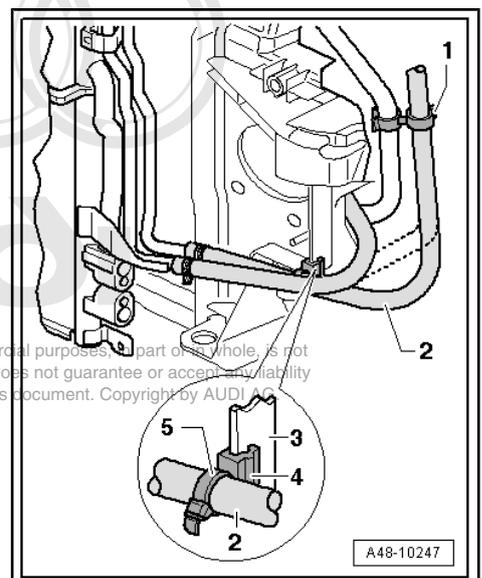
### Attachment of expansion hose/return hose in vicinity of longitudinal member (front)

- Fit bracket -1- in recess on expansion hose -2-.
- Secure cable ties -4- on bracket -1- and guide bush -3-.



### Attachment of return hose at front end

- Secure return hose -2- on front end -3- with bracket -4- and cable tie -5-.
- Secure return hose -2- on refrigerant line with clip -1-.



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

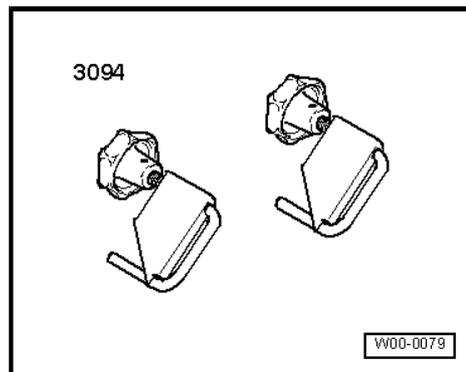


## 10.2 Checking delivery pressure of power steering pump (vehicles with 8-cylinder FSI petrol engine)

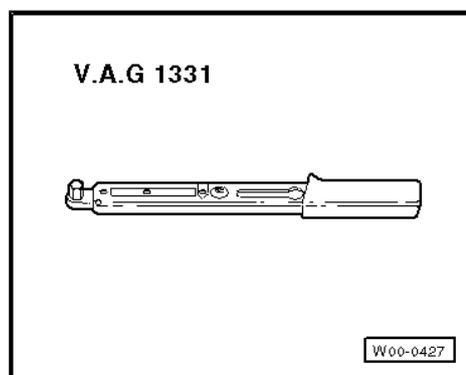
### Special tools and workshop equipment required

- ◆ Hose clamps -3094-

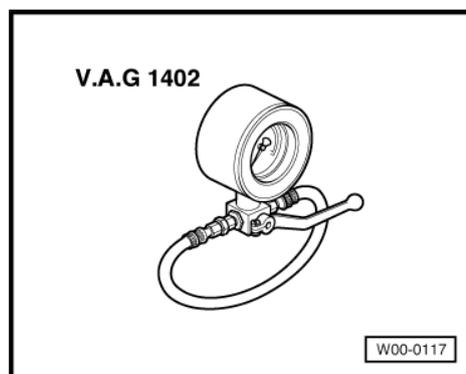
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



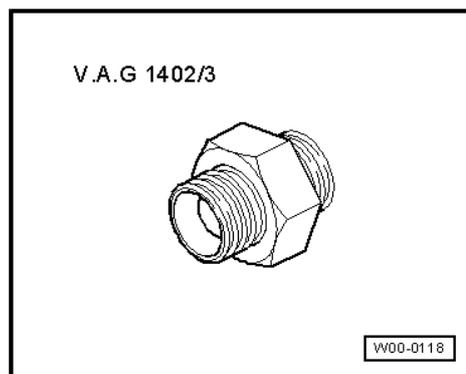
- ◆ Torque wrench -V.A.G 1331-



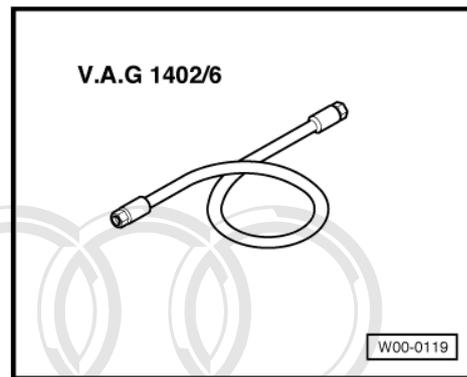
- ◆ Power steering tester -V.A.G 1402-



- ◆ Adapter -V.A.G 1402/3-



◆ Adapter set -V.A.G 1402/6-



**Test requirements:**

- No leaks in system
- Hoses and pipes not kinked or constricted

**Checking**

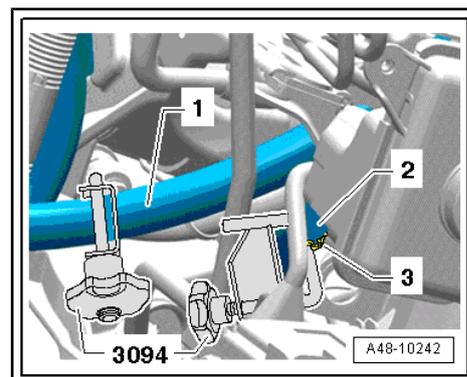
- Position vehicle on lifting platform ⇒ [page 7](#)

 **Caution**

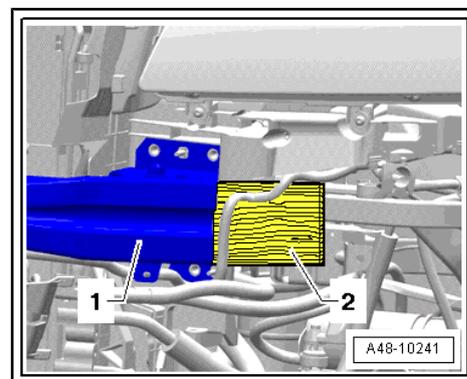
- *A non-return valve is located under hose clip -3-. Hose clamps -3094- must not be fitted in the vicinity of the non-return valve.*

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.

- Clamp off suction hose -1- and return hose -2- at reservoir using hose clamps -3094- .
- Remove noise insulation ⇒ Rep. gr. 50 .
- Move lock carrier to service position ⇒ Rep. gr. 50 .

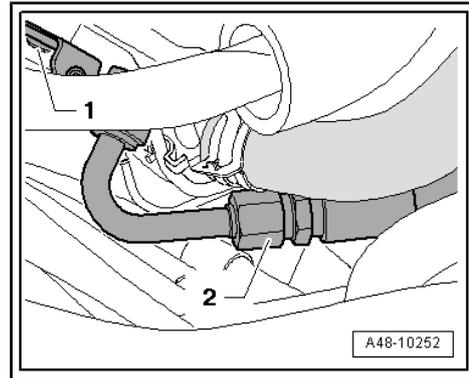


- Insert a suitable wooden board -2- between longitudinal member and lock carrier -1-.



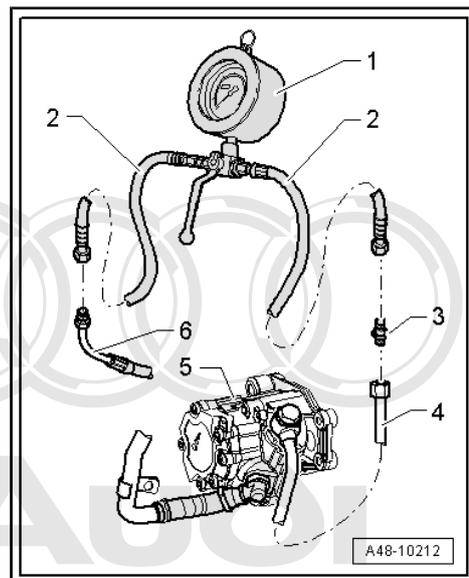


- Unscrew bolt -1- from bracket securing pressure line.
- Place a cloth under the union to catch escaping hydraulic fluid.
- Disconnect pipe connection -2-.



- After disconnecting pressure line, connect power steering tester -V.A.G 1402- as shown.

- 1 - Power steering tester -V.A.G 1402-
- 2 - Hose from adapter set -V.A.G 1402/6-
- 3 - Adapter -V.A.G 1402/3-
- 4 - Pressure line
- 5 - Power steering pump
- 6 - Pressure line
- Remove hose clamps -3094- .

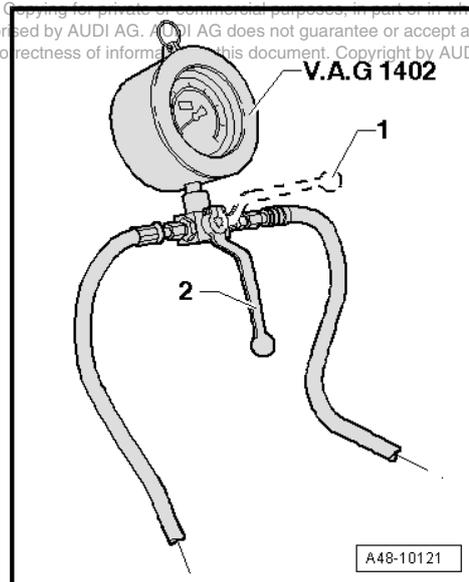


- Make sure lever on pressure gauge is in position -2-.
- Start engine but do not press accelerator.
- Turn steering wheel approx. 10 times from lock to lock.
- Switch off engine and top up hydraulic fluid in reservoir if necessary.

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.

**i** Note

- ◆ To avoid damaging the pump, please note the following points:
- ◆ Cut-off valve of pressure gauge must not remain closed for more than 10 seconds during this test.
- ◆ Start engine without pressing accelerator and leave it running at idling speed.
- ◆ Take pump pressure reading at idling speed immediately after starting engine (have second mechanic take reading).
- ◆ The pressure will drop during the test; take the highest pressure reading as the test value.



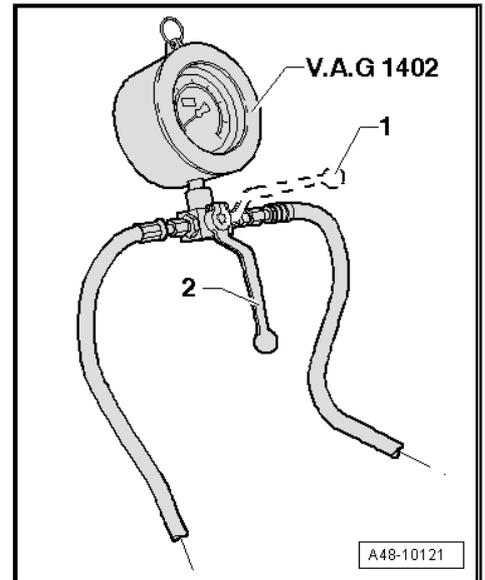
- Then check delivery pressure.

- Start engine, close cut-off valve (position -1-) with engine idling and read off pressure. Do not leave cut-off valve closed for longer than 10 seconds.

**Delivery pressure specification: 125...130 bar**

Renew power steering pump if specification is not attained  
 ⇒ [page 411](#) .

- Switch off engine.
- Remove power steering tester -V.A.G 1402- .
- Bleed steering system ⇒ [page 330](#) .
- Check hydraulic fluid level ⇒ [page 326](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Attach lock carrier ⇒ Rep. gr. 50 .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Perform adjustment of ACC ⇒ [page 260](#) .



### 10.3 Removing and installing power steering pump (vehicles with 8-cylinder FSI petrol engine)

Power steering pump - exploded view:

**i Note**

- ◆ *Renew seals.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*
- ◆ *Use only hydraulic fluid .*
- ◆ *When installing new power steering pump, always renew oil seal and O-ring for pump ⇒ Rep. gr. 15 .*

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

- Fill with hydraulic fluid before installing
- Checking delivery pressure ⇒ [page 408](#)
- Removing and installing ⇒ [page 412](#)

**2 - Bracket**

- Bracket and power steering pump are combined as one component and must not be separated

**3 - Bolt**

- Securing bolt for: gear-box/ engine/ bracket/ power steering pump
- Tightening torque ⇒ Rep. gr. 37

**4 - O-ring**

- Renewing ⇒ Rep. gr. 13

**5 - Oil seal**

- Renewing ⇒ Rep. gr. 13

**6 - Bolt, 22 Nm****7 - Banjo bolt, 50 Nm****8 - Seal**

- Always renew

**9 - Pressure line**

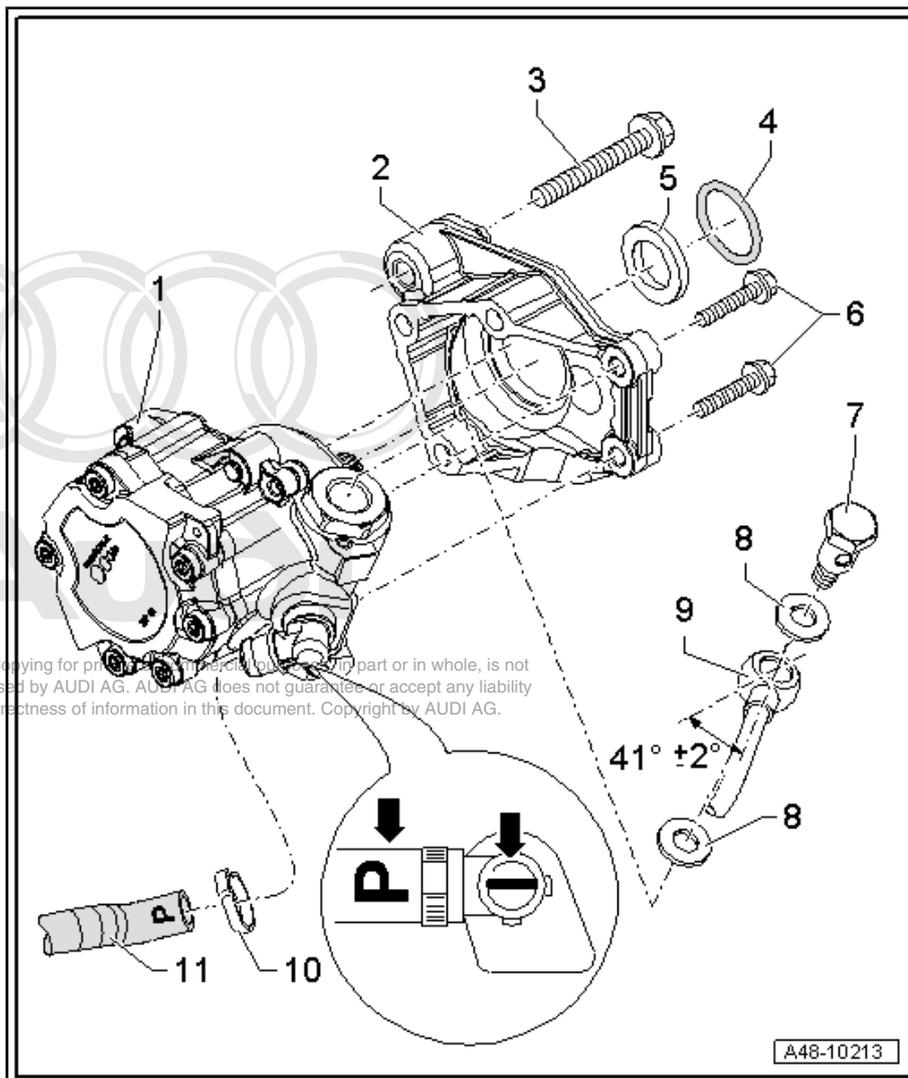
- Note correct position: Angle between pipe connection and shaft of power steering pump is approx.  $41^\circ$

**10 - Hose clip**

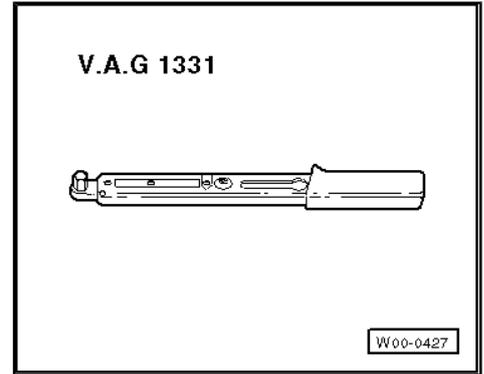
- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**11 - Suction hose**

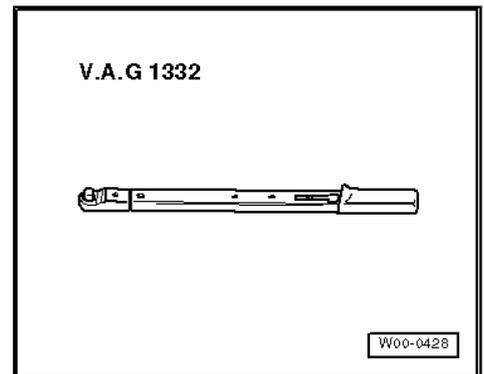
- Marking -P- on suction hose must be aligned with seam on power steering pump

**Removing and installing power steering pump:****Removing****Special tools and workshop equipment required**

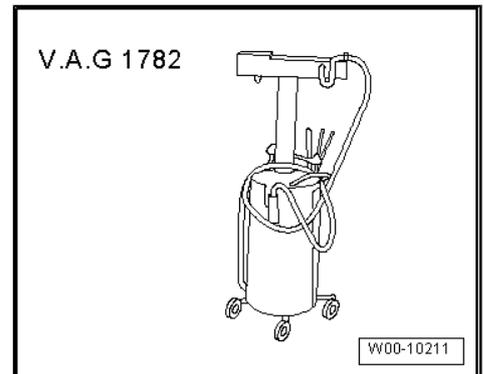
- ◆ Torque wrench -V.A.G 1331-



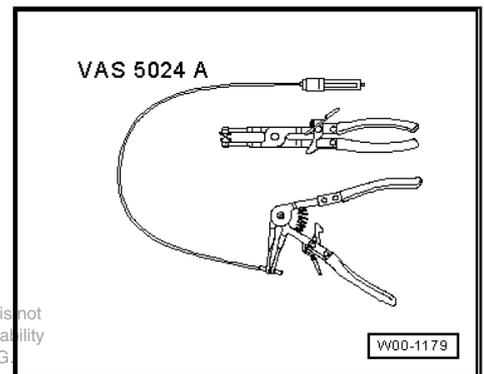
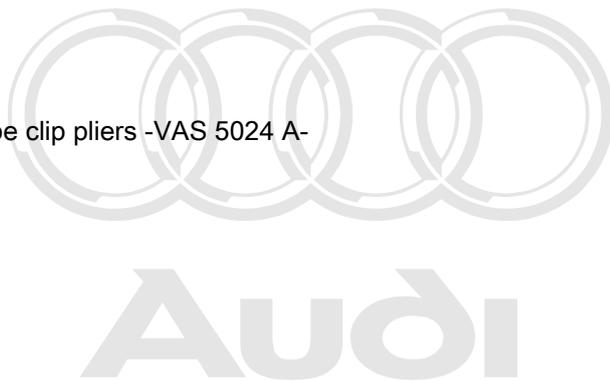
- ◆ Torque wrench -V.A.G 1332-



- ◆ Used oil collection and extraction unit -V.A.G 1782-



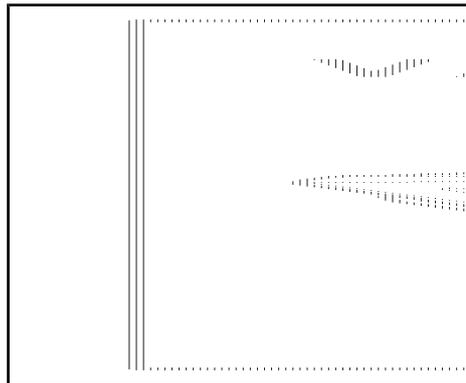
- ◆ Spring-type clip pliers -VAS 5024 A-



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



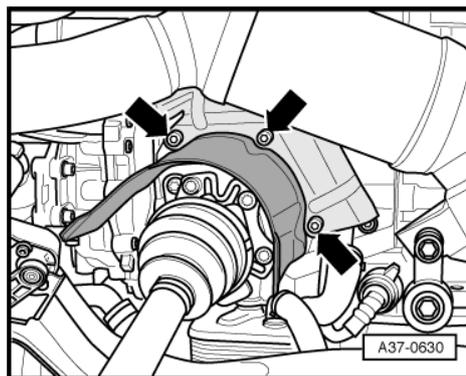
- ◆ Drip tray for workshop hoist -VAS 6208-



### General notes

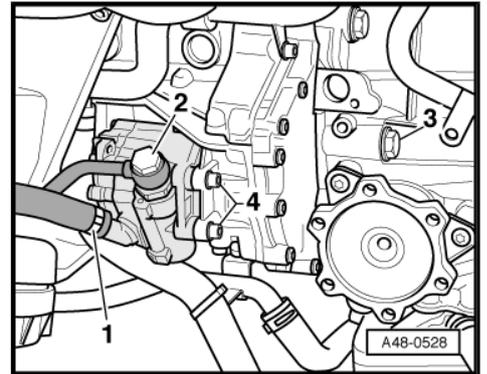
There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

- ◆ Always check steering system for leaks if fluid level is low in reservoir.
  - ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
  - ◆ The power steering pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.
  - ◆ Renew oil seal and O-ring for power steering pump prior to installation.
- Position vehicle on lifting platform ⇒ [page 7](#) .
  - Extract hydraulic fluid from reservoir with used oil collection and extraction unit -V.A.G 1782- .
  - Remove engine mounting with engine support (left-side) ⇒ Rep. gr. 10 .
  - Remove heat shield for drive shaft (left-side) -arrows-.
  - Unbolt drive shaft from gearbox flange (left-side).
  - Place drip tray for workshop hoist -VAS 6208- underneath to catch hydraulic fluid.



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

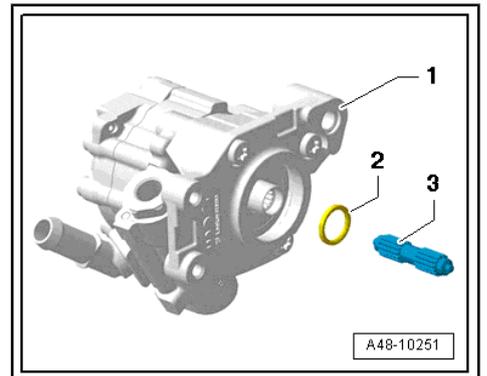
- Detach hose clip from suction hose -1-.
- Disconnect suction hose from power steering pump.
- Unscrew pressure pipe -2- from power steering pump.
- Remove bolts -4-.
- Remove bolt -3-.
- Detach power steering pump.



- If power steering pump -1- is renewed, seal -2- and drive shaft -3- must also be renewed.

**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.

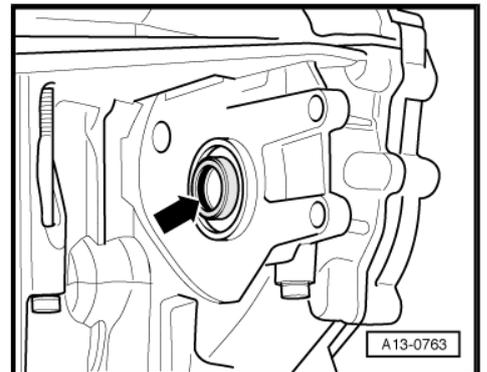


- Renew oil seal and O-ring for power steering pump -arrow- => Rep. gr. 13 .

### Installing

Installation is carried out in the reverse sequence. Note the following points:

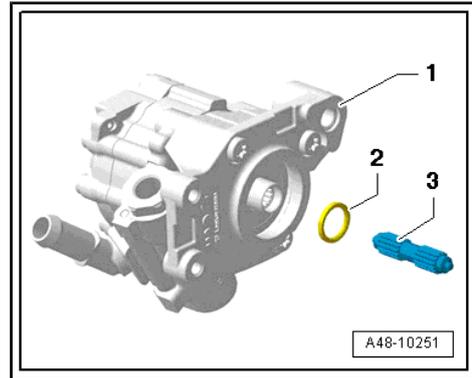
- ◆ Renew gaskets and seals.
- ◆ Clean off fluid in engine compartment where necessary.
- ◆ Always renew O-rings on suction line and drive shaft for power steering pump.
- ◆ Before fitting a new power steering pump, put in hydraulic fluid at the inlet and turn pump by hand until fluid flows out at the pressure outlet.
- ◆ Hose connections and hoses must be free of oil and grease before fitting.
- ◆ Secure all hose connections with the correct type of hose clips (same as original equipment) => Electronic parts catalogue „ETKA“ .
- Turn hub by hand until fluid comes out at pump outlet.





- Fit components of power steering pump as illustrated and install pump on engine.

- 1 - Power steering pump
- 2 - Seal
- 3 - Drive shaft; on re-installation, grease splines of power steering pump and drive shaft all round on both ends. For correct version, refer to => ETKA - Electronic parts catalogue .



- Connect pressure pipe -2- to power steering pump => [Item 7 \(page 412\)](#) .

- Tighten bolts -4- => [Item 6 \(page 412\)](#) .

- Tighten bolt -3- => [Item 3 \(page 412\)](#) .

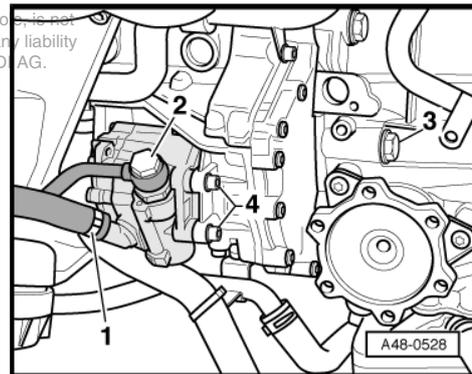
- Connect suction hose -1- to power steering pump and secure with hose clip.

- Fill up with hydraulic fluid .

Installation position of suction hose on power steering pump => [Item 11 \(page 412\)](#)

- Clean off fluid from subframe where necessary.

- Attach drive shaft => [page 74](#) .



**WARNING**

*All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.*

- Bleed steering system => [page 330](#) .

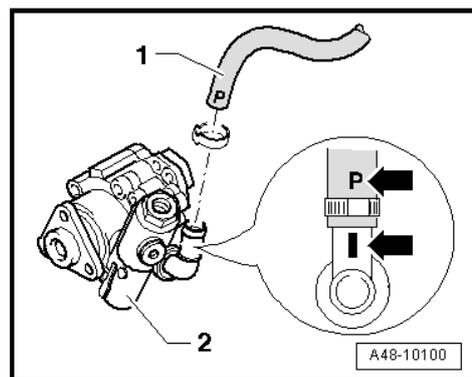
- Check hydraulic fluid level => [page 326](#) .

- Check steering system for leaks => [page 331](#) .

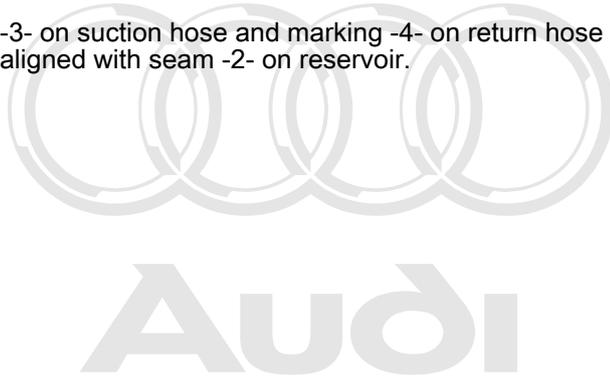
- Set down vehicle on its wheels => [page 7](#) .

### 10.4 Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 8-cylinder FSI petrol engine)

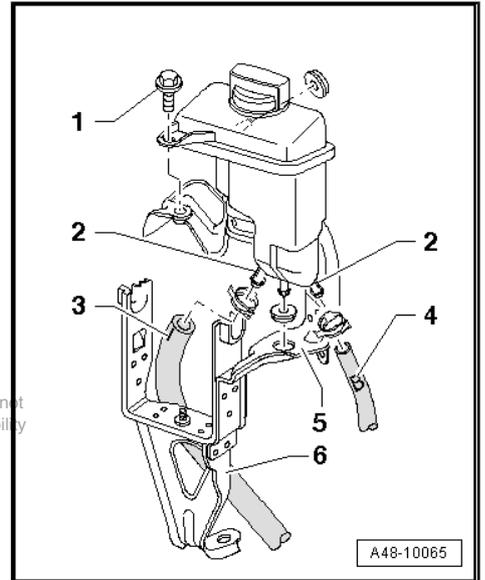
- Marking -P- on suction hose -1- must be aligned with seam on pump -2- -arrows-.



- Marking -3- on suction hose and marking -4- on return hose must be aligned with seam -2- on reservoir.



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



## 11 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 10-cylinder petrol engine)

⇒ „11.1 Exploded view (vehicles with 10-cylinder petrol engine)“, page 418

⇒ „11.2 Checking delivery pressure of power steering pump (vehicles with 10-cylinder petrol engine)“, page 422

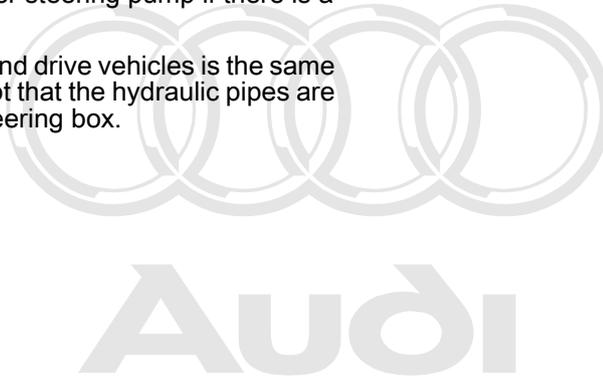
⇒ „11.3 Removing and installing power steering pump (vehicles with 10-cylinder petrol engine)“, page 427

⇒ „11.4 Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 10-cylinder petrol engine)“, page 432

### 11.1 Exploded view (vehicles with 10-cylinder petrol engine)

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

The hydraulic fluid circuit on right-hand drive vehicles is the same as on left-hand drive vehicles, except that the hydraulic pipes are extended from left to right on the steering box.



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

**i** Note

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

**1 - Power steering box**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**2 - Expansion hose (pipe section)**

**3 - Return hose**

- Note attachment of return hose/expansion hose in vicinity of longitudinal member (front) ⇒ [page 421](#)
- Note attachment at front end ⇒ [page 421](#)

**4 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**5 - Hose clip for non-return valve**

- Hose clamps up to Ø 25 mm -3094- must not be fitted in the vicinity of the non-return valve

**6 - Return hose**

- Between reservoir and hydraulic fluid cooler
- Note correct position on reservoir and hydraulic fluid cooler ⇒ [page 432](#)

**7 - Cap with dipstick**

- Checking fluid level ⇒ [page 326](#)

**8 - Bolt, 9 Nm**

**9 - Rubber mounting**

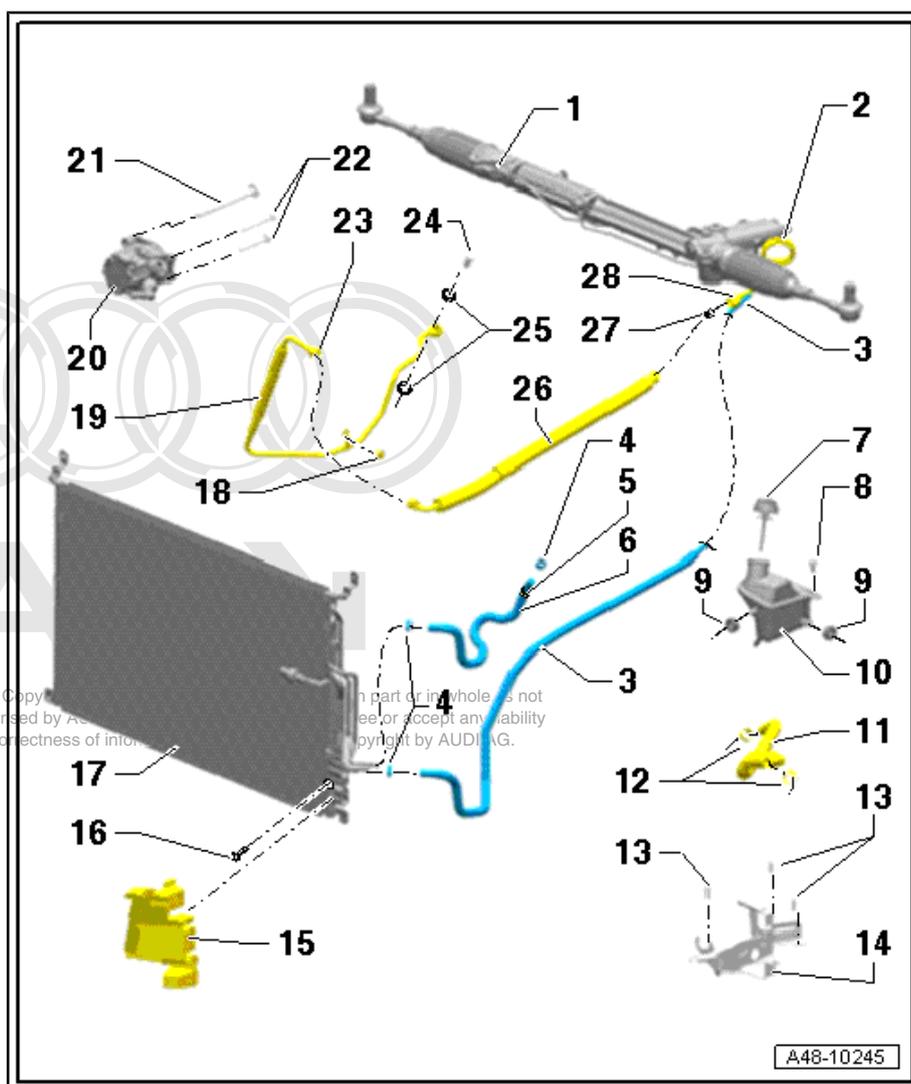
- For reservoir

**10 - Reservoir**

- When filling system, put in hydraulic fluid
- Location/renewing ⇒ [page 422](#)
- Fitting reservoir in bracket ⇒ [page 422](#)

**11 - Suction hose**

- Installation position on reservoir ⇒ [page 432](#)
- Installation position on power steering pump ⇒ [page 432](#)





## 12 - Hose clip

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

## 13 - Bolt, 9 Nm

## 14 - Bracket

- For reservoir
- Location/renewing ⇒ [page 422](#)

## 15 - Cover

## 16 - Bolt, 9 Nm

## 17 - Hydraulic fluid cooler

## 18 - Bolt, 9 Nm

## 19 - Pressure line

- Attaching to engine ⇒ [page 421](#)

## 20 - Power steering pump

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing
- Checking delivery pressure ⇒ [page 422](#)
- Removing and installing ⇒ [page 427](#)

## 21 - Bolt

- Tightening torque ⇒ [Item 3 \(page 427\)](#)

## 22 - Bolt

- Tightening torque ⇒ [Item 6 \(page 427\)](#)

## 23 - Union nut, 40 Nm

## 24 - Banjo bolt, 47 Nm

## 25 - Seal

- Always renew

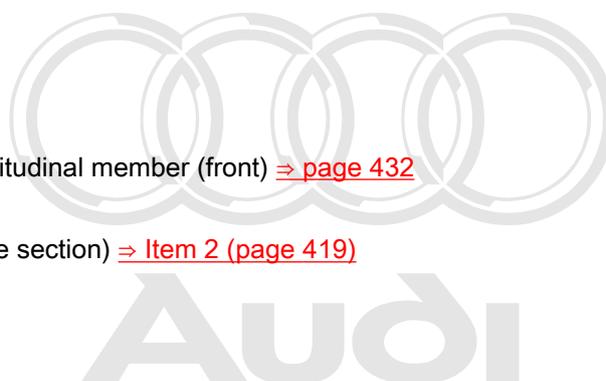
## 26 - Expansion hose

- Note attachment in vicinity of longitudinal member (front) ⇒ [page 432](#)

## 27 - Non-return valve

- Pressed into expansion hose (pipe section) ⇒ [Item 2 \(page 419\)](#)

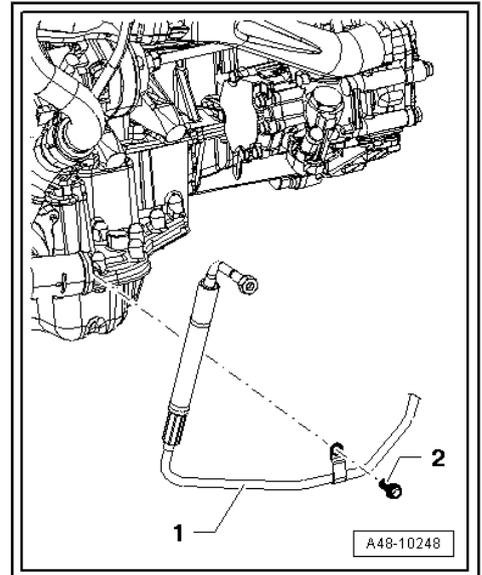
## 28 - Union nut, 45 Nm



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.

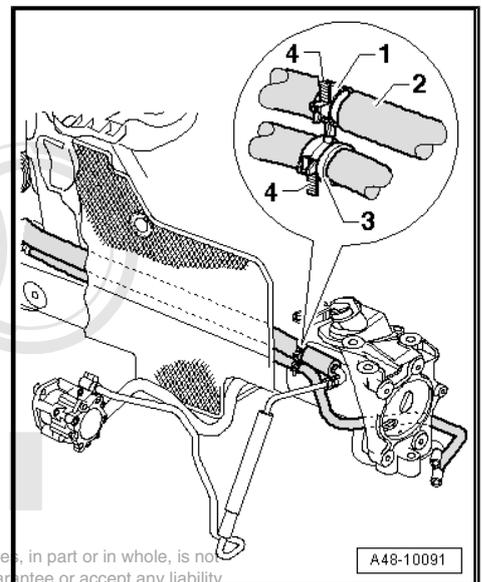
**Attachment of pressure line to engine**

- Secure pressure line -1- at bottom left of engine with bolt -2-.



**Attachment of expansion hose/return hose in vicinity of longitudinal member (front)**

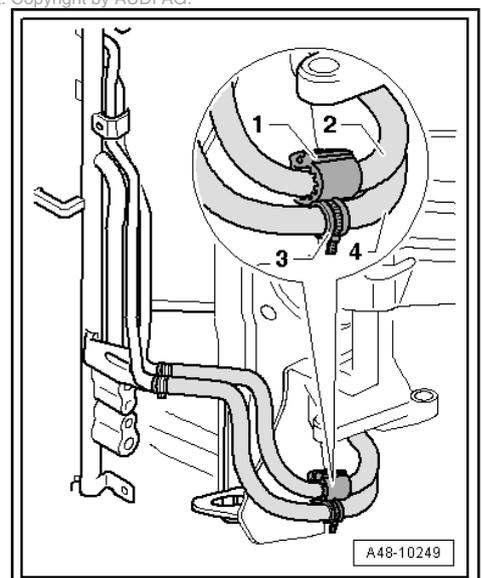
- Fit bracket -1- in recess on expansion hose -2-.
- Secure cable ties -4- on bracket -1- and guide bush -3-.



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.

**Attachment of return hose at front end**

- Align return hose -2- with chafing guard -1- centrally with edge of lock carrier panel.
- Secure return hose -4- on lock carrier with cable tie -3-.



### Location of bracket/reservoir

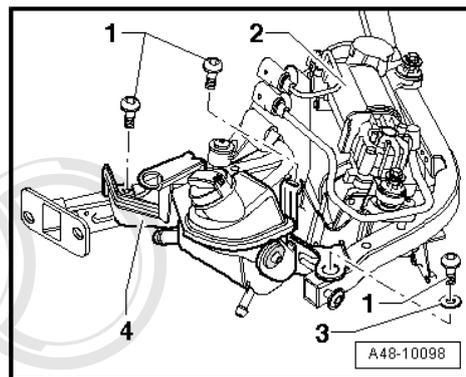
Bracket -4- with reservoir is located next to air supply unit -2- for self-levelling suspension.

1 - Bolt, 20 Nm

3 - Washer (only on front bolt)

Remove following components in order to renew reservoir:

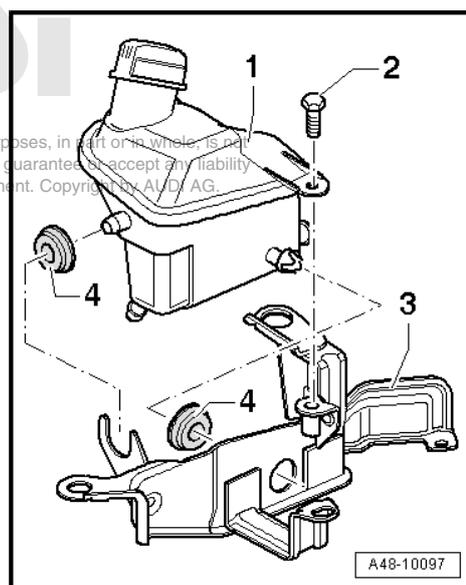
- ◆ Front wheel housing liner (front section, left-side) ⇒ Rep. gr. 66
- ◆ Air cleaner (left-side) ⇒ Rep. gr. 13
- ◆ Move lock carrier to service position ⇒ Rep. gr. 50



### Fitting reservoir in bracket

- Insert reservoir -1- with rubber grommets -4- into bracket -3-.
- Tighten bolt -2- to 9 Nm.

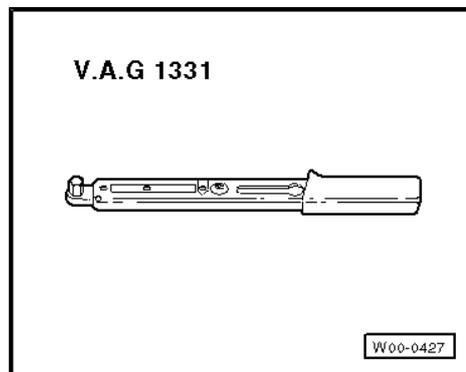
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG



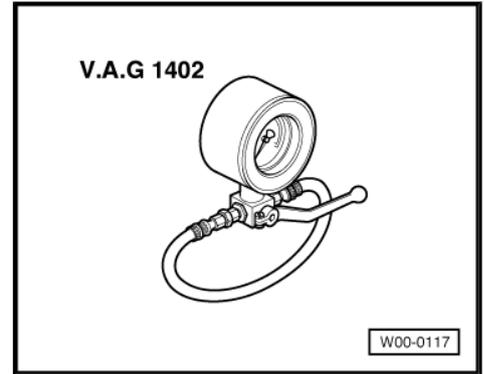
## 11.2 Checking delivery pressure of power steering pump (vehicles with 10-cylinder petrol engine)

### Special tools and workshop equipment required

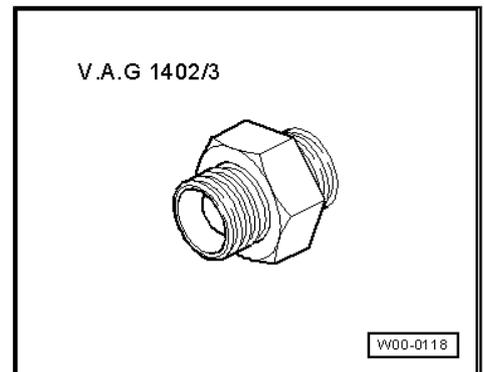
- ◆ Torque wrench -V.A.G 1331-



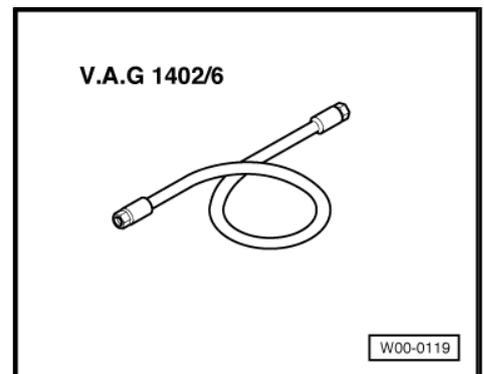
- ◆ Power steering tester -V.A.G 1402-



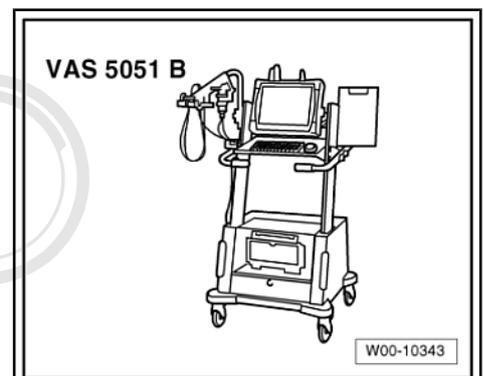
- ◆ Adapter -V.A.G 1402/3-



- ◆ Adapter set -V.A.G 1402/6-



- ◆ Vehicle diagnostic, testing and information system -VAS 5051 B- with appropriate diagnosis cable



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

**Note**

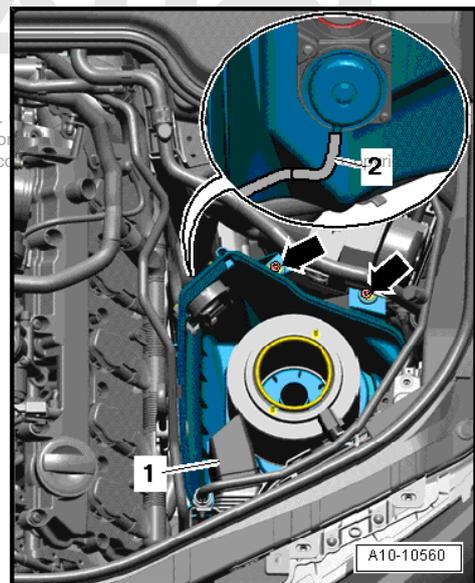
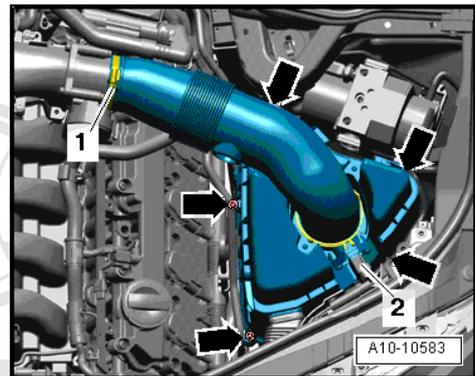
- ◆ *The pressure line cannot be clamped off with a hose clamp in the vicinity of the pipe connection.*
- ◆ *The power steering tester -V.A.G 1402- is connected with the pressure line »open«.*
- ◆ *Several electrical and electronic components have to be disconnected when performing the pressure test. After completing the pressure test, connect vehicle diagnostic, testing and information system -VAS 5051 B-, interrogate the fault memories and erase the faults that have been stored as a result of the pressure test.*

**Test requirements:**

- No leaks in system
- Hoses and pipes not kinked or constricted

**Checking**

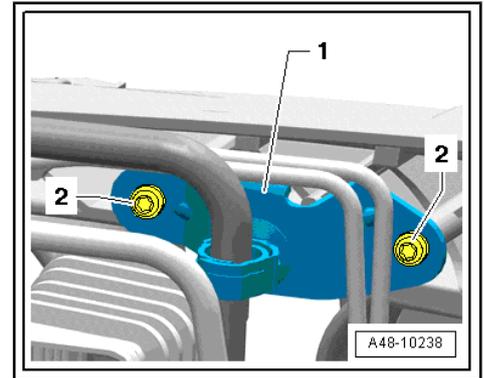
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove headlight (left-side) ⇒ Rep. gr. 94 .
- Unplug connector -2- at air mass meter 2 -G246- .
- Detach air intake hose -1- at intake manifold.
- Unscrew bolts -arrows-. Detach top section of air cleaner housing.
- Remove air duct -1-.
- Unscrew bolts -arrows-.
- Pull bottom section of air cleaner housing up slightly and disconnect vacuum hose -2-.
- Take out bottom section of air cleaner housing.



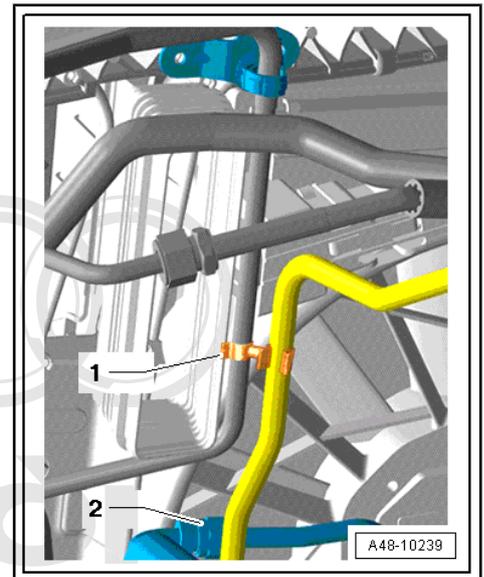
Copyright  
permitted unless author  
with respect to the co

able, is not  
by liability  
I AG.

- Unscrew bolts -2- from retaining bracket -1-.

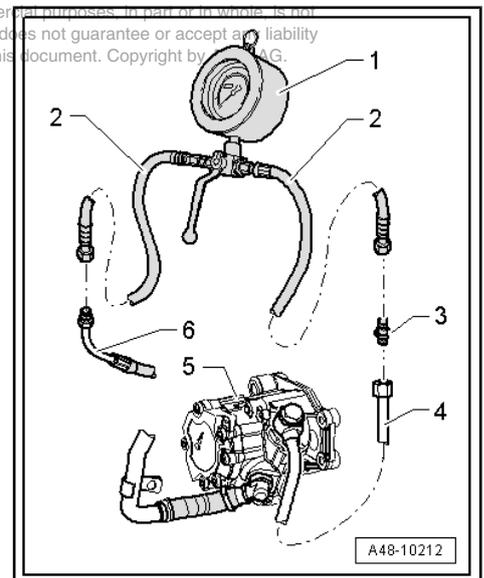


- Detach clip -1- from refrigerant line.
- Place several cloths under the union to catch escaping hydraulic fluid.
- Disconnect pipe connection -2-.



- After disconnecting pressure line, connect power steering tester -V.A.G 1402- as shown.

- 1 - Power steering tester -V.A.G 1402-
- 2 - Hose from adapter set -V.A.G 1402/6-
- 3 - Adapter -V.A.G 1402/3-
- 4 - Pressure line
- 5 - Power steering pump
- 6 - Pressure line



- Make sure lever on pressure gauge is in position -2-.
- Start engine but do not press accelerator.
- Turn steering wheel approx. 10 times from lock to lock.
- Switch off engine and top up hydraulic fluid in reservoir if necessary.

**Note**

- ◆ To avoid damaging the pump, please note the following points:
- ◆ Cut-off valve of pressure gauge must not remain closed for more than 10 seconds during this test.
- ◆ Start engine without pressing accelerator and leave it running at idling speed.
- ◆ Take pump pressure reading at idling speed immediately after starting engine (have second mechanic take reading).
- ◆ The pressure will drop during the test; take the highest pressure reading as the test value.

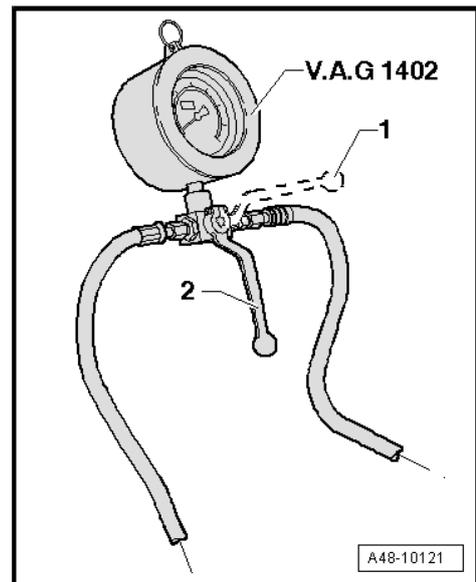
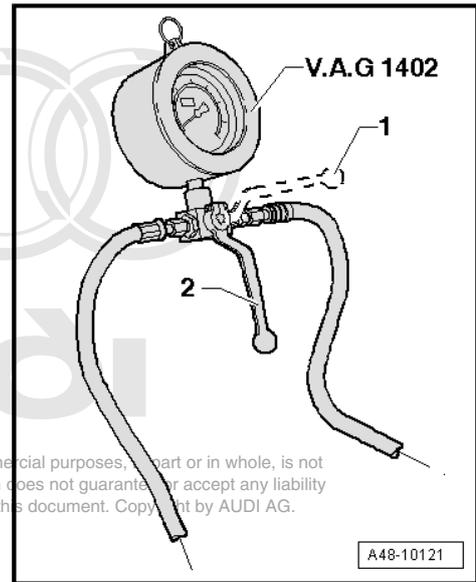
- Then check delivery pressure.

- Start engine, close cut-off valve (position -1-) with engine idling and read off pressure. Do not leave cut-off valve closed for longer than 10 seconds.

**Delivery pressure specification: 125...130 bar**

Renew power steering pump if specification is not attained  
⇒ [page 427](#) .

- Switch off engine.
- Remove power steering tester -V.A.G 1402- .
- Bleed steering system ⇒ [page 330](#) .
- Check hydraulic fluid level ⇒ [page 326](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Install headlight (left-side) ⇒ Rep. gr. 94 .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Connect vehicle diagnostic, testing and information system - VAS 5051 B- , interrogate fault memories and erase faults that have been stored as a result of pressure test ⇒ [page 191](#) .
- Perform adjustment of ACC ⇒ [page 260](#) .



## 11.3 Removing and installing power steering pump (vehicles with 10-cylinder petrol engine)

Power steering pump - exploded view:

### Note

- ◆ Renew seals.
- ◆ Do not re-use hydraulic fluid which has been drained off.
- ◆ Use only hydraulic fluid.
- ◆ When installing new power steering pump, always renew oil seal and O-ring for pump ⇒ Rep. gr. 15.

### 1 - Power steering pump

- Fill with hydraulic fluid before installing
- Checking delivery pressure ⇒ [page 422](#)
- Removing and installing ⇒ [page 428](#)

### 2 - Bracket

- Bracket and power steering pump are combined as one component and must not be separated

### 3 - Bolt

- Securing bolt for: gear-box/ engine/ bracket/ power steering pump
- Tightening torque ⇒ Rep. gr. 37

### 4 - O-ring

- Renewing ⇒ Rep. gr. 15

### 5 - Oil seal

- Renewing ⇒ Rep. gr. 15

### 6 - Bolt, 22 Nm

### 7 - Banjo bolt, 50 Nm

### 8 - Seal

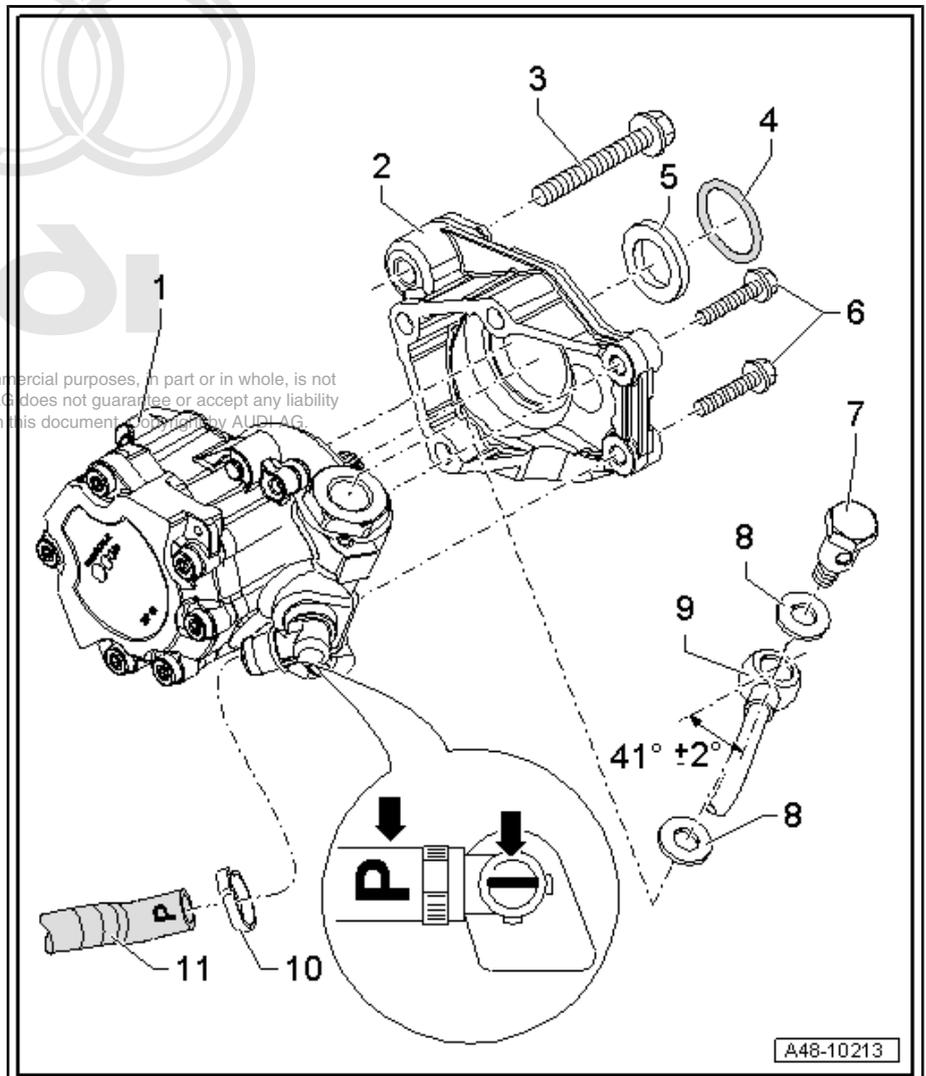
- Always renew

### 9 - Pressure line

- Note correct position: Angle between pipe connection and shaft of power steering pump is approx. 41°

### 10 - Hose clip

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew



Protected by copyright. This document, in part or in whole, is not permitted to be reproduced for commercial purposes. Audi AG does not guarantee or accept any liability with respect to the correctness of information in this document. © 2011 Audi AG.



### 11 - Suction hose

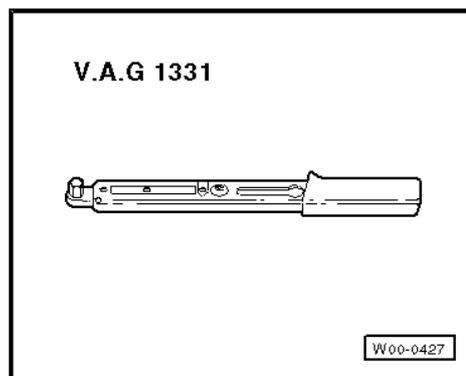
- ❑ Marking -P- on suction hose must be aligned with seam on power steering pump

#### Removing and installing power steering pump:

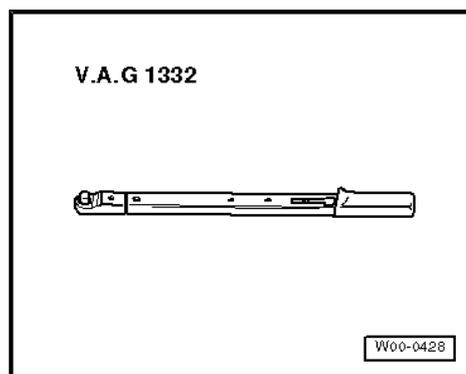
##### Removing

##### Special tools and workshop equipment required

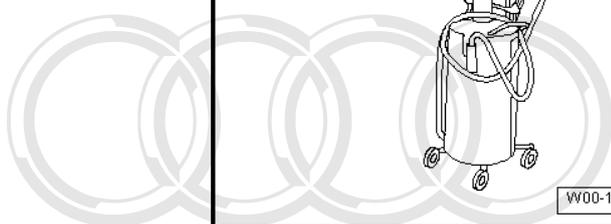
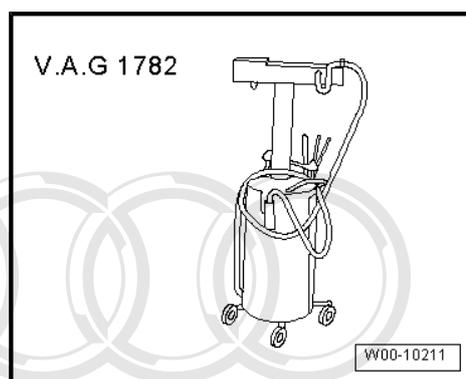
- ◆ Torque wrench -V.A.G 1331-



- ◆ Torque wrench -V.A.G 1332-

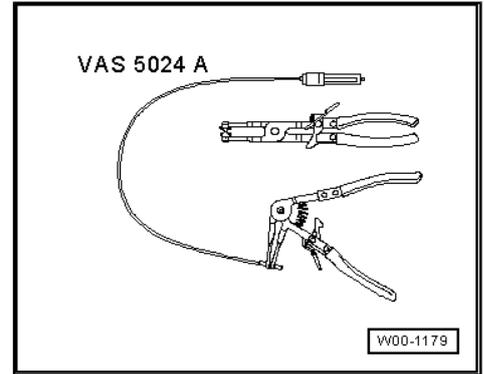


- ◆ Used oil collection and extraction unit -V.A.G 1782-

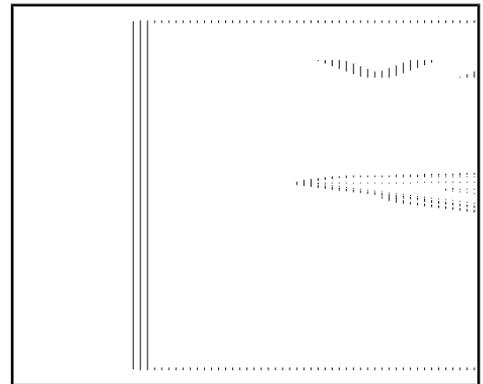
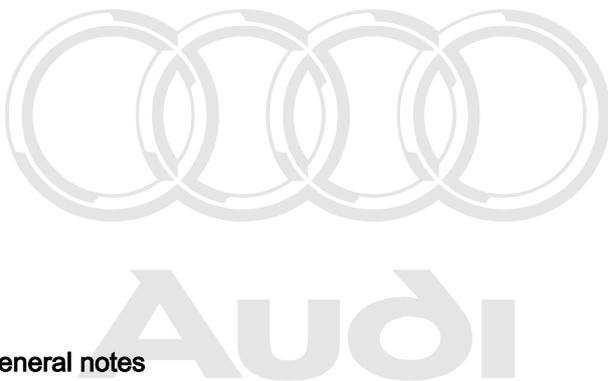


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- ◆ Spring-type clip pliers -VAS 5024 A-



- ◆ Drip tray for workshop hoist -VAS 6208-



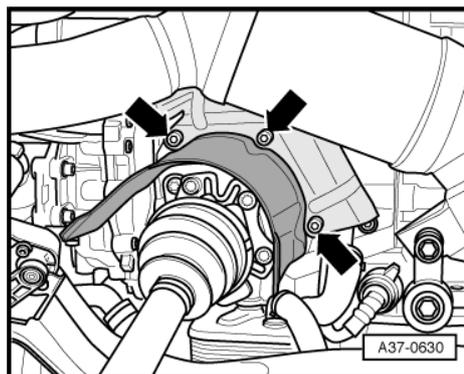
### General notes

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

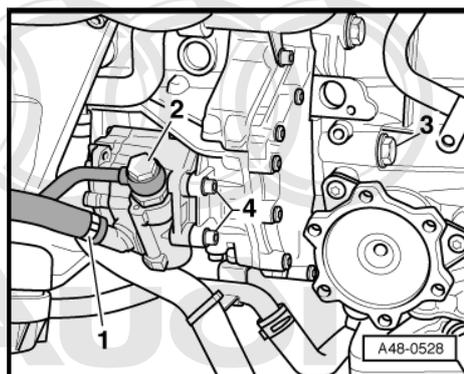
- ◆ Always check steering system for leaks if fluid level is low in reservoir.
  - ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
  - ◆ The power steering pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.
  - ◆ Renew oil seal and O-ring for power steering pump prior to installation.
- Position vehicle on lifting platform ⇒ [page 7](#) .
  - Extract hydraulic fluid from reservoir with used oil collection and extraction unit -V.A.G 1782- .
  - Remove engine ⇒ Rep. gr. 10 .
  - Leave engine in place on scissor-type assembly platform - VAS 6131- with gearbox attached.
  - Remove catalytic converter (left-side) ⇒ Rep. gr. 26 .



- Remove heat shield for drive shaft (left-side) -arrows-.
- Unbolt drive shaft from gearbox flange (left-side).
- Remove front wheel (left-side).
- Place drip tray for workshop hoist -VAS 6208- underneath to catch hydraulic fluid.

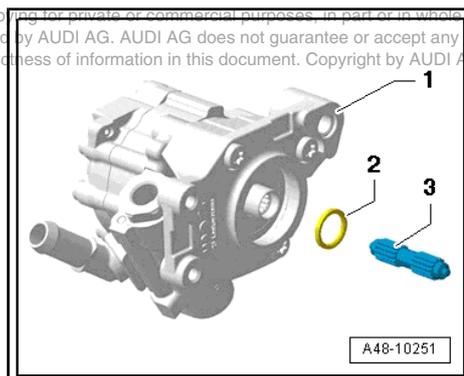


- Detach hose clip from suction hose -1-.
- Disconnect suction hose from power steering pump.
- Unscrew pressure pipe -2- from power steering pump.
- Remove bolts -4-.
- Remove bolt -3-.
- Detach power steering pump.



- If power steering pump -1- is renewed, seal -2- and drive shaft -3- must also be renewed.

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

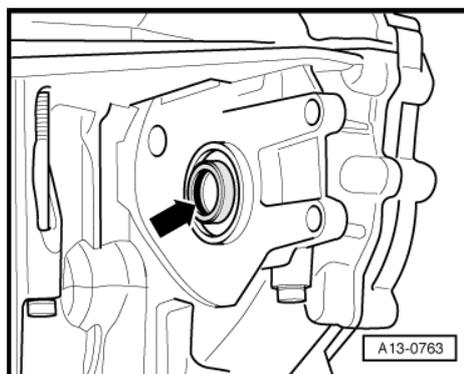


- Renew oil seal and O-ring for power steering pump -arrow- → Rep. gr. 15 .

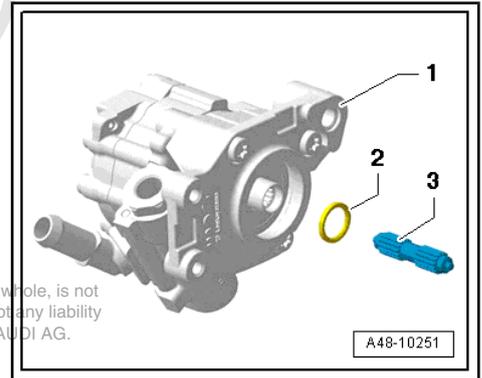
### Installing

Installation is carried out in the reverse sequence. Note the following points:

- ◆ Renew gaskets and seals.
- ◆ Clean off fluid in engine compartment where necessary.
- ◆ Always renew O-rings on suction line and drive shaft for power steering pump.
- ◆ Before fitting a new power steering pump, put in hydraulic fluid at the inlet and turn pump by hand until fluid flows out at the pressure outlet.
- ◆ Hose connections and hoses must be free of oil and grease before fitting.
- ◆ Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue „ETKA“ .



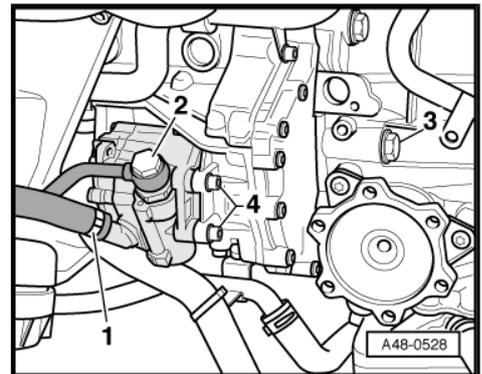
- Fit components of power steering pump as illustrated and install pump on engine.
- 1 - Power steering pump
- 2 - Seal
- 3 - Drive shaft; grease splines of drive shaft all round on both ends before re-installing. For correct version, refer to ⇒ ET-KA - Electronic parts catalogue .



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

- Connect pressure pipe -2- to power steering pump ⇒ [Item 6 \(page 427\)](#) .
- Tighten bolts -4- ⇒ [Item 3 \(page 427\)](#) .
- Tighten bolt -3- ⇒ [Item 6 \(page 427\)](#) .
- Connect suction hose -1- to power steering pump and secure with hose clip.
- Fill up with hydraulic fluid .

Installation position of suction hose on power steering pump ⇒ [page 432](#)



- Clean off fluid from subframe where necessary.
- Attach drive shaft ⇒ [page 74](#) .
- Install catalytic converter (left-side) ⇒ Rep. gr. 26 .
- Install engine ⇒ Rep. gr. 10 .
- Tighten subframe bolts to torque but not to extra angle (only tighten bolts fully after checking wheel alignment).



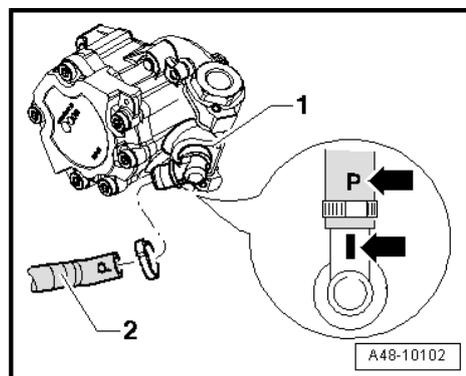
**WARNING**

*All bolts and nuts must be fully tightened according to specifications before the vehicle is driven on public roads.*

- Bleed steering system ⇒ [page 330](#) .
- Check hydraulic fluid level ⇒ [page 326](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .
- Check and adjust wheel alignment ⇒ [page 245](#) .

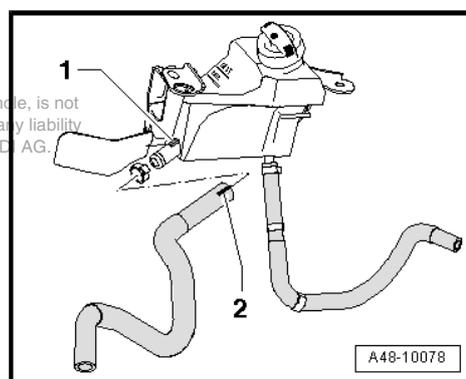
## 11.4 Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 10-cylinder petrol engine)

- Marking -P- on suction hose -2- must be aligned with seam on pump -1- -arrows-.

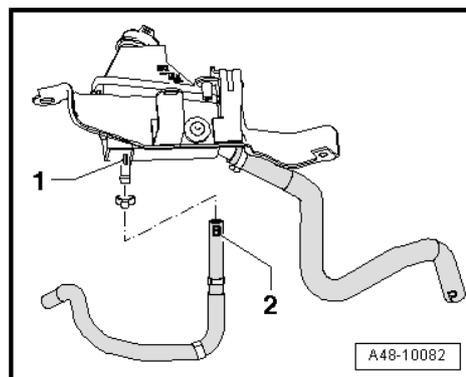


- Marking on suction hose -2- must be aligned with moulded seam -1- on reservoir.

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



- Marking on return hose -2- must be aligned with moulded seam -1- on reservoir.



## 12 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 12-cylinder petrol engine)

⇒ „12.1 Exploded view (vehicles with 12-cylinder petrol engine)“, page 433

⇒ „12.2 Checking delivery pressure of power steering pump (vehicles with 12-cylinder petrol engine)“, page 436

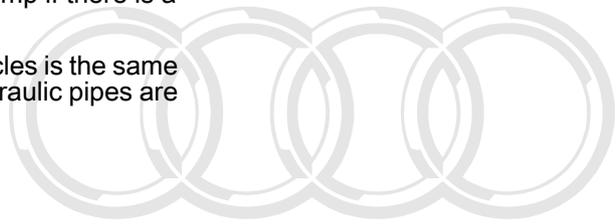
⇒ „12.3 Removing and installing power steering pump (vehicles with 12-cylinder petrol engine)“, page 440

⇒ „12.4 Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 12-cylinder petrol engine)“, page 450

### 12.1 Exploded view (vehicles with 12-cylinder petrol engine)

There is no provision for repairing the power steering pump. If problems are reported, trace the fault by means of a pressure test and a leakage test. Renew the power steering pump if there is a fault.

The hydraulic fluid circuit on right-hand drive vehicles is the same as on left-hand drive vehicles, except that the hydraulic pipes are extended from left to right on the steering box.



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.

**Note**

- ◆ Always check steering system for leaks if fluid level in reservoir is low.
- ◆ If leakage is visible at the pipe connections first tighten connections and wipe dry, then check for leaks again.
- ◆ Pump is supplied without fluid filling. Prior to installation, the pump must therefore always be filled with hydraulic fluid and turned by hand. Otherwise, there is a possibility of pump damage or noise while driving.

**1 - Servotronic steering box**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“

**2 - Expansion hose (pipe section)****3 - Union nut, 45 Nm****4 - Non-return valve**

- Pressed into expansion hose (pipe section)  
⇒ [Item 2 \(page 434\)](#)

**5 - Cap with dipstick**

- Checking fluid level  
⇒ [page 326](#)

**6 - Bolt, 9 Nm****7 - Rubber mounting**

- For reservoir

**8 - Reservoir**

- When filling system, put in hydraulic fluid
- Location/renewing  
⇒ [page 435](#)
- Fitting reservoir in bracket ⇒ [page 435](#)

**9 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

**10 - Bolt, 20 Nm****11 - Bracket**

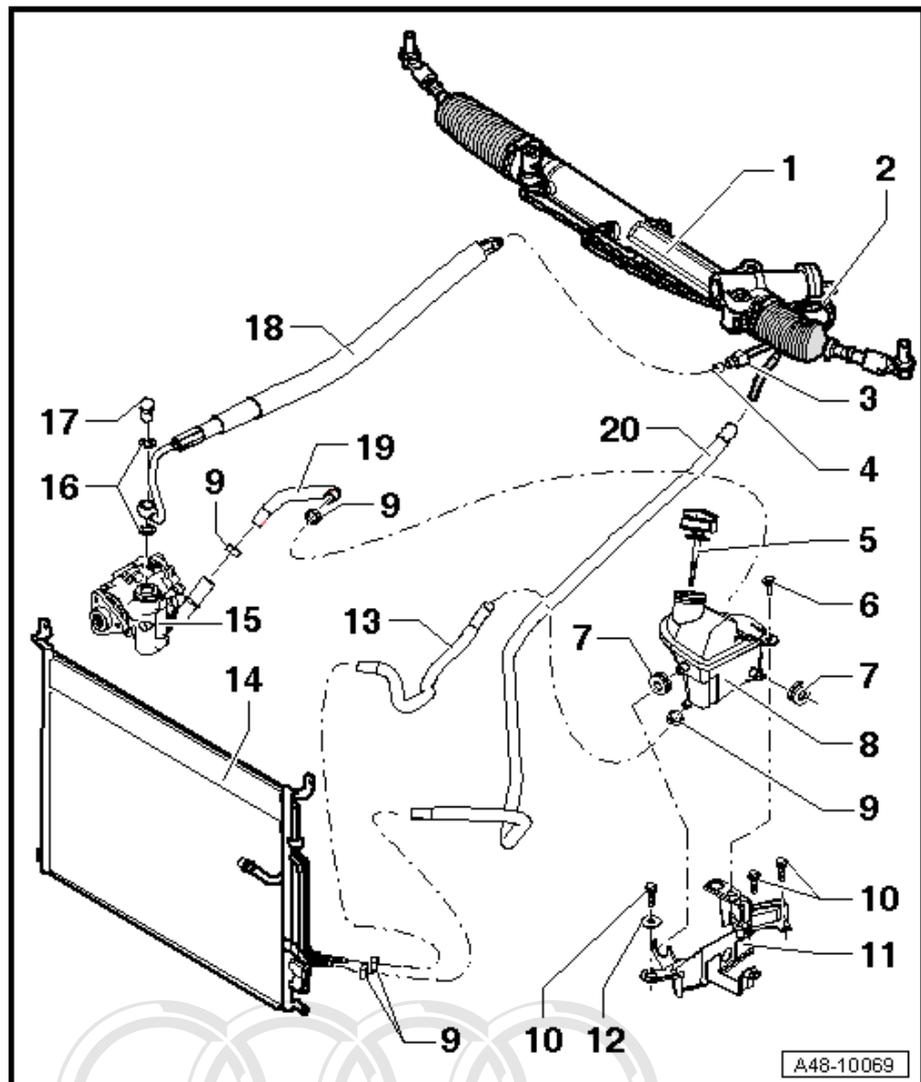
- For reservoir
- Location/renewing ⇒ [page 435](#)

**12 - Washer****13 - Return hose**

- Between reservoir and hydraulic fluid cooler
- Installation position on reservoir ⇒ [page 450](#)

**14 - Hydraulic fluid cooler****15 - Power steering pump**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing



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

- After replacement, check alignment of pulley ⇒ [page 448](#)
- Checking delivery pressure ⇒ [page 436](#)
- Removing and installing ⇒ [page 440](#)

**16 - Seal**

- Always renew

**17 - Banjo bolt, 47 Nm**

**18 - Expansion hose**

- Note attachment of return hose/expansion hose in vicinity of longitudinal member (front) ⇒ [page 436](#)

**19 - Suction hose**

- Between reservoir and power steering pump
- Installation position on reservoir and power steering pump ⇒ [page 450](#)

**20 - Return hose**

- Between servotronic steering box and hydraulic fluid cooler
- Note attachment of return hose/expansion hose in vicinity of longitudinal member (front) ⇒ [page 436](#)
- Note attachment at front end ⇒ [page 436](#)
- Note attachment at radiator ⇒ [page 436](#)

**Location of bracket/reservoir**

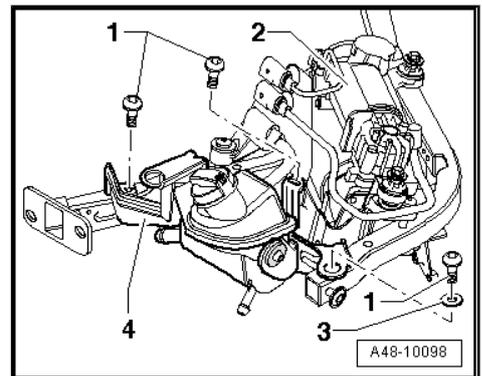
Bracket -4- with reservoir is located next to air supply unit -2- for self-levelling suspension.

1 - Bolt, 20 Nm

3 - Washer (only on front bolt)

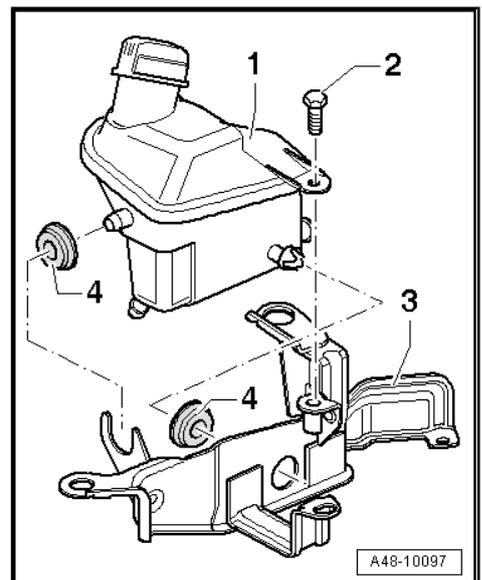
Remove following components in order to renew reservoir:

- ◆ Front wheel housing liner (front section, left-side) ⇒ Rep. gr. 66
- ◆ Air cleaner (left-side) ⇒ Rep. gr. 13
- ◆ Move lock carrier to service position ⇒ Rep. gr. 50



**Fitting reservoir in bracket**

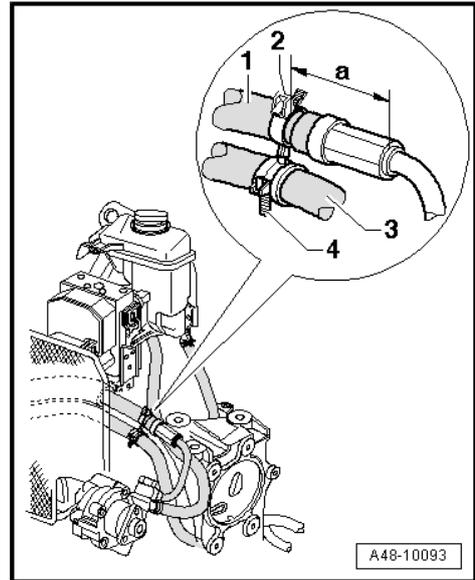
- Insert reservoir -1- with rubber grommets -4- into bracket -3-.
- Tighten bolt -2- to 9 Nm.





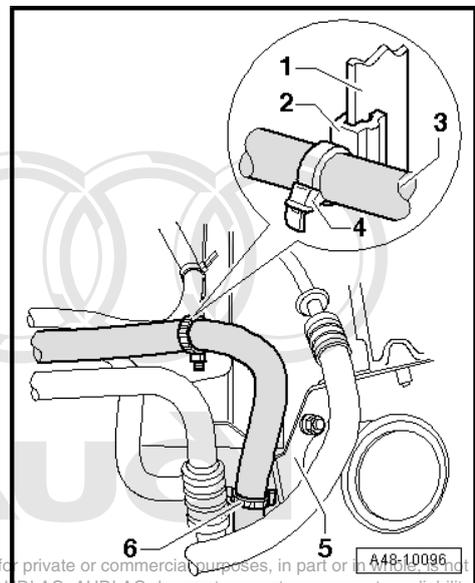
### Attachment of expansion hose/return hose in vicinity of longitudinal member (front)

- Secure cable tie -2- on expansion hose -1-.
- Dimension -a- must be 70 mm.
- Secure cable tie -4- on return hose -3-.



### Attachment of return hose at front end

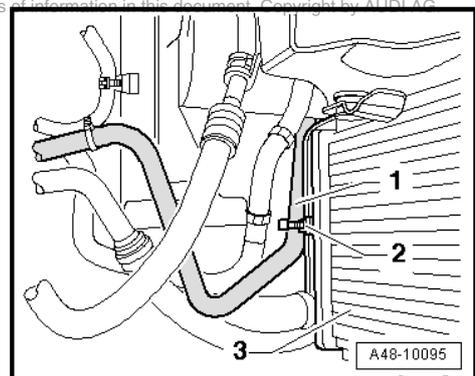
- Secure return hose -3- on front end -1- with bracket -2- and cable tie -4-.
- Secure return hose -3- on bracket for secondary air pump -5- with bracket -6-.



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

### Attachment of intake hose on radiator

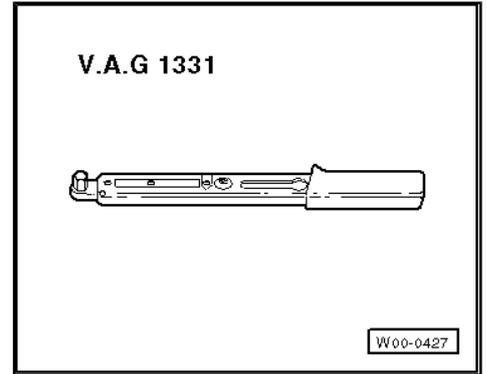
- Secure return hose -1- on radiator -3- with cable tie -2-.



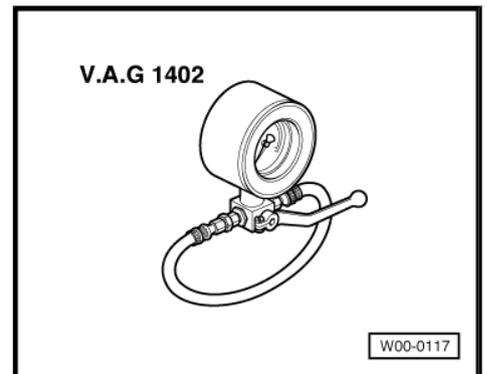
## 12.2 Checking delivery pressure of power steering pump (vehicles with 12-cylinder petrol engine)

Special tools and workshop equipment required

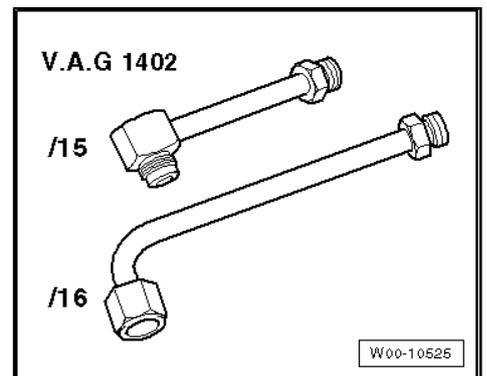
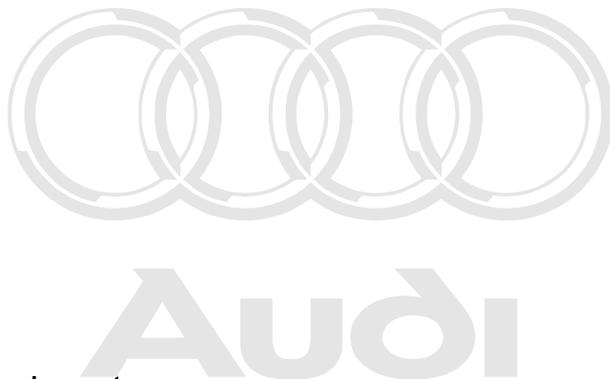
- ◆ Torque wrench -V.A.G 1331-



- ◆ Power steering tester -V.A.G 1402-



- ◆ Adapter -V.A.G 1402/15- with adapter -V.A.G 1402/16-



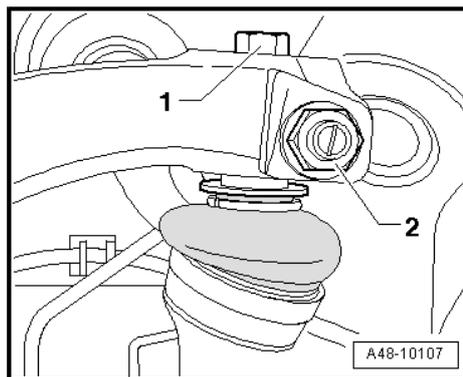
#### Test requirements:

- Belt condition/ belt tension OK
- No leaks in system
- Hoses and pipes not kinked or constricted
- Position vehicle on lifting platform ⇒ [page 7](#) .
- Remove wheel trim; on light-alloy wheels, pull off trim cap (use puller in vehicle tool kit).
- Remove front wheels.
- Secure brake disc with one wheel bolt.
- Remove rear section of wheel housing liner (front left) ⇒ Rep. gr. 66 .



- Unscrew bolt -1- and nut -2-.
- Pull or press track rod downwards out of steering arm.

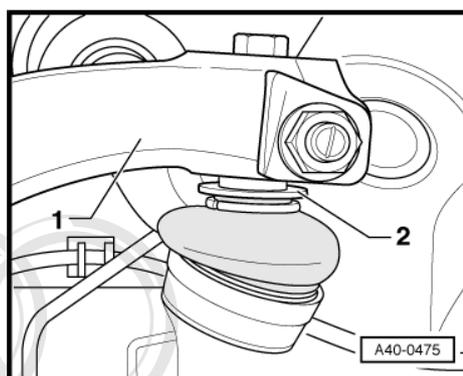
Do not attempt to enlarge slots in wheel bearing housing using a chisel or similar.



**i** Note

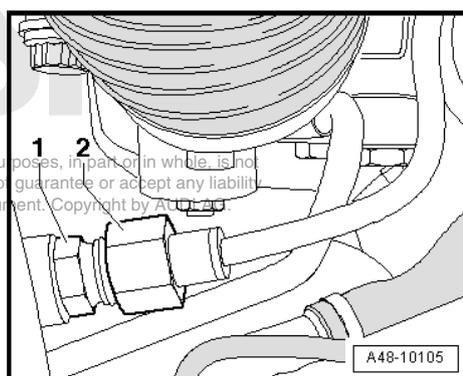
- ◆ Do not apply chisel or similar between steering arm -1- and seal -2- on track rod ball joint to press out track rod, as this would damage seal.
- ◆ When pressing track rod out of steering arm, apply pressure only to end of track rod ball joint, or knock out end of joint using a wooden or rubber mallet.

- Lift track rod clear and tie up.
- Turn steering wheel to left.
- Place a cloth underneath to catch hydraulic fluid.

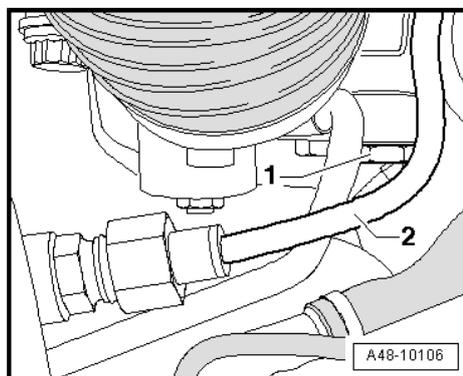


- Unscrew union nut -2- on pipe. Counterhold at hexagon flats -1- on expansion hose.

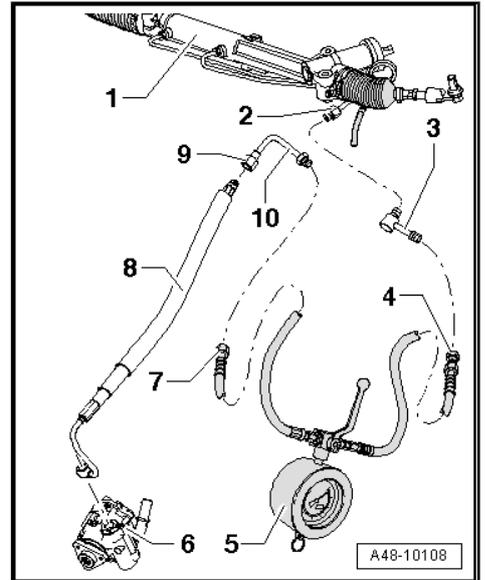
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Audi AG.



- Slacken banjo bolt -1- on steering box, but do not remove.
- Turn pipe -2- outwards and tighten banjo bolt -1- again.



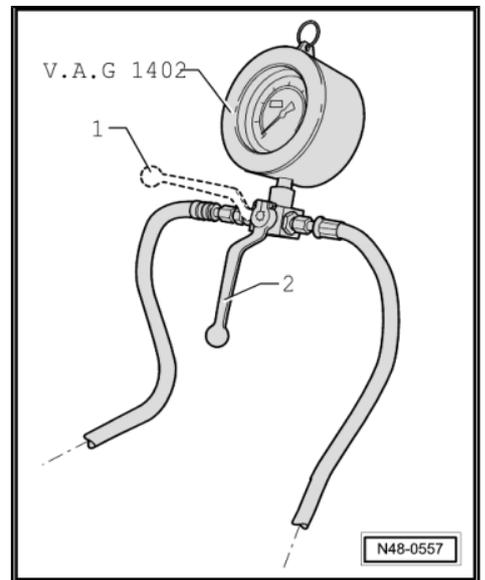
- Connect power steering tester -V.A.G 1402- as shown.
- 1 - Servotronic steering box
- 2 - Union nut, 45 Nm
- 3 - Adapter -V.A.G 1402/15-
- 4 - Union nut from hose from adapter set -V.A.G 1402/6-
- 5 - Pressure gauge -V.A.G 1402-
- 6 - Power steering pump
- 7 - Union nut from hose from adapter set -V.A.G 1402/6-
- 8 - Expansion hose
- 9 - Union nut from adapter -V.A.G 1402-
- 10 - Adapter -V.A.G 1402/16-



- Make sure lever on pressure gauge is in position -2-.
- Start engine but do not press accelerator.
- Turn steering wheel approx. 10 times from lock to lock.
- Switch off engine and top up hydraulic fluid in reservoir if necessary.
- Then check delivery pressure.
- Start engine, close cut-off valve (position -1-) with engine idling and read off pressure.

**Note**

- ◆ *To avoid damaging the pump, please note the following points:*
- ◆ *Cut-off valve of pressure gauge must not remain closed for more than 10 seconds during this test.*
- ◆ *Start engine and let it idle without pressing accelerator.*
- ◆ *Read off pump pressure at idling speed immediately after starting engine (have second mechanic take reading if necessary).*
- ◆ *The pressure will drop during the test; the highest pressure reading is therefore the required test value.*
- Read off gauge pressure with engine running at idling speed (measurement must not take longer than 10 seconds).



**Delivery pressure specification: 125...130 bar**

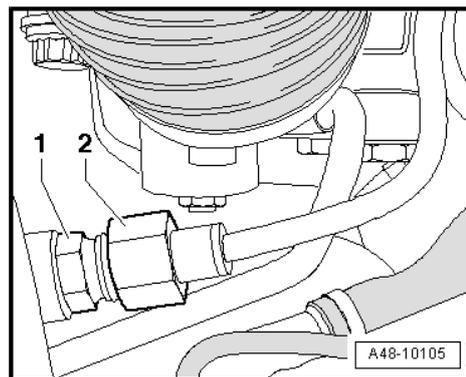
Renew power steering pump if specification is not attained  
 => [page 440](#).

- Switch off engine.
- Remove power steering tester -V.A.G 1402-

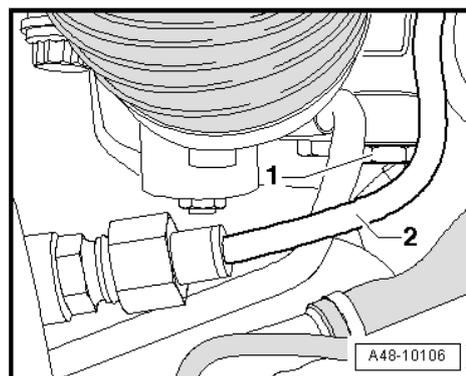
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- Tighten union nut -2- on pipe ⇒ [Item 3 \(page 434\)](#) . Counterhold at hexagon flats -1- on expansion hose.



- Install banjo bolt -1- with new seals ⇒ [Item 19 \(page 296\)](#) .
- Check hydraulic fluid level ⇒ [page 326](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Install rear section of wheel housing liner (front left) ⇒ Rep. gr. 66 .
- Set down vehicle on its wheels ⇒ [page 7](#) .



## 12.3 Removing and installing power steering pump (vehicles with 12-cylinder petrol engine)

Power steering pump - exploded view:



### Note

- ◆ *Renew seals.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*
- ◆ *Use only hydraulic fluid .*
- ◆ *When renewing power steering pump or bracket for power steering pump, always check alignment of pulleys on A/C compressor and steering pump.*



# 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.

**1 - Power steering pump**

- For correct version refer to ⇒ Electronic parts catalogue „ETKA“
- Fill with hydraulic fluid before installing
- Checking delivery pressure ⇒ [page 436](#)
- Removing and installing ⇒ [page 441](#)

**2 - Shim**

- Different versions possible. Refer to ⇒ Electronic parts catalogue „ETKA“

**3 - Belt pulley**

**4 - Bolt, 23 Nm**

**5 - Bolt, 23 Nm**

**6 - Bracket**

- After replacement, check alignment of pulley ⇒ [page 448](#)

**7 - Sleeve**

**8 - Bolt, 23 Nm**

**9 - Sleeve**

**10 - Bolt, 32 Nm**

**11 - Seal**

- Always renew

**12 - Banjo bolt, 47 Nm**

**13 - Pressure hose**

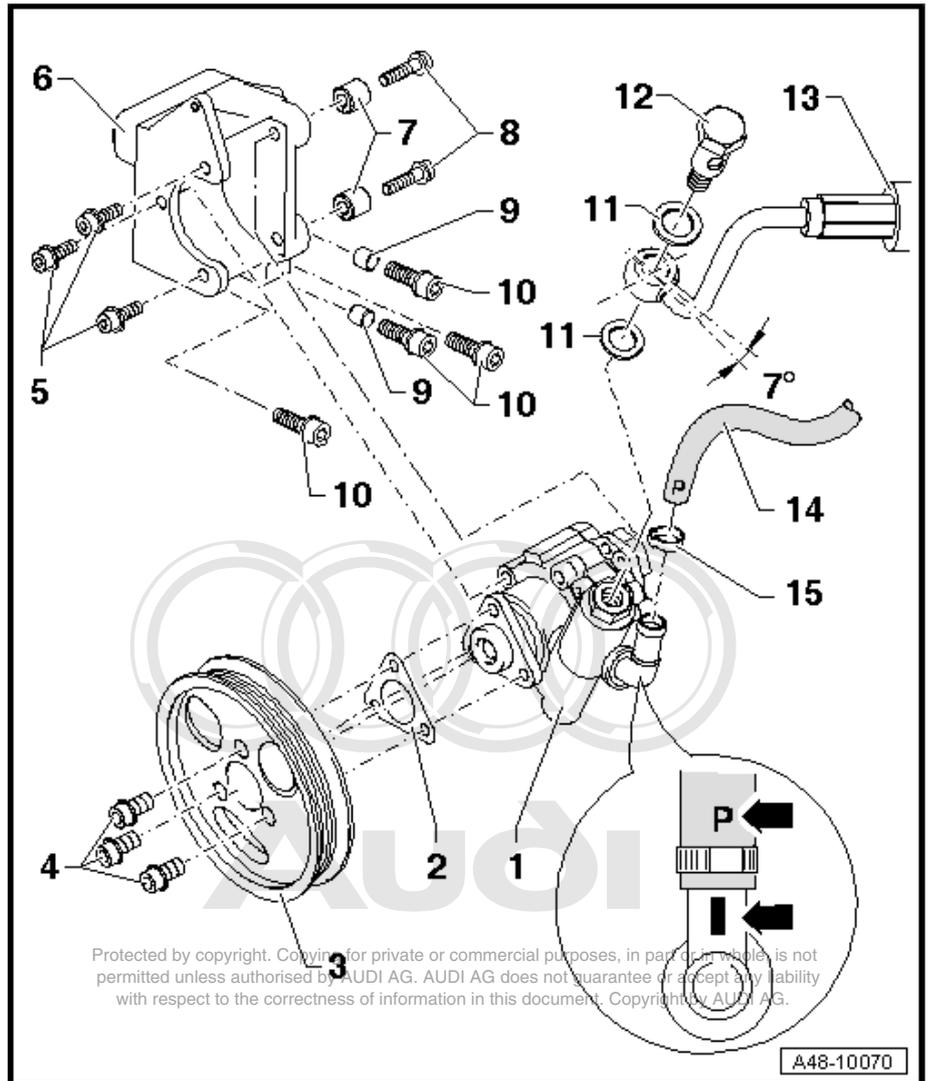
- Note correct position: Angle between pipe connection and axis of pump is approx. 7°

**14 - Suction hose**

- Marking -P- on suction hose must be aligned with seam on pump.

**15 - Hose clip**

- Tighten using hose clip pliers -V.A.G 1275- or locking pliers for steering box -VAS 6199-
- Always renew

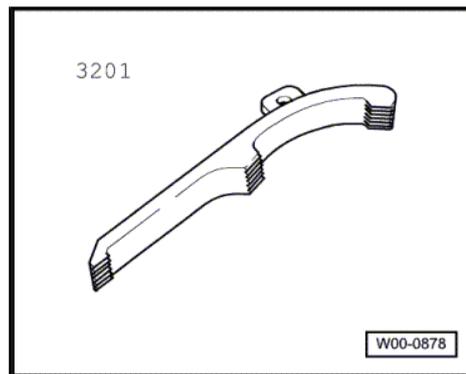


**Removing and installing power steering pump:**

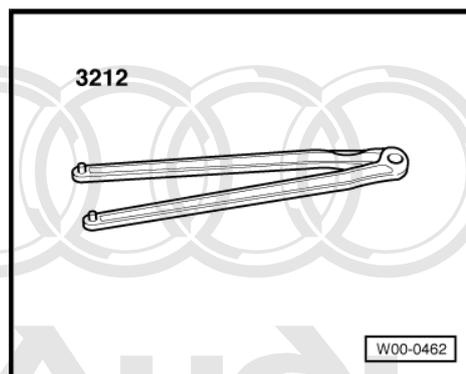
**Special tools and workshop equipment required**



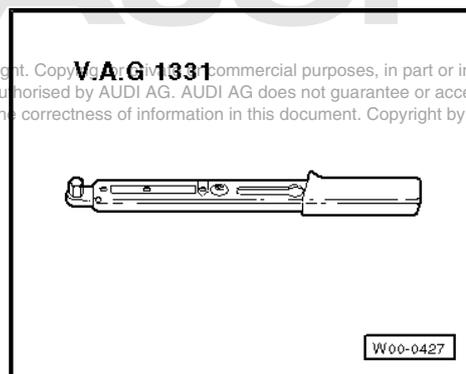
◆ Aligning gauge -3201-



◆ Pin wrench -3212-

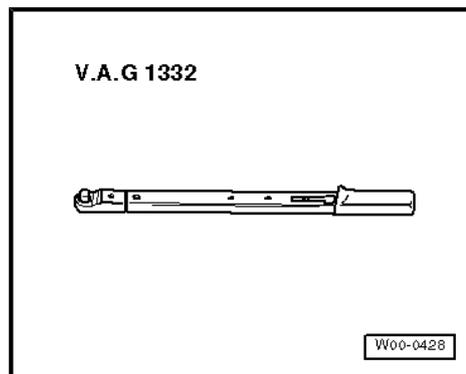


◆ Torque wrench -V.A.G 1331-

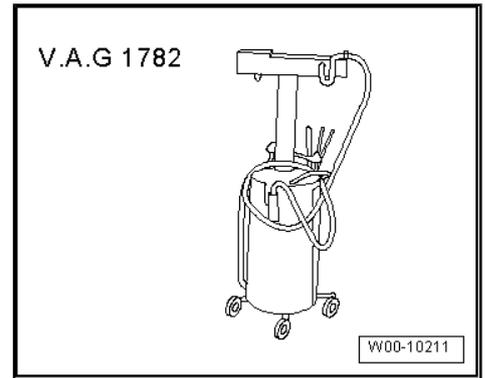


Protected by copyright. Copying for private use for commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

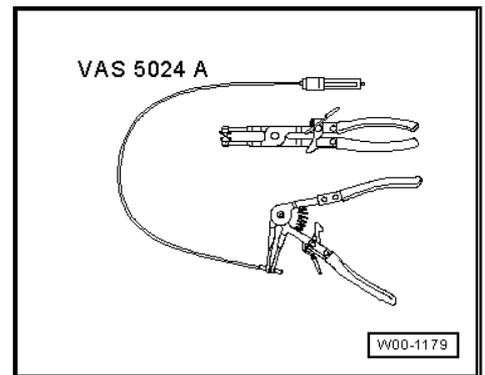
◆ Torque wrench -V.A.G 1332-



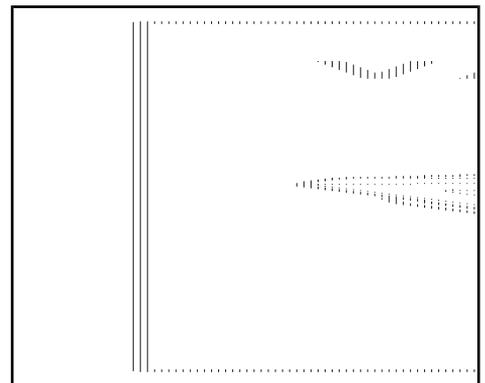
- ◆ Used oil collection and extraction unit -V.A.G 1782-



- ◆ Spring-type clip pliers -VAS 5024 A-



- ◆ Drip tray for workshop hoist -VAS 6208-



- ◆ Hydraulic fluid

### Removing



#### Note

*To prevent any damage to the poly V-belt, it is important to check the alignment of the pulleys on the air conditioner compressor and the power steering pump.*

**After replacing the following components you must check the alignment of the poly V-belt.**

- ◆ Power steering pump
- ◆ Bracket for power steering pump
- Position vehicle on lifting platform → page 7
- Remove left front wheel.

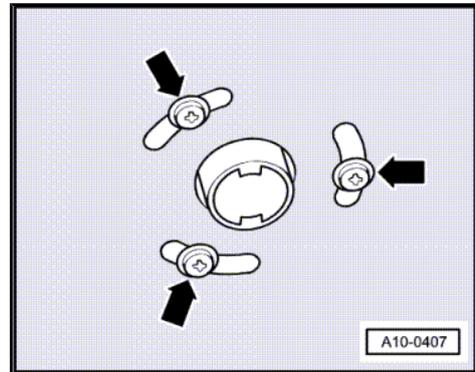
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted. Audi AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



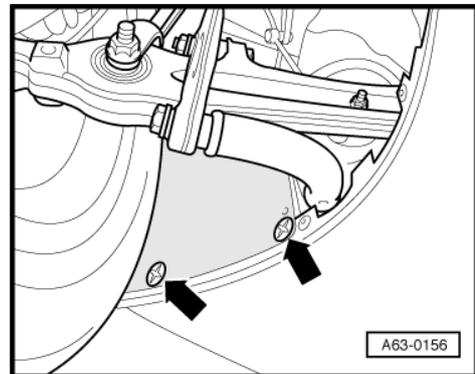
**Note**

Secure brake disc with 2 wheel bolts.

- On vehicles with auxiliary heater, remove bolts -arrows- for exhaust pipe of auxiliary/additional heater at noise insulation.



- Open quick-release fasteners -arrows- on left and right at bottom of wheel housing liners.

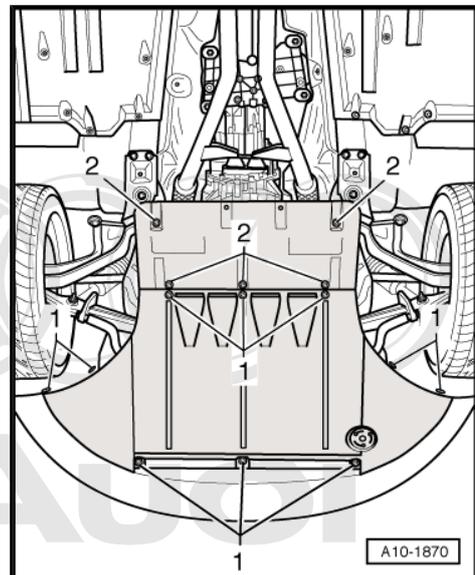


- Open quick-release fasteners -1- and remove noise insulation (front).



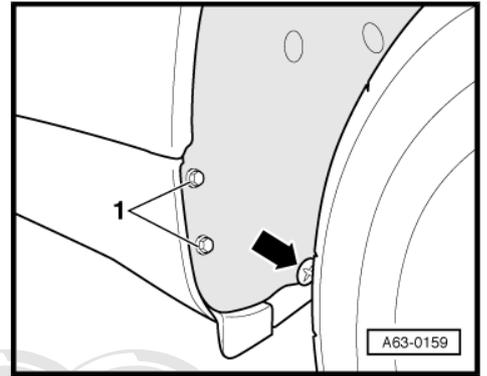
**Note**

- ◆ Press in clamping pins on wheel housing liners only approx. 5 mm into expanding clips, and not all the way through.
- ◆ This releases the expanding clip so it can be pulled out.
- ◆ On installation, the clamping pin is pushed back and the expanding clip can be reused.

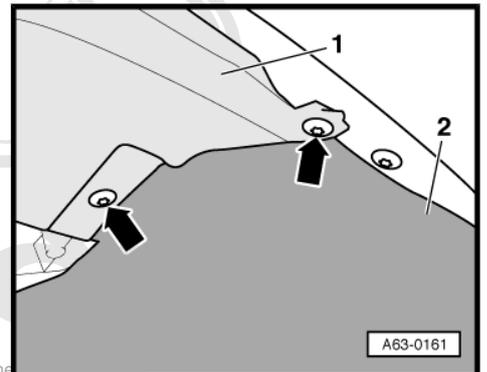


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Using a screwdriver, press clamping pins of expanding clips -1- on wheel housing liner (front) approx. 5 mm deep into expanding clips.
- Pull out expanding clip.
- Unscrew bolt -2- from wheel housing liner.



- Unscrew two bolts -arrows- from wheel housing liner (front section).
- Wheel housing liner (rear section) -2- does not need to be removed.



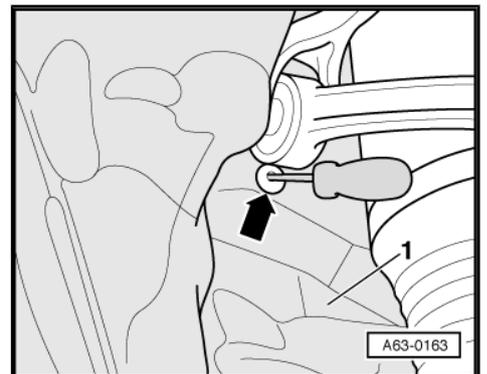
- Unscrew top bolt -arrow- from wheel housing liner (front)

 **Note**

- ◆ Press in clamping pins on wheel housing liners only approx. 5 mm into expanding clips, and not all the way through.
- ◆ This releases the expanding clip so it can be pulled out.
- ◆ On installation, the clamping pin is pushed back and the expanding clip can be reused.

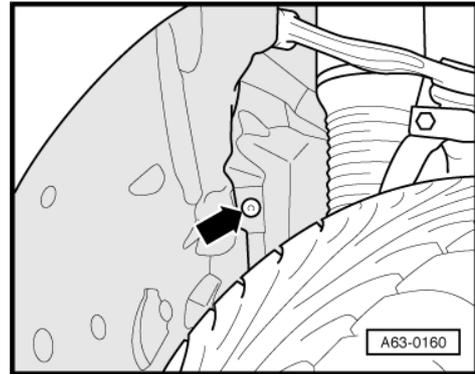


- Using a screwdriver, press clamping pins of expanding clips -arrow- on wheel housing liner (front) approx. 5 mm deep into expanding clips.
- Pull out expanding clip.

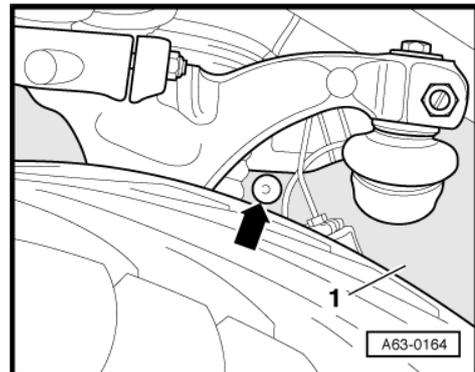




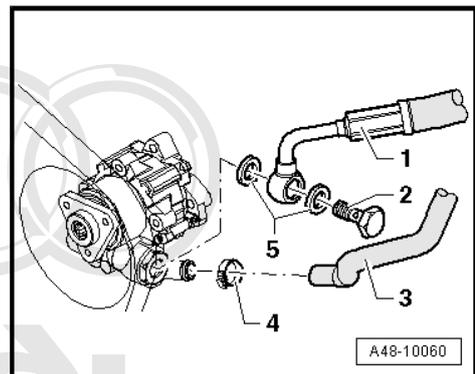
- Remove expanding clip -arrow- in upper section of wheel housing liner (front) in the same way.



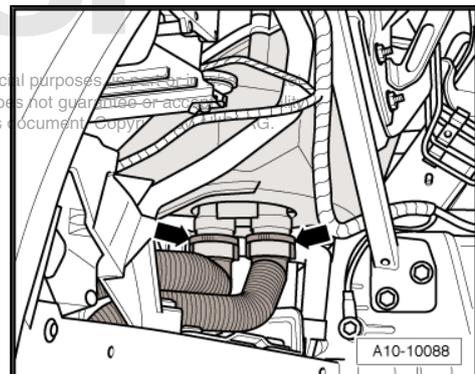
- Remove expanding clip -arrow- in rear section of wheel housing liner (front) -1- in the same way.
- Place drip tray for workshop hoist -VAS 6208- underneath to catch hydraulic fluid.



- Detach hose clip -4- from suction hose -3-.
- Disconnect suction hose and move hose to one side.
- Remove banjo bolt -2- for expansion hose -1-.
- Seal off connections with plugs.

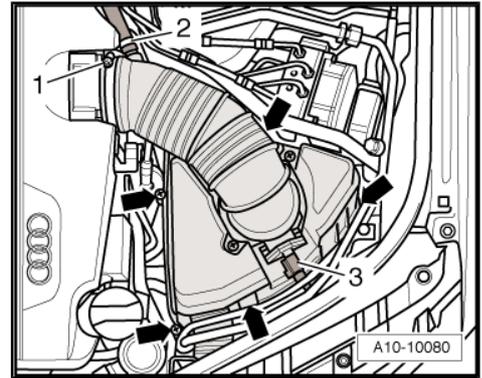


- Disconnect both air intake hoses -arrows- at bottom of air cleaner housing (bottom section, left-side). Press release tabs together to disconnect.

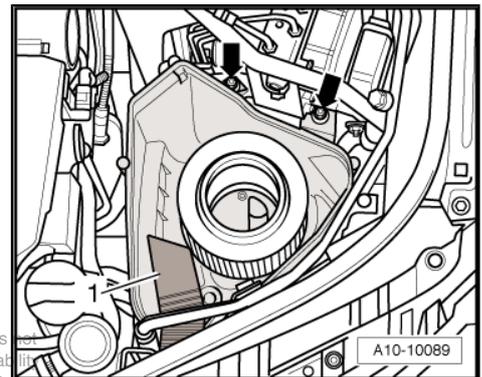


Protected by copyright. Copying for private or commercial purposes is prohibited without the written permission of Audi AG. Audi AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copying is prohibited.

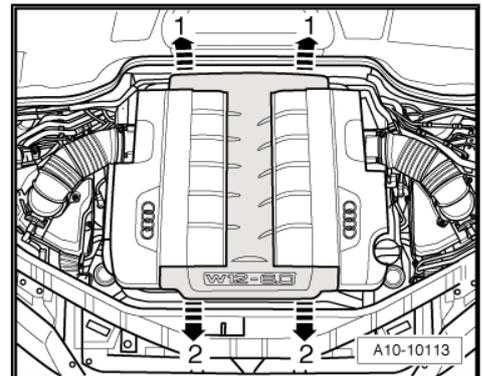
- Unplug electrical connector -3- for air mass meter 2 -G246- .
- Detach hose -2- from air intake hose.
- Detach air intake hose -1- at intake manifold.
- Unscrew bolts -arrows-.
- Detach top section of air cleaner housing (left-side).



- Remove air duct -1-.
- Unscrew bolts -arrows-.
- Take out bottom section of air cleaner housing (left-side).



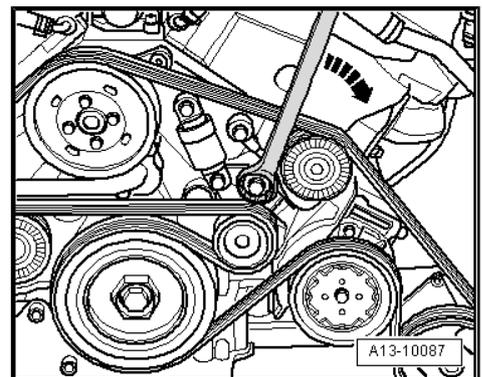
- Carefully pull engine cover panel upwards (starting at the rear and in the centre) -arrows 1-.
- Then pull engine cover panel forwards off intake manifold -arrows 2-.



- Swivel tensioner in direction of -arrow- to slacken off poly V-belt.
- Detach poly V-belt from power steering pump pulley, then release tensioner.

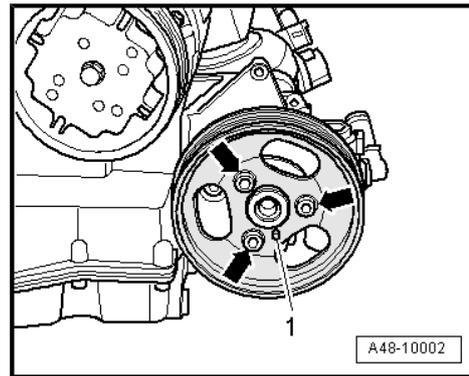
**i** Note

*Leave poly V-belt in position on the other pulleys.*





- Unbolt pulley -1- from power steering pump -arrows-.



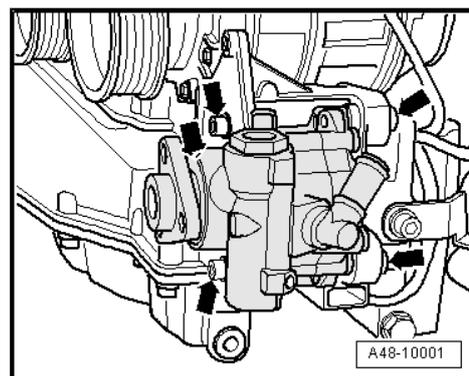
- Unscrew bolts -arrows- and take off power steering pump.

### Installing

Installation is carried out in the reverse sequence. Note the following points:

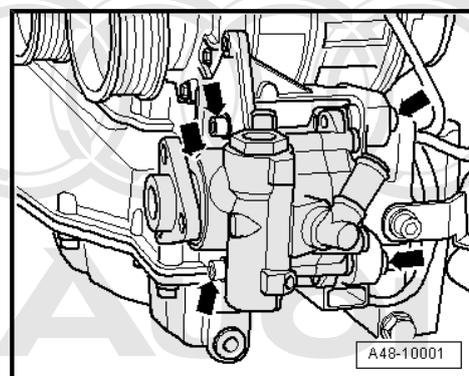
#### Note

- ◆ Renew seals and O-rings.
- ◆ Before fitting a new pump, put in hydraulic fluid at the inlet and turn pump by hand until fluid flows out at the pressure outlet.
- ◆ Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ *Electronic parts catalogue „ETKA“*.



- Turn hub by hand until fluid comes out at pump outlet.

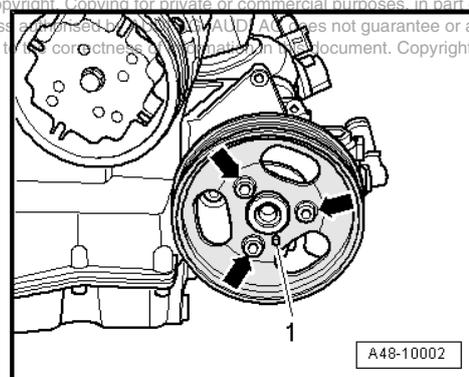
- Tighten bolts -arrows- ⇒ [Item 5 \(page 441\)](#) and ⇒ [Item 8 \(page 441\)](#) .



### Checking and adjusting pulley alignment

Installation position: projection -1- on poly V-belt pulley faces in direction of travel

- Tighten bolts -arrows- on power steering pump pulley ⇒ Rep. gr. 13 .



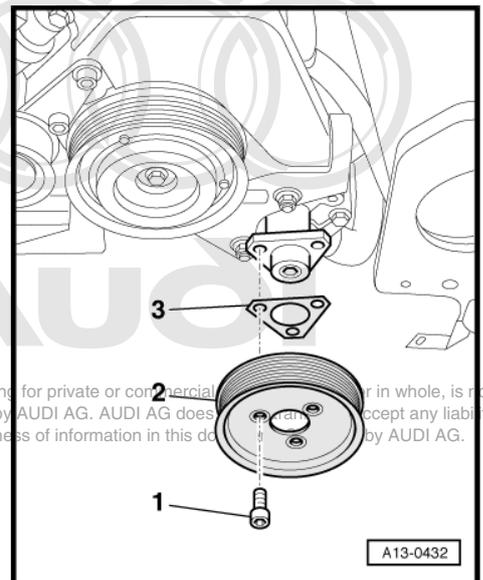
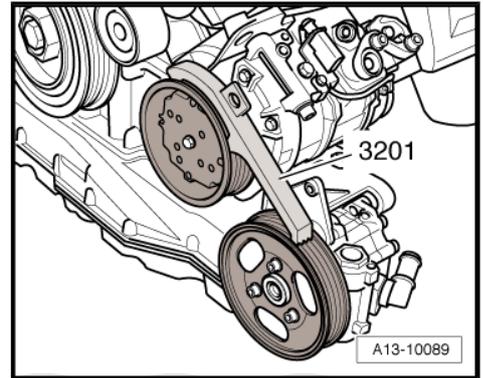
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless expressly permitted by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of this technical document. Copyright by AUDI AG.

- Position aligning gauge -3201- on pulley of air conditioner compressor.
- Identify central position of power steering pump shaft by moving shaft backwards and forwards in axial direction.

When in its central position, the belt pulley on the power steering pump must be in alignment with the pulley on the air conditioner compressor.

If the two pulleys are not aligned:

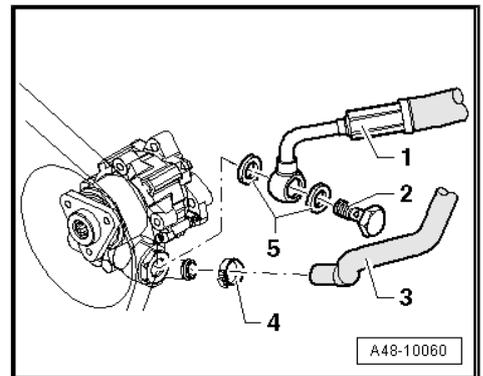
- Use shims -3- of appropriate thickness (as listed in ⇒ Electronic parts catalogue „ETKA“ ) to adjust alignment between power steering pump pulley -2- and A/C compressor pulley.
- Then re-check alignment of poly V-belt pulleys with aligning gauge -3201- . Repeat adjustment if necessary.



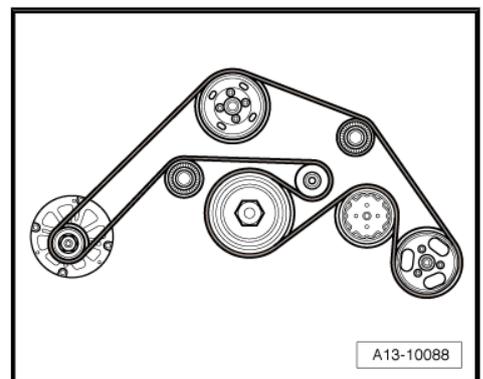
Protected by copyright. Copying for private or commercial use, in whole or in part, is not permitted unless authorised by AUDI AG. AUDI AG does not accept any liability with respect to the correctness of information in this document.

### Installing (continued)

- Fit new seals -5- on banjo bolt.
- Tighten banjo bolt -2- ⇒ [Item 12 \(page 441\)](#) .
- Connect suction hose -3- and secure with new hose clip -4- . Note correct installation position ⇒ [page 371](#) .
- Fill up with hydraulic fluid .
- Clean off fluid in engine compartment where necessary.

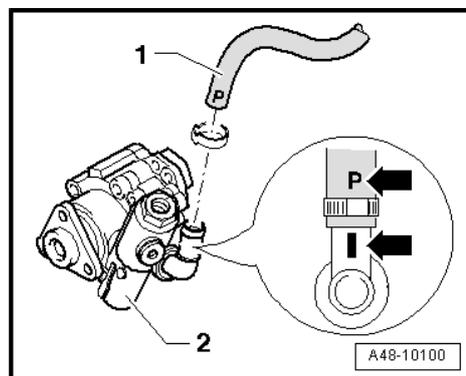


- Fit poly V-belt ⇒ Rep. gr. 13 .
- Check hydraulic fluid level ⇒ [page 327](#) .
- Bleed steering system ⇒ [page 330](#) .
- Check steering system for leaks ⇒ [page 331](#) .
- Set down vehicle on its wheels ⇒ [page 7](#) .

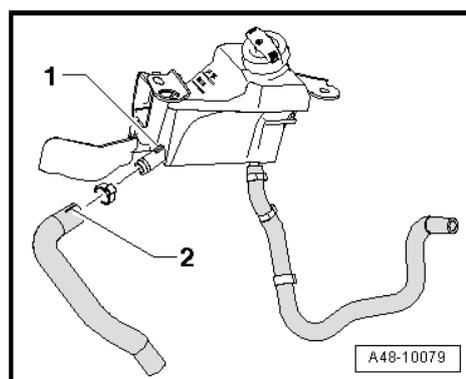


## 12.4 Installation position of suction hoses at power steering pump and fluid reservoir (vehicles with 12-cylinder petrol engine)

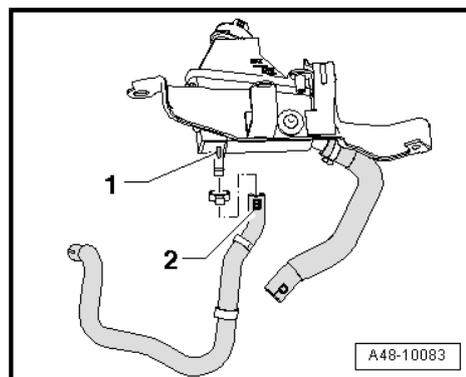
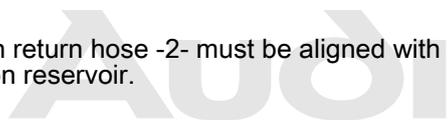
- Marking -P- on suction hose -1- must be aligned with seam on pump -2- -arrows-.



- Marking on suction hose -2- must be aligned with moulded seam -1- on reservoir.



- Marking on return hose -2- must be aligned with moulded seam -1- on reservoir.



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