

Workshop Manual Audi A2 2001 ➤

Running gear, front-wheel drive

Edition 07.2003



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

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.

Contents

00 - Technical data	1
1 Technical data	1
1.1 Running gear	1
1.2 Steering	1
2 General notes	2
3 Disposal of fluid-filled components to meet environmental requirements	3
3.1 Releasing gas in front gas-filled shock absorbers	3
3.2 Releasing gas in rear gas-filled shock absorbers	4
3.3 Draining power steering box	5
3.4 Disposal of motor/pump unit	5
4 Checking shock absorbers	7
4.1 Leaks at shock absorbers	7
4.2 Noises from shock absorbers	7
4.3 Checking shock absorbers when removed	7
4.4 Checking shock absorbers on shock tester	8
40 - Front suspension	10
1 Subframe (basic running gear): exploded view	10
1.1 Locating subframe	12
1.2 Removing and installing anti-roll bar	14
1.3 Checking swivel joint	16
1.4 Removing and installing swivel joint (vehicles with fabricated wishbone and bolt-on swivel joint)	16
1.5 Installation position of swivel joints	19
1.6 Removing and installing wishbone with swivel joint and suspension bracket (vehicles with forged-steel wishbone)	20
1.7 Removing and installing wishbone with suspension bracket (vehicles with fabricated wishbone and bolt-on swivel joint)	23
1.8 Separating and assembling wishbone and suspension bracket	25
1.9 Renewing bonded rubber bush for suspension bracket	28
1.10 Renewing bonded rubber bush for suspension bracket using V.A.G 1459 B	30
1.11 Removing and installing subframe	34
2 Subframe (1.2 TDI running gear): exploded view	37
2.1 Locating subframe	38
2.2 Removing and installing anti-roll bar	39
2.3 Checking swivel joint	41
2.4 Removing and installing wishbone with swivel joint and suspension bracket	41
2.5 Separating and assembling wishbone and suspension bracket	44
2.6 Removing and installing subframe	46
3 Wheel bearing (basic running gear): exploded view	49
3.1 Removing and installing front wheel hub/wheel bearing unit with wheel bearing housing installed	51
4 Wheel bearing (1.2 TDI running gear): exploded view	58
4.1 Removing and installing front wheel hub/wheel bearing unit with wheel bearing housing installed	60
5 Suspension strut (basic running gear): exploded view	65
5.1 Removing and installing suspension strut/coil spring	66
6 Suspension strut (1.2 TDI running gear): exploded view	71
6.1 Removing and installing suspension strut/coil spring	72
7 Drive shafts (basic running gear)	76
7.1 Removing and installing drive shafts (vehicles with forged-steel wishbone)	76
7.2 Removing and installing drive shafts (vehicles with fabricated wishbone)	80

7.3	Servicing drive shaft with constant velocity joint	83
7.4	Checking outer constant velocity joint	89
7.5	Checking inner constant velocity joint	91
7.6	Servicing drive shaft with triple roller joint AAR 2000	92
7.7	Dismantling and assembling triple roller joint AAR 2000	95
8	Drive shafts (1.2 TDI running gear)	100
8.1	Removing and installing drive shafts	100
8.2	Servicing drive shaft	103
8.3	Checking outer constant velocity joint	109
42	Rear suspension	111
1	Servicing rear axle	111
1.1	Removing and installing rear axle	111
1.2	Rear axle beam (drum brakes; basic running gear and 1.2 TDI running gear): exploded view	114
1.3	Rear axle beam (disc brakes): exploded view	118
1.4	Removing and installing bonded rubber bush	119
1.5	Removing and installing hydraulic bonded rubber bush	129
1.6	Removing and installing shock absorber/spring	136
1.7	Shock absorber: exploded view	138
2	Servicing wheel bearing	141
2.1	Wheel bearing (basic running gear and 1.2 TDI running gear): exploded view	141
2.2	Removing and installing wheel bearing/hub unit (basic running gear)	143
2.3	Removing and installing wheel bearing/hub unit (1.2 TDI running gear)	145
2.4	Wheel bearing (disc brakes): exploded view	148
2.5	Removing and installing wheel bearing/hub unit (disc brakes)	150
44	Wheels, tyres, vehicle geometry	153
1	Wheels and tyres	153
1.1	General notes	153
1.2	Forged light-alloy wheel	153
1.3	Forged light-alloy wheel for 1.2 TDI running gear	155
1.4	Steel wheel	156
1.5	Steel wheel (winter)	157
1.6	Light-alloy wheel, 6-spoke design (6J x 15, ET 37)	158
1.7	Light-alloy wheel, 6-spoke design (6J x 16, ET 35)	159
1.8	Light-alloy wheel (5-spoke design)	160
1.9	Balancing wheels on vehicle	160
1.10	Instructions for changing/fitting wheels	161
2	Wheel alignment	164
2.1	General information	164
2.2	Wheel alignment specifications	165
2.3	Requirements for test	166
2.4	Measurement procedure	167
2.5	Centralising camber at front wheels	169
2.6	Checking camber at rear wheels	170
2.7	Centralising toe setting at rear wheels	170
2.8	Adjusting toe setting at front wheels	171
48	Steering	172
1	Steering column and steering wheel with airbag	172
1.1	Checking steering column for damage	172
1.2	Removing and installing steering wheel with airbag	172
1.3	Removing and installing steering column	174
1.4	Removing and installing ignition lock housing	181

2	Manual steering box: exploded view	183
2.1	Removing and installing manual steering box	184
2.2	Removing and installing track rod ball joints	187
2.3	Servicing manual steering box	189
2.4	Adjusting manual steering box	193
3	Power steering	194
3.1	Design and function	194
4	Power steering box: exploded view	197
4.1	Removing and installing power steering box	199
4.2	Removing and installing track rod ball joints	205
4.3	Servicing power steering box (TRW)	207
4.4	Adjusting power steering box (TRW)	211
5	Power steering and hose connections: general view	212
5.1	Removing and installing power steering sensor G250	212
5.2	Removing and installing hydraulic lines	214
6	Routing of wiring for power steering sensor G250 (6Q2 423 291 A): general view	218
6.1	Routing of wiring on LHD vehicles	218
6.2	Routing of wiring on RHD vehicles	219
7	Motor/pump unit: exploded view	221
7.1	Checking delivery pressure of motor/pump unit	223
7.2	Removing and installing motor/pump unit	227
8	Checking fluid level, bleeding steering system and checking for leaks	231
8.1	Checking fluid level of power steering	231
8.2	Bleeding steering system	233
8.3	Checking steering system for leaks	234

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



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

00 – Technical data

1 Technical data

1.1 Running gear

Front-wheel drive	
Front axle	◆ MacPherson struts with bottom wishbones ◆ Subframe ◆ Anti-roll bar
Rear axle	◆ Torsion beam axle with separate spring/shock absorber layout ◆ Without anti-roll bar

1.2 Steering

Protected by copyright. Copying for private or commercial purposes, in part or in full, is prohibited without the written permission of Audi AG. Audi AG does not guarantee or accept any liability with respect to the correctness of the information contained herein. Copyright by Audi AG.			
	Front-wheel drive		
	Basic running gear		
	Power steering	Manual steering	Power steering
Steering box	Power-assisted, maintenance-free rack-and-pinion steering	Manual, maintenance-free rack-and-pinion steering	Power-assisted, maintenance-free rack-and-pinion steering
No. of turns from lock to lock	2.9	3.93	2.9
Turning circle diameter	approx. 10.6 m	approx. 10.5 m	approx. 10.6 m



2 General notes

Load-bearing components and parts of the suspension or steering must not be welded or straightened.

Bonded rubber bushes can only be turned to a limited extent. The bolt connections on the suspension links should therefore only be tightened when the vehicle is standing on the ground.

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.



Caution

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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Disposal of fluid-filled components to meet environmental requirements

3.1 Releasing gas in front gas-filled shock absorbers

3.1.1 A - Releasing gas by drilling

- Clamp gas-filled shock absorber vertically in vice, with piston rod pointing downwards.



Caution

Safety goggles must be worn when drilling.

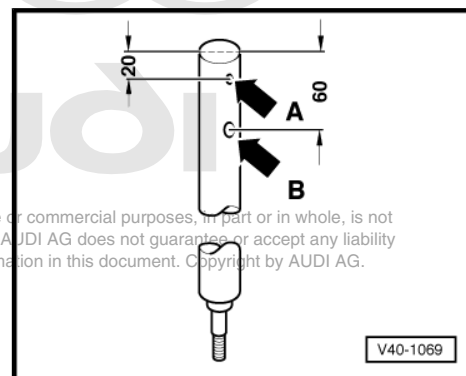
- Drill a 3 mm Ø hole -arrow A- through outer tube of shock absorber.



Note!

Gas will escape during drilling.

- Continue drilling until inner tube is penetrated (approx. 25 mm deep).
- Drill a second 6 mm Ø 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 oil comes out.



3.1.2 B - Opening shock absorber with pipe cutter



Caution

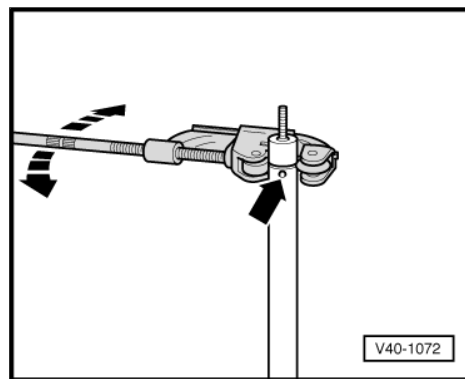
Safety goggles must be worn while drilling and cutting.

- Drill a 3 mm $\varnothing$ hole -arrow- through outer tube of shock absorber, or saw through side of tube.


Note!

Gas will escape when drilling or sawing.

- Apply pipe cutter (e.g. Stahlwille Express 150/3) as shown in illustration 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 shock absorber tube.



3.2 Releasing gas in rear gas-filled shock absorbers

3.2.1 A - Releasing gas by drilling

- Clamp gas-filled shock absorber vertically in vice, with piston rod pointing downwards.


Caution

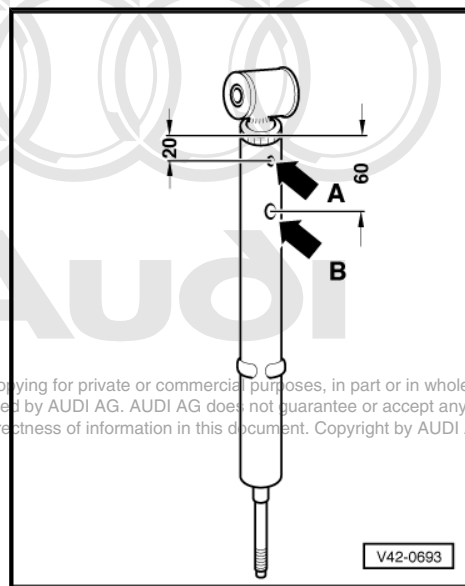
Safety goggles must be worn when drilling.

- Drill a 3 mm $\varnothing$ hole -arrow A- through outer tube of shock absorber.


Note!

Gas will escape during drilling.

- Continue drilling until inner tube is 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 oil comes out.



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

3.2.2 B - Opening shock absorber with pipe cutter


Caution

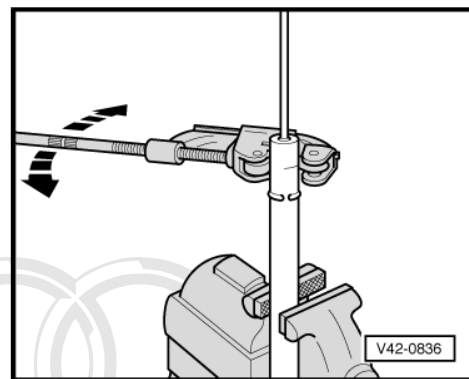
Safety goggles must be worn while drilling and cutting.

- Drill a 3 mm Ø hole -arrow- through outer tube of shock absorber, or saw through side of tube.

 Note!

Gas will escape when drilling or sawing.

- Apply pipe cutter (e.g. Stahlwille Express 150/3) as shown in illustration 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 shock absorber tube.



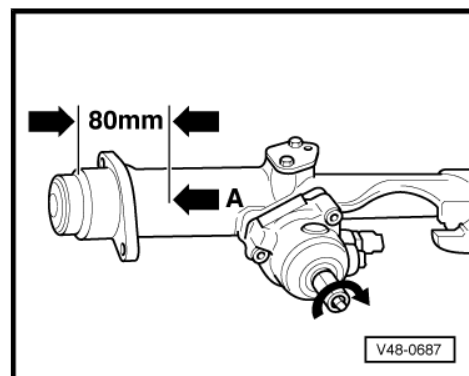
3.3 Draining power steering box

 Note!

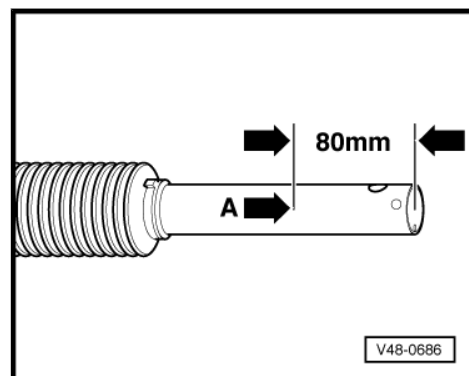
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for errors or omissions in the information in this document. Copyright by AUDI AG.

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

- Turn the steering pinion in the direction indicated (arrow) far as the end stop.



- Clamp steering box horizontally in a vice.
- Place drip tray under steering box.
- Saw off the steering box at the point indicated by -arrow A-.
- Hold the opened steering box over the drip tray and allow the hydraulic fluid to drain. If necessary, turn the steering pinion to the opposite stop.



3.4 Disposal of motor/pump unit

The fluids in the motor/pump unit do not contain toxic substances. These fluids can therefore be disposed of together with used engine and gearbox oil. "Used oil and fluids" for disposal include old engine and gearbox oil, including ATF, and mineral-based hydraulic fluids.

Used oil and fluids should be disposed of in accordance with the applicable environmental regulations.



Used oil and fluids that are suitable for recycling and recovery must on no account be mixed with brake fluid, antifreeze, synthetic resin or cellulose paint thinners or other chemicals.

After "draining" the used motor/pump unit, ensure that it is completely empty by allowing the remaining fluid to drip out.

Observe the applicable environmental regulations when disposing of the used unit (small quantities of hydraulic fluid will always remain in the housing).

Room temperature should be at least 20°C when draining the motor/pump 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.

4 Checking shock absorbers

4.1 Leaks at shock absorbers

Shock absorbers are often replaced because of externally visible leakage. Inspections on the test rig and in the vehicle have shown that in the majority of cases this replacement is not justified.

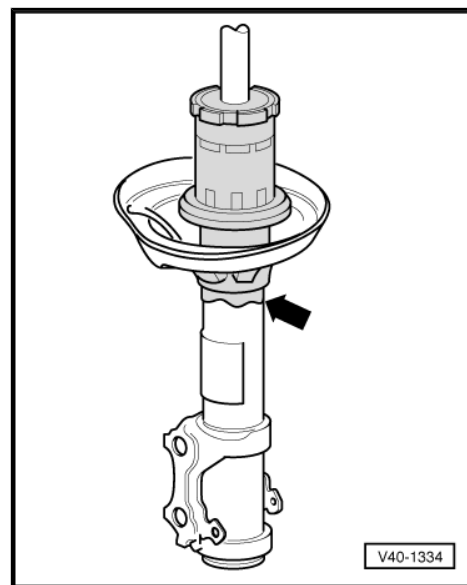
Slight loss of fluid ("sweating") at the piston rod seal is not a reason for replacing a shock absorber. A shock absorber with slight fluid leakage can be accepted as "OK" under the following conditions:

- ◆ Fluid seepage (as shown in the shaded part of the illustration) is visible, but the fluid is dull and possibly dried by dust.
- ◆ The fluid seepage extends only from the top shock absorber seal (piston rod oil seal) down to the bottom spring plate -arrow-.



Note!

Slight fluid leakage is actually beneficial, as it lubricates the piston rod oil seal and thus extends the life of the shock absorber. This applies to shock absorbers on both the front and rear axles.



4.2 Noises from shock absorbers

Shock absorbers are often replaced because of noises (rumbling, etc.) experienced by the customer. Inspections on the test rig and in the vehicle have shown that in approx. 70 % of these cases the complaints and subsequent replacement are not justified.

In the case of complaints regarding rumbling or knocking noises please proceed as follows:

- Carry out a road test with the customer - if possible on a dry, uneven road - to establish when, where and how the noises occur.



Note!

These noises are only very rarely caused by the shock absorbers.

4.3 Checking shock absorbers when removed

Defective shock absorbers can be identified by loud rumbling noises when driving, caused by wheel hopping, especially on bad roads. Heavy fluid leakage is an additional visual indication.

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

Shock absorbers are maintenance-free; shock absorber fluid cannot be topped up.

After removal, a shock absorber can be checked by hand as follows:

- Compress shock absorber by hand.
- ◆ The piston rod should move smoothly over the entire stroke with uniform resistance and without jolts.
- Release piston rod.
- ◆ If the shock absorber has sufficient gas pressure the piston rod will return by itself to its original position.



Note!

- ◆ *If this is not the case, the shock absorber does not necessarily need to be renewed. Provided there has been no major loss of fluid, it will still be as effective as a conventional shock absorber.*
- ◆ *Even without gas pressure, the shock absorber will provide full damping effect as long as there has been no major loss of fluid. However, it may produce more noise.*

4.4 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
- ◆ Shock absorber tester -VAS 1990-



Note!

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

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

4.4.1 Test results

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

- ◆ Satisfactory damping effect or
- ◆ Unsatisfactory damping effect

i Note!

- ◆ *It is not possible to obtain more detailed 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 given values are exceeded, this shows that the effectiveness of the shock absorber has decreased by more than 50 %; in this case it should be renewed.

Front axle, basic running gear:

- ◆ a = higher than 45: unsatisfactory damping effect
- ◆ a = lower than 45: satisfactory damping effect

Rear axle, basic running gear:

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

Front axle, 1.2 TDI running gear:

- ◆ a = higher than 45: unsatisfactory damping effect
- ◆ a = lower than 45: satisfactory damping effect

Rear axle, 1.2 TDI running gear:

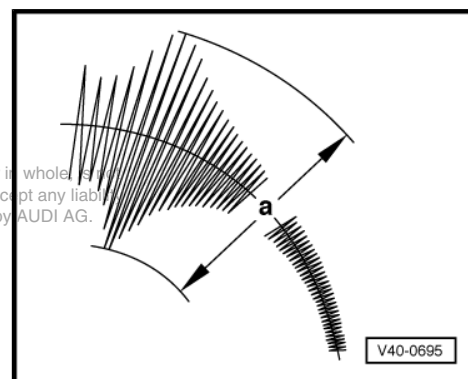
- ◆ a = higher than 70: unsatisfactory damping effect
- ◆ a = lower than 70: satisfactory damping effect

Front axle, sports running gear:

- ◆ a = higher than 42: unsatisfactory damping effect
- ◆ a = lower than 42: satisfactory damping effect

Rear axle, sports running gear:

- ◆ a = higher than 55: unsatisfactory damping effect
- ◆ a = lower than 55: satisfactory damping effect



40 – Front suspension

1 Subframe (basic running gear): exploded view

General notes ⇒ [page 2](#)

1 - Subframe

- ☐ Removing and installing ⇒ [page 34](#)
- ☐ Different versions: Vehicles with petrol engine have a recess on the underside -arrow-
- ☐ For correct version refer to ⇒ Parts catalogue

2 - Hexagon nut, 40 Nm

3 - Anti-roll bar

- ☐ Removing and installing ⇒ [page 14](#)

4 - Rubber bush

5 - Clamp

6 - Hexagon nut, 40 Nm

- ☐ Always renew if removed

7 - Coupling rod (link between anti-roll bar and suspension strut)

8 - Suspension bracket

- ☐ On subframe

9 - Hexagon bolt M12 x 1.5 x 75

- ☐ 70 Nm and turn 90° further
- ☐ Always renew if removed

10 - Bonded rubber bush for suspension bracket

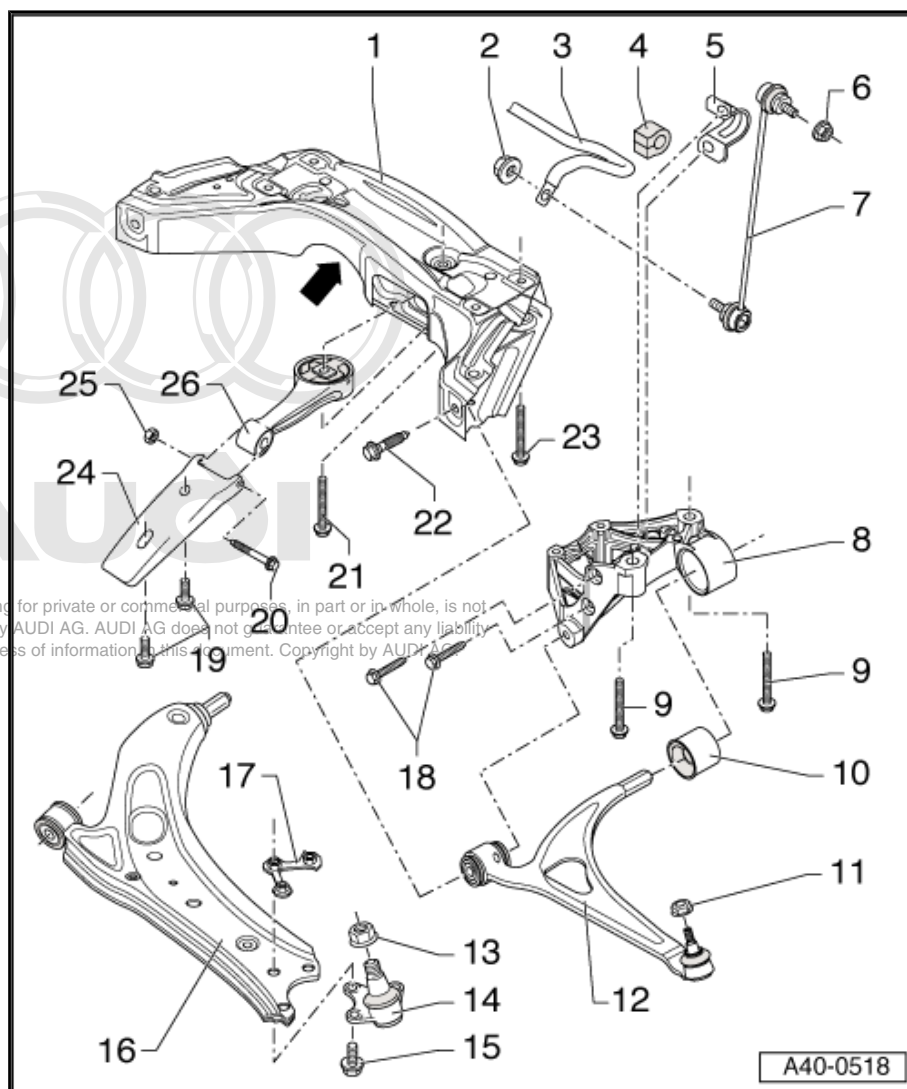
- ☐ Removing and installing ⇒ [page 28](#)
- ☐ Pressing in and out with -V.A.G 1459 B- ⇒ [page 30](#)

11 - Hexagon nut

- ☐ 20 Nm and turn 90° further
- ☐ Always renew if removed

12 - Wishbone with swivel joint

- ☐ Forged steel version
- ☐ For correct version refer to ⇒ Parts catalogue
- ☐ Removing and installing ⇒ [page 20](#)
- ☐ Renew wishbone if swivel joint is defective
- ☐ Supplied only as complete assembly with front stop washer, front bush and rear stop washer
- ☐ Renew wishbone if bonded rubber bush is damaged
- ☐ Must not be installed together with wishbone ⇒ [Item 16 \(page 11\)](#) on same vehicle



13 - Hexagon nut

- ☐ 20 Nm and turn 90° further
- ☐ Always renew if removed

14 - Swivel joint

- ☐ Checking ⇒ [page 16](#)
- ☐ Removing and installing ⇒ [page 16](#)

15 - Hexagon bolt

- ☐ 20 Nm and turn 90° further
- ☐ Always renew if removed
- ☐ Note required sequence when installing bolts:
 1. Start threads of all bolts.
 2. Tighten centre bolt to specified torque.
 3. Tighten the two outer bolts to specified torque.

16 - Wishbone

- ☐ Fabricated version consisting of welded sheet-metal sections with welded-on mountings for suspension bushes
- ☐ For correct version refer to ⇒ Parts catalogue
- ☐ Removing and installing ⇒ [page 23](#)
- ☐ Supplied only as complete assembly with front stop washer, bush and rear stop washer
- ☐ Renew wishbone if bonded rubber bush is damaged
- ☐ Must not be installed together with wishbone + swivel joint ⇒ [Item 12 \(page 10\)](#) on same vehicle

17 - Locking plate with nuts

- ☐ Always renew if removed

18 - Hexagon bolt

- ☐ 20 Nm and turn 90° further
- ☐ Always renew if removed

19 - Hexagon bolt, 50 Nm

- ☐ Always renew if removed

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

20 - Hexagon bolt

- ☐ 50 Nm and turn 90° further
- ☐ Always renew if removed

21 - Hexagon bolt

- ☐ 40 Nm and turn 90° further
- ☐ Always renew if removed

22 - Hexagon bolt M12 x 1.5 x 100

- ☐ 70 Nm and turn 90° further
- ☐ Always renew if removed
- ☐ Note required assembly sequence:
 - First tighten hexagon bolt ⇒ [Item 22 \(page 11\)](#) lightly, then tighten hexagon bolt ⇒ [Item 23 \(page 11\)](#) lightly.
 - Then tighten hexagon bolts alternately to specified torque.

23 - Hexagon bolt

- ☐ 4x
- ☐ 50 Nm and turn 90° further
- ☐ Always renew if removed
- ☐ Note required assembly sequence:

- ☐ First tighten hexagon bolt ⇒ [Item 22 \(page 11\)](#) lightly, then tighten hexagon bolt ⇒ [Item 23 \(page 11\)](#) lightly.
- ☐ Then tighten hexagon bolts alternately to specified torque.

24 - Retaining plate

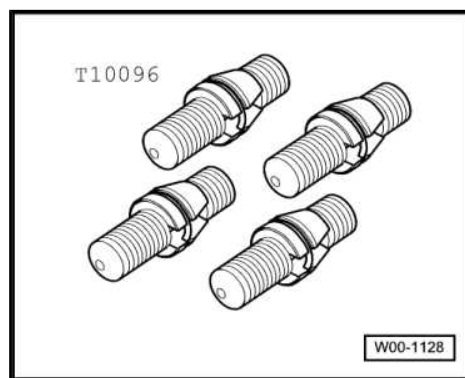
- ☐ For correct version refer to ⇒ Parts catalogue

25 - Hexagon nut**26 - Pendulum support**

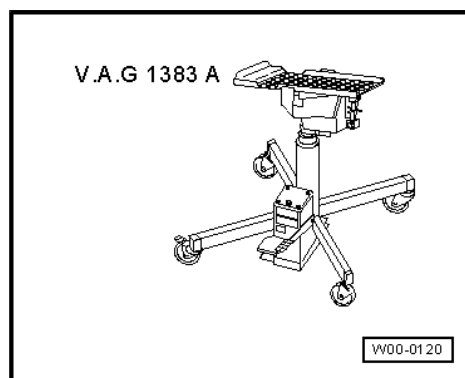
1.1 Locating subframe

Special tools and workshop equipment required

- ◆ Locating pins -T10096-



- ◆ Engine and gearbox jack -V.A.G 1383 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.

1.1.1 Removing

- Unbolt pendulum support -1- from retaining plate on gearbox -arrow-.



Note!

Please note that there are different versions of the pendulum support depending on the type of gearbox fitted.

Vehicles with petrol engine:

- Remove exhaust system ⇒ Rep. Gr. 26 ; Removing and installing parts of exhaust system .

All vehicles (continued):

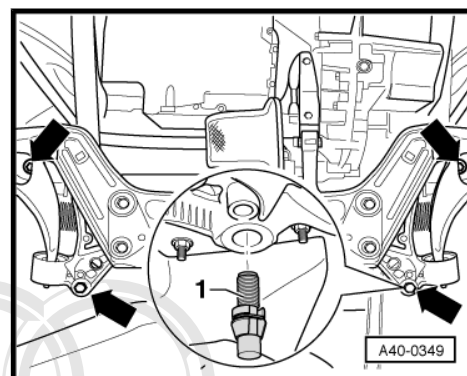
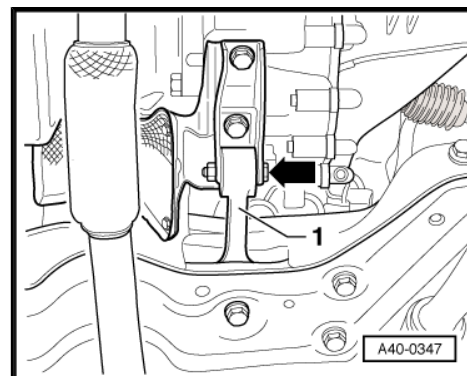
- Place engine and gearbox jack -V.A.G 1383 A- under sub-frame.
- Clean locating pins -T10096- .

It is important to keep to the specified sequence for the following operations.

- Remove one subframe bolt -arrows- and screw in one locating pin -1- -T10096- . Tighten locating pin to 20 Nm.

The locating pins -T10096- must not be tightened to more than 20 Nm, otherwise the threads of the locating pin will be damaged.

- Then remove the next bolt and screw in another locating pin -T10096- . Tighten to 20 Nm.
- Location of the subframe is completed when all 4 bolts have been replaced consecutively with the locating pins -T10096- .
- Lower subframe approx. 4 cm.



1.1.2 Installing

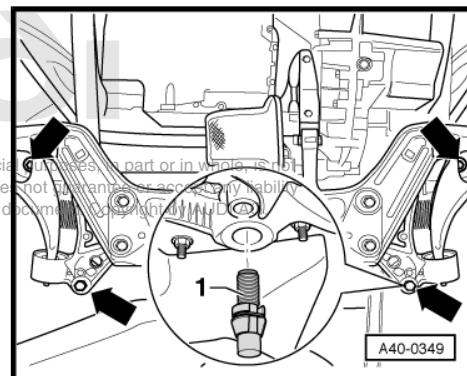
Installation is carried out in the reverse sequence. Note the following points:

- Always remove one locating pin at a time and replace with a new bolt -arrows-.
- Tighten this bolt to the required tightening torque.

After installation, check position of steering wheel by test-driving vehicle.

Wheel alignment must be checked and adjusted if steering wheel is not in central position when driving straight-ahead.

- Check and adjust wheel alignment ⇒ [page 164](#) .



1.1.3 Tightening torques

Subframe to body	70 Nm + 90°
◆ Use new bolts.	
Pendulum support to retaining plate (vehicles with manual gearbox)	50 Nm + 90°
◆ Use new bolts.	



Pendulum support to retaining plate (vehicles with automated direct-shift gearbox)

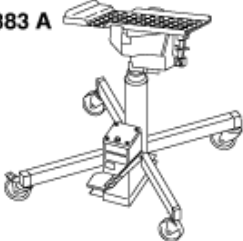
40 Nm +
90°

- ◆ Use new bolts.

1.2 Removing and installing anti-roll bar

Special tools and workshop equipment required

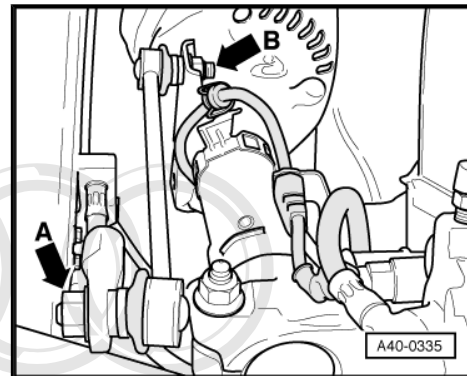
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-

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. 	V.A.G 1332 
V.A.G 1383 A 	
	W42-0068

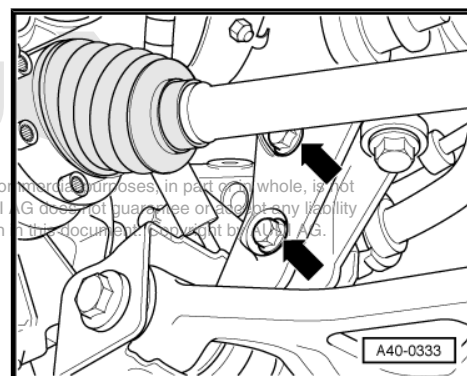
1.2.1 Removing

- Remove wheels.
- Remove noise insulation.

- Detach coupling rods from anti-roll bar -arrow A-.

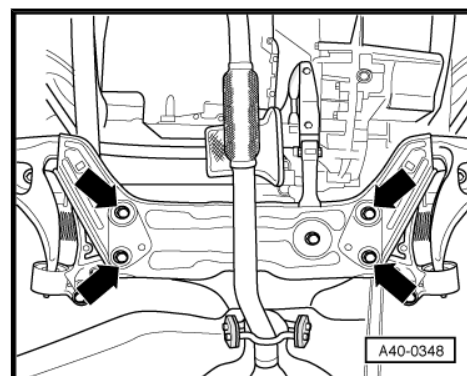


- Detach clamps for anti-roll bar from suspension bracket -arrows-.
- Place engine and gearbox jack -V.A.G 1383 A- under sub-frame.



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

- Unbolt steering box from subframe -arrows- and tie up with wire (or similar).
- Locate subframe ⇒ [page 12](#) .
- Carefully lower subframe.
- Remove anti-roll bar from one side.



1.2.2 Installing

- Secure subframe ⇒ [page 12](#) .

Installation is carried out in the reverse sequence.

- Fit and secure wheels ⇒ [page 161](#) .

1.2.3 Tightening torques

Anti-roll bar to suspension bracket ◆ Use new bolts.	20 Nm + 90°
Coupling rod to anti-roll bar	40 Nm
Steering box to subframe ◆ Use new bolts.	50 Nm + 90°
Subframe to body ◆ Use new bolts.	70 Nm + 90°
Pendulum support to retaining plate ◆ Use new bolts.	50 Nm + 90°

1.3 Checking swivel joint

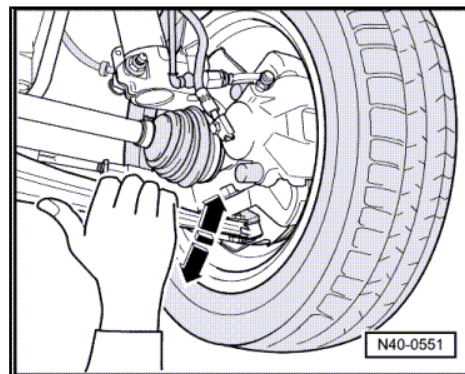
There are two different wishbone versions:

- ◆ Forged steel wishbone with integral swivel joint
- ◆ Fabricated wishbone with bolt-on swivel joint.

Mixed installation of different versions on the same vehicle is not permissible. The method of checking axial and radial play is the same for both versions.

1.3.1 Checking axial play

- Pull wishbone firmly downwards and press back up again.



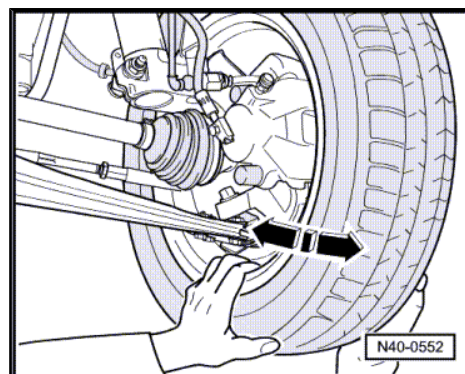
1.3.2 Checking radial play

- Press bottom of wheel firmly inwards and outwards.



Note!

- ◆ *There should be no perceptible or visible "play" when carrying out both tests.*
- ◆ *Observe the swivel joint while performing the tests.*
- ◆ *Take into account any existing wheel bearing play or "play" in upper suspension strut mounting.*
- ◆ *Check rubber boot for damage.*



Forged steel wishbone with integral swivel joint

- Renew complete wishbone if swivel joint is defective.

Fabricated wishbone with bolt-on swivel joint

- Renew only swivel joint if joint is defective.

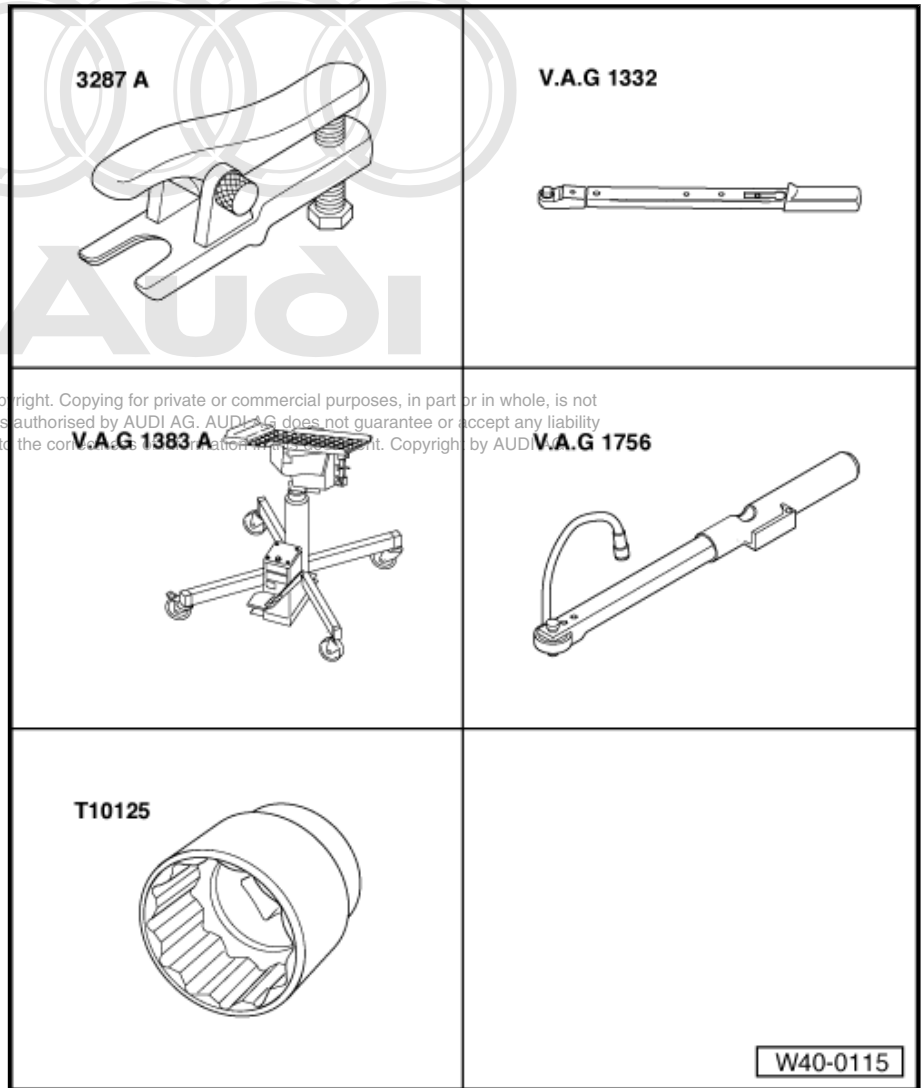
1.4 Removing and installing swivel joint (vehicles with fabricated wishbone and bolt-on swivel joint)

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

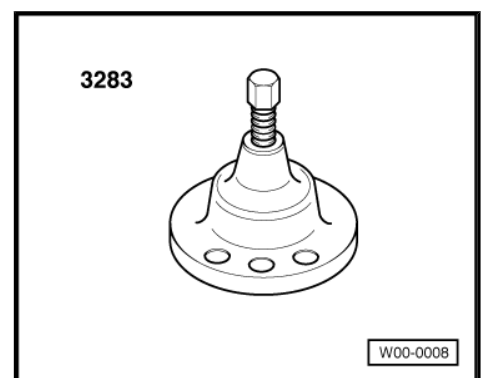
Special tools and workshop equipment required

- ◆ Ball joint puller -3287 A-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Angle wrench -V.A.G 1756-
- ◆ Socket (36 mm) -T10125-

Protected by copyright. Copying for private or commercial purposes, in part or in 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 provided. Copyright by AUDI AG.



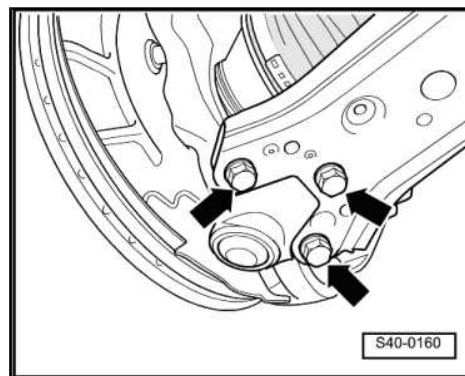
- ◆ Press tool -3283-



1.4.1 Removing

- Lift vehicle far enough to take weight off front wheels.
- Loosen 12-point nut using 36 mm socket -T10125- .
- Remove wheel.
- Mark positions of bolts securing swivel joint to wishbone.

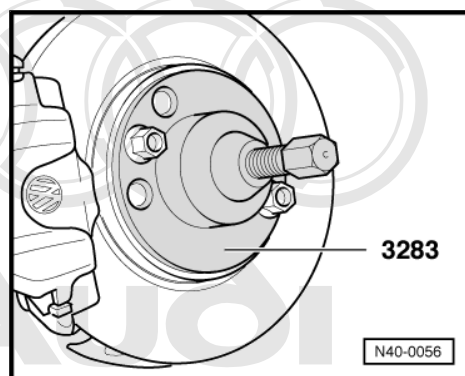
- Remove bolts -arrows-.
- Pull wheel bearing housing with swivel joint out of wishbone.



- Press out drive shaft.


Note!

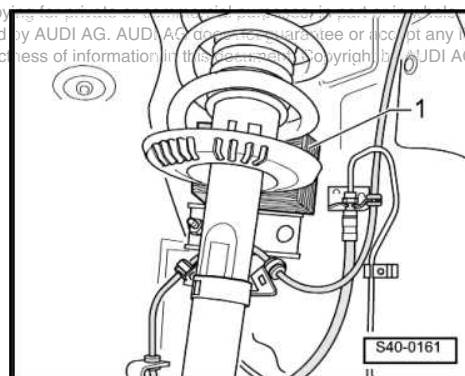
Ensure sufficient clearance when pressing out drive shaft.



- Pivot suspension strut outwards and hold in place with a wooden block or similar -1-.
- Tie up drive shaft to body with wire.

The drive shaft must not hang down under its own weight.

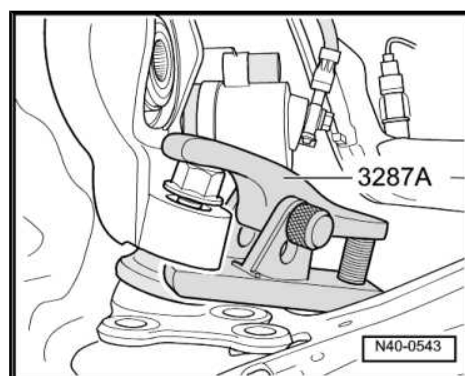
Otherwise the inner joint will be bent too far and will be damaged.



- Apply ball joint puller as shown in the illustration and press out swivel joint.


Note!

- ◆ Place gearbox jack -V.A.G 1383 A- or similar underneath (risk of accident from parts dropping out when swivel joint is pressed out).
- ◆ Leave nut screwed on a few turns to protect threads on swivel joint.



1.4.2 Installing

- Remove any paint or adhesive residue and/or corrosion on thread and splines of outer drive shaft joint.
- Remove any remaining locking fluid from splines on outer drive shaft joint and splines of wheel hub.

Splines on outer joint and splines of wheel hub must be free of oil and grease.

- Degrease thread on outer joint (stub axle) if necessary.
- Apply two beads of locking fluid -D 185 400 A2- on splines as illustrated. Bead diameter approx. 2 mm.

- 1 - Outer joint
- 2 - Bead approximately in centre of splines
- 3 - Bead near beginning of splines
- 4 - Do not grease thread on outer joint (stub axle).

- Insert swivel joint in wheel bearing housing.
- Install new self-locking nut, counterholding with Torx key T40 .
Tightening torque: [⇒ Item 13 \(page 11\)](#) .

- Insert drive shaft in wheel bearing.
- **Secure swivel joint to wishbone (bolts on old marks).** Tightening torque: [⇒ Item 15 \(page 11\)](#) . Keep to specified sequence when installing bolts:

1. Start threads of all bolts.
2. Tighten centre bolt to specified torque.
3. Tighten the two outer bolts to specified torque.

Use new bolts.

Use new locking plate with nut.



Note!

Ensure sealing boot is not damaged or twisted.

- Fit and secure wheel [⇒ page 161](#) .
- Tighten 12-point nut using 36 mm socket -T10125-
[⇒ Item 1 \(page 86\)](#) .

After installation, check position of steering wheel by test-driving vehicle.

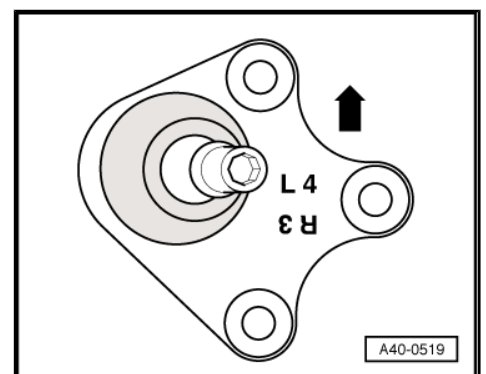
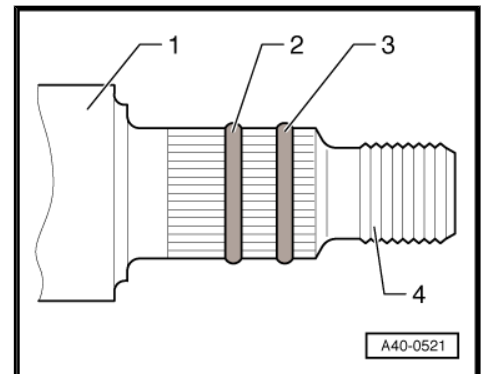
Wheel alignment must be checked and adjusted if steering wheel is not in central position when driving straight-ahead.

- Check and adjust wheel alignment [⇒ page 164](#) .

1.5 Installation position of swivel joints

Left swivel joint

Designation "L4" faces in direction of travel -arrow-.

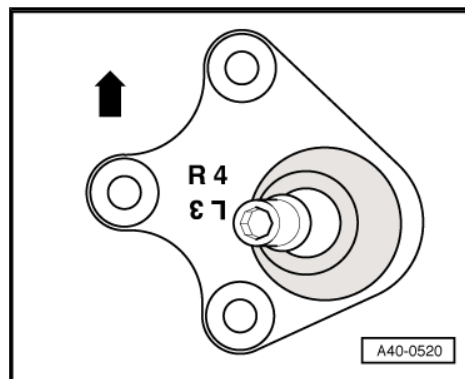


Right swivel joint

Designation "R4" faces in direction of travel -arrow-.

Note exact installation position of swivel joints.

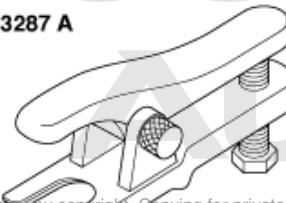
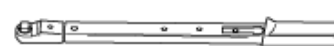
Caster will be incorrect if swivel joints are not installed in correct position.



1.6 Removing and installing wishbone with swivel joint and suspension bracket (vehicles with forged-steel wishbone)

Special tools and workshop equipment required

- ◆ Ball joint puller -3287 A-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-

3287 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.	V.A.G 1331 
V.A.G 1332 	
	G40-0022

1.6.1 Removing

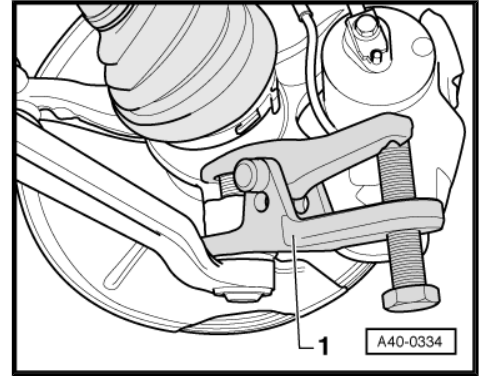
- Remove wheel.
- Remove noise insulation.
- Unscrew nut from swivel joint.

- Apply ball joint puller -1- as shown in the illustration and press out swivel joint.

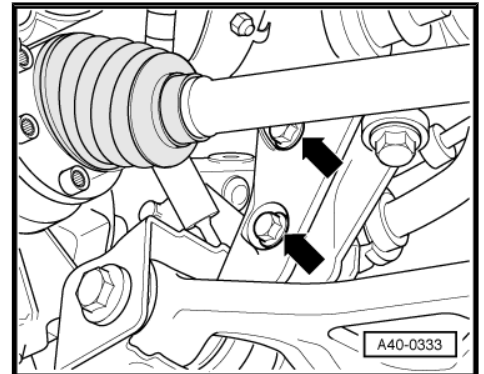
1 - Ball joint puller -3287 A-



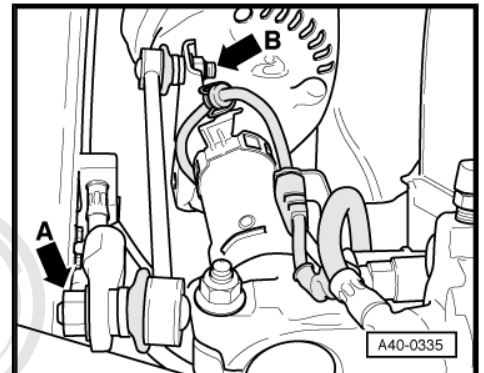
Take care not to damage rubber boot when inserting ball joint puller.



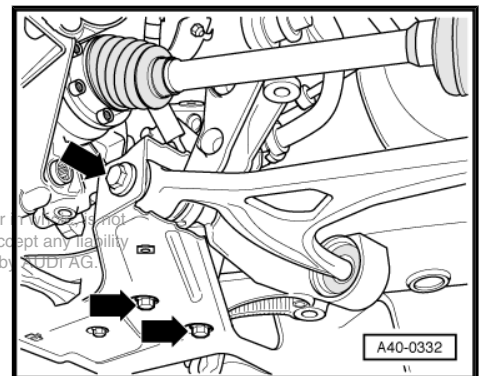
- Unbolt clamp for anti-roll bar from suspension bracket -arrows-.



- Detach coupling rod from anti-roll bar -arrow A-.



- Remove bolts -arrows-.
- Locate subframe ⇒ [page 12](#).
- Pull wishbone with suspension bracket out of subframe.

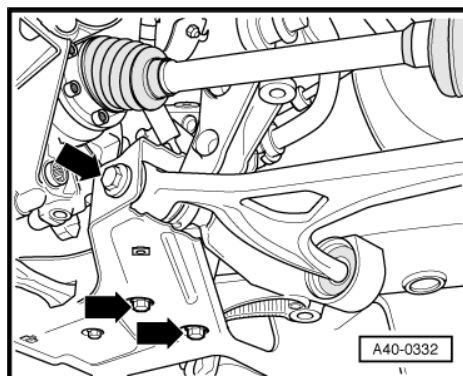


Protected by copyright. Copying for private or commercial purposes, in part or in full, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

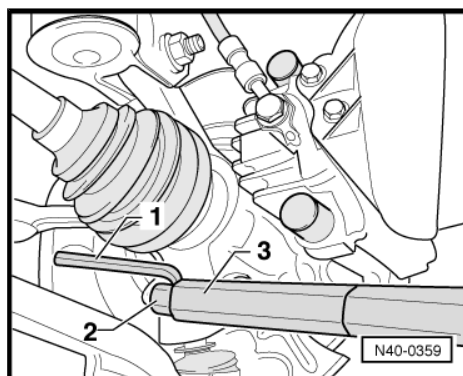
1.6.2 Installing

- Insert wishbone in subframe.

- Install and tighten bolts -arrows-. Tightening torque:
⇒ [Item 22 \(page 11\)](#) and ⇒ [Item 23 \(page 11\)](#) .
- Secure subframe ⇒ [page 12](#) .



- Install new self-locking nut on swivel joint, counterholding with Torx key T40 .
- 1 - Torx key T40
- 2 - Ring spanner insert or slotted ring spanner insert
⇒ [page 22](#) , Fig. V40-1323
- 3 - Torque wrench -V.A.G 1331-
- Fit and secure wheel ⇒ [page 161](#) .



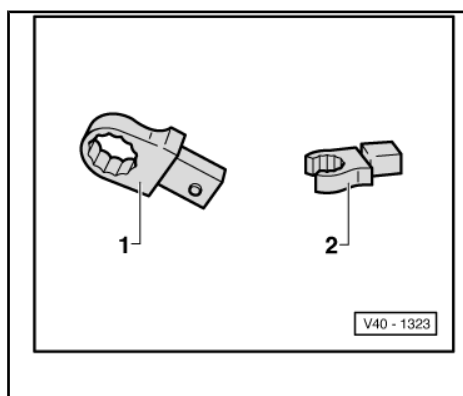
- Ring spanner inserts:
- 1 - Ring spanner insert (commercial type, 16 mm)
- 2 - Slotted ring spanner insert (commercial type, 16 mm)


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 for errors or omissions. Copyright by AUDI AG.

Ensure sealing boot is not damaged or twisted.

Remaining installation steps are carried out in reverse sequence.



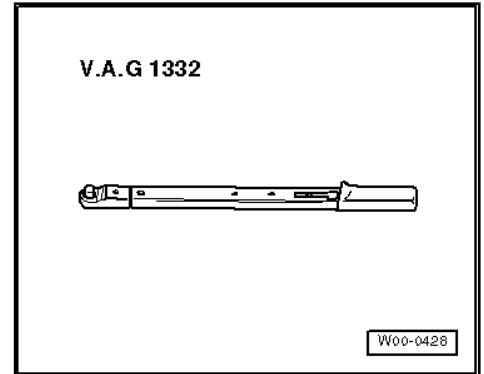
1.6.3 Tightening torques

Anti-roll bar to suspension bracket ◆ Use new bolts.	20 Nm + 90°
Coupling rod to anti-roll bar	40 Nm
Steering box to subframe ◆ Use new bolts.	50 Nm + 90°
Subframe to body ◆ Use new bolts.	70 Nm + 90°
Swivel joint to wheel bearing housing ◆ Use new nut.	20 Nm + 90°
Wishbone to subframe ◆ Use new bolts.	70 Nm + 90°

1.7 Removing and installing wishbone with suspension bracket (vehicles with fabricated wishbone and bolt-on swivel joint)

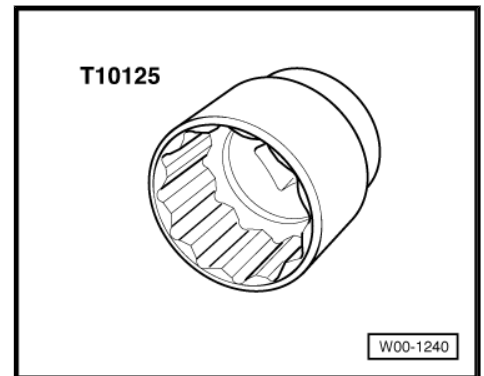
Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



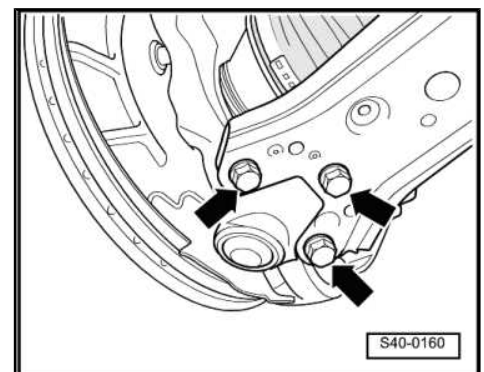
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- ◆ Socket (36 mm) -T10125-



1.7.1 Removing

- Lift vehicle far enough to take weight off front wheels.
- Loosen 12-point nut using 36 mm socket -T10125- .
- Remove front wheels.
- Mark positions of bolts securing swivel joint to wishbone.
- Remove bolts -arrows-.
- Pull wheel bearing housing with swivel joint out of wishbone.



- Pivot suspension strut outwards and hold in place with a wooden block or similar -1-; at the same time pull drive shaft out of wheel bearing.


Note!

If the drive shaft cannot be pulled out of the wheel bearing by hand, use press tool -3283-.

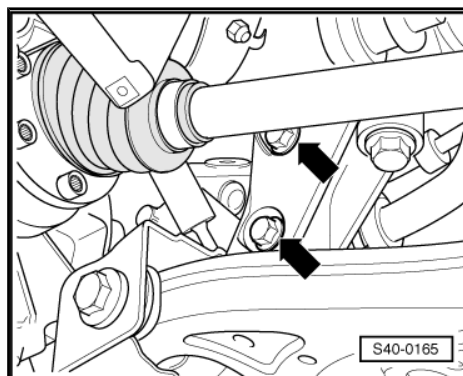
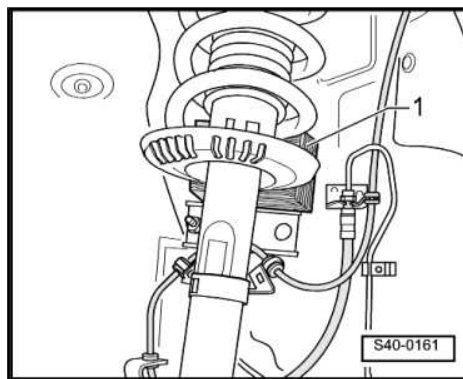
- Tie up drive shaft to body with wire.

The drive shaft must not hang down under its own weight.

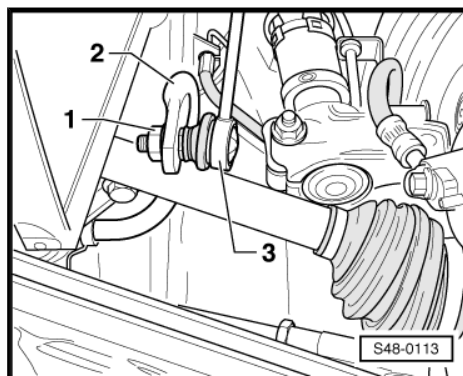
Otherwise the inner joint will be bent too far and will be damaged.

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.

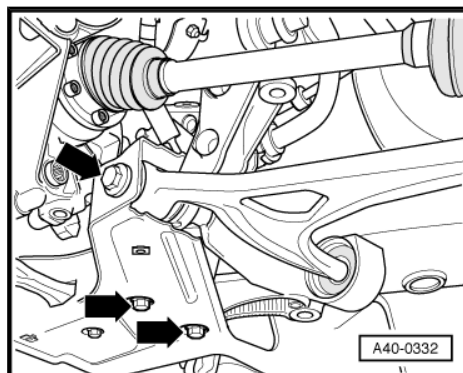
- Remove bolts -arrows-.



- Remove hexagon nut -1- from coupling rod (left and right sides).
- Pull coupling rod -3- out of anti-roll bar -2- (left and right sides).



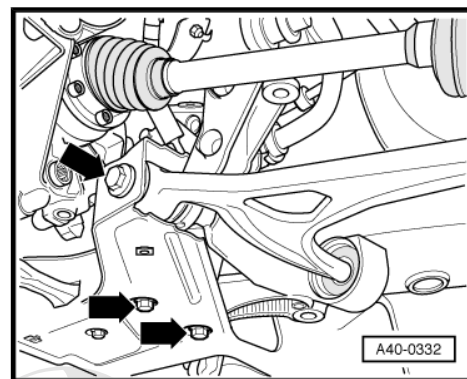
- Remove bolts -arrows-.
- Locate subframe ⇒ [page 12](#).
- Pull wishbone with suspension bracket out of subframe.



1.7.2 Installing

- Insert wishbone with suspension bracket in subframe.

- Install and tighten bolts -arrows-. Tightening torque:
⇒ [Item 22 \(page 11\)](#) and ⇒ [Item 23 \(page 11\)](#) .
- Secure subframe ⇒ [page 12](#) .
- Insert drive shaft in wheel bearing.
- Secure swivel joint to wishbone (bolts on old marks). Tightening torque: ⇒ [Item 15 \(page 11\)](#) . Keep to specified sequence when installing bolts:
 1. Start threads of all bolts.
 2. Tighten centre bolt to specified torque.
 3. Tighten the two outer bolts to specified torque.



Use new locking plate with nuts.

Use new bolts.



Note!

Ensure sealing boot is not damaged or twisted.

Remaining installation steps are carried out in reverse sequence.

- Fit and secure wheels ⇒ [page 161](#) .
- Tighten 12-point nut using 36 mm socket -T10125-
⇒ [Item 1 \(page 86\)](#) .

After installation, check position of steering wheel by test-driving vehicle.

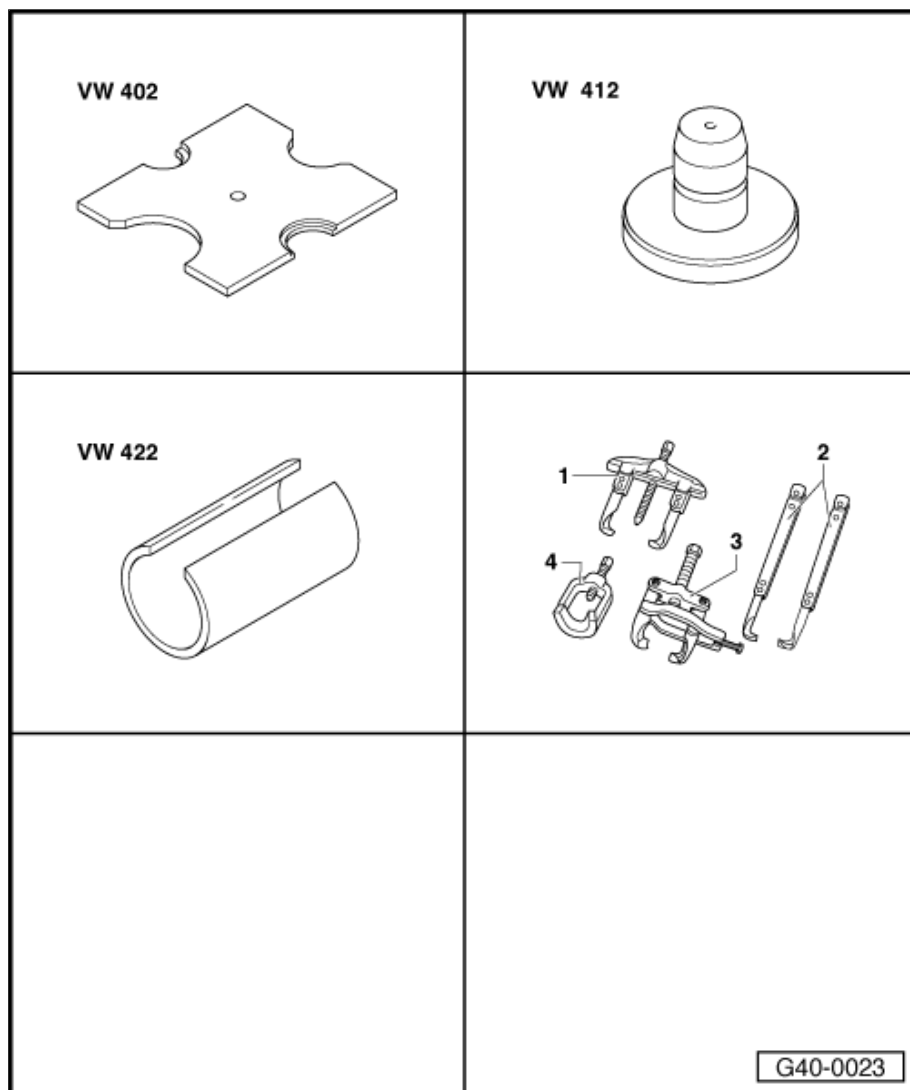
Wheel alignment must be checked and adjusted if steering wheel is not in central position when driving straight-ahead.

- Check and adjust wheel alignment ⇒ [page 164](#) .

1.8 Separating and assembling wishbone and suspension bracket

Special tools and workshop equipment required

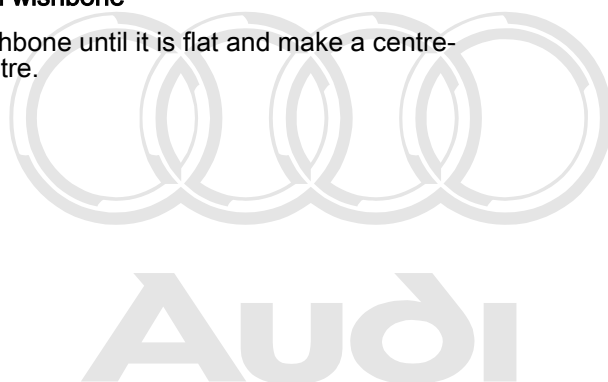
- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 412-
- ◆ Tube -VW 422-
- ◆ -1- Two-arm puller -Kukko 20/10-



1.8.1 Separating wishbone from suspension bracket

Vehicles with forged-steel wishbone

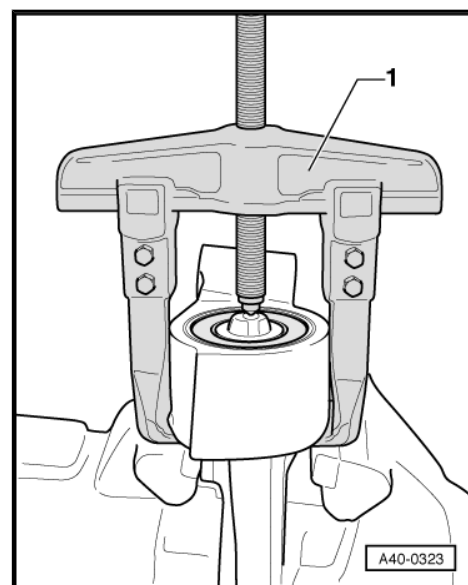
- File the end of the wishbone until it is flat and make a centre-punch mark in the centre.



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

- Press wishbone out of suspension bracket.
- 1 - Two-arm puller , e.g. -Kukko 20/10-



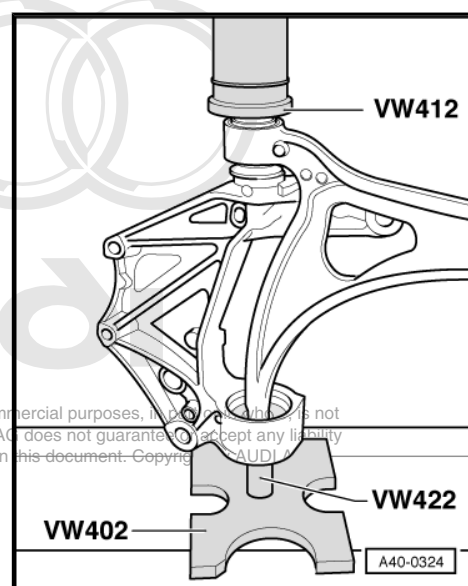
1.8.2 Assembling wishbone and suspension bracket

- Coat hexagon flats of wishbone with assembly lubricating oil -G 294 421 A1- (diluted 1:20).
- Press wishbone into suspension bracket.



Note!

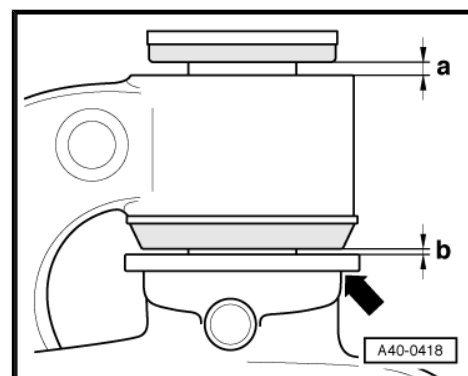
Note installation position of wishbone in relation to suspension bracket when pressing in. The flats on the wishbone must align with the flats in the suspension bracket bush.



1.8.3 Checking assembly of wishbone and suspension bracket

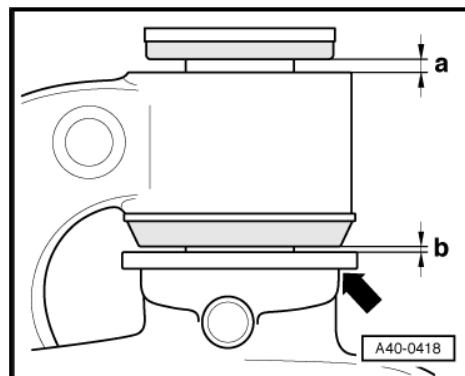
Checking dimensions for vehicles with petrol engine

- ◆ Distance -a- between front stop washer and wishbone must be $1.5 \pm 0.45/-0.7$ mm.
- ◆ Distance -b- between rear stop washer and wishbone must be 2.2 ± 0.6 mm.
- ◆ There must be zero gap between rear stop washer and suspension bracket -arrow-.



Checking dimensions for vehicles with TDI engine

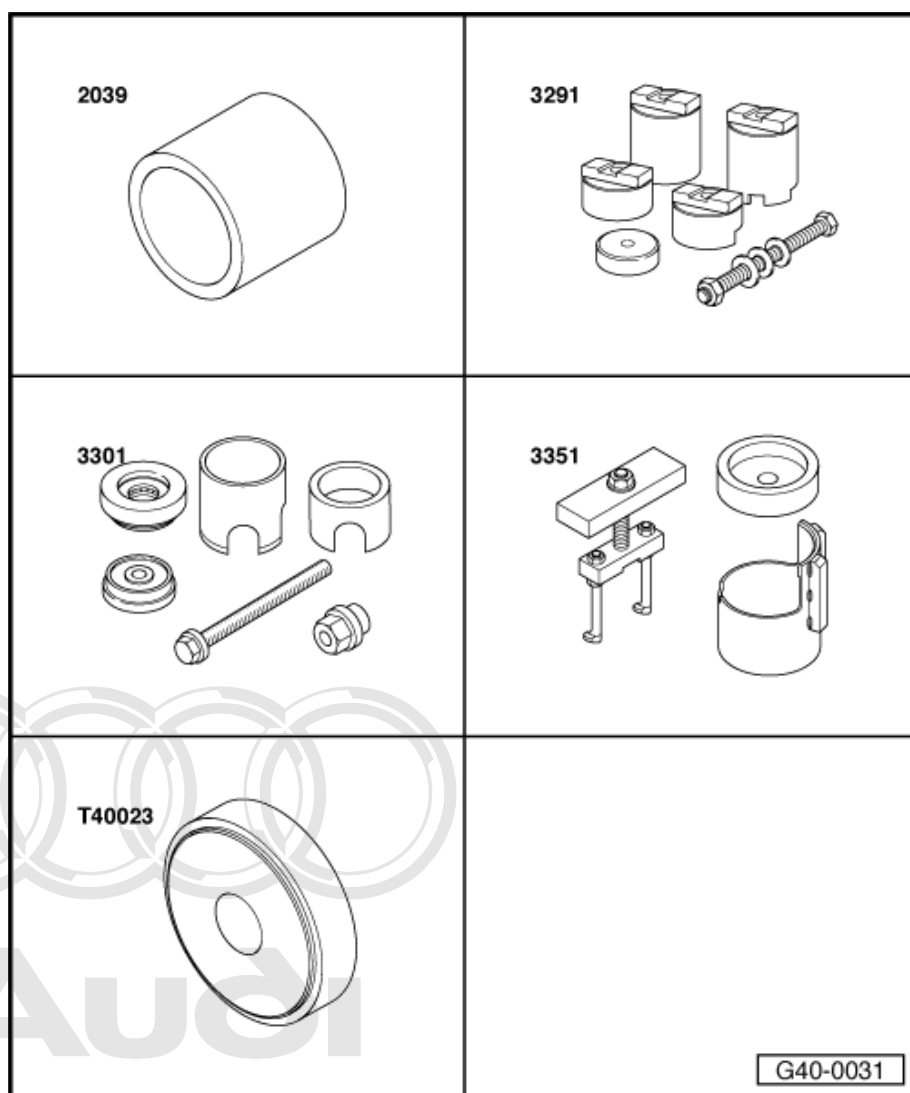
- ◆ Distance -a- between front stop washer and wishbone must be $2.8 + 0.45/-0.7$ mm.
- ◆ Distance -b- between rear stop washer and wishbone must be 1.4 ± 0.6 mm.
- ◆ There must be zero gap between rear stop washer and suspension bracket -arrow-.



1.9 Renewing bonded rubber bush for suspension bracket

Special tools and workshop equipment required

- ◆ Tube -2039-
- ◆ Assembly tool -3291-
- ◆ Assembly tool -3301-
- ◆ Puller -3351-
- ◆ Thrust piece -T40023-



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

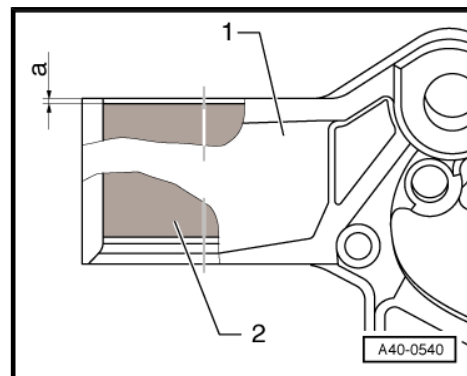
1.9.1 Removing

- Remove wishbone with suspension bracket.
- ◆ Removing and installing wishbone with swivel joint and suspension bracket (vehicles with forged-steel wishbone)
⇒ [page 20](#)

- ◆ Removing and installing wishbone with suspension bracket (vehicles with fabricated wishbone and bolt-on swivel joint)
⇒ [page 23](#)
- Separate wishbone from suspension bracket ⇒ [page 25](#).

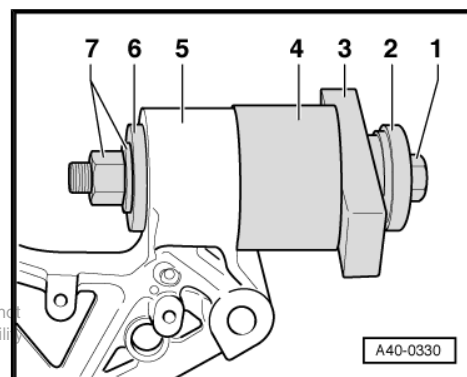
1.9.2 Removing rear bush for suspension bracket

- Measure distance -a- between suspension bracket -1- and bonded rubber bush -2-.
- Note this value; it is required when installing the new bush.



- Pull out bush.

- 1 - Spindle from -3291-
- 2 - Axial bearing from -3301-
- 3 - Bar -3351/4-
- 4 - Tube -2039-
- 5 - Suspension bracket
- 6 - Thrust piece -T40023-
- 7 - Brass washers and nut from -3291-

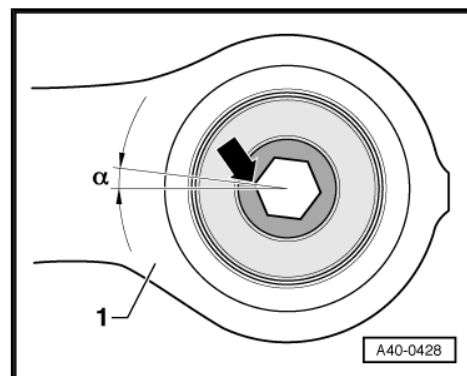


1.9.3 Installing

Installation position of bush in suspension bracket

The apex between two hexagon flats -arrow- must be aligned at angle α to the arm of the suspension bracket -1-.

$$\alpha = 7^\circ \pm 5^\circ$$



1.9.4 Installing rear bush for suspension bracket

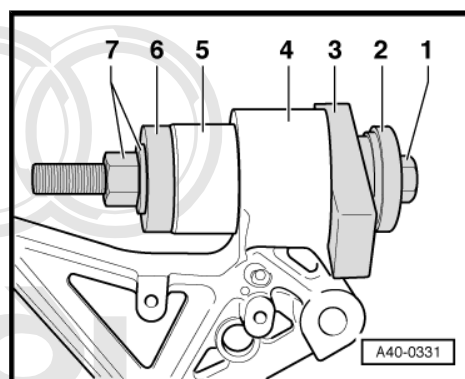


Note!

- ◆ Use assembly lubricating oil -G 294 421 A1- (diluted 1:20) when pressing in.
- ◆ This lubricating oil is acid-free and penetrates into the rubber after a short time (by diffusion).
- ◆ It leaves a slightly tacky film, which ensures firm seating of the bush.
- ◆ Most conventional greases or oils contain acid and cause a film of lubricant to form.
- ◆ This may affect the rubber, or cause the entire bush to twist in the suspension bracket instead of flexing when the suspension compresses and rebounds.

– Pull in bonded rubber bush.

- 1 - Spindle from -3291-
- 2 - Axial bearing from -3301-
- 3 - Bar -3351/4-
- 4 - Suspension bracket
- 5 - Bush
- 6 - Thrust piece -T40023-
- 7 - Brass washers and nut from -3291-



– Obtain the correct distance -a- by pulling in the bush gradually.

– Dismantle the special tools and check distance -a- repeatedly while pulling in the bush.

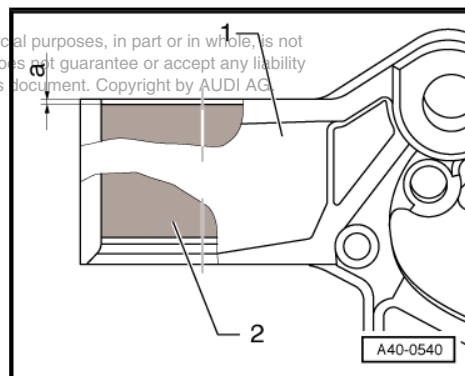
– Repeat this procedure as often as necessary until the correct distance -a- is obtained.

– Assemble wishbone and suspension bracket ⇒ [page 25](#) .

– Install wishbone with suspension bracket.

◆ Removing and installing wishbone with swivel joint and suspension bracket (vehicles with forged-steel wishbone)
⇒ [page 20](#)

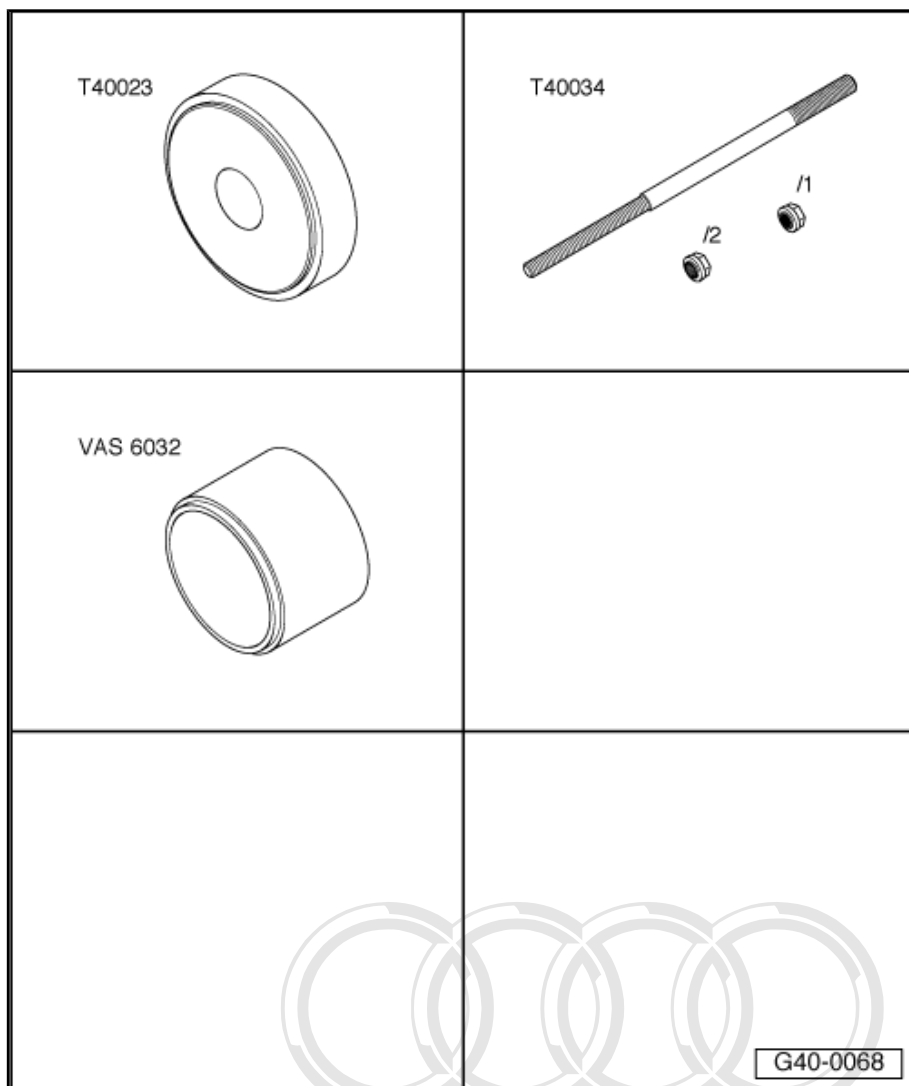
◆ Removing and installing wishbone with suspension bracket (vehicles with fabricated wishbone and bolt-on swivel joint)
⇒ [page 23](#)



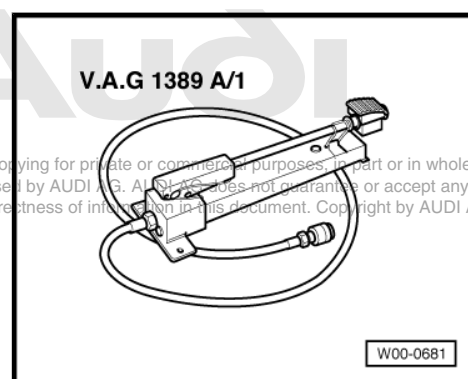
1.10 Renewing bonded rubber bush for suspension bracket using - V.A.G 1459 B-

Special tools and workshop equipment required

- ◆ Thrust piece -T40023-
- ◆ Spindle from assembly tool -T40034-
- ◆ Nut M18×2 -T40034/1-
- ◆ Nut M20×2 -T40034/2-
- ◆ Tube -VAS 6032-



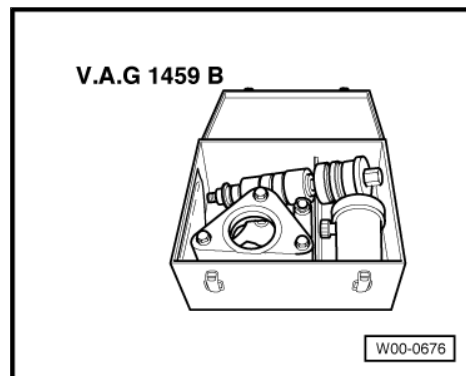
- ◆ Foot pump with high-pressure hose -V.A.G 1389 A/1-



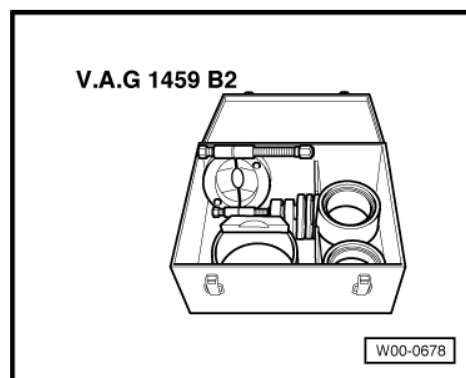
If there is a hand pump -V.A.G 1389/1- available in the dealership it can be converted to a foot-operated pump.

To do this, use the conversion set -V.A.G 1389/4- .

- ◆ Hydraulic wheel bearing tool -V.A.G 1459 B-



- ◆ Hollow piston cylinder HKZ-15 with thrust piece E-0-204-T (hydraulic)
- ◆ Thrust piece E-3
- ◆ Thrust piece E-5
- ◆ Special nut E-8-214, M20x2
- ◆ Supplementary set -V.A.G 1459 B/2-



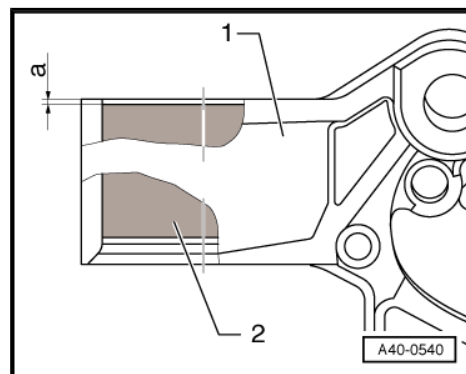
- ◆ Thrust piece E-42

1.10.1 Removing

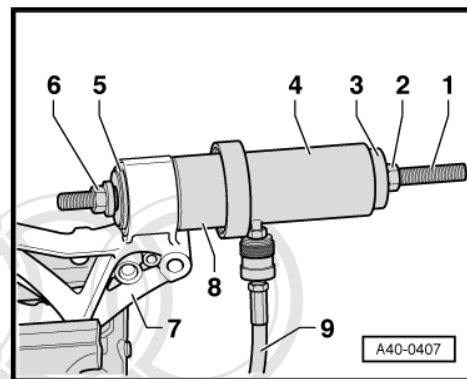
- Remove wishbone with suspension bracket.
- ◆ Removing and installing wishbone with swivel joint and suspension bracket (vehicles with forged-steel wishbone)
⇒ [page 20](#)
- ◆ Removing and installing wishbone with suspension bracket (vehicles with fabricated wishbone and bolt-on swivel joint)
⇒ [page 23](#)

1.10.2 Removing rear bush for suspension bracket

- Measure distance -a- between suspension bracket -1- and bonded rubber bush -2-.
- Note this value; it is required when installing the new bush.



- Pull out bush.
- 1 - Spindle from -T40034-
- 2 - Nut M20x2 from -T40034/2- or special nut E-8-214
- 3 - Thrust piece E-5
- 4 - Hollow piston cylinder HKZ-15
- 5 - Thrust piece -T40023- or thrust piece E-3
- 6 - Nut M18x2 -T40034/1-
- 7 - Tube -VAS 6032-
- 8 - High-pressure hose with quick-release coupling



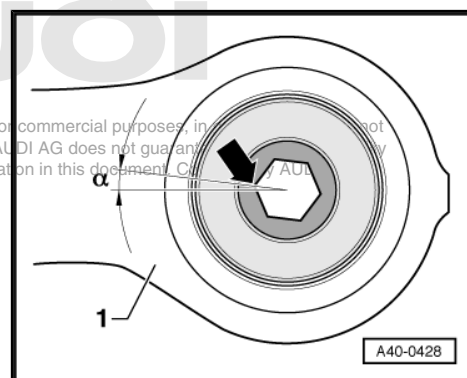
1.10.3 Installing

Installation position of bush in suspension bracket

The apex between two hexagon flats -arrow- must be aligned at angle α to the arm of the suspension bracket -1-.

$$\alpha = 7^\circ \pm 5^\circ$$

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 © 2003 AUDI AG



1.10.4 Installing rear bush for suspension bracket

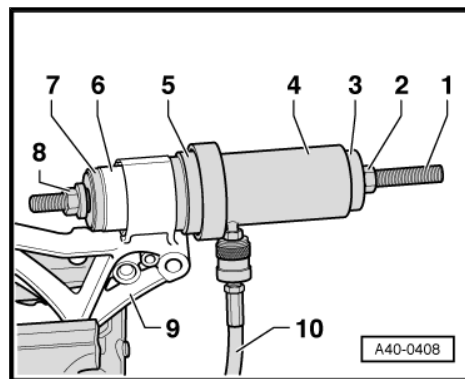


Note!

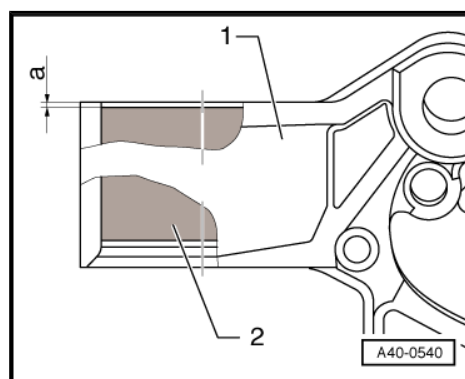
- ◆ Use assembly lubricating oil -G 294 421 A1- (diluted 1:20) when pressing in.
- ◆ This lubricating oil is acid-free and penetrates into the rubber after a short time (by diffusion).
- ◆ It leaves a slightly tacky film, which ensures firm seating of the bush.
- ◆ Most conventional greases or oils contain acid and cause a film of lubricant to form.
- ◆ This may affect the rubber, or cause the entire bush to twist in the suspension bush instead of flexing when the suspension compresses and rebounds.

– Press in bush.

- 1 - Spindle from -T40034-
- 2 - Nut M20x2 -T40034/2- -- or special nut E-8-214
- 3 - Thrust piece E-5
- 4 - Hollow piston cylinder HKZ-15
- 5 - Thrust piece E-42
- 6 - Bush
- 7 - Thrust piece -T40023- or thrust piece E-3
- 8 - Nut M18x2 -T40034/1-
- 9 - Suspension bracket
- 10 - High-pressure hose with quick-release coupling



- Obtain the correct distance -a- by pulling in the bush gradually.
- Dismantle the special tools and check distance -a- repeatedly while pulling in the bush.
- Repeat this procedure as often as necessary until the correct distance -a- is obtained.
- Assemble wishbone and suspension bracket ⇒ [page 25](#) .
- Install wishbone with suspension bracket.
- ◆ Removing and installing wishbone with swivel joint and suspension bracket (vehicles with forged-steel wishbone)
⇒ [page 20](#)
- ◆ Removing and installing wishbone with suspension bracket (vehicles with fabricated wishbone and bolt-on swivel joint)
⇒ [page 23](#)



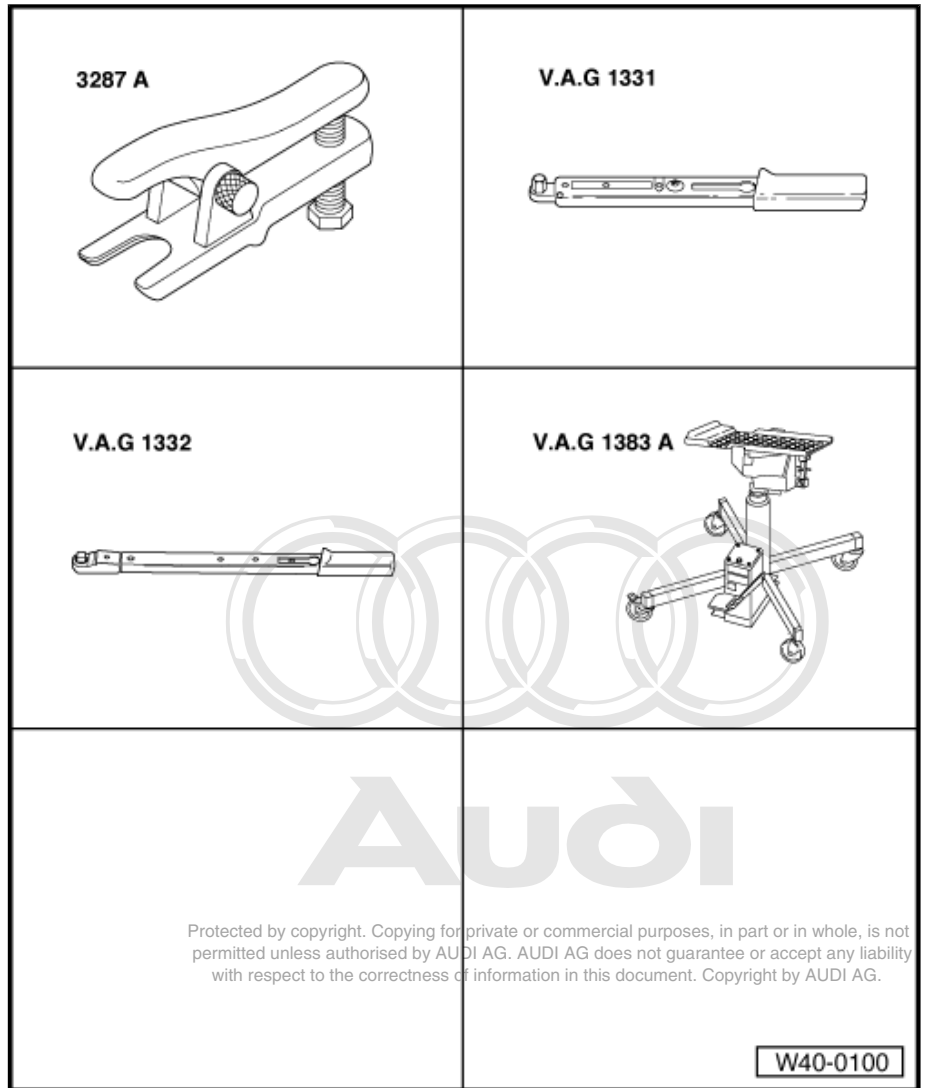
1.11 Removing and installing subframe



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.

Special tools and workshop equipment required

- ◆ Ball joint puller -3287 A-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-

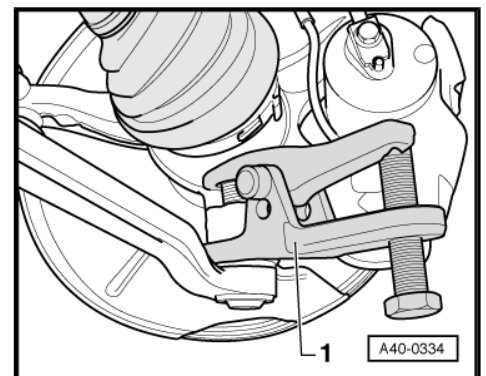


1.11.1 Removing

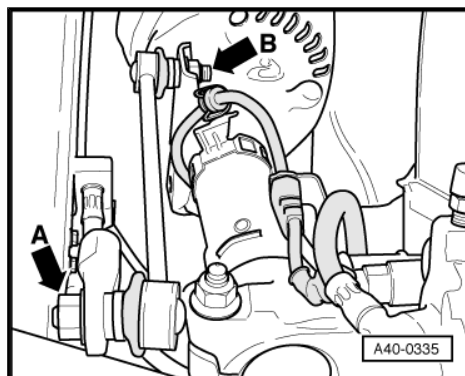
- Remove wheels.
- Remove noise insulation.
- Remove nuts on left and right swivel joints.
- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joints.



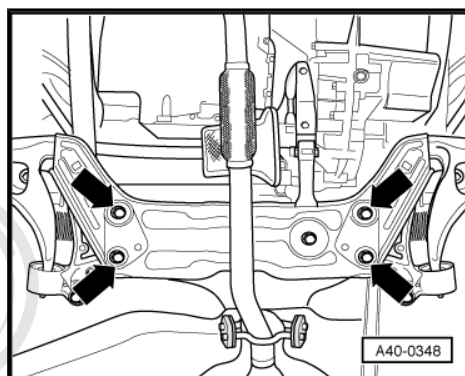
Take care not to damage rubber boot when inserting ball joint puller.



- Detach coupling rod from anti-roll bar -arrow A-.
- Turn anti-roll bar upwards.



- Unbolt steering box from subframe -arrows- and tie up with wire (or similar).
- Place engine and gearbox jack -V.A.G 1383 A- under subframe.
- Locate subframe ⇒ [page 12](#) .
- Carefully lower subframe.



1.11.2 Installing

- Secure subframe ⇒ [page 12](#) .

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

Before inserting subframe bolts, position steering box on subframe and insert bolts for steering box.

- Install swivel joints ⇒ [page 21](#) .
- Fit and secure wheels ⇒ [page 161](#) .

1.11.3 Tightening torques

Coupling rod to anti-roll bar	40 Nm
Steering box to subframe	50 Nm + 90°
◆ Use new bolts.	
Subframe to body	70 Nm + 90°
◆ Use new bolts.	
Swivel joint to wheel bearing housing	20 Nm + 90°
◆ Use new nut.	
Pendulum support to retaining plate	50 Nm + 90°
◆ Use new bolts.	

2 Subframe (1.2 TDI running gear): exploded view

General notes ⇒ [page 2](#)

1 - Subframe

- ❑ Removing and installing
⇒ [page 46](#)

2 - Cover

3 - Spreader rivet

4 - Stud

5 - Bolt

- ❑ 20 Nm and turn 90° further

6 - Anti-roll bar

- ❑ Removing and installing
⇒ [page 39](#)

7 - Coupling rod

- ❑ Link between anti-roll bar and wishbone
- ❑ Bolted to anti-roll bar
⇒ [Item 6 \(page 37\)](#),
tightening torque 25 Nm.

8 - Hexagon bolt, 25 Nm

9 - Suspension bracket

- ❑ Replacement part only
available as a unit with
bonded rubber bush

10 - Hexagon bolt M12 x 1.5 x 75

- ❑ 70 Nm and turn 90° further
- ❑ Always renew if removed

11 - Hexagon nut, 35 Nm

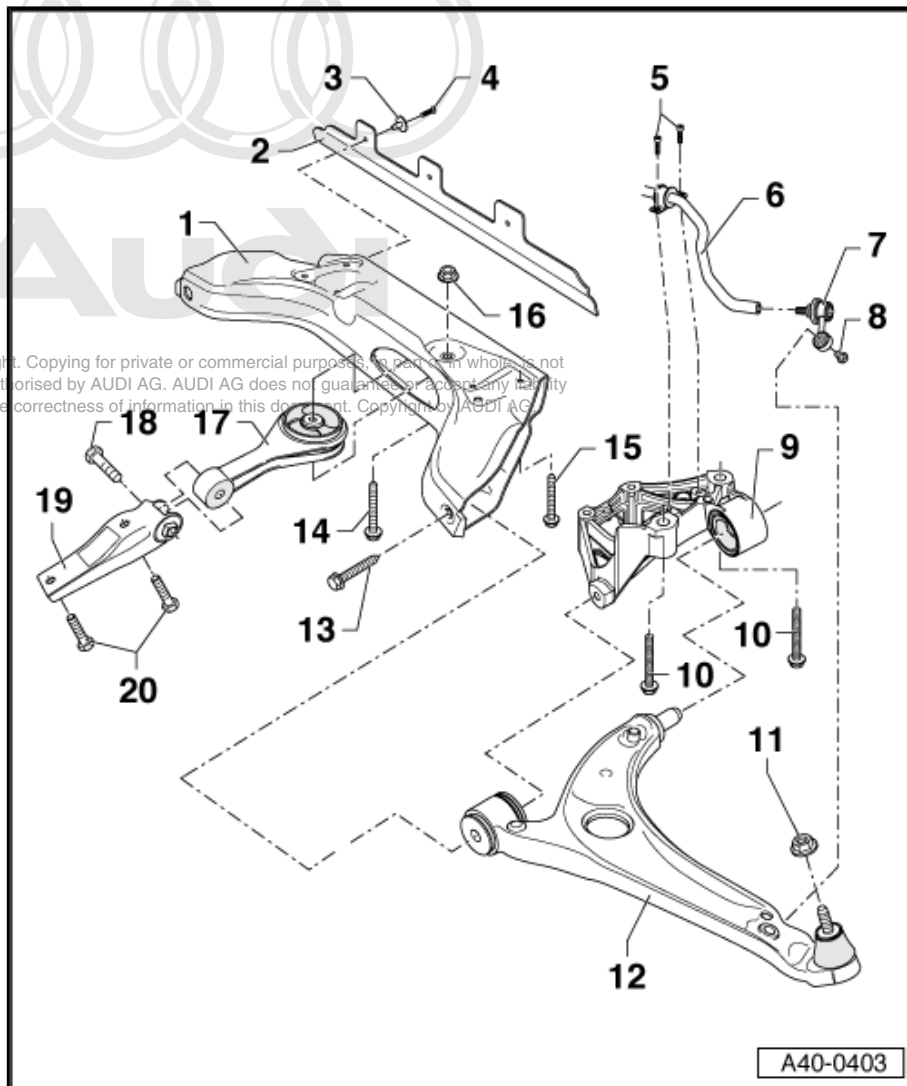
- ❑ Always renew if removed

12 - Wishbone with swivel joint

- ❑ Removing and installing ⇒ [page 41](#)
- ❑ Renew wishbone if swivel joint is defective
- ❑ Different versions for manual steering and power steering; check identification ⇒ [page 38](#)
- ❑ Supplied only as complete assembly with front stop washer, front bush and rear stop washer
- ❑ For correct version refer to ⇒ Parts catalogue

13 - Hexagon bolt M 12 x 1.5 x 100

- ❑ 70 Nm and turn 90° further
- ❑ Always renew if removed
- ❑ Note required assembly sequence:
 - First tighten hexagon bolt ⇒ [Item 13 \(page 37\)](#) lightly, then tighten hexagon bolt ⇒ [Item 15 \(page 38\)](#) lightly.
 - Then tighten hexagon bolts alternately to specified torque.



14 - Hexagon bolt

- ☐ 40 Nm and turn 90° further
- ☐ Always renew if removed

15 - Hexagon bolt

- ☐ 4x
- ☐ 50 Nm and turn 90° further
- ☐ Always renew if removed
- ☐ Note required assembly sequence:
 - First tighten hexagon bolt ⇒ [Item 13 \(page 37\)](#) lightly, then tighten hexagon bolt ⇒ [Item 15 \(page 38\)](#) lightly.
 - Then tighten hexagon bolts alternately to specified torque.

16 - Hexagon nut

17 - Pendulum support

18 - Hexagon bolt

- ☐ 40 Nm and turn 90° further
- ☐ Always renew if removed

19 - Retaining plate

20 - Hexagon bolt, 50 Nm

- ☐ Always renew if removed

Identification of wishbone

The letters “M” and “S” are embossed on the wishbone near the swivel joint -arrows-.

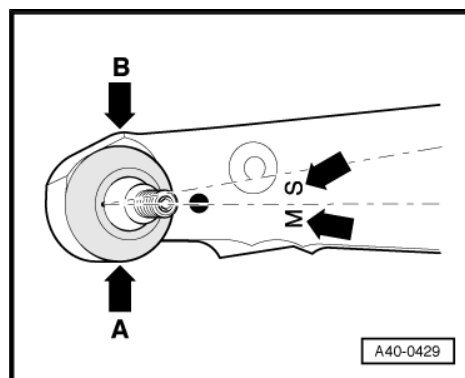
“M” stands for manual steering and “S” for power-assisted (servo) steering.

The “M” is coloured green if the vehicle is equipped with manual steering.

The “S” is coloured yellow if the vehicle is equipped with power-assisted steering.

On vehicles with manual steering, the swivel joint is located directly on the side facing the rear of the vehicle -arrow A-.

On vehicles with power-assisted steering, the swivel joint is located directly on the side facing in the direction of travel -arrow B-.



2.1 Locating subframe

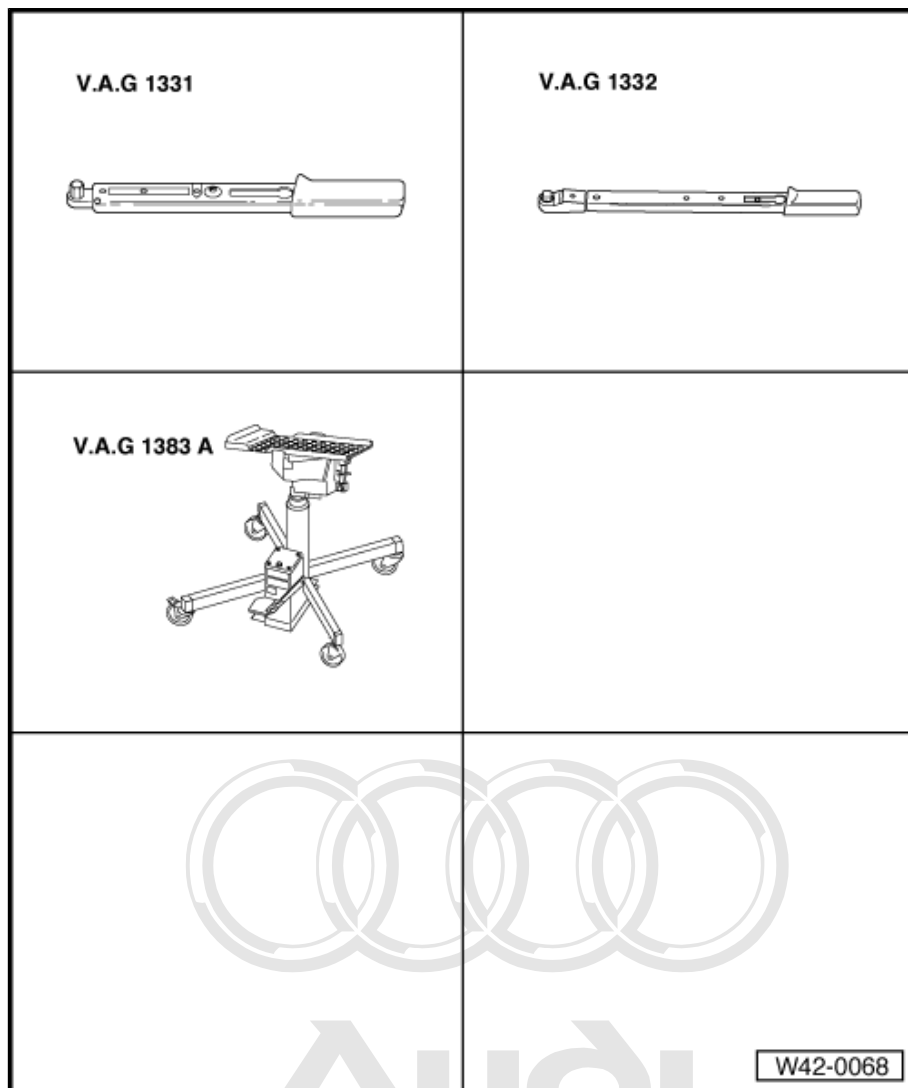
The procedure for locating the subframe in position is described on [page 12](#).

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

Special tools and workshop equipment required

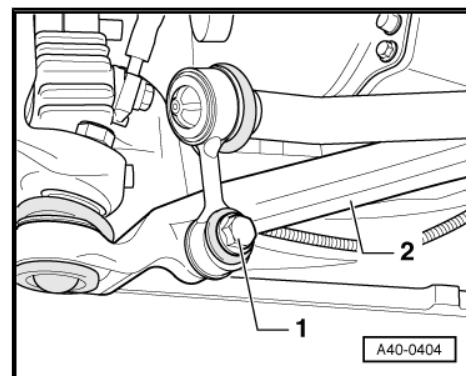
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-



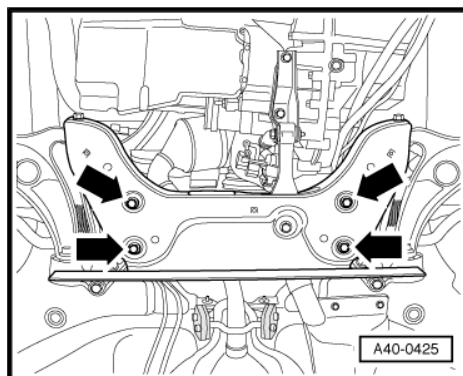
2.2.1 Removing

- Remove wheels.
- Remove noise insulation.
- Unscrew bolt -1- from wishbone -2- on both sides.

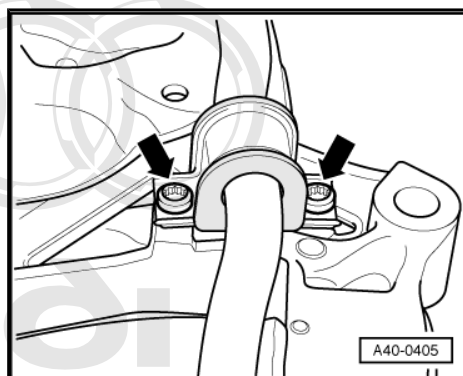
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- Unbolt steering box from subframe -arrows- and tie up with wire (or similar).
- Place gearbox jack -V.A.G 1383 A- under subframe.
- Locate subframe ⇒ [page 12](#) .
- Carefully lower subframe.



- Detach clamps for anti-roll bar from suspension bracket -arrows-.
- Remove anti-roll bar from one side.



2.2.2 Installing

- Secure subframe ⇒ [page 12](#) .

Installation is carried out in the reverse sequence.

- Fit and secure wheels ⇒ [page 161](#) .

2.2.3 Tightening torques

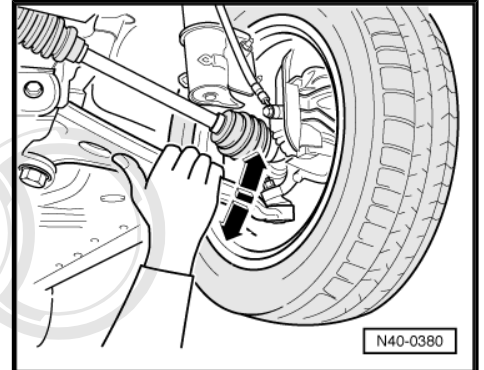
Anti-roll bar to suspension bracket	20 Nm + 90°
◆ Use new bolts.	
Anti-roll bar to wishbone	23 Nm
◆ Use new bolts.	
Steering box to subframe	50 Nm + 90°
◆ Use new bolts.	
Subframe to body	70 Nm + 90°
◆ Use new bolts.	
Pendulum support to retaining plate	40 Nm + 90°
◆ Use new bolts.	

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

2.3 Checking swivel joint

2.3.1 Checking axial play

- Pull wishbone firmly downwards and press back up again.



2.3.2 Checking radial play

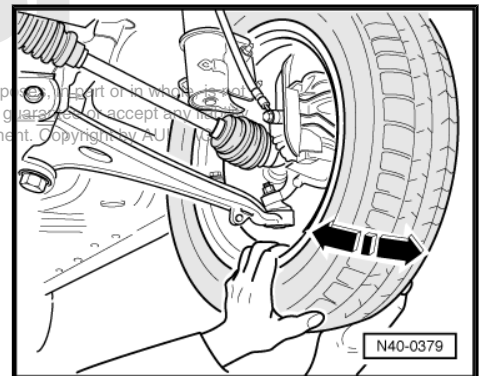
- Press bottom of wheel firmly inwards and outwards.



Note!

Protected by copyright. Copying for private or commercial purposes without the written permission of Audi AG is prohibited. Audi AG does not guarantee or accept any responsibility with respect to the correctness of information in this document. Copyright © Audi AG 2003.

- ◆ *There should be no perceptible or visible "play" when carrying out both tests.*
- ◆ *Observe the swivel joint while performing the tests.*
- ◆ *Take into account any existing wheel bearing play or "play" in upper suspension strut mounting.*
- ◆ *Check rubber boot for damage, renew swivel joint if necessary.*

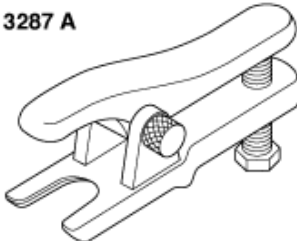
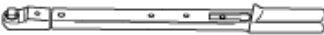


2.4 Removing and installing wishbone with swivel joint and suspension bracket



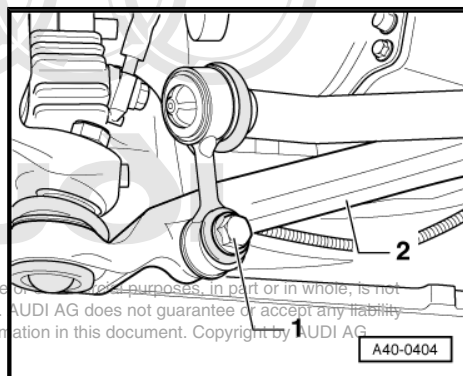
Special tools and workshop equipment required

- ◆ Ball joint puller -3287 A-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-

3287 A 	V.A.G 1331 
V.A.G 1332 	
	G40-0022

2.4.1 Removing

- Remove wheel.
- Remove noise insulation.
- Remove bolt -1- from wishbone -2-.
- Unscrew nut from swivel joint.



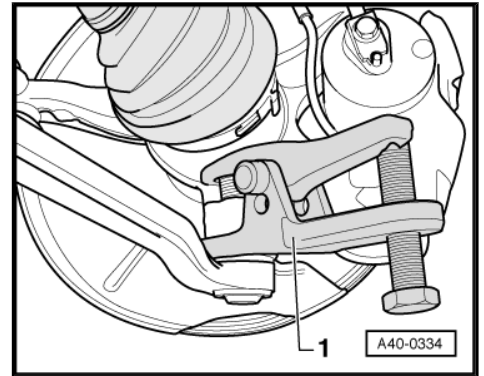
Protected by copyright. Copying for private or non-commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG

A40-0404

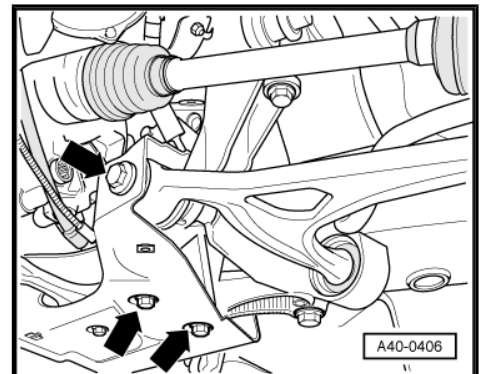
- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joint.

i Note!

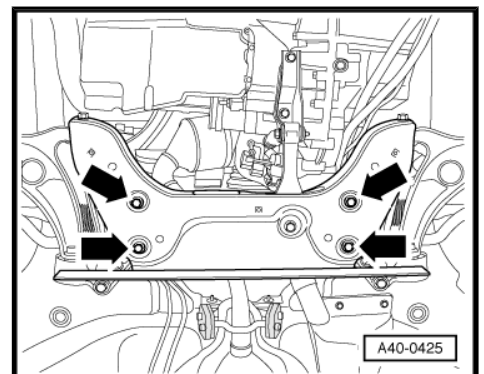
Take care not to damage rubber boot when inserting ball joint puller.



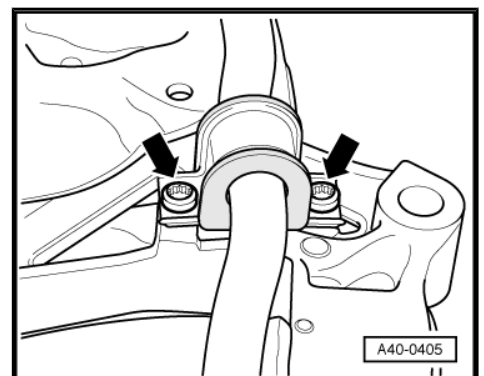
- Remove bolts -arrows-.



- Remove remaining bolts securing steering box to subframe -arrows- and tie up steering box with wire (or similar).
- Place engine and gearbox jack -V.A.G 1383 A- under subframe.
- Locate subframe ⇒ [page 12](#).
- Carefully lower subframe.



- Detach clamps for anti-roll bar from suspension bracket -arrows-.
- Pull wishbone with suspension bracket out of subframe.

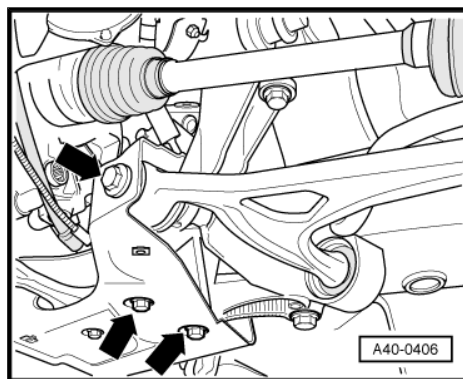


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2.4.2 Installing

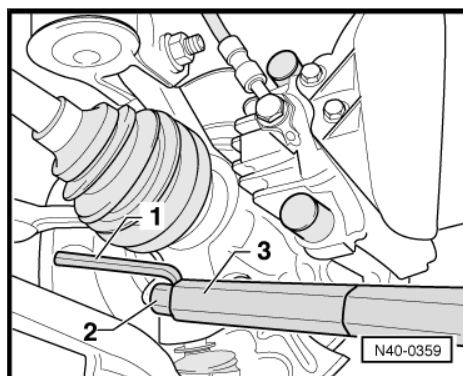
- Insert wishbone in subframe.

- Insert bolts -arrows-.
- Secure subframe ⇒ [page 12](#) .



- Install new self-locking nut on swivel joint, counterholding with 5 mm Allen key .
- 1 - 5 mm Allen key , shortened approx. 10 mm
- 2 - Ring spanner insert or slotted ring spanner insert ⇒ [page 44](#) , Fig. V40-1323
- 3 - 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.



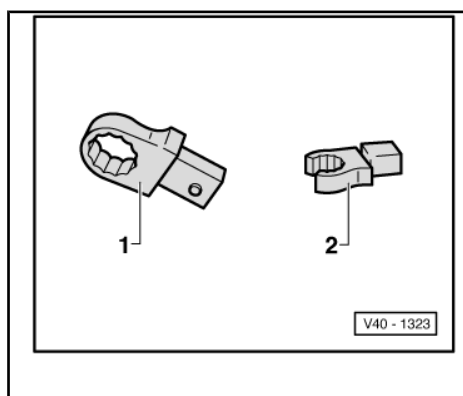
- Ring spanner inserts:
- 1 - Ring spanner insert (commercial type, 16 mm)
- 2 - Slotted ring spanner insert (commercial type, 16 mm)


Note!

Ensure sealing boot is not damaged or twisted.

- Fit and secure wheel ⇒ [page 161](#) .

Remaining installation steps are carried out in reverse sequence.



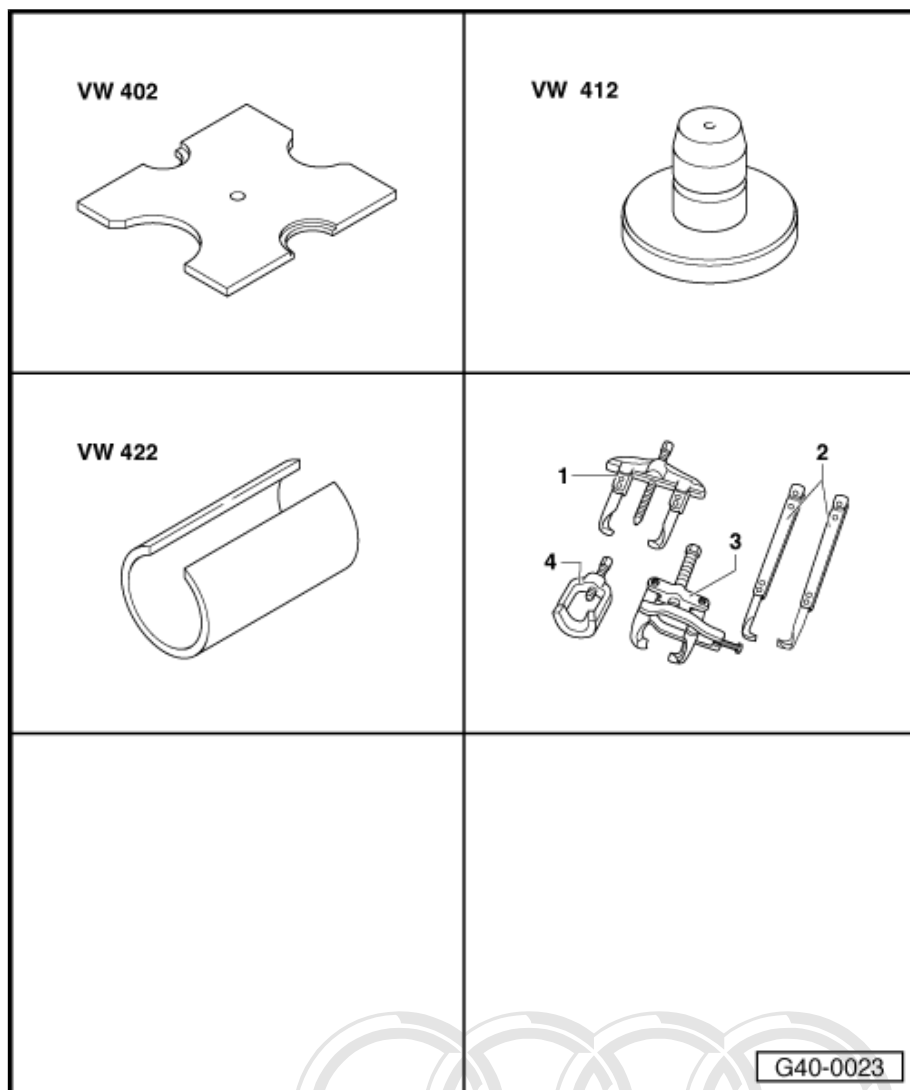
2.4.3 Tightening torques

Anti-roll bar to suspension bracket	20 Nm + 90°
◆ Use new bolts.	
Coupling rod to wishbone	23 Nm
Steering box to subframe	50 Nm + 90°
◆ Use new bolts.	
Subframe to body	70 Nm + 90°
◆ Use new bolts.	
Swivel joint to wheel bearing housing	20 Nm + 90°
◆ Use new nut.	
Wishbone to subframe	70 Nm + 90°
◆ Use new bolts.	

2.5 Separating and assembling wishbone and suspension bracket

Special tools and workshop equipment required

- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 412-
- ◆ Tube -VW 422-
- ◆ -1- Two-arm puller -Kukko 20/10-



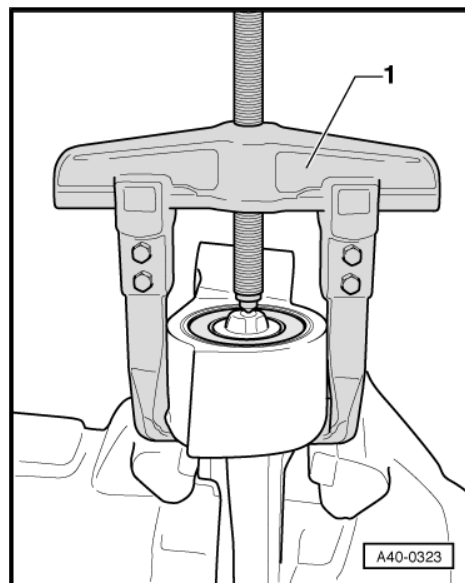
2.5.1 Separating wishbone from suspension bracket

- File the end of the wishbone until it is flat and make a centre-punch mark in the centre.

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

1 - Two-arm puller , e.g. -Kukko 20/10-



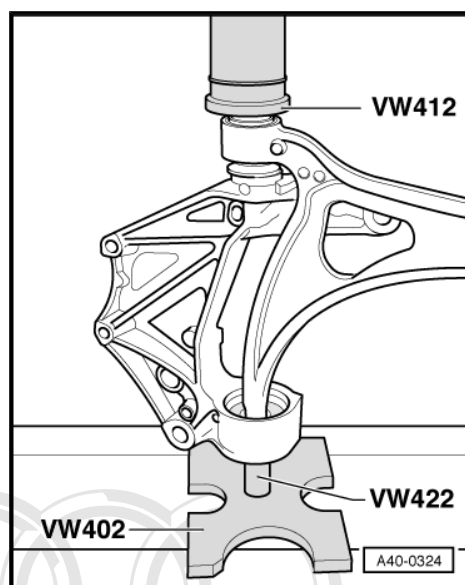
2.5.2 Assembling wishbone and suspension bracket

- Coat hexagon flats of wishbone with assembly lubricating oil -G 294 421 A1- (diluted 1:20).
- Press wishbone into suspension bracket.



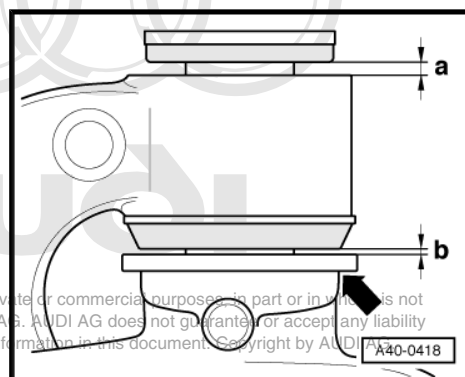
Note!

Note installation position of wishbone in relation to suspension bracket when pressing in. The flats on the wishbone must align with the flats in the suspension bracket bush.



Checking dimensions

- ◆ Distance -a- between front stop washer and wishbone must be $2.8^{+0.45}_{-0.7}$ mm.
- ◆ Distance -b- between rear stop washer and wishbone must be 1.4 ± 0.6 mm.
- ◆ There must be zero gap between rear stop washer and suspension bracket -arrow-.

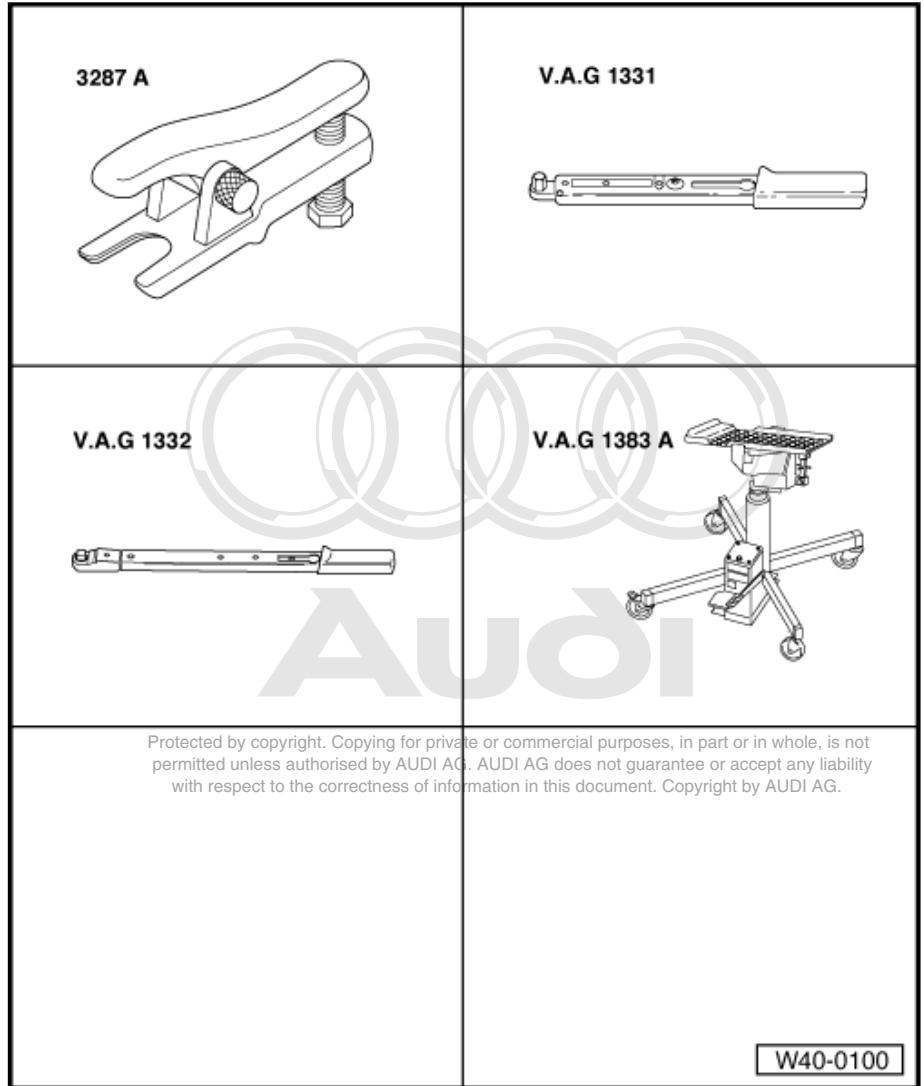


Protected by copyright. Copying for private or commercial purposes in part or in whole is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2.6 Removing and installing subframe

Special tools and workshop equipment required

- ◆ Ball joint puller -3287 A-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-

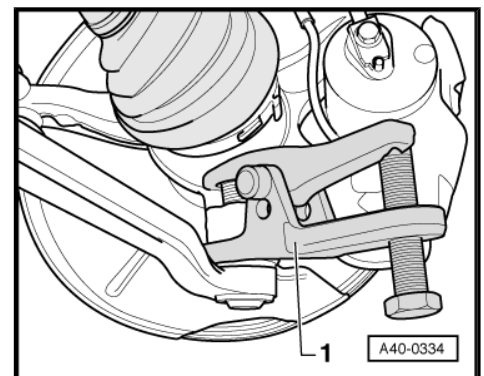


2.6.1 Removing

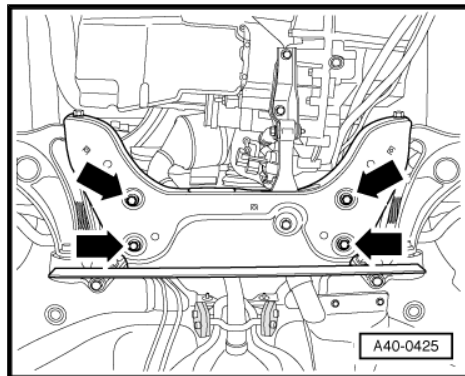
- Remove wheels.
- Remove noise insulation.
- Remove nuts on left and right swivel joints.
- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joints.



Take care not to damage rubber boot when inserting ball joint puller.



- Unbolt steering box from subframe -arrows- and tie up with wire (or similar).
- Place engine and gearbox jack -V.A.G 1383 A- under subframe.
- Locate subframe ⇒ [page 12](#) .
- Carefully lower subframe.



2.6.2 Installing

- Secure subframe ⇒ [page 12](#) .

Installation is carried out in the reverse sequence.

Before inserting subframe bolts, position steering box on subframe and insert bolts for steering box.

- Install swivel joints ⇒ [page 44](#) .
- Fit and secure wheels ⇒ [page 161](#) .

2.6.3 Tightening torques

Steering box to subframe

◆ Use new bolts.

50 Nm +
90°

Subframe to body

◆ Use new bolts.

70 Nm +
90°

Swivel joint to wheel bearing housing

◆ Use new nut.

20 Nm +
90°

Wishbone to subframe

◆ Use new bolts.

70 Nm +
90°

Pendulum support to retaining plate

◆ Use new bolts.

40 Nm +
90°

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

3 Wheel bearing (basic running gear): exploded view

General notes ➔ [page 2](#)

1 - Drive shaft

- ☐ With deflector ring
- ☐ Remove any paint and adhesive and/or corrosion or locking fluid remaining on splines and thread of outer joint.
- ☐ Degrease splines and thread of outer joint before inserting in wheel hub
- ☐ Apply 2 beads of locking fluid on splines
➔ [page 50](#)

2 - Suspension strut

- ☐ Exploded view
➔ [page 65](#)

3 - Hexagon nut

4 - Wheel bearing housing

- ☐ Check dimensions before installing new wheel bearing
➔ [page 54](#)

5 - Hexagon bolt

- ☐ 60 Nm and turn 90° further
- ☐ Always renew if removed
- ☐ Threaded end of bolt points in direction of travel

6 - Hexagon socket head bolt, 8 Nm

7 - Speed sensor

- ☐ Before inserting sensor, clean inner surface of bore and coat with lubricating paste -G 000 650-

8 - Self-locking nut, 45 Nm

- ☐ Always renew if removed

9 - Hexagon bolt, 10 Nm

10 - Splash plate

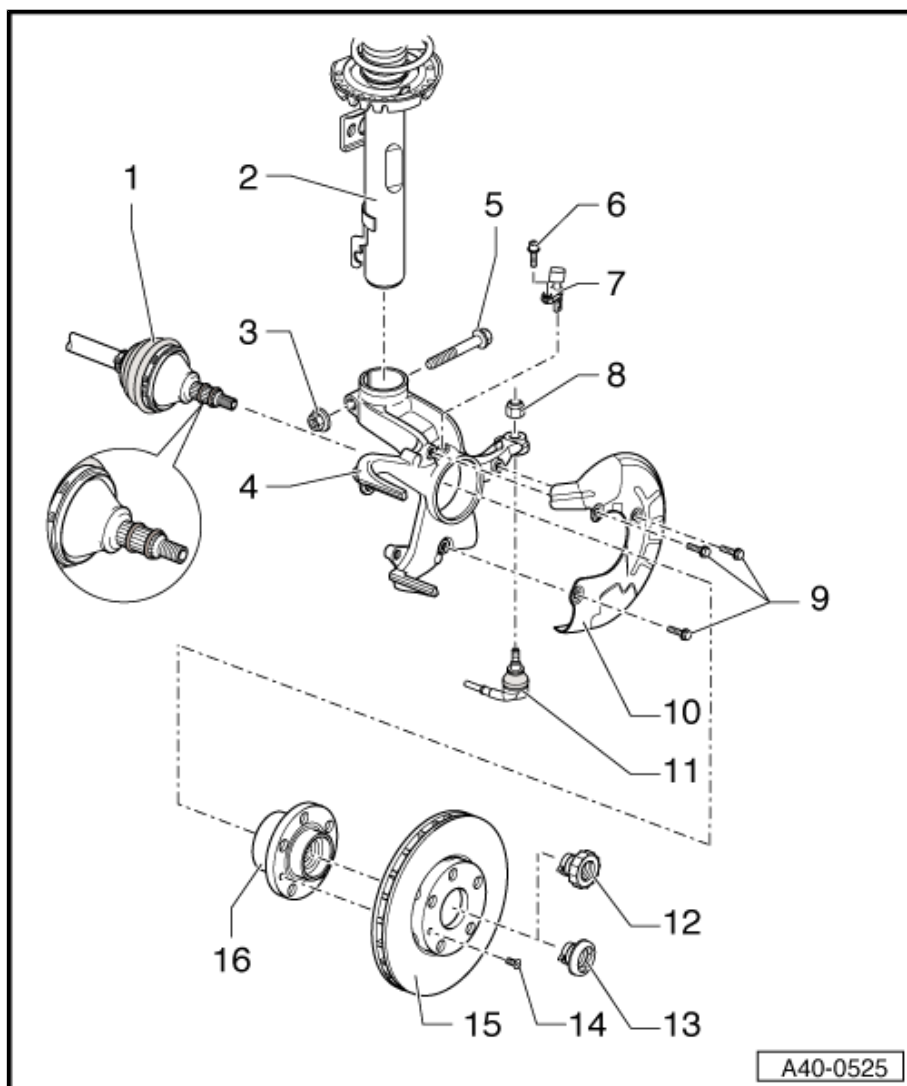
11 - Track rod ball joint

12 - 12-point nut, 120 Nm

- ☐ Always renew
- ☐ For correct version refer to ➔ Parts catalogue

13 - Hexagon socket nut

- ☐ This version should no longer be used
- ☐ Replace with 12-point nut ➔ [Item 12 \(page 49\)](#)



Protected by copyright. Copying for private or 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.

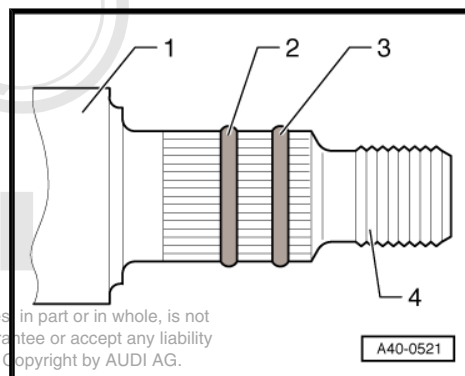
14 - Cross-head screw, 4 Nm**15 - Brake disc (ventilated)****16 - Wheel hub with wheel bearing**

- ☐ The ABS sensor ring is incorporated in the seal of the wheel bearing
- ☐ Removing ⇒ [page 51](#)
- ☐ Renew; is destroyed when pulled out
- ☐ Installing ⇒ [page 51](#)

Applying locking fluid

- Apply two beads of locking fluid -D 185 400 A2- as illustrated.
Bead diameter approx. 2 mm.

- 1 - Outer joint
- 2 - Bead approximately in centre of splines
- 3 - Bead near beginning of splines
- 4 - Do not grease thread on outer joint (stub axle).

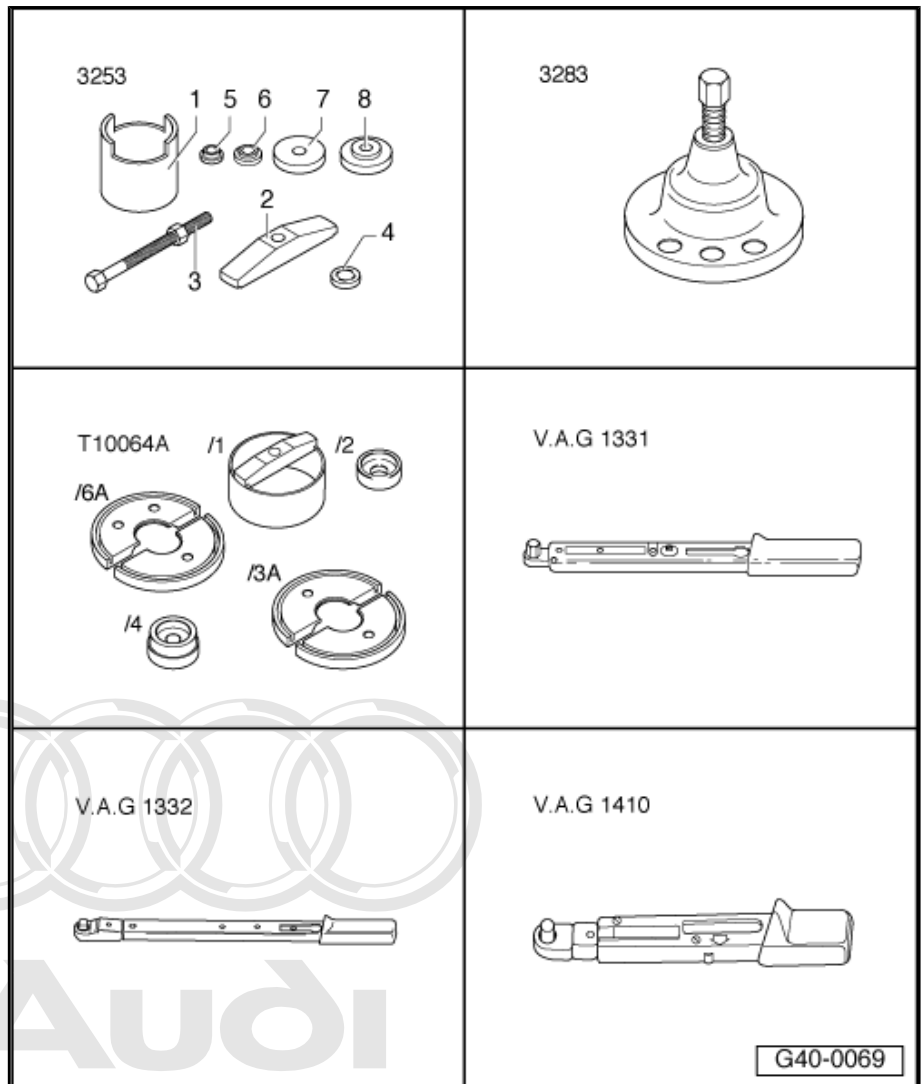


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3.1 Removing and installing front wheel hub/wheel bearing unit with wheel bearing housing installed

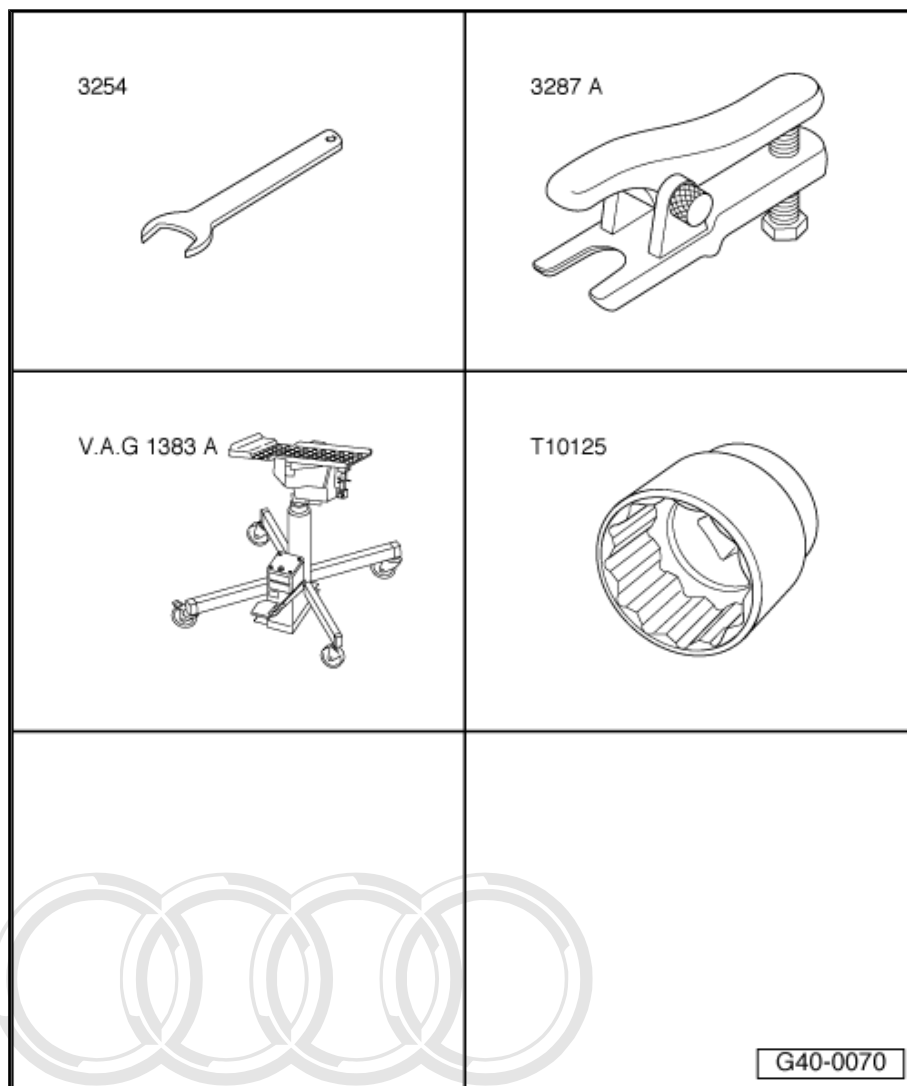
Special tools and workshop equipment required

- ◆ Assembly tool -3253-
- ◆ Press tool -3283-
- ◆ -T10064/6A- from assembly tool
- ◆ -T10064/1- from assembly tool
- ◆ -T10064/4 - from assembly tool
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Torque wrench - V.A.G 1410-



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

- ◆ Open-end spanner (50 mm) -3254-
- ◆ Ball joint puller -3287 A-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Socket (36 mm) -T10125-



3.1.1 Removing

- Lift vehicle far enough to take weight off front wheels.

Vehicles with hexagon socket nut

- Remove hexagon socket nut from drive shaft with 19 mm hexagon key, e.g. Hazet No. 985.

Vehicles with 12-point nut

- Remove 12-point nut from drive shaft with 36 mm socket - T10125- .

All vehicles (continued):

- Unscrew bolt from brake hose bracket ⇒ Brake system; Rep. Gr. 46 ; Servicing front brakes .
- Remove wheel.

Vehicles with forged steel wishbone and integral swivel joint

- Unscrew nut from swivel joint.

- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joint.

Note!

Take care not to damage rubber boot when inserting ball joint puller.

Vehicles with fabricated wishbone and bolt-on swivel joint

- Mark positions of bolts securing swivel joint to wishbone.

- Remove bolts -arrows-.
- Pull wheel bearing housing with swivel joint out of wishbone.

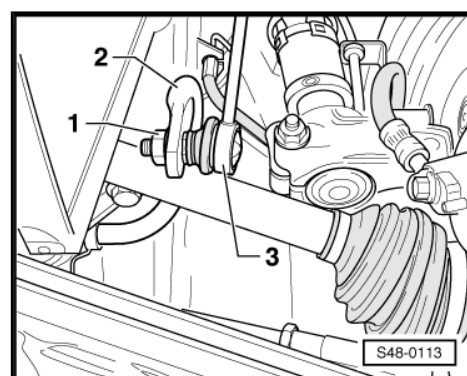
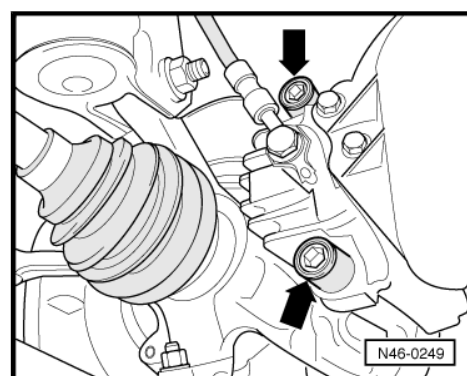
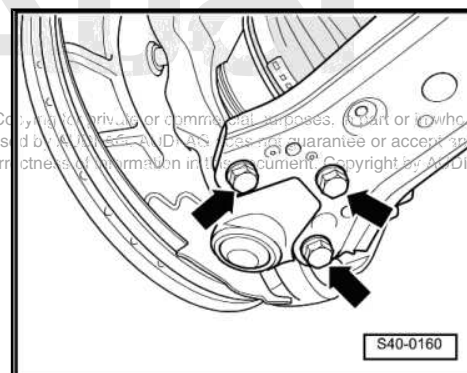
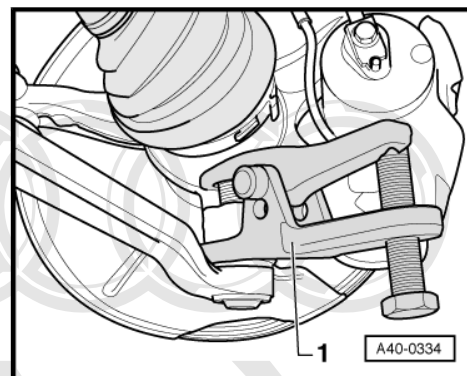
All vehicles (continued):

- Remove protective caps.

- Unscrew and remove both guide pins -arrows- from brake caliper.

- Take off the brake caliper housing and secure with wire so that the brake hose does not take the weight of the brake caliper and is not damaged.

- Remove hexagon nut -1- from coupling rod.
- Pull coupling rod -3- out of anti-roll bar -2-.



- Press out drive shaft.



Note!

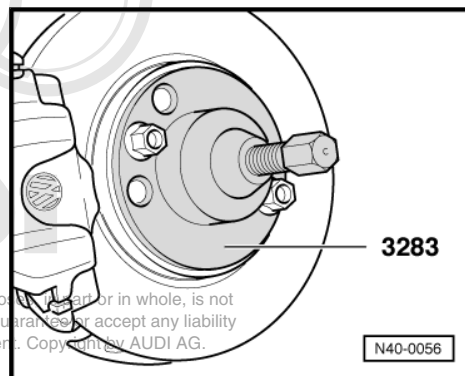
Ensure sufficient clearance when pressing out drive shaft.

- Remove drive shaft from wheel bearing housing and tie up.

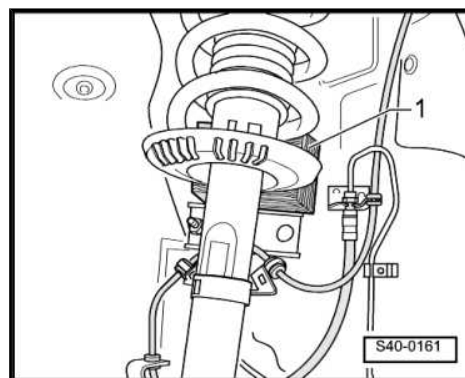
The drive shaft must not hang down under its own weight.

Otherwise the inner joint will be bent too far and will be damaged.

Protected by copyright. Copying for private or commercial purposes without the written permission of Audi AG is not guaranteed or accepted any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- Pivot suspension strut outwards and hold in place with a wooden block or similar -1-.
- Remove cross-head screw for brake disc and take off brake disc.
- Remove splash plate.
- Remove speed sensor from wheel bearing housing.



3.1.2 Pulling out wheel hub with wheel bearing

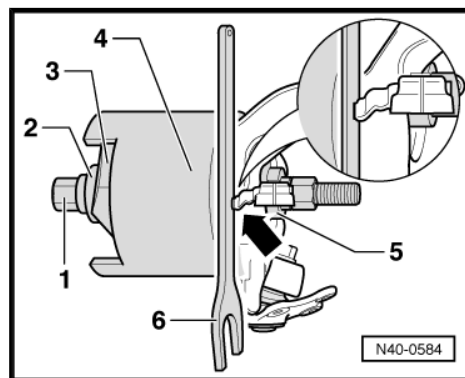


Note!

Place gearbox jack -V.A.G 1383/A- underneath (danger of accident from parts dropping out when wheel hub/wheel bearing unit is pulled out).

- Insert 50 mm open-end spanner -3254- between -3253/1- and mounting surface on steering arm -arrow-.
- Pull wheel hub together with wheel bearing out of wheel bearing housing. Hold tool assembly firmly while doing this.

- 1 - Spindle -3253/3-
- 2 - Axial roller bearing -3253/4-
- 3 - Cross piece -3253/2-
- 4 - Tube -3253/1-
- 5 - Thrust plate -3253/6-
- 6 - Open-end spanner (50 mm) -3254-



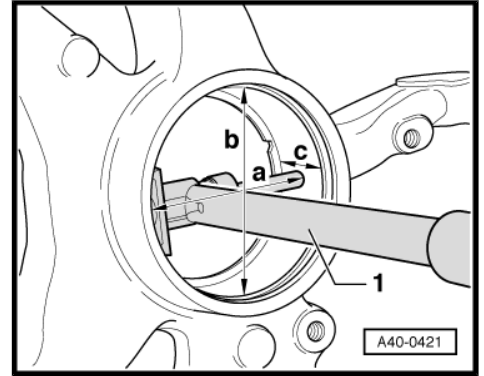
3.1.3 Checking dimensions of wheel bearing housing

Special tools and workshop equipment required

- ◆ Cylinder gauge 50...100 mm (commercial type)
- Remove remaining pieces of circlip from slot and bore in wheel bearing housing.
- Clean bore of wheel bearing housing.

- Measure in both directions -a- and -b- at each of 2 points in axial direction -c-. Tolerance range: 71.922 mm to 71.952 mm
- 1 - Cylinder gauge 50...100 mm (commercial type)

The wheel bearing housing must be renewed if any of the values are outside the specified tolerance range.



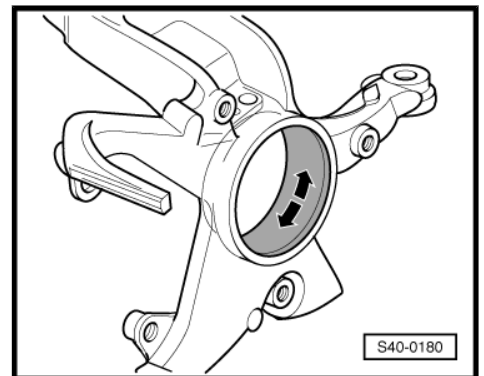
3.1.4 Installing

Installing wheel hub with wheel bearing

- Coat entire surface of bore with Molykote grease.

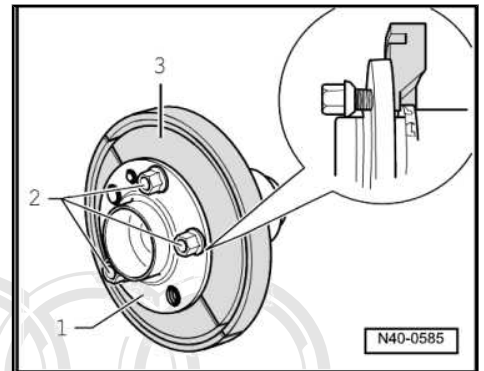
Molykote grease -G 052 723 A2-

Use grease sachet from repair kit.



- Bolt grip plates -T10064/6A- -3- to wheel hub/wheel bearing unit -1-.

Wheel bolts -2- must not project beyond rear surface of grip plates -T10064/6A- .



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

- Pull wheel hub/wheel bearing unit into wheel bearing housing.


Note!

Make sure wheel hub/wheel bearing unit is kept straight when installing.

- Pull in wheel hub/wheel bearing unit circlip engages audibly.

1 - Axial roller bearing -3253/4-

2 - Tube -T10064/1-

3 - Grip plates -T10064/6A-

4 - Spindle -3253/3-

5 - Guide piece -T10064/4-

- Insert guide piece -T10064/4- with larger diameter facing wheel bearing housing.

- Unbolt grip plates -T10064/6A- from wheel hub/wheel bearing unit.

1 - Wheel hub with wheel bearing

2 - Wheel bolts

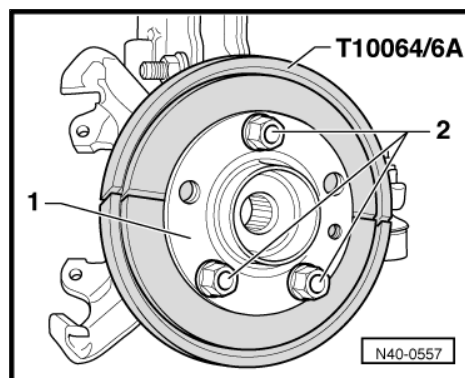
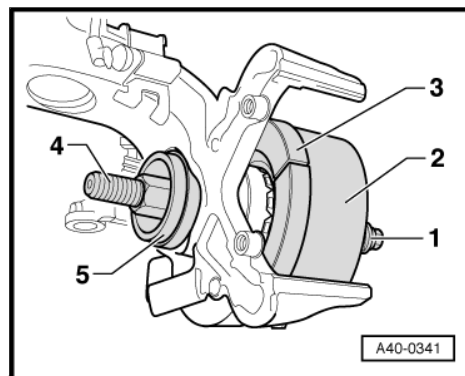
Remaining installation steps are carried out in reverse sequence.
Note the following points:

- Remove any paint or adhesive residue and/or corrosion on thread and splines of outer drive shaft joint.
- Remove any remaining locking fluid from splines on outer drive shaft joint and splines of wheel hub.

Splines on outer joint and splines of wheel hub must be free of oil and grease.

- Degrease thread on outer joint (stub axle) if necessary.

Important: Do not apply grease to threads of outer joint.



- Apply two beads of locking fluid -D 185 400 A2- on splines as illustrated. Bead diameter approx. 2 mm.

- 1 - Outer joint
- 2 - Bead approximately in centre of splines
- 3 - Bead near beginning of splines
- 4 - Do not grease thread on outer joint (stub axle).

Vehicles with fabricated wishbone and bolt-on swivel joint

- When securing swivel joint to wishbone on vehicles with fabricated wishbone, keep to previously marked position of bolts, or original bolt impressions. Use new bolts and a new locking plate with nuts.

Observe correct installation sequence of bolts

⇒ [Item 15 \(page 11\)](#) .

- Fit and secure wheels ⇒ [page 161](#) .

After installation, check position of steering wheel by test-driving vehicle.

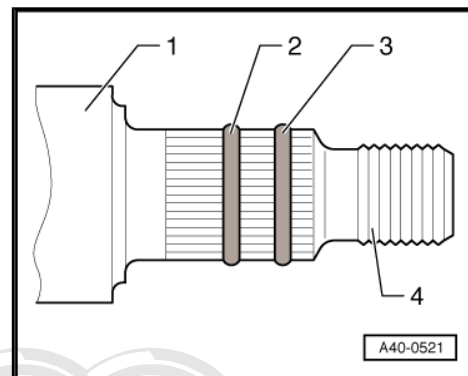
Wheel alignment must be checked and adjusted if steering wheel is not in central position when driving straight-ahead.

- Check and adjust wheel alignment ⇒ [page 164](#) .

All vehicles (continued):

- Always replace hexagon socket nut (**pressed steel version**) with a 12-point nut.

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



3.1.5 Tightening torques

- | | |
|---|-------------------------------------|
| Swivel joint to wheel bearing housing | ⇒ Item 11 (page 10) |
| ◆ Use new nut. | |
| Swivel joint to wheel bearing housing | ⇒ Item 13 (page 11) |
| ◆ Use new nut. | |
| Swivel joint to wishbone | ⇒ Item 15 (page 11) |
| ◆ Use new nut. | |
| ◆ Use new locking plate with nuts. | |
| Guide pin for brake caliper to wheel bearing housing ⇒ Brake system; Rep. Gr. 46 ; Servicing front brakes | |
| Coupling rod to anti-roll bar | ⇒ Item 2 (page 10) |
| Splash plate to wheel bearing housing | ⇒ Item 9 (page 49) |
| Cross-head screw for brake disc | ⇒ Item 14 (page 50) |
| Speed sensor to wheel bearing housing | ⇒ Item 6 (page 49) |
| 12-point nut for drive shaft to wheel hub with wheel bearing | ⇒ Item 12 (page 49) |
| Wheel bolts | ⇒ page 161 |

4 Wheel bearing (1.2 TDI running gear): exploded view

General notes ⇒ [page 2](#)

1 - Drive shaft

- ☐ Remove any paint and adhesive and/or corrosion or locking fluid remaining on splines and thread of outer joint.
- ☐ Degrease splines and thread of outer joint before inserting in wheel hub
- ☐ Apply 2 beads of locking fluid on splines
⇒ [page 59](#)
- ☐ Grease threads of outer joint (stub axle) with solid grease G 052 751 A1.

2 - Self-locking nut

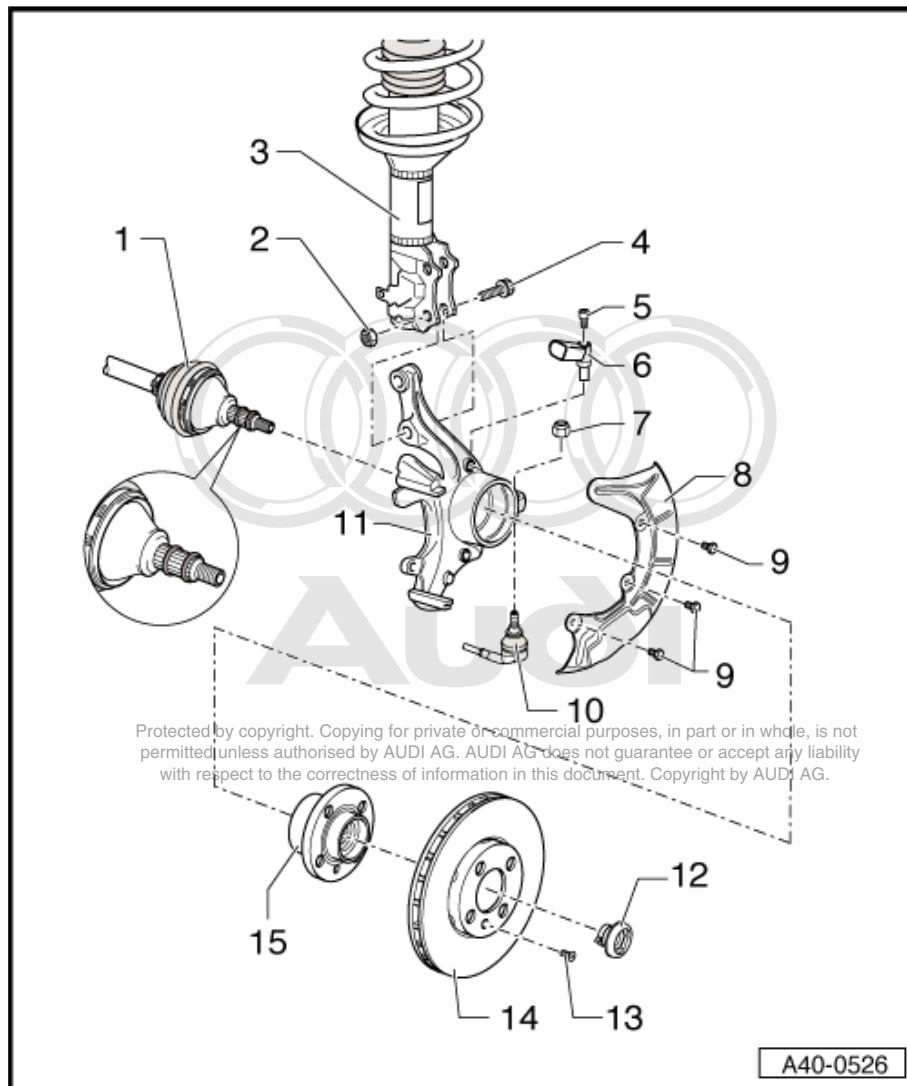
- ☐ 70 Nm and turn 90° further
- ☐ Always renew if removed
- ☐ For correct version refer to ⇒ Parts catalogue

3 - Suspension strut

- ☐ Exploded view
⇒ [page 71](#)

4 - Hexagon bolt

- ☐ Always renew if removed
- ☐ Mark installation position before loosening
- ☐ Threaded end of bolt points in direction of travel



5 - Hexagon socket head bolt, 8 Nm

6 - Speed sensor

- ☐ Before inserting sensor, clean inner surface of fitting hole and coat with grease G 000 650

7 - Self-locking nut -45 Nm-

- ☐ Always renew if removed

8 - Splash plate

9 - Hexagon bolt, 10 Nm

10 - Track rod ball joint

11 - Wheel bearing housing

- ☐ Different versions for manual steering and power steering; check identification ⇒ [page 59](#)
- ☐ Check dimensions before installing new wheel bearing ⇒ [page 62](#)

12 - Hexagon socket nut, 30 Nm

- ☐ For correct version refer to ⇒ Parts catalogue

- ☐ Always renew
- ☐ Colour: black

13 - Cross-head screw, 4 Nm

14 - Brake disc (ventilated)

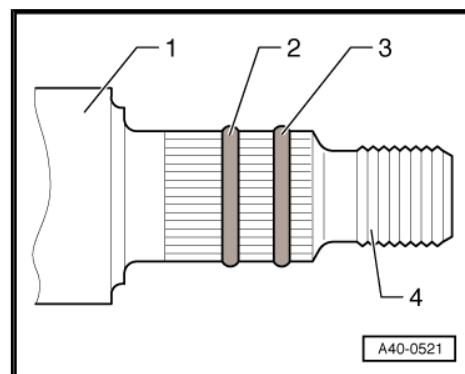
15 - Wheel hub with wheel bearing

- ☐ The ABS sensor ring is incorporated in the seal of the wheel bearing
- ☐ Removing ⇒ [page 60](#)
- ☐ Renew; is destroyed when pulled out
- ☐ Installing ⇒ [page 60](#)

Applying locking fluid

- Apply two beads of locking fluid D 185 400 A2 as illustrated. Bead diameter approx. 2 mm.

- 1 - Outer joint
- 2 - Bead approximately in centre of splines
- 3 - Bead near beginning of splines
- 4 - Grease threads of outer joint (stub axle) all round with solid grease -G 052 751 A1-



Identification of wheel bearing housing

The letters "M" and "S" are embossed on the wheel bearing housing near the swivel joint mounting -arrows-

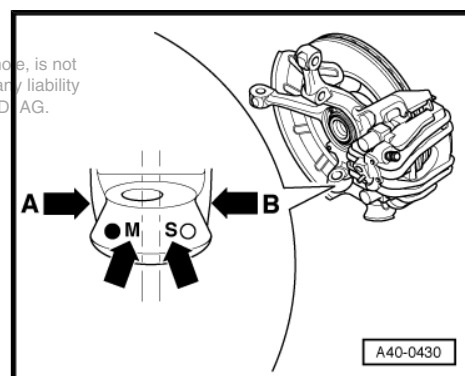
"M" stands for manual steering and "S" for power-assisted (servo) steering.

The wheel bearing housing is marked with a green dot if the vehicle is equipped with manual steering.

The wheel bearing housing is marked with a yellow dot if the vehicle is equipped with power steering.

On vehicles with manual steering, the bore is offset towards the side facing the rear of the vehicle -arrow A-.

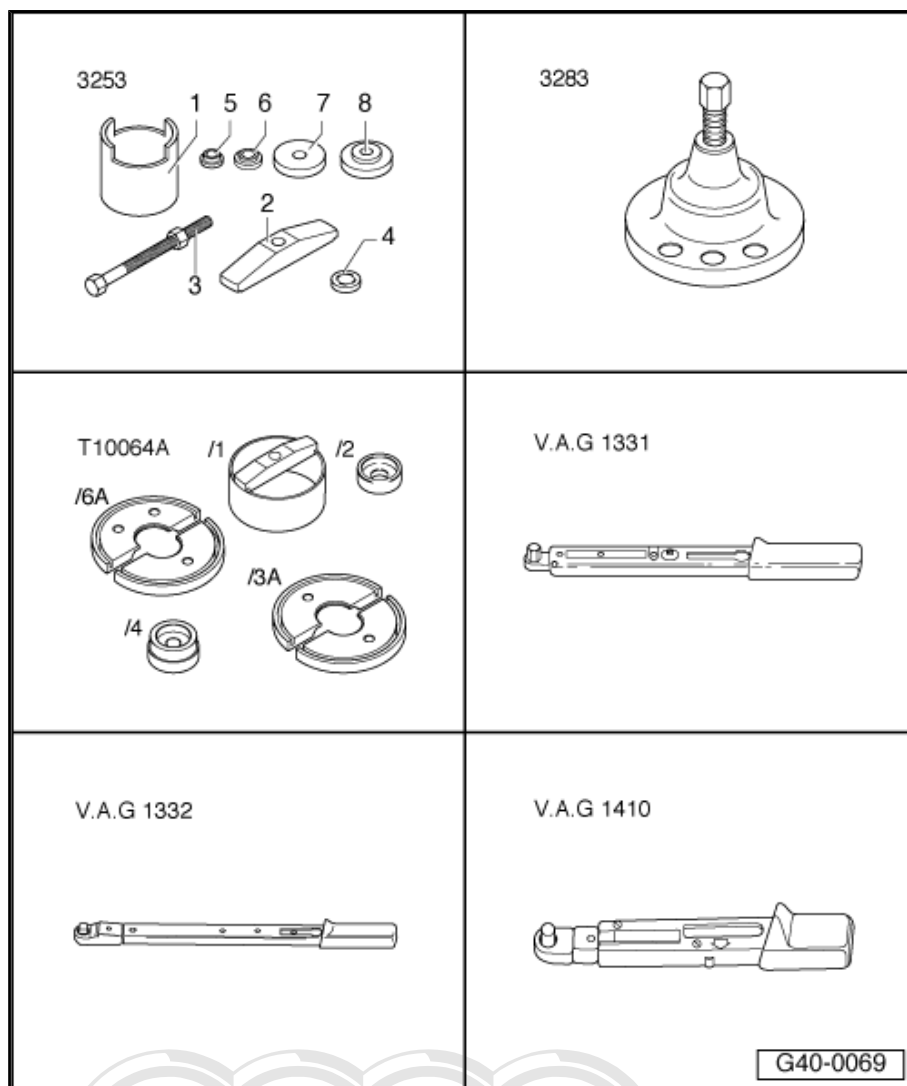
On vehicles with power steering, the bore is offset towards the side facing in the direction of travel -arrow B-.



4.1 Removing and installing front wheel hub/wheel bearing unit with wheel bearing housing installed

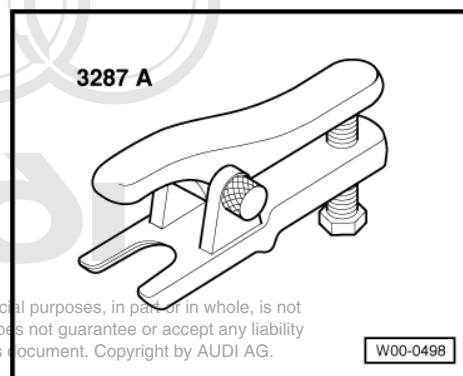
Special tools and workshop equipment required

- ◆ Assembly tool -3253-
- ◆ Press tool -3283-
- ◆ -T10064/3A- from assembly tool
- ◆ -T10064/1- from assembly tool
- ◆ -T10064/2- from assembly tool
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Torque wrench - V.A.G 1410-



G40-0069

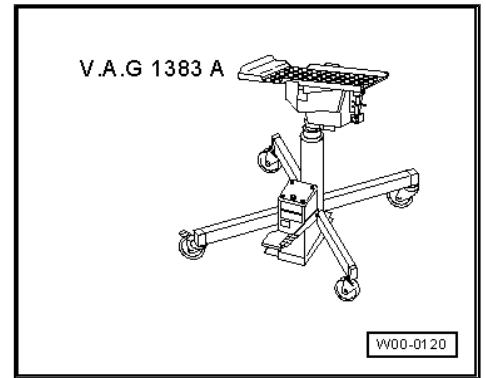
- ◆ Ball joint puller -3287 A-



W00-0498

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

◆ Engine and gearbox jack -V.A.G 1383 A-



4.1.1 Removing

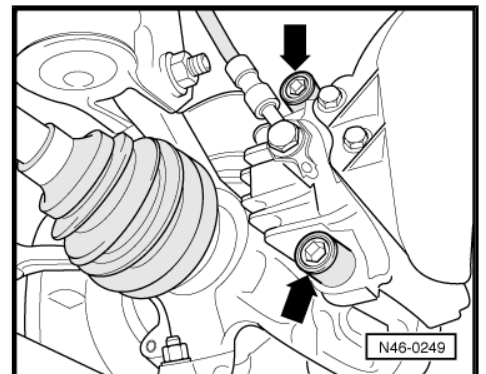
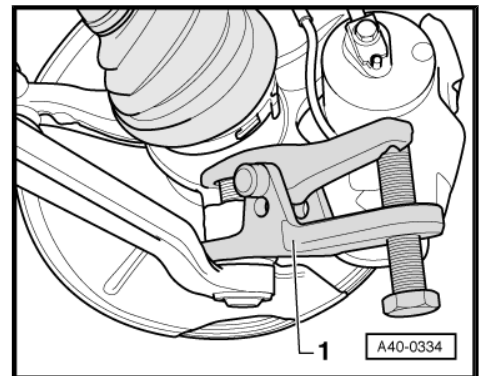
- Lift vehicle far enough to take weight off front wheels.
- Remove hexagon socket nut from drive shaft with 19 mm hexagon key, e.g. Hazet No. 985.
- Remove wheel.
- Unscrew nut from swivel joint.
- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joint.



Note!

Take care not to damage rubber boot when inserting ball joint puller.

- Remove protective caps.
- Unscrew and remove both guide pins -arrows- from brake caliper.
- Take off the brake caliper housing and secure with wire so that the brake hose does not take the weight of the brake caliper and is not damaged.



- Press out drive shaft.


Note!

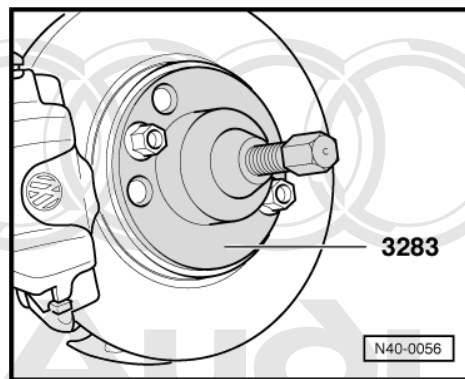
Ensure sufficient clearance when pressing out drive shaft.

- Remove drive shaft from wheel bearing housing and tie up.
- Pivot suspension strut outwards and hold in place with a wooden block or similar.
- Remove cross-head screw for brake disc and take off brake disc.
- Remove splash plate.
- Remove speed sensor from wheel bearing housing.

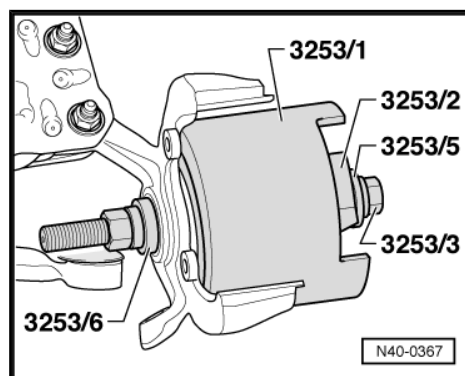
Pulling out wheel hub with wheel bearing

Note!

- ◆ *Place gearbox jack -V.A.G 1383/A- underneath (danger of accident from parts dropping out when wheel hub/wheel bearing unit is pulled out).*
- ◆ *When setting up special tools for pulling out wheel bearing/wheel hub unit, make sure they are aligned straight and do not move out of alignment.*
- Pull wheel hub together with wheel bearing out of wheel bearing housing. Hold tool assembly firmly while doing this.



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



4.1.2 Checking dimensions of wheel bearing housing

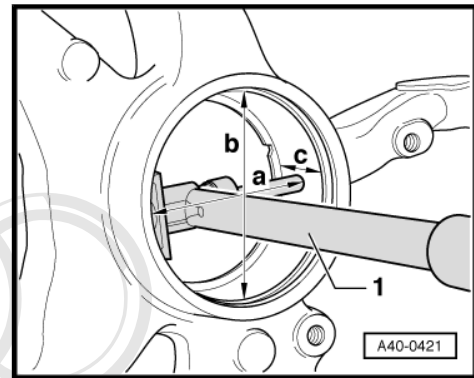
Special tools and workshop equipment required

- ◆ Cylinder gauge 50...100 mm (commercial type)
- Remove remaining pieces of circlip from slot and bore in wheel bearing housing.
- Clean bore of wheel bearing housing.

- Measure in both directions -a- and -b- at each of 2 points in axial direction -c-. Tolerance range: 61.940 mm to 61.970 mm

1 - Cylinder gauge (commercially available)

The wheel bearing housing must be renewed if any of the values are outside the specified tolerance range.



4.1.3 Installing

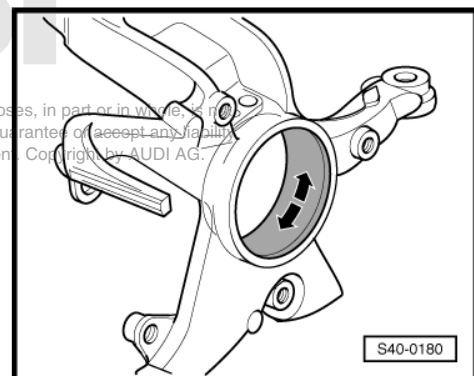
Installing wheel hub with wheel bearing

- Coat entire surface of bore with Molykote grease.

Molykote grease -G 052 723 A2-

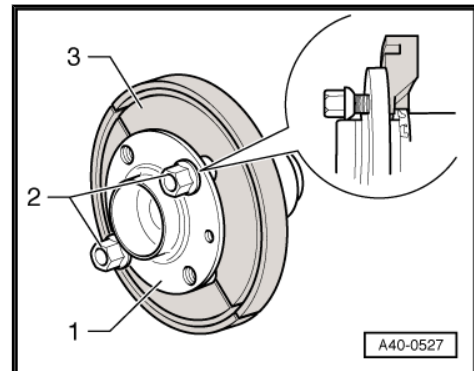
Use grease sachet from repair kit.

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.



- Bolt grip plates -T10064/3A- -3- to wheel hub/wheel bearing unit -1-.

Wheel bolts -2- must not project beyond rear surface of grip plates -T10064/3A- .



- Pull wheel hub/wheel bearing unit into wheel bearing housing.

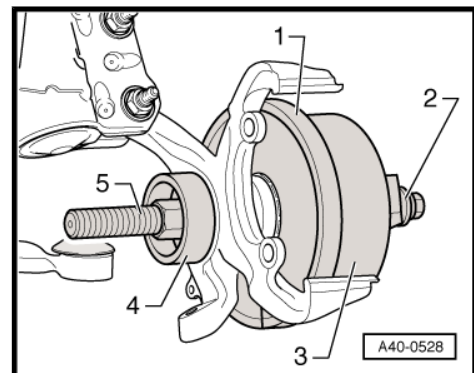
- 1 - Grip plates -T10064/3A-
- 2 - Axial roller bearing -3253/4-
- 3 - Tube -T10064/1-
- 4 - Guide piece -T10064/2 -
- 5 - Spindle -3253/3-



Note!

Make sure wheel hub/wheel bearing unit is kept straight when installing.

- Pull in wheel hub/wheel bearing unit circlip engages audibly.



- Unbolt grip plates -T10064/3A- -2- from wheel hub with wheel bearing -1-.

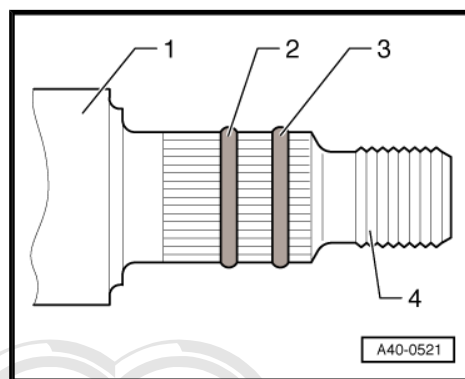
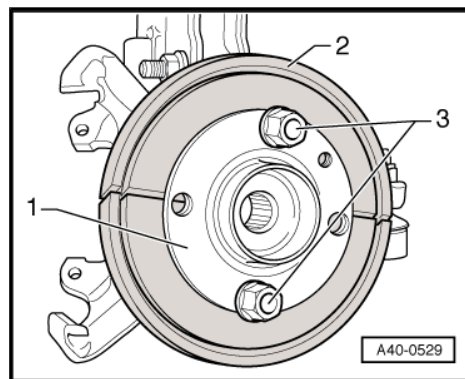
3 - Wheel bolts

Remaining installation steps are carried out in reverse sequence.
Note the following points:

- Remove any paint or adhesive residue and/or corrosion on thread and splines of outer drive shaft joint.
- Remove any remaining locking fluid from splines on outer drive shaft joint and splines of wheel hub.

Splines on outer joint and splines of wheel hub must be free of oil and grease.

- Degrease thread on outer joint (stub axle) if necessary.
 - Apply two beads of locking fluid -D 185 400 A2- on splines as illustrated. Bead diameter approx. 2 mm.
- 1 - Outer joint
 - 2 - Bead approximately in centre of splines
 - 3 - Bead near beginning of splines
 - 4 - Do not grease thread on outer joint (stub axle).
- After installing drive shaft, grease thread of outer joint with solid grease -G 052 751 A1- .
 - Install new hexagon socket nut (pressed-steel version) for outer joint.



4.1.4 Tightening torques

Swivel joint to wheel bearing housing
◆ Use new nut.

⇒ Item 11
(page 37)

Guide pin for brake caliper to wheel bearing housing ⇒ Brake system; Rep. Gr. 46 ; Servicing front brakes

Splash plate to wheel bearing housing

⇒ Item 9
(page 58)

Cross-head screw for brake disc

⇒ Item 13
(page 59)

Speed sensor to wheel bearing housing

⇒ Item 5
(page 58)

Hexagon socket nut for drive shaft to wheel hub with wheel bearing

⇒ Item 12
(page 58)

Wheel bolts

⇒ page 161

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.

5 Suspension strut (basic running gear): exploded view

1 - Shock absorber

- ☐ Can be renewed individually
- ☐ For correct version refer to ⇒ Parts catalogue
- ☐ Disposal ⇒ [page 3](#)
- ☐ Checking shock absorber for leaks and noises ⇒ [page 7](#)

2 - Bump stop

3 - Protective sleeve

4 - Hexagon bolt, 25 Nm

5 - Cap

- ☐ Always renew

6 - Hexagon nut, 60 Nm

- ☐ Loosening and tightening ⇒ [page 69](#)

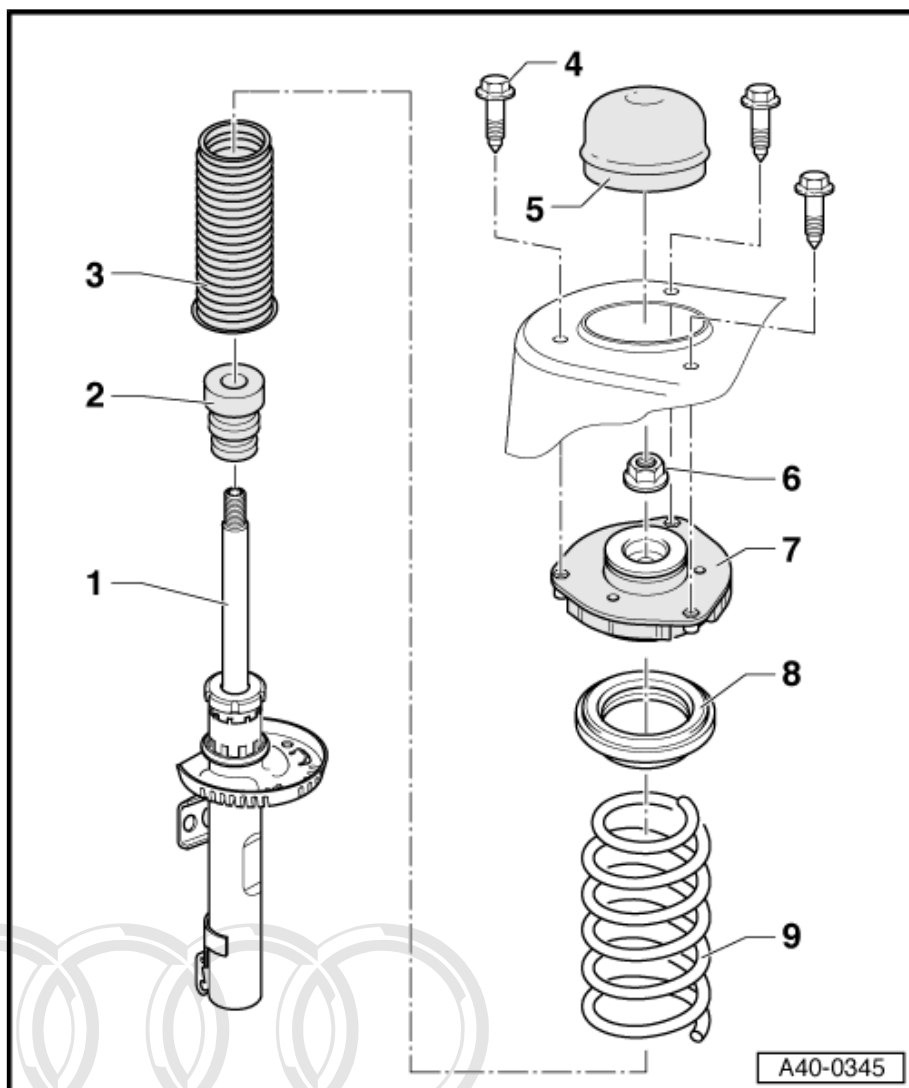
7 - Suspension strut mounting

- ☐ Loosening and tightening ⇒ [page 66](#)

8 - Deep groove ball thrust bearing

9 - Coil spring

- ☐ Removing and installing ⇒ [page 69](#)
- ☐ For correct version refer to ⇒ Parts catalogue
- ☐ Note colour code
- ☐ Surface of spring coil must not be damaged

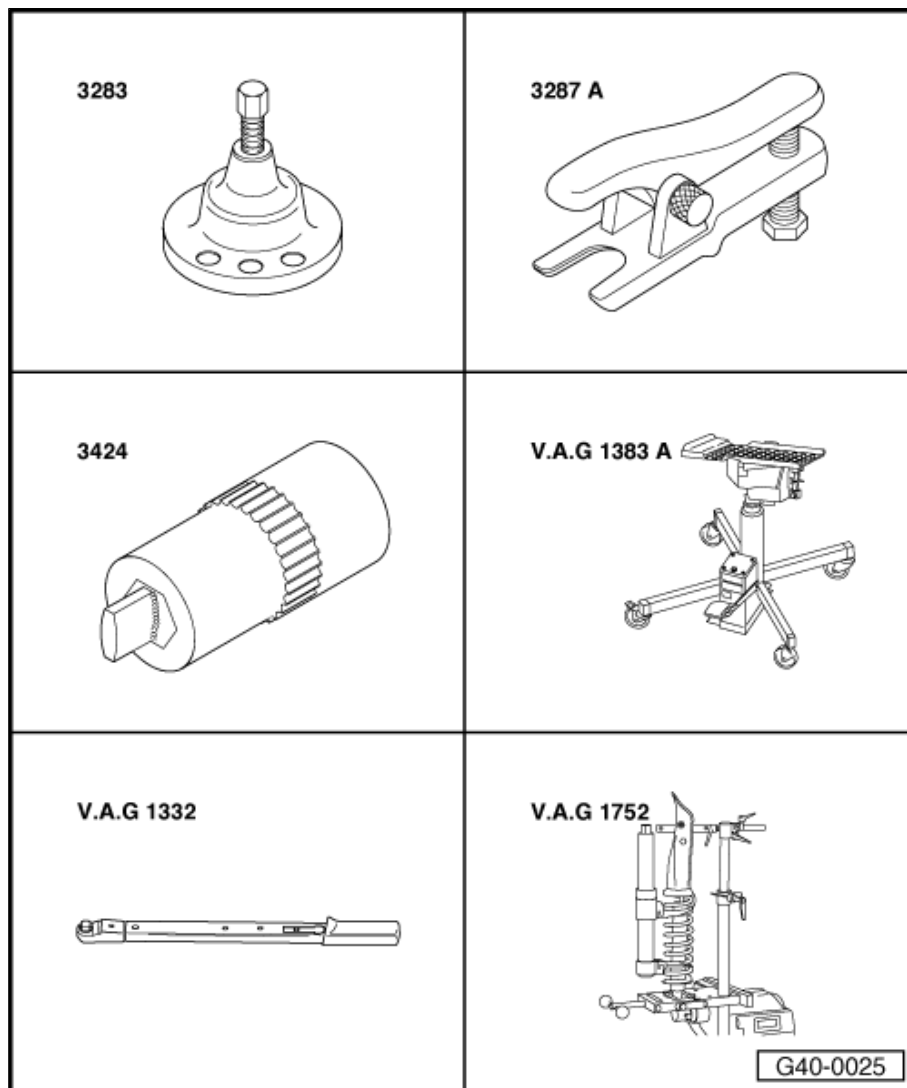


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

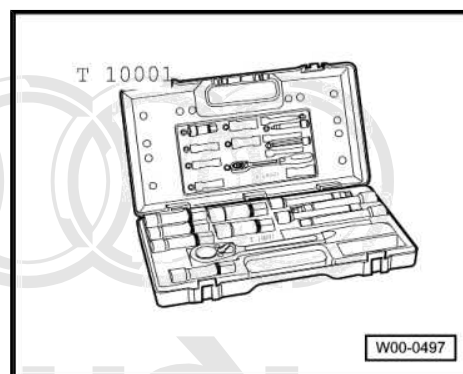
5.1 Removing and installing suspension strut/coil spring

Special tools and workshop equipment required

- ◆ Press tool -3283-
- ◆ Ball joint puller -3287 A-
- ◆ Spreader -3424-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Spring compressor - V.A.G 1752/1-
- ◆ Spring retainer - V.A.G 1752/4-



- ◆ Shock absorber set -T10001-



5.1.1 Removing and installing suspension strut

- Lift vehicle far enough to take weight off front wheels.
- Remove hexagon socket nut from drive shaft using hexagon key (19 mm), e.g. Hazet No. 985.

Protected by copyright. Copying for private or 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.

- Remove wheel.
- Unscrew nut from swivel joint.
- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joint.

Note!

Take care not to damage rubber boot when inserting ball joint puller.

Left suspension strut

Additional steps are necessary when removing the left-side suspension strut.

- Detach coupling rod from right side of anti-roll bar -arrow A-

The following procedure is the same for both sides.

- Unscrew upper hexagon nut for coupling rod at suspension strut -arrow B-.
- Detach speed sensor wiring from suspension strut.

Left suspension strut

Additional steps are necessary when removing the left-side suspension strut.

- Turn anti-roll bar upwards.

The following procedure is the same for both sides.

- Press out drive shaft.

Note!

Ensure sufficient clearance when pressing out drive shaft.

- Remove drive shaft from wheel bearing housing and tie up.
- Re-connect swivel joint to wheel bearing housing.

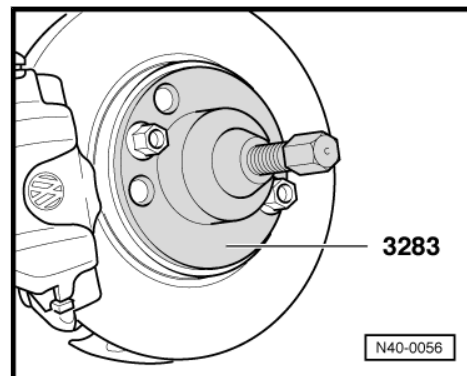
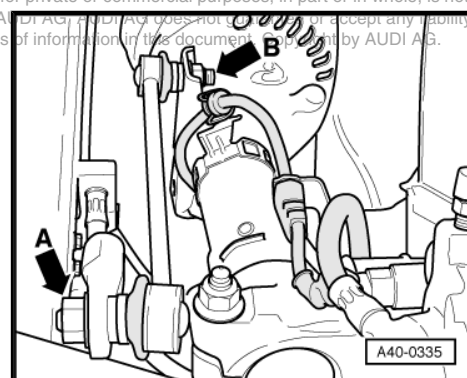
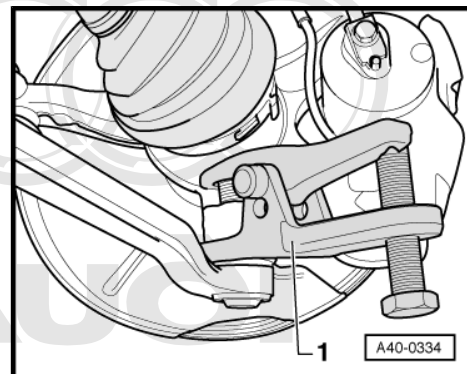
Right suspension strut

Additional steps are necessary when removing the right-side suspension strut.

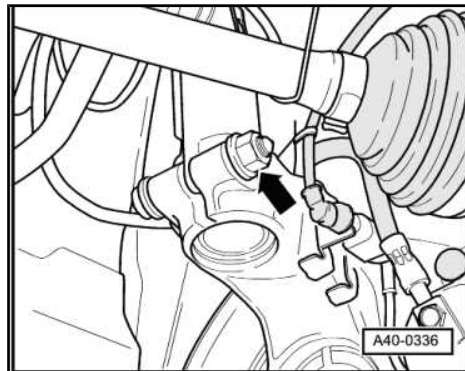
- Turn the steering to full right lock.

The following procedure is the same for both sides.

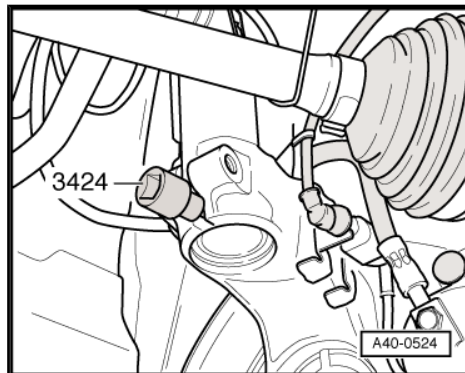
- Position engine and gearbox jack -V.A.G 1383 A- under wheel bearing housing.



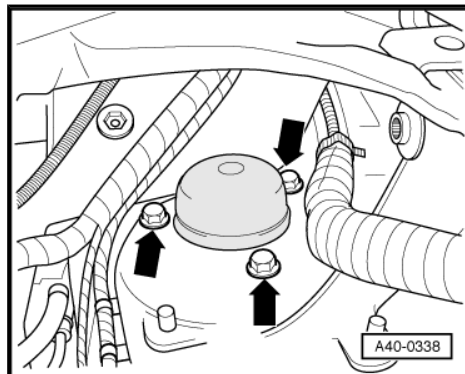
- Remove bolt and nut securing wheel bearing housing/suspension strut -arrow-. Note installation position of bolt. Threaded end of bolt points in direction of travel



- Insert spreader -3424- in slot in wheel bearing housing.
- Turn ratchet handle through 90° and detach from 3424.
- Press brake disc towards suspension strut by hand. Otherwise the shock absorber tube can become misaligned in the bore of the wheel bearing housing.
- Pull wheel bearing housing downwards off shock absorber tube and lower with engine and gearbox jack -V.A.G 1383 A- until shock absorber tube is free.
- Tie up wheel bearing housing to suspension bracket/subframe with wire.
- Remove engine/gearbox jack -V.A.G 1383 A- from under wheel bearing housing.



Unscrew hexagon bolts -arrows- at top shock absorber mounting and take out suspension strut.



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

5.1.2 Removing and installing coil spring

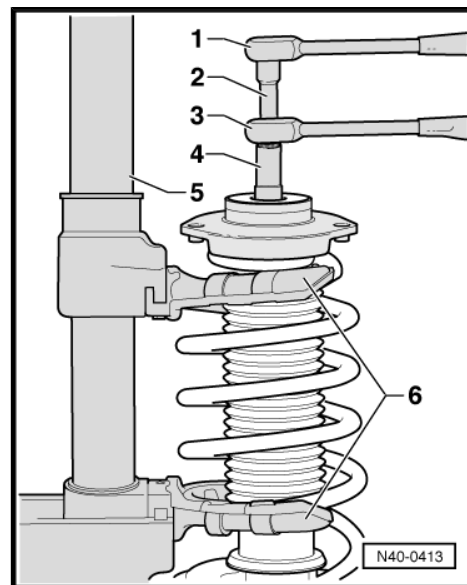
- Compress coil spring with spring compressor -V.A.G 1752/1- until axial ball bearing is free at top.
- Unscrew hexagon nut from piston rod.
- Take off suspension strut components and coil spring together with spring compressor -V.A.G 1752/1- .

- 1 - Torque wrench -V.A.G 1332-
- 2 - Extension (7 mm) -T10001/8-
- 3 - Reversible ratchet -T10001/11-
- 4 - Socket (21 mm) -T10001/5-
- 5 - Spring compressor -V.A.G 1752/1-
- 6 - Spring retainer -V.A.G 1752/4-

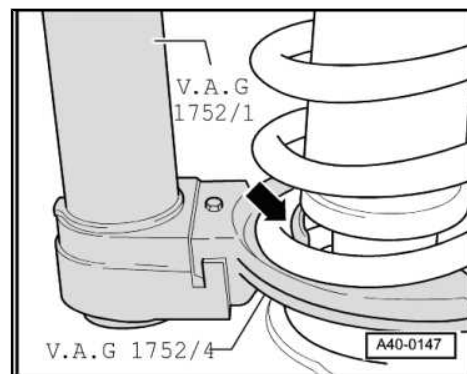


Caution

First compress spring far enough to ensure that upper spring plate is free.



- Ensure that coil spring is seated correctly in spring retainer - V.A.G 1752/4- -arrow-.

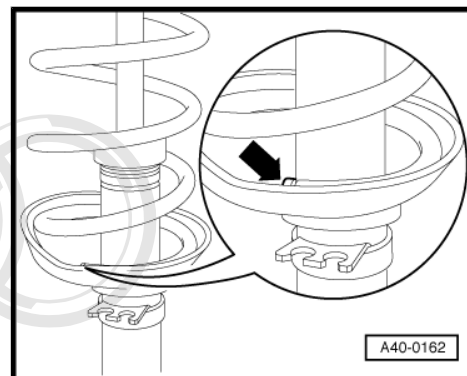


5.1.3 Installing

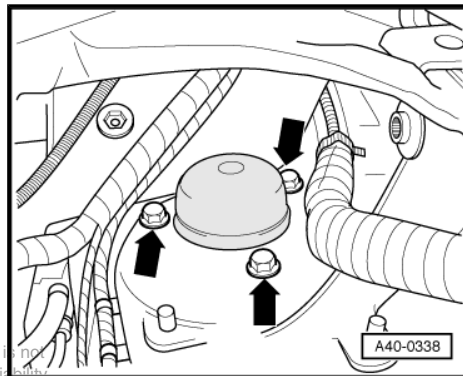
- Position coil spring with spring compressor -V.A.G 1752/1- on bottom spring seat. End of spring coil must make contact with stop -arrow-.

Tightening torque for hexagon nut on upper spring plate: 60 Nm

The remaining installation steps for the coil spring are carried out in the reverse sequence. Note the following points:



- Install suspension strut and secure to suspension turret. Tightening torque: 25 Nm
- Position engine and gearbox jack -V.A.G 1383 A- under wheel bearing housing.
- Locate suspension strut on wheel bearing housing.
- Remove wire from wheel bearing housing.
- Using gearbox jack, carefully raise wheel bearing housing until bolt securing suspension strut/wheel bearing housing can be inserted.


Note!

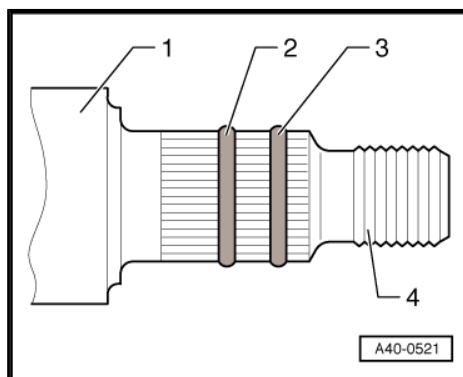
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Do not press against the ball joint with the gearbox jack.

- At the same time, push brake disc by hand towards suspension strut. Otherwise the shock absorber tube can become misaligned in the bore of the wheel bearing housing.
- Take out spreader tool -3424- .
- Remove any paint or adhesive residue and/or corrosion on thread and splines of outer drive shaft joint.
- Remove any remaining locking fluid from splines on outer drive shaft joint and splines of wheel hub.

Splines on outer joint and splines of wheel hub must be free of oil and grease.

- Degrease thread on outer joint (stub axle) if necessary.
 - Apply two beads of locking fluid -D 185 400 A2- on splines as illustrated. Bead diameter approx. 2 mm.
- 1 - Outer joint
 - 2 - Bead approximately in centre of splines
 - 3 - Bead near beginning of splines
 - 4 - Do not grease thread on outer joint (stub axle).
- Fit and secure wheel ⇒ [page 161](#) .



5.1.4 Tightening torques

Coupling rod to suspension strut 40 Nm
◆ Use new nuts.

Wheel bearing housing to suspension strut 60 Nm + 90°
◆ Use new bolt and nut.

Swivel joint to wheel bearing housing 20 Nm + 90°
◆ Use new nut.

Nut for drive shaft to wheel hub with wheel bearing ⇒ [Item 12 \(page 49\)](#)
◆ Use new nut.

6 Suspension strut (1.2 TDI running gear): exploded view

1 - Shock absorber

- ☐ Can be renewed individually
- ☐ For correct version refer to ⇒ Parts catalogue
- ☐ Disposal ⇒ [page 3](#)
- ☐ Checking shock absorber for leaks and noises ⇒ [page 7](#)

2 - Bump stop

3 - Protective sleeve

4 - Hexagon bolt, 25 Nm

5 - Cap

- ☐ Always renew

6 - Hexagon nut, 60 Nm

- ☐ Loosening and tightening ⇒ [page 74](#)

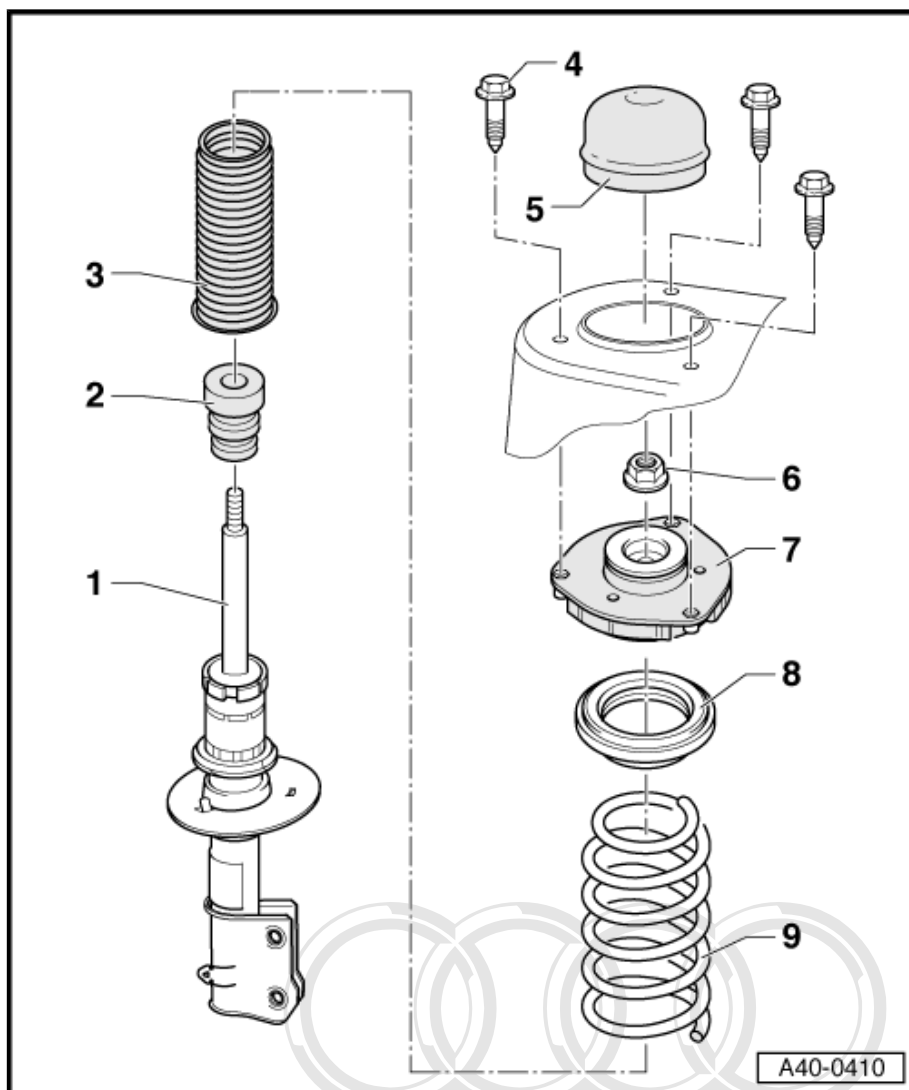
7 - Suspension strut mounting

- ☐ Loosening and tightening ⇒ [page 72](#)

8 - Deep groove ball thrust bearing

9 - Coil spring

- ☐ Removing and installing ⇒ [page 74](#)
- ☐ Note colour code
- ☐ Surface of spring coil must not be damaged



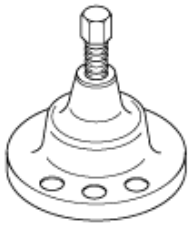
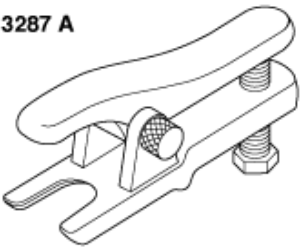
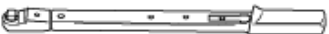
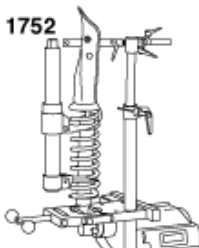
Audi

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

6.1 Removing and installing suspension strut/coil spring

Special tools and workshop equipment required

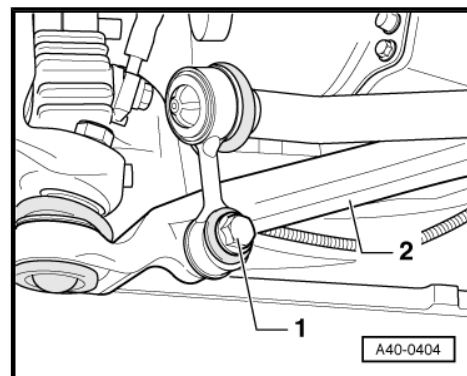
- ◆ Press tool -3283-
- ◆ Ball joint puller -3287 A-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Spring compressor - V.A.G 1752/1-
- ◆ Spring retainer - V.A.G 1752/4-
- ◆ Shock absorber set - T10001-

3283 	3287 A 
V.A.G 1332 	V.A.G 1383 A 
V.A.G 1752 	T 10001  G40-0032

6.1.1 Removing and installing suspension strut

- Lift vehicle far enough to take weight off front wheels.
- Remove hexagon socket nut from drive shaft with 19 mm hexagon key , e.g. Hazet No. 985.
- Remove wheel.

- Remove bolt for coupling rod -1- from wishbone -2-.
- Unscrew nut from swivel joint.

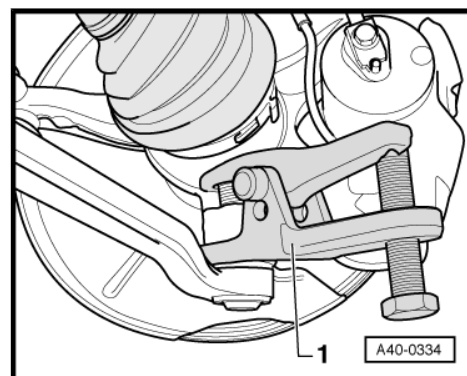


- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joint.



Note!

Take care not to damage rubber boot when inserting ball joint puller.



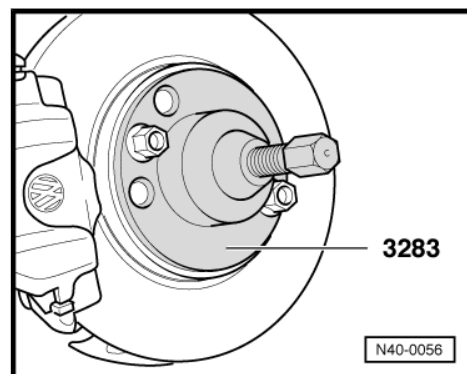
- Press out drive shaft.



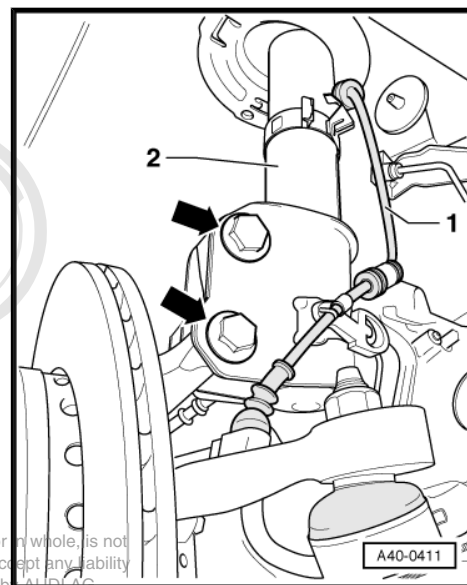
Note!

Ensure sufficient clearance when pressing out drive shaft.

- Remove drive shaft from wheel bearing housing and tie up.
- Re-connect swivel joint to wheel bearing housing.
- Position engine and gearbox jack -V.A.G 1383 A- under wheel bearing housing.

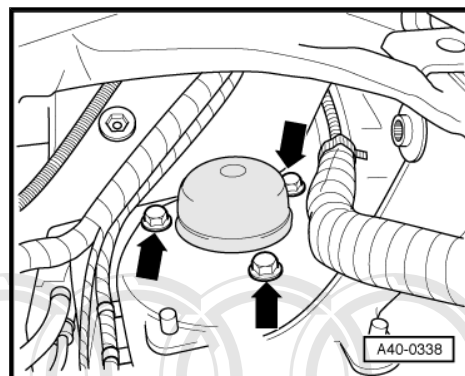


- Detach wire -1- for speed sensor from suspension strut -2-.
- Remove bolts and nuts securing wheel bearing housing/suspension strut -arrows-. Note installation position of bolt. Threaded ends of bolts point in direction of travel.
- Pull wheel bearing housing sideways off shock absorber until shock absorber tube is free.
- Tie up wheel bearing housing to suspension bracket/subframe with wire.
- Remove engine/gearbox jack -V.A.G 1383 A- from under wheel bearing housing.



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

Unscrew hexagon bolts -arrows- for upper shock absorber mounting and take out suspension strut.



6.1.2 Removing and installing coil spring

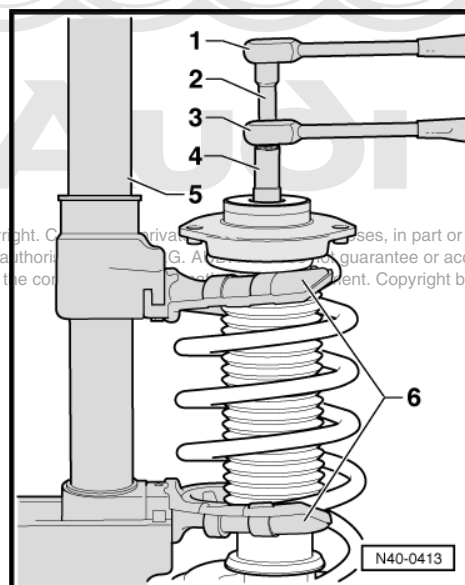
- Compress coil spring with spring compressor -V.A.G 1752/1- until axial ball bearing is free at top.
- Unscrew hexagon nut from piston rod.
- Take off suspension strut components and coil spring together with spring compressor -V.A.G 1752/1- .

- 1 - Torque wrench -V.A.G 1332-
- 2 - Extension (7 mm) -T10001/8-
- 3 - Reversible ratchet -T10001/11-
- 4 - Socket (21 mm) -T10001/5-
- 5 - Spring compressor -V.A.G 1752/1-
- 6 - Spring retainer -V.A.G 1752/4-



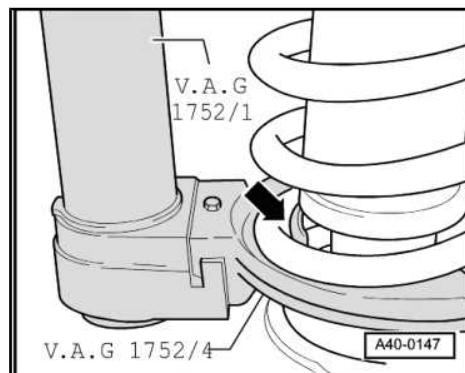
Caution

First compress spring far enough to ensure that upper spring plate is free.



Protected by copyright. Copyright © Audi AG. All rights reserved. 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 by any information storage and retrieval system, without prior written permission from Audi AG. Copyright by AUDI AG.

- Ensure that coil spring is seated correctly in spring retainer - V.A.G 1752/4- -arrow-.

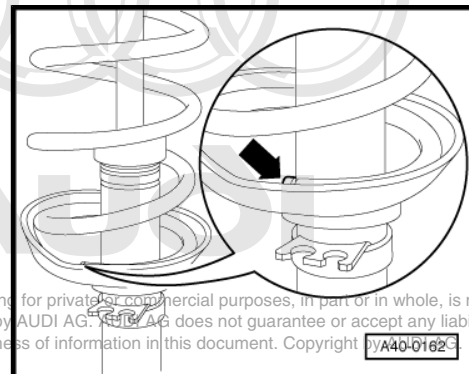


6.1.3 Installing

- Position coil spring with spring compressor -V.A.G 1752/1- on bottom spring seat. End of spring coil must make contact with stop -arrow-.

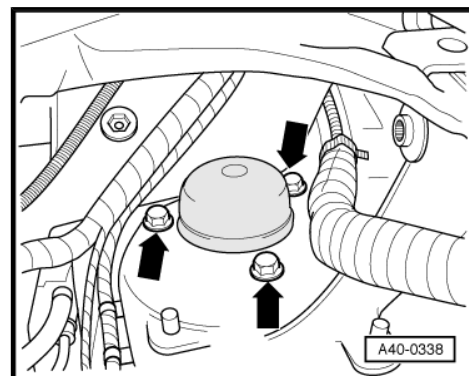
Tightening torque for hexagon nut on upper spring plate: 60 Nm

The remaining installation steps for the coil spring are 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 authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG

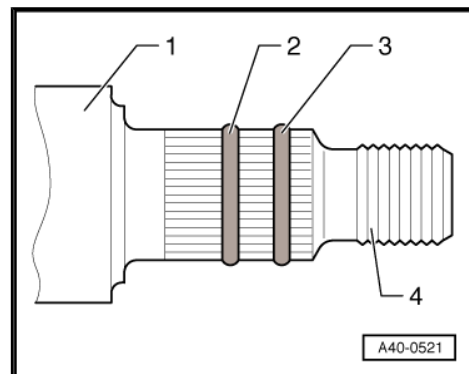
- Install suspension strut and secure to suspension turret -arrows-. Tightening torque: 25 Nm
- Position engine and gearbox jack -V.A.G 1383 A- under wheel bearing housing.
- Locate suspension strut on wheel bearing housing.
- Remove wire from wheel bearing housing.
- Using gearbox jack, carefully raise wheel bearing housing until bolts securing suspension strut/wheel bearing housing can be inserted.



Note!

Do not press against the ball joint with the gearbox jack.

- Apply two beads of locking fluid -D 185 400 A2- on splines as illustrated. Bead diameter approx. 2 mm.
- 1 - Outer joint
 - 2 - Bead approximately in centre of splines
 - 3 - Bead near beginning of splines
 - 4 - Grease threads of outer joint (stub axle) after assembly with solid grease -G 052 751 A1- .
- Install new hexagon socket nut.
 - Fit and secure wheel ⇒ [page 161](#) .



6.1.4 Tightening torques

Wheel bearing housing to suspension strut 70 Nm + 90°
◆ Use new bolts and nuts.

Swivel joint to wheel bearing housing 20 Nm + 90°
◆ Use new nut.

Hexagon socket nut for drive shaft to wheel hub with wheel bearing ⇒ [Item 12 \(page 58\)](#)
◆ Use new nut.

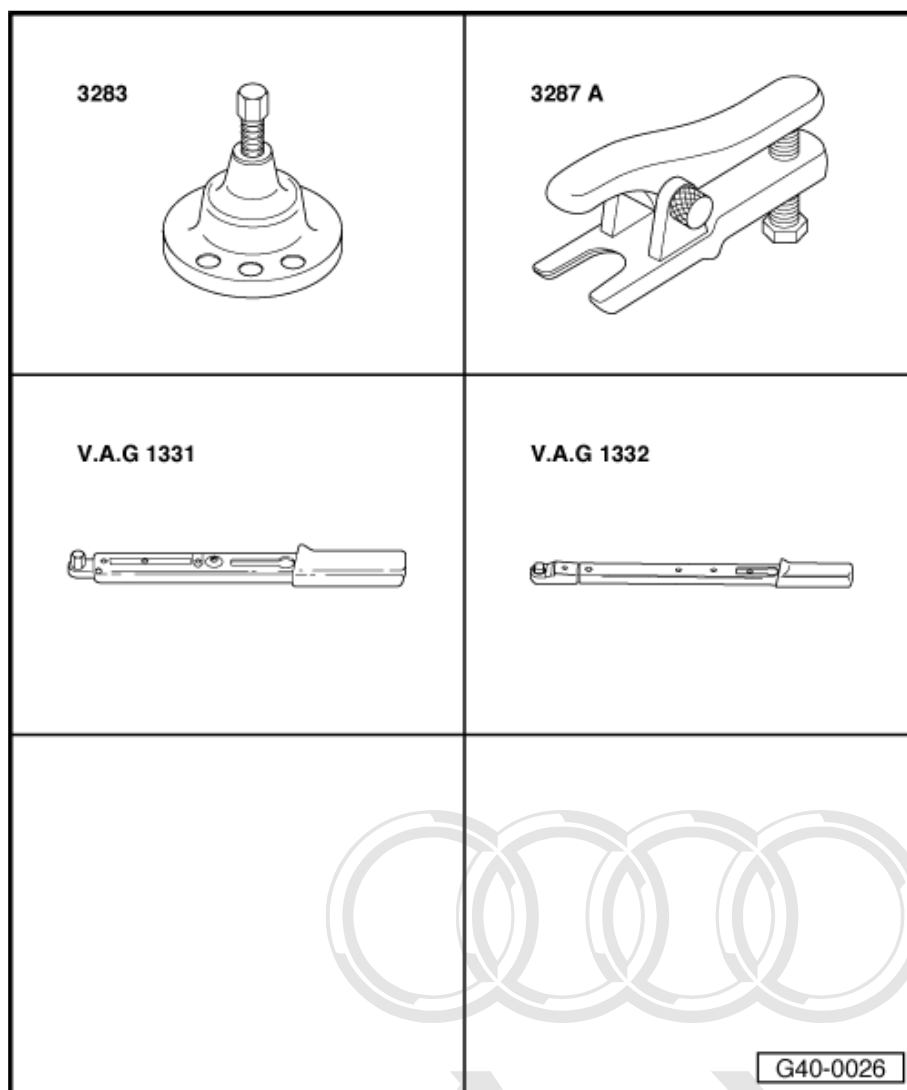
Anti-roll bar to wishbone 23 Nm
◆ Use new bolts.

7 Drive shafts (basic running gear)

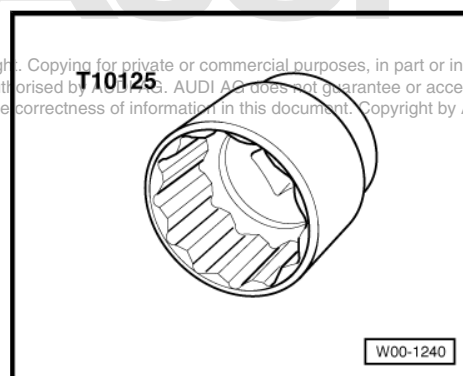
7.1 Removing and installing drive shafts (vehicles with forged-steel wishbone)

Special tools and workshop equipment required

- ◆ Press tool -3283-
- ◆ Ball joint puller -3287 A-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-



- ◆ Socket (36 mm) -T10125-



7.1.1 Removing

- Lift vehicle far enough to take weight off front wheels.

Vehicles with hexagon socket nut (pressed-steel version) for drive shaft

- Remove hexagon socket nut from drive shaft with 19 mm hexagon key, e.g. Hazet No. 985.
- When re-installing, replace pressed-steel hexagon socket nut with 12-point nut on both sides.

Vehicles with 12-point nut

- Remove 12-point nut from drive shaft with 36 mm socket - T10125-.

All vehicles (continued):

- Remove wheel.
- Remove noise insulation.

Right drive shaft (vehicles with petrol engine)

- If fitted, detach guard plate from pendulum support.
- If fitted, detach guard plate above drive shaft from engine.

Both sides (continued):

- Unbolt drive shaft from flange ~~shaft on gearbox~~
- Unscrew nut from swivel joint; if necessary counterhold with T40 Torx key.

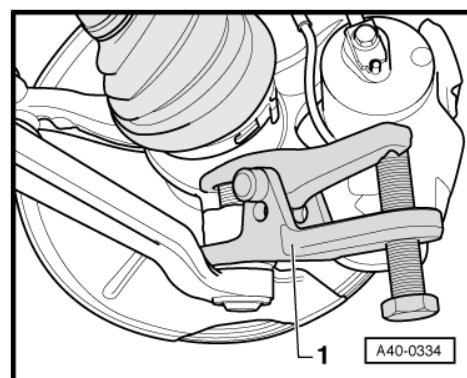
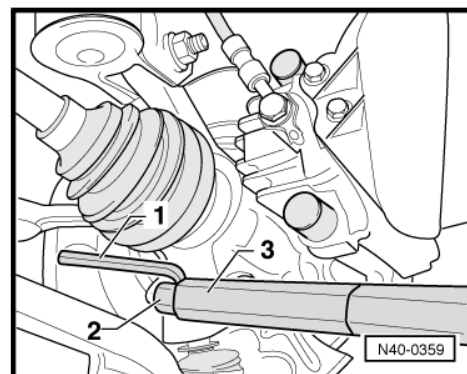
- 1 - Torx key T40
- 2 - Ring spanner insert or slotted ring spanner insert
⇒ [page 79](#), Fig. V40-1323
- 3 - Torque wrench -V.A.G 1331-

- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joint.



Note!

Take care not to damage rubber boot when inserting ball joint puller.

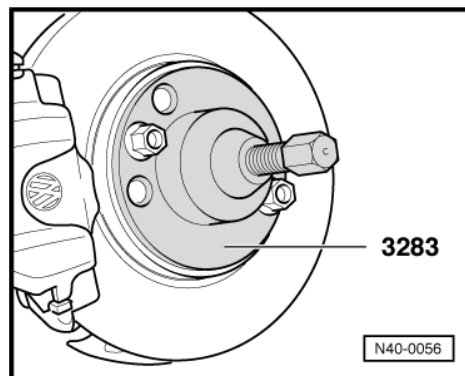


- Press out drive shaft.


Note!

Ensure sufficient clearance when pressing out drive shaft.

- Pivot suspension strut outwards and support in position.
- Take out drive shaft.



7.1.2 Installing

- Remove any paint or adhesive residue and/or corrosion on thread and splines of outer joint.
- Remove any remaining locking fluid from splines on outer drive shaft joint and splines of wheel hub.

Splines on outer joint and splines of wheel hub must be free of oil and grease.

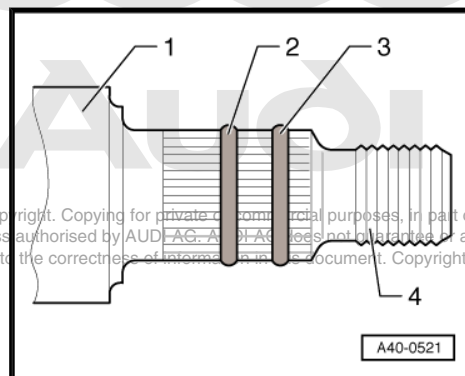
- Degrease thread on outer joint (stub axle) if necessary.
- Apply two beads of locking fluid -D 185 400 A2- on splines as illustrated. Bead diameter approx. 2 mm.

- 1 - Outer joint
- 2 - Bead approximately in centre of splines
- 3 - Bead near beginning of splines
- 4 - Do not grease thread on outer joint (stub axle).

- Insert drive shaft.
- Insert outer joint in wheel hub splines and secure with new 12-point nut.
- Bolt drive shaft to flange shaft on gearbox and tighten to 10 Nm in diagonal sequence.
- Tighten multi-point socket-head bolts diagonally to the specified torque.

◆ Drive shaft with constant velocity joint ⇒ [Item 13 \(page 87\)](#)

◆ Drive shaft with triple roller joint AAR 2000
⇒ [Item 14 \(page 94\)](#)



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.

7.1.3 Nut securing drive shaft



Note!

- ◆ Replace the hexagon socket nut -B- (pressed-steel version) with a 12-point nut -A- on both sides of the vehicle. Do not install the pressed-steel type hexagon socket nut.
- ◆ Degrease thread on outer joint (stub axle) before installing.

- Always install a new 12-point nut.

Do not apply grease to thread on drive shaft.

Tightening torque ⇒ [Item 12 \(page 49\)](#)

- Use socket (36 mm) -T10125-

Right drive shaft

- If fitted, attach guard plate to pendulum support.
- If fitted, attach guard plate above drive shaft to engine.

Both sides (continued):

- Install new self-locking nut on swivel joint, counterholding with Torx key T40 .

- 1 - Torx key T40
- 2 - Ring spanner insert or slotted ring spanner insert
⇒ [page 79](#) , Fig. V40-1323
- 3 - Torque wrench -V.A.G 1331-

- Ring spanner inserts:

- 1 - Ring spanner insert (commercial type, 16 mm)
- 2 - Slotted ring spanner insert (commercial type, 16 mm)

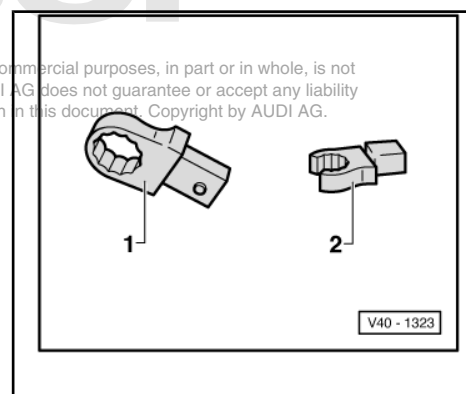
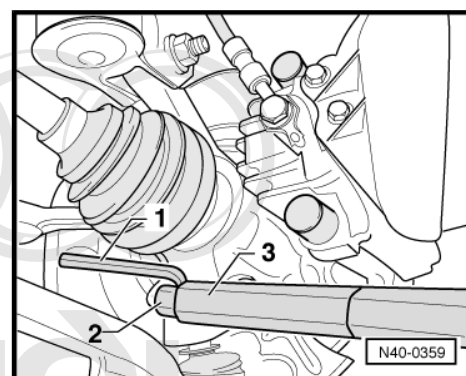
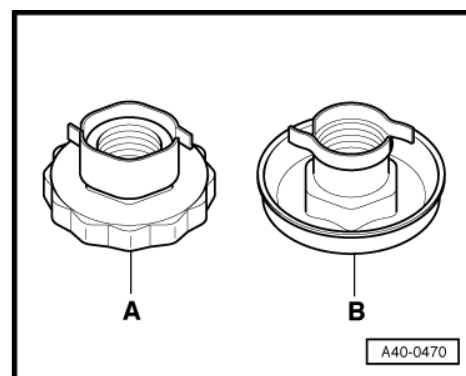


Note!

Ensure rubber boot on swivel joint is not damaged or twisted.

Remaining installation steps are carried out in reverse sequence.

- Fit and secure wheel ⇒ [page 161](#) .



7.1.4 Tightening torques

- Swivel joint to wheel bearing housing
- ◆ Use new nut.

20 Nm + 90°

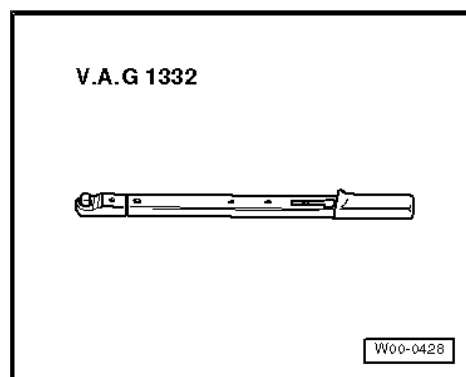
- 12-point nut for drive shaft to wheel hub with wheel bearing
- ◆ Use new nut.

⇒ [Item 12 \(page 49\)](#)

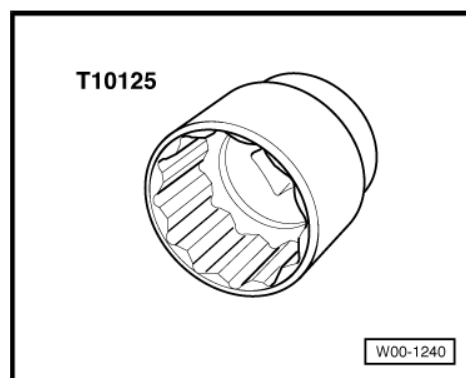
7.2 Removing and installing drive shafts (vehicles with fabricated wishbone)

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



- ◆ Socket (36 mm) -T10125-



7.2.1 Removing

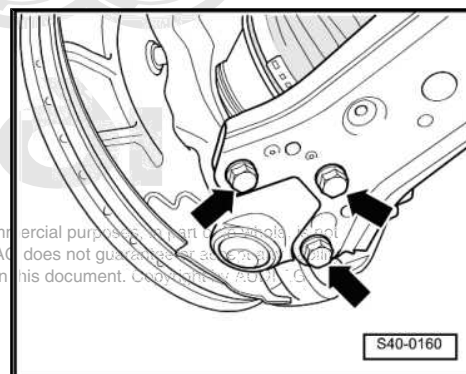
- Lift vehicle far enough to take weight off front wheels.
- Remove 12-point nut using 36 mm socket -T10125- .
- Remove wheel.
- Remove noise insulation.

Right drive shaft (vehicles with petrol engine)

- If fitted, detach guard plate from pendulum support.
- If fitted, detach guard plate above drive shaft from engine.

Both sides (continued):

- Unbolt drive shaft from flange shaft on gearbox.
- Mark positions of bolts securing swivel joint to wishbone.
- Remove bolts -arrows-.
- Pull wheel bearing housing with swivel joint out of wishbone.



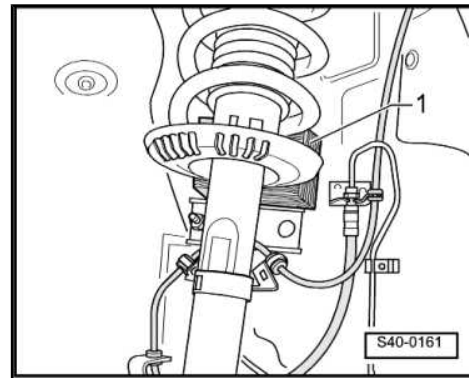
Protected by copyright. Copying for private or commercial purposes without the written permission of Audi AG is prohibited. Audi AG does not guarantee the accuracy of the information in this document. Copyright © Audi AG 2003.

- Pivot suspension strut outwards and hold in place with a wooden block or similar -1-; at the same time pull drive shaft out of wheel bearing.



Note!

If the drive shaft cannot be pulled out of the wheel bearing by hand, use press tool -3283-.



7.2.2 Installing

- Remove any paint or adhesive residue and/or corrosion on thread and splines of outer drive shaft joint.
- Remove any remaining locking fluid from splines on outer drive shaft joint and splines of wheel hub.

Splines on outer joint and splines of wheel hub must be free of oil and grease.

- Degrease thread on outer joint (stub axle) 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.

- Apply two beads of locking fluid -D 185 400 A2- on splines as illustrated. Bead diameter approx. 2 mm.

- 1 - Outer joint
 - 2 - Bead approximately in centre of splines
 - 3 - Bead near beginning of splines
 - 4 - Do not grease thread on outer joint (stub axle).
- Insert drive shaft.
 - Insert outer joint as far as possible in wheel hub splines and secure with new 12-point nut.
 - Secure swivel joint to wishbone (bolts on old marks). Tightening torque: ⇒ [Item 15 \(page 11\)](#) . Keep to specified sequence when installing bolts:
1. Start threads of all bolts.
 2. Tighten centre bolt to specified torque.
 3. Tighten the two outer bolts to specified torque.

Use new locking plate with nuts.

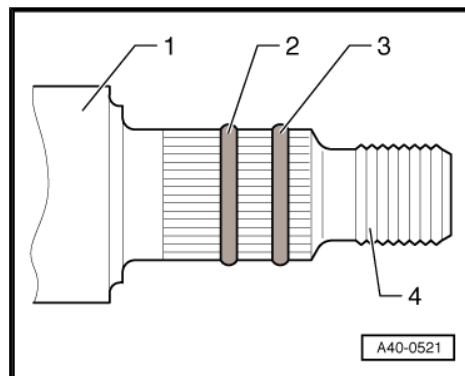
Use new bolts.



Note!

Ensure sealing boot is not damaged or twisted.

- Place inner joint of drive shaft in position and tighten bolts in diagonal sequence to 10 Nm.
- Tighten multi-point socket-head bolts diagonally to the specified torque.
- ◆ Drive shaft with constant velocity joint ⇒ [Item 13 \(page 87\)](#)
- ◆ Drive shaft with triple roller joint AAR 2000 ⇒ [Item 14 \(page 94\)](#)
- Fit and secure wheel ⇒ [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.

7.2.3 Nut securing drive shaft



Note!

- ◆ *Replace the hexagon socket nut -B- (pressed-steel version) with a 12-point nut -A- on both sides of the vehicle. Do not install the pressed-steel type hexagon socket nut.*
- ◆ *Degrease thread on outer joint (stub axle) before installing.*
- Always install a new 12-point nut.

Do not apply grease to thread on drive shaft.

Tightening torque ➔ [Item 12 \(page 49\)](#)
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Use socket (36 mm) -T10125-

Right drive shaft

- If fitted, attach guard plate to pendulum support.
- If fitted, attach guard plate above drive shaft to engine.

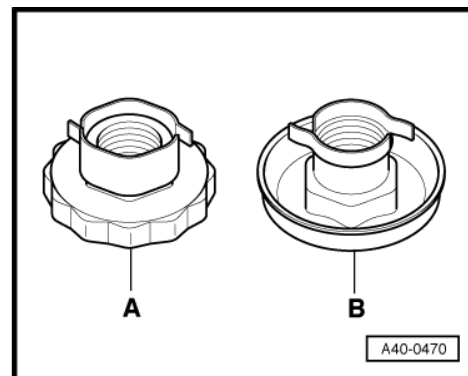
Both sides (continued):

- Install noise insulation.

After installation, check position of steering wheel by test-driving vehicle.

Wheel alignment must be checked and adjusted if steering wheel is not in central position when driving straight-ahead.

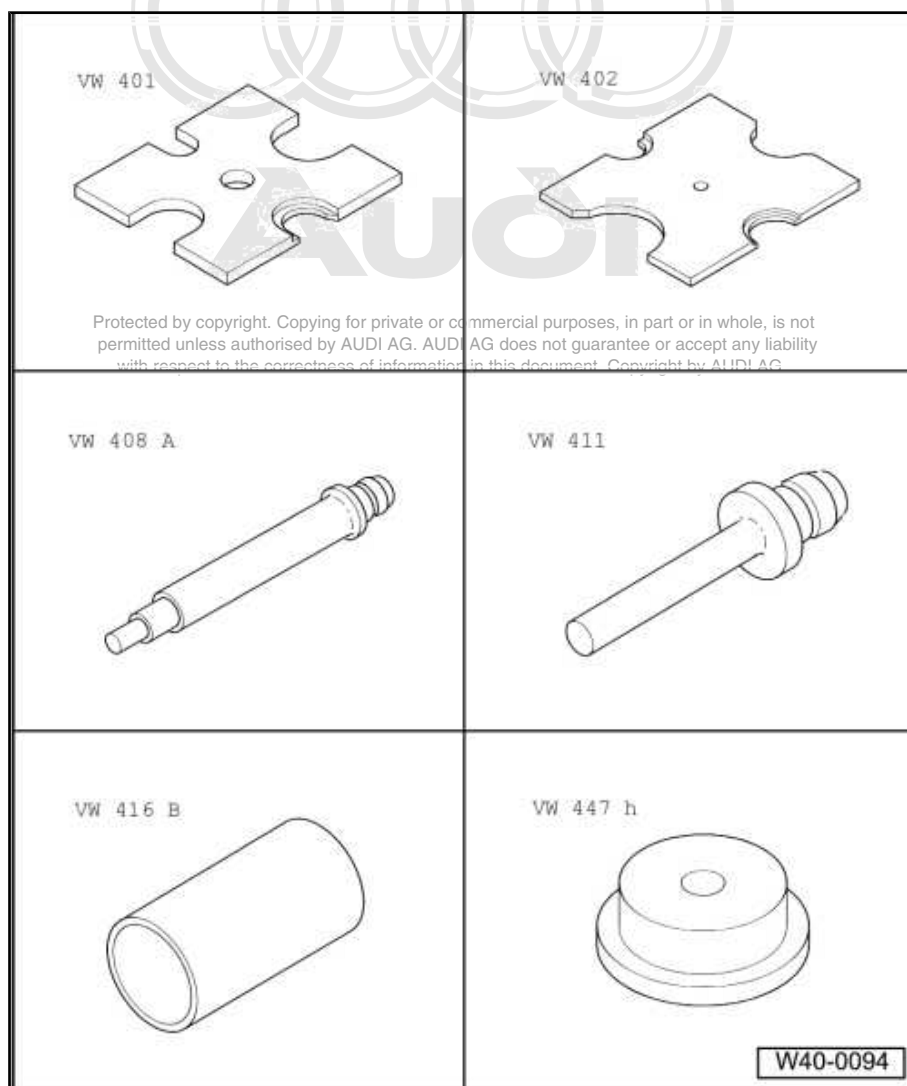
- Check and adjust wheel alignment ➔ [page 164](#) .



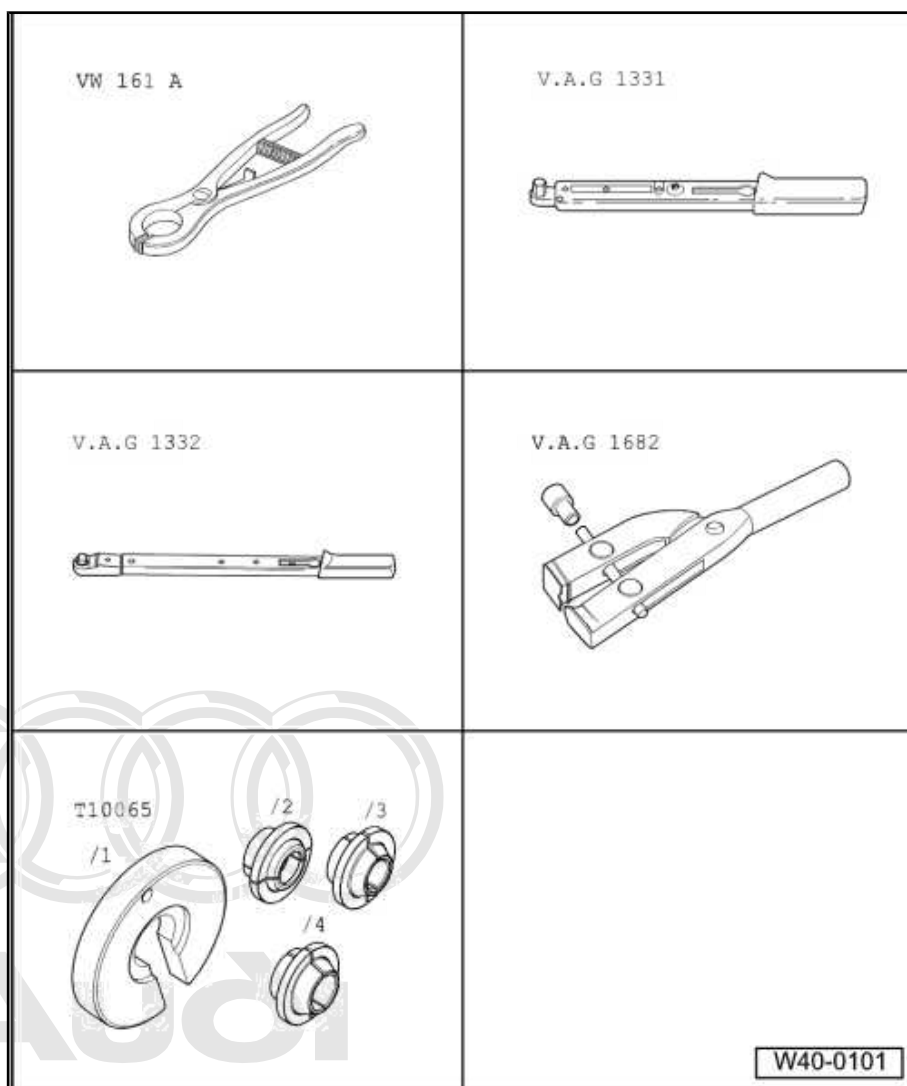
7.3 Servicing drive shaft with constant velocity joint

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-



- ◆ Circlip pliers -VW 161 A-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Clamp tensioner - V.A.G 1682-
- ◆ Assembly tool -T10065-



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

7.3.1 Grease quantity and type

Constant velocity joints are filled with high-temperature grease ⇒
Parts catalogue

	Grease	of which in:	
	Total quantity (g)	Joint (g)	Boot (g)
◆ Outer joint Ø mm			
85	80	40	40
◆ Inner joint Ø mm			
90	80	40	40

Regrease joint if required when renewing the boot.

7.3.2 Dismantling and assembling drive shaft

1 - 12-point nut (self-locking)

- ☐ Tightening torque
⇒ [Item 12 \(page 49\)](#)
- ☐ Always renew if removed
- ☐ Colour: silver
- ☐ Remove any corrosion on thread of outer joint before fitting nut.
- ☐ Tightening:
 - Degrease thread on stub axle.
 - Install and tighten new 12-point nut using socket -T10125-.

2 - Self-locking hexagon socket nut (pressed steel)

- ☐ Pressed-steel hexagon socket nuts are installed on vehicles up to chassis number 8Z-2-015 078. Replace pressed-steel nuts on both sides of vehicle with 12-point nuts ⇒ [Item 1 \(page 86\)](#).
- ☐ Pressed-steel hexagon socket nuts must not be installed.

3 - Deflector ring

- ☐ Only installed with basic running gear
- ☐ Colourless

4 - Outer constant velocity joint

- ☐ Renew only as complete unit
- ☐ Removing ⇒ [page 87](#)
- ☐ Installing: drive onto shaft with plastic hammer until compressed circlip seats
- ☐ Greasing ⇒ [page 85](#)
- ☐ Checking ⇒ [page 89](#)
- ☐ Apply locking fluid -D 185 400 A2- to splines before inserting in wheel hub ⇒ [page 78](#) or ⇒ [page 82](#)
- ☐ Degrease thread on stub axle

5 - Circlip

- ☐ Always renew
- ☐ Insert in groove on shaft

6 - Spacer ring (plastic)

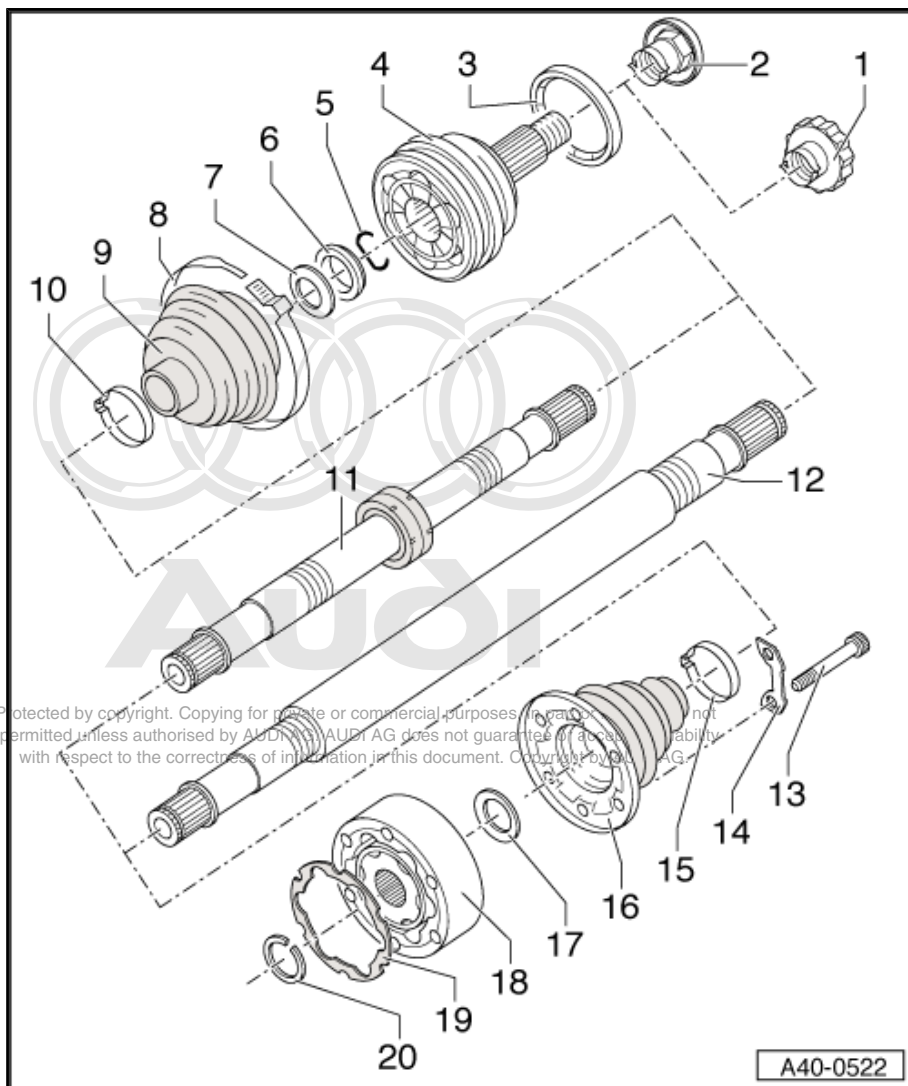
- ☐ Installation position ⇒ [page 89](#)

7 - Convex washer

- ☐ Installation position ⇒ [page 89](#)

8 - Hose clip

- ☐ Always renew



- ☐ Use clamp tensioner -V.A.G 1682- to tighten ⇒ [page 89](#)

9 - Boot for constant velocity joint

- ☐ Check for splits and chafing
- ☐ Material: Hytrel (polyelastomer)

10 - Hose clip

- ☐ Always renew
- ☐ Use clamp tensioner -V.A.G 1682- to tighten ⇒ [page 89](#)

11 - Left drive shaft (solid shaft)

12 - Right drive shaft (tubular shaft)

13 - Multi-point socket-head bolt, M8 x 48

- ☐ Pre-tighten to 10 Nm in diagonal sequence
- ☐ Tighten to 40 Nm
- ☐ Always renew if removed

14 - Lock plate

15 - Hose clip

- ☐ Always renew
- ☐ Tightening ⇒ [page 89](#)

16 - Boot for inner constant velocity joint

- ☐ Check for splits and chafing
- ☐ Material: Hytrel (polyelastomer)

17 - Convex washer

- ☐ Installation position ⇒ [page 88](#)

18 - Inner constant velocity joint

- ☐ Renew only as complete unit
- ☐ Pressing off ⇒ [page 88](#)
- ☐ Pressing on ⇒ [page 88](#)
- ☐ Greasing ⇒ [page 85](#)
- ☐ Checking ⇒ [page 91](#)

19 - Gasket

- ☐ Adhesive surface on constant velocity joint must be free of oil and grease
- ☐ Renew
- ☐ Pull off protective foil and stick into joint.

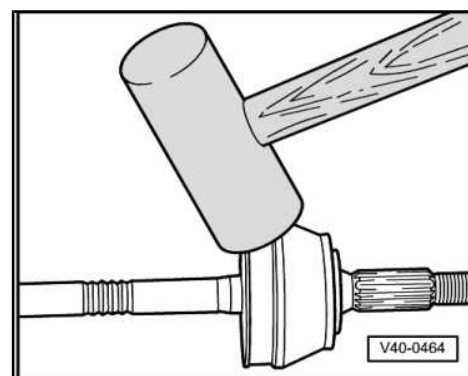
20 - Circlip

- ☐ Always renew
- ☐ Remove and install using circlip pliers -VW 161 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.

Removing outer constant velocity joint

- Drive joint off drive shaft with a firm blow from an aluminium hammer.

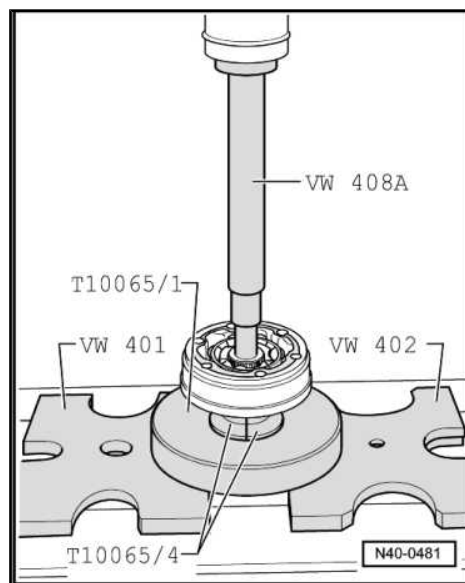


Pressing off inner constant velocity joint



Note!

First drive off boot with drift.



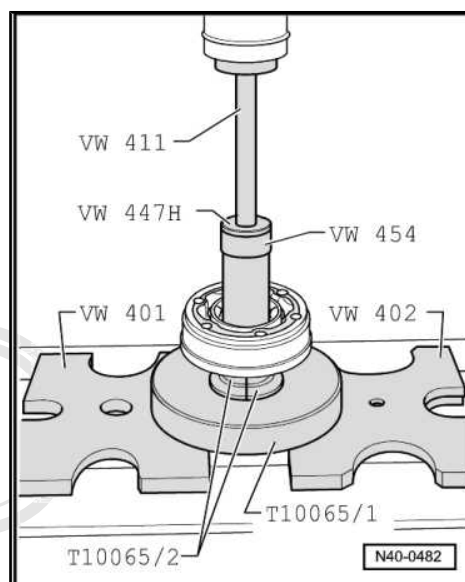
Pressing on inner constant velocity joint

- Press on joint as far as stop.
- Engage circlip.



Note!

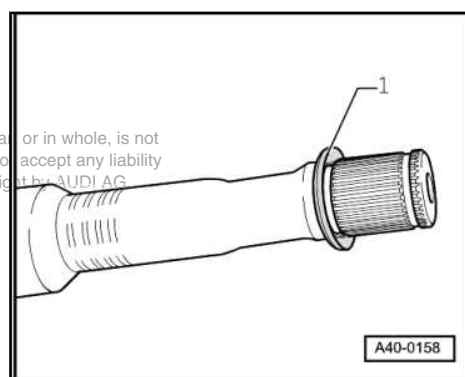
Chamfer on internal diameter of ball hub (splines) must face contact collar of drive shaft.



Installation position of convex washer at inner joint

1 - Convex 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

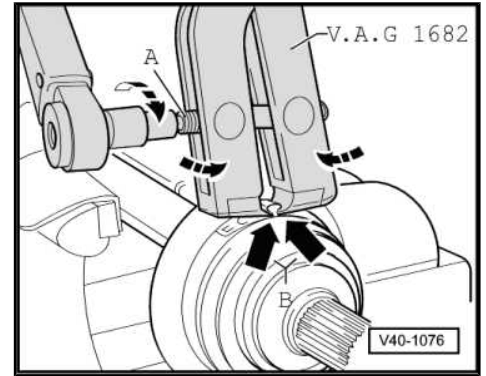


Tightening hose clip on outer joint

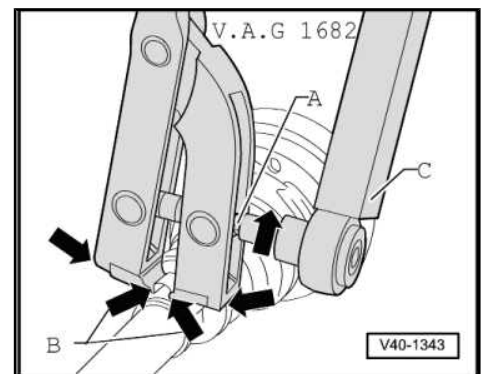
- Apply clamp tensioner -V.A.G 1682- as shown. Ensure jaws of tool make contact with lugs -arrows B- on hose clip.
- Tighten hose clip by turning spindle with torque wrench (take care to keep clamp tensioner straight).

Note!

- ◆ 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 -C- (adjustment range 5 ... 50 Nm), e.g. - V.A.G 1331-.
- ◆ Make sure thread of spindle -A- on clamp tensioner moves freely. Lubricate with MOS₂ 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 applying the specified tightening torque.

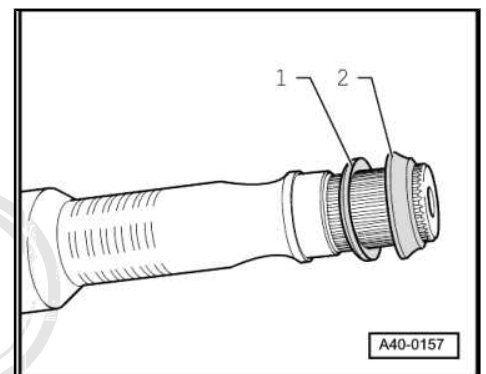


Tightening hose clip at inner joint/small diameter



Installation position of spacer ring and convex washer (wheel end)

- 1 - Convex washer
- 2 - Spacer ring (plastic)

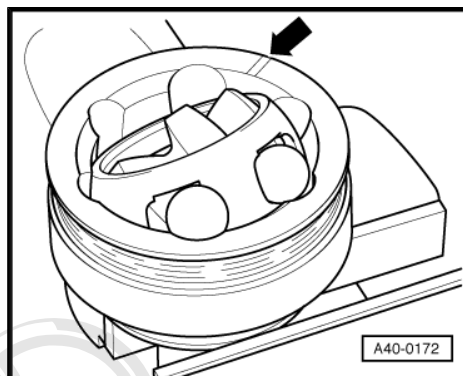


7.4 Checking outer constant velocity joint

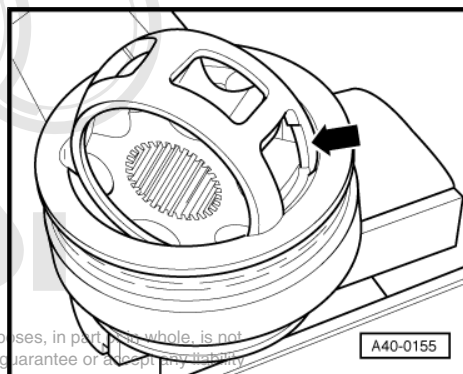
The joint should be dismantled to renew dirty grease or for checking the balls and ball tracks for wear and damage.

7.4.1 Removing

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

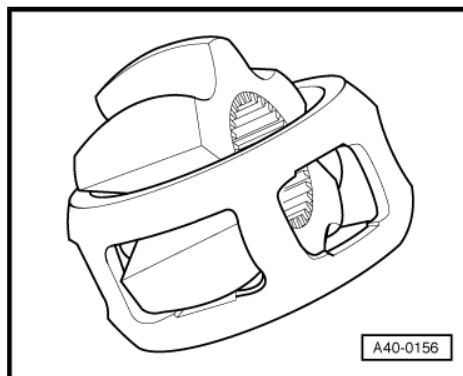


- Turn cage until two cage openings -arrow- are level with joint body.
- Lift out cage together with hub.



- Swivel one segment of the hub into one of the cage openings.
- Pivot hub out of cage.

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 ball track marks are not a reason for changing the joint.



7.4.2 Installing

- 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 half the total quantity of grease into the joint body.
- Fit new circlip in shaft.
- Distribute remaining grease in boot.

7.5 Checking inner constant velocity joint

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

- Swivel ball hub and ball cage.
- Push out joint in direction of arrow.
- Push balls out of cage.



Note!

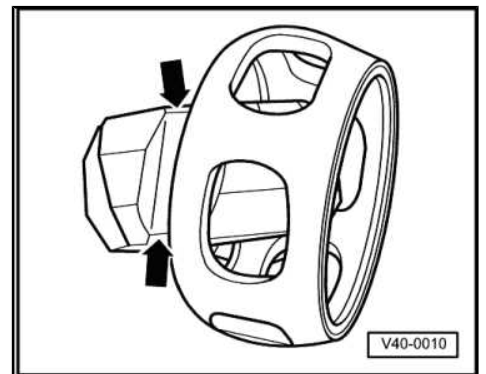
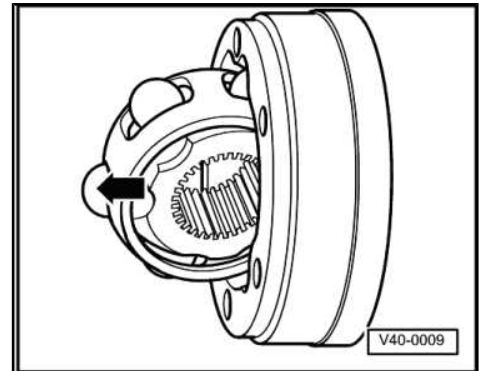
Ball hub and joint are paired and must be marked before dismantling. Ensure the balls run in the same tracks after assembly.

- 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 ball track marks are not a reason for changing the joint.



7.5.1 Installing

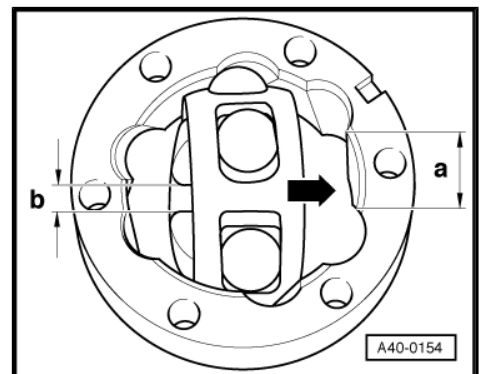
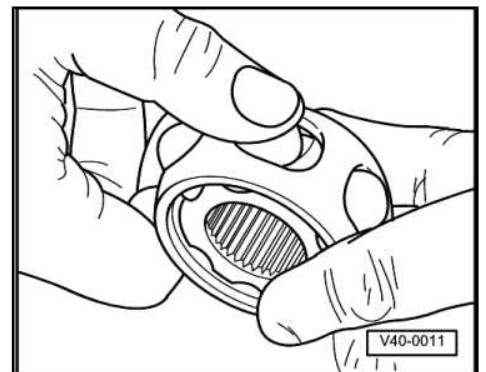
- Insert hub into cage via the two chamfers. No specific installation position is required. Push balls into cage.
- Insert hub with cage and balls at a right angle to the joint.



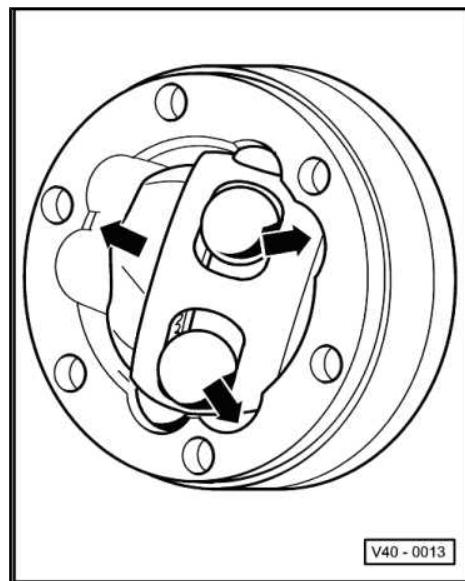
Note!

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.

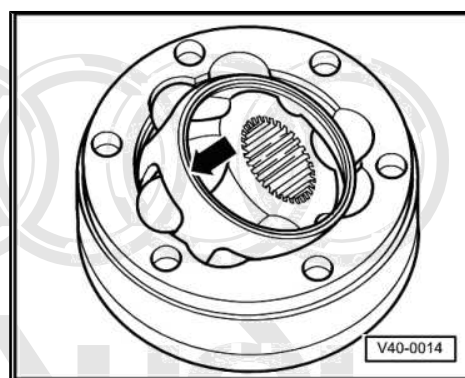
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- Swivel the 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 tracks.



- Swivel in the hub with balls by applying firm pressure on the cage -arrow-.



7.5.2 Checking function of constant velocity joint

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

The constant velocity joint has been correctly assembled if the ball hub can be moved by hand backwards and forwards over its entire axial adjustment range.

7.6 Servicing drive shaft with triple roller joint AAR 2000

7.6.1 Grease quantity and type

Constant velocity joints are filled with high-temperature grease ⇒ Parts catalogue

	Grease	of which in:	
	Total quantity (g)	Joint (g)	Boot (g)
♦ Outer joint Ø mm			
90	100	50	50
♦ Triple roller inner joint Ø mm			
108	110	110	-

Regrease joint when renewing boot.

7.6.2 Dismantling and assembling drive shaft

1 - 12-point nut (self-locking)

- ☐ Tightening torque
⇒ [Item 12 \(page 49\)](#)
- ☐ Always renew if removed
- ☐ Colour: silver
- ☐ Remove any corrosion on thread of outer joint before fitting nut.
- ☐ Tightening:
 - Degrease thread on stub axle.
 - Install and tighten new 12-point nut using socket (36 mm) -T10125-.

2 - Hexagon socket nut, self-locking (pressed-steel version)

- ☐ Pressed-steel hexagon socket nuts are installed on vehicles up to chassis number 8Z-2-015 078. Replace pressed-steel nuts on both sides of vehicle with 12-point nuts ⇒ [Item 1 \(page 93\)](#).
- ☐ Pressed-steel hexagon socket nuts must not be installed.

3 - Deflector ring

- ☐ Only installed with basic running gear
- ☐ Colourless

4 - Outer constant velocity joint

- ☐ Renew only as complete unit
- ☐ Removing ⇒ [page 87](#)
- ☐ Installing: drive onto shaft with plastic hammer until compressed circlip seats
- ☐ Greasing ⇒ [page 92](#)
- ☐ Checking ⇒ [page 89](#)
- ☐ Apply locking fluid -D 185 400 A2- to splines before inserting in wheel hub ⇒ [page 78](#) or ⇒ [page 82](#)
- ☐ Degrease thread on stub axle

5 - Circlip

- ☐ Always renew
- ☐ Insert in groove on shaft

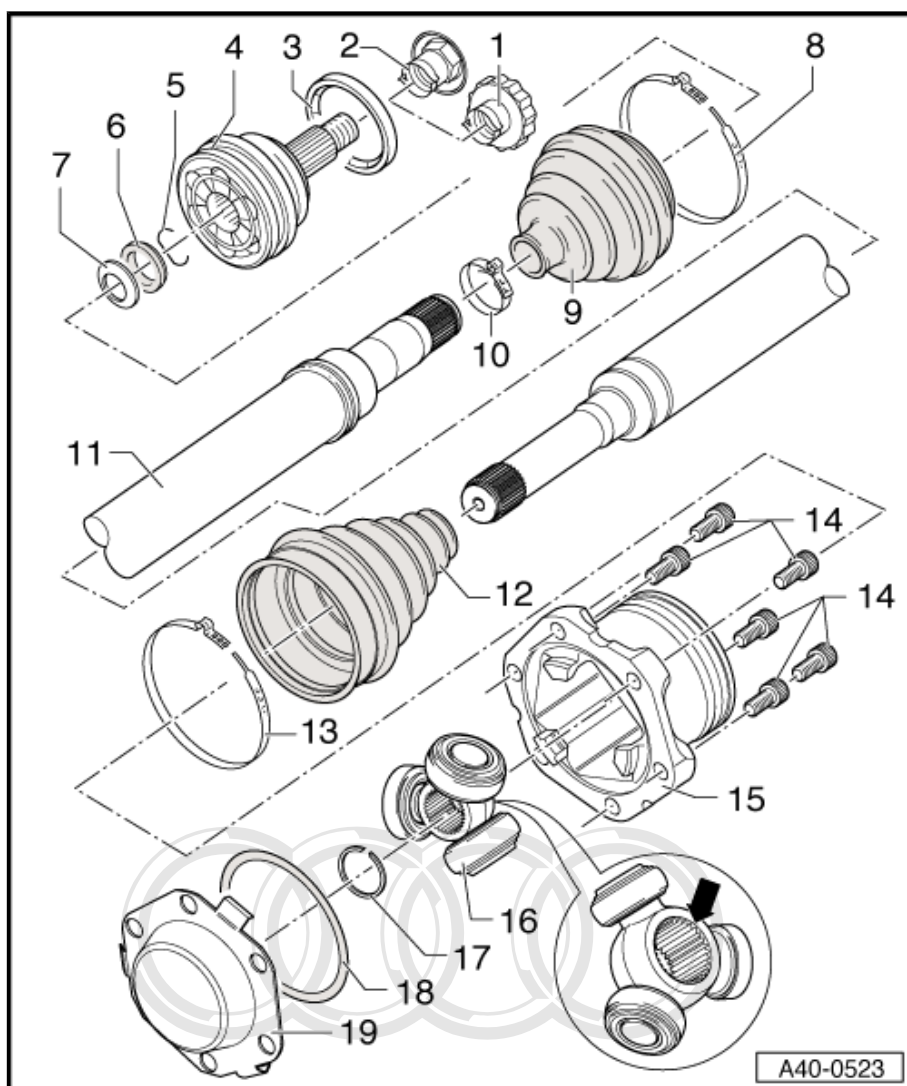
6 - Spacer ring (plastic)

7 - Convex washer

- ☐ Large Ø (concave side) contacts spacer ring

8 - Hose clip

- ☐ 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.



9 - Boot for constant velocity joint

- ☐ Check for splits and chafing
- ☐ Material: Hytrel (polyelastomer)

10 - Hose clip

- ☐ Always renew

11 - Drive shaft

- ☐ Left drive shaft with damper weight

12 - Boot for triple roller joint

- ☐ Check for splits and chafing

13 - Hose clip

- ☐ For triple roller joint
- ☐ Always renew

14 - Multi-point socket-head bolt

- ☐ Pre-tighten to 10 Nm in diagonal sequence
- ☐ Tighten to 70 Nm
- ☐ Always renew if removed

15 - Joint body

16 - Triple roller spider with rollers

Chamfer -arrow- faces towards drive shaft splines

17 - Circlip

- ☐ Always renew
- ☐ Remove and install using circlip pliers -VW 161 A-

18 - O-ring

- ☐ Always renew

19 - Cover

- ☐ Always renew

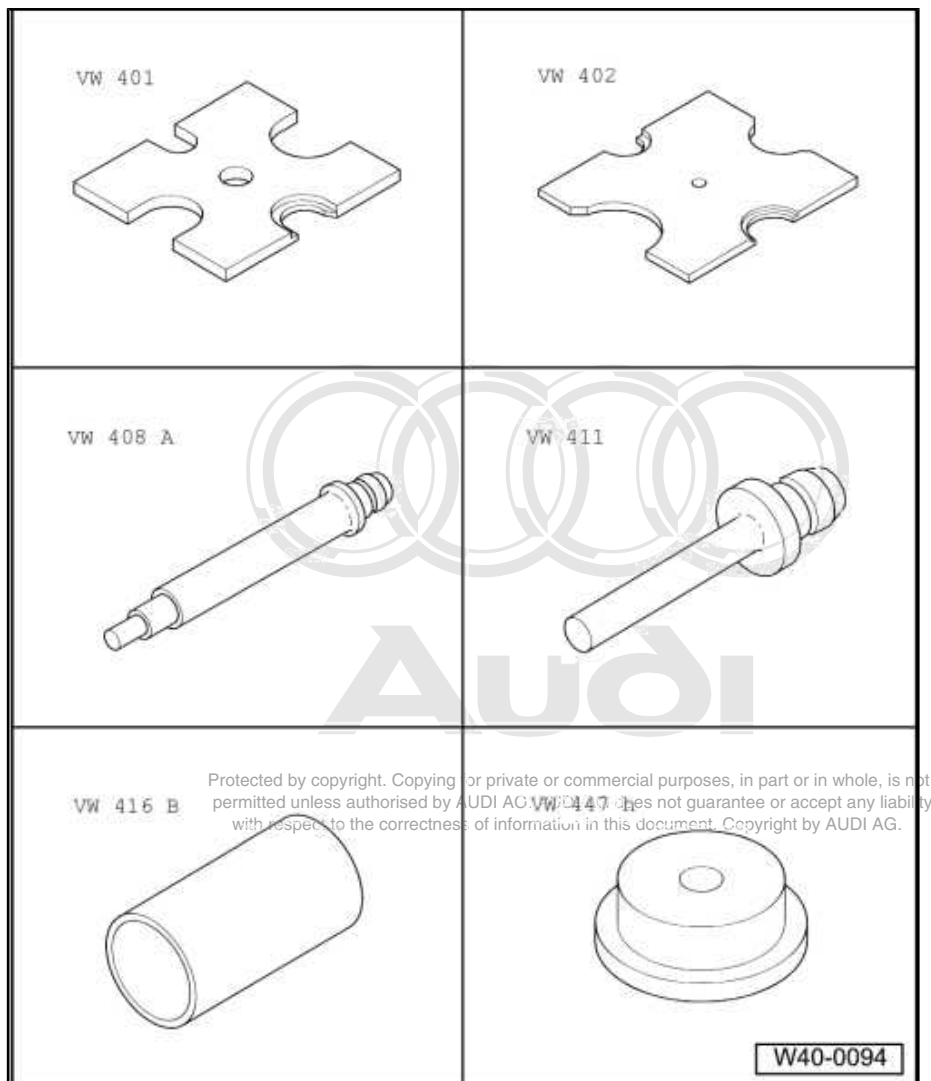


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

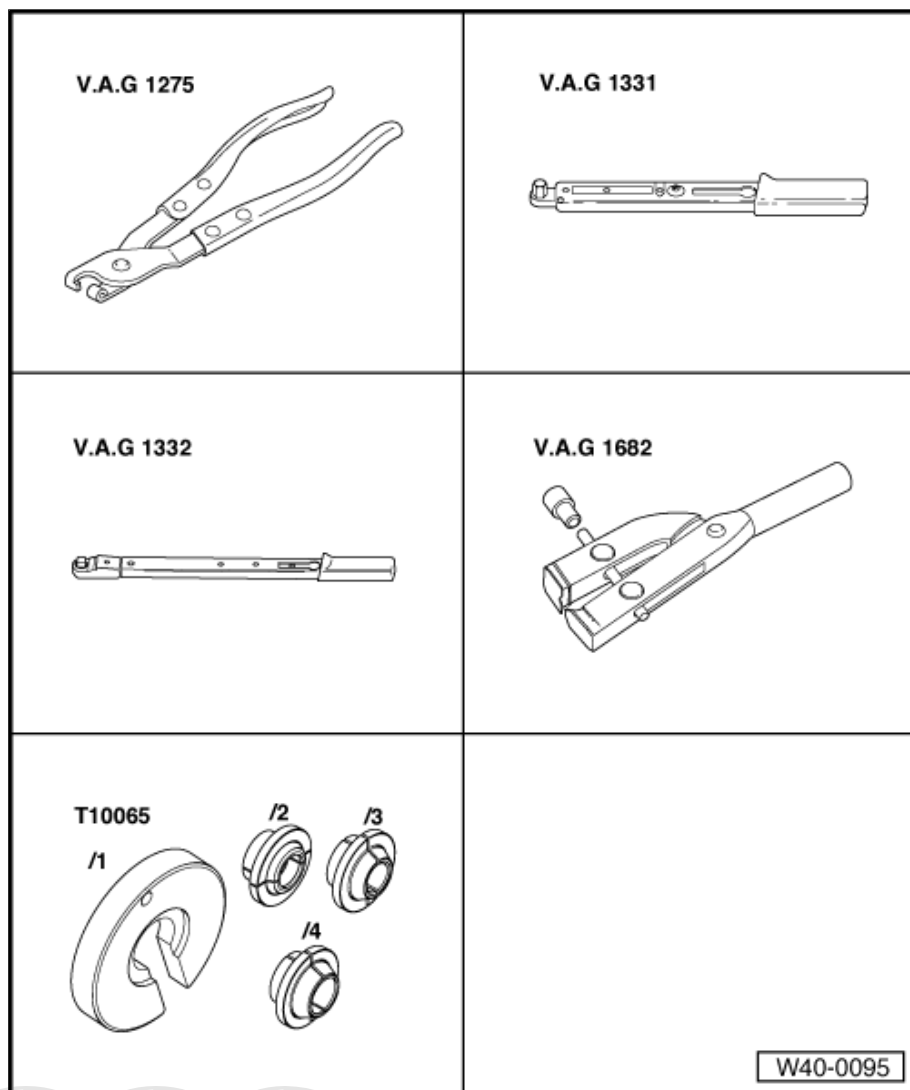
7.7 Dismantling and assembling triple roller joint AAR 2000

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-

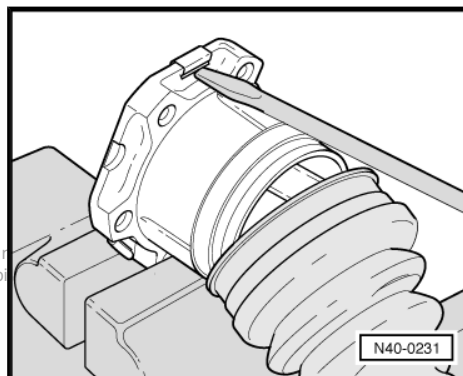


- ◆ Hose clip pliers - V.A.G 1275-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Clamp tensioner - V.A.G 1682-
- ◆ Assembly tool -T10065-
- ◆ Circlip pliers -VW 161 A-



7.7.1 Dismantling

- Open hose clip at joint and push back boot.
- Using a screwdriver, bend open metal tabs on cover and lever off cover.



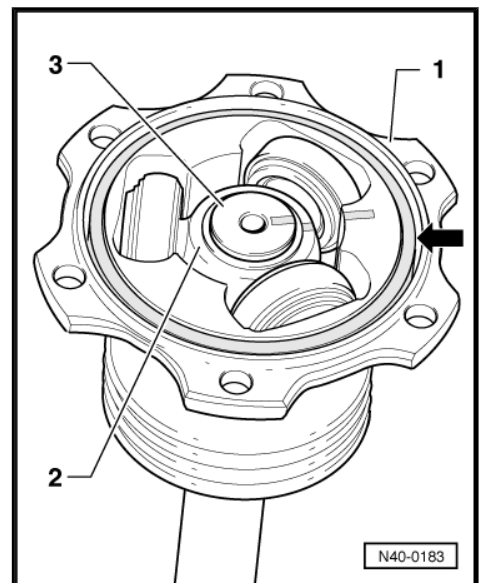
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Mark positions of parts 1 ... 3 in relation to each other before dismantling.

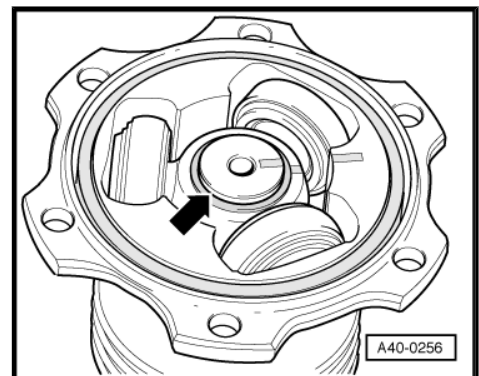
The joint may be noisy if these parts are not marked and reinstalled in their original positions.

Use a waterproof felt-tip pen for marking.

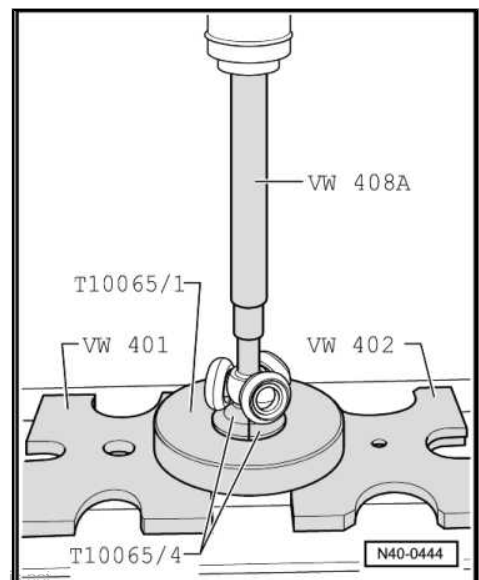
- 1 - Joint body
- 2 - Triple roller spider
- 3 - Drive shaft
- Take O-ring -arrow- out of groove.



- Remove circlip -arrow-.
- Hold on to joint and remove drive shaft from vice.
- Insert drive shaft in press.



- Hold drive shaft, then press triple roller spider off drive shaft.
- Remove triple roller spider with rollers and place on a clean surface.
- Pull joint body off shaft.
- Pull joint boot off shaft.
- Clean shaft and joint body.



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

7.7.2 Assembling

- Push joint boot onto shaft.
- Push joint body onto shaft.

Installing triple roller spider

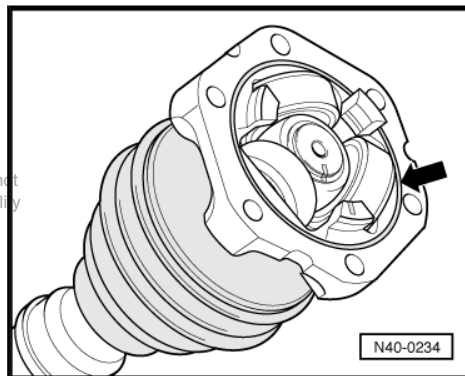
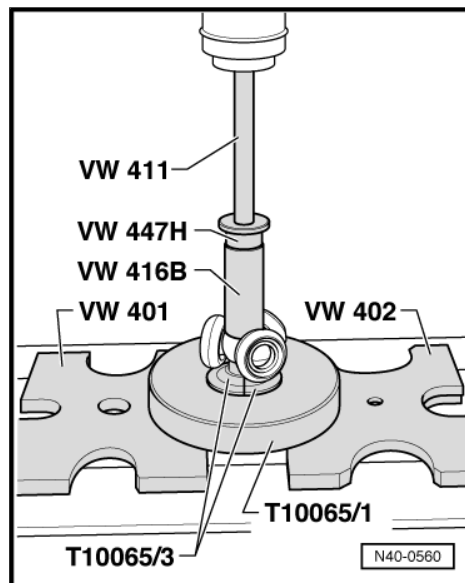
Chamfer on spider faces towards shaft and is used as an assembly aid.

- Fit triple roller spider onto shaft according to markings and press home onto stop.
- Install circlip (ensure proper seating).
- Slide joint body over rollers and hold in position.

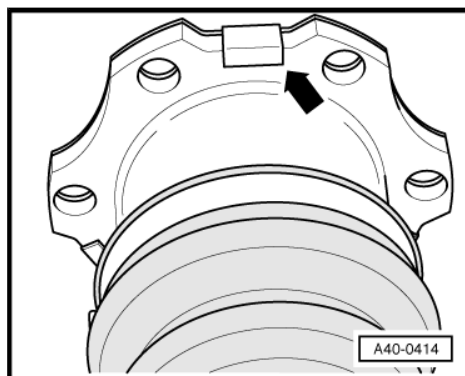

Note!

When greasing triple roller joints, pack grease only into the joint and not into the boot.

- Press half the specified quantity of drive shaft grease from the repair kit into the triple roller joint.
- Press the other half of the specified quantity of drive shaft grease from the repair kit into the back of the triple roller joint.
- Install joint boot. The bead on the joint boot must engage in the groove on the joint.
- Now take drive shaft out of vice and clamp joint body in position in vice.
- Insert new seal -arrow- from repair kit into groove.



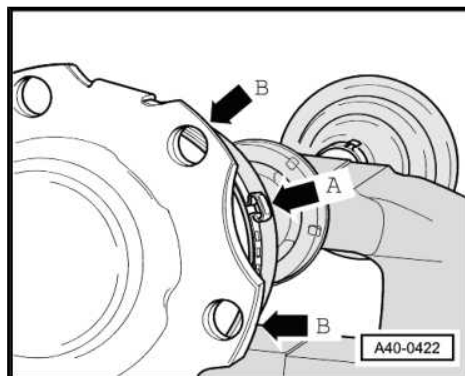
- Fit new cover onto joint (position tabs on straight surfaces of joint -arrow-). Holes in cover and joint must align.



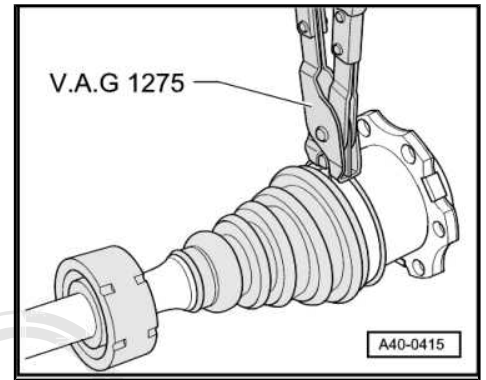
- Install hose clip.


Note!

To make it easier to insert the multi-point socket-head bolts when installing the drive shaft, the lug -arrow A- on the hose clip must be positioned between the mounting flanges -arrows B- on the joint body.



- Tighten hose clip with hose clip pliers -V.A.G 1275- .



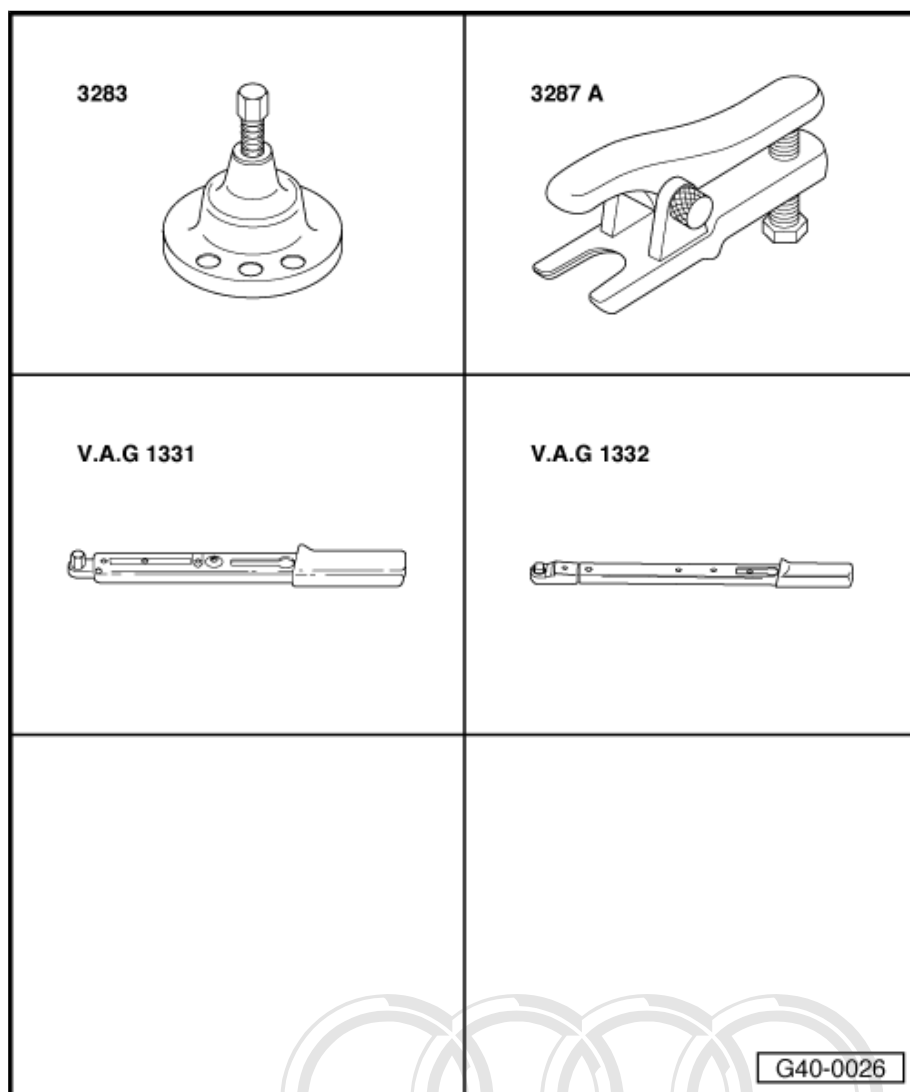
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

8 Drive shafts (1.2 TDI running gear)

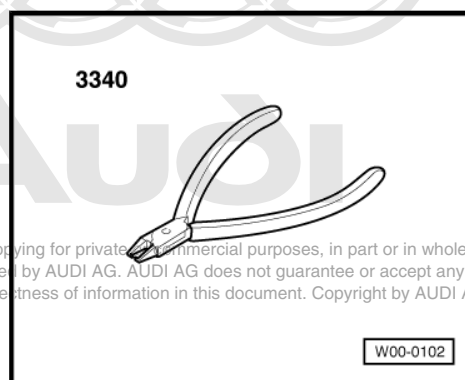
8.1 Removing and installing drive shafts

Special tools and workshop equipment required

- ◆ Press tool -3283-
- ◆ Ball joint puller -3287 A-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-



- ◆ Pliers -3340-

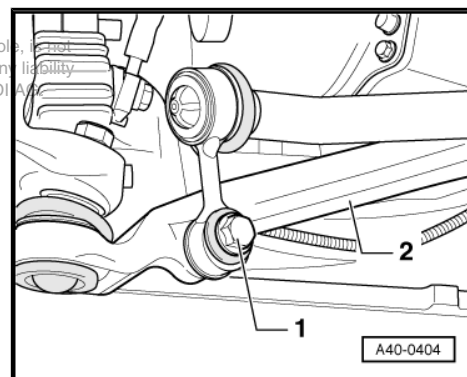


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

8.1.1 Removing

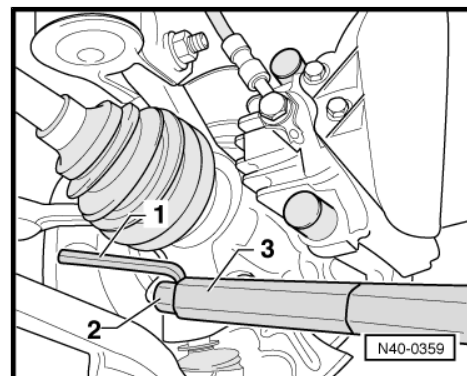
- Lift vehicle far enough to take weight off front wheels.
- Remove hexagon socket nut from drive shaft with 19 mm hexagon key , e.g. Hazet No. 985.
- Remove wheel.
- Remove noise insulation.
- Detach guard plate above drive shaft from engine.
- Mark position of profiled shaft in relation to joint body.
- Remove bolt for coupling rod -1- from wishbone -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.



- Unscrew nut from swivel joint; if necessary counterhold with 5 mm Allen key.

- 1 - 5 mm Allen key , shortened approx. 10 mm
- 2 - Ring spanner insert or slotted ring spanner insert
⇒ [page 103](#) , Fig. V40-1323
- 3 - Torque wrench -V.A.G 1331-

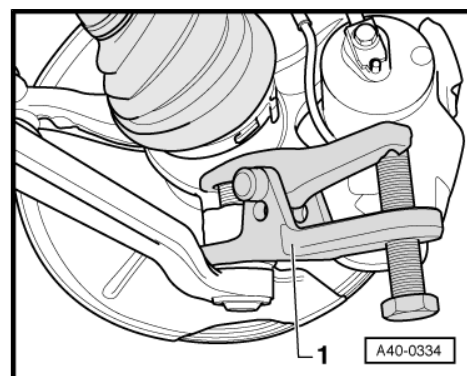


- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joint.



Note!

Take care not to damage rubber boot when inserting ball joint puller.

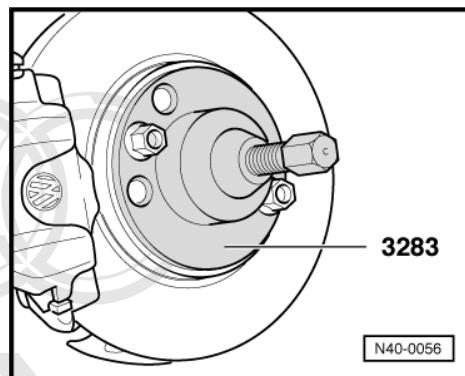


- Press out drive shaft.

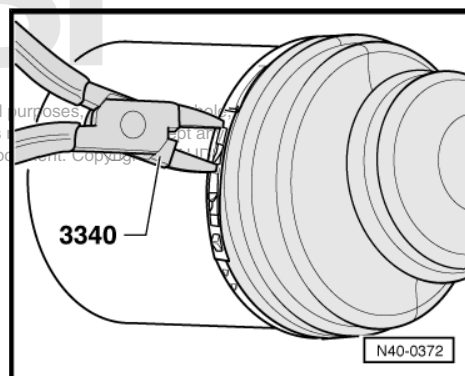

Note!

Ensure sufficient clearance when pressing out drive shaft.

- Pivot suspension strut outwards and support in position.



- Open hose clip at gearbox end.
- Take out drive shaft.



Protected by copyright. Copying for private or commercial purposes 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. Copying is prohibited.

8.1.2 Installing

When servicing drive shaft or renewing flange shaft for triple roller joint, these parts must be cleaned and greased.

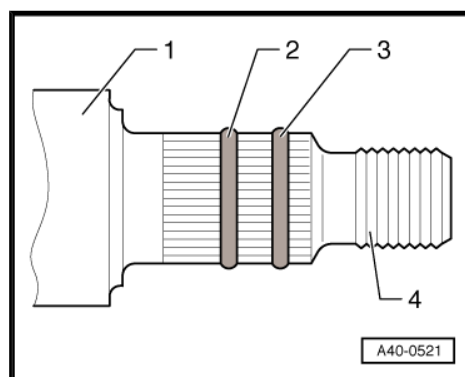
Grease quantity and type ⇒ [page 105](#)

- Remove any paint or adhesive residue and/or corrosion on thread and splines of outer drive shaft joint.
- Remove any remaining locking fluid from splines on outer drive shaft joint and splines of wheel hub.

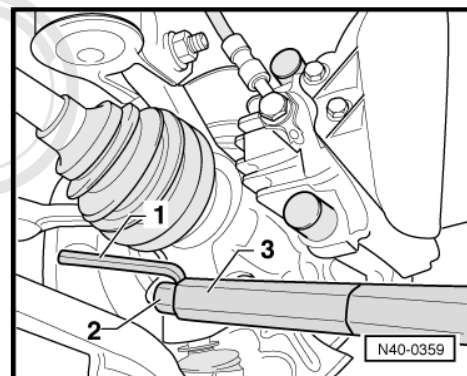
Splines on outer joint and splines of wheel hub must be free of oil and grease.

- Insert drive shaft into joint body of triple roller joint (according to markings) and push boot onto joint.
- Apply two beads of locking fluid -D 185 400 A2- on splines as illustrated. Bead diameter approx. 2 mm.

- 1 - Outer joint
 - 2 - Bead approximately in centre of splines
 - 3 - Bead near beginning of splines
 - 4 - Grease threads of outer joint (stub axle) after assembly.
- Insert outer joint into splines of wheel hub.
 - Grease threads of outer joint -4- all round with solid grease - G 052 751 A1- .
 - Install and tighten new hexagon socket nut (pressed-steel version) ⇒ [Item 12 \(page 58\)](#) .



- Install new self-locking nut on swivel joint, counterholding with 5 mm Allen key .
- 1 - 5 mm Allen key , shortened approx. 10 mm
- 2 - Ring spanner insert or slotted ring spanner insert
⇒ [page 103](#) , Fig. V40-1323
- 3 - Torque wrench -V.A.G 1331-



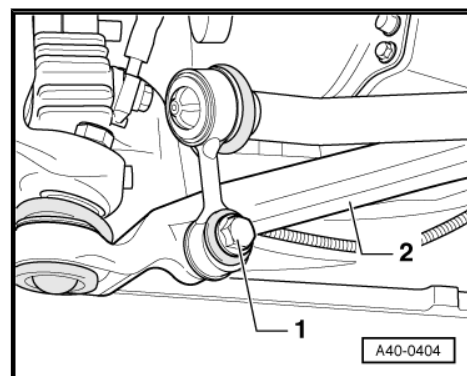
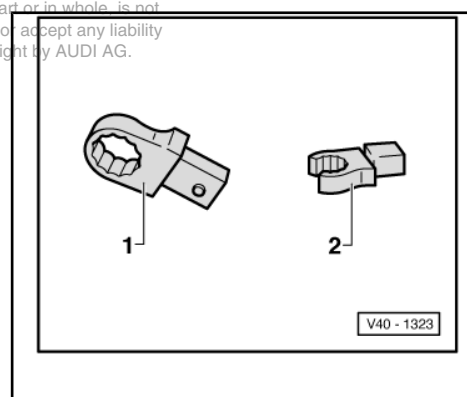
- Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- Ring spanner inserts:
 - 1 - Ring spanner insert (commercial type, 16 mm)
 - 2 - Slotted ring spanner insert (commercial type, 16 mm)



Note!

Ensure rubber boot is not damaged or twisted.

- Position boot on joint body of triple roller joint and install hose clip.
- Install guard plate above drive shaft.
- Secure coupling rod to wishbone -2- using new bolt -1-.
- Install noise insulation.
- Fit and secure wheel ⇒ [page 161](#) .



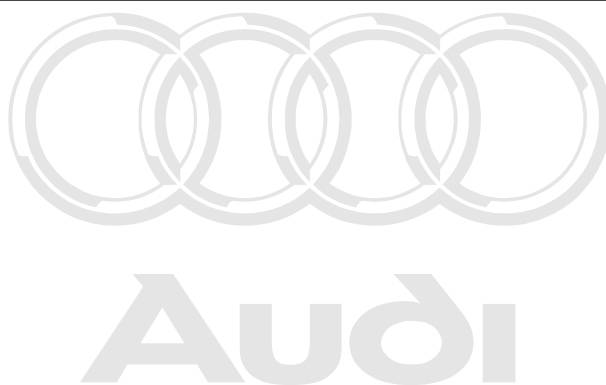
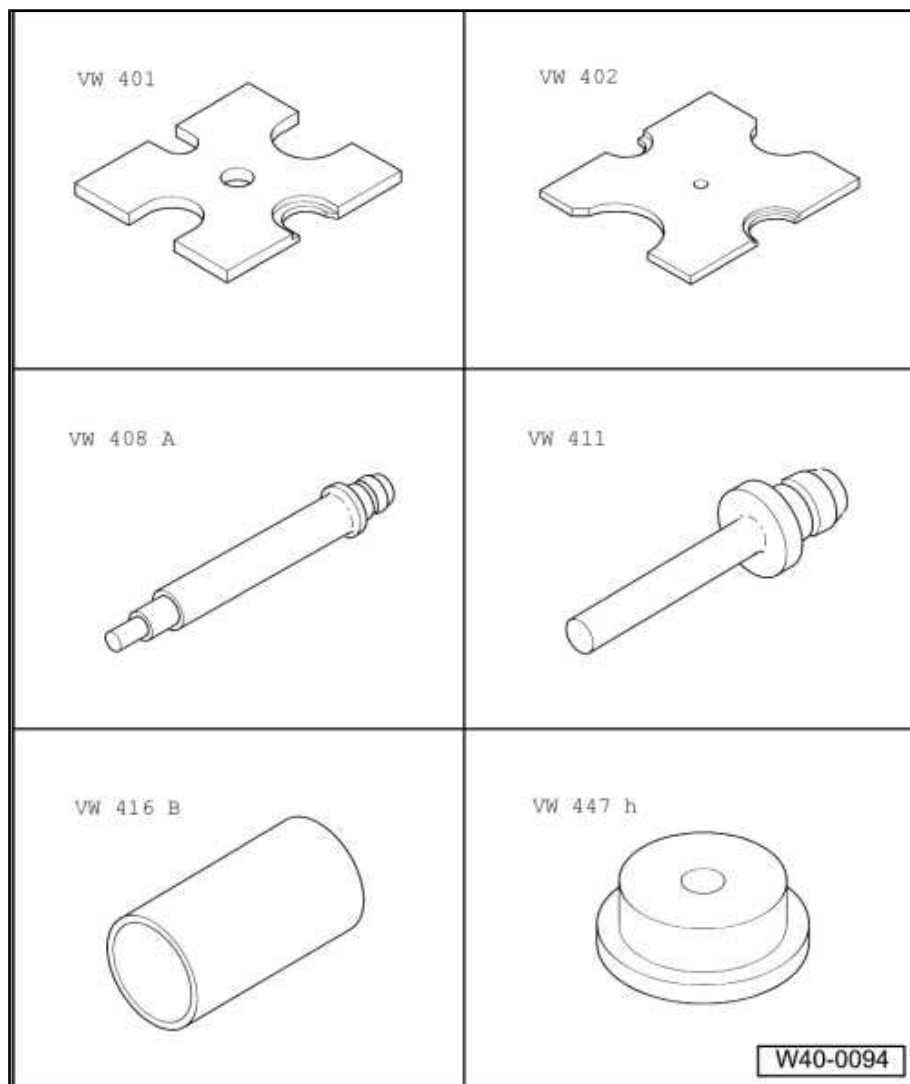
8.1.3 Tightening torques

Swivel joint to wheel bearing housing	20 Nm + 90°
◆ Use new nut.	
Hexagon socket nut for drive shaft to wheel hub with wheel bearing	30 Nm
◆ Use new nut.	
Anti-roll bar to wishbone	23 Nm
◆ Use new bolts.	

8.2 Servicing drive shaft

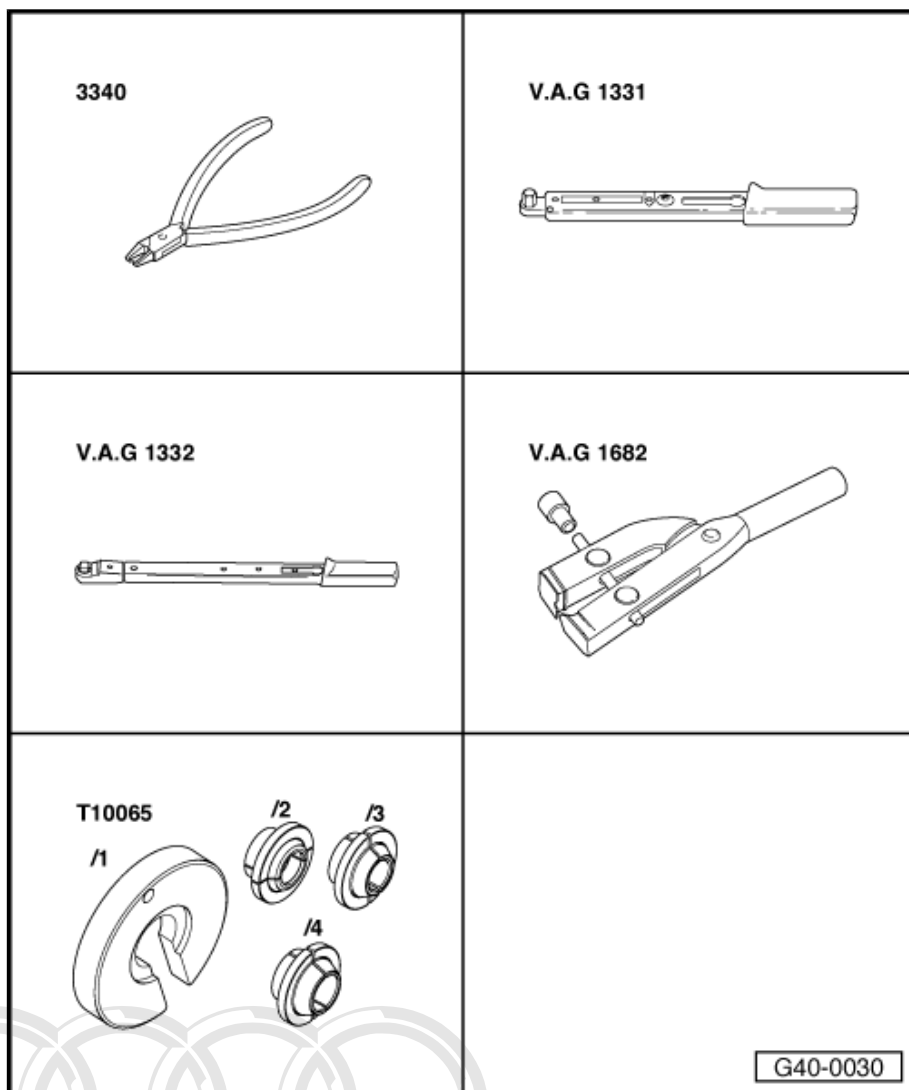
Special tools and workshop equipment required

- ◆ 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-



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Clamp tensioner - V.A.G 1682-
- ◆ Assembly tool -T10065-



8.2.1 Grease quantity and type

Joints are filled with high-temperature grease. ⇒ Parts catalogue

	Grease	of which in:	
	Total quantity (g)	Joint (g)	Boot (g)
◆ Outer joint Ø mm			
90	90	45	45
◆ Triple roller inner joint Ø mm			
72	110	80	30

Regrease joint when renewing boot.

8.2.2 Dismantling and assembling drive shaft

1 - Hexagon socket nut (pressed-steel version), 30 Nm

- ☐ Always renew
- ☐ Colour: black

2 - Outer constant velocity joint

- ☐ Renew only as complete unit
- ☐ Removing ⇒ [page 107](#)
- ☐ Installing: drive onto shaft as far as stop using plastic hammer
- ☐ Greasing ⇒ [page 105](#)
- ☐ Checking ⇒ [page 109](#)
- ☐ Apply locking fluid D 185 400 A2 to splines before inserting in wheel hub ⇒ [page 102](#)

3 - Circlip

- ☐ Renew
- ☐ Insert in groove on shaft

4 - Hose clip

- ☐ Renew
- ☐ Use clamp tensioner - V.A.G 1682- to tighten ⇒ [page 108](#)

5 - Boot for constant velocity joint

- ☐ Check for splits and chafing
- ☐ Material: Hytrel (polyelastomer)

6 - Hose clip

- ☐ Renew
- ☐ Tightening ⇒ [page 108](#)

7 - Drive shaft

8 - Boot

- ☐ Check for splits and chafing

9 - Hose clip

- ☐ Releasing and installing ⇒ [page 109](#)

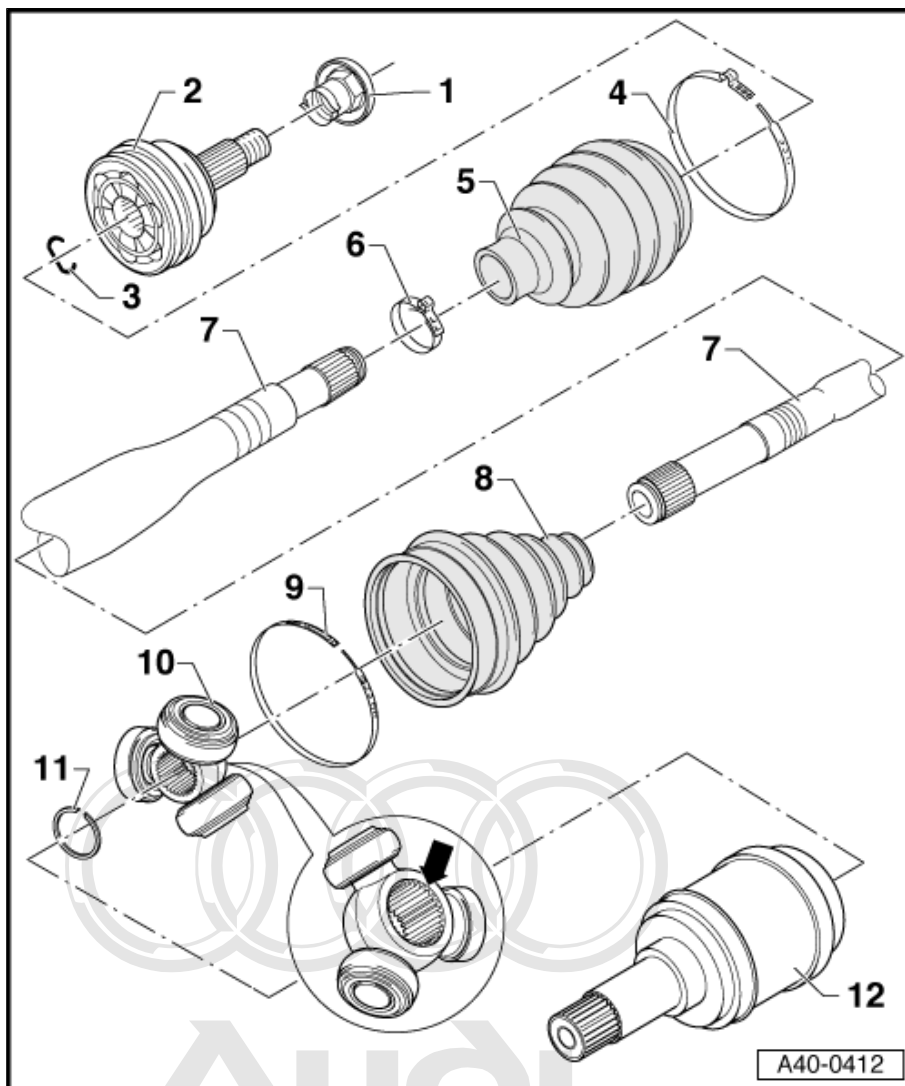
10 - Triple roller spider with rollers

Chamfer -arrow- faces towards drive shaft splines

- ☐ Pressing off ⇒ [page 107](#)
- ☐ Installation position ⇒ [page 107](#)
- ☐ Pressing on ⇒ [page 108](#)

11 - Circlip

- ☐ Renew
- ☐ Insert in groove on shaft



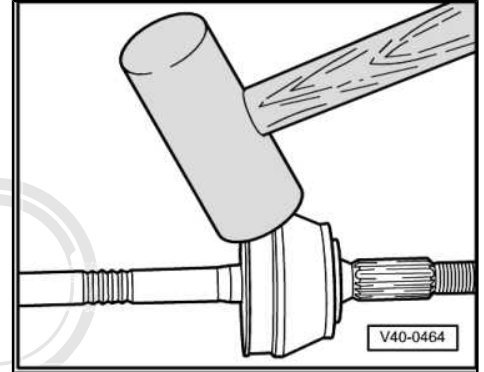
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

12 - Flange shaft for triple roller joint

- ☐ Is bolted to gearbox
- ☐ Removing and installing ⇒ 5-speed manual gearbox 085 DS; Rep. Gr. 39 ; Renewing flange shaft oil seals

Removing outer constant velocity joint

- Drive joint off drive shaft with a firm blow from an aluminium hammer.

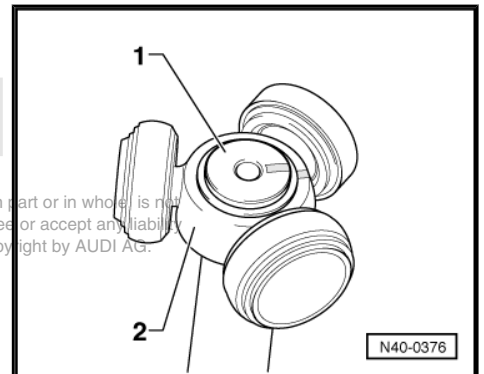


Installation position of triple roller spider

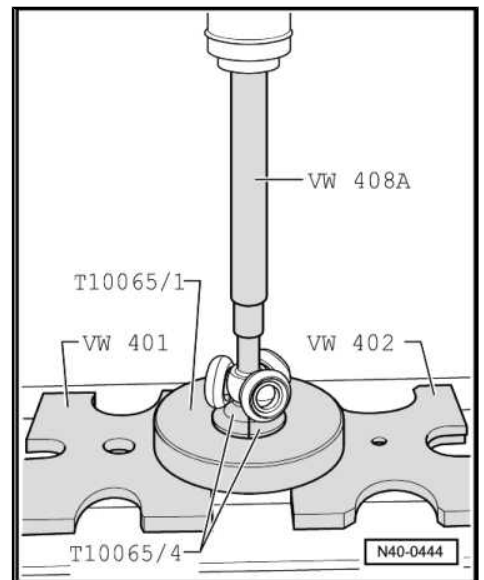
- Before pressing off triple roller spider, mark position of triple roller spider -2- in relation to drive shaft -1-.

Use a waterproof felt-tip pen for marking.

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



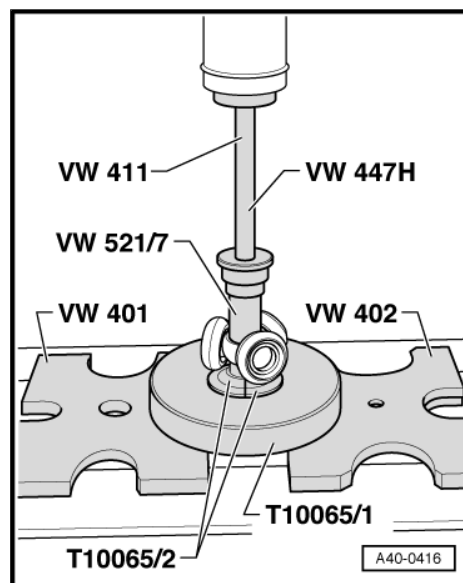
Pressing triple roller spider off drive shaft.



Pressing triple roller spider onto drive shaft

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

- Fit triple roller spider onto shaft according to markings and press home onto stop.



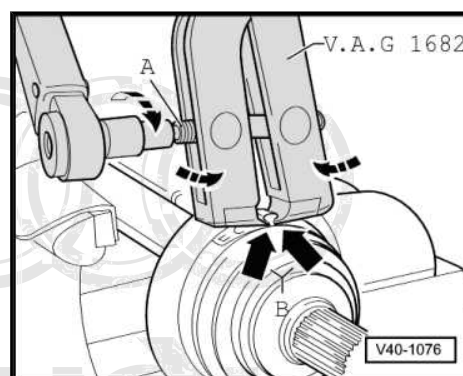
Tightening hose clip on outer joint (large diameter)

- Apply clamp tensioner -V.A.G 1682- as shown. Ensure jaws of tool make contact with lugs -arrows B- on hose clip.
- Tighten hose clip by turning spindle with torque wrench (take care to keep clamp tensioner straight).

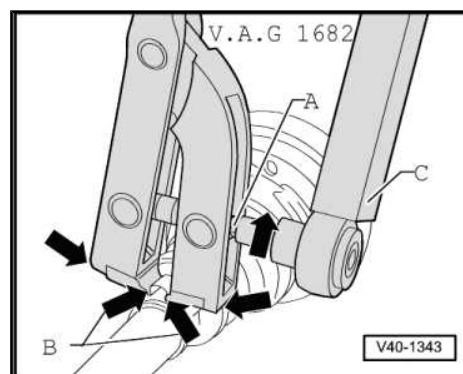


Note!

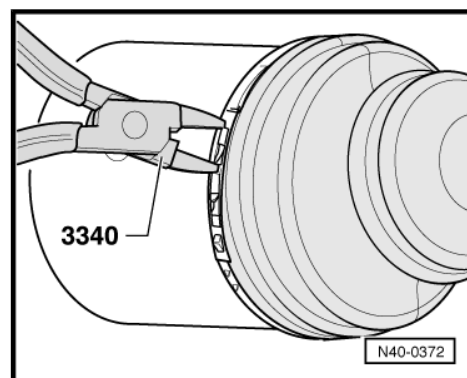
- ◆ Due to the hard material of the CV joint boot (as opposed to rubber), a stainless steel hose clip is required; this can only be tightened using clamp tensioner -V.A.G 1682-.
- ◆ Tightening torque: 20 Nm.
- ◆ Use torque wrench -C- (adjustment range 5 ... 50 Nm), e.g. - V.A.G 1331-.
- ◆ Make sure thread of spindle -A- on clamp tensioner moves freely. Lubricate with MOS₂ 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 applying the specified tightening torque.



Tightening hose clip on outer joint (small diameter)



Releasing and installing hose clip

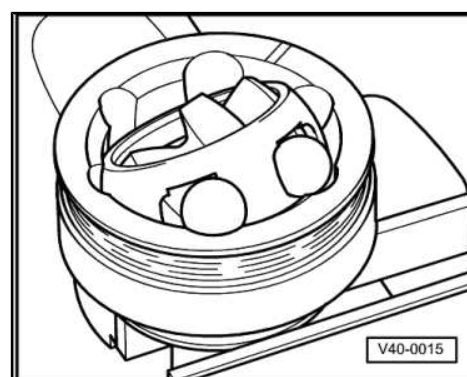


8.3 Checking outer constant velocity joint

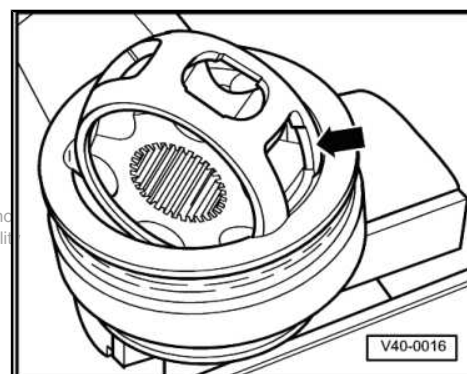
The joint should be dismantled to renew dirty grease or for checking the balls and ball tracks for wear and damage.

8.3.1 Removing

- 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.

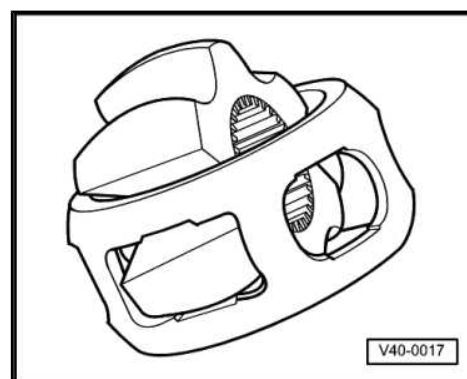


- Turn the cage until the two rectangular openings -arrow- are level with the joint body.
- Lift out cage together with hub.



- Swivel one segment of hub into rectangular opening of cage.
- Pivot hub out of cage.

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 ball track marks are not a reason for changing the joint.



8.3.2 Installing

- Pack half of total grease quantity (45 g) into joint body.



- Fit cage with hub into joint body.
- 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.
- Fit new circlip into hub.
- Distribute remaining grease in boot.



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

42 – Rear suspension

1 Servicing rear axle

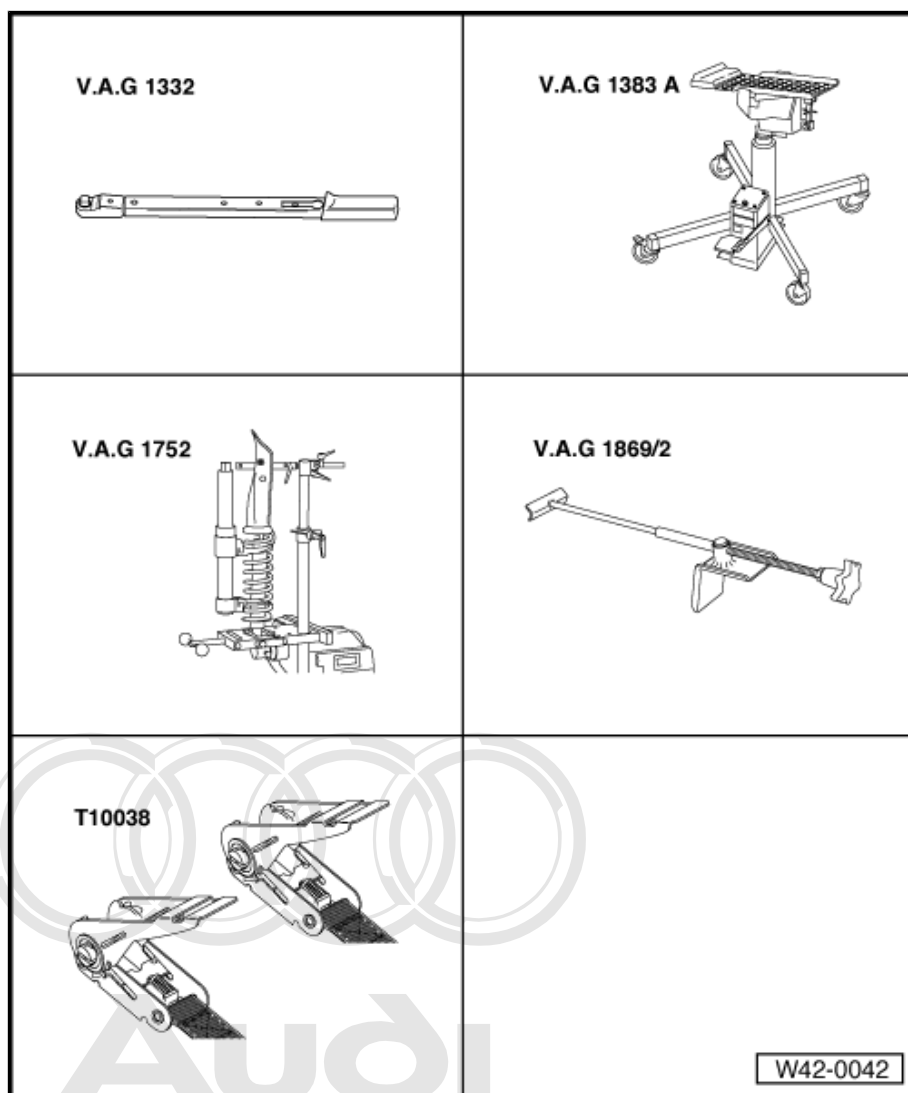
1.1 Removing and installing rear axle

The procedure for removing and installing the rear axle is described for a vehicle with drum brakes.

The procedure for a vehicle with disc brakes is basically the same.

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Suspension strut spring compressor -V.A.G 1752-
- ◆ Brake pedal depressor - V.A.G 1869/2-
- ◆ Tensioning strap -T10038-



1.1.1 Removing

- Release handbrake.
- Remove rear storage 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.

- Slacken adjusting nut -arrow- as far as possible.
- Set up brake pedal actuator -V.A.G 1869/2- .

This prevents the brake pipes and the ABS hydraulic unit from running dry.

- Raise vehicle to working height.

Securing vehicle to lifting platform

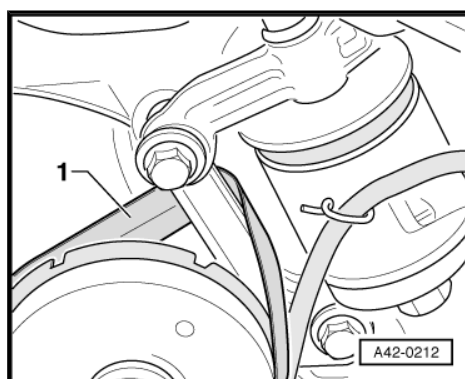
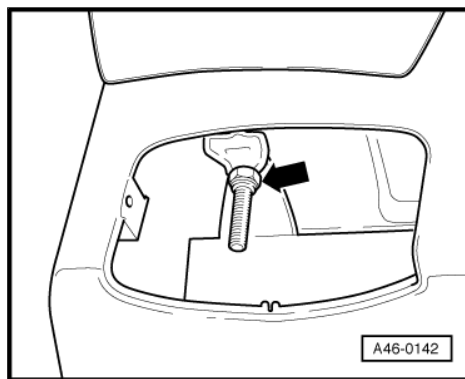
The vehicle must be secured to the support arms of the lifting platform before the rear axle is removed.

If vehicle is not secured, there is a risk of it slipping off the lifting platform.

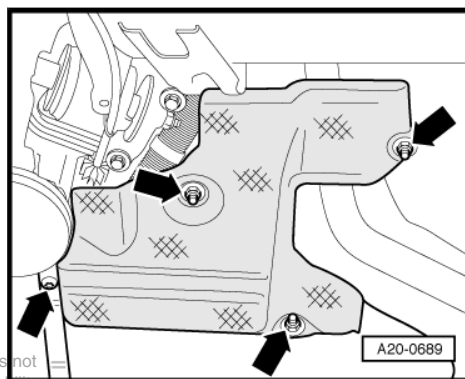
- Run tensioning strap -T10038- -1- through mounting bracket for rear axle.

The vehicle must be secured on both sides with the tensioning straps.

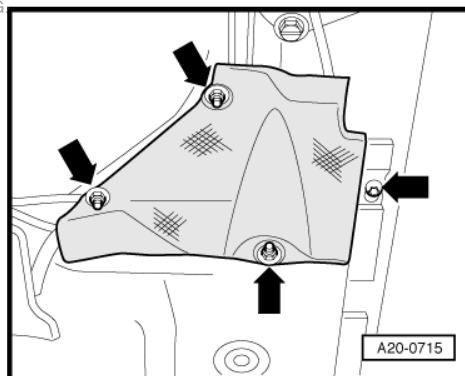
- Remove wheels.
- Unplug connector on speed sensor wire and speed sensor.
- Unclip speed sensor wire from bracket.



- Remove heat shield from fuel tank (left-side) -arrows-.

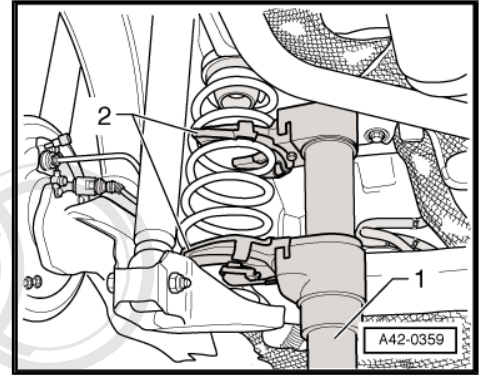


- Remove heat shield in front of fuel tank (right-side) -arrows-.

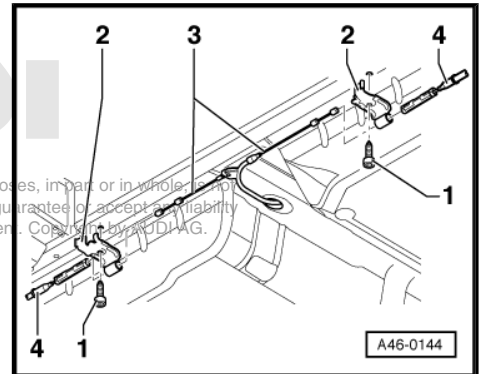


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG

- Attach spring compressor -V.A.G 1752/1- -1-.
- 2 - Spring retainer -V.A.G 1752/3-
- Compress coil spring until it can be removed.
- Remove spring.

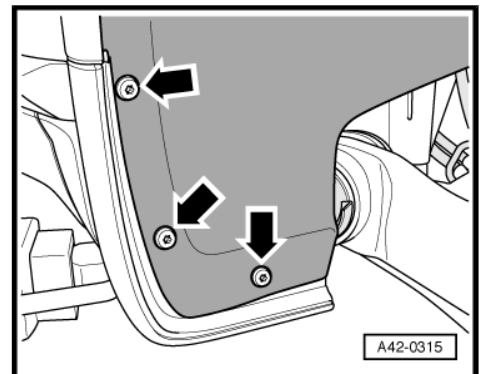


- Remove support bracket -2-
- Disconnect cables -3- and -4-.

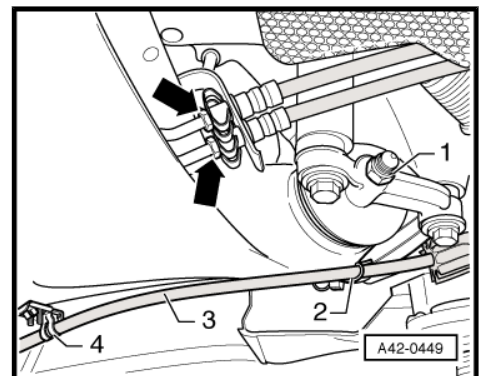


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Unscrew bolts for wheel housing liners -arrows- on both sides.



- Disconnect brake pipes -arrows- and remove clamps.
- Pull brake hose out of bracket on rear axle beam.
- Detach cable -3- from handbrake cable bracket -2-.
- Release fastener -4- and detach cable.
- Bring engine and gearbox jack -V.A.G 1383 A- into position.
- A - Wooden block
- Remove bolts -1- for rear axle beam.

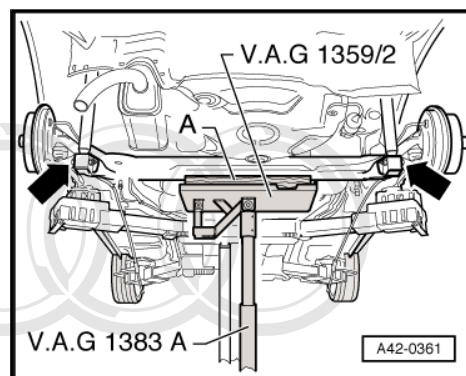


- Unbolt rear axle from shock absorbers -arrows-.
- Lower rear axle with engine and gearbox jack -V.A.G 1383 A- .


Note!

Watch for washers fitted on bushes when removing rear axle from mounting brackets. These is a risk of accident if these washers are allowed to drop out.

- Secure rear axle with a strap or similar when lowering and re-moving.



1.1.2 Installing

Installation is carried out in reverse sequence.

- Before installing rear axle, grease kidney-shaped cavities of bonded rubber bushes with assembly paste G 052 150 A2.
- When installing coil springs, note that colour marking must always face towards axle.
- Bleed brakes ⇒ Brake system; Repair group 47; Bleeding brake system .
- Fit and secure wheels ⇒ [page 161](#) .

After installation, check position of steering wheel by test-driving vehicle.

Wheel alignment must be checked and adjusted if steering wheel is not in central position.

- Check and adjust wheel alignment ⇒ [page 164](#) .

1.1.3 Tightening torques

Rear axle to mounting bracket 75 Nm
 ♦ Use new bolts and nuts.

(Vehicle standing on its wheels)

Shock absorber to rear axle 55 Nm
 ♦ Use new bolt and nut.

Load rear of vehicle with weight of one person
 when tightening

(Vehicle standing on its wheels)

1.2 Rear axle beam (drum brakes; basic running gear and 1.2 TDI running gear): exploded view

General notes ⇒ [page 2](#)

1 - Axle beam

- ☐ Up to week 13/02
- ☐ Keep contact surface and tapped holes for stub axle free from paint and dirt.
- ☐ For correct version refer to ⇒ Parts catalogue

2 - Axle beam

- ☐ From week 14/02 onwards
- ☐ Keep contact surface and tapped holes for stub axle free from paint and dirt.
- ☐ For correct version refer to ⇒ Parts catalogue

3 - Spring plate

- Check spring plate for damage

4 - Coil spring

- ☐ Removing and installing ⇒ [page 136](#)
- ☐ Surface of spring coil must not be damaged
- ☐ Note colour markings - they must always face towards axle.
- ☐ For correct version refer to ⇒ Parts catalogue

5 - Spring plate

6 - Hexagon bolt, 30 Nm and turn 90° further

- ☐ Always renew if removed

7 - Shock absorber

- ☐ For correct version refer to ⇒ Parts catalogue
- ☐ Disposal ⇒ [page 3](#)
- ☐ Checking shock absorber for leaks and noises ⇒ [page 7](#)

8 - Self-locking hexagon nut, 55 Nm

- ☐ Always renew if removed
- ☐ When tightening nut, ensure axle beam is in horizontal position (unladen) and load rear of vehicle with one person

9 - Hexagon bolt

- ☐ Always renew if removed

10 - Hexagon socket head bolt, 8 Nm

11 - ABS speed sensor

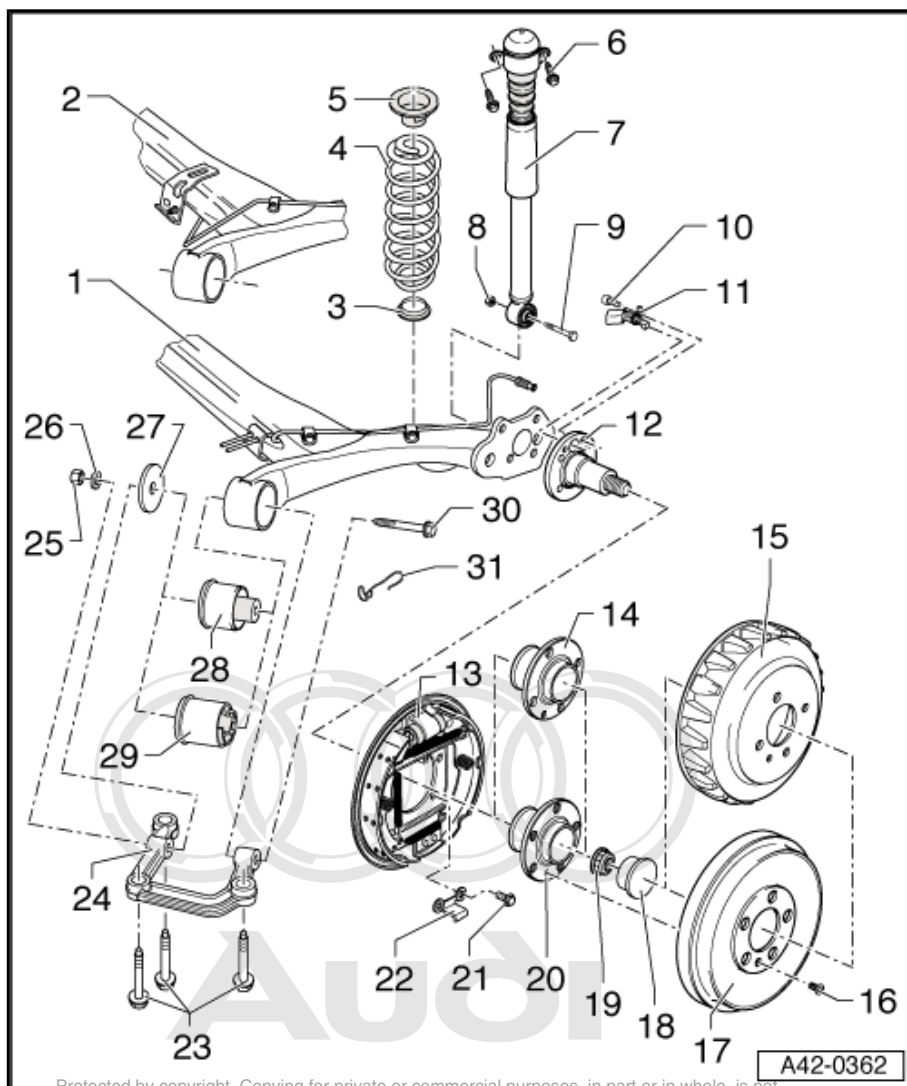
- ☐ Before inserting sensor, clean inner surface of fitting hole and coat with grease G 000 650

12 - Stub axle

- ☐ Must not be straightened
- ☐ Recutting the thread is not permitted

13 - Brake backplate with brake shoes

- ☐ Servicing ⇒ Brake system; Repair group 46; Servicing rear brakes (drum brakes)



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

14 - Wheel hub with wheel bearing

- ☐ For 1.2 TDI running gear
- ☐ The ABS sensor ring is incorporated in the wheel hub
- ☐ Removing and installing ⇒ [page 145](#)

Wheel bearing and wheel hub are combined in one housing.

This wheel bearing/hub unit is maintenance-free and has zero play. There is no provision for adjustment or repair.

15 - Brake drum

- ☐ For 1.2 TDI running gear

16 - Cross-head screw, 4 Nm**17 - Brake drum**

- ☐ For basic running gear

18 - Dust cap

- ☐ Always renew if removed
- ☐ Removing and installing (basic running gear) ⇒ [page 143](#)
- ☐ Removing and installing (1.2 TDI running gear) ⇒ [page 145](#)

Proper sealing can only be achieved by installing a new dust cap.

This is essential for optimum function and service life of wheel bearing.

19 - 12-point nut (self-locking)

- ☐ Always renew if removed
- ☐ Tightening torques:
 - ◆ 1.2 TDI running gear: 175 Nm
 - ◆ Basic running gear: 70 Nm and turn 30° further

20 - Wheel hub with wheel bearing

- ☐ For basic running gear
- ☐ The ABS sensor ring is incorporated in the wheel hub
- ☐ Removing and installing ⇒ [page 143](#)

Wheel bearing and wheel hub are combined in one housing.

This wheel bearing/hub unit is maintenance-free and has zero play. There is no provision for adjustment or repair.

21 - Hexagon bolt

- ☐ Always renew if removed
- ☐ 4x

☐ With convex washer

☐ Tightening torques:

- ◆ 1.2 TDI running gear: 60 Nm
- ◆ Basic running gear: 30 Nm and turn 90° further

22 - Bracket for handbrake cable

- ☐ For 1.2 TDI running gear only

23 - Hexagon bolt, 55 Nm and turn 90° further

- ☐ Always renew if removed

24 - Mounting bracket for rear axle

25 - Hexagon nut, 75 Nm

26 - Washer

27 - Washer

- ☐ Insert from centre of vehicle
- ☐ Two washers may be fitted on some versions. The total thickness must always be 8 mm.

28 - Bonded rubber bush

- ☐ Removing and installing:
- ◆ Manually with special tools [⇒ page 120](#)
- ◆ Using hydraulic press -VAS 6178- , -VAS 6179- and -VAS 6180- [⇒ page 124](#)

29 - Hydraulic bonded rubber bush

- ☐ Only installed up to approx. week 30/00

Not supplied as replacement part.

If bush is leaking it must be replaced with a conventional bonded rubber bush

Mixed installation of different versions on the same vehicle is not permissible.

- ☐ Removing [⇒ page 129](#)

30 - Bolt

- ☐ Install from outside of vehicle
- ☐ Always renew if removed

31 - Bracket for handbrake 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.

1.3 Rear axle beam (disc brakes): exploded view

General notes ⇒ [page 2](#)

1 - Axle beam

- ☐ Keep contact surface and tapped holes for stub axle free from paint and dirt.
- ☐ For correct version refer to ⇒ Parts catalogue

2 - Spring plate

- Check spring plate for damage

3 - Coil spring

- ☐ Removing and installing ⇒ [page 136](#)
- ☐ Surface of spring coil must not be damaged
- ☐ Note colour markings - they must always face towards axle.
- ☐ For correct version refer to ⇒ Parts catalogue

4 - Spring plate

5 - Hexagon bolt, 30 Nm and turn 90° further

- ☐ Always renew if removed

6 - Shock absorber

- ☐ For correct version refer to ⇒ Parts catalogue
- ☐ Disposal ⇒ [page 3](#)
- ☐ Checking shock absorber for leaks and noises ⇒ [page 7](#)

7 - Self-locking hexagon nut, 55 Nm

- ☐ Always renew if removed
- ☐ When tightening nut, ensure axle beam is in horizontal position (unladen) and load rear of vehicle with one person

8 - Hexagon bolt

- ☐ Always renew if removed

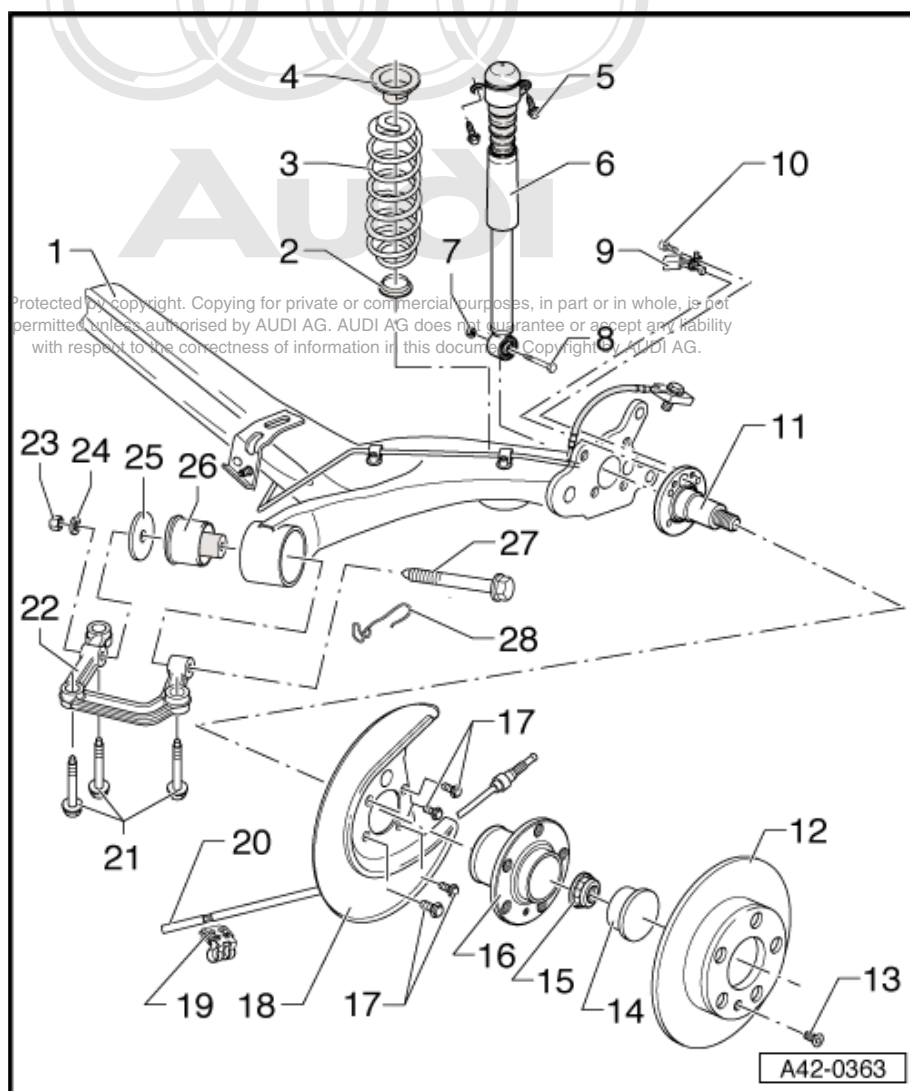
9 - ABS speed sensor

- ☐ Before inserting sensor, clean inner surface of fitting hole and coat with grease G 000 650

10 - Hexagon socket head bolt, 8 Nm

11 - Stub axle

- ☐ Must not be straightened
- ☐ Recutting the thread is not permitted



12 - Brake disc

13 - Cross-head screw, 4 Nm

14 - Dust cap

- ☐ Always renew if removed
- ☐ Removing and installing ⇒ [page 150](#)

Proper sealing can only be achieved by installing a new dust cap.

This is essential for optimum function and service life of wheel bearing.

15 - 12-point nut, self-locking, 70 Nm and turn 30° further

- ☐ Always renew if removed

16 - Wheel hub with wheel bearing

- ☐ The ABS sensor ring is incorporated in the wheel hub
- ☐ Removing and installing ⇒ [page 150](#)

Wheel bearing and wheel hub are combined in one housing.

This wheel bearing/hub unit is maintenance-free and has zero play. There is no provision for adjustment or repair.

17 - Hexagon bolt, 30 Nm and turn 90° further

- ☐ 4x
- ☐ Always renew if removed

18 - Splash plate

19 - Bracket for handbrake cable

- ☐ Always renew

20 - Handbrake cable

21 - Hexagon bolt, 55 Nm and turn 90° further

- ☐ Always renew if removed

22 - Mounting bracket for rear axle

23 - Hexagon nut, 75 Nm

24 - Washer

25 - Washer

- ☐ Insert from centre of vehicle
- ☐ Two washers may be fitted on some versions. The total thickness must always be 8 mm.

26 - Bonded rubber bush

- ☐ Removing and installing:
- ◆ Manually with special tools ⇒ [page 120](#)
- ◆ Using hydraulic press -VAS 6178- , -VAS 6179- and -VAS 6180- ⇒ [page 124](#)

27 - Bolt

- ☐ Install from outside of vehicle
- ☐ Always renew if removed

28 - Bracket for handbrake cable

1.4 Removing and installing bonded rubber bush

There are two alternative methods for removing and installing the bonded rubber bush.

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

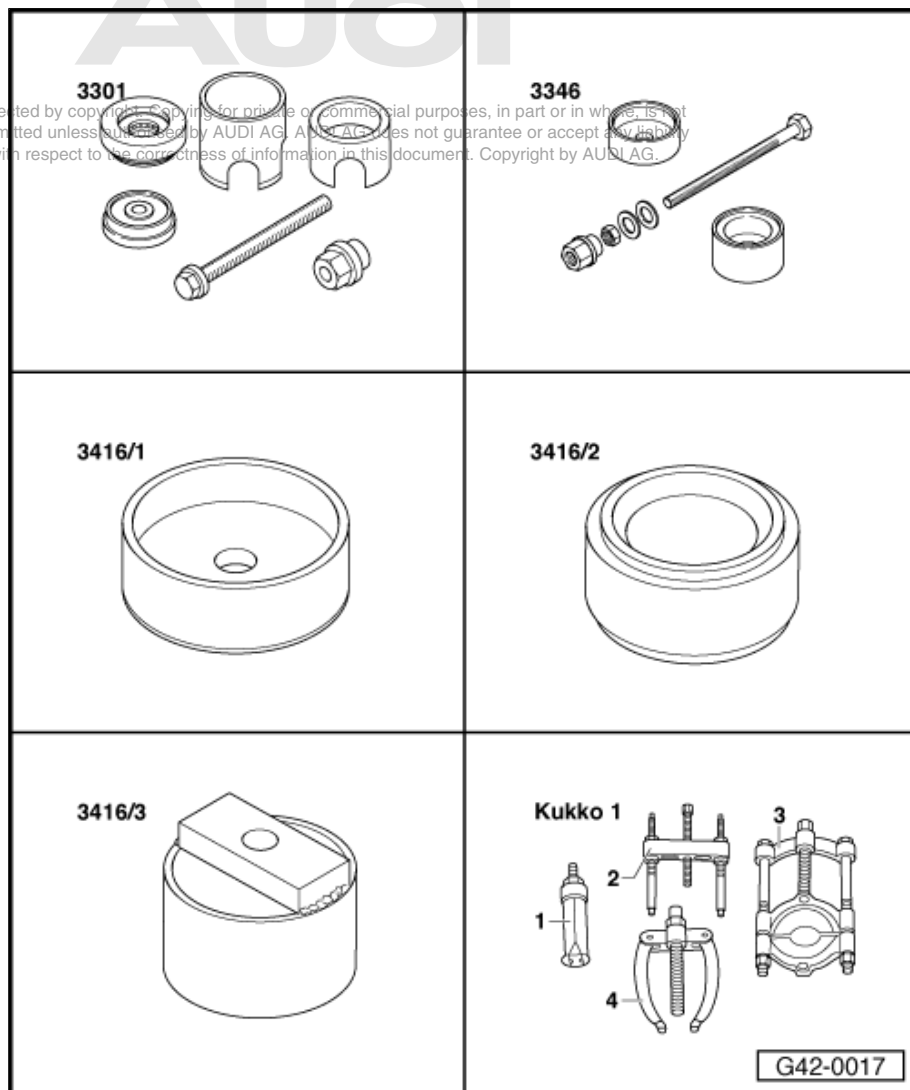
Method 1: Manually with special tools ⇒ [page 120](#)

Method 2: Using hydraulic press -VAS 6178- , -
VAS 6179- and -VAS 6180- ⇒ [page 124](#)

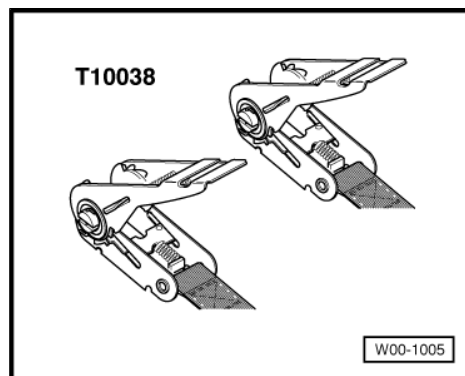
1.4.1 Method 1

Special tools and workshop equipment required

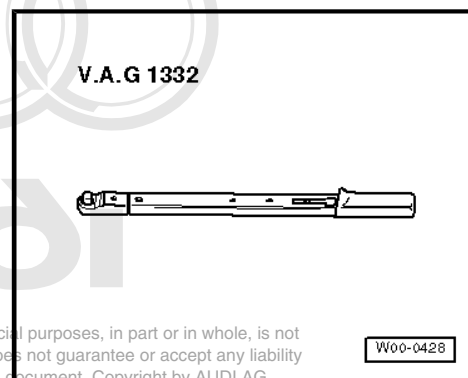
- ◆ Assembly tool -3301-
- ◆ Assembly tool -3346-
- ◆ Thrust piece -3416/1-
- ◆ Thrust piece -3416/2-
- ◆ Support tube -3416/3-
- ◆ -2- Puller -Kukko 18/1-
- ◆ -3- Splitter -Kukko 17/1-



- ◆ Tensioning strap -T10038-



- ◆ 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.

1.4.2 Removing

Securing vehicle to lifting platform

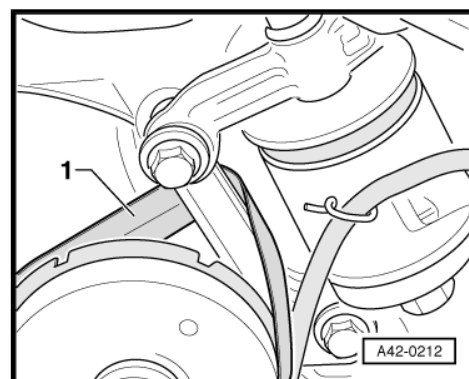
The vehicle must be secured to the support arms of the lifting platform before the rear axle is removed from the mounting brackets.

If vehicle is not secured, there is a risk of it slipping off the lifting platform.

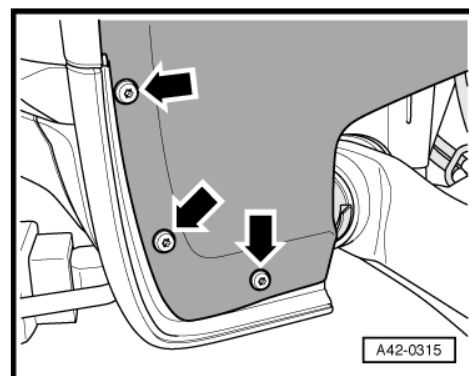
- Run tensioning strap -T10038- -1- through mounting bracket for rear axle.

The vehicle must be secured on both sides with the tensioning straps.

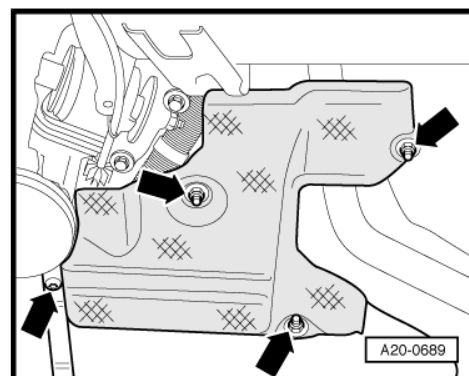
- Remove wheels.



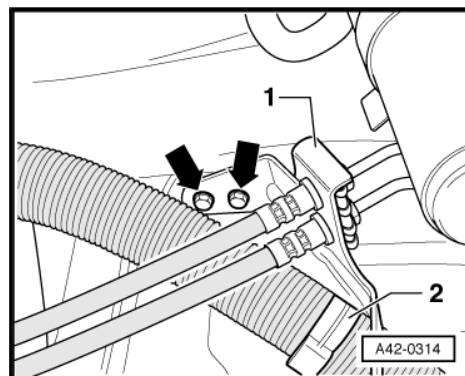
- Unscrew bolts for wheel housing liners -arrows- on both sides.
- Unclip speed sensor wiring from bracket on rear axle.



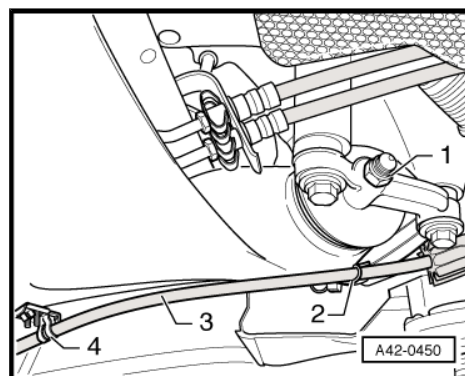
- Remove heat shield from fuel tank (left-side) -arrows-.



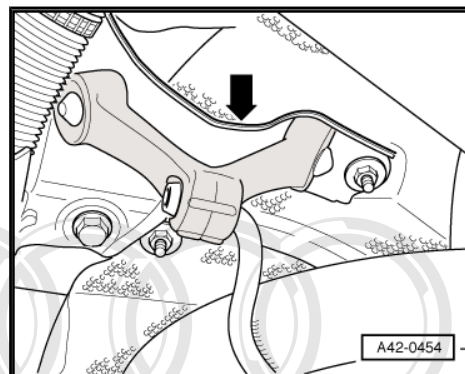
- Remove bolts -arrows- securing bracket for brake hoses -1- and open clamp -2-.



- Detach cable -3- from handbrake cable bracket -2-.
- Release fastener -4- and detach cable.
- Bring engine and gearbox jack -V.A.G 1383 A- into position.
- Remove bolts -1- for rear axle beam.
- Lower rear axle approx. 10 cm with engine and gearbox jack -V.A.G 1383 A- .



- Secure rear axle at bracket for exhaust system -arrow- using tensioning strap -T10038- . Make sure that brake pipes and hoses are not under tension.



Note!

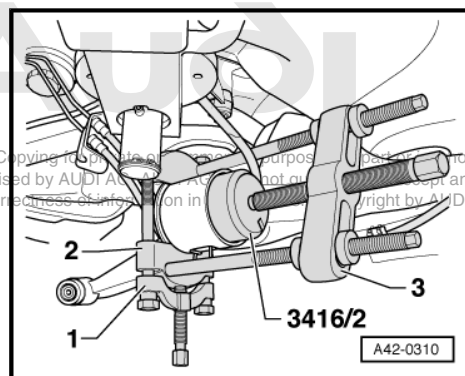
- ♦ Watch for washers fitted on bushes when removing rear axle from mounting brackets. These is a risk of accident if these washers are allowed to drop out.
- ♦ Place engine and gearbox jack -V.A.G 1383 A- under axle beam (to prevent any risk of accident from parts dropping out when bush is pulled out).

Pressing out bonded rubber bush

The illustration shows the set-up for removing the bush on the left side of the rear axle.

- Set up special tools on rear axle as illustrated.
- Press out bonded rubber bush.

- 1 - Splitter -Kukko 17/1-
- 2 - Inserts -Kukko 15/1-
- 3 - Puller -Kukko 18/1-



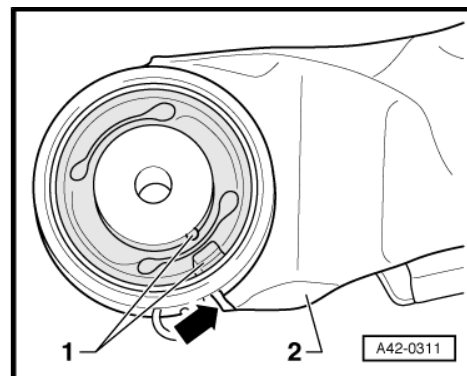
Protected by copyright. Copying for private use is permitted unless authorised by AUDI AG. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without prior written permission from AUDI AG. Copyright by AUDI AG.

1.4.3 Installing

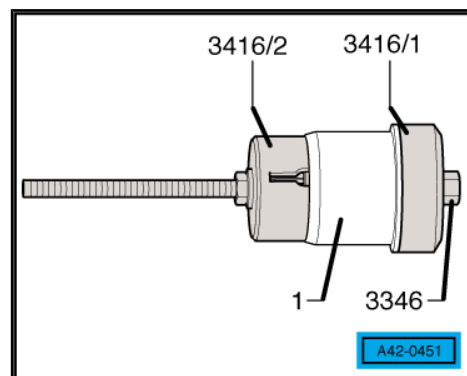
Face of bonded rubber bush is provided with markings -1-.

These must align with the edge -arrow- of the trailing arm -2-.

- Identify position of markings -1- on outer circumference of bonded rubber bush.

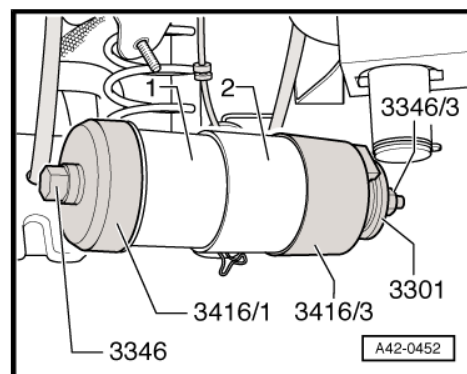


- Attach special tools to bonded rubber bush -1-.



The illustration shows the set-up for installing the bush on the left side of the rear axle.

- Now bring bonded rubber bush -1- with special tools into position at rear axle -2-.
- Make sure that the marking on the bonded rubber bush aligns with the edge of the trailing arm.
- Pull in bonded rubber bush by turning spindle.



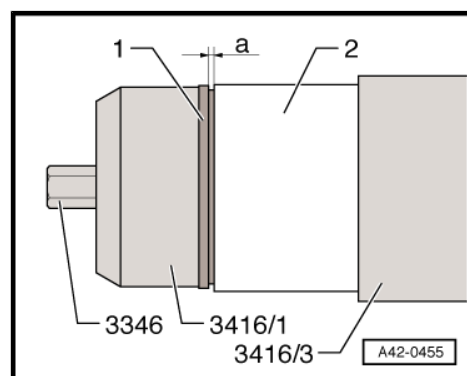
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Pull in bonded rubber bush only up to the point where gap $a = 0.2 \text{ mm}$ remains between collar on bush -1- and mounting eye on rear axle -2-. This prevents the collar from shearing off during installation.
- Measure gap with feeler gauge.
- Check position of bonded rubber bush after installing.
- Before installing rear axle in mounting brackets, grease kidney-shaped cavities of bonded rubber bushes with assembly paste G 052 150 A2.

Noises can occur when the vehicle is driven if the rear axle is installed "dry".

Further installation of rear axle is carried out in reverse sequence.

- Fit and secure wheels ⇒ [page 161](#) .





1.4.4 Tightening torque

Rear axle to mounting bracket

75 Nm

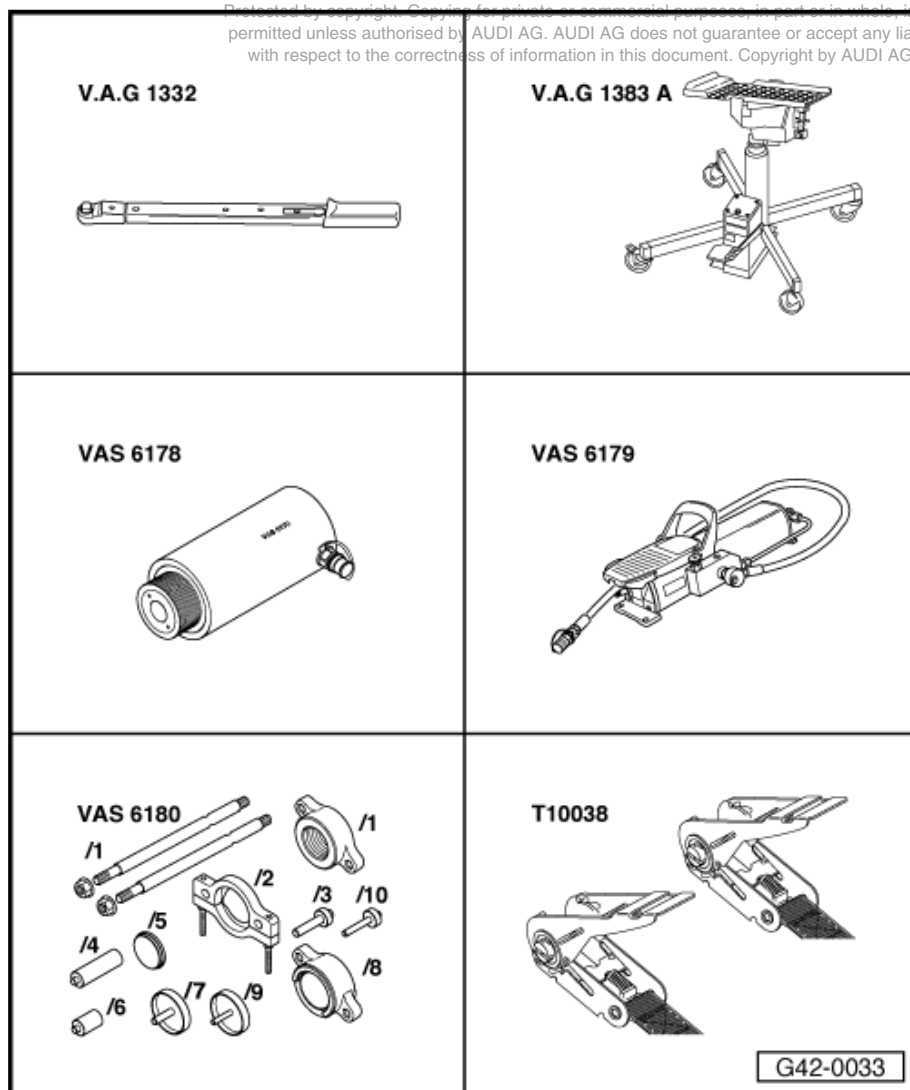
◆ Use new bolts and nuts.

(Vehicle standing on its wheels)

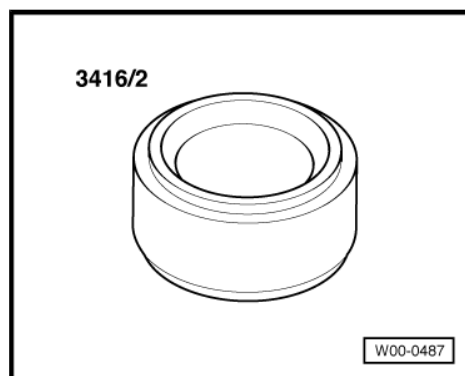
1.4.5 Method 2

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Hydraulic press -VAS 6178-
- ◆ Foot pump -VAS 6179-
- ◆ Assembly tool -VAS 6180-
- ◆ Tensioning strap -T10038-



- ◆ Thrust piece -3416/2-



Notes on using foot pump -VAS 6179-

- ◆ It is important to read the operating instructions before using the foot pump.
- ◆ The foot pump requires a minimum air pressure of 0.6 MPa (6 bar) in order to develop a maximum hydraulic pressure of 70 MPa (700 bar).
- ◆ Make sure that the air pressure for the foot pump does not exceed 1 MPa (10 bar). Pressures above this value can cause damage to the pump.
- ◆ You can work with a hydraulic pressure of 20 MPa (200 bar) or 70 MPa (700 bar).
- ◆ Generating hydraulic pressure:

- Operate foot pedal -1- as indicated (arrow).

3 - Pressure release pedal

The pump will stop building up further pressure when the hydraulic pressure reaches 20 MPa (200 bar), or when the foot pedal is released in the neutral position.

If a hydraulic pressure of 20 MPa (200 bar) is not sufficient to remove or install the bush, you can increase it to 70 MPa (700 bar).

- Press foot pedal -1- and change-over valve -2- simultaneously as indicated (arrows).

3 - Pressure release pedal

The pump will stop building up further pressure when the hydraulic pressure reaches 70 MPa (700 bar), or when the foot pedal is released in the neutral position.

- ◆ Releasing pressure in hydraulic press ⇒ Operating instructions, Page 8.



Warning

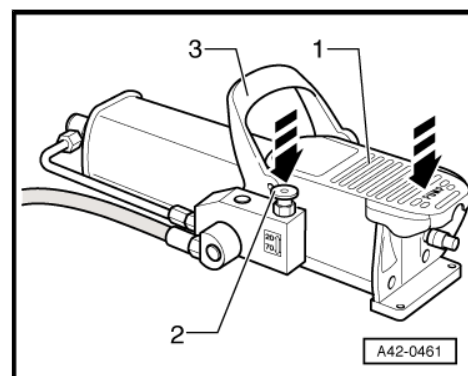
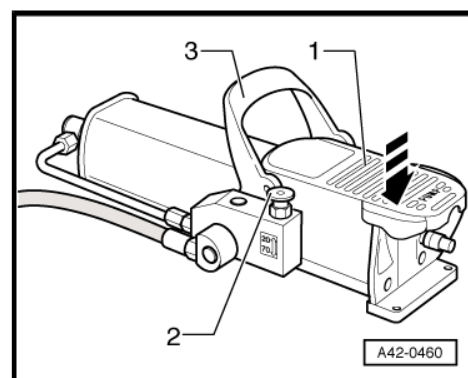
Make sure that the foot pump is not over-filled when releasing the pressure in the hydraulic press, otherwise the fluid container can burst.

The pump resets automatically to a hydraulic pressure of 20 MPa (200 bar) after the pressure has been released in the hydraulic press -VAS 6178-.

1.4.6 Removing

Securing vehicle to lifting platform

The vehicle must be secured to the support arms of the lifting platform before the rear axle is removed from the mounting brackets.

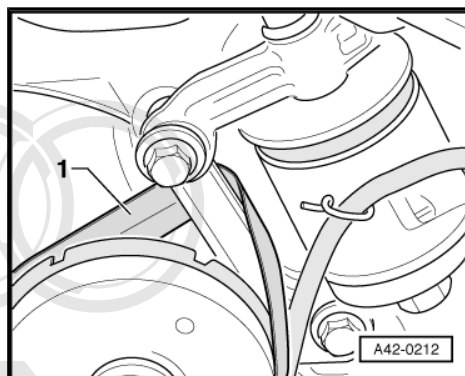


If vehicle is not secured, there is a risk of it slipping off the lifting platform.

- Run tensioning strap -T10038- -1- through mounting bracket for rear axle.

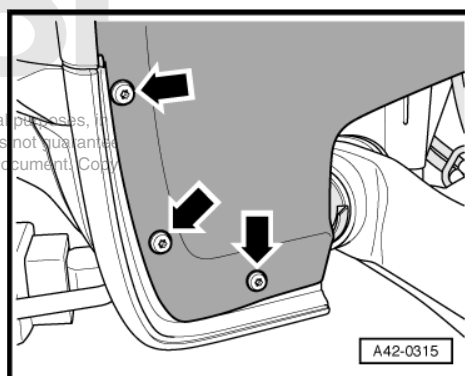
The vehicle must be secured on both sides with the tensioning straps.

- Remove wheels.

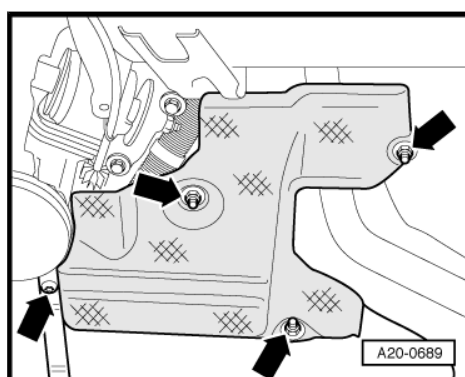


- Unscrew bolts for wheel housing liners -arrows- on both sides.
- Unclip speed sensor wiring from bracket on rear axle.

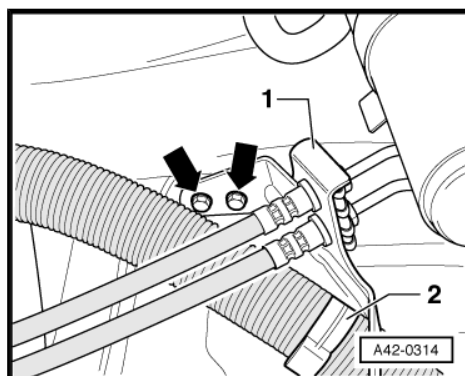
Protected by copyright. Copying for private or commercial purposes, is permitted unless authorised by AUDI AG. AUDI AG does not guarantee with respect to the correctness of information in this document. Copy



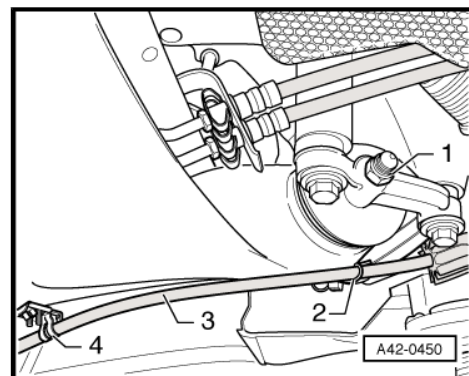
- Remove heat shield from fuel tank (left-side) -arrows-.



- Remove bolts -arrows- securing bracket for brake hoses -1- and open clamp -2-.



- Detach cable -3- from handbrake cable bracket -2-.
- Release fastener -4- and detach cable.
- Bring engine and gearbox jack -V.A.G 1383 A- into position.
- Remove bolts -1- for rear axle beam.
- Lower rear axle approx. 10 cm with engine and gearbox jack -V.A.G 1383 A- .



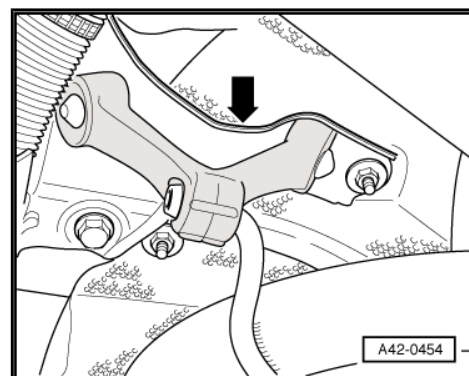
- Secure rear axle at bracket for exhaust system -arrow- using tensioning strap -T10038- .

Make sure that brake pipes and hoses are not under tension.



Note!

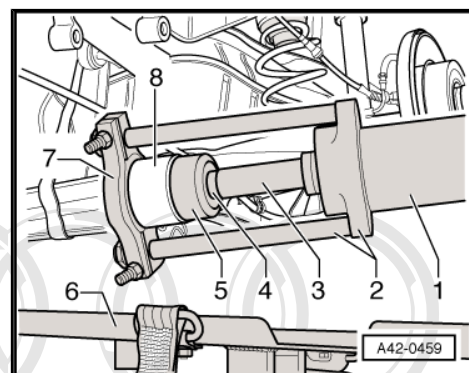
- ◆ Watch for washers fitted on bushes when removing rear axle from mounting brackets. These is a risk of accident if these washers are allowed to drop out.
- ◆ Place engine and gearbox jack -V.A.G 1383 A- under axle beam (to prevent any risk of accident from parts dropping out when bush is pulled out).



Pressing out bonded rubber bush

The illustration shows the set-up for removing the bush on the left side of the rear axle.

- Set up special tools on rear axle as illustrated.
 - Press out bonded rubber bush.
- 1 - Hydraulic press -VAS 6178-
 - 2 - Cylinder attachment with pull rods -VAS 6180/1-
 - 3 - Extension (long) -VAS 6180/4-
 - 4 - Thrust piece (nominal diameter 12 mm) -VAS 6180/3-
 - 5 - Thrust piece -3416/2-
 - 6 - Engine and gearbox jack -V.A.G 1383 A-
 - 7 - Splitter -VAS 6180/2-
 - 8 - Axle beam



Note!

- ◆ Jaws of splitter -VAS 6180/2- must be positioned between collar on bonded rubber bush and eye of trailing arm.
- ◆ "Top" marking on splitter -VAS 6180/2- must face outer left side of vehicle when pressing out left bonded rubber bush, and outer right side of vehicle when pressing out right bush.

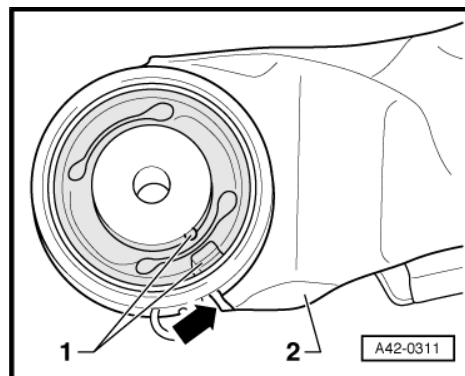
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1.4.7 Installing

Face of bonded rubber bush is provided with markings -1-.

These must align with the edge -arrow- of the trailing arm -2-.

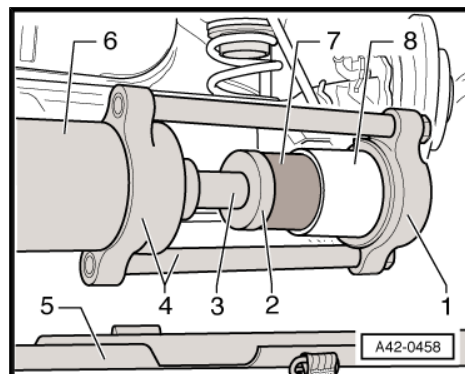
- Identify position of markings -1- on outer circumference of bonded rubber bush.



The illustration shows the set-up for installing the bush on the left side of the rear axle.

- Now bring bonded rubber bush with special tools into position at rear axle.

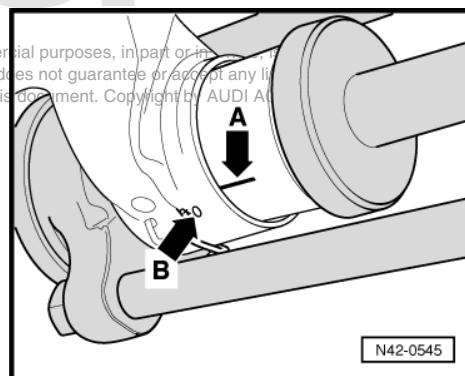
- 1 - Counterhold -VAS 6180/8-
- 2 - Thrust piece (nominal diameter 12 mm) -VAS 6180/7-
- 3 - Extension (short) -VAS 6180/6-
- 4 - Cylinder attachment with pull rods -VAS 6180/1-
- 5 - Engine and gearbox jack -V.A.G 1383 A-
- 6 - Hydraulic press -VAS 6178-
- 7 - Bonded rubber bush
- 8 - Axle beam



Note!

“Top” marking on counterhold -VAS 6180/8- must face outer left side of vehicle when pressing in left bonded rubber bush, and outer right side of vehicle when pressing in right bush.

- Before pressing in the bonded rubber bush, make sure that the previously made marking -arrow A- is aligned with the edge of the trailing arm -arrow B-.

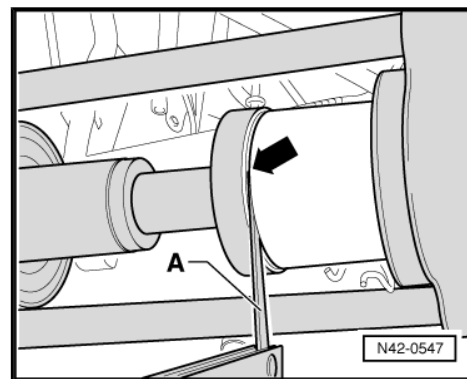


- Press in bonded rubber bush only up to the point where gap $a = 0.2 \text{ mm}$ remains -arrow-. This prevents the collar from shearing off during installation.
- Measure gap -arrow- with feeler gauge -A-.
- Check position of bonded rubber bush after installing.
- Before installing rear axle in mounting brackets, grease kidney-shaped cavities of bonded rubber bushes with assembly paste G 052 150 A2.

Noises can occur when the vehicle is driven if the rear axle is installed "dry".

Further installation of rear axle is carried out in reverse sequence.

- Fit and secure wheels ⇒ [page 161](#) .



1.4.8 Tightening torque

Rear axle to mounting bracket

75 Nm

- ◆ Use new bolts and nuts.

(Vehicle standing on its wheels)

1.5 Removing and installing hydraulic bonded rubber bush

Hydraulic bonded rubber bushes are installed on the rear axle up to approx. week 30/00.

These hydraulic bonded rubber bushes are not available as replacement parts.

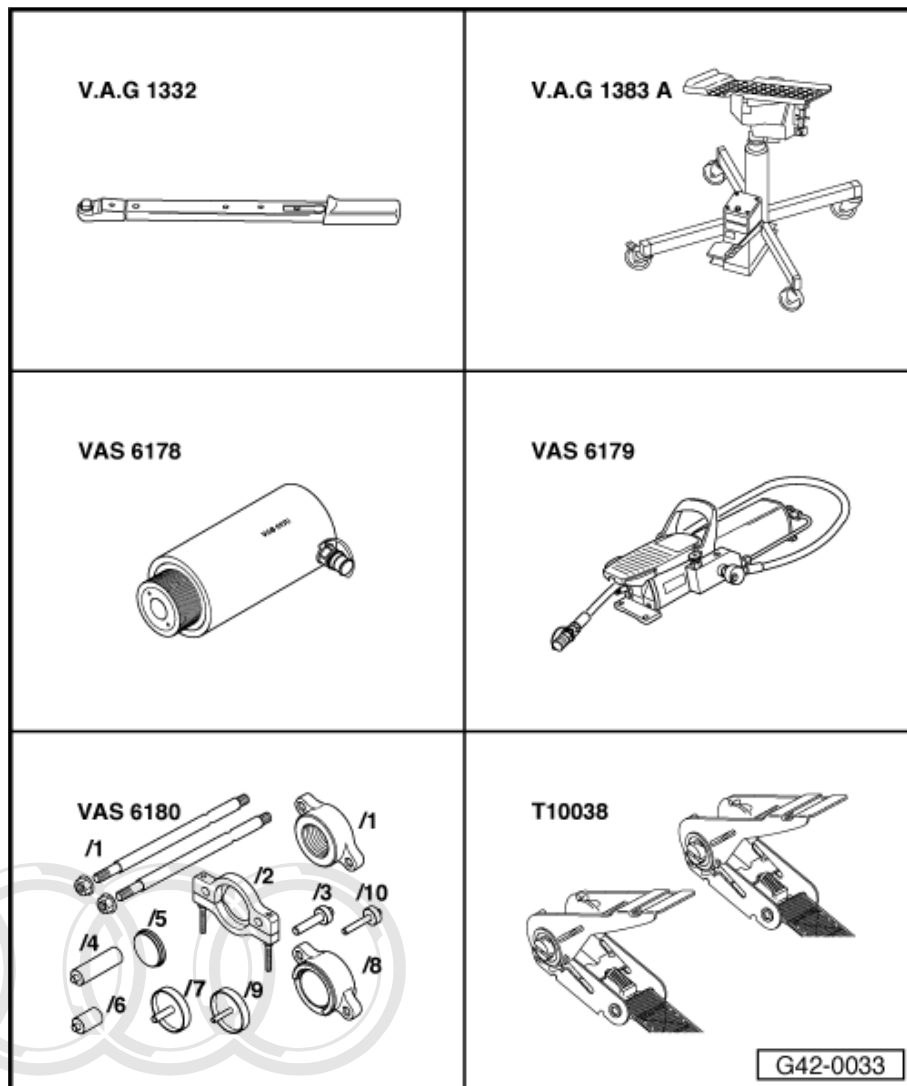
If the hydraulic bonded rubber bushes are damaged, they must be replaced with conventional bonded rubber bushes ⇒ Parts catalogue .

If necessary, the bushes must be renewed on both sides of the rear axle. Mixed installation of different versions on the same vehicle is not permissible.

Copying for private or commercial purposes, in part or in whole, is not permitted. Copyright by AUDI 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 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Hydraulic press -VAS 6178-
- ◆ Foot pump -VAS 6179-
- ◆ Assembly tool -VAS 6180-
- ◆ Tensioning strap -T10038-



Notes on using foot pump -VAS 6179-

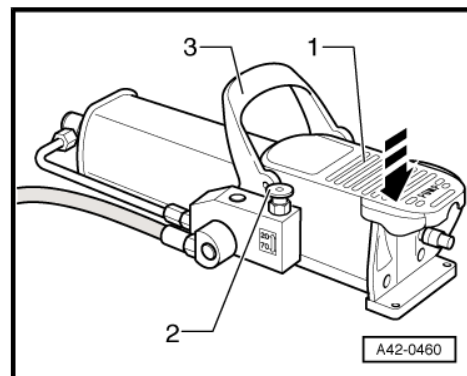
- ◆ It is important to read the operating instructions before using the foot pump.
- ◆ The foot pump requires a minimum air pressure of 0.6 MPa (6 bar) in order to develop a maximum hydraulic pressure of 70 MPa (700 bar).
- ◆ Make sure that the air pressure for the foot pump does not exceed 1 MPa (10 bar). Pressures above this value can cause damage to the pump.
- ◆ You can work with a hydraulic pressure of 20 MPa (200 bar) or 70 MPa (700 bar).
- ◆ Generating hydraulic pressure:

- Operate foot pedal -1- as indicated (arrow).

3 - Pressure release pedal

The pump will stop building up further pressure when the hydraulic pressure reaches 20 MPa (200 bar), or when the foot pedal is released in the neutral position.

If a hydraulic pressure of 20 MPa (200 bar) is not sufficient to remove or install the bush, you can increase it to 70 MPa (700 bar).

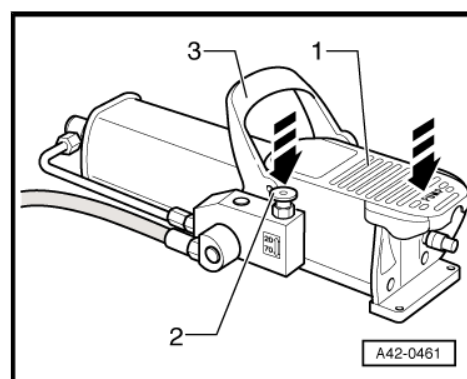


- Press foot pedal -1- and change-over valve -2- simultaneously as indicated (arrows).

3 - Pressure release pedal

The pump will stop building up further pressure when the hydraulic pressure reaches 70 MPa (700 bar), or when the foot pedal is released in the neutral position.

- ◆ Releasing pressure in hydraulic press ⇒ Operating instructions, Page 8.



Warning

Make sure that the foot pump is not over-filled when releasing the pressure in the hydraulic press, otherwise the fluid container can burst.

The pump resets automatically to a hydraulic pressure of 20 MPa (200 bar) after the pressure has been released in the hydraulic press -VAS 6178-.

1.5.1 Removing

Securing vehicle to lifting platform

The vehicle must be secured to the support arms of the lifting platform before the rear axle is removed from the mounting brackets.

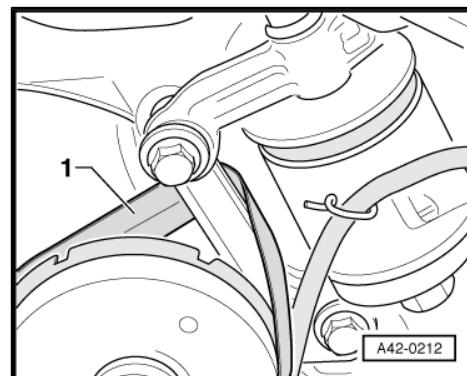
If vehicle is not secured, there is a risk of it slipping off the lifting platform.

- Run tensioning strap -T10038- -1- through mounting bracket for rear axle.

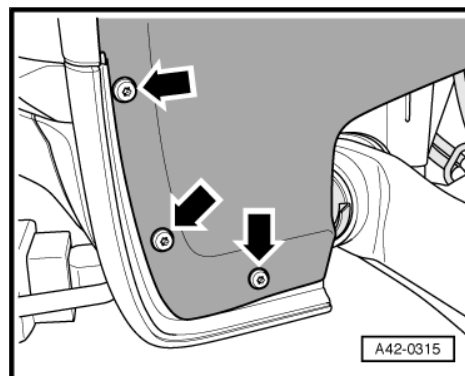
The vehicle must be secured on both sides with the tensioning straps.

- Remove wheels.

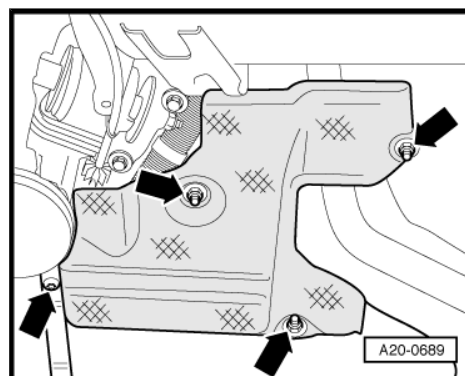
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



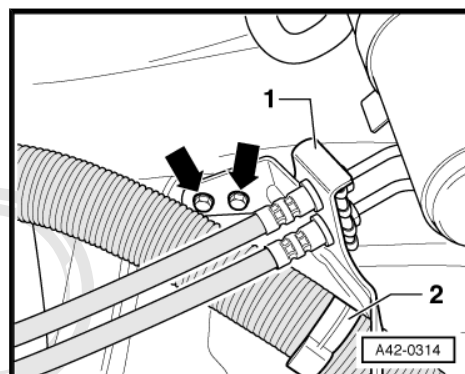
- Unscrew bolts for wheel housing liners -arrows- on both sides.
- Unclip speed sensor wiring from bracket on rear axle.



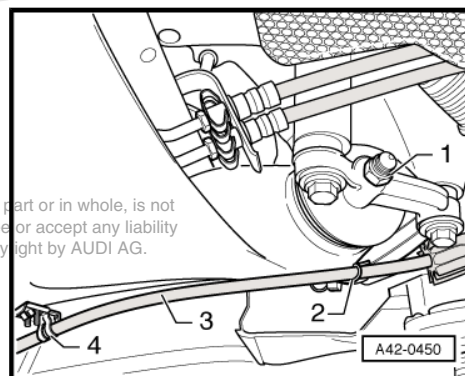
- Remove heat shield from fuel tank (left-side) -arrows-.



- Remove bolts -arrows- securing bracket for brake hoses -1- and open clamp -2-.



- Detach cable -3- from handbrake cable bracket -2-.
- Release fastener -4- and detach cable.
- Bring engine and gearbox jack -V.A.G 1383 A- into position.
- Remove bolts -1- for rear axle beam.
- Lower rear axle approx. 10 cm with engine and gearbox jack -V.A.G 1383 A- .



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

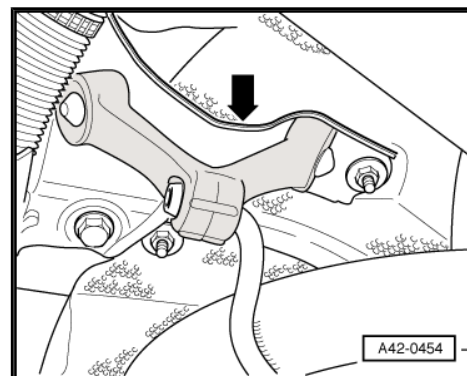
- Secure rear axle at bracket for exhaust system -arrow- using tensioning strap -T10038- .

Make sure that brake pipes and hoses are not under tension.



Note!

- ♦ Watch for washers fitted on bushes when removing rear axle from mounting brackets. These is a risk of accident if these washers are allowed to drop out.
- ♦ Place engine and gearbox jack -V.A.G 1383 A- under axle beam (to prevent any risk of accident from parts dropping out when bush is pulled out).

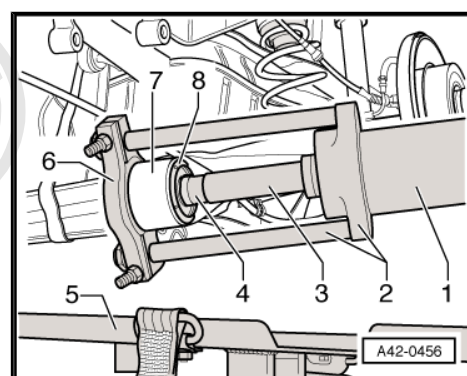


Pressing out centre core of hydraulic bonded rubber bush

The illustration shows the set-up for removing the bush on the left side of the rear axle.

- Set up special tools on rear axle as illustrated.
- Wrap a plastic bag over the special tools and axle beam to catch escaping fluid immediately when the bush is pressed out.
- Press out centre core of bonded rubber bush.

- 1 - Hydraulic press -VAS 6178-
- 2 - Cylinder attachment with pull rods -VAS 6180/1-
- 3 - Extension (long) -VAS 6180/4-
- 4 - Thrust piece (nominal diameter 12 mm) -VAS 6180/3-
- 5 - Engine and gearbox jack -V.A.G 1383 A-
- 6 - Splitter -VAS 6180/2-
- 7 - Axle beam
- 8 - Hydraulic bonded rubber bush



Note!

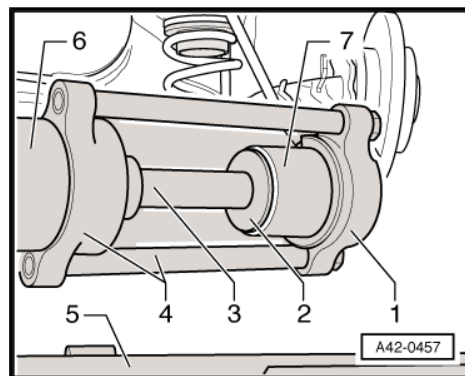
- ♦ Jaws of splitter -VAS 6180/2- must be positioned between collar on bonded rubber bush and eye of trailing arm.
- ♦ "Top" marking on splitter -VAS 6180/2- must face outer left side of vehicle when pressing out left bonded rubber bush, and outer right side of vehicle when pressing out right bush.

Pressing out sleeve of hydraulic bonded rubber bush

The illustration shows the set-up for removing the bush on the left side of the rear axle.

– Press out sleeve.

- 1 - Counterhold -VAS 6180/8-
- 2 - Thrust piece -VAS 6180/5-
- 3 - Extension (long) -VAS 6180/4-
- 4 - Cylinder attachment with pull rods -VAS 6180/1-
- 5 - Engine and gearbox jack -V.A.G 1383 A-
- 6 - Hydraulic press -VAS 6178-
- 7 - Axle beam



Note!

“Top” marking on counterhold -VAS 6180/8- must face outer left side of vehicle when pressing out left bonded rubber bush, and outer right side of vehicle when pressing out right bush.

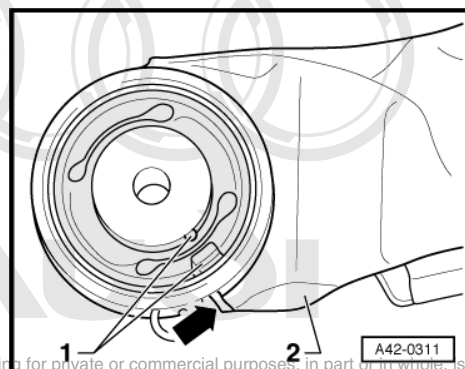
1.5.2 Installing

Use only “conventional” bonded rubber bushes when installing.

Face of bonded rubber bush is provided with markings -1-.

These must align with the edge -arrow- of the trailing arm -2-.

- Identify position of markings -1- on outer circumference of bonded rubber bush.

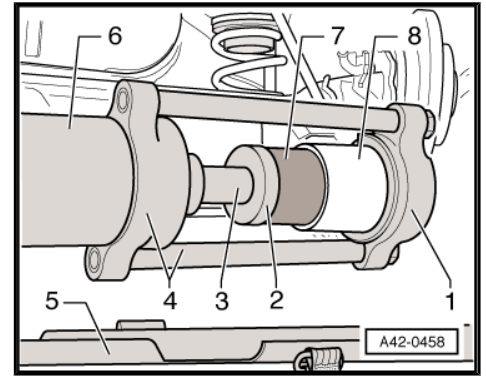


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

The illustration shows the set-up for installing the bush on the left side of the rear axle.

- Now bring bonded rubber bush with special tools into position at rear axle.

- 1 - Counterhold -VAS 6180/8-
- 2 - Thrust piece (nominal diameter 12 mm) -VAS 6180/7-
- 3 - Extension (short) -VAS 6180/6-
- 4 - Cylinder attachment with pull rods -VAS 6180/1-
- 5 - Engine and gearbox jack -V.A.G 1383 A-
- 6 - Hydraulic press -VAS 6178-
- 7 - Bonded rubber bush
- 8 - Axle beam

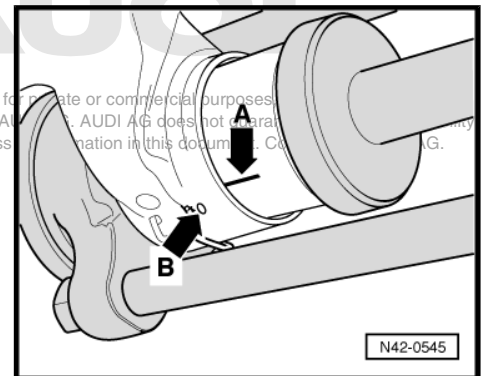


Note!

“Top” marking on counterhold -VAS 6180/8- must face outer left side of vehicle when pressing in left bonded rubber bush, and outer right side of vehicle when pressing in right bush.

- Before pressing in the bonded rubber bush, make sure that the previously made marking -arrow A- is aligned with the edge of the trailing arm -arrow B-.

Protected by copyright. Copying for private or commercial purposes is permitted unless authorised by Audi AG. Audi AG does not guarantee the correctness of the information in this document. Copyright © Audi AG.

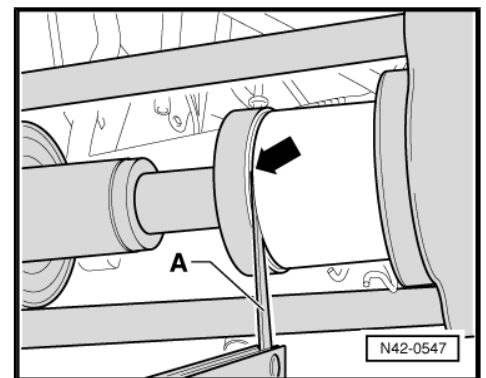


- Press in bonded rubber bush only up to the point where gap $a = 0.2$ mm remains -arrow-. This prevents the collar from shearing off during installation.
- Measure gap -arrow- with feeler gauge -A-.
- Check position of bonded rubber bush after installing.
- Before installing rear axle in mounting brackets, grease kidney-shaped cavities of bonded rubber bushes with assembly paste G 052 150 A2.

Noises can occur when the vehicle is driven if the rear axle is installed “dry”.

Further installation of rear axle is carried out in reverse sequence.

- Fit and secure wheels ⇒ [page 161](#) .



1.5.3 Tightening torque

- Rear axle to mounting bracket
- ◆ Use new bolts and nuts.

75 Nm

(Vehicle standing on its wheels)

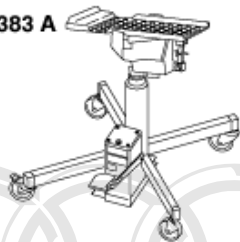
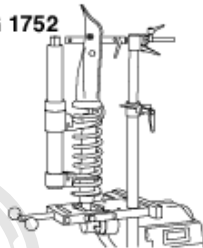
1.6 Removing and installing shock absorber/spring

The procedure for removing and installing the shock absorber/spring is described for a vehicle with drum brakes (1.2 TDI running gear).

The procedure for removing and installing the shock absorber/spring on a vehicle with drum brakes (basic running gear) or disc brakes is basically the same.

Special tools and workshop equipment required

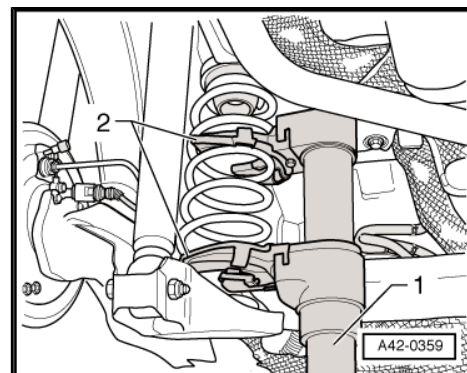
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Suspension strut spring compressor -V.A.G 1752-

V.A.G 1331 	V.A.G 1332 
V.A.G 1383 A 	V.A.G 1752 
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.	

G42-0011

1.6.1 Removing spring

- Attach spring compressor -V.A.G 1752/1- -1-.
- 2 - Spring retainer -V.A.G 1752/3-
- Compress coil spring until it can be removed.
- Remove spring.



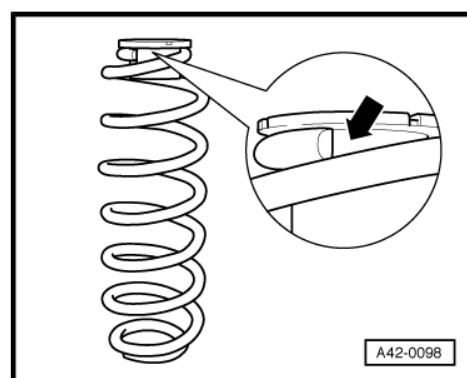
1.6.2 Installing spring

- Check that the lower spring plate is not damaged.
- Renew if necessary.
- Install spring together with top spring plate (coloured marking on spring must face towards axle).

Note installation position.

End of spring -arrow- must lie against stop on spring plate.

- Slacken off spring and remove spring compressor - V.A.G 1752/1- (take care not to damage surface coating of spring).



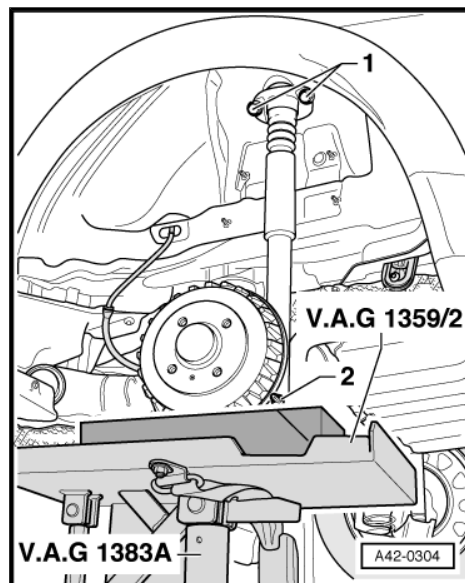
1.6.3 Removing shock absorber

- Raise vehicle to working height, thus relieving load on coil spring.

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 guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- **Remove wheel.**
- Remove rear wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Rear wheel housing liner .
- Place engine and gearbox jack -V.A.G 1383 A- under brake drum.

- Remove bolts -1-.
- Remove hexagon bolt -2- securing shock absorber to axle.
- Take out shock absorber.



1.6.4 Installing shock absorber

Installation is carried out in reverse sequence.

The vehicle must be standing on its wheels when tightening the bolt connections with bonded rubber bushes.

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

- Fit and secure wheels => [page 161](#) .

1.6.5 Tightening torques

Shock absorber to rear axle

55 Nm

- ◆ Use new bolts and nuts.

(Load rear of vehicle with weight of one person while tightening mounting.)

Shock absorber to body

30 Nm + 90°

- ◆ Use new bolts.

1.7 Shock absorber: exploded view



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

- ☐ For correct version refer to ⇒ Parts catalogue
- ☐ Disposal ⇒ [page 3](#)
- ☐ Checking shock absorber for leaks and noises ⇒ [page 7](#)
- ☐ Checking function ⇒ [page 140](#)

2 - Protective cap

3 - Protective tube

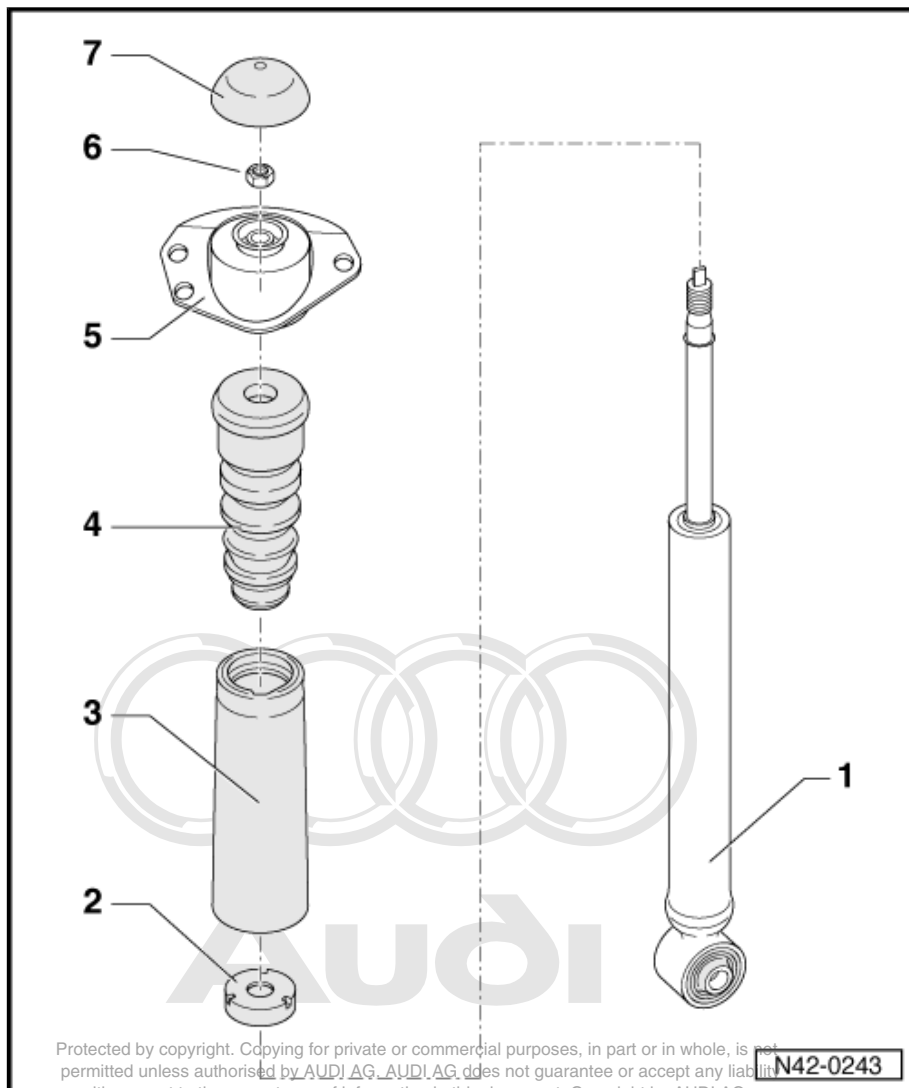
4 - Bump stop

5 - Shock absorber mounting

6 - Self-locking hexagon nut, 25 Nm

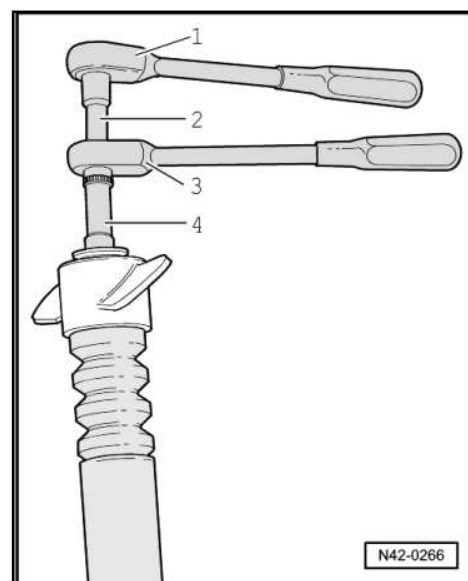
- ☐ Always renew if removed
- ☐ Removing ⇒ [page 139](#)

7 - Cover



Removing hexagon nut from shock absorber

- 1 - Commercially available ratchet handle
- 2 - Socket -T10001/9- from shock absorber set -T10001-
- 3 - Reversible ratchet handle -T10001/11- from shock absorber set -T10001-
- 4 - Socket -T10001/1- from shock absorber set -T10001-





1.7.1 Checking function

Compress shock absorber by hand. It should be possible to press in the piston rod smoothly and with uniform force over the full travel.

The piston rod will return to its initial position if there is sufficient gas pressure in the shock absorber.

If the piston rod does not return to its initial position by itself, the shock absorber may still be serviceable, provided there is no loss of 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.

2 Servicing wheel bearing

2.1 Wheel bearing (basic running gear and 1.2 TDI running gear): exploded view

General notes ⇒ [page 2](#)

1 - Axle beam

- ☐ Up to week 13/02
- ☐ Keep contact surface and tapped holes for stub axle free from paint and dirt.
- ☐ For correct version refer to ⇒ Parts catalogue

2 - Axle beam

- ☐ From week 14/02 onwards
- ☐ Keep contact surface and tapped holes for stub axle free from paint and dirt.
- ☐ For correct version refer to ⇒ Parts catalogue

3 - Stub axle

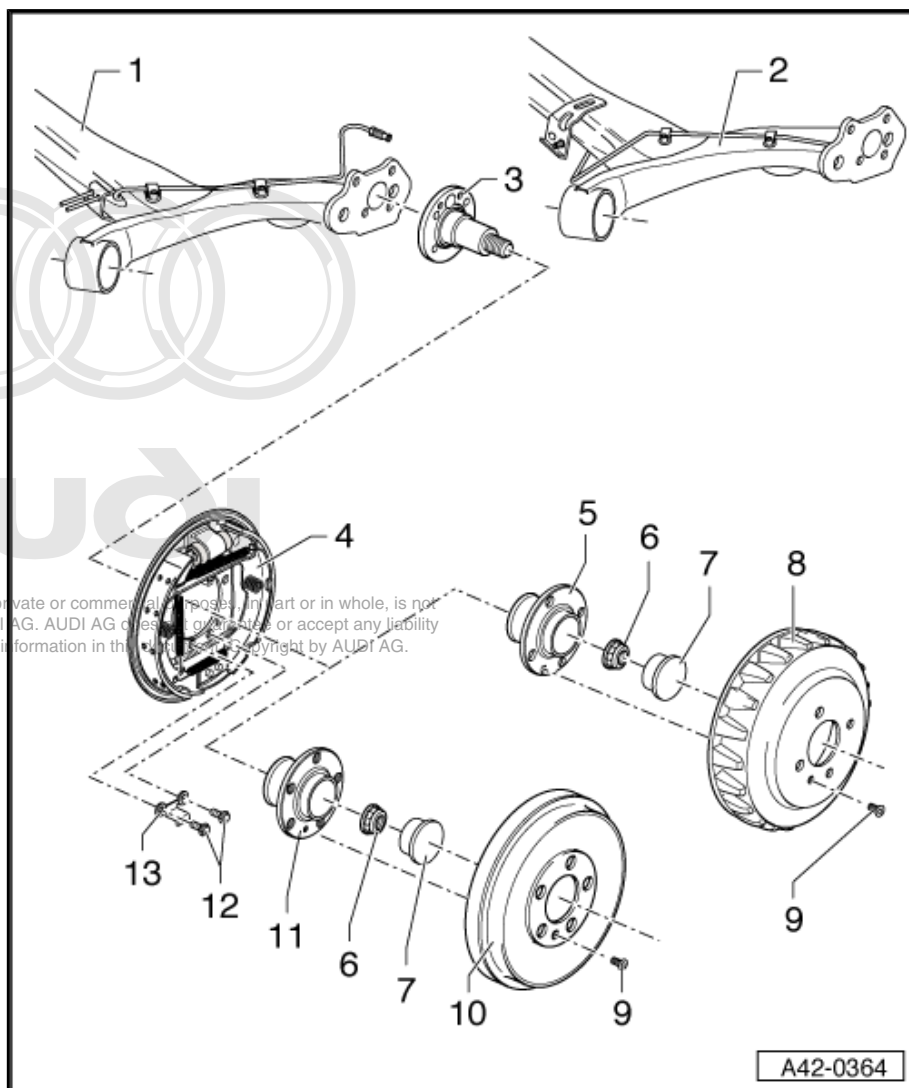
- ☐ **Must not be straightened**
- ☐ Recutting the thread is not permitted

4 - Brake backplate with brake shoes

- ☐ Servicing ⇒ Brake system; Rep. Gr. 46; Servicing rear brakes (drum brakes)

5 - Wheel hub with wheel bearing

- ☐ For 1.2 TDI running gear
- ☐ The ABS sensor ring is incorporated in the wheel hub
- ☐ Removing and installing ⇒ [page 145](#)



Wheel bearing and wheel hub are combined in one housing.

This wheel bearing/hub unit is maintenance-free and has zero play. There is no provision for adjustment or repair.

6 - 12-point nut (self-locking)

- ☐ Tightening torques:
- ☐ 1.2 TDI running gear: 175 Nm
- ☐ Basic running gear: 70 Nm and turn 30° further
- ☐ Always renew if removed

7 - Dust cap

- ☐ Always renew if removed



- ☐ Removing and installing (basic running gear) ⇒ [page 143](#)
- ☐ Removing and installing (1.2 TDI running gear) ⇒ [page 145](#)

Proper sealing can only be achieved by installing a new dust cap.

This is essential for optimum function and service life of wheel bearing.

8 - Brake drum

- ☐ For 1.2 TDI running gear

9 - Cross-head screw, 4 Nm

10 - Brake drum

- ☐ For basic running gear

11 - Wheel hub with wheel bearing

- ☐ For basic running gear
- ☐ The ABS sensor ring is incorporated in the wheel hub
- ☐ Removing and installing ⇒ [page 143](#)

Wheel bearing and wheel hub are combined in one housing.

This wheel bearing/hub unit is maintenance-free and has zero play. There is no provision for adjustment or repair.

12 - Hexagon bolt

- ☐ Tightening torques:
- ☐ 1.2 TDI running gear: 60 Nm
- ☐ Basic running gear: 30 Nm and turn 90° further
- ☐ 4x
- ☐ With convex washer
- ☐ Always renew if removed

13 - Bracket for handbrake cable

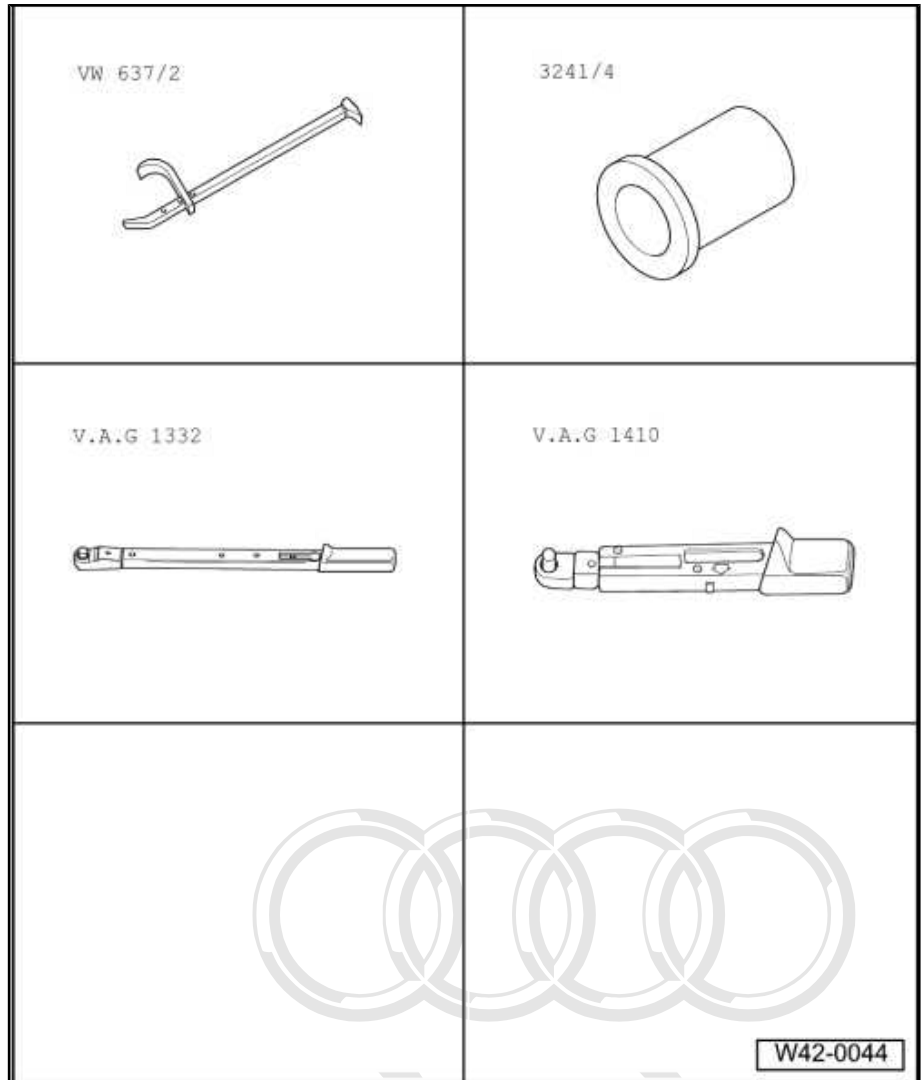
- ☐ For 1.2 TDI running gear only

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

2.2 Removing and installing wheel bearing/hub unit (basic running gear)

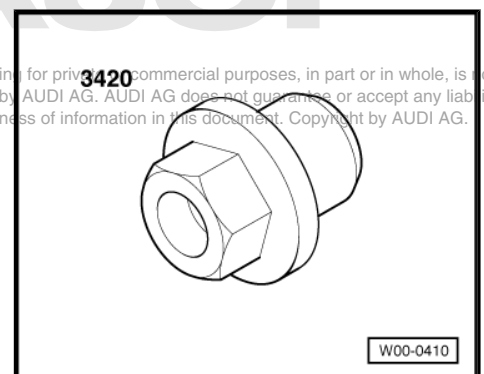
Special tools and workshop equipment required

- ◆ Hub grease cap puller -VW 637/2-
- ◆ Fitting sleeve -3241/4-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Torque wrench -V.A.G 1410-



- ◆ Assembly tool -3420-

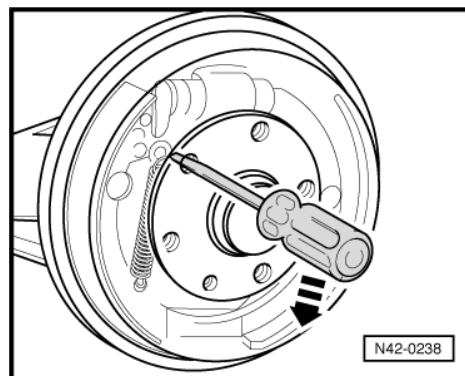
Protected by copyright. Copying for private commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



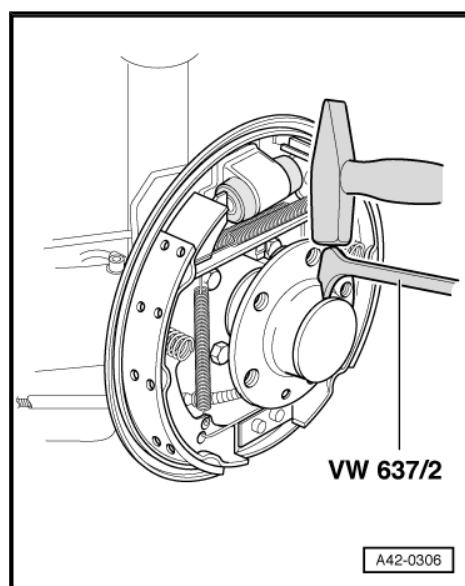
2.2.1 Removing

- Raise vehicle.
- Remove wheel.

- Back off brake.
- To do this, insert a screwdriver through a hole in the brake drum and push the wedge upwards.
- Unscrew cross-head screw for brake drum and remove brake drum.

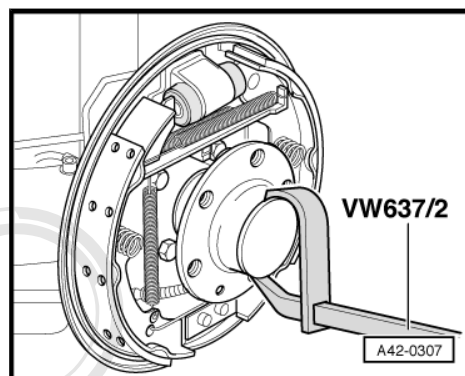


- Tap gently on claw of hub grease cap puller -VW 637/2- to release dust cap from its seat.

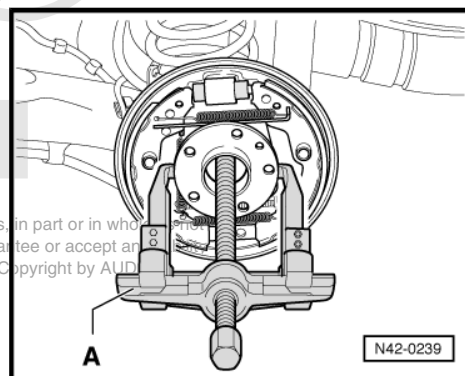


- Pry off dust cap.
- Unscrew twelve-point nut.
- Pull wheel bearing/hub unit off stub axle.

If the wheel bearing/hub unit cannot be pulled off by hand, proceed as follows.



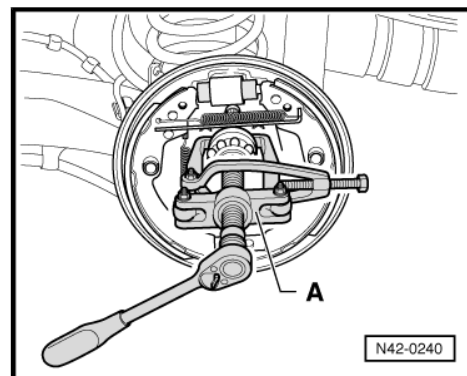
- Apply puller as shown in illustration.
- A - Puller , e.g. -Kukko 20/2- (commercial type)
- Pull wheel bearing/hub unit off stub axle.



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

- Pull inner bearing race off stub axle.

A - Puller with leg clamp , e.g. -Kukko 204-2- (commercial type)



2.2.2 Installing

- Carefully push wheel bearing/hub unit onto stub axle as far as stop.

Take care to keep wheel bearing/hub unit straight.

If the wheel bearing/hub unit cannot be pushed by hand onto the stub axle as far as the stop, proceed as follows.

- Fit wheel bearing/wheel hub unit onto stub axle as far as it will go.



Note!

When installing wheel bearing/wheel hub unit on stub axle, apply pressure to inner race only.

- Attach assembly tool -3420- and pull wheel bearing/hub unit on as far as stop.
- Unscrew assembly tool -3420- .

- Fit new twelve-point nut and tighten ⇒ [Item 6 \(page 141\)](#) .

- Install brake drum ⇒ [Brake system; Rep. Gr. 46; Servicing rear brakes \(drum brakes\); Removing and installing rear brakes](#) .

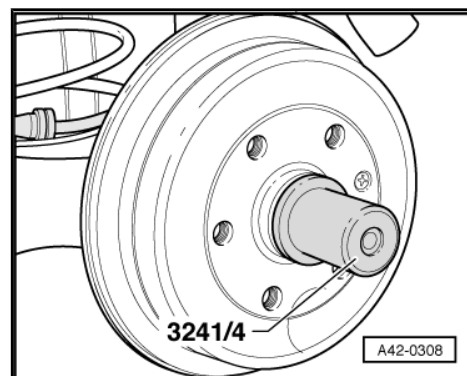
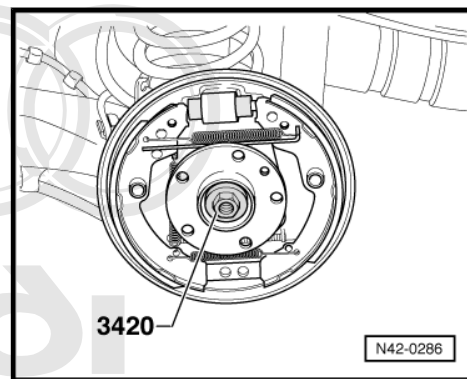
- Drive in dust cap.



Note!

- ◆ Always renew dust caps.
- ◆ Damaged dust caps allow moisture to enter the bearing. For this reason it is important to use the tool shown in the illustration.

- Fit and secure wheels ⇒ [page 161](#) .



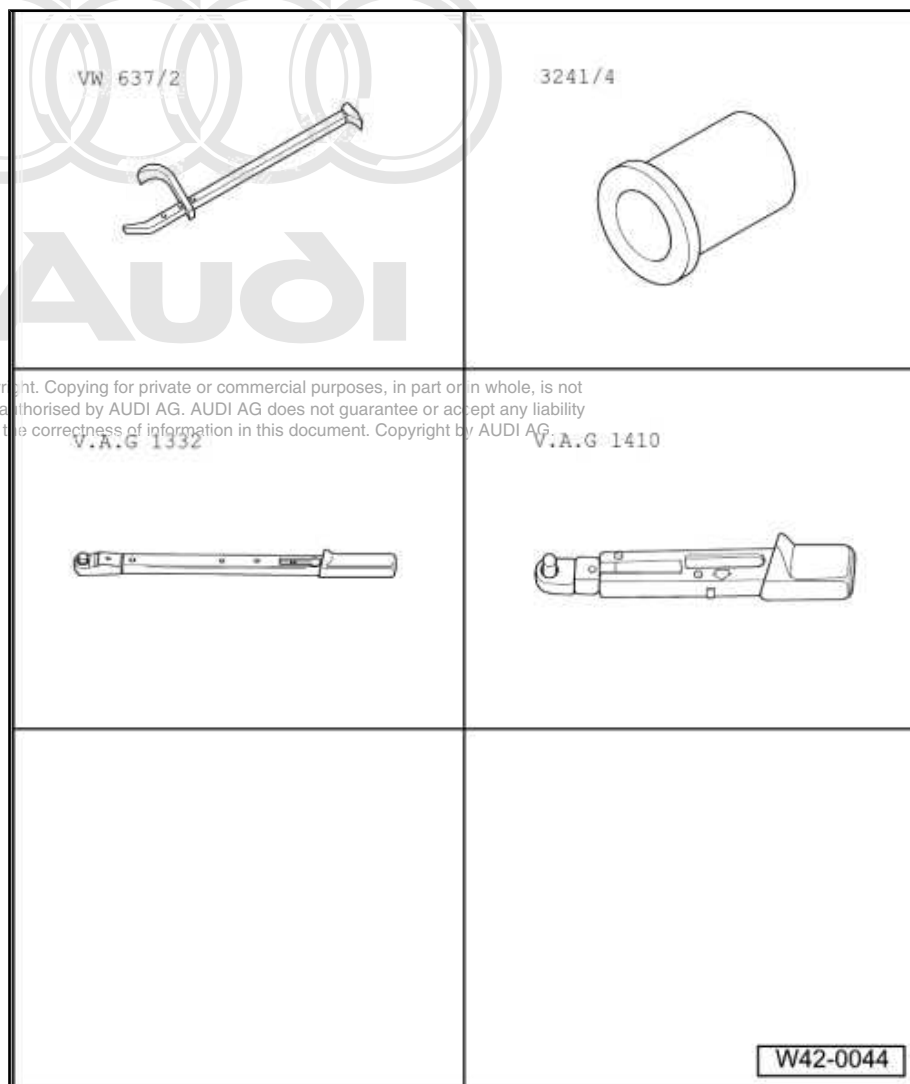
2.3 Removing and installing wheel bearing/hub unit (1.2 TDI running gear)



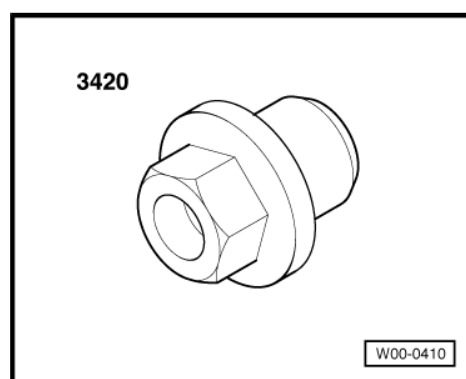
Special tools and workshop equipment required

- ◆ Hub grease cap puller -VW 637/2-
- ◆ Fitting sleeve -3241/4-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Torque wrench -V.A.G 1410-

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



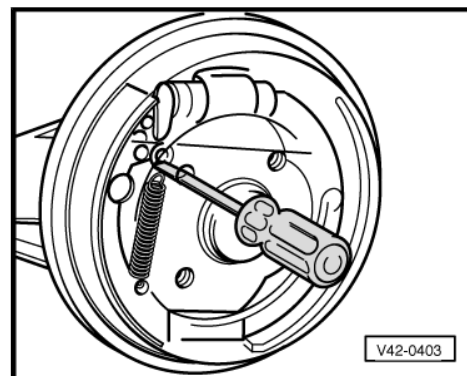
- ◆ Assembly tool -3420-



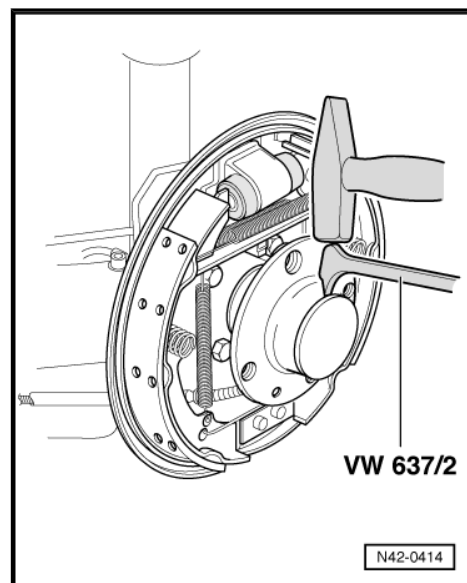
2.3.1 Removing

- Raise vehicle.
- Remove wheel.

- Back off brake.
- To do this, insert a screwdriver through a hole in the brake drum and push the wedge upwards.
- Unscrew cross-head screw for brake drum and remove brake drum.

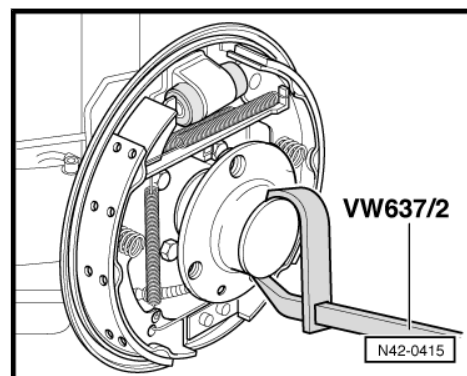


- Tap gently on claw of hub grease cap puller -VW 637/2- to release dust cap from its seat.

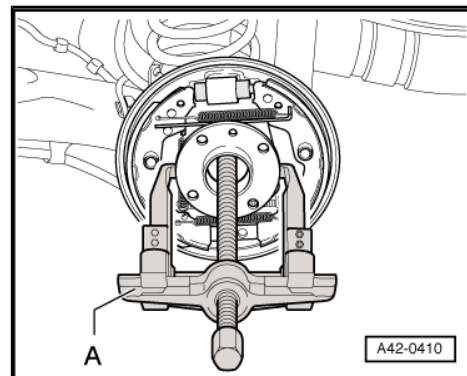


- Pry off dust cap.
- Unscrew twelve-point nut.
- Pull wheel bearing/hub unit off stub axle.

If the wheel bearing/hub unit cannot be pulled off by hand, proceed as follows.

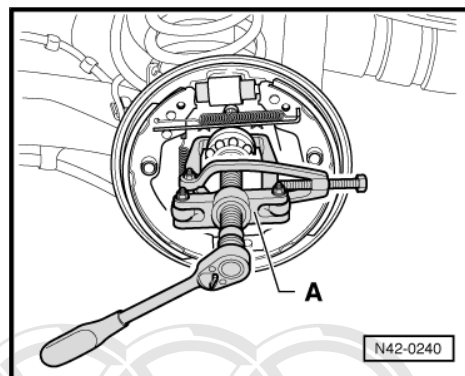


- Apply puller as shown in illustration.
- A - Puller , e.g. -Kukko 20/2- (commercial type)
- Pull wheel bearing/hub unit off stub axle.



- Pull inner bearing race off stub axle.

A - Puller with leg clamp , e.g. -Kukko 204-2- (commercial type)



2.3.2 Installing

- Carefully push wheel bearing/hub unit onto stub axle as far as stop.

Take care to keep wheel bearing/hub unit straight.

If the wheel bearing/hub unit cannot be pushed by hand onto the stub axle as far as the stop, proceed as follows.

- Fit wheel bearing/wheel hub unit onto stub axle as far as it will go.



Note!

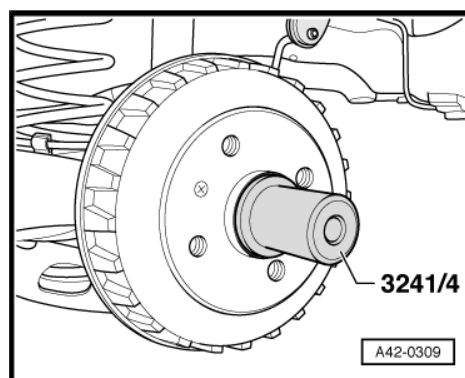
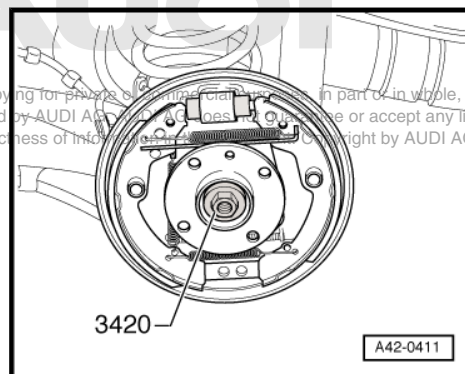
When installing wheel bearing/wheel hub unit on stub axle, apply pressure to inner race only.

- Attach assembly tool -3420- and pull wheel bearing/hub unit on as far as stop.
- Unscrew assembly tool -3420- .
- Fit new twelve-point nut and tighten ⇒ [Item 6 \(page 141\)](#) .
- Install brake drum ⇒ Brake system; Rep. Gr. 46 ; Servicing rear brakes (drum brakes); Removing and installing rear brakes .
- Drive in dust cap.



Note!

- ♦ Always renew dust caps.
- ♦ Damaged dust caps allow moisture to enter the bearing. For this reason it is important to use the tool shown in the illustration.
- Fit and secure wheels ⇒ [page 161](#) .



2.4 Wheel bearing (disc brakes): exploded view

1 - Cross-head screw, 4 Nm

2 - Brake disc

3 - Dust cap

- ☐ Always renew if removed
- ☐ Removing and installing
⇒ [page 150](#)

Proper sealing can only be achieved by installing a new dust cap.

This is essential for optimum function and service life of the wheel bearing.

4 - 12-point nut, self-locking, 70 Nm and turn 30° further

- ☐ Always renew if removed

5 - Wheel hub with wheel bearing

- ☐ Removing and installing
⇒ [page 150](#)

Wheel bearing and wheel hub are combined in one housing.

This wheel bearing/hub unit is maintenance-free and has zero play. There is no provision for adjustment or repair.

6 - Axle beam

7 - Hexagon socket head bolt
⇒ Brake system; Rep. Gr. 46 ;
Servicing rear brakes (disc brakes)

8 - Splash plate

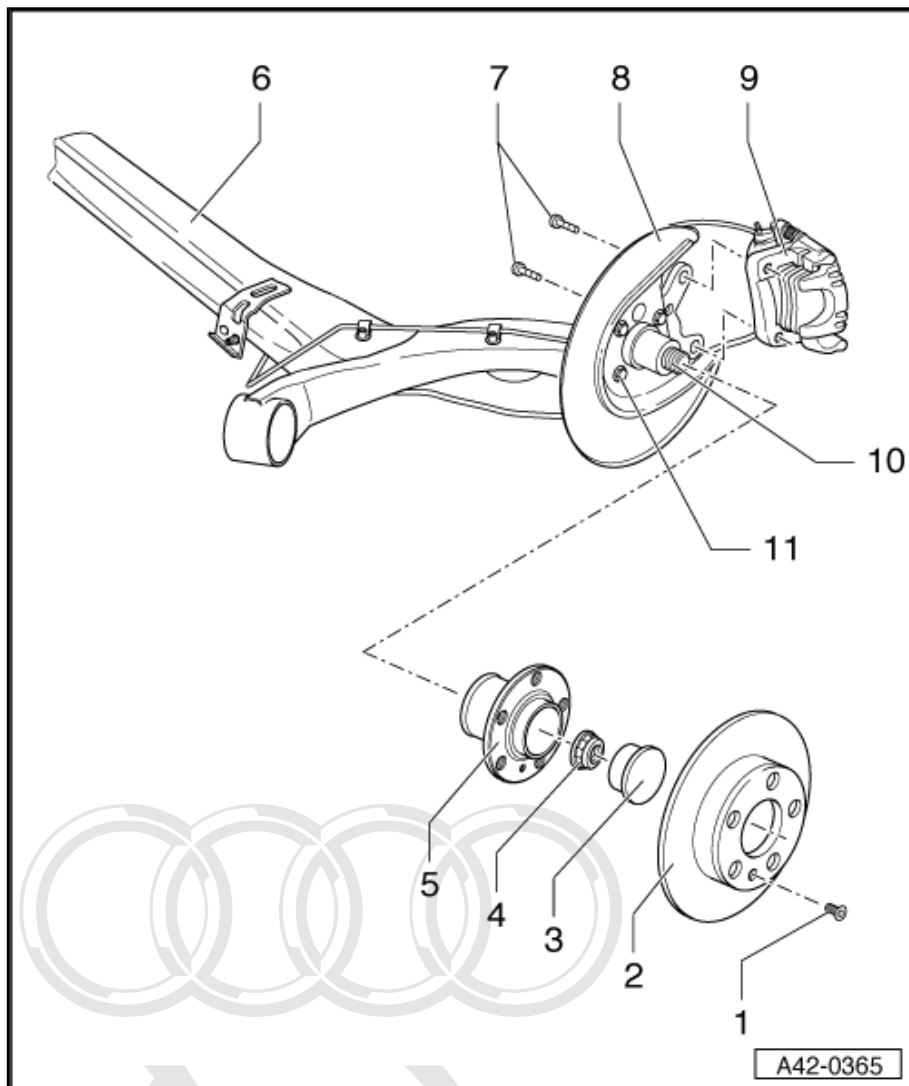
9 - Brake caliper

10 - Stub axle

- ☐ Must not be straightened
- ☐ Recutting the thread is not permitted

11 - Hexagon bolt

- ☐ 4x
- ☐ 30 Nm and turn 90° further
- ☐ Always renew if removed

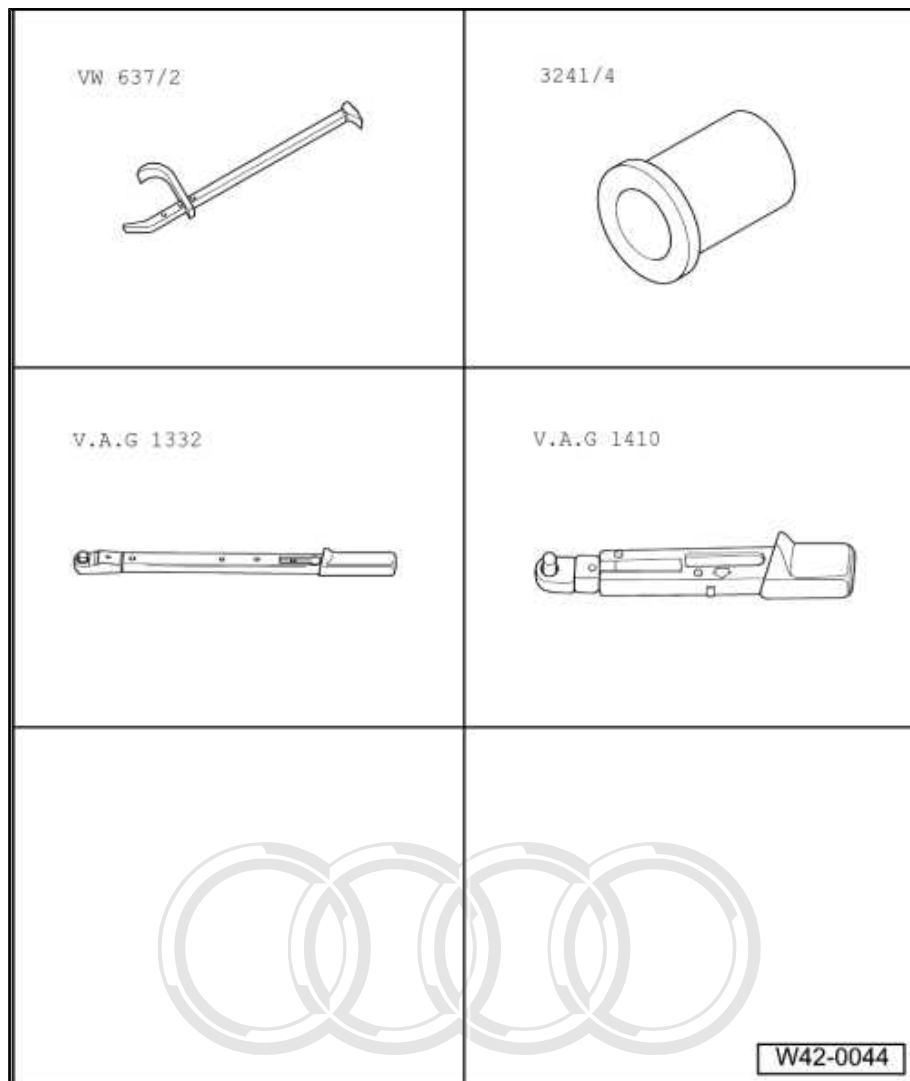


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

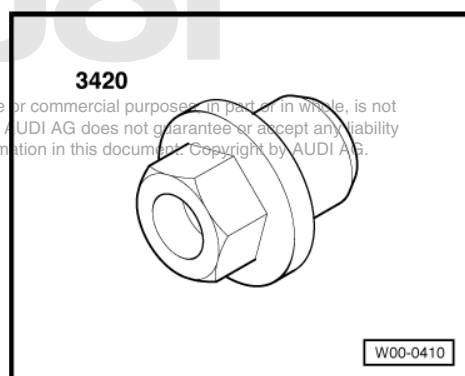
2.5 Removing and installing wheel bearing/hub unit (disc brakes)

Special tools and workshop equipment required

- ◆ Hub grease cap puller -VW 637/2-
- ◆ Fitting sleeve -3241/4-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Torque wrench -V.A.G 1410-



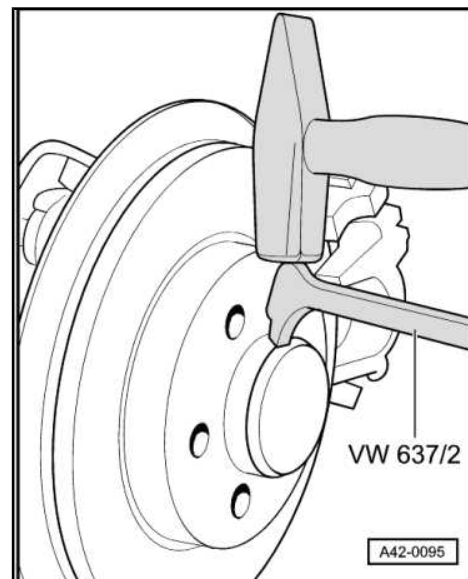
- ◆ Assembly tool -3420-



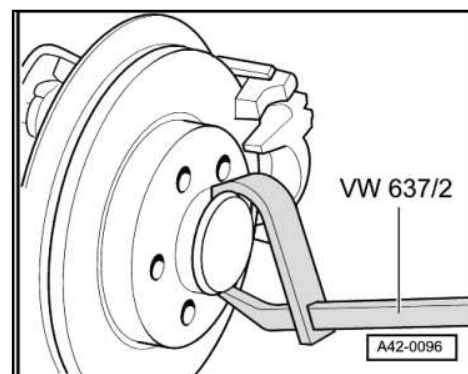
2.5.1 Removing

- Raise vehicle.
- Remove wheel.

- Tap gently on claw of hub grease cap puller -VW 637/2- to release dust cap from its seat.

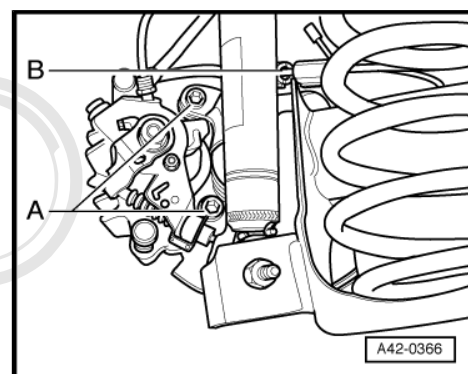


- Pry off dust cap.



- Remove securing bolts -A- from brake caliper.
- Take off brake caliper and tie up on body.
- Remove cross-head screw for brake disc and take off brake disc.
- Unscrew twelve-point nut.
- Pull wheel bearing/hub unit off stub axle.

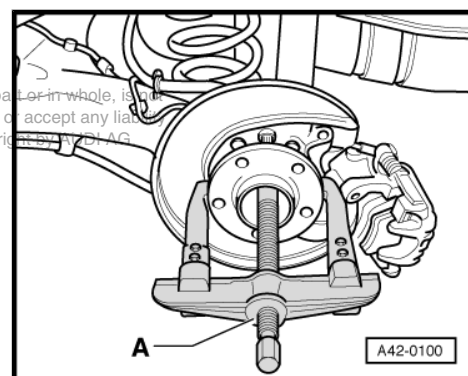
If the wheel bearing/hub unit cannot be pulled off by hand, proceed as follows.



- Apply puller as shown in illustration.

A - Puller, e.g. -Kukko 20/2- (commercial type)

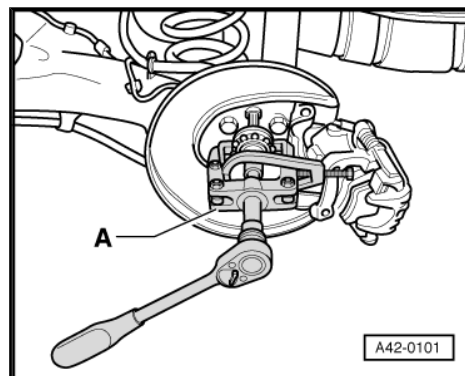
- Pull wheel bearing/hub unit off stub axle.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, 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. Copyright © 2003 AUDI AG

- Pull inner bearing race off stub axle.

A - Puller with leg clamp , e.g. -Kukko 204-2- (commercial type)



2.5.2 Installing

- Carefully push wheel bearing/hub unit onto stub axle.

Take care to keep wheel bearing/hub unit straight.

If the wheel bearing/hub unit cannot be pushed by hand onto the stub axle as far as the stop, proceed as follows.

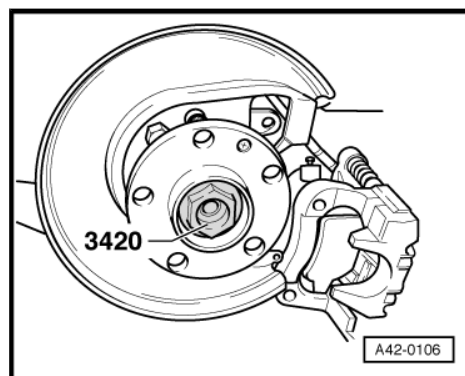
- Fit wheel bearing/wheel hub unit onto stub axle as far as it will go.



Note!

When installing wheel bearing/wheel hub unit on stub axle, apply pressure to inner race only.

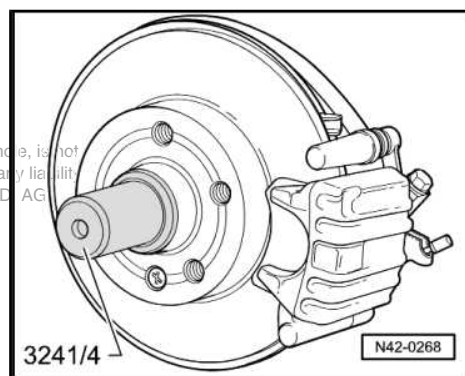
- Attach assembly tool -3420- and pull wheel bearing/hub unit on as far as stop.
- Unscrew assembly tool -3420- .
- Fit new twelve-point nut and tighten ⇒ [Item 4 \(page 149\)](#) .
- Install brake disc and caliper ⇒ Brake system; Rep. Gr. 46 ; Servicing rear brakes (disc brakes)
- Drive in dust cap.



Note!

- ◆ **Always renew dust caps.** 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
- ◆ **Damaged dust caps allow moisture to enter the bearing. For this reason it is important to use the tool shown in the illustration.**

- Fit and secure wheels ⇒ [page 161](#) .



44 – Wheels, tyres, vehicle geometry

1 Wheels and tyres

1.1 General notes

The wheel/tyre combinations specified by the factory are listed in
⇒ Technical information; Wheels and Tyres Guide .

For reasons of safety, tyres should not be renewed individually,
but at least on both sides of one axle.

The tyres with the deeper tread should always be fitted on the
front wheels.

The factory recommends using tyres of the same make, design
and tread pattern on all wheels.

Always renew the rubber valve when fitting a new wheel rim or
tyre.

Tyres must be fitted with the DOT marking facing outwards (in the
case of tyres with a directional tread pattern, this only applies to
the left-hand side of the vehicle).

If the vehicle is fitted with tyres with a directional tread pattern,
the spare wheel should have a wheel/tyre combination for the
right-hand side of the vehicle.

Always clean contact surfaces between rims and brake disc.

1.2 Forged light-alloy 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.

1 - Tyre

2 - Valve

- ☐ For correct version refer to ⇒ Parts catalogue

3 - Forged light-alloy wheel

- ☐ Hole circle diameter 100 mm
- ☐ 5.5J x 15, ET 34 (rim offset)

4 - Anti-theft wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque ⇒ [page 162](#)

5 - Adapter for anti-theft wheel bolt

- ☐ Adapter set for tamper-proof wheel bolts - T40004-

6 - Trim cap

- ☐ Fit onto anti-theft wheel bolt
- ☐ Remove with puller
- ☐ Puller is included in vehicle tool kit

7 - Hub cap

8 - Trim cap

- ☐ Fit onto wheel bolt
- ☐ Remove with puller
- ☐ Puller is included in vehicle tool kit

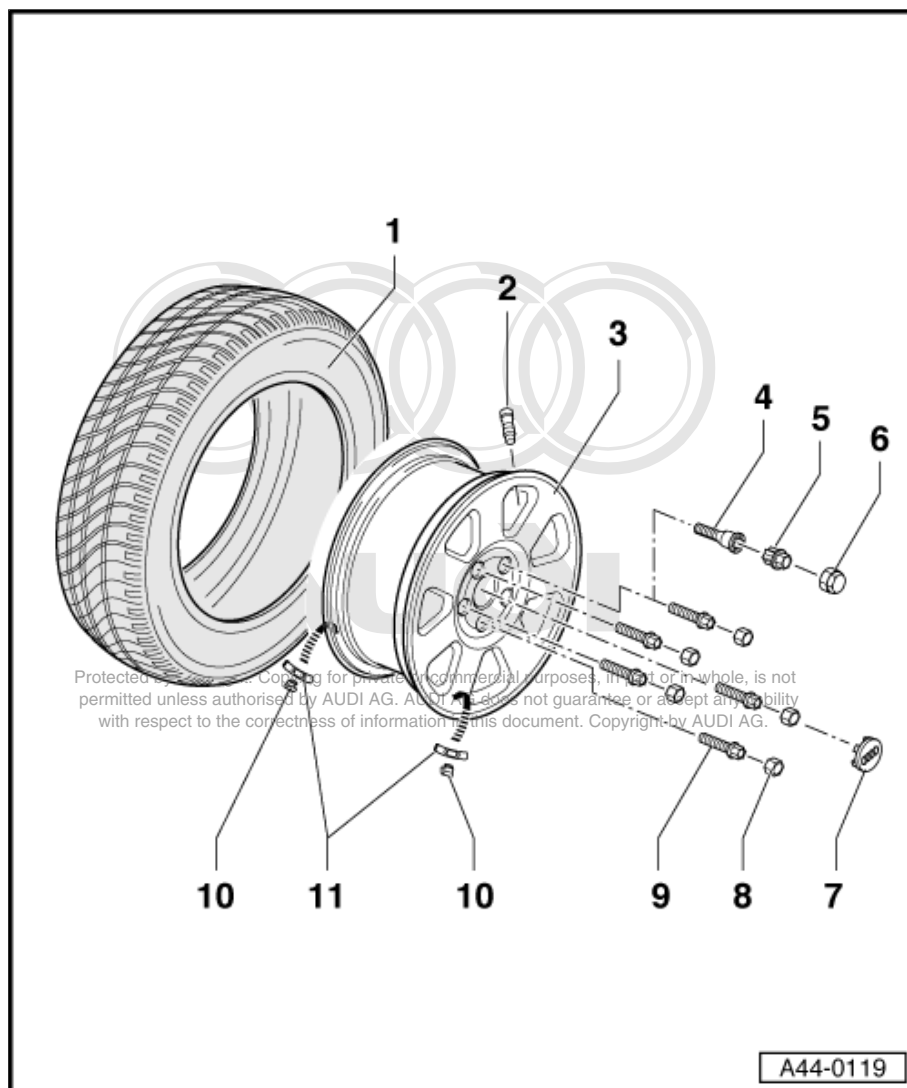
9 - Wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque ⇒ [page 162](#)

10 - Retaining spring for balancing weights

11 - Balancing weights

- ☐ Not more than 60 g permitted per rim flange



1.3 Forged light-alloy wheel for 1.2 TDI running gear

1 - Tyre

2 - Valve

- ☐ For correct version refer to ⇒ Parts catalogue

3 - Forged light-alloy wheel

- ☐ Hole circle diameter 100 mm
- ☐ 4.5J x 14, ET 38 (rim offset)

4 - Wheel bolt

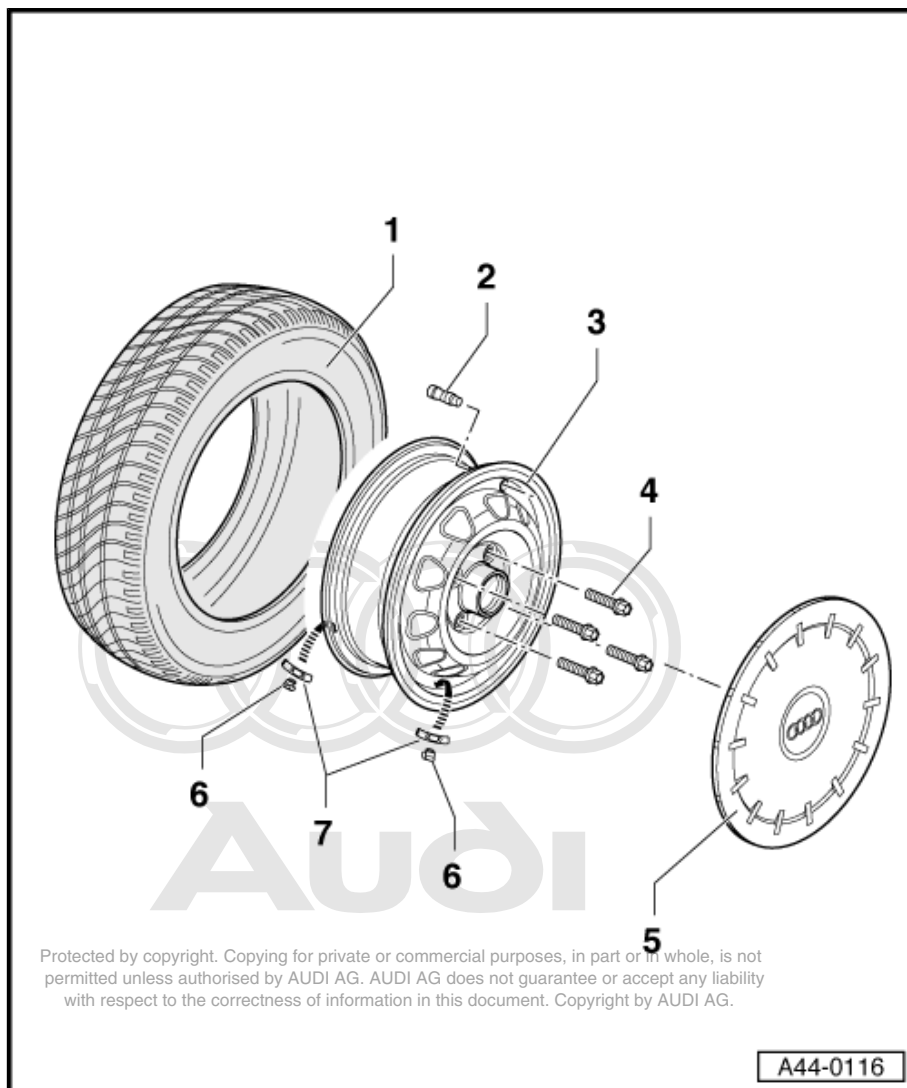
- ☐ M12×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

5 - Wheel trim

6 - Retaining spring for balancing weights

7 - Balancing weights

- ☐ Not more than 60 g permitted per rim flange



1.4 Steel wheel

1 - Tyre

2 - Valve

- ☐ For correct version refer to ⇒ Parts catalogue

3 - Steel wheel

- ☐ Hole circle diameter 100 mm
- ☐ 5.5J x 15, ET 34 (rim offset)

4 - Anti-theft wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

5 - Adapter for anti-theft wheel bolt

- ☐ Adapter set for tamper-proof wheel bolts - T40004-

6 - Wheel trim

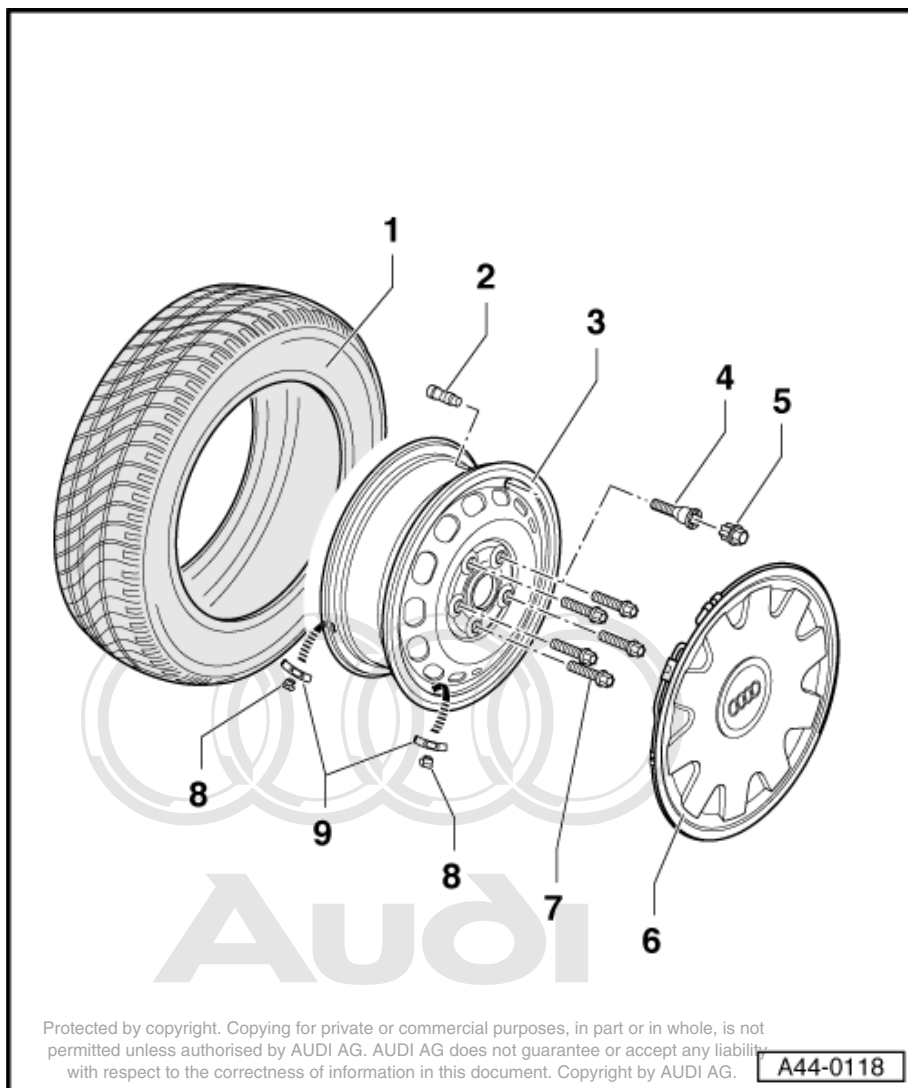
7 - Wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

8 - Retaining spring for balancing weights

9 - Balancing weights

- ☐ Not more than 60 g permitted per rim flange



1.5 Steel wheel (winter)

1 - Tyre

2 - Valve

- ☐ For correct version refer to ⇒ Parts catalogue

3 - Steel wheel

- ☐ Hole circle diameter 100 mm
- ☐ 5J x 15, ET 28 (rim offset)

4 - Anti-theft wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

5 - Adapter for anti-theft wheel bolt

- ☐ Adapter set for tamper-proof wheel bolts - T40004-

6 - Wheel trim

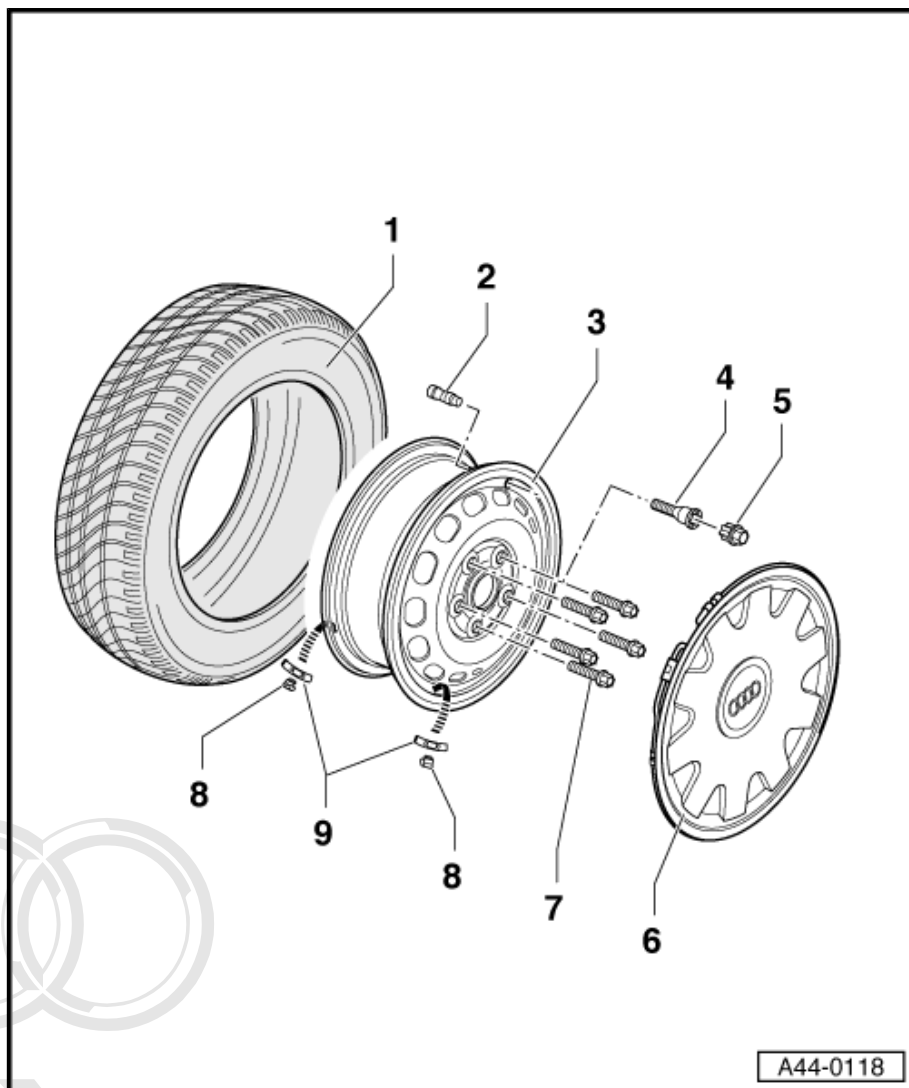
7 - Wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

8 - Retaining spring for balancing weights

9 - Balancing weights

- ☐ Not more than 60 g permitted per rim flange



A44-0118

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

1.6 Light-alloy wheel, 6-spoke design (6J x 15, ET 37)

1 - Tyre

2 - Valve

- ☐ For correct version refer to ⇒ Parts catalogue

3 - Light-alloy wheel rim

- ☐ Hole circle diameter 100 mm
- ☐ 6J x 15, ET 37 (rim offset)

4 - Anti-theft wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

5 - Adapter for anti-theft wheel bolt

- ☐ Adapter set for tamper-proof wheel bolts - T40004

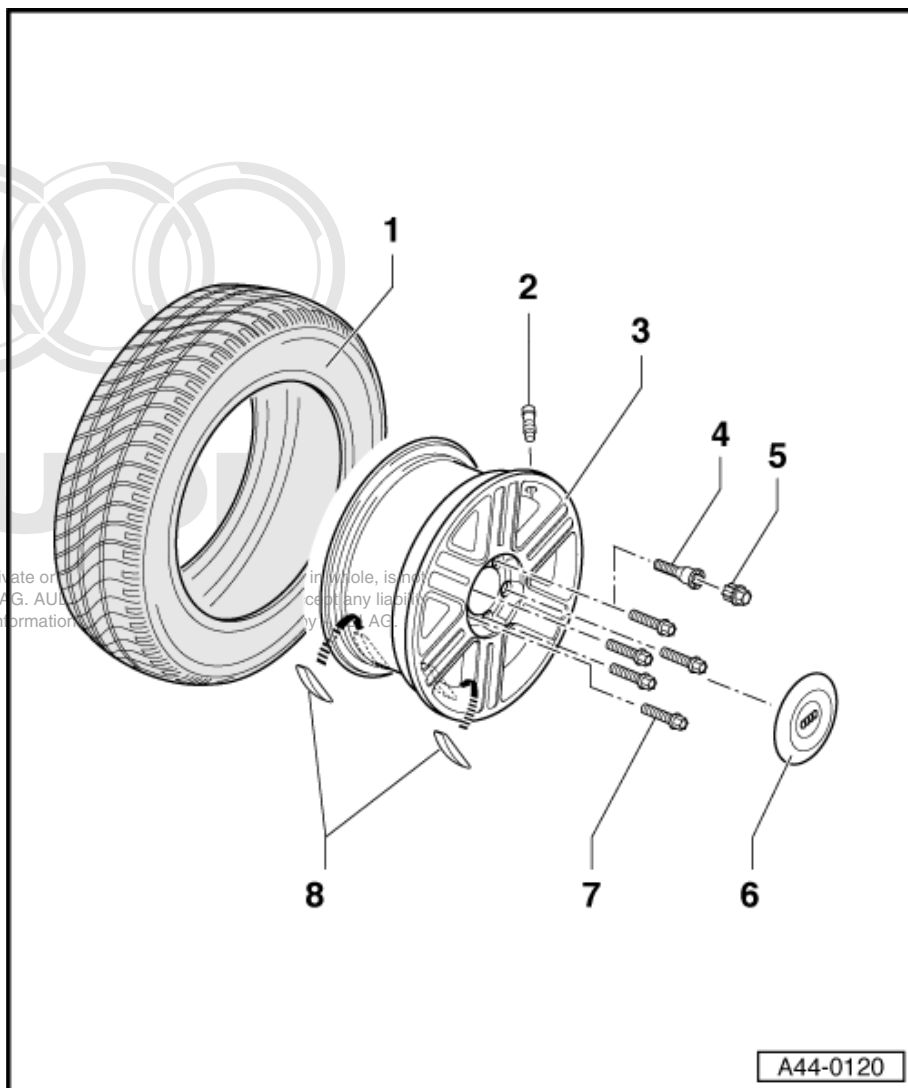
6 - Trim cap

7 - Wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

8 - Adhesive balancing weights

- ☐ Not more than 60 g permitted per rim flange
- ☐ Only bond at room temperature
- ☐ Remove dirt and grease from wheel rim at bonding point
- ☐ Pull off backing foil
- ☐ Do not touch adhesive surfaces; make sure they are kept clean
- ☐ Bond on balancing weights at surfaces provided for this purpose



1.7 Light-alloy wheel, 6-spoke design (6J x 16, ET 35)

1 - Tyre

2 - Valve

- ☐ For correct version refer to ⇒ Parts catalogue

3 - Light-alloy wheel rim

- ☐ Hole circle diameter 100 mm
- ☐ 6J x 16, ET 35 (rim offset)

4 - Anti-theft wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

5 - Adapter for anti-theft wheel bolt

- ☐ Adapter set for tamper-proof wheel bolts - T40004-

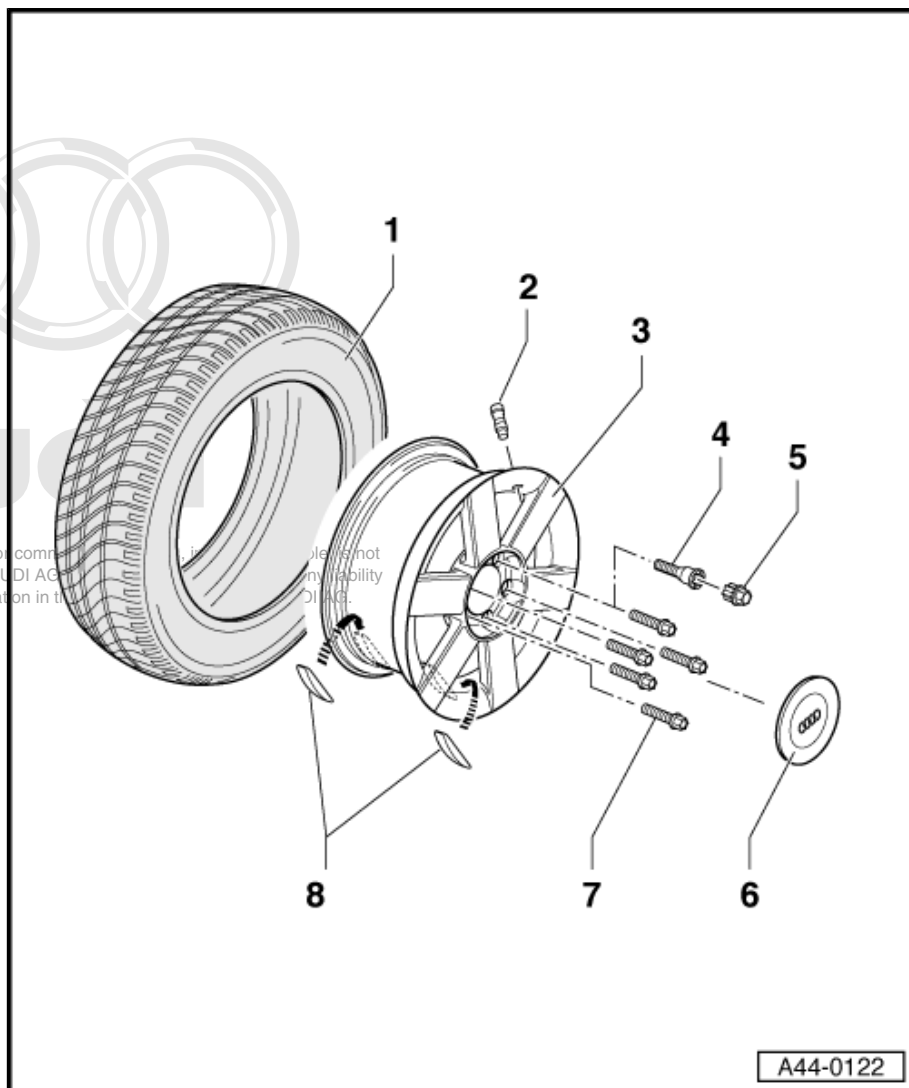
6 - Trim cap

7 - Wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

8 - Adhesive balancing weights

- ☐ Not more than 60 g permitted per rim flange
- ☐ Only bond at room temperature
- ☐ Remove dirt and grease from wheel rim at bonding point
- ☐ Pull off backing foil
- ☐ Do not touch adhesive surfaces; make sure they are kept clean
- ☐ Bond on balancing weights at surfaces provided for this purpose



1.8 Light-alloy wheel (5-spoke design)

1 - Tyre

2 - Valve

- ☐ For correct version refer to ⇒ Parts catalogue

3 - Light-alloy wheel rim

- ☐ Hole circle diameter 100 mm
- ☐ 6J x 16, ET 35 (rim offset)

4 - Anti-theft wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

5 - Adapter for anti-theft wheel bolt

- ☐ Adapter set for tamper-proof wheel bolts
T40004-

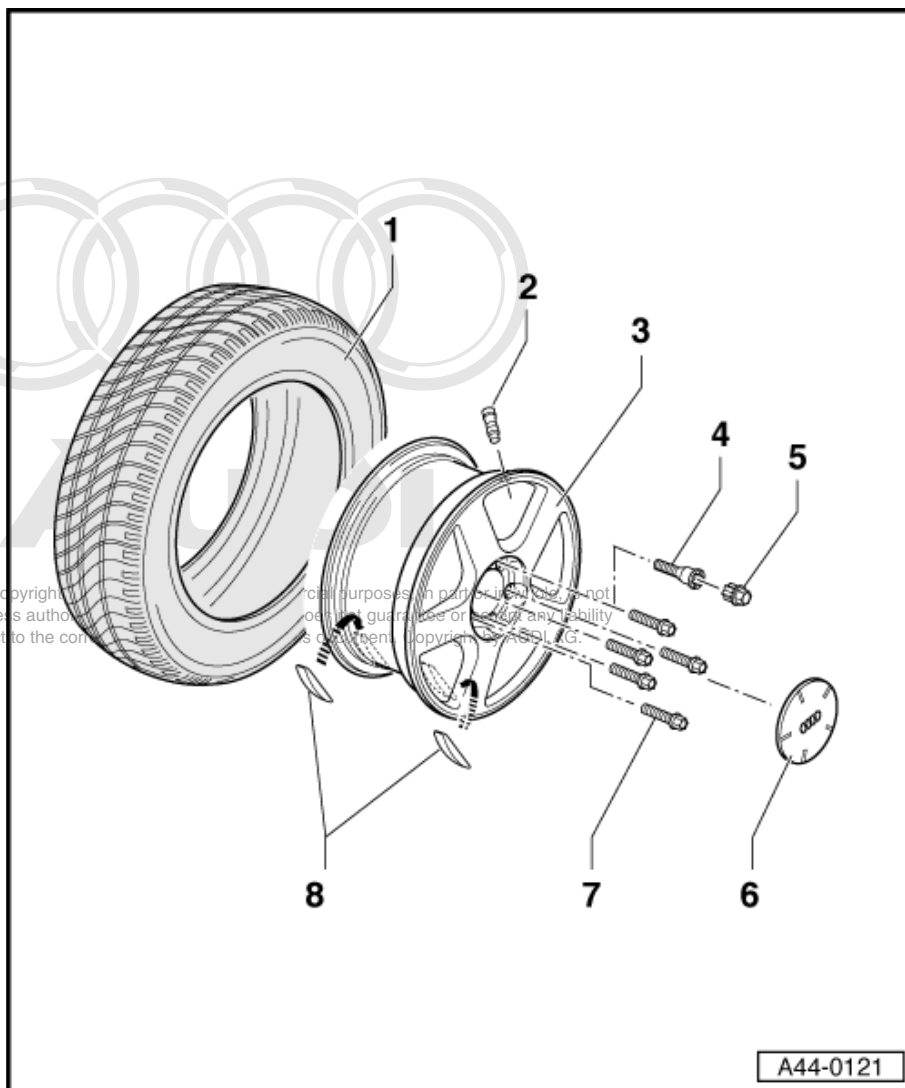
6 - Trim cap

7 - Wheel bolt

- ☐ M14×1.5 x 27.5 mm
- ☐ Tightening torque
⇒ [page 162](#)

8 - Adhesive balancing weights

- ☐ Not more than 60 g permitted per rim flange
- ☐ Only bond at room temperature
- ☐ Remove dirt and grease from wheel rim at bonding point
- ☐ Pull off backing foil
- ☐ Do not touch adhesive surfaces; make sure they are kept clean
- ☐ Bond on balancing weights at surfaces provided for this purpose



1.9 Balancing wheels on vehicle

Switch off ignition before balancing.



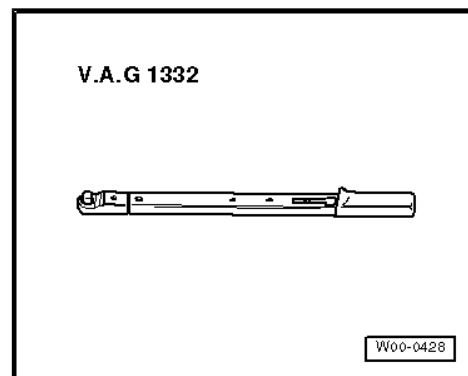
Note!

- ◆ *Wheel imbalance causes vibration at the steering wheel and at the front of the vehicle ⇒ Technical information; Wheels and Tyres Guide .*
- ◆ *Place front wheels of front-wheel drive vehicles on sensor platforms when balancing wheels.*
- ◆ *Check the manufacturer's instructions for operating wheel balancing equipment.*

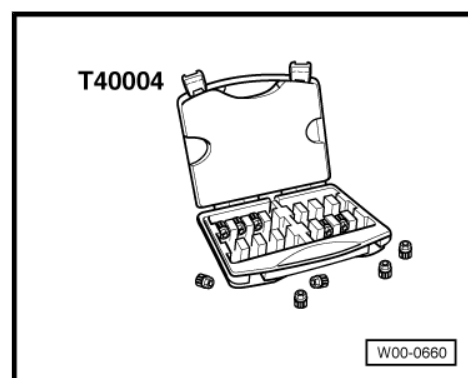
1.10 Instructions for changing/fitting wheels

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



- ◆ Adapter set for tamper-proof wheel bolts -T40004-



Note!

- ◆ *Raise vehicle only at jacking points provided.*

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 guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- ◆ *To slacken off wheel bolts, always use socket attachments of the correct size. Worn socket attachments must not be re-used.*
- ◆ *Do not use impact wrenches for slackening off anti-theft wheel bolts (lockable wheel bolts).*
- ◆ *Take care to keep wheel bolts clean.*



Caution

Perform the checks and follow the instructions listed below. This is important to ensure that the wheel bolts and the wheels are properly secured.

Perform the following steps with the wheel rim removed.

- Check that the convex seats for the wheel bolts in the rim and the contact surfaces (rim/brake disc and brake disc/wheel hub) are free of corrosion and dirt. Remove any oil, grease and corrosion.

- Check that the centring hole in the wheel rim and the centring flange on the wheel hub are free from corrosion and dirt. Remove any oil, grease and corrosion and apply wax spray -D 322 000 A2- to ensure corrosion protection.


Note!

The wax spray must not come into contact with brake system components.

- Any rust or dirt which drops between brake disc and wheel hub on removal should be blown out with compressed air.


Caution

Wear safety goggles when working with compressed air.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 convex seats for the wheel bolts in the wheel rim and the shoulders on the wheel bolts must be free from dirt and corrosion.
- If necessary, clean the seats for the wheel bolts in the rim using a clean, lint-free cloth.
- Check that the wheel bolts and the threads in the wheel hub are clean.
- Use a brass wire brush or similar to remove any dirt from the shoulder and threads of the wheel bolts. Damaged or badly corroded wheel bolts must be renewed.
- If lightly corroded wheel bolts are re-installed on the vehicle, clean the threads and the shoulders on the bolt heads and grease the surfaces in sliding contact using Optimol TA paste -G 052 109 A2- as follows:

A - One-piece wheel bolt

- ◆ Lightly grease thread -1- and shoulder -2-.

B - Two-piece wheel bolt - not approved for use on Audi A2 vehicles.

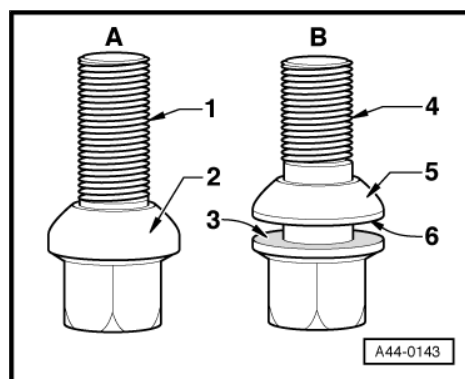
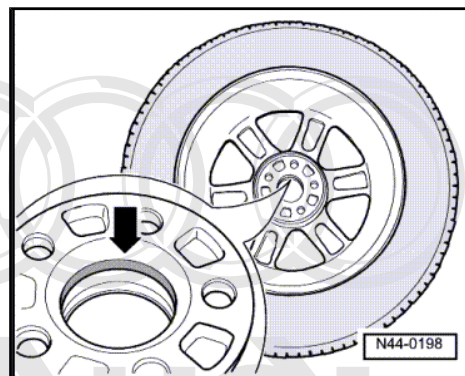

Note!

Use only Optimol TA paste -G 052 109 A2-. The paste must not come into contact with parts of the brake system.

- Check that wheel bolts can be screwed in easily by hand without using tools. When fitting the wheel, the bolts should screw in easily over the full length of the threads.
- Make sure the holes in the brake disc are aligned with the threads in the hub. The thread of the wheel bolts must not contact the bore in the brake disc.

1.10.1 Fitting wheels

- Position wheel on wheel hub and secure by hand with two opposing wheel bolts.
- Screw in remaining wheel bolts by hand. They should screw in easily. Make sure the bores are exactly centralised.



- If necessary lift the wheel slightly and tighten two wheel bolts lightly by hand.
- When fitting the wheel, screw in all wheel bolts evenly by hand.
- Tighten wheel bolts in diagonal sequence to approx. 50 Nm using wheel brace or similar.
- Lower vehicle to floor and tighten wheel bolts in diagonal sequence to final torque.
- ◆ Tightening torque: 120 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.



2 Wheel alignment

2.1 General information



Note!

- ◆ *Wheel alignment should not be checked until the vehicle has completed 1000 to 2000 km, when the coil springs have had time to settle.*
- ◆ *Vibrations can also be caused by excessive residual imbalance and/or radial runout of the wheels.*

Wheel alignment must always be checked with Audi-approved wheel alignment equipment.

The alignment check must always include both the front and the rear axles.

- ◆ When making adjustments, try to obtain the specified settings as accurately as possible.

This is important to achieve proper handling and road behaviour.



Caution

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

Zero compensation of the steering angle sender -G85- must be performed after checking and adjusting wheel alignment.

If the position of the rear axle and thus the overall running direction of the vehicle is not taken into account, this can result in an off-centre alignment of the steering wheel.

Steering wheel and steering column are marked.

This position must not be changed.

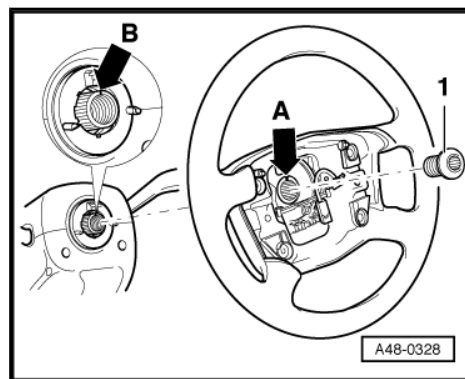
A - Line marking on steering wheel

B - Punch mark on steering column

Otherwise, the steering rack may not be located in the central position.

Steering columns supplied as spare parts do not have a punch mark.

These steering columns must be marked accordingly after completing wheel alignment and test-driving vehicle.



2.1.1 Tightening torque

Multi-point socket head bolt: 50 Nm

2.1.2 When does wheel alignment have to be checked?

Wheel alignment must be checked:

- ◆ if handling or road behaviour is poor,
- ◆ if accident damage has occurred,
- ◆ if tyres are worn unevenly,
- ◆ if suspension components have been removed.

Front suspension component renewed	Wheel alignment check required		Rear suspension component renewed	Wheel alignment check required	
	Yes	No		Yes	No
Suspension strut (basic running gear)		X	Shock absorber		X
Suspension strut (1.2 TDI running gear)	X		Coil spring		X
Wishbone with swivel joint ◆ Forged steel wishbone (basic running gear) ◆ Light-alloy wishbone (1.2 TDI running gear)	X		Mounting bracket	X	
Wheel bearing housing	X				
Track rod ball joint	X				
Steering box	X				
Subframe	X				
Anti-roll bar	X				
Fabricated wishbone (welded pressed-metal sections) with bolt-on swivel joint (basic running gear)	X				
Swivel joint (bolted-on)	X		Torsion beam axle, complete assembly ¹⁾		X

1) Torsion beam axle without mounting bracket

2.2 Wheel alignment specifications

These specifications are applicable for all engines.

Front axle	Basic running gear 1GA, G07, G22	1.2 TDI running gear 1GF, G03 manual steering	1.2 TDI running gear 1GF, G03 power steering	Sports running gear 1GL, G08
Camber	- 35' ± 20'	- 40' ± 20'	- 40' ± 20'	- 40' ± 20'
Maximum permissible difference between left and right	30'	30'	30'	30'
Toe angle at each wheel (specification when checking adjustment, unladen)	4' ± 5'	4' ± 5'	4' ± 5'	4' ± 5'
Toe angle at each wheel (specification when making adjustment, unladen)	4' ± 5'	4' ± 5'	4' ± 5'	4' ± 5'
Toe-out on turns at 20 degrees steering angle ²⁾	1° 30' ± 20'	1° 18' ± 20'	1° 35' ± 20'	1° 30' ± 20'
Caster (setting not adjustable)	4° 20'	2° 36'	3° 36'	4° 20'

2) 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	Basic running gear 1GA, G07, G22	1.2 TDI running gear 1GF, G03 manual steering	1.2 TDI running gear 1GF, G03 power steering	Sports running gear 1GL, G08
Camber	-1° 25' ± 20'	-1° 25' ± 20'	-1° 25' ± 20'	-1° 25' ± 20'
Maximum permissible difference between left and right	20'	20'	20'	20'

Rear axle	Basic running gear 1GA, G07, G22	1.2 TDI running gear 1GF, G03 manual steering	1.2 TDI running gear 1GF, G03 power steering	Sports running gear 1GL, G08
Total toe	20' ± 10'	20' ± 10'	20' ± 10'	20' ± 10'
Maximum permissible deviation in direction of travel relative to longitudinal axis of vehicle	20'	20'	20'	20'

2.2.1 Additional vehicle data:

Figures applicable to all engines

	Unit	Basic running gear 1GA, G07, G22	1.2 TDI running gear 1GF, G03 manual steering and power steering	Sports running gear 1GL, G08
Wheelbase	mm	2408	2408	2408
Front track width	mm	1464	1463	1454
Rear track width	mm	1427	1419	1419



Note!

- ◆ Specified values for basic running gear apply to standard tyre size and wheel rim offset: 175/60 R15 ET34.
- ◆ Specified values for 1.2 TDI running gear (with manual and power steering) apply to standard tyre size and wheel rim offset: 145/80 R14 ET38.
- ◆ Specified values for sports running gear apply to standard tyre size and wheel rim offset: 205/40 R17 ET38.
- ◆ Vehicle in unladen condition
- ◆ The additional data listed here are intended only to facilitate diagnosis after an accident.

2.3 Requirements for test

- Check suspension, steering and steering linkage for excessive play and damage.
- Tread depth difference of no more than 2 mm on one axle.
- Tyres inflated to correct pressures
- Vehicle in unladen condition ³⁾.
- Spare wheel, vehicle tool kit and jack must be in their specified positions.
- Wheel alignment platforms and computer measuring equipment can lose their original levelling setting and calibration over a period of time.
- Wheel alignment platforms and computer equipment should therefore be serviced and calibrated at least once a year.
- Precision equipment of this type should be treated with appropriate care.

- If necessary, contact the manufacturer for familiarisation with the proper use of the wheel alignment equipment.

3) "Unladen" means: the weight of the vehicle ready for the road (full tank, full windscreen washer/headlight cleaner fluid container, spare wheel, vehicle tools and vehicle jack), without driver.

2.3.1 Explanatory notes on weight codes used in production (PR numbers)

Vehicle data sticker (example)

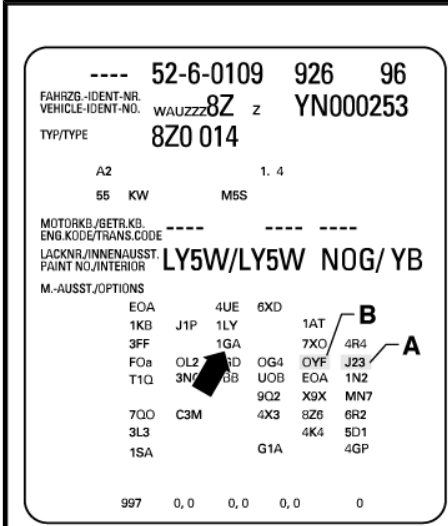
To facilitate matching of suspension components, the spring/shock absorber combinations are classified according to weight codes (PR numbers).

A - Weight code/PR No. for front axle

B - Weight code/PR No. for rear axle

The suspension version fitted in the vehicle is indicated by the relevant PR No. -arrow- on the vehicle data sticker.

The vehicle data sticker is located in the tool compartment underneath the luggage compartment cover and in the Service Schedule.



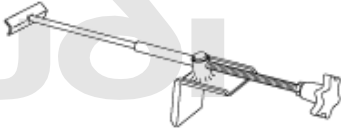
----- 52-6-0109 926 96
FAHRZG.-IDENT.-NR. VEHICLE-IDENT.-NO. WAUZZZ8Z z YN000253
TYP/TYP 8Z0 014
A2 1. 4
55 KW M5S
MOTOR/KB./BETR.KB. ENG.KODE/TRANS.CODE
LACKNR./INNENAUSST. LY5W/LY5W NOG/ YB
PAINT NO./INTERIOR
M.-AUSST./OPTIONS
EOA 4UE 6XD 1AT 4R4
1KB J1P 1LY 7X0 J23
3FF 1GA 0YF 1N2
FOB OL2 RD OG4 EOA
T1Q 3NF GB UOB X9X MN7
7QO C3M 9Q2 4X3 8ZB 6R2
3L3 4K4 5D1
1SA G1A 4GP
997 0,0 0,0 0,0 0
A44-0123

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

2.4 Measurement procedure

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-
- ◆ Tool insert (22 mm) -V.A.G 1332/12-
- ◆ Wheel alignment computer -V.A.G 1813 IG-
- ◆ Brake pedal depressor - V.A.G 1869/2-

V.A.G 1332 	V.A.G 1332/12 
V.A.G 1813 	V.A.G 1869/2 
	G44-0003

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

2.4.1 Requirements for measurement procedure

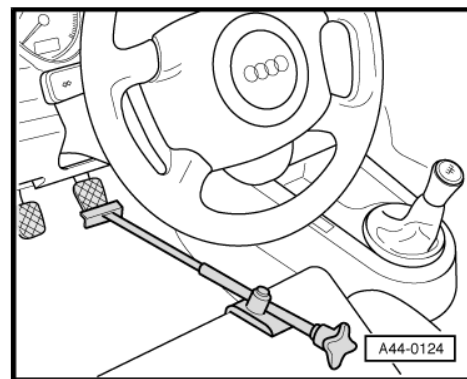
- Ensure that the sliding plates and turntables are not touching the end stop when checking the alignment.
- Vehicle accurately aligned, suspension bounced and rocked several times
- The test equipment must be properly adjusted and attached to the vehicle (see equipment manufacturer's instructions).
- Carry out wheel rim runout compensation.



Note!

Compensation of wheel rim runout: A certain amount of lateral 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 correctly set the toe-in without performing the wheel runout compensation.

- Set up brake pedal actuator -V.A.G 1869/2- .



2.4.2 Overview of work sequence for measuring wheel alignment

The vehicle must be unladen when measuring wheel alignment.

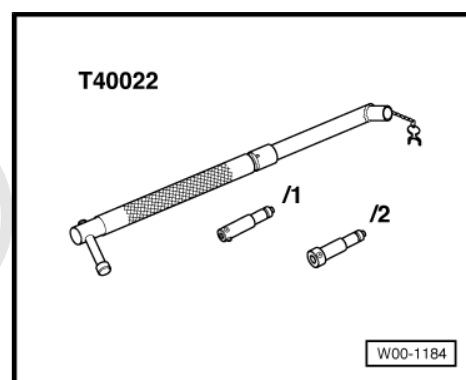
Always keep to the following sequence of operations.

1. Check camber at front wheels and centralise if necessary
⇒ [page 169](#)
2. Check camber at rear wheels. Camber is not adjustable,
Note ⇒ [page 170](#)
3. Check toe setting at rear wheels and centralise if necessary
⇒ [page 170](#) .
4. Check toe setting at front wheels with vehicle unladen and
adjust if necessary ⇒ [page 171](#) .
5. If suspension geometry settings are altered, perform zero
compensation of steering angle sender -G85- ⇒ Running
gear self-diagnosis for ESP, steering; Rep. Gr. 01 ; Per-
forming self-diagnosis; Zero compensation of steering angle
sender -G85- .

2.5 Centralising camber at front wheels

Special tools and workshop equipment required

- ◆ Adjusting tool -T40022-



Note!

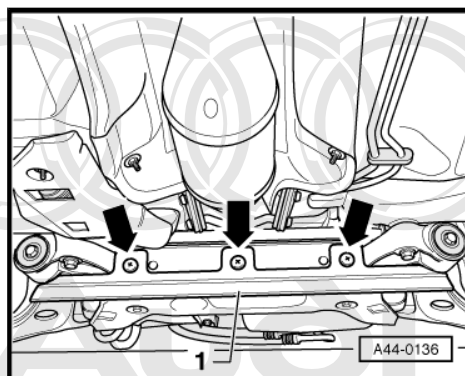
Move the subframe only to the left or right (viewed in the direction of travel) and never forwards or backwards.

- Remove noise insulation.

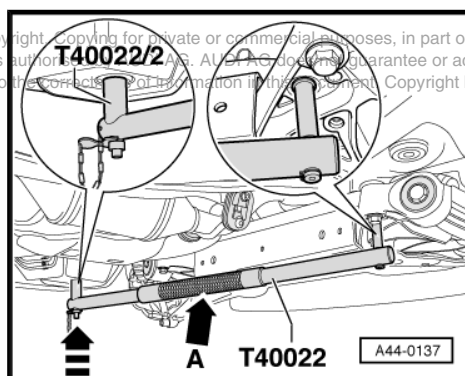
Vehicles with 1.2 TDI running gear

- Detach cover -1- from subframe -arrows-.

All vehicles (continued):



- Insert adjusting tool -T40022- with adapter -T40022/2- into the underbody and the suspension bracket and apply a light pre-load.
- Loosen bolts securing suspension bracket/subframe to body on one side only.
- The camber can now be adjusted to the specified value by turning the handle -arrow A- ⇒ [page 165](#).
- If the specified value cannot be achieved, loosen the bolts securing the suspension bracket/subframe to the body on the other side and repeat the adjustment procedure.
- Once the specified value has been achieved, insert new subframe bolts into the body and tighten them to 70 Nm.
- Then release the handle -arrow A-.
- Press the pin on the adapter -T40022/2- in the direction of the arrow and remove the adjusting tool.
- Tighten the subframe bolts on the body by turning through a further 90°.



2.5.1 Tightening torques

Subframe to body

70 Nm + 90°

- ◆ Use new bolt.

2.6 Checking camber at rear wheels

Camber can be checked but not adjusted.

If the measurements are outside the permitted tolerances, check the axle beam for damage and renew if necessary.

2.7 Centralising toe setting at rear wheels

The total toe setting at the rear wheels cannot be adjusted.

The individual toe values can be centralised by moving the rear axle.

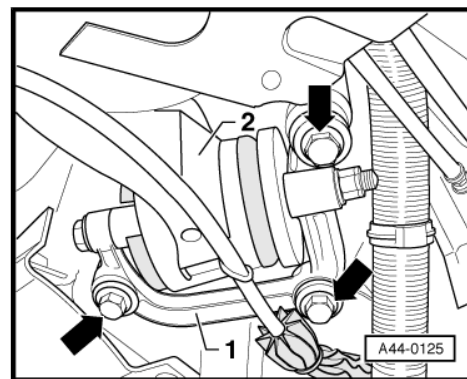
- Slacken off bolts -arrows- at mounting brackets -1-.

2 - Axle beam

- Centralise the individual toe settings by moving the mounting brackets.
- Install new hexagon bolts and tighten.

If the total toe setting is outside the permitted tolerance, or if it is not possible to centralise the individual settings, the axle beam must be checked for damage and renewed if necessary.

It may also be necessary to check the body dimensions/alignment at the rear axle mounting points and repair as required ⇒ Workshop manual, Body repairs .



2.7.1 Tightening torques

Mounting bracket to body 55 Nm + 90°
♦ Use new bolt.

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

2.8 Adjusting toe setting at front wheels

- Counterhold track rod ball joint -A- with a 19 mm spanner when loosening and tightening lock nut -B-.
- Loosen lock nut -B-.
- Adjust toe setting at left and right-hand wheels by turning hexagon flats -C-.

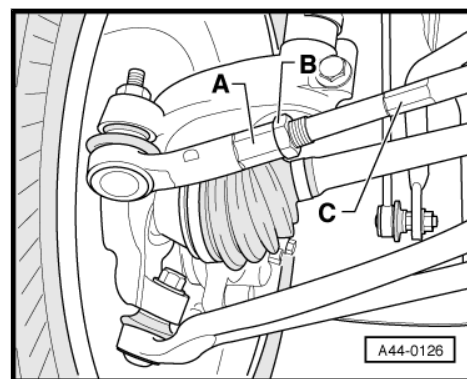
Make sure that rubber boots are not twisted after turning track rods.

Twisted rubber boots wear out quickly.

- Tighten lock nut -B- to 50 Nm and check toe-in setting again.

The setting may change slightly after tightening lock nut -B-.

The adjustment is correct if the measured toe value is still inside the tolerance.



48 – Steering

1 Steering column and steering wheel with airbag

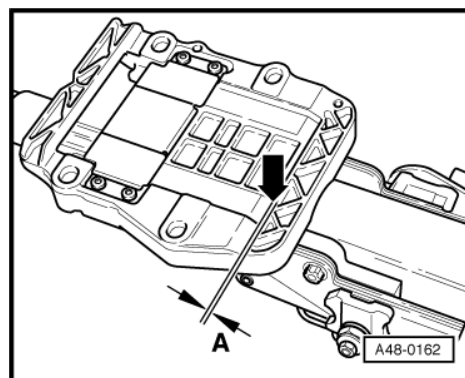
1.1 Checking steering column for damage

1.1.1 Visual check

- Check all steering column parts for damage.

1.1.2 Checking function

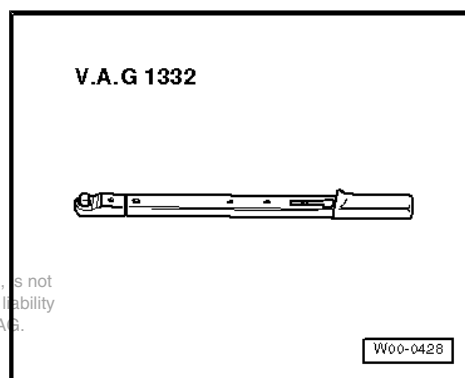
- Check that steering column turns easily and smoothly.
- Check that steering column can be adjusted for height and reach.
- Check whether there is a gap -dimension A- between the slide and the mounting bracket.
- If dimension -A- is larger than 0.5 mm, the steering column is damaged and must be renewed.



1.2 Removing and installing steering wheel with airbag

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



Removal and installation of the steering wheel is illustrated for a 4-spoke steering wheel with airbag.

The procedure for removing and installing a 3-spoke sports steering wheel with airbag is basically the same.

1.2.1 Removing

- Remove airbag module ⇒ General body repairs, interior; Rep. Gr. 69 ; Servicing airbag on driver's side .

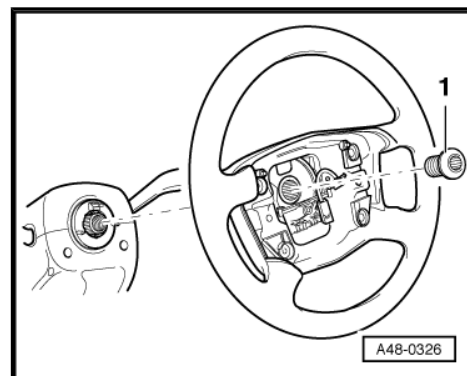
- Turn steering wheel to centre position (wheels in straight-ahead position).
- Unscrew securing bolt and remove steering wheel.

1 - Multi-point socket-head bolt (12 mm)

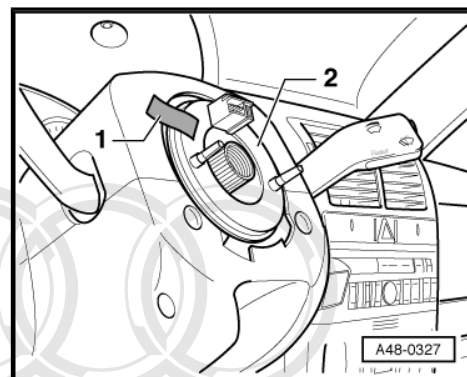


Caution

Do not twist coil connector out of centre position.



- To prevent unintentional turning, secure coil connector -2- with wheels in straight-ahead position using adhesive tape -1-.



1.2.2 Installing

Steering wheel and steering column are marked.

A - Line marking on steering wheel

B - Punch mark on steering column

This position must not be changed.

Otherwise, the steering rack may not be located in the central position.

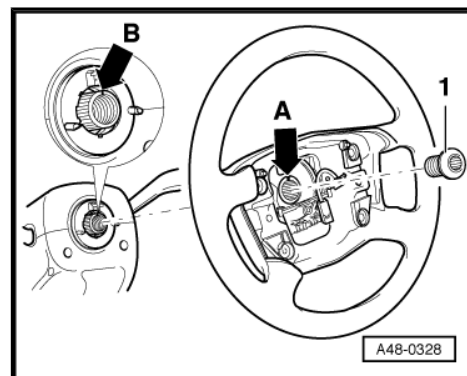
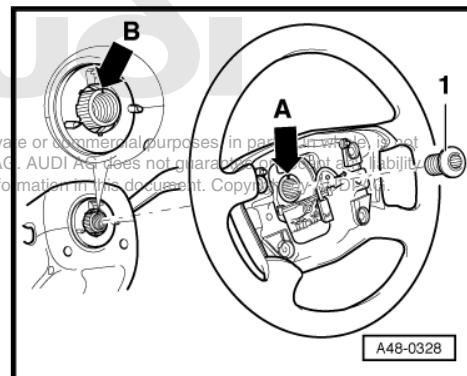
Steering columns supplied as spare parts do not have a punch mark.

These must be marked accordingly after completing wheel alignment or test-driving vehicle.

- Pull adhesive tape off coil connector. Take care not to turn coil connector.
- Fit steering wheel.

Line marking -A- on steering wheel hub and punch mark -B- on steering column must align.

- Install and tighten new multi-point socket head bolt -1-.
- Install airbag module ⇒ General body repairs, interior; Rep. Gr. 69 ; Servicing airbag on driver's side .
- Perform zero compensation of steering angle sender -G85- ⇒ Running gear self-diagnosis for ESP, steering; Rep. Gr. 01 ; Zero compensation of steering angle sender -G85- .



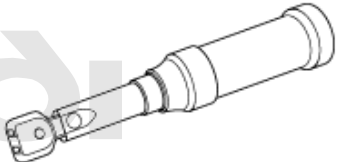
1.2.3 Tightening torques

Multi-point socket-head bolt (12 mm): 50 Nm

1.3 Removing and installing steering column

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Torque wrench - V.A.G 1783-

V.A.G 1331 	V.A.G 1332 
V.A.G 1783 	
	G48-0008

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



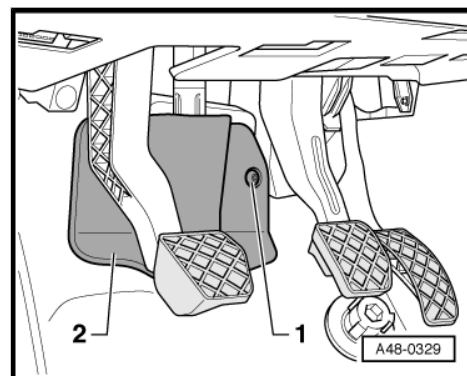
Note!

- ◆ New replacement steering columns are fitted with a transport lock. Pull out this transport lock after installation of steering column.
- ◆ It is advisable to keep the transport lock. It can be used for removing the steering column.
- ◆ Renew self-locking nuts and bolts.
- ◆ Welding and straightening work on steering components is not permitted.

1.3.1 Removing

- Remove airbag module ⇒ General body repairs, interior; Rep. Gr. 69 ; Servicing airbag on driver's side .

- Remove airbag steering wheel ➔ [page 172](#)
- Remove bolt -1-.
- Pull cover -2- to the left and disengage.
- Remove floor mat on driver's side ➔ General body repairs, interior; Rep. Gr. 70 ; Trim; Removing and installing front floor mat .

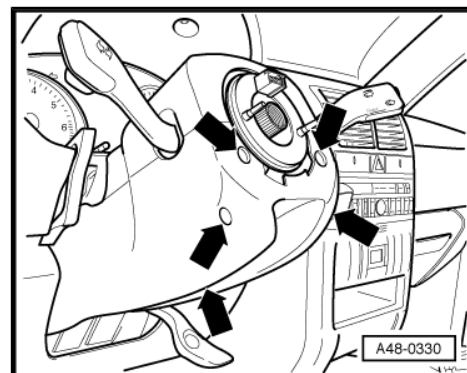


- Unscrew bolts -arrows-.
- Remove top and bottom parts of steering column trim.

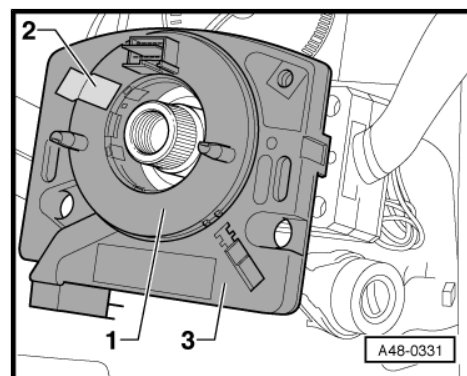


Caution

Coil connector remains on steering column switch. Ensure that coil connector is not twisted out of centre position.



- To prevent unintentional turning, secure coil connector -2- using adhesive tape -1-.
- 3 - Steering angle sender -G85-
- Remove driver's storage compartment ➔ General body repairs, interior; Rep. Gr. 68 ; Storage compartments/covers; Removing driver's storage compartment .

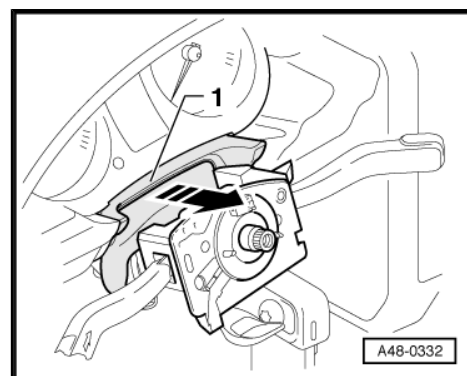


- Remove trim cover -1- in direction of arrow.

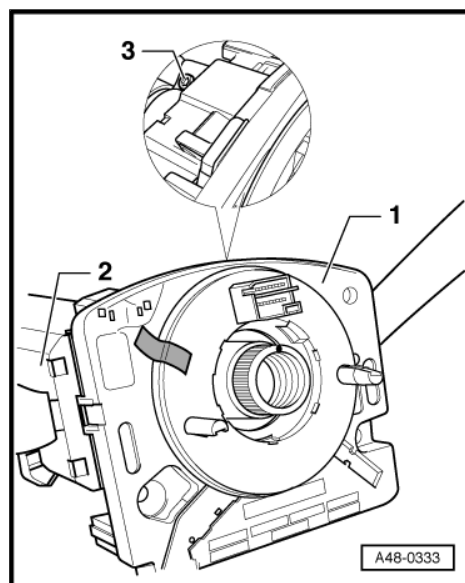


Note!

Steering angle sender -G85- does not have to be separated from steering column switch when removing steering column ➔ Brake system; Rep. Gr. 45 ; Component overview, ESP; Removing and installing steering angle sender -G85- .



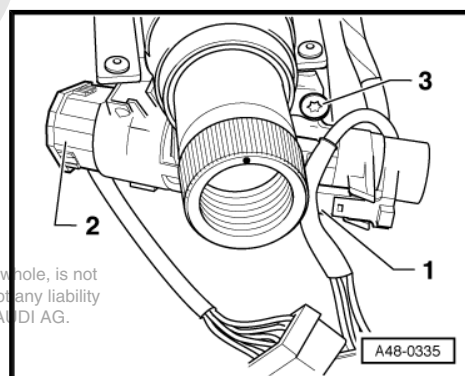
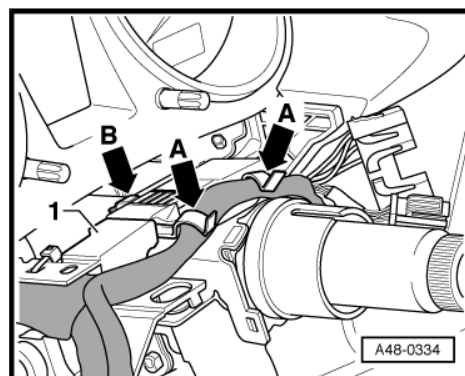
- Detach all connectors from steering angle sender -1- and steering column switch -2-.
- Slacken off bolt -3- on clamp until steering column switch can be detached.
- Place steering column switch to one side.



- Detach wiring harness from cable retainer clips -arrows A-.

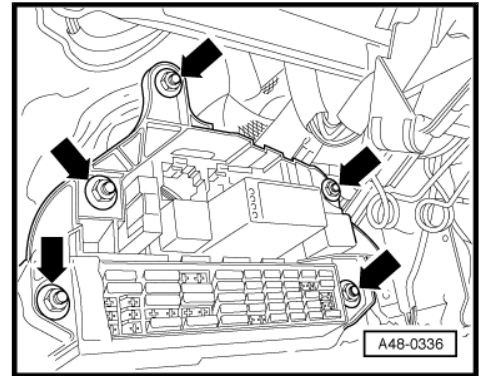

Note!

- ◆ *Only remove cable retainer if damaged.*
- ◆ *Cable retainer is available separately as a replacement part.*
- ◆ *Replacement steering columns are supplied with cable retainer.*
- Remove cable retainer -1-. Pivot cable retainer upwards and simultaneously remove from the rear fastening -arrow B-.
- Detach wiring harness with cable clip on left-side of steering column.
- Detach connector for immobiliser reader coil -1- and connector for ignition/starter switch -2-.
- Unscrew earth connection -3-.

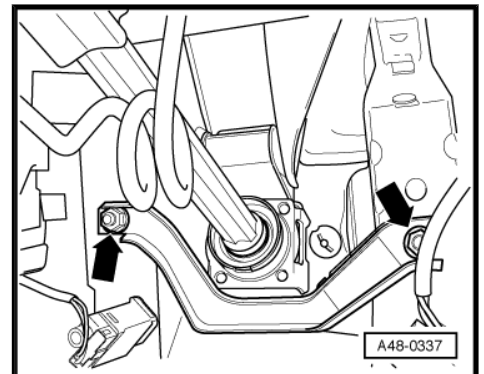


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

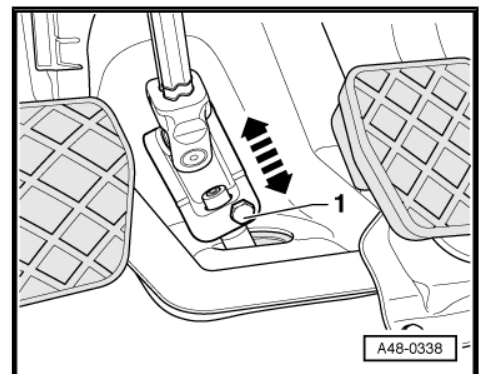
- Remove hexagon nuts -arrows-.
 - Detach relay carrier from studs.
- Do not remove relay carrier any further.



- On vehicles with manual gearbox, remove connecting plate between clutch and brake pedals -arrows-.



- Remove hexagon bolt -1-.
- Pull universal joint off steering box.



1.3.2 Securing steering column prior to removal

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

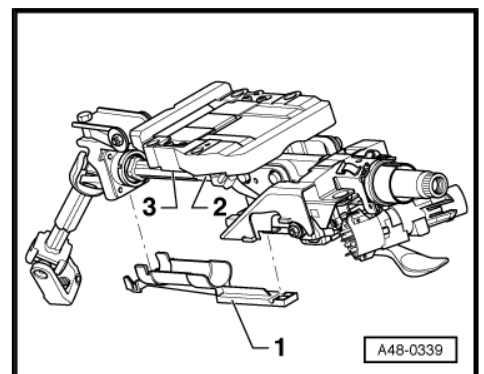
A transport lock is required to prevent the top and bottom sections of the steering column pulling apart on removal.

If the top and bottom sections of the steering column become separated, the proper pairing of the cloverleaf profile cannot be ensured. This may also allow dirt to enter the greased area.

- Secure steering column from pulling apart. For this purpose, use the transport lock -1- from a replacement steering column which has already been installed, or a cable tie or wire.

2 - Steering column (top section)

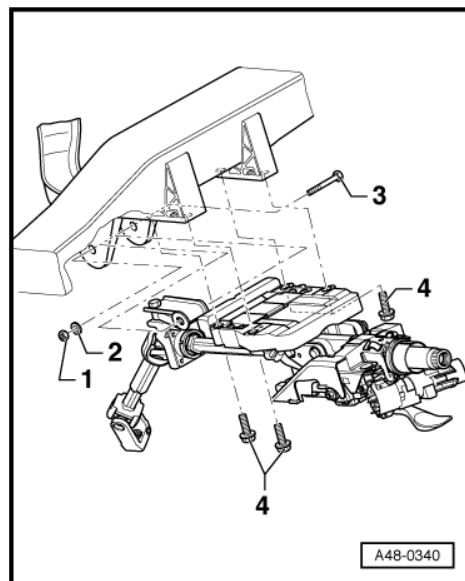
3 - Steering column (bottom section)



- Unscrew nut -1- on module carrier and pull out hexagon bolt -3-.
 - Remove bolts -4-.
 - Take out steering column.
- 2 - Washer


Note!

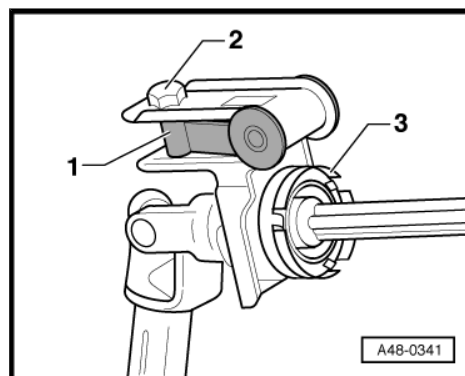
- ◆ *Do not remove mounting bush if old steering column is being re-installed.*
- ◆ *Removal of mounting bush is only required if damaged.*



- Remove hexagon bolt -2-.
- Pull mounting bush -1- out of fork on steering column -3-.


Note!

- ◆ *Replacement steering columns are supplied with ignition lock housing but without lock cylinder.*
 - ◆ *If the lock cylinder of the removed steering column is OK, it should be transferred to the new steering column.*
- Remove lock cylinder ⇒ Electrical system; Rep. Gr. 94 ; Servicing lock cylinder and ignition/starter switch; Removing and installing ignition/starter switch .



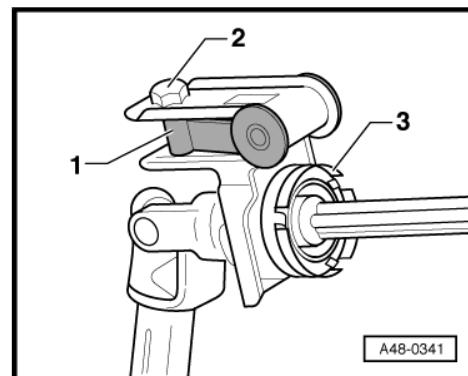
1.3.3 Installing


Note!

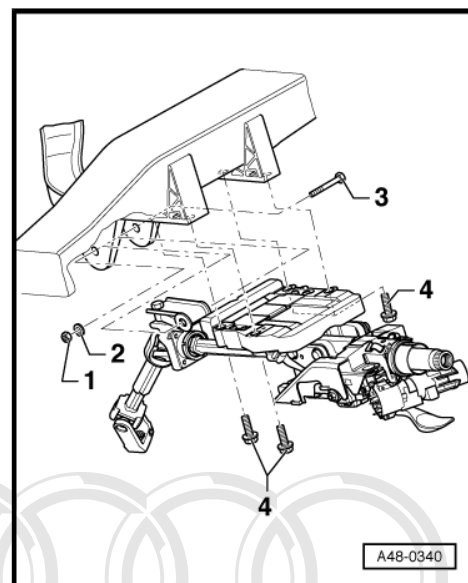
- ◆ *Mounting bush and securing bolts for steering column should always be renewed following an accident.*
- ◆ *If the removed steering column has not been damaged in an accident, the old mounting bush can be transferred to the replacement steering column following a visual inspection.*
- ◆ *The mounting bush and securing bolts are not supplied with the replacement steering column and must be ordered separately.*

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

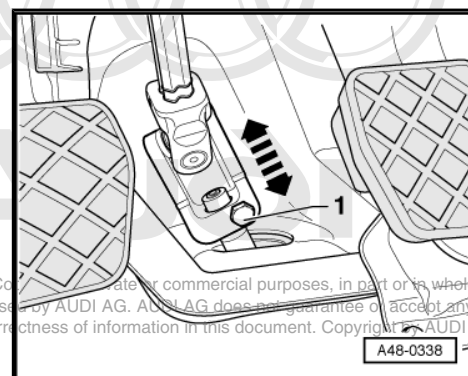
- Fit mounting bush -1- in fork on steering column -3-.
- Screw in and tighten hexagon bolt -2-.
- Install lock cylinder in ignition lock housing => Electrical system; Rep. Gr. 94 ; Servicing lock cylinder and ignition/starter switch; Removing and installing ignition/starter switch .



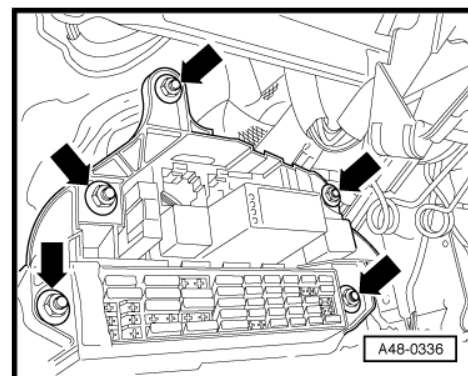
- Install steering column with mounting bush in module carrier.
- Insert new hexagon bolt -3- for mounting bush from the right-side and loosely screw on new nut -1- with washer -2-.
- Secure steering column to brackets on module carrier with bolts -4-.
- Tighten nut -1-.
- Remove transport lock.



- Push universal joint onto steering pinion and secure with new bolt -1-.
- Install connecting plate between clutch and brake pedals.

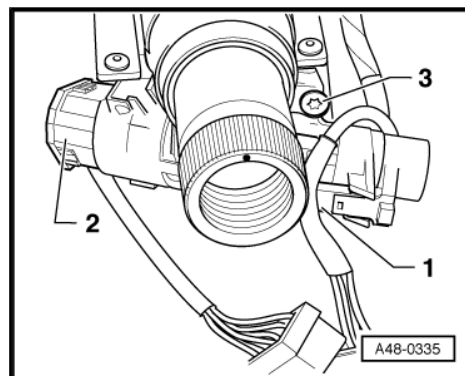


- Install relay carrier on studs, screw on hexagon nuts -arrows- and tighten.



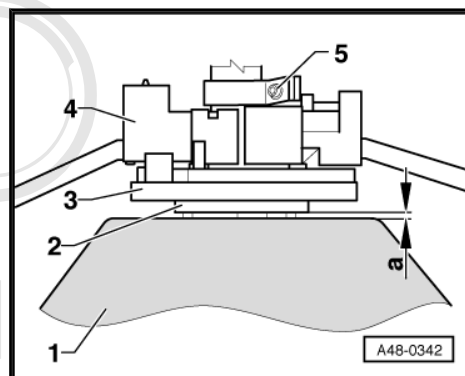
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright © AUDI AG.

- Attach connector for immobiliser reader coil -1- and connector for ignition/starter switch -2-.
- Attach earth connection -3-.
- Attach wiring harness in cable retainer clips on steering column.
- Attach wiring harness with cable clip on left-side of steering column.

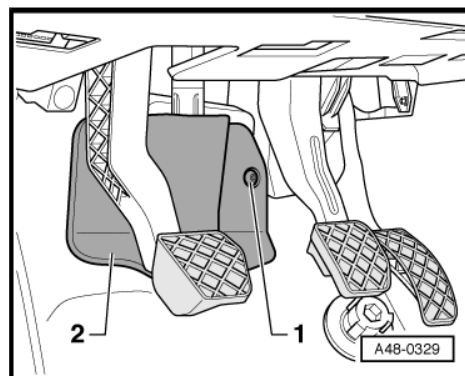


The illustration shows the view of the steering column switch with steering angle sender from above.

- 1 - Steering wheel
- 2 - Housing with coil connector
- 3 - Steering angle sender -G85-
- 4 - Steering column switch
- 5 - Clamping bolt
- a - = 3 mm



- Fit steering column switch on steering lock housing.
- Remove adhesive tape used to prevent unintentional turning.
- First attach steering wheel with old multi-point socket-head bolt.
- Align steering column switch horizontally and adjust to dimension -a-. Then tighten clamping bolt -5-.
- Remove steering wheel again.
- Attach all connectors on steering angle sender -G85- and steering column switch.
- Install trim cover.
- Install top and bottom trim for steering column switch.
- Install driver's storage compartment ⇒ General body repairs, interior; Rep. Gr. 68 ; Storage compartments/covers; Removing driver's storage compartment .
- Install floor mat on driver's side ⇒ General body repairs, interior; Rep. Gr. 70 ; Trim; Removing and installing front floor mat .
- Attach cover -2- to bracket and push towards centre of vehicle. Cover must engage in position.
- Screw in and tighten bolt -1-.
- Install airbag steering wheel ⇒ [page 172](#)
- Install airbag module ⇒ General body repairs, interior; Rep. Gr. 68 ; Servicing airbag on driver's side .
- Perform zero compensation of steering angle sender -G85- ⇒ Brake system; Rep. Gr. 45 ; ESP: exploded view of components; Removing and installing steering angle sender -G85- .



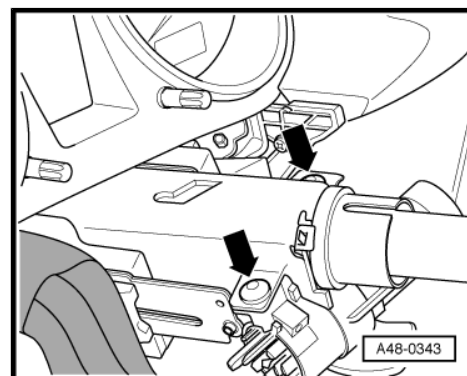
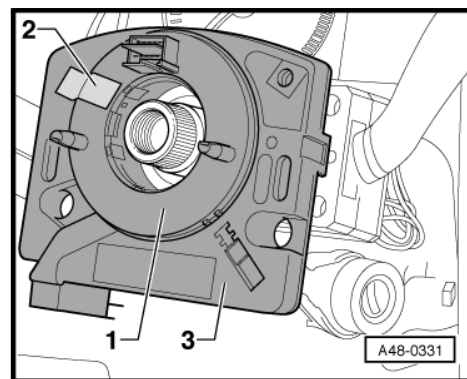
1.3.4 Tightening torques

Mounting bush to fork on steering column	8 Nm
Mounting bush to mounting bracket	9 Nm
♦ Use new bolt and nut.	
Steering column to module carrier	25 Nm
Universal joint to steering pinion	20 Nm + 90°
♦ Use new bolt.	
Connecting plate between clutch and brake pedals	28 Nm
Relay carrier	2 Nm
Clamping bolt for steering column switch	3 Nm
Steering column trim	5 Nm
Cover for universal joint	2.5 Nm

1.4 Removing and installing ignition lock housing

1.4.1 Removing

- Remove airbag module ⇒ General body repairs, interior; Rep. Gr. 69 ; Servicing airbag on driver's side .
- Remove airbag steering wheel ⇒ [page 172](#)
- Remove top and bottom parts of steering column switch trim ⇒ [page 174](#) .
- To prevent unintentional turning, secure coil connector -2- using adhesive tape -1-.
- 3 - Steering angle sender -G85-
 - Remove trim cover ⇒ [page 174](#) .
 - Remove steering column switch with steering angle sender -G85- .
 - Detach cable retainer from steering column ⇒ [page 174](#) .
 - Detach connector for immobiliser reader coil and ignition/starter switch ⇒ [page 174](#) .
 - Unscrew earth connection from ignition lock housing ⇒ [page 174](#) .
- Drill out or, if necessary, chisel out shear bolts -arrows- and remove ignition lock housing.
- Remove lock cylinder ⇒ Electrical system; Rep. Gr. 94 ; Servicing lock cylinder and ignition/starter switch; Removing and installing lock cylinder .
- Remove ignition/starter switch ⇒ Electrical system; Rep. Gr. 94 ; Servicing lock cylinder and ignition/starter switch; Removing and installing ignition/starter switch .



1.4.2 Installing

- Install lock cylinder in ignition lock housing ⇒ Electrical system; Rep. Gr. 94 ; Servicing lock cylinder and ignition/starter switch; Removing and installing lock cylinder .
- Install ignition/starter switch in ignition lock housing ⇒ Electrical system; Rep. Gr. 94 ; Servicing lock cylinder and ignition/starter switch; Removing and installing ignition/starter switch .
- Install ignition lock housing and secure with new shear bolts.
- Tighten shear bolts until heads shear off.
- Attach connector for immobiliser reader coil and connector for ignition/starter switch ⇒ [page 178](#) .
- Attach earth connection to ignition lock housing ⇒ [page 178](#) .
- Attach cable retainer and wiring harness to steering column ⇒ [page 178](#) .
- Align steering column switch with steering wheel and secure ⇒ [page 178](#) .
- Install trim cover.
- Remove tape securing coil connector.
- Install top and bottom sections of steering column trim ⇒ [page 178](#) .
- Install airbag steering wheel ⇒ [page 172](#)
- Install airbag module ⇒ General body repairs, interior; Rep. Gr. 69 ; Servicing airbag on driver's side .
- Perform zero compensation of steering angle sender -G85- ⇒ Brake system; Rep. Gr. 45 ; ESP: exploded view of components; Removing and installing steering angle sender -G85- .



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 Manual steering box: exploded view

General notes ⇒ [page 2](#)



Servicing is restricted to replacement of track rods and rubber boots. The necessary information can be found on ⇒ [page 189](#) onwards.

1 - Steering box

- ☐ Removing and installing
⇒ [page 184](#)

2 - Sealing collar

3 - Self-locking hexagon nut, 45 Nm

- ☐ Renew

4 - Steering arm on wheel bearing housing

5 - Hexagon bolt, 70 Nm and turn 90° further

- ☐ Renew

6 - Hexagon bolt, 50 Nm and turn 90° further

- ☐ Renew

7 - Pendulum support

8 - Hexagon bolt, 40 Nm and turn 90° further

- ☐ Renew

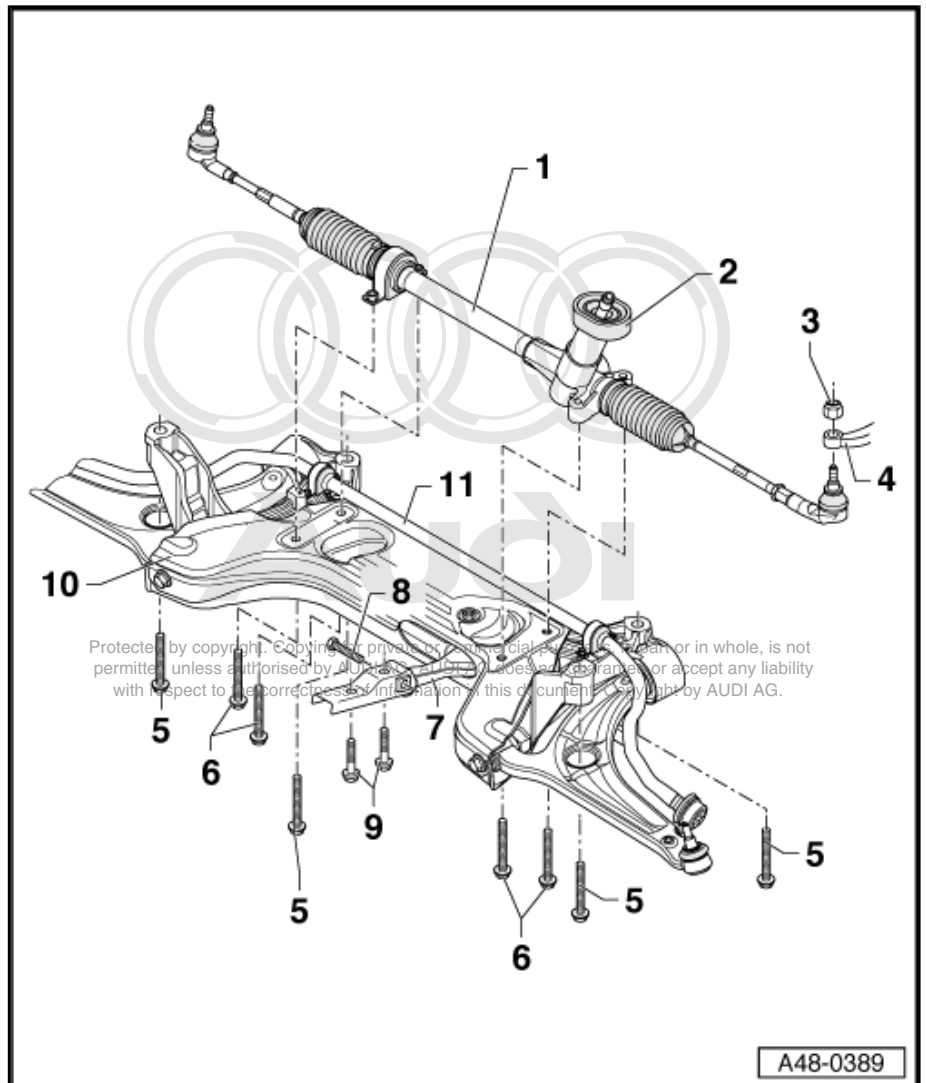
9 - Hexagon bolt, 50 Nm

10 - Subframe

- ☐ Removing and installing
⇒ [page 34](#)

11 - Anti-roll bar

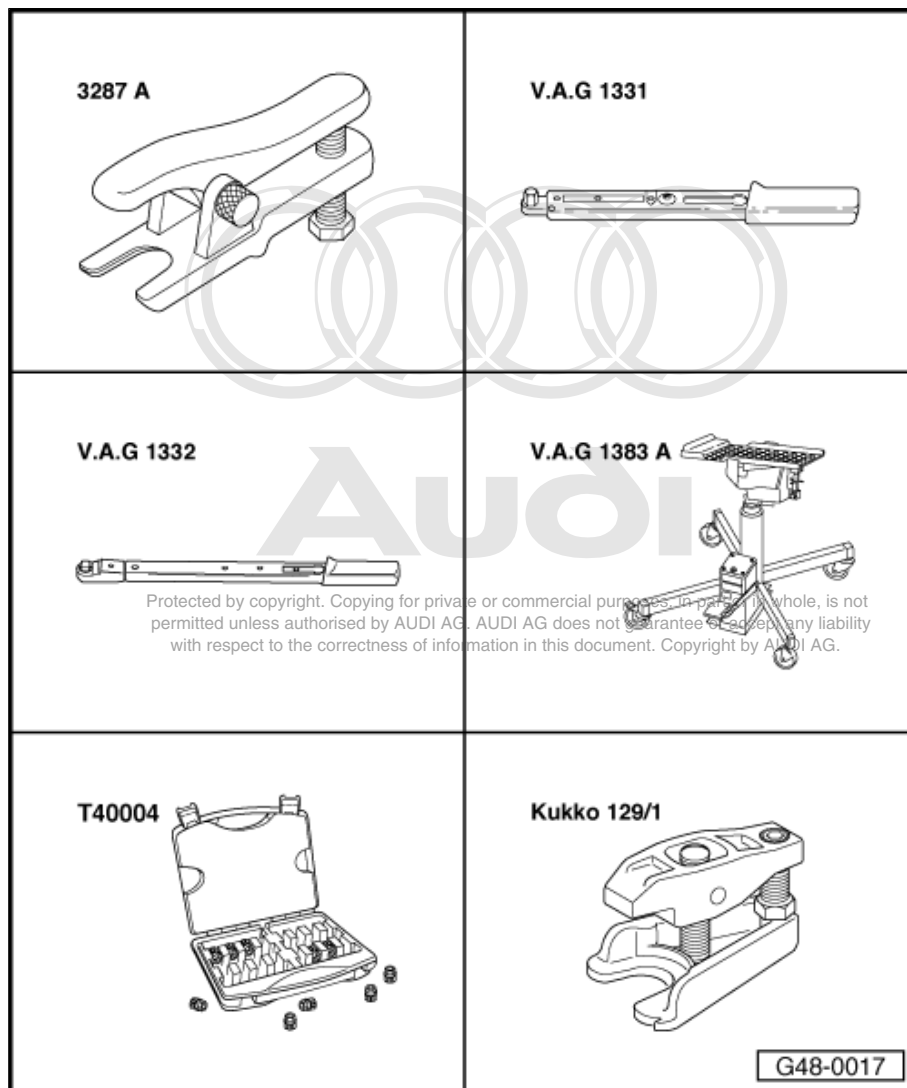
- ☐ Removing and installing
⇒ [page 39](#)



2.1 Removing and installing manual steering box

Special tools and workshop equipment required

- ◆ Ball joint puller -3287 A-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Adapter set for tamper-proof wheel bolts -T40004- Assembly tool
- ◆ Ball joint puller -Kukko 129/1-



2.1.1 Notes on servicing manual steering box

- ◆ Servicing is restricted to replacement of rubber boots and track rods.
- ◆ After removal, place parts on a clean surface and cover them over if repairs are not to be performed immediately.
- ◆ Only use lint-free cloths.
- ◆ Only remove replacement parts from packaging immediately prior to installation.
- ◆ Only use genuine packaged parts.

2.1.2 Removing

- Disconnect battery ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .



Caution

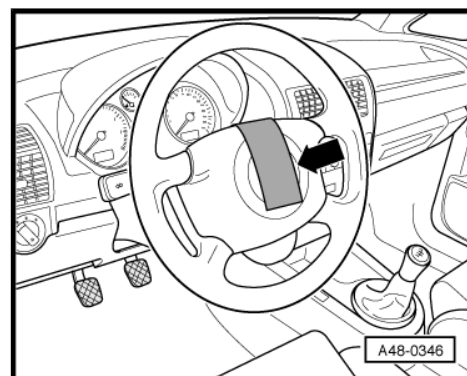
Turn steering wheel to centre position (wheels straight-ahead) and do not turn while performing repair work, as otherwise coil connector of airbag module could be damaged.

- To prevent unintentional turning, secure steering wheel in straight-ahead position with adhesive tape -arrow-.

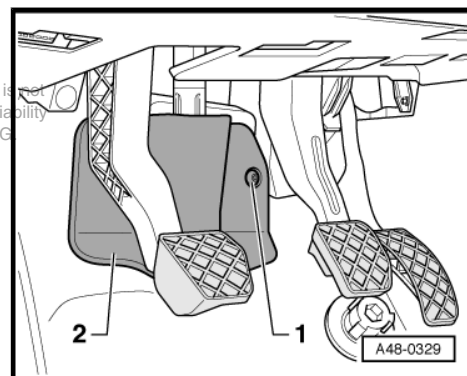


Note!

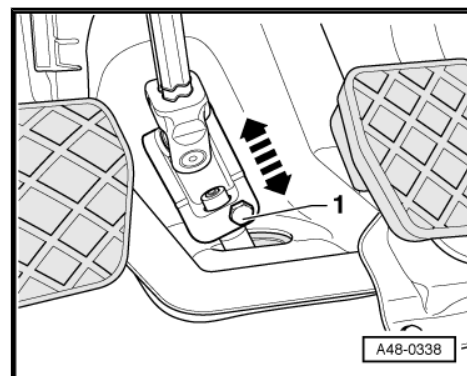
Only use adhesive tape that can be completely removed from the steering wheel afterwards without leaving marks.



- Remove bolt -1-.
- Pull cover -2- to the left and disengage.
- Remove floor mat on driver's side → General body repairs, interior; Rep. Gr. 70 ; Trim; Removing and installing front floor mat .



- Remove hexagon bolt -1-.
- Pull universal joint off steering box.
- Remove front wheels.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Loosen nut on swivel joint.

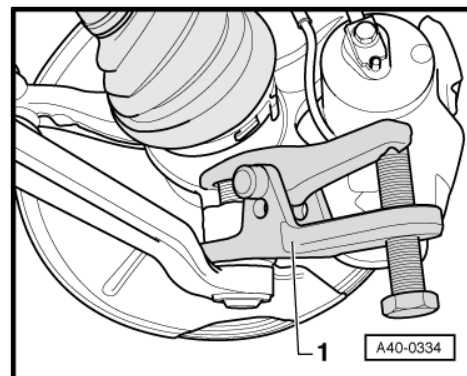


- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joint.



Note!

- ◆ Take care not to damage rubber boot when inserting ball joint puller.
- ◆ Leave nut screwed several turns onto track rod ball joint to protect thread.

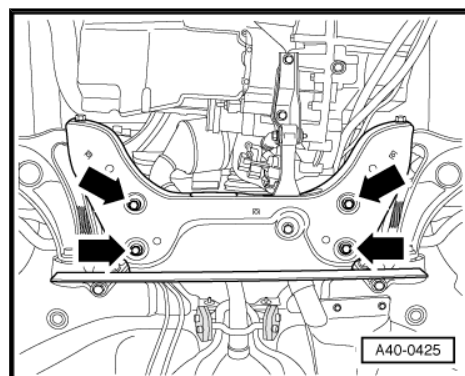
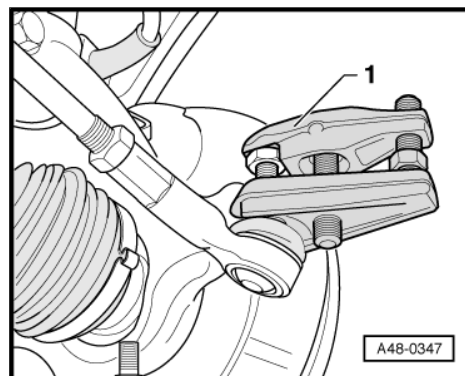


- Detach track rods from steering arms using ball joint puller - Kukko 129/1- -1-.


Note!

Take care not to damage rubber boot when inserting ball joint puller.

- Unscrew nut from track rod ball joint.
- Unbolt steering box from subframe -arrows-.
- Locate subframe ⇒ [page 12](#) .
- Lower subframe with engine and gearbox jack - V.A.G 1383 A- .
- Take out steering box towards the rear.



2.1.3 Installing


Caution

After installation of steering box, check position of steering wheel by test-driving vehicle, or check wheel alignment.


Note!

- ◆ For tightening torques, refer to ⇒ [page 183](#) onwards.
- ◆ New steering boxes are supplied complete with track rods and rubber boots.
- ◆ Before installing the manual steering box, check the centre position of the rack and adjust if necessary.
- ◆ Do not attach universal joint of steering column to steering box pinion until vehicle is standing on ground and wheels are set to straight-ahead position.

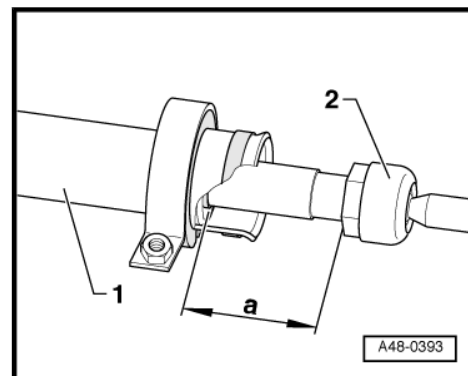
- Measure distance -a- to check whether steering box is in centre position.

a = 67 mm; adjust if necessary by turning steering box pinion.

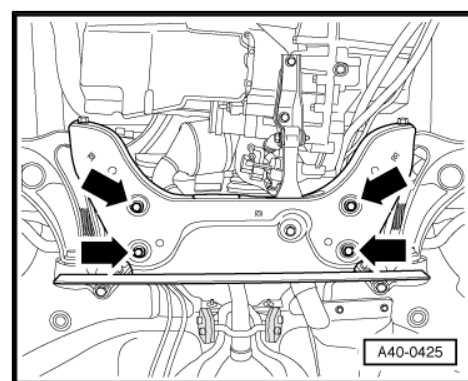
1 - Manual steering box

2 - Track rod

- Place steering box on subframe and install new bolts hand-tight.
- Check correct positioning of sealing collar at steering box pinion.
- Align subframe with pins from -T10096- installed in the body.
- Raise subframe and, at the same time, guide steering box pinion into opening in floor of vehicle.
- Install subframe ⇒ [page 46](#) .



- Tighten hexagon bolts for steering box to specified tightening torque and then turn through specified angle -arrows-.
- Insert track rods in steering arms and secure in place.
- Install swivel joints ⇒ [page 41](#) .
- Fit and secure wheels ⇒ [page 161](#) .
- Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Push universal joint onto steering pinion and secure with new bolt (tighten to 20 Nm, then turn through a further 90°).
- Install cover.
- Install floor mat on driver's side ⇒ General body repairs, interior; Rep. Gr. 70 ; Trim; Removing and installing front floor mat .
- Connect battery ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .
- Test-drive vehicle.



Caution

If, after the test drive, the steering wheel is misaligned with the wheels in the straight-ahead position, wheel alignment must be checked and adjusted if necessary.

- Check and adjust wheel alignment ⇒ [page 164](#) .

2.2 Removing and installing track rod ball joints

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-
- ◆ Tool insert (22 mm) -V.A.G 1332/12-
- ◆ Adapter set for tamper-proof wheel bolts -T40004-
- ◆ Ball joint puller -Kukko 129/1-

V.A.G 1332 	V.A.G 1332/12 
T40004 	Kukko 129/1 
	G48-0016

2.2.1 Removing

- Loosen nut on track rod ball joint.


Note!

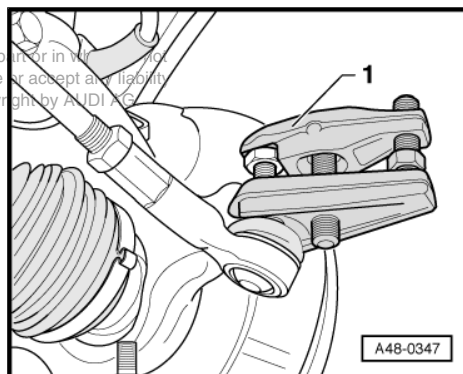
Leave nut screwed several turns onto track rod ball joint to protect thread.

- Detach track rods from steering arms using ball joint puller - Kukko 129/1- .

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.

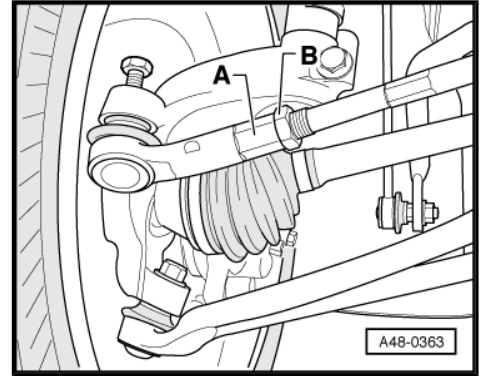

Note!

Take care not to damage rubber boot when inserting ball joint puller.



A48-0347

- Counterhold track rod ball joint -A- with a 19 mm spanner when loosening and tightening lock nut -B-.
- Loosen lock nut -B-.
- Unscrew nut from track rod ball joint.
- Unscrew track rod ball joint.



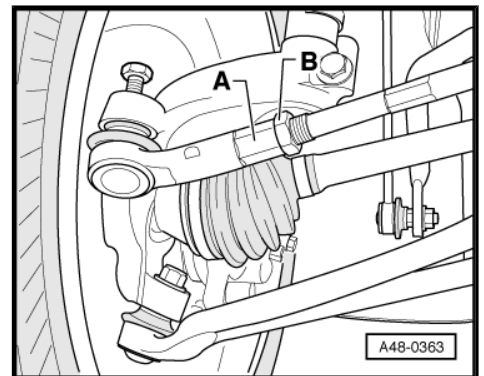
2.2.2 Installing

Installation is carried out in the reverse sequence.

- Tighten lock nut -B- to 50 Nm.

Make sure that rubber boots are not twisted.

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

Special tools and workshop equipment required

- ◆ Hose clip pliers - V.A.G 1275-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Open-end spanner insert (32 mm) -V.A.G 1332/6-
- ◆ Tool insert (22 mm) -V.A.G 1332/12-
- ◆ Spring-type clip pliers -VAS 5024 A-

V.A.G 1275



V.A.G 1332



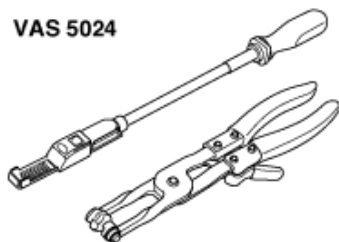
V.A.G 1332/6



V.A.G 1332/12



VAS 5024



G48-0011

1 - Track rod ball joint (right-side)

- ☐ Marked "C"
- ☐ Pressing off
⇒ [page 187](#)

2 - Lock nut, 50 Nm

- ☐ Counterhold at flats on track rod ball joint when loosening and tightening

3 - Hose clip (spring-type)

- ☐ Use spring-type clip pliers -VAS 5024 A- when installing

4 - Boot

- ☐ Unscrew track rod ball joint before removing
- ☐ Check for wear (slits, cracks); check sealing surfaces and sealing lips for dirt/damage
- ☐ If renewed, check central position of steering box and adjust if necessary ⇒ [page 192](#)
- ☐ Must not be twisted when toe setting has been adjusted

5 - Hose clip

- ☐ Renew - open with pin-cers
- ☐ Tightening ⇒ [page 193](#)

6 - Track rod

- ☐ Tightening torque at rack: 80 Nm
- ☐ Counterhold at flats on rack when loosening and tightening ⇒ [page 192](#).
- ☐ If renewed, check central position of steering box and adjust if necessary ⇒ [page 192](#)

7 - Sealing collar

8 - Seal

9 - Clamp

- ☐ Secures steering box to subframe
- ☐ Renew if thread is damaged

10 - Rubber insert

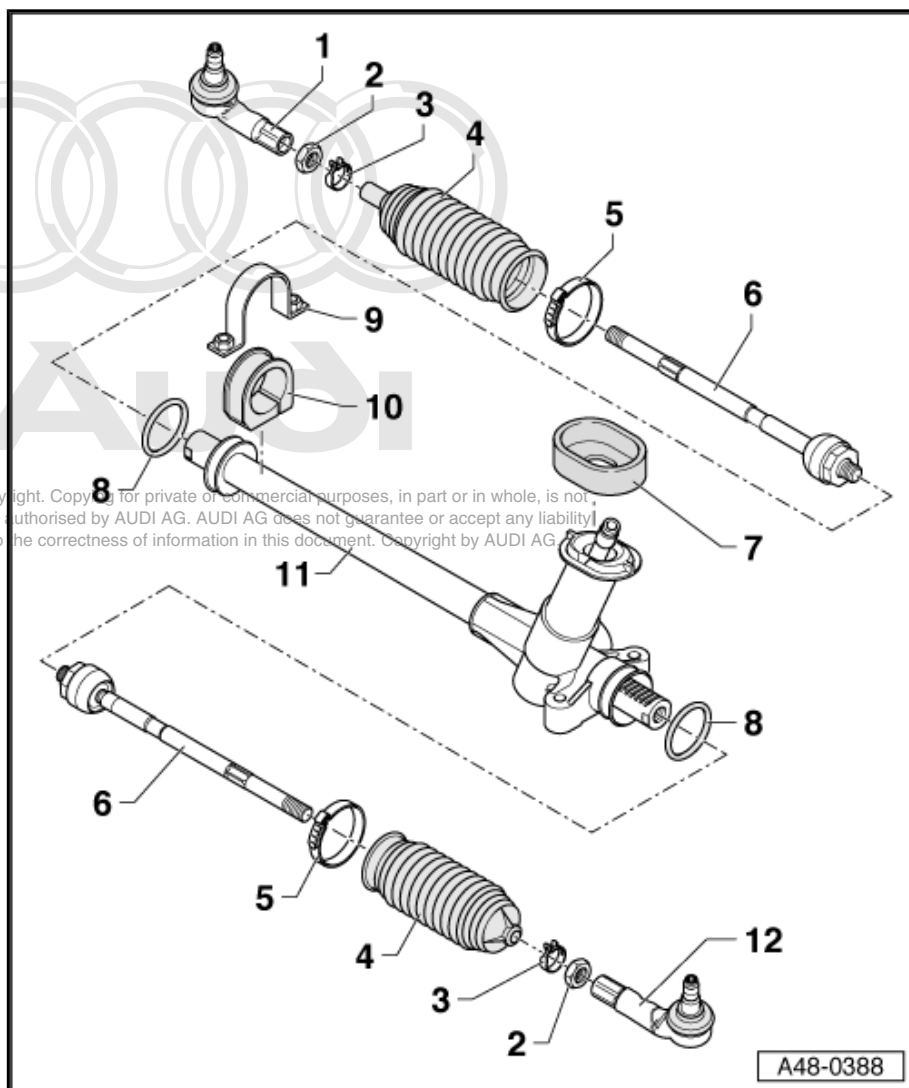
- ☐ Steering box/subframe mounting
- ☐ Note installation position: step in rubber part must point to the right

11 - Steering box

- ☐ Servicing is restricted to replacement of track rods and rubber boots.
- ☐ Removing and installing ⇒ [page 184](#)
- ☐ Adjusting ⇒ [page 193](#)

12 - Track rod ball joint (left-side)

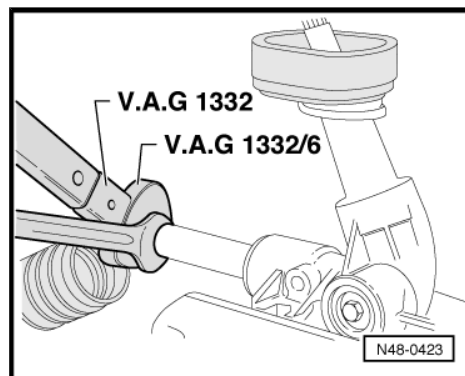
- ☐ Marked "D"
- ☐ Pressing off ⇒ [page 187](#)



2.3.1 Loosening and tightening track rods

The track rods can only be loosened and tightened with the steering box removed.

- Open large clip on rubber boot and pull back boot.
- Counterhold with open-end spanner (19 mm) when loosening and tightening.



2.3.2 Checking centre position of steering box and adjusting if necessary

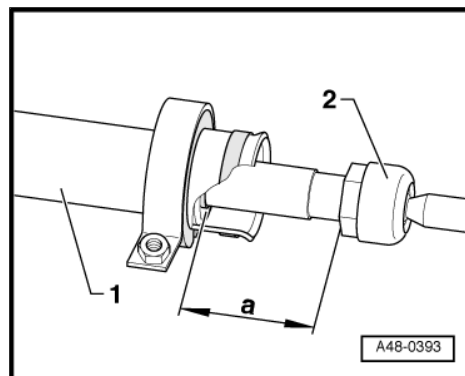
- Measure distance *a* to check whether steering box is in centre position.
- a* - = 67 mm; adjust if necessary by turning steering box pinion.



Note!

Dimension -a- is the same on both sides of the steering box.

- 1 - Manual steering box
- 2 - Track rod



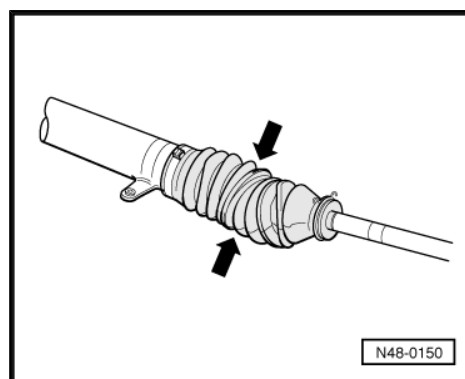
2.3.3 Installing boot

- Check boot for wear (slits, tears) and check sealing surfaces for dirt.

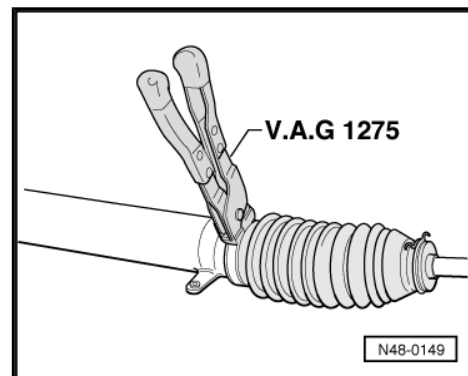


Note!

Take care not to twist the boot on installation (illustration shows incorrect installation).



- Tighten hose clip using hose clip pliers -V.A.G 1275- .



2.4 Adjusting manual steering box

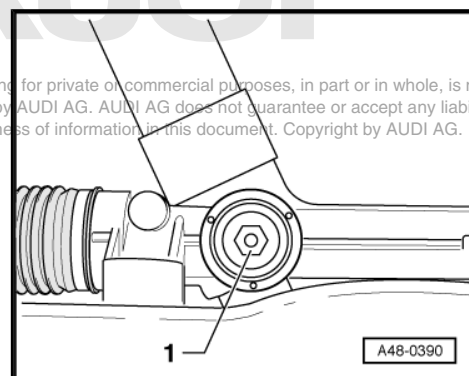


Note!

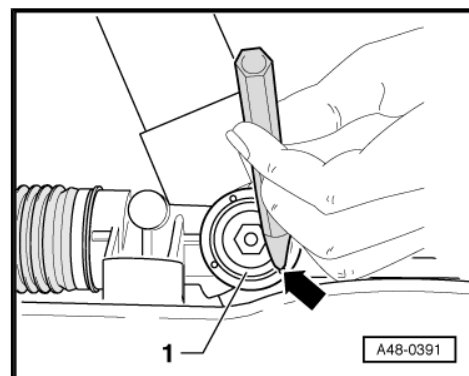
Two mechanics are required to perform adjustment. Adjust with engine switched off.

- Raise vehicle on lifting platform.
- 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 -1- into the cover until the knocking noise can no longer be heard inside the vehicle.
- Test drive the vehicle and check that the steering centres smoothly by itself back to the straight-ahead position after a turn.

Protected by copyright. Copying for private or 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.



- Secure the adjusting nut -1- to stop it turning by making a centre punch mark in the collar of the steering gear housing -arrow-.



3 Power steering

3.1 Design and function

The EPHS steering system (Electrically Powered Hydraulic Steering) varies the degree of power assistance according to the road speed and the rate of change in the steering angle.



Note!

The steering hydraulics pump -V119- consists of a gear pump ⇒ [Item d \(page 195\)](#) and an electric motor ⇒ [Item f \(page 195\)](#).

A gear pump integrated in the motor/pump unit is used in this steering system in place of the power steering pump (vane pump) in previous power-assisted steering systems.

This gear pump ⇒ [Item d \(page 195\)](#) is not driven directly from the engine, but by an electric motor ⇒ [Item f \(page 195\)](#) integrated in the motor/pump assembly.

The electric motor ⇒ [Item f \(page 195\)](#) only runs with the ignition switched on and when the engine is running.

Signals for road speed ⇒ [Item 10 \(page 195\)](#), engine speed ⇒ [Item 9 \(page 195\)](#) and rate of change in steering angle ⇒ [Item 13 \(page 195\)](#) are transmitted to the control unit ⇒ [Item e \(page 195\)](#). This control unit regulates the speed of the electric motor ⇒ [Item f \(page 195\)](#) as well as the gear pump ⇒ [Item d \(page 195\)](#) and thus the delivery rate or flow rate of the 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.

1 - Power steering box

2 - Power steering sensor - G250-

- ☐ Only installed up to chassis number 8Z1 N019 007 and from 8Z1 N019 032 to 8Z1 N019 035.
- ☐ A power steering sensor is no longer fitted as of chassis number 8Z1 N019 036. This function has been taken over by steering angle sender -G85-

3 - Steering column

4 - Control unit with display in dash panel insert -J285-

5 - Speedometer sender -G22-

6 - Engine control unit

7 - servotronic warning lamp -K92-

- ☐ In dash panel insert, connected via CAN BUS

8 - Signal for servotronic warning lamp -K92-

- ☐ Transmitted via CAN BUS

9 - Engine speed signal

- ☐ Transmitted via CAN BUS

10 - Road speed signal

- ☐ Transmitted via CAN BUS

11 - Banjo bolt with non-return valve

12 - Expansion hose

13 - Signal for rate of change of steering angle

14 - Return line

15 - Motor/pump unit, consisting of:

a - Screw cap

b - Hydraulic fluid reservoir

c - Pressure limiting valve

d - Gear pump

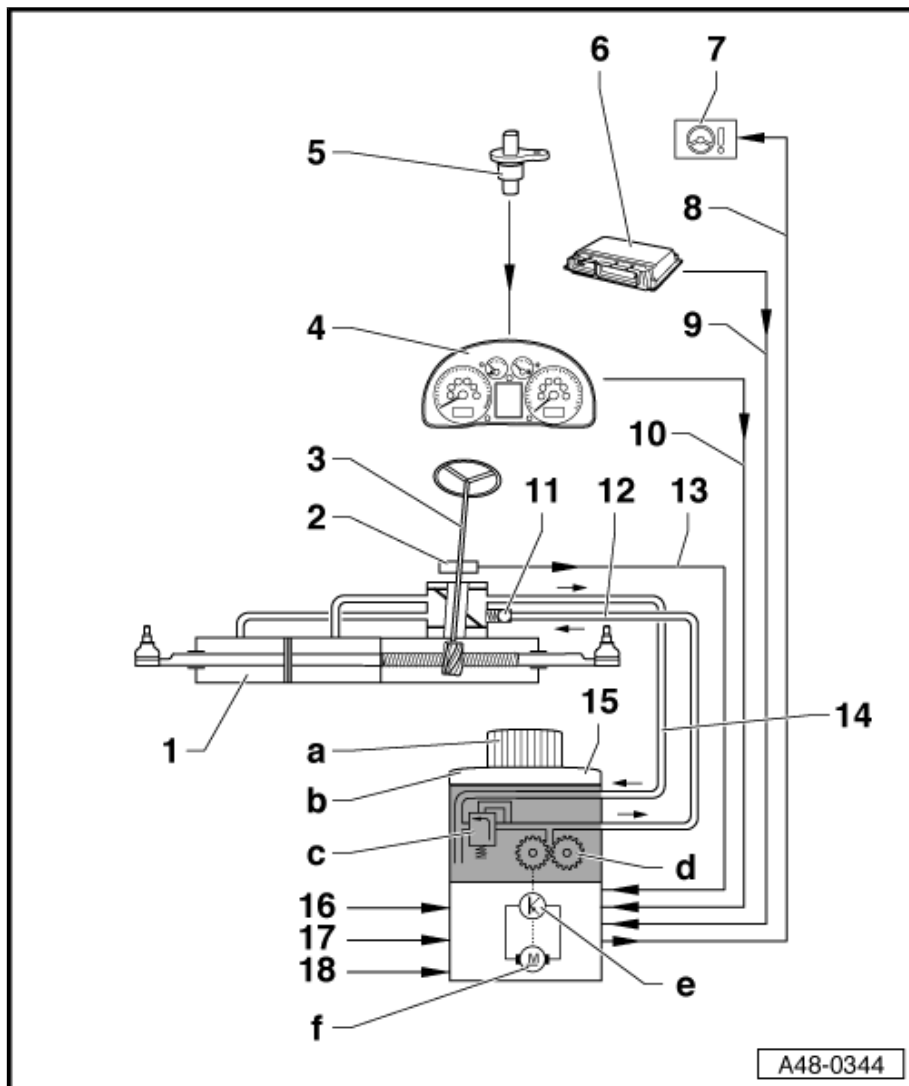
e - Power steering control unit -J500-

f - Electric motor

16 - Power steering terminal +30

17 - Power steering terminal +15

18 - Earth -



3.1.1 Function of pump

Ignition	Engine	Motor/pump unit	Power assistance
On	Running	Running	Available
Off	Not running Road speed = 0	Not running	None

3.1.2 Power assistance

Road speed	Rate of change of steering angle	Delivery rate (flow rate) of hydraulic fluid	Power assistance
Low e.g. city traffic, parking	High	High	High (light steering)
High e.g. motorway driving	Low	Low	Low (firm steering)

3.1.3 Safety cut-out

The electro-hydraulic power steering is protected by a safety cut-out which prevents it from being actuated immediately after a malfunction, a failure or a crash.

This safety cut-out can be overridden by switching off the ignition and restarting the engine. It may be necessary to wait about 15 minutes for the motor/pump unit to cool down if overheating has occurred.

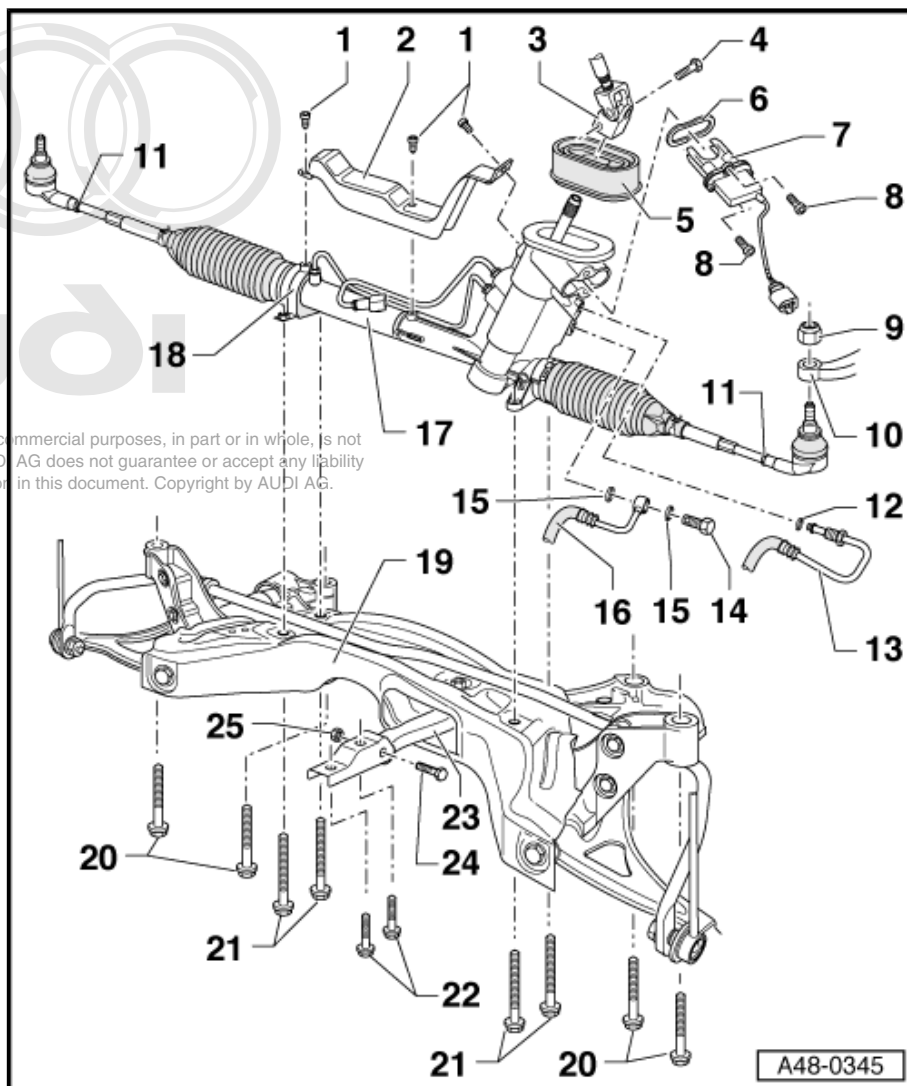
If, after waiting for this period, the safety cut-out cannot be cancelled by starting the engine, there is a fault in the vehicle's electrical system or the motor/pump unit is defective. In this case carry out a self-diagnosis and if necessary renew the motor/pump unit.

General notes ⇒ page 2



*Servicing is restricted to replacement of track rods and rubber boots. The necessary information can be found on ⇒ **page 207** onwards.*

- ☐ Steering box - motor/pump unit
- ☐ Must not be clamped during dismantling operations
- ☐ Tightening torque of union bolt: 30 Nm



14 - Banjo bolt with non-return valve, 36 Nm**15 - Seal**

- ☐ Renew

16 - Expansion hose

- ☐ Motor/pump unit - steering box
- ☐ Must not be clamped during dismantling operations

17 - Power steering box

- ☐ Adjusting ⇒ [page 211](#)
- ☐ Removing and installing ⇒ [page 199](#)
- ☐ Different versions available ⇒ Parts catalogue
- ☐ A washer is fitted between the rubber insert ⇒ [Item 18 \(page 198\)](#) and the subframe ⇒ [Item 19 \(page 198\)](#) ; this is no longer required when the steering box or the rubber insert is renewed (the washer was installed up to approx. week 31/00).

18 - Clamp with rubber insert

- ☐ A washer is fitted between the rubber insert and the subframe ⇒ [Item 19 \(page 198\)](#) ; this is no longer required when the steering box or the rubber insert is renewed (the washer was installed up to approx. week 31/00).

19 - Subframe

- ☐ With recess (in vehicles with petrol engine)
- ☐ Without recess (in vehicles with diesel engine)
- ☐ Removing and installing ⇒ [page 34](#)

20 - Hexagon bolt, 70 Nm and turn 90° further

- ☐ Renew

21 - Hexagon bolt

- ☐ 50 Nm and turn 90° further
- ☐ Renew

22 - Hexagon bolt, 50 Nm**23 - Pendulum support**

- ☐ Illustrated in Fig. for gearbox 02T

24 - Hexagon bolt

- ☐ Gearbox 02T and 02J
 - Renew hexagon bolt.
 - Insert hexagon bolt from left side.
- ☐ Tightening torque: 50 Nm and turn 90° further

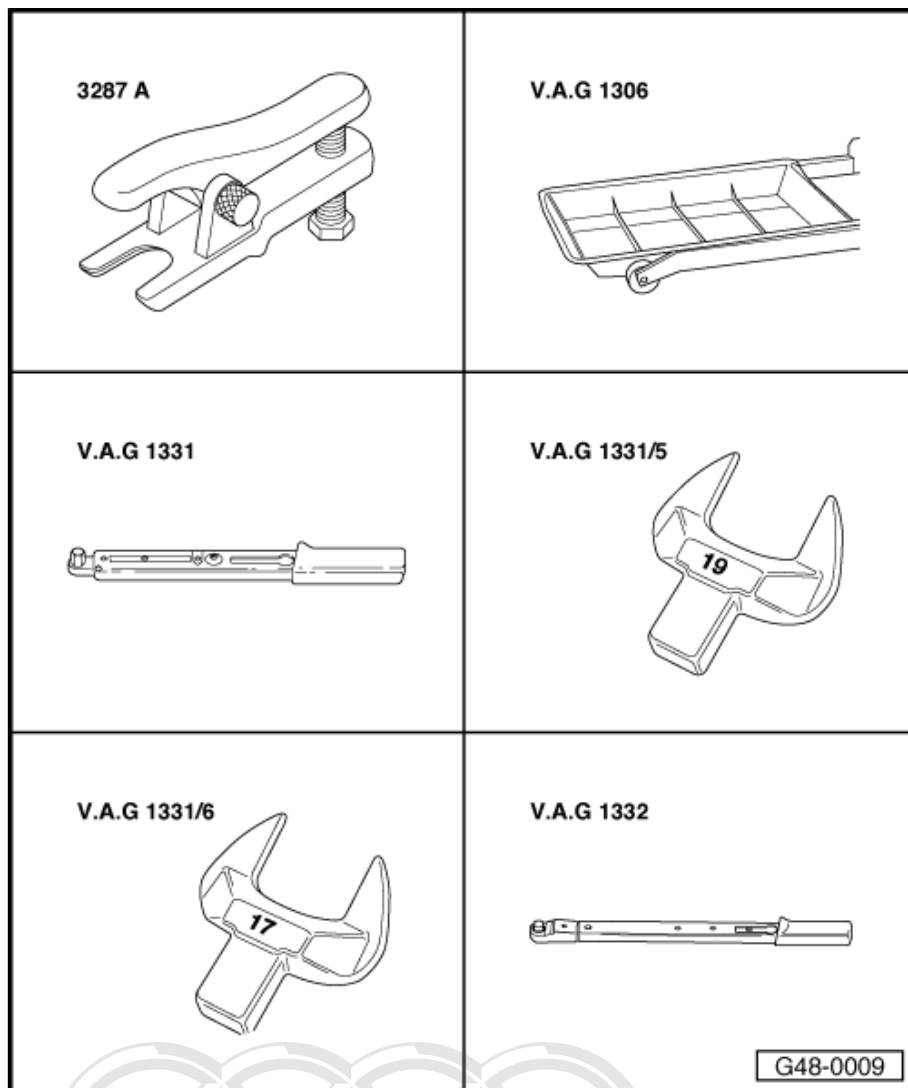
25 - Hexagon nut

- ☐ Only for gearboxes 02J and 02T

4.1 Removing and installing power steering box

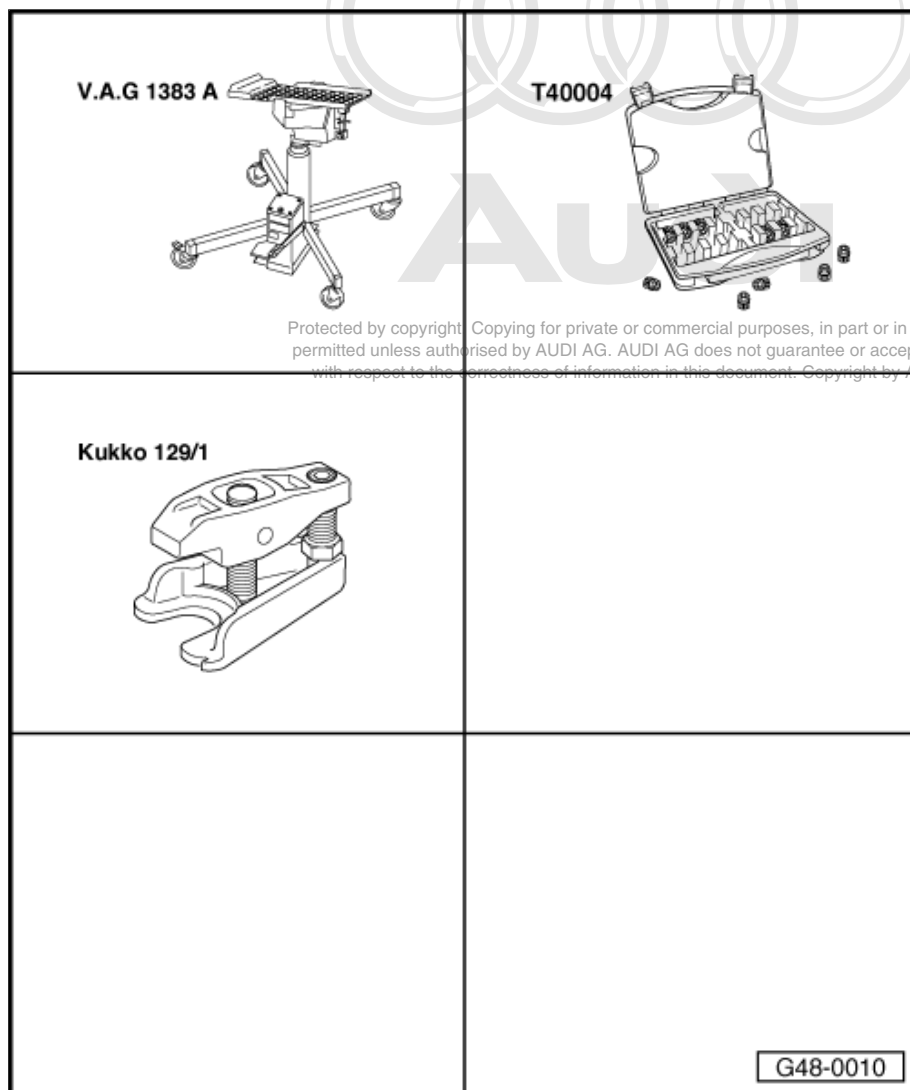
Special tools and workshop equipment required

- ◆ Ball joint puller -3287 A-
- ◆ Drip tray -V.A.G 1306-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Tool insert (19 mm) -V.A.G 1331/5-
- ◆ Tool insert (17 mm) -V.A.G 1331/6-
- ◆ 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.

- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Adapter set for tamper-proof wheel bolts -T40004-
- ◆ Ball joint puller -Kukko 129/1-
- ◆ Extractor bottle (commercially available)



4.1.1 Notes for working on power steering box

- ◆ Servicing is restricted to replacement of rubber boots and track rods.
- ◆ Absolute cleanliness is required when working on the power steering.
- ◆ Thoroughly clean all unions and the adjacent areas before disconnecting.
- ◆ After removal, place parts on a clean surface and cover them over if repairs are not to be performed immediately.
- ◆ Only use lint-free cloths.
- ◆ Only remove replacement parts from packaging immediately prior to installation.
- ◆ Only use genuine packaged parts.
- ◆ Do not re-use hydraulic fluid which has been drained off.
- ◆ Renew seals.
- ◆ Disposal ⇒ [page 3](#)

4.1.2 Removing

- Disconnect battery ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .



Caution

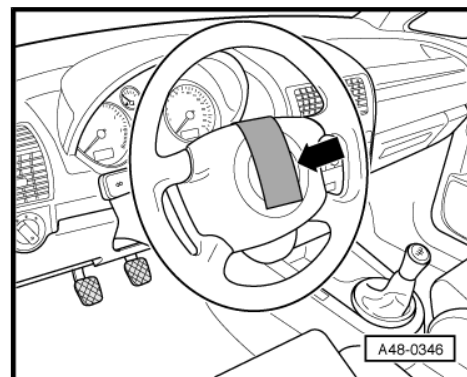
Turn steering wheel to centre position (wheels straight-ahead) and do not turn while performing repair work, as otherwise coil connector of airbag module could be damaged.

- To prevent unintentional turning, secure steering wheel in straight-ahead position with adhesive tape -arrow-.

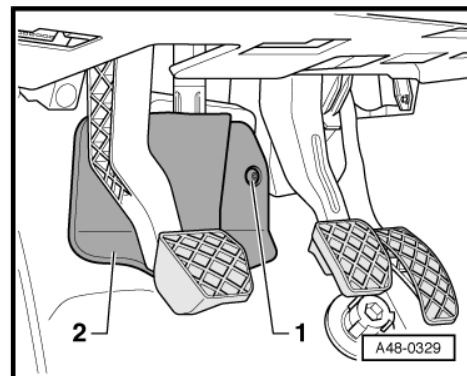


Note!

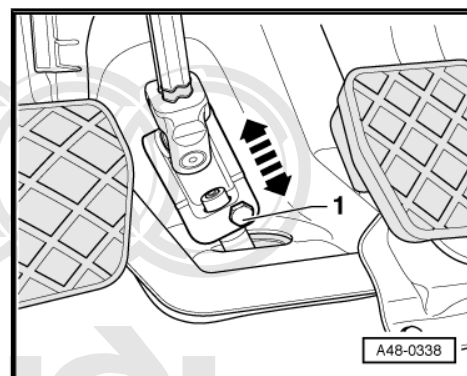
Only use adhesive tape that can be completely removed from the steering wheel afterwards without leaving marks.



- Remove bolt -1-.
- Pull cover -2- to the left and disengage.
- Remove floor mat on driver's side ⇒ General body repairs, interior; Rep. Gr. 70 ; Trim; Removing and installing front floor mat .



- Remove hexagon bolt -1-.
- Pull universal joint off steering box.
- Remove front wheels.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Loosen nut on swivel joint.

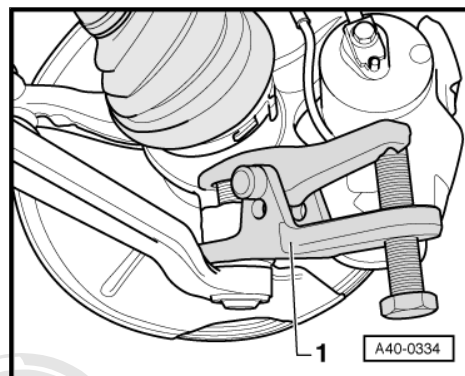


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Apply ball joint puller -3287 A- -1- as shown in the illustration and press out swivel joint.


Note!

- ◆ *Take care not to damage rubber boot when inserting ball joint puller.*
- ◆ *Leave nut screwed several turns onto track rod ball joint to protect thread.*

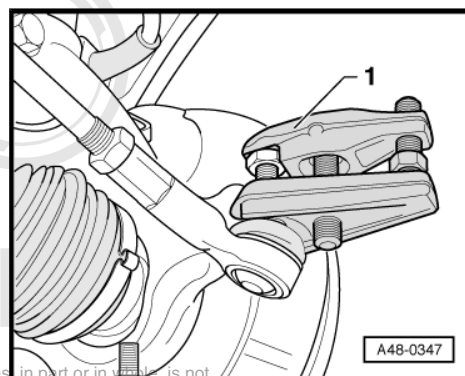


- Detach track rods from steering arms using ball joint puller -Kukko 129/1- -1-.

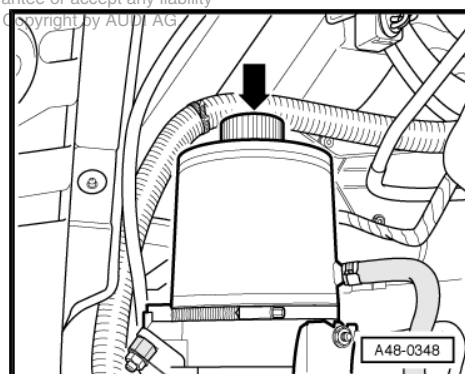

Note!

Take care not to damage rubber boot when inserting ball joint puller.

- Unscrew nut from track rod ball joint.
- Place drip tray under motor/pump unit to collect escaping hydraulic fluid.
- Remove screw cap -arrow- from fluid reservoir of motor/pump unit.
- Extract hydraulic fluid via the filler neck with a commercially available extractor bottle.


Note!

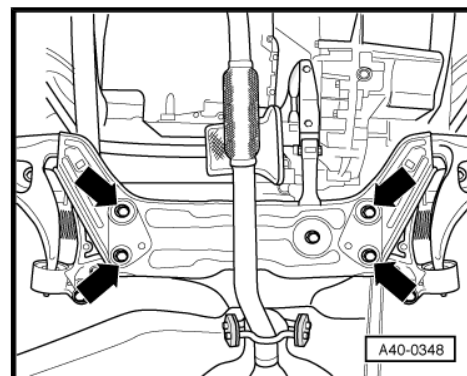
- ◆ *Small quantities of hydraulic fluid will remain in the motor/pump unit as well as in the return line and expansion hose after extraction.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*
- ◆ *The expansion hose and return line must not be clamped with hose clamps, e.g. -3094- or other tools. Clamping can cause damage to the expansion hose and return line.*
- ◆ *To avoid damage, a bending radius of less than 100 mm is not permissible when bending or suspending the expansion hose and return line.*
- Place drip tray under steering box to collect escaping hydraulic fluid.



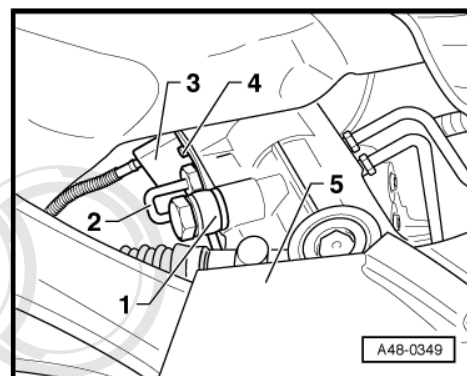
- Unbolt steering box from subframe -arrows-.
- Locate subframe ⇒ [page 12](#) .

Note!

When lowering subframe, ensure that the expansion hose, return line and wiring from power steering sensor -G250- are not under tension.



- Disconnect expansion hose -1- and return line -2- from steering box and seal off with a plastic bag and adhesive tape.
- Tie up expansion hose and return line.
- Seal tapped holes on steering box (e.g. with plastic screw plugs).
- Unscrew socket-head bolts -4-.
- If fitted, remove power steering sensor -3- from steering box.
- Lower subframe -5- with engine and gearbox jack - V.A.G 1383A- .
- Take out steering box towards the rear.



4.1.3 Installing



Caution

After installation of steering box, check position of steering wheel by test-driving vehicle, or check wheel alignment.

Note!

- ◆ For tightening torques, refer to ⇒ [page 197](#) onwards.
- ◆ When securing pipe connections, make sure pipes to not contact or rub against other components.
- ◆ New steering boxes are supplied complete with track rods and rubber boots.
- ◆ Before installing the power steering box, check the centre position of the rack and adjust if necessary.
- ◆ Do not attach universal joint of steering column to steering box pinion until vehicle is standing on ground and wheels are set to straight-ahead position.

- Measure distance -a- to check whether steering box is in centre position.

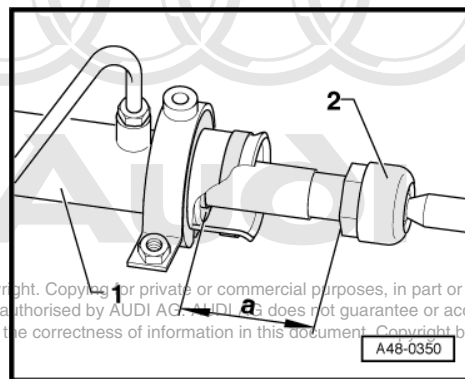
a - = 67 mm for vehicles with 1.2 TDI running gear; if necessary adjust by turning steering box pinion.

a - = 72.5 mm for vehicles with basic running gear; if necessary adjust by turning steering box pinion.

1 - Power steering box

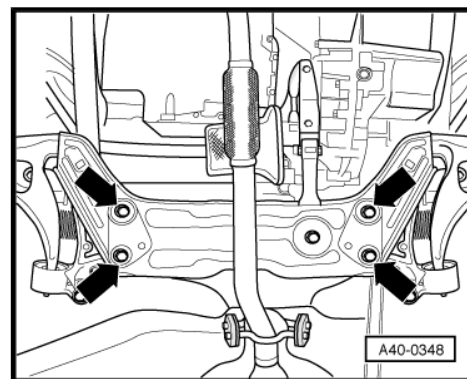
2 - Track rod

- Place steering box on subframe and install new bolts hand-tight.
- Check correct positioning of sealing collar at steering box pinion.
- Align subframe with pins from -T10096- installed in the body.
- Raise the subframe enough to allow the expansion hose, return line and wiring for power steering sensor -G250- (if fitted) to be installed on the power steering box without tension.
- Install power steering sensor -G250- (if fitted) in the steering box.
- Connect return line to rotary slide valve housing with a new O-ring.
- Connect expansion hose to rotary slide valve housing with new seals.
- Raise subframe and, at the same time, guide steering box pinion into opening in floor of vehicle.
- Install subframe ⇒ [page 34](#) .



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 hexagon bolts for steering box to specified tightening torque and then turn through specified angle -arrows-.
- Insert track rods in steering arms and secure in place. If the joint pin turns when tightening, counterhold with 6 mm hexagon key .
- Install swivel joints ➔ [page 21](#) .
- Install front left wheel housing liner ➔ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Fit and secure wheels ➔ [page 161](#) .
- Install noise insulation ➔ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Push universal joint onto steering pinion and secure with new bolt (tighten to 20 Nm, then turn through a further 90°).
- Install cover.
- Install floor mat on driver's side ➔ General body repairs, interior; Rep. Gr. 70 ; Trim; Removing and installing front floor mat .
- Connect battery ➔ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .
- Fill up with hydraulic fluid and bleed steering system ➔ [page 231](#) .
- Test-drive vehicle.



Caution

If, after the test drive, the steering wheel is misaligned with the wheels in the straight-ahead position, wheel alignment must be checked and adjusted if necessary.

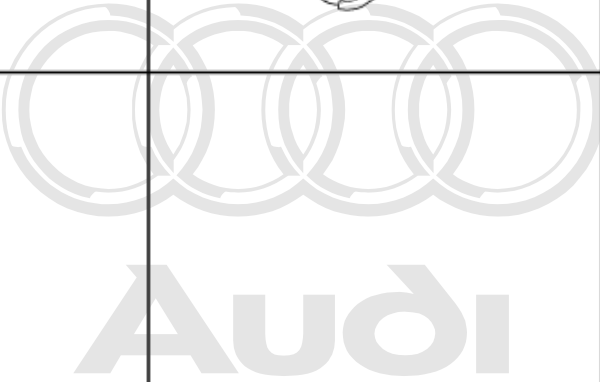
- Check and adjust wheel alignment ➔ [page 164](#) .

4.2 Removing and installing track rod ball joints

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 1332-
- ◆ Tool insert (22 mm) -V.A.G 1332/12-
- ◆ Adapter set for tamper-proof wheel bolts -T40004-
- ◆ Ball joint puller -Kukko 129/1-

V.A.G 1332 	V.A.G 1332/12 
T40004 	Kukko 129/1 
 G48-0016	

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

4.2.1 Removing

- Loosen nut on track rod ball joint.



Note!

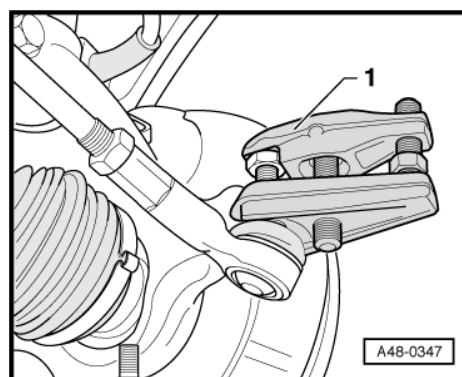
Leave nut screwed several turns onto track rod ball joint to protect thread.

- Detach track rods from steering arms using ball joint puller - Kukko 129/1- .



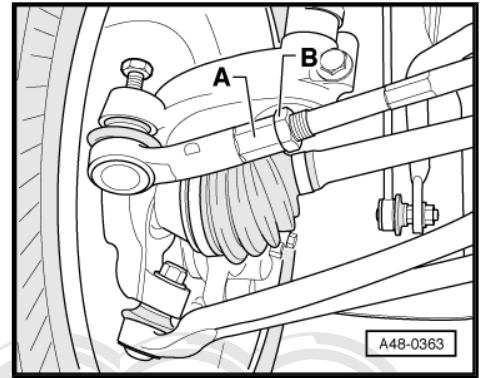
Note!

Take care not to damage rubber boot when inserting ball joint puller.



A48-0347

- When loosening and tightening lock nut -B-, counterhold track rod ball joint -A- with a 19 mm spanner .
- Loosen lock nut -B-.
- Unscrew nut from track rod ball joint.
- Unscrew track rod ball joint.

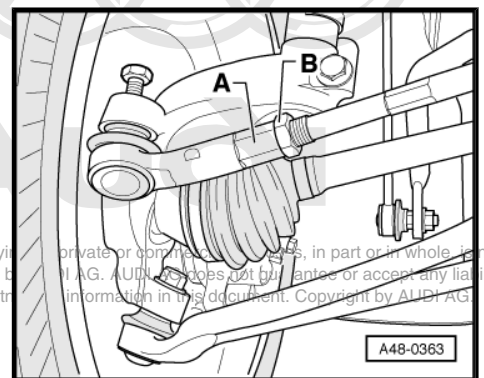


4.2.2 Installing

Installation is carried out in the reverse sequence.

- Tighten lock nut -B- to 50 Nm.

Make sure that rubber boots are not twisted.



Protected by copyright. Copying, reproduction, distribution, or use in any form, in part or in whole, is not permitted unless authorised by Audi AG. Audi AG does not give warranties or accept any liability for the information in this document. Copyright by Audi AG.

4.3 Servicing power steering box (TRW)

Special tools and workshop equipment required

- ◆ Hose clip pliers - V.A.G 1275-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Open-end spanner insert (32 mm) -V.A.G 1332/6-
- ◆ Tool insert (22 mm) -V.A.G 1332/12-
- ◆ Spring-type clip pliers -VAS 5024 A-

V.A.G 1275 	V.A.G 1332 
V.A.G 1332/6 	V.A.G 1332/12 
VAS 5024 	Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG. G48-0011

1 - Track rod ball joint (right-side)

- ☐ Marked "C"
- ☐ Pressing off
⇒ [page 205](#)

2 - Lock nut, 50 Nm

- ☐ Counterhold at flats on track rod ball joint when loosening and tightening

3 - Hose clip (spring-type)

- ☐ Use spring-type clip pliers - VAS 5024 A- when installing

4 - Boot

- ☐ Unscrew track rod ball joint before removing
- ☐ Check for wear (slits, cracks); check sealing surfaces and sealing lips for dirt/damage
- ☐ If renewed, check central position of steering box and adjust if necessary ⇒ [page 210](#)

5 - Hose clip

- ☐ Renew - open with pinners
- ☐ Tightening ⇒ [page 211](#)

6 - Track rod

- ☐ Tightening torque at rack: 80 Nm
- ☐ Counterhold at flats on rack when loosening and tightening ⇒ [page 210](#) .

- ☐ If renewed, check central position of steering box and adjust if necessary ⇒ [page 210](#)

7 - Seal

8 - Sealing collar

9 - Power steering box

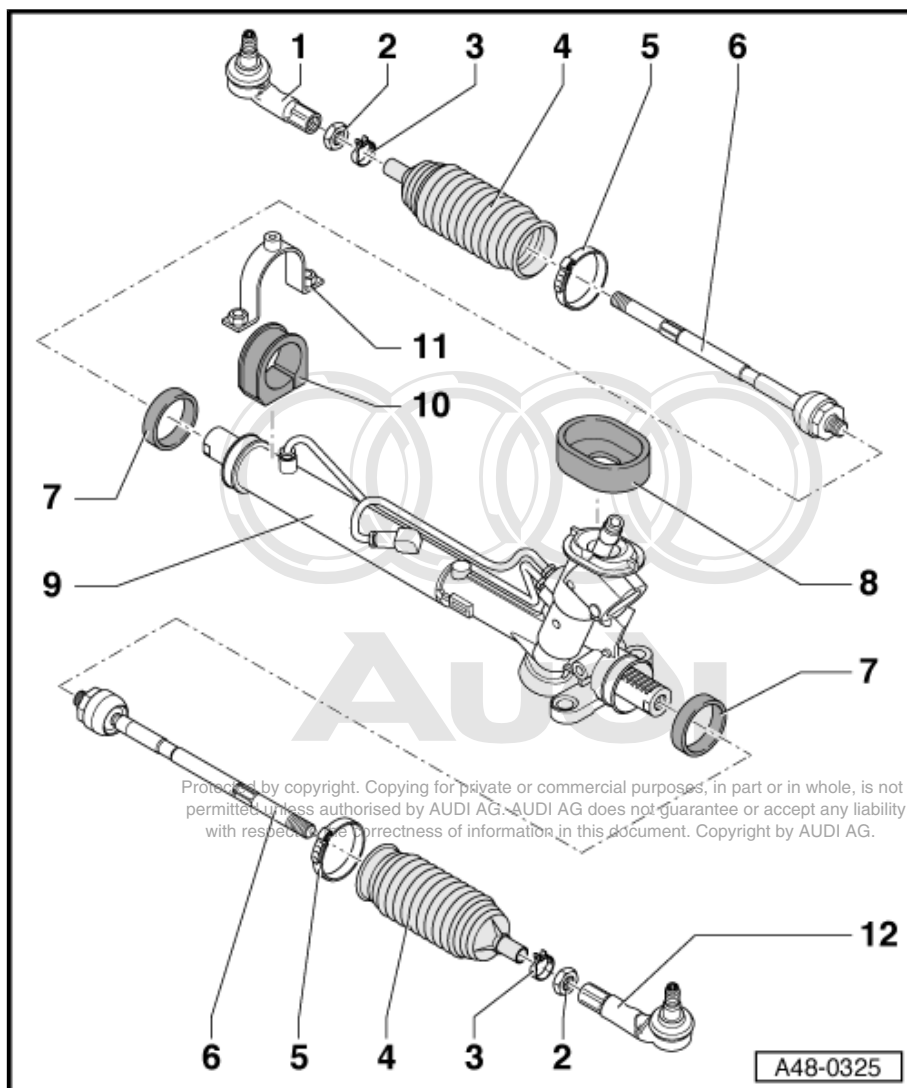
- ☐ Servicing is restricted to replacement of track rods and rubber boots.
- ☐ Removing and installing ⇒ [page 199](#)
- ☐ Adjusting ⇒ [page 211](#)
- ☐ Checking centre position ⇒ [page 210](#)
- ☐ Different versions available ⇒ Parts catalogue
- ☐ A washer is fitted between the rubber insert ⇒ [Item 10 \(page 209\)](#) and the subframe; this is no longer required when the steering box or the rubber insert is renewed (the washer was installed up to approx. week 31/00).

10 - Rubber insert

- ☐ Secures steering box to subframe
- ☐ Note installation position: step in rubber part must point to the right
- ☐ A washer is fitted between the rubber insert and the subframe; this is no longer required when the steering box or the rubber insert is renewed (the washer was installed up to approx. week 31/00).

11 - Clamp

- ☐ Secures steering box to subframe



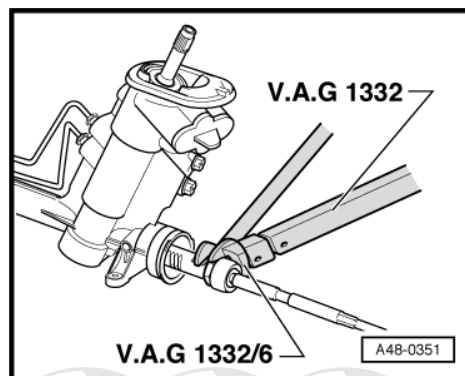
12 - Track rod ball joint (left-side)

- ☐ Marked "D"
- ☐ Pressing off ⇒ [page 205](#)

4.3.1 Loosening and tightening track rods

The track rods can only be loosened and tightened with the steering box removed.

- Open large clip on rubber boot and pull back boot.
- Counterhold with open-end spanner (19 mm) when loosening and tightening.



4.3.2 Checking centre position of steering box and adjusting if necessary

- Measure distance -a- to check whether steering box is in centre position.

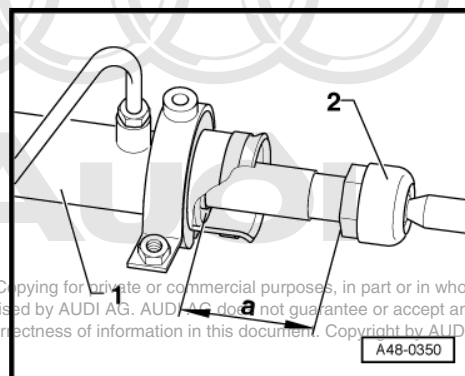
a - = 67 mm for vehicles with 1.2 TDI running gear; if necessary adjust by turning steering box pinion.

a - = 72.5 mm for vehicles with basic running gear; if necessary adjust by turning steering box pinion.



Note!

Dimension -a- is the same on both sides of the steering box.



1 - Power steering box

2 - Track rod

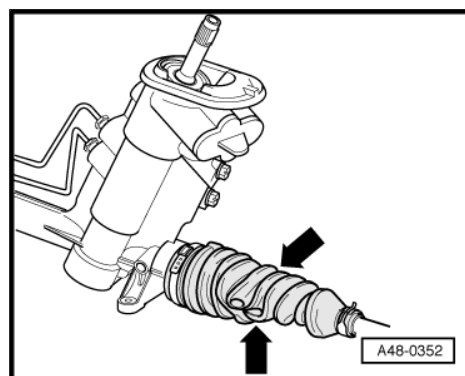
4.3.3 Installing boot

- Check boot for wear (slits, tears) and check sealing surfaces for dirt.

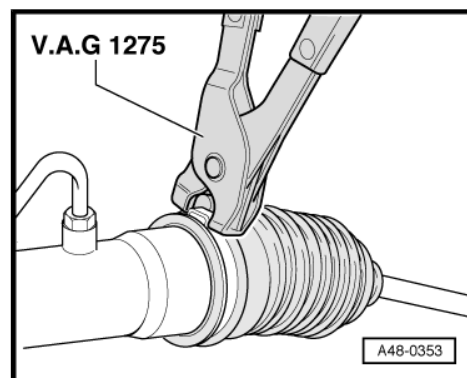


Note!

Take care not to twist the boot on installation (illustration shows incorrect installation).



- Tighten hose clip using hose clip pliers -V.A.G 1275- .



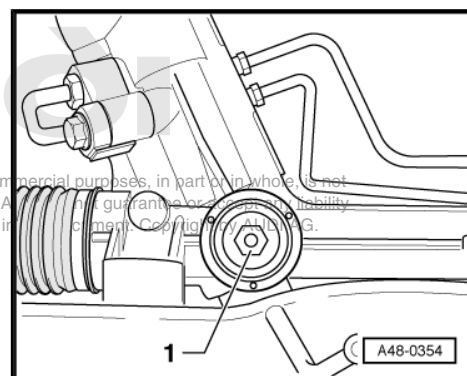
4.4 Adjusting power steering box (TRW)



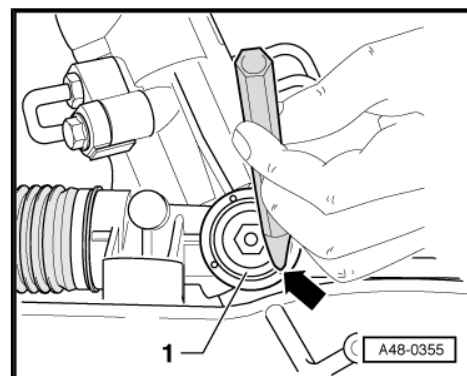
Note!

Two mechanics are required to perform adjustment. Adjust with engine switched off.

- Raise vehicle on lifting platform.
- 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 -1- into the cover until the knocking noise can no longer be heard inside the vehicle.
- Test drive the vehicle and check that the steering centres smoothly by itself back to the straight-ahead position after a turn. Correct the adjustment if necessary.



- Secure the adjusting nut -1- to stop it turning by making a centre punch mark in the collar of the steering gear housing -arrow-.



5 Power steering and hose connections: general view

1 - Motor/pump unit

- ❑ Checking ⇒ Running gear self-diagnosis for ESP, steering; Rep. Gr. 01

- ❑ Checking delivery pressure ⇒ [page 223](#)

- ❑ Removing and installing ⇒ [page 227](#)

2 - Spacer bracket

3 - Spacer

4 - Return line

- ❑ Must not be clamped during dismantling operations
- ❑ On vehicles with TDI engine, return line must be secured to drive shaft guard plate with cable tie ⇒ [page 212](#)

5 - Expansion hose

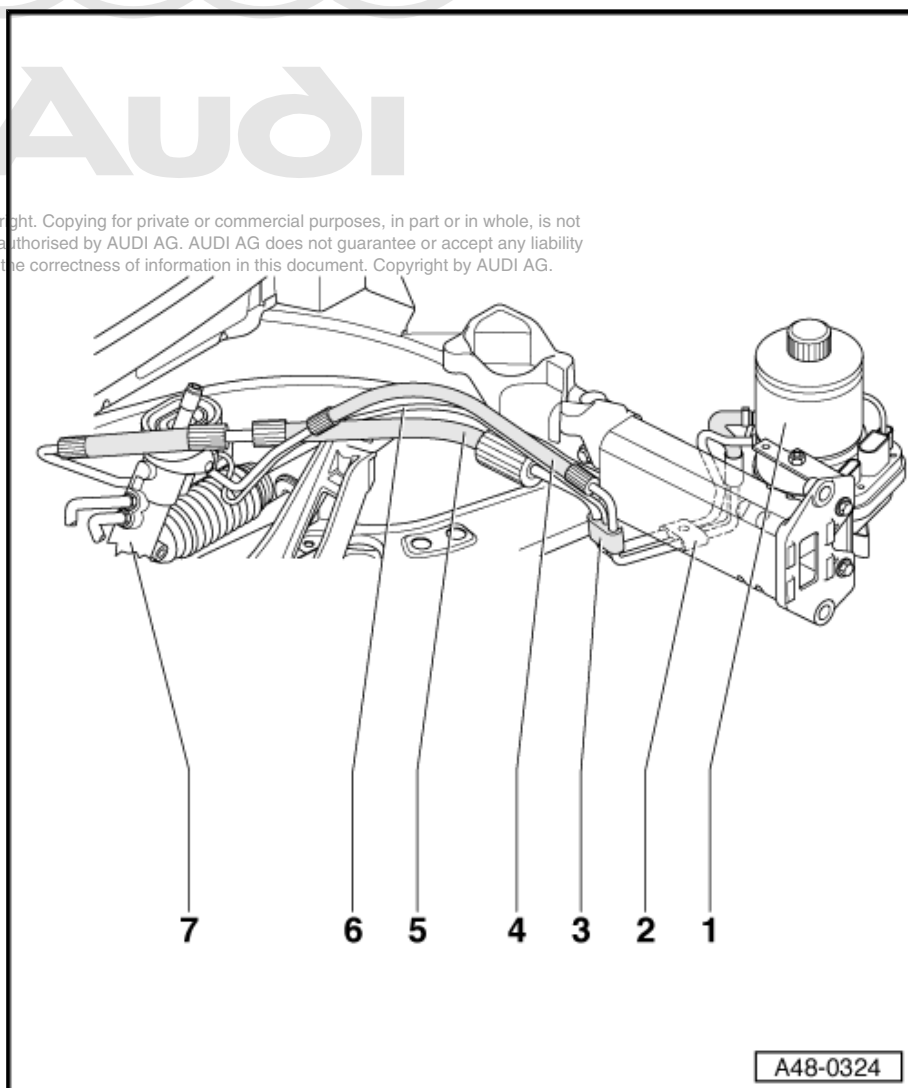
- ❑ Must not be clamped during dismantling operations

6 - Wiring from power steering sensor -G250-

- ❑ Power steering box - motor/pump unit

7 - Power steering box

- ❑ Removing and installing ⇒ [page 199](#)



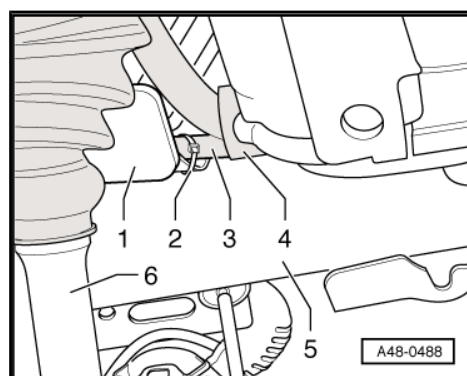
Securing return line

- Secure return line -3- to guard plate -1- for drive shaft -6- using cable tie -2-.

Note the following points:

- ◆ Take care not to pinch return line with cable tie.
- ◆ Do not push expansion hose -4- too far downwards.

5 - Longitudinal member



5.1 Removing and installing power steering sensor -G250-

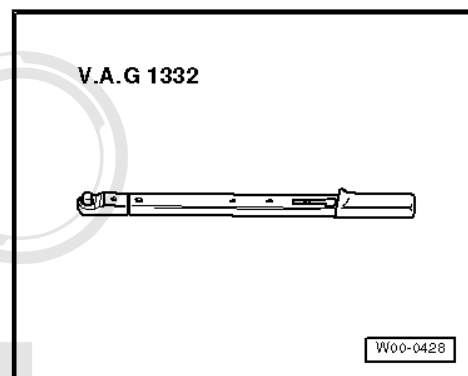
From chassis No. 8Z1 N019036 onwards the function of the power steering sensor -G250- is taken over by the steering angle sender -G85- on the steering column switch
⇒ [Item 2 \(page 195\)](#) .

On these vehicles the procedure for removing and installing the power steering sensor -G250- is therefore not required.

Removing and installing steering angle sender -G85- ➔ General body repairs, interior; Rep. Gr. 69 ; Servicing airbag on driver's side

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



- ◆ Adapter set for tamper-proof wheel bolts -T40004-

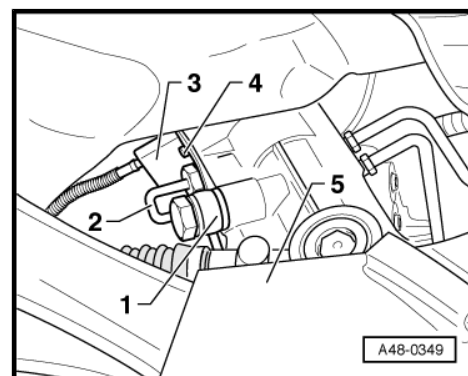
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept liability with respect to the correctness of information in this document. Copyright by AUDI AG



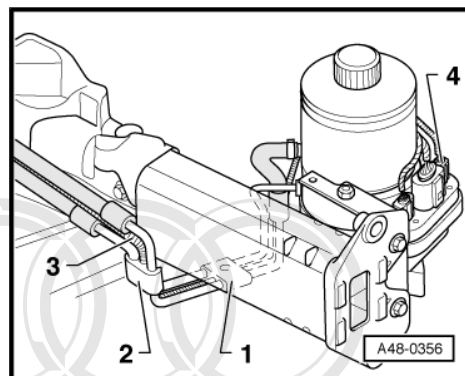
5.1.1 Removing

- Disconnect battery ➔ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .
- Remove front left wheel.
- Remove noise insulation ➔ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Remove front left wheel housing liner ➔ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Remove socket head bolts -4- from rotary slide valve housing on steering box.
- Pull power steering sensor -G250- -3- out of steering box.

- 1 - Expansion hose
- 2 - Return line
- 5 - Subframe



- Remove power steering sensor wiring -3- from spacer bracket -1- and spacer -2-.
- Unclip wire from retaining clip on motor/pump unit bracket.
- Detach electrical connector -4- from motor/pump unit.
- Take out power steering sensor -G250- .



5.1.2 Installing

Installation is carried out in the reverse sequence.

- Fit and secure wheel → [page 161](#) .

5.1.3 Tightening torques

Power steering sensor to steering box

5 Nm

Wheel bolts to wheel hub

120 Nm

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

5.2 Removing and installing hydraulic lines

Special tools and workshop equipment required

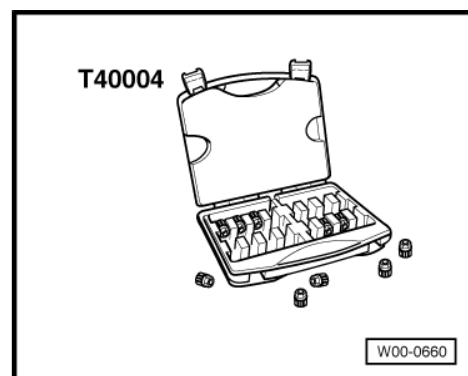
- ◆ Drip tray -V.A.G 1306-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Tool insert (19 mm) -V.A.G 1331/5-
- ◆ Tool insert (17 mm) -V.A.G 1331/6-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Spring-type clip pliers -VAS

V.A.G 1306 	V.A.G 1331
V.A.G 1331/5 	V.A.G 1331/6
V.A.G 1332 	VAS 5024

G48-0012

5024 A-

- ◆ Adapter set for tamper-proof wheel bolts -T40004-



- ◆ Extractor bottle (commercially available)

5.2.1 Removing

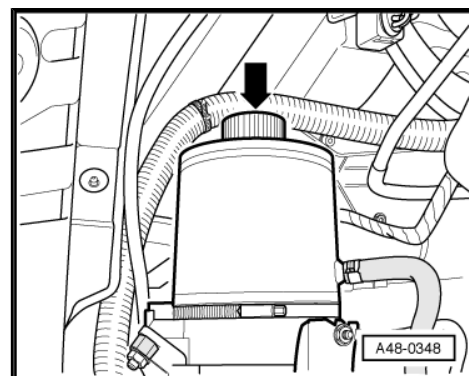


Note!

- ◆ Do not re-use hydraulic fluid which has been drained off.
- ◆ Renew seals.
- ◆ A small amount of hydraulic fluid remains in the motor/pump unit and steering box after extraction.

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.

- Remove front left wheel.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Place drip tray under motor/pump unit to collect escaping hydraulic fluid.
- Remove screw cap -arrow- from fluid reservoir of motor/pump unit.
- Extract hydraulic fluid via the filler neck with a commercially available extractor bottle.
- Place drip tray under steering box to collect escaping hydraulic fluid.

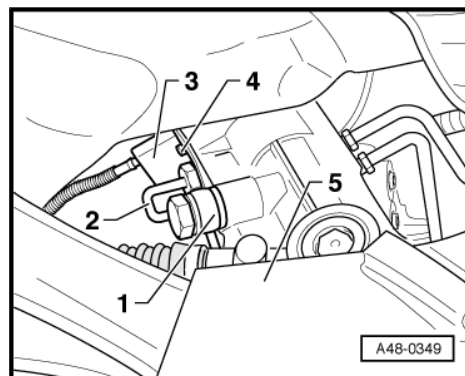


- Disconnect expansion hose -1- and return line -2- from steering box and seal off with a plastic bag and adhesive tape.
- Seal tapped holes on steering box (e.g. with plastic screw plugs).

3 - Power steering sensor -G250- (if fitted)

4 - Socket head bolt

5 - Subframe



- Detach motor/pump unit from longitudinal member.

Vehicles without headlight washer system

- Remove bolts -1- and -2-.

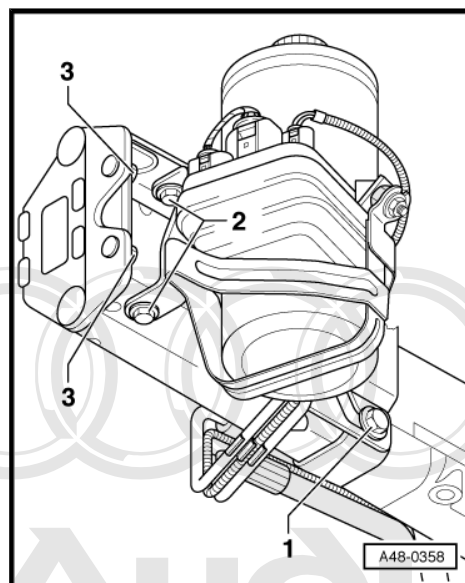
Vehicles with headlight washer system

- Remove bolts -1- and nuts -3-.



Note!

We recommend using a socket wrench set with 3/8" square drive for removing and installing nuts -3-.



Vehicles with TDI engine

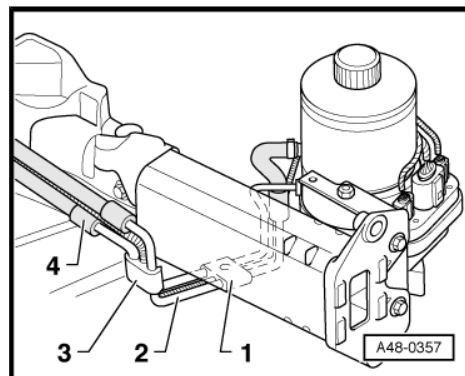
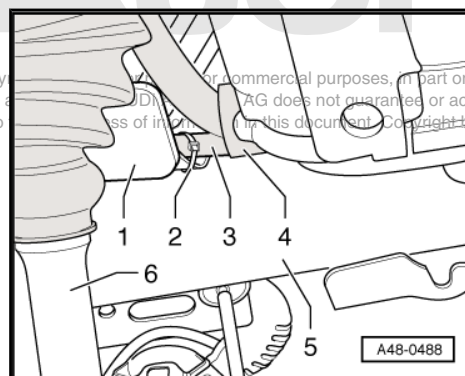
- Release cable tie -2- securing return line -3- to guard plate -1- for drive shaft -6-.

4 - Expansion hose

5 - Longitudinal member

All vehicles (continued):

- Tie up motor/pump unit, do not remove.
- Place drip tray under motor/pump unit to collect escaping hydraulic fluid.
- Remove expansion hose -4- and return line -2- from spacer bracket -1-.
- Detach spacer -3-.
- Detach expansion hose and return line from motor/pump unit.
- Seal tapped hole and connection on motor/pump unit.



5.2.2 Installing

- Connect expansion hose and return line to motor/pump unit.
Note installation position of expansion hose and return line.
- Install motor/pump unit.
- Clip on spacer for expansion hose, return line and power steering sensor wire.
- Install expansion hose, return line and power steering sensor wire in spacer bracket.

Vehicles with TDI engine

- Secure return line to guard plate for drive shaft using cable tie.
[⇒ page 212](#).

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

All vehicles (continued):

- Connect return line to rotary slide valve housing with a new O-ring.
- Connect expansion hose to rotary slide valve housing with new seals.
- Fill up with hydraulic fluid and bleed steering system
[⇒ page 231](#).
- Install front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Fit and secure wheel [⇒ page 161](#) .

5.2.3 Tightening torques

Motor/pump unit bracket to body and adapter	23 Nm
Motor/pump unit adapter to body	23 Nm
Expansion hose to steering box	36 Nm
Return line to steering box	30 Nm
Expansion hose to motor/pump unit	30 Nm
Wheel bolts to wheel hub	120 Nm

6 Routing of wiring for power steering sensor -G250- (6Q2 423 291 A): general view



Note!

- ◆ The power steering sensor -G250- 6Q2 493 291 A (VW) has been approved for use in the service sector on LHD and RHD vehicles. The installation of this sensor requires different wiring routing and fasteners.
- ◆ This section only describes the points where new routing and fasteners are required.
- ◆ When renewing the power steering sensor -G250- the new routing and fasteners are required on all vehicles.
- ◆ Use cable clips ⇒ Parts catalogue for securing wiring for power steering sensor -G250- .
- ◆ Take care not to pinch expansion hose with cable tie.

6.1 Routing of wiring on LHD vehicles

1 - Wiring harness for electro-hydraulic power steering

2 - Motor/pump unit

3 - Wiring from power steering sensor -G250-

- ☐ Power steering box - motor/pump unit
- ☐ It is important to route the wiring in a loop as illustrated (Fig. A48-0539).

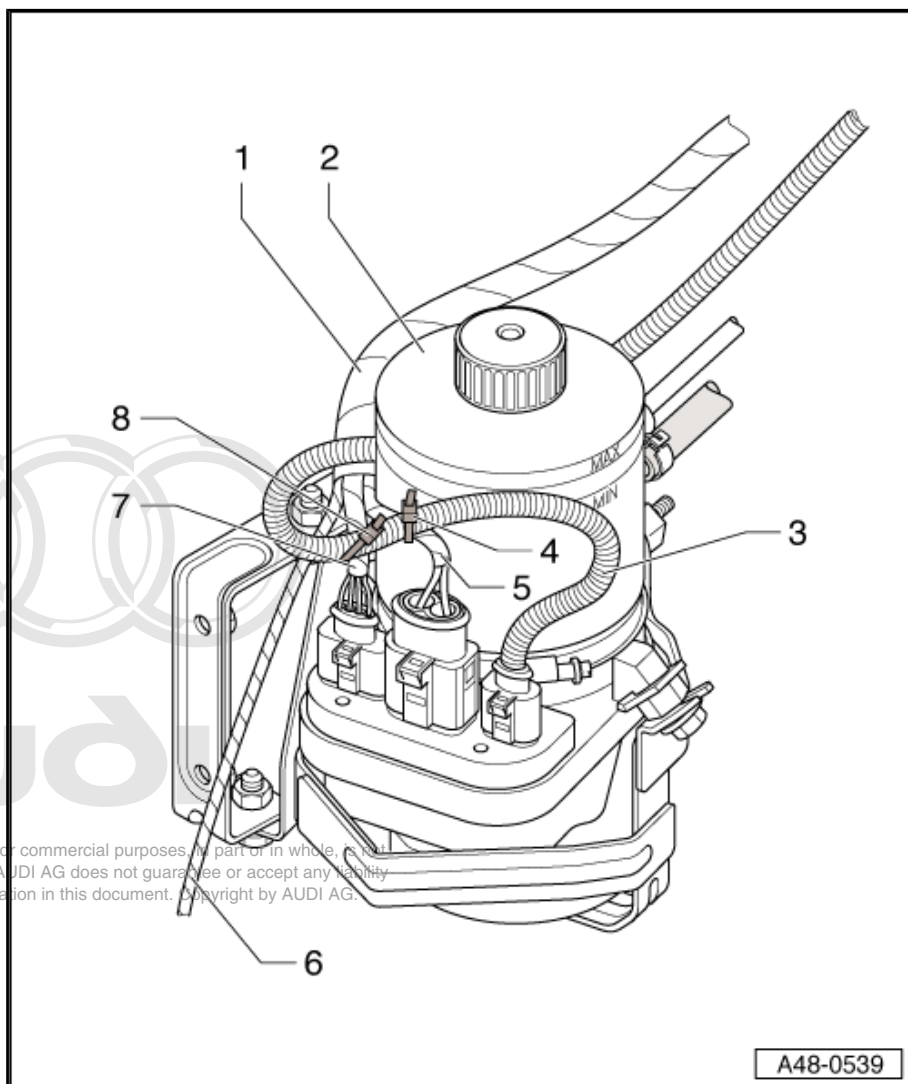
4 - Securing point: wiring for power steering sensor -G250- ⇒ [Item 3 \(page 218\)](#) to wiring for electro-hydraulic power steering ⇒ [Item 5 \(page 218\)](#)

5 - Wiring for electro-hydraulic power steering

6 - Front-end wiring harness

7 - Wiring for electro-hydraulic power steering

8 - Securing point: wiring for power steering sensor -G250- ⇒ [Item 3 \(page 218\)](#) to wiring for electro-hydraulic power steering ⇒ [Item 7 \(page 218\)](#)



6.2 Routing of wiring on RHD vehicles

6.2.1 Routing and securing points of wiring for power steering sensor -G250- on power steering box

1 - Wiring from power steering sensor -G250-

- ❑ Power steering box - motor/pump unit
- ❑ This wiring must be routed and secured as illustrated in Figs. A48-0540 and A48-0541
⇒ [page 220](#).

2 - Power steering sensor - G250-

3 - Securing point: wiring for power steering sensor -G250- ⇒ [Item 2 \(page 219\)](#) to hydraulic pipe ⇒ [Item 5 \(page 219\)](#) on power steering box

4 - Securing point: wiring for power steering sensor -G250- ⇒ [Item 2 \(page 219\)](#) to hydraulic pipe ⇒ [Item 5 \(page 219\)](#) on power steering box

5 - Hydraulic pipe on power steering box

6 - Power steering box

7 - Securing point: wiring for power steering sensor -G250- ⇒ [Item 2 \(page 219\)](#) to expansion hose (pressure line) ⇒ [Item 8 \(page 219\)](#)

8 - Expansion hose

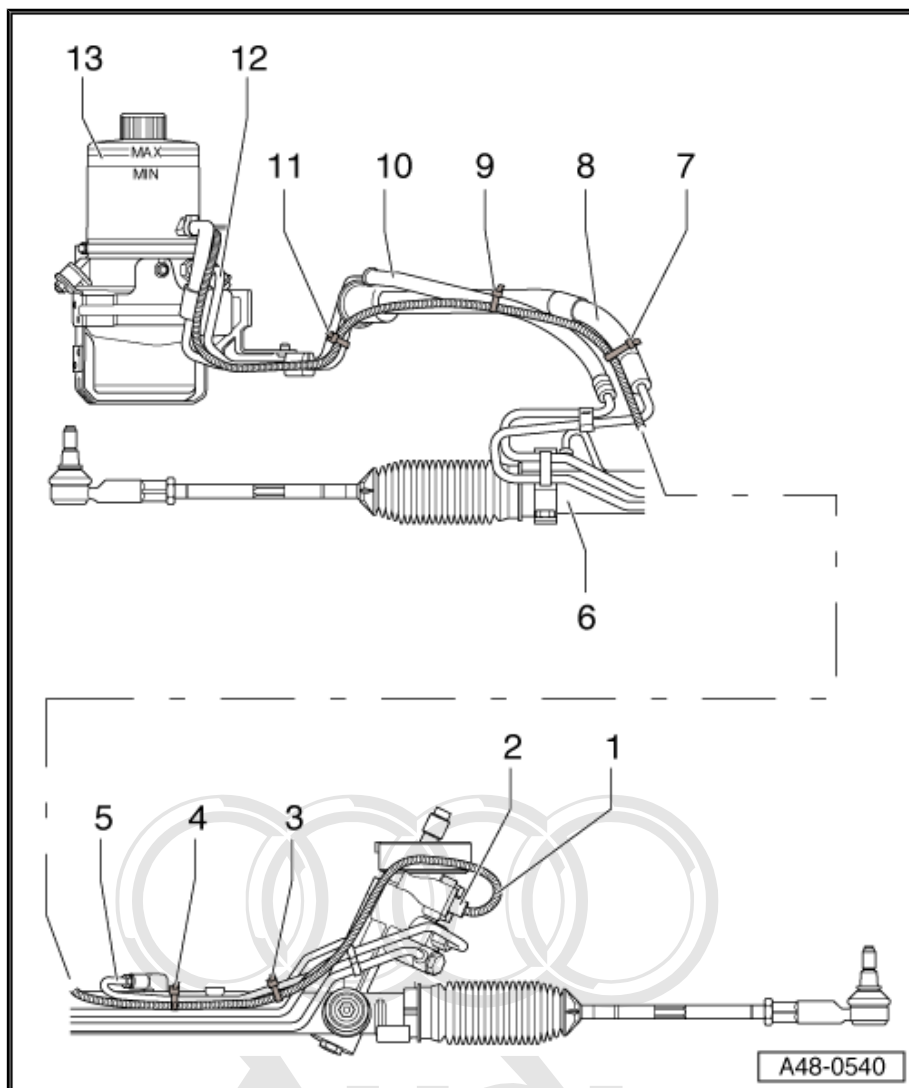
9 - Securing point: wiring for power steering sensor -G250- ⇒ [Item 2 \(page 219\)](#) to return line ⇒ [Item 10 \(page 219\)](#)

10 - Return line

11 - Securing point: wiring for power steering sensor -G250- ⇒ [Item 2 \(page 219\)](#) to pressure line ⇒ [Item 12 \(page 219\)](#)

12 - Pressure line

13 - Motor/pump 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.

6.2.2 Additional routing and securing points of wiring for power steering sensor - G250- on motor/pump unit

1 - Securing point: wiring for power steering sensor -G250-
⇒ [Item 2 \(page 220\)](#) to pressure line ⇒ [Item 4 \(page 220\)](#)

2 - Wiring from power steering sensor -G250-

- ❑ Power steering box - motor/pump unit
- ❑ This wiring must be routed and secured as illustrated in Figs. A48-0540 ⇒ [page 219](#) and A48-0541.

3 - Wiring harness for electro-hydraulic power steering

4 - Pressure line

5 - Return line

6 - Motor/pump unit

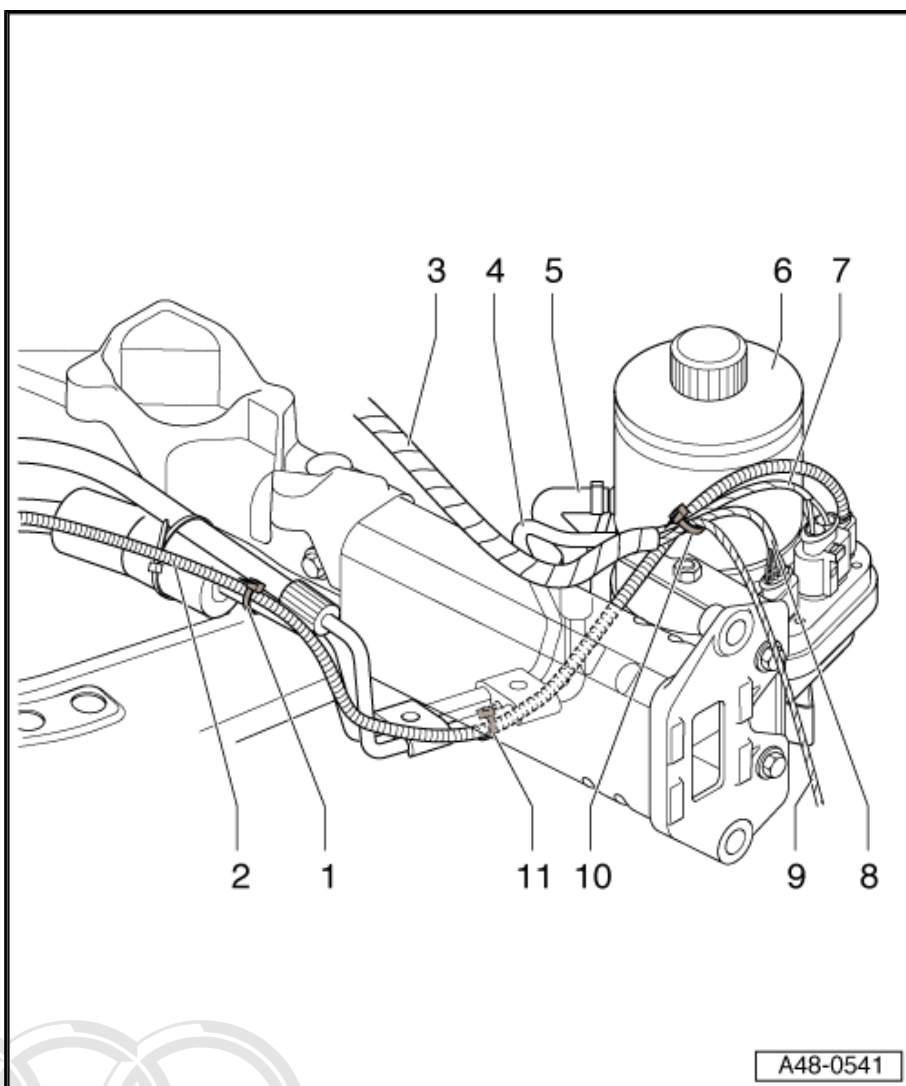
7 - Wiring for electro-hydraulic power steering

8 - Wiring for electro-hydraulic power steering

9 - Front-end wiring harness

10 - Securing point: wiring for power steering sensor -G250-
⇒ [Item 2 \(page 220\)](#) to wiring for electro-hydraulic power steering ⇒ [Item 7 \(page 220\)](#) and ⇒ [Item 8 \(page 220\)](#)

11 - Securing point: wiring for power steering sensor -G250-
⇒ [Item 2 \(page 220\)](#) to return line ⇒ [Item 5 \(page 220\)](#)



7 Motor/pump unit: exploded view



Note!

- ◆ *There is no provision for servicing of motor/pump unit.*
- ◆ *If problems are reported, trace the fault by means of a pressure test and a leakage test.*
- ◆ *The motor/pump unit can also be checked via self-diagnosis
⇒ Running gear, self-diagnosis for ESP, steering; Rep. Gr. 01.*
- ◆ *If a fault is found, the motor/pump unit must be renewed.*
- ◆ *The following parts can be renewed on the motor/pump unit:
screw cap, O-ring for screw cap, mountings, motor/pump unit bracket, securing bolts and nuts.*
- ◆ *Always check steering system for leaks if fluid level in reservoir is low.*
- ◆ *If leakage is visible at the connections, re-tighten connections and wipe dry.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*
- ◆ *Renew seals and O-rings.*
- ◆ *Disposal ⇒ [page 5](#)*
- ◆ *Quantity of fluid in system: approx. 0.8 ltr.*

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

1 - Motor/pump unit

- ☐ No provision for servicing
- ☐ Is protected by a safety cut-out in the event of malfunction, failure or crash ⇒ [page 194](#)
- ☐ Only operates when ignition is "ON" and engine is running
- ☐ Checking delivery pressure ⇒ [page 223](#)
- ☐ Self-diagnosis ⇒ Running gear self-diagnosis for ESP, steering; Rep. Gr. 01
- ☐ Removing and installing ⇒ [page 227](#)

2 - Hexagon bolt, 23 Nm

3 - Hexagon nut, 7 Nm

- ☐ When tightening, counterhold at mounting ⇒ [Item 9 \(page 222\)](#)

4 - Retainer

- ☐ For wiring from power steering sensor -G250-

5 - Bracket

- ☐ For motor/pump unit

6 - Hexagon nut, 23 Nm

7 - Adapter

- ☐ For motor/pump unit bracket

8 - Spacer bracket

- ☐ For hoses

9 - Mounting

- ☐ Tightening torque: 7 Nm
- ☐ Check for damage (splits in rubber, metal plate detached from rubber) and renew if necessary

10 - O-ring

- ☐ For screw cap

11 - Screw cap

- ☐ With dipstick

12 - O-ring

- ☐ Always renew if expansion hose is disconnected

13 - Expansion hose

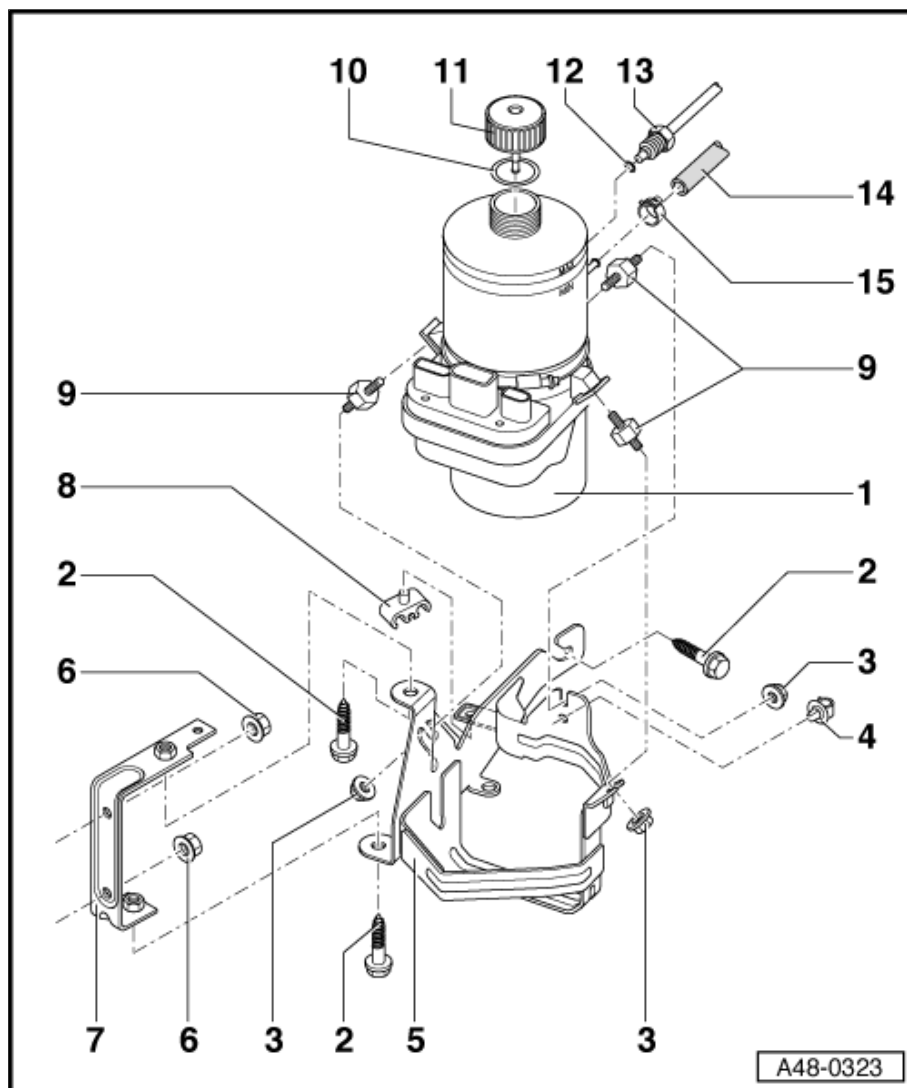
- ☐ Motor/pump unit - power steering box
- ☐ Tightening torque of union bolt: 30 Nm

14 - Return line

- ☐ Power steering box - motor/pump unit

15 - Hose clip (spring-type)

- ☐ Use spring-type clip pliers -VAS 5024 A- when installing

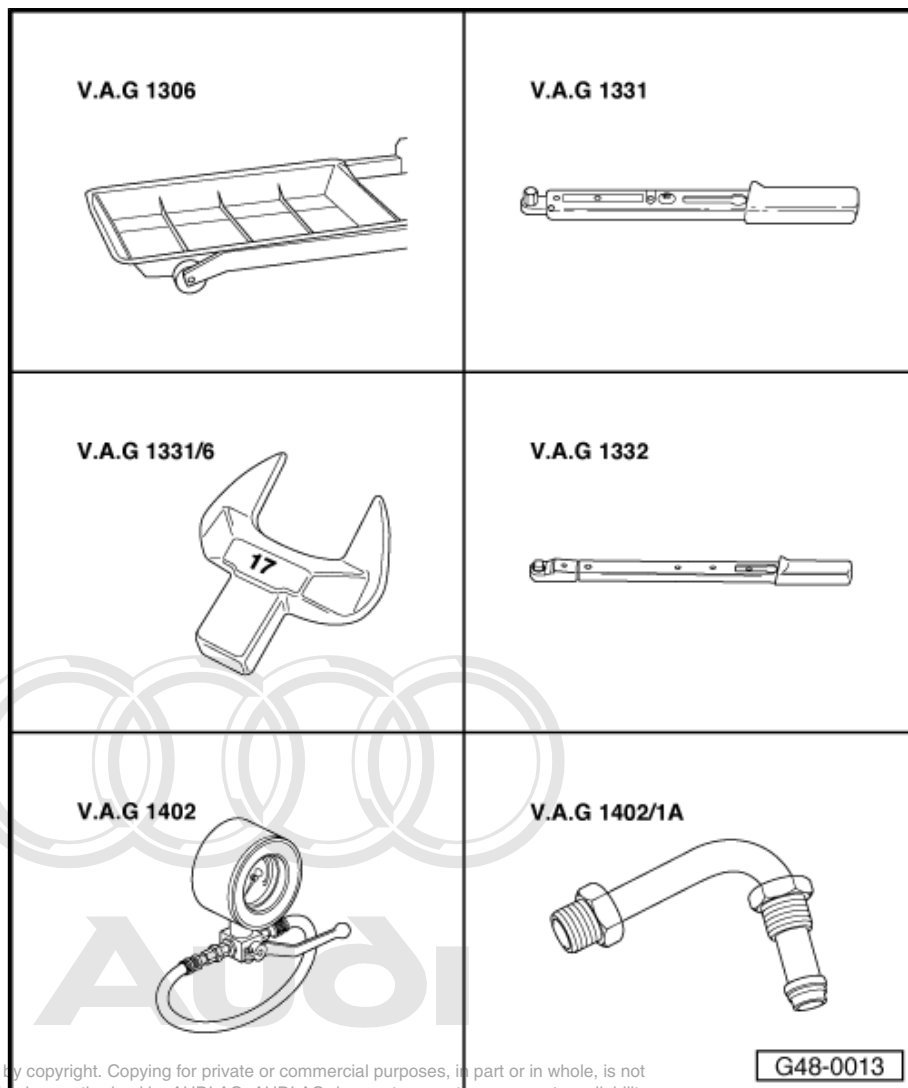


protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

7.1 Checking delivery pressure of motor/pump unit

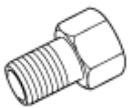
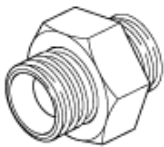
Special tools and workshop equipment required

- ◆ Drip tray -V.A.G 1306-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Tool insert (17 mm) -V.A.G 1331/6-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Power steering tester - V.A.G 1402-
- ◆ Adapter -V.A.G 1402/1A-



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

- ◆ Adapter -V.A.G 1402/2-
- ◆ Adapter -V.A.G 1402/3-
- ◆ Hose from adapter set - V.A.G 1402/6-
- ◆ Adapter set for tamper-proof wheel bolts -T40004-
- ◆ Extractor bottle (commercially available)

V.A.G 1402/2 	V.A.G 1402/3 
V.A.G 1402/6 	T40004 
	G48-0014


Note!

- ◆ *Small quantities of hydraulic fluid will remain in the motor/pump unit as well as in the return line and expansion hose after extraction.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*
- ◆ *Renew seals.*
- ◆ *The expansion hose and return line must not be clamped with hose clamps, e.g. -3094- or other tools. Clamping can cause damage to the expansion hose and return line.*
- ◆ *To avoid damage, a bending radius of less than 100 mm is not permissible when bending or suspending the expansion hose and return line.*

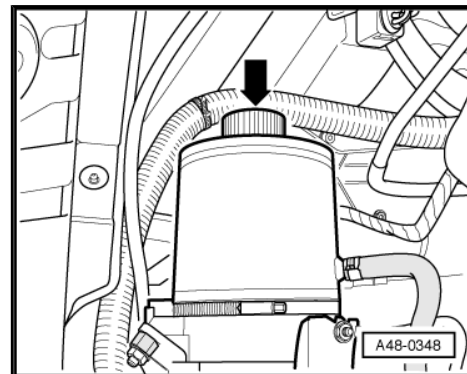
7.1.1 Requirements for test

- No leaks in system
- Expansion hose and return line not kinked or constricted

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

7.1.2 Procedure

- Remove front left wheel.
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Place drip tray under motor/pump unit to collect escaping hydraulic fluid.
- Remove screw cap -arrow- from fluid reservoir of motor/pump unit.
- Extract hydraulic fluid via the filler neck with a commercially available extractor bottle.



- Detach motor/pump unit from longitudinal member.

Vehicles without headlight washer system

- Remove bolts -1- and -2-.

Vehicles with headlight washer system

- Remove bolts -1- and nuts -3-.

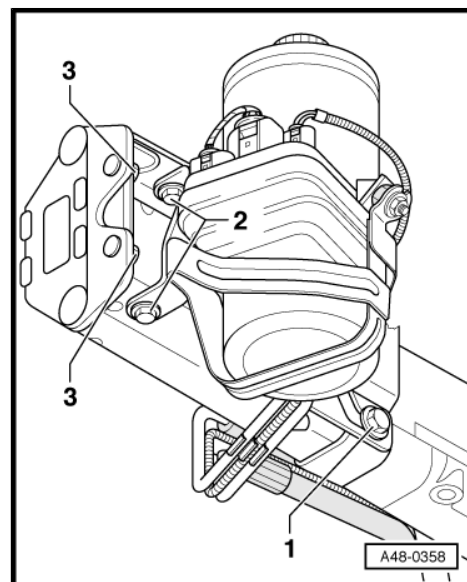


Note!

We recommend using a socket wrench set with 3/8" square drive for removing and installing nuts -3-.

All vehicles (continued):

- Detach expansion hose and return line from spacer bracket.
- Move motor/pump unit with bracket or with bracket and adapter upwards, if necessary tie up or support motor/pump unit.
- Disconnect expansion hose from motor/pump 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.

- Connect power steering tester -V.A.G 1402-
- Attach tester to front suspension. Hoses must not be under tension.

1 - Power steering tester -V.A.G 1402-

2 - Adapter -V.A.G 1402/3-

3 - Hose from adapter set -V.A.G 1402/6-

4 - Adapter -V.A.G 1402/2-

5 - Adapter -V.A.G 1402/1A-

A - Expansion hose

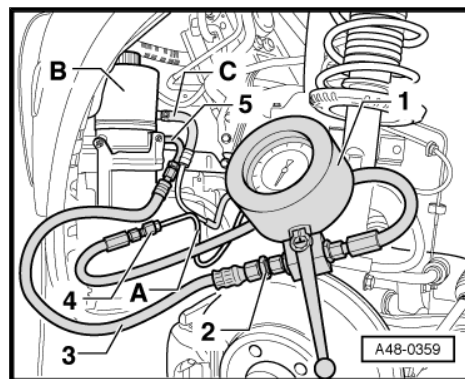
B - Motor/pump unit

C - Return line

- Open cut-off valve at pressure gauge of tester. Lever must point vertically downwards.

- Fill up with hydraulic fluid and bleed steering system

⇒ [page 231](#) .



Note!

- ◆ *A second mechanic is required for testing the delivery pressure/system pressure of the motor/pump unit.*
- ◆ *To prevent damage to the motor/pump unit and the power steering system, testing of the delivery pressure/system pressure must not be continued for longer than approx. 5 seconds.*
- ◆ *The cut-off valve on the pressure gauge of the tester must not be closed during the test. If the cut-off valve is closed, the displayed pressure will drop to 0 bar when the pressure valve in the motor/pump unit responds.*

- Now check delivery pressure

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.

- Start engine.
- Read off pressure with engine idling and steering at full lock (left and right).
- Compare measured value with specification. Specification: 96...104 bar.



Note!

- ◆ *Renew the motor/pump unit if the reading is higher or lower than specified*
⇒ ["7.2 Removing and installing motor/pump unit", page 227](#)
- ◆ *Always check steering system for leaks if fluid level is low in reservoir.*
- ◆ *If leakage is visible at steering pinion, first check pipes and pipe connections for leaks. Tighten and wipe dry if necessary.*
- ◆ *Renew steering gear if leakage is found at steering pinion seal or at steering rack seals in steering gear housing.*
- ◆ *To check steering rack seals, loosen hose clip on boot and push back boot.*
- Stop engine.
- Draw off hydraulic fluid with extractor bottle.

- Remove power steering tester.
- Connect expansion hose to motor/pump unit.
- Bolt motor/pump unit with bracket or adapter to body.
- Install expansion hose, return line and wiring in spacer bracket.
- Fill up with hydraulic fluid and bleed steering system
⇒ [page 231](#).
- Install front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 : Removing and installing wheel housing liner; Front wheel housing liner.
- Fit and secure wheel ⇒ [page 161](#).

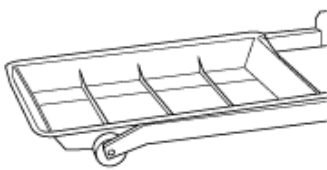
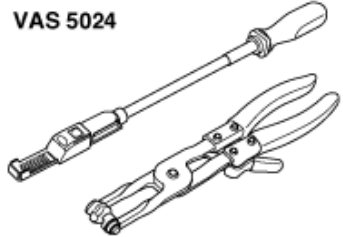
7.1.3 Tightening torques

Motor/pump unit bracket to body and adapter	23 Nm
Motor/pump unit adapter to body	23 Nm
Expansion hose to motor/pump unit	30 Nm
Wheel bolts to wheel hub	120 Nm

7.2 Removing and installing motor/pump unit

Special tools and workshop equipment required

- ◆ Drip tray -V.A.G 1306-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Tool insert (17 mm) -V.A.G 1331/6-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Spring-type clip pliers -VAS 5024 A-
- ◆ Adapter set for tamper-proof wheel bolts -T40004-
- ◆ Extractor bottle (commercially available)

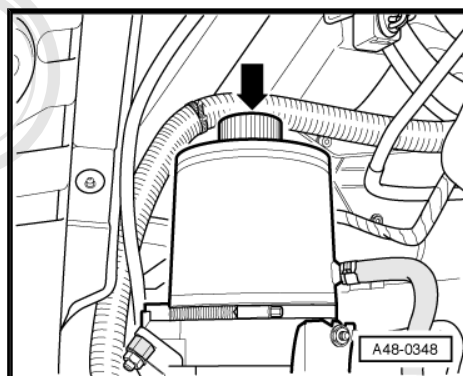
V.A.G 1306 	V.A.G 1331 
V.A.G 1331/6 	V.A.G 1332 
VAS 5024 	T40004 
	G48-0015

**Note!**

- ◆ *Repairs must not be performed on the motor/pump unit*
- ◆ *If problems are reported, trace the fault by means of a function test, pressure test, leak test and self-diagnosis.*
- ◆ *If a fault is found, the motor/pump unit must be renewed.*
- ◆ *Small quantities of hydraulic fluid will remain in the motor/pump unit as well as in the return line and expansion hose after extraction.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*
- ◆ *The expansion hose and return line must not be clamped with hose clamps, e.g. -3094- or other tools. Clamping can cause damage to the expansion hose and return line.*
- ◆ *To avoid damage, a bending radius of less than 100 mm is not permissible when bending or suspending the expansion hose and return line.*
- ◆ *For tightening torques, refer to [⇒ page 221](#) onwards.*

7.2.1 Removing

- Disconnect battery ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .
- Remove front left wheel.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Place drip tray under motor/pump unit to collect escaping hydraulic fluid.
- Remove screw cap -arrow- from fluid reservoir of motor/pump unit.
- Extract hydraulic fluid via the filler neck with a commercially available extractor bottle.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI 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 motor/pump unit from longitudinal member.

Vehicles without headlight washer system

- Remove bolts -1- and -2-.

Vehicles with headlight washer system

- Remove bolts -1- and nuts -3-.

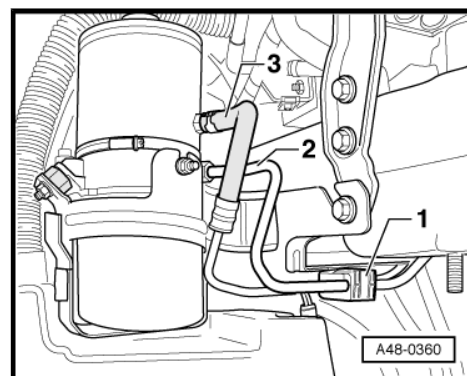
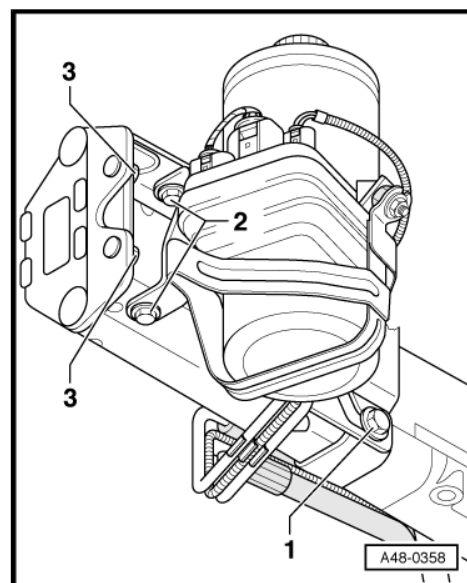


Note!

We recommend using a socket wrench set with 3/8" square drive for removing and installing nuts -3-.

All vehicles (continued):

- Detach all electrical connectors from motor/pump unit.
- Remove expansion hose -2- and return line -3- from spacer bracket -1-.
- Move motor/pump unit with bracket or with bracket and adapter upwards, if necessary tie up or support motor/pump unit.
- Disconnect expansion hose -2- from motor/pump unit.
- Seal off tapped holes on motor/pump unit (e.g. with plastic screw plugs).
- Seal off expansion hose with a plastic bag and adhesive tape.
- Open hose clip using spring-type clip pliers -VAS 5024 A- and pull return line -3- off connection on motor/pump unit.
- Seal connection on motor/pump unit and return line with a plastic bag and adhesive tape.
- Take out motor/pump unit.



7.2.2 Installing

- Bring motor/pump unit into position and tie in place.
- Connect expansion hose and return line to motor/pump unit.
Note installation position of expansion hose and return line.
- Install expansion hose and return line in spacer bracket.
- Attach all electrical connectors to motor/pump unit.
- Install motor/pump unit and tighten all securing bolts and nuts.
- Connect battery ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .
- Fill up with hydraulic fluid and bleed steering system
⇒ [page 231](#) .
- Install front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Fit and secure wheel ⇒ [page 161](#) .



7.2.3 Tightening torques

Motor/pump unit bracket to body and adapter
er 23 Nm

Motor/pump unit adapter to body 23 Nm

Expansion hose to motor/pump unit 30 Nm

Wheel bolts to wheel hub 120 Nm

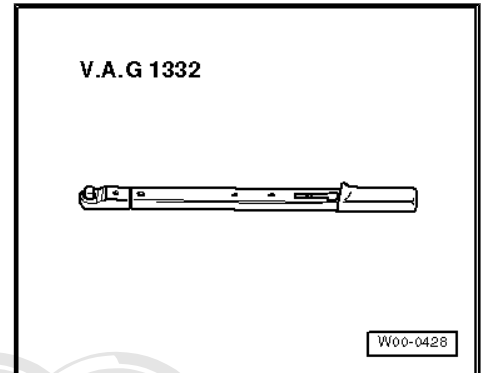


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

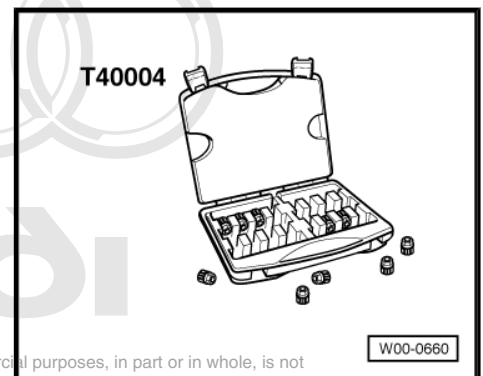
8 Checking fluid level, bleeding steering system and checking for leaks

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



- ◆ Adapter set for tamper-proof wheel bolts -T40004-



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

- ◆ Collector bottle (commercially available)

8.1 Checking fluid level of power steering



Note!

- ◆ *Check hydraulic fluid level with dipstick on screw cap of motor/pump unit reservoir.*
- ◆ *Do not use the "MAX" and "MIN" marks on the reservoir for checking the fluid level.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*

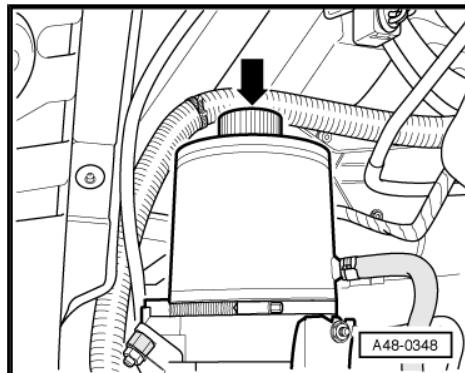
Vehicles with basic running gear

- Remove front left wheel.
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .

- Remove screw cap -arrow-.

Vehicles with 1.2 TDI running gear

- Remove engine bonnet ⇒ General body repairs, exterior; Rep. Gr. 55 ; Bonnet; Removing and installing bonnet .

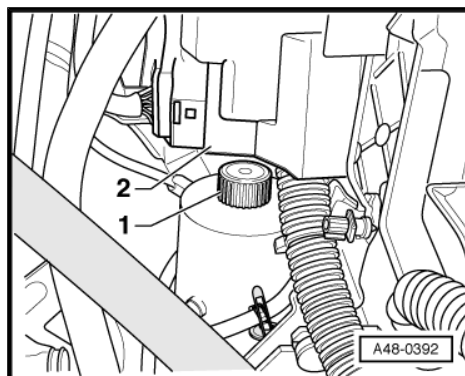


- Remove screw cap -1- underneath headlight -2-.

All vehicles (continued):

- Wipe off dipstick with a clean cloth.
- Screw in cap hand-tight and unscrew again.

The fluid level can only be measured correctly when the screw cap has been screwed in and then removed again.



8.1.1 Cold fluid:

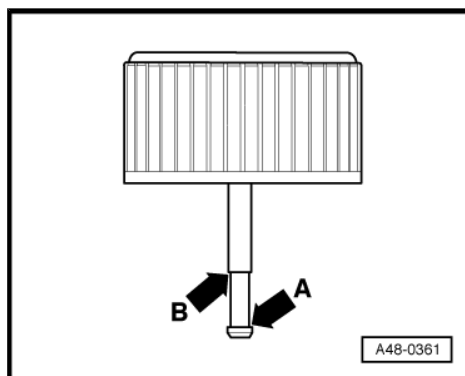
- Do not run engine; set front wheels to straight-ahead position.
- Check fluid level.

The fluid level should be between the bottom mark -arrow A- and the top mark -arrow B- on the dipstick.



Note!

- ◆ *Fluid must be drained off if the level is above the mark -arrow B-.*
- ◆ *If the fluid level is below the range specified, the hydraulic system must be checked for leaks (Checking power steering system for leaks ⇒ [page 234](#)). In this case it is not sufficient to merely top up the fluid.*
- ◆ *Do not re-use hydraulic fluid which has been drained off.*
- If there are no leaks in the hydraulic system, top up hydraulic fluid.
- Screw cap hand-tight onto the motor/pump unit reservoir.



8.1.2 Fluid at operating temperature (above approx. 50°C):

- Allow engine to idle for approx. 2 minutes with front wheels set to straight-ahead position.
- Stop engine and switch off ignition.

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

- Check fluid level.

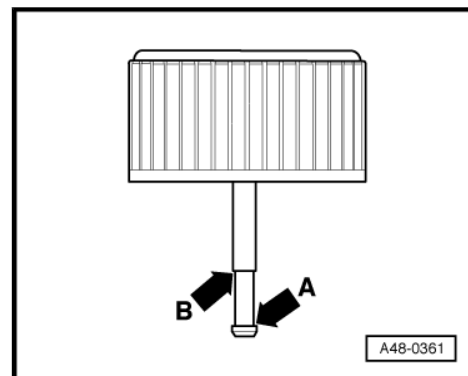
The fluid level should be between the bottom mark -arrow A- and the top mark -arrow B- on the dipstick.

A fluid level over the mark -arrow B- is permissible when the hydraulic fluid is at operating temperature.



Note!

- ◆ Do not extract hydraulic fluid if the fluid level is over the mark -arrow B-.
- ◆ If the fluid level is below the range specified, the hydraulic system must be checked for leaks (Checking power steering system for leaks ⇒ [page 234](#)). In this case it is not sufficient to merely top up the fluid.



- If there are no leaks in the hydraulic system, top up hydraulic fluid.
- Screw cap hand-tight onto the motor/pump unit reservoir.

Vehicles with basic running gear

- Install front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Fit and secure wheel ⇒ [page 161](#) .

Vehicles with 1.2 TDI running gear

- Install engine bonnet ⇒ General body repairs, exterior; Rep. Gr. 55 ; Bonnet; Removing and installing bonnet .

8.1.3 Tightening torques

Screw cap on hydraulic fluid reservoir	hand-tight
Wheel bolts to wheel hub	120 Nm

8.2 Bleeding steering system

Vehicles with basic running gear

- Remove front left wheel.
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .

Vehicles with 1.2 TDI running gear

- Remove engine bonnet ⇒ General body repairs, exterior; Rep. Gr. 55 ; Bonnet; Removing and installing bonnet .

All vehicles (continued):

- Check hydraulic fluid level and top up if necessary ⇒ [page 231](#) .
- Raise vehicle until front wheels are free.
- With engine switched off, turn steering wheel 10 times from lock to lock.
- Check hydraulic fluid level and top up if necessary ⇒ [page 231](#) .
- Loosely screw on cap for hydraulic fluid reservoir; do not tighten.



- Start engine and allow to run for approx. 10 seconds.
- Stop engine.
- Check hydraulic fluid level and top up if necessary
⇒ [page 231](#) .
- Loosely screw on cap for hydraulic fluid reservoir; do not tighten.
- Repeat the following steps until the hydraulic fluid level does not drop any further.
- Start engine.
- Turn steering wheel 10 times from lock to lock.
- Stop engine.
- Check hydraulic fluid level and top up if necessary
⇒ [page 231](#) .
- Screw on cap for hydraulic fluid reservoir hand-tight.



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.

Any air remaining in the steering system will dissipate when the vehicle has been driven 10...20 km.

Vehicles with basic running gear

- Install front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Fit and secure wheel ⇒ [page 161](#) .

Vehicles with 1.2 TDI running gear

- Install engine bonnet ⇒ General body repairs, exterior; Rep. Gr. 55 ; Bonnet; Removing and installing bonnet .

8.2.1 Tightening torques

Screw cap on hydraulic fluid reservoir	hand-tight
Wheel bolts to wheel hub	120 Nm

8.3 Checking steering system for leaks



Note!

The power steering system must be checked for leaks after assembly operations and in the case of hydraulic fluid loss in the reservoir.

- Remove front left wheel.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Start engine; run at idling speed.
- Turn steering wheel to full lock in both directions and hold for a maximum of 5 ... 10 seconds. This builds up the maximum possible pressure.

- Check expansion hose and return line for leaks. If leaks are found, renew the affected hose or pipe.
- Check all pipe and hose connections for firm seating and for leaks. If leaks are found, re-tighten pipe or hose connection to the permissible tightening torque or renew pipe, hose or seal.
- Check motor/pump unit for leaks. Renew motor/pump unit if leaks are found.
- Check hydraulic fluid reservoir for leaks. Renew motor/pump unit if leaks are found.
- Check hydraulic fluid level and top up if necessary
⇒ [page 231](#) .

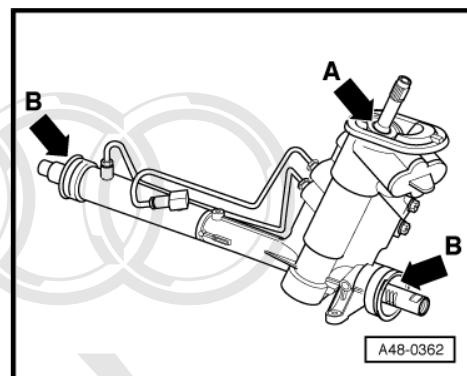
i Note!

If repeated loss of hydraulic fluid in the motor/pump unit reservoir occurs and extensive tests have been performed several times on the pipes and hoses and their connections and on the motor/pump unit including reservoir, it will then be necessary to remove and check the power steering box.

- Remove power steering box ⇒ [page 199](#) .
- Check seal for input shaft on valve housing of power steering box -arrow A- for leaks.
- Open hose clip for boot and push back boot.
- Check steering rack seals -arrows B- for leaks.

The steering box must be renewed if fluid is visible in the steering box housing and/or in the rubber boots.

- Install power steering box ⇒ [page 199](#) .
- Install front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Removing and installing wheel housing liner; Front wheel housing liner .
- Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Body - front; Noise insulation - exploded view .
- Fit and secure wheel ⇒ [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.