

Workshop Manual

Audi Q3 2012 ➤

Audi Q3 China 2013 ➤

Running gear, axles, steering

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List of Workshop Manual Repair Groups

Repair Group

- 00 - Technical data
- 40 - Front suspension
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- 44 - Wheels, tyres, vehicle geometry
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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.

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00 – Technical data

1 General notes

(ARL004639; Edition 02.2016)

⇒ [“1.1 Running gear”, page 1](#)

⇒ [“1.2 Steering”, page 1](#)

⇒ [“1.3 Types of tyre”, page 1](#)

⇒ [“1.4 General notes on Tyre Pressure Loss Indicator \(TPLI+\)”, page 1](#)

⇒ [“1.5 General notes on drive shaft”, page 2](#)

1.1 Running gear

	Front-wheel drive and four-wheel drive
Front axle	MacPherson struts with lower wishbones, subframe and anti-roll bar or shock absorbers with variable damper characteristics (option)
Rear axle	Four-link suspension with separate spring/shock absorber layout and tub- ular anti-roll bar or shock absorbers with variable damper characteristics (option)
Wheelbase mm	S line, RS Q3 2604 Standard and electronic damping control 2603
Track width (front/rear) ¹⁾ mm	S line, RS Q3 1573/1579 Standard and electronic damping control 1571/1575

1) Front/rear track width only applicable to standard tyre size 215/65/R16 on 6.5Jx16 ET33 rims (ET = rim offset)

1.2 Steering

	Front-wheel drive and four-wheel drive
Steering rack	Electro-mechanically assisted, maintenance-free rack-and-pinion steering
Maximum steering angle	35° 16'

1.3 Types of tyre

For general information on wheel/tyre combinations, winter tyres, snow chains and recommended tyre makes, refer to ⇒ [Wheel/Tyre Guide](#) .

1.4 General notes on Tyre Pressure Loss Indicator (TPLI+)

Please observe the instructions in the ⇒ [Owner's Manual](#) .

If the vehicle is equipped with a Tyre Pressure Loss Indicator, this is indicated by the corresponding production control number (PR No.) on the vehicle data sticker or in ELSA in the ⇒ [Vehicle-specific notes in the document “Vehicle data” ⇒ page 247](#) .

The Tyre Pressure Loss Indicator uses information from the ABS speed sensors to compare the rolling circumference and the vibration characteristics of the individual wheels. Any changes on one or more wheels are indicated on the dash panel display. If only one tyre is affected, the tyre position is indicated.

The Tyre Pressure Loss Indicator is a software module in the ESP/ABS control unit designed to detect slow or gradual tyre pressure loss at one or more wheels. Using the signals from the ABS speed sensors, the TPLI+ compares the wheel speeds and thus the rolling circumference of the individual wheels. The Tyre Pressure Loss Indicator in the instrument cluster lights up if the rolling circumference of one of the wheels changes. The rolling circumference of the wheels can change due to the following circumstances:

- ◆ If the tyre pressure is too low.
- ◆ If the tyre is damaged.
- ◆ If the wheels or the inflation pressures have been changed and the new tyre pressures not saved.
- ◆ If the vehicle is loaded unevenly.
- ◆ If the wheels of one axle are subjected to a greater load (e.g. when pulling a trailer or when driving uphill and downhill).
- ◆ When driving with snow chains.
- ◆ When driving with the temporary spare wheel.
- ◆ If one wheel has been changed on each axle (this also includes changing round the wheels from front to rear or vice versa).
- ◆ If the left and right wheels run on different surfaces for a sustained period of time.

If the Tyre Pressure Loss Indicator lights up:

The Tyre Pressure Loss Indicator on the instrument cluster indicates if the tyre pressure is too low or if a system malfunction has occurred.

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System fault in Tyre Pressure Loss Indicator (TPLI+):

If the warning lamp flashes for about 1 minute after switching on the ignition and then remains steadily lit, there is a system fault. "TPMS" also appears in the instrument cluster.

System faults are stored in the event memory for the ABS/ESP control unit and indicated by the yellow TPLI+ lamp in the instrument cluster flashing for 1 minute after the ignition is switched on. The TPLI+ warning lamp cannot be switched off by pressing the button on the multimedia system operating unit - E380-. Proceed as follows if a fault is stored in the event memory:

- Connect ⇒ Vehicle diagnostic tester.
- Select the relevant program in "Guided Functions".
- Follow the instructions on the screen.

Performing calibration (re-adaption of tyre pressure):

The tyre pressures must be stored in the MMI following any changes to the inflation pressures or after changing a tyre or tyres on the vehicle ⇒ Owner's Manual .

1.5 General notes on drive shaft

Before fitting the outer joint in the wheel hub, apply a thin coat of assembly paste to the splines on the outer joint ⇒ Electronic parts catalogue .

When working on the vehicle, do not allow the drive shafts to hang down under their own weight and never let the joints bend to such an extent that they contact the end stop.

Wheel bearings must not be subjected to load after loosening bolt securing drive shaft at wheel hub.

If the wheel bearings are subjected to the full weight of the vehicle they will be overloaded, resulting in reduced service life. For this reason please note the following points:

Procedure for loosening bolt securing drive shaft at wheel hub

⇒ **"5.3 Loosening and tightening bolt securing drive shaft", page 102**

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Procedure for tightening bolts securing drive shaft to flange shaft:

First pre-tighten all 6 bolts in diagonal sequence to 10 Nm, then tighten in diagonal sequence to final specified torque.

Do not attempt to move the vehicle without the drive shafts fitted; this would result in wheel bearing damage. If moving the vehicle is unavoidable, note the following points:

- Fit an outer joint in place of the drive shaft.
- Tighten outer joint to 200 Nm.

2 Safety precautions

⇒ "2.1 Safety precautions when working on vehicles with start/stop system", page 4

⇒ "2.2 Safety precautions when working on subframe", page 4

⇒ "2.3 Safety precautions when using testers and measuring instruments during a road test", page 5

2.1 Safety precautions when working on vehicles with start/stop system

When performing repairs on vehicles with start/stop system, note the following:



WARNING

Risk of personal injury caused by automatic engine start on vehicles with start/stop system.

- ◆ *On vehicles with active start/stop system (indicated by a symbol and/or a message in the instrument cluster) the engine can start automatically under certain conditions.*
- ◆ *When working on the vehicle, it is therefore important to ensure that the start/stop system is deactivated (switch off ignition and switch on again if required).*

2.2 Safety precautions when working on subframe

Please note the following when working on the subframe:



Caution

Risk of damage to running gear components.

- ◆ *Never place the vehicle on its wheels if the subframe mounting, steering rack or subframe cross brace is not correctly installed.*
- ◆ *Under no circumstances must the vehicle be supported on the subframe or the subframe cross brace (e.g. using a trolley jack or similar).*

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2.3 Safety precautions when using testers and measuring instruments during a road test

Please note the following if test and measuring equipment has to be used during a road test:



WARNING

There is a risk of accident if the driver's attention is distracted or if the test equipment is not adequately secured.

There is a risk of injury if the passenger's airbag is triggered during an accident.

- *The operation of test and measuring equipment during a road test distracts the driver's attention.*
- *There is an increased risk of injury if test and measuring equipment is not secured.*
- ◆ *All test equipment must be secured on the rear seat with a belt and operated by a 2nd person from this location.*



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3 Repair notes

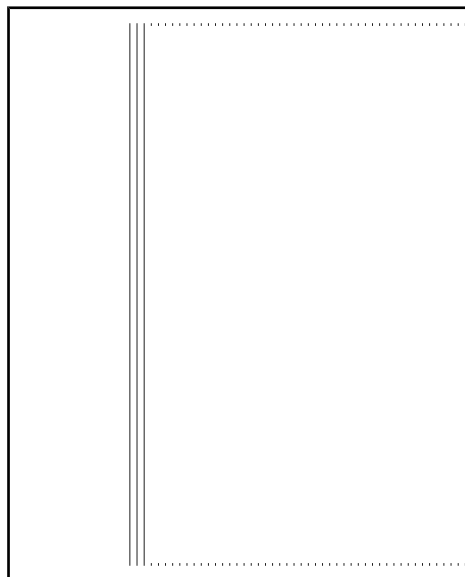
- ⇒ [“3.1 Leaks at shock absorbers”, page 6](#)
- ⇒ [“3.2 Checking shock absorbers when removed”, page 6](#)
- ⇒ [“3.3 Checking shock absorbers on shock tester”, page 7](#)
- ⇒ [“3.4 Maximum values "a" in mm”, page 8](#)
- ⇒ [“3.5 Rules for cleanliness”, page 9](#)
- ⇒ [“3.6 General notes”, page 9](#)
- ⇒ [“3.7 General repair instructions”, page 10](#)
- ⇒ [“3.8 Contact corrosion”, page 10](#)
- ⇒ [“3.9 Steering rack”, page 10](#)
- ⇒ [“3.10 Gaskets and seals”, page 10](#)
- ⇒ [“3.11 Bolts and nuts”, page 11](#)
- ⇒ [“3.12 Electrical components”, page 11](#)
- ⇒ [“3.13 Repairing damaged threads in longitudinal member \(sub-frame to body\)”, page 11](#)
- ⇒ [“3.14 Lifting suspension to unladen position \(vehicles with coil springs\)”, page 11](#)

3.1 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 seal) down to the bottom spring plate -arrow-.



3.2 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.



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.*

3.3 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

- ◆ Maha shock absorber tester - VAS 1990- or
- ◆ Suspension strut test stand - VAS 6636- or
- ◆ Suspension strut test stand - VAS 6640-

Requirements for test

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

Test results

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

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

 Note

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

The following values apply only to tests conducted on the test equipment listed above. If the maximum values listed below are exceeded, the effectiveness of the shock absorber has deteriorated significantly and replacement is recommended.

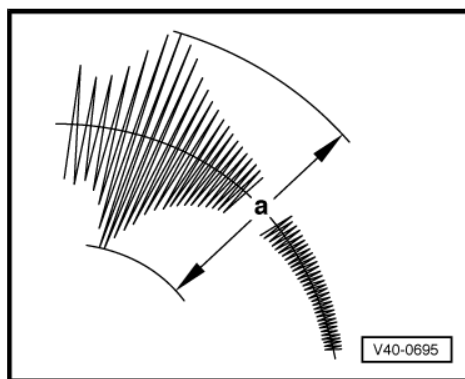
Example:

Maximum value = 70

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

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

Explanatory notes on production control numbers (PR numbers)
⇒ [page 247](#)



3.4 Maximum values "a" in mm

 Note

- ◆ *If the reading is higher than the maximum value "a" listed in the table, the damping effect is unsatisfactory ⇒ renew the shock absorber.*
- ◆ *If the reading is lower than the maximum value "a" listed in the table, the damping effect is satisfactory ⇒ the shock absorber does not have to be renewed.*

Model/version	Front axle	Rear axle	Remarks
Standard running gear G05, G11, G12, G14, G15	41	51	Unladen Tank full
Standard running gear with electronic damping control G43	t.b.a.	t.b.a.	Unladen Tank full
Sports running gear (S line) G09, G13	40	48	Unladen Tank full
Sports running gear with electronic damping con- trol G44	t.b.a.	t.b.a.	Unladen Tank full

Test must be carried out with tyre inflation pressures for "part load".

3.5 Rules for cleanliness

- ◆ Thoroughly clean all unions and the adjacent areas before disconnecting.
- ◆ Ensure proper seating of dowel sleeves for centralising suspension bracket and steering rack when installing.
- ◆ Place removed parts on a clean surface and cover them up to keep them clean. Use plastic sheeting or paper for this purpose. Do not use fluffy cloths.
- ◆ Make sure to install clean parts: only remove replacement parts from packaging immediately prior to installation.
- ◆ Use only the grease and sealants with the part number stated.
- ◆ Carefully cover or seal open components if repairs are not to be carried out immediately.

3.6 General notes

- ◆ All contact surfaces must be cleaned when installing wax-coated components. The contact surfaces must be free of wax and grease.
- ◆ Tightening torques refer to uncoiled bolts and nuts.
- ◆ Always renew self-locking bolts/nuts.
- ◆ Always renew bolts and nuts which are tightened by turning through a specified angle.
- ◆ Load-bearing components and other suspension parts must not be welded or straightened.
- ◆ Do not subject coil springs to hammer blows or weld splashes and do not make any new colour markings.
- ◆ Do not perform welding or cutting operations (using power grinders) near the coil springs or suspension struts. Cover up coil springs or suspension struts if necessary.
- ◆ Make sketches or take photographs when unfastening or removing and installing hydraulic or pneumatic pipes or electrical wires. This ensures re-installation at the original location.
- ◆ Any cable ties, brackets or fasteners removed during repair work must be re-attached at their original standard locations.
- ◆ Before fitting the outer joint in the wheel hub, apply a thin coat of assembly paste to the splines on the outer joint ⇒ Electronic parts catalogue .
- ◆ When working on the vehicle, do not allow the drive shafts to hang down under their own weight and never let the joints bend to such an extent that they contact the end stop.
- ◆ Do not attempt to move the vehicle without the drive shafts fitted; this would result in wheel bearing damage. If moving the vehicle is unavoidable, note the following points:
- ◆ Fit an outer joint in place of the drive shaft.
- ◆ Tighten outer joint to 200 Nm.
- ◆ Bonded rubber bushes can only be turned to a limited extent. The suspension must therefore always be in the unladen position ⇒ [page 11](#) when the suspension link attachments are tightened.
- ◆ Always renew bonded rubber bushes on both sides of vehicle.

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**WARNING**

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

3.7 General repair instructions

To avoid repetition, a number of notes that are generally applicable to the individual procedures described in this manual are summarised here. They apply for this individual Workshop Manual.

- ◆ Before carrying out repair work on the electromechanical steering rack, identify the cause of the fault as exactly as possible using the ⇒ Vehicle diagnostic tester in the operating modes "Guided Fault Finding", "Vehicle Self-Diagnosis" and "Test Instruments".

3.8 Contact corrosion

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

For this reason, all the fasteners on the vehicle have a special surface coating.

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

Always install new parts as listed in the Electronic parts catalogue if you are not sure whether used parts can be refitted.

Note:

- ◆ We recommend using only genuine replacement parts; these have been tested and are compatible with aluminium.
- ◆ We recommend the use of Audi accessories.
- ◆ Damage resulting from contact corrosion is not covered under the warranty.

3.9 Steering rack

To achieve the desired results when performing repairs on the steering rack it is important to work with the greatest possible care and cleanliness, and to use proper tools in good condition. Always observe the basic safety rules when performing servicing procedures.

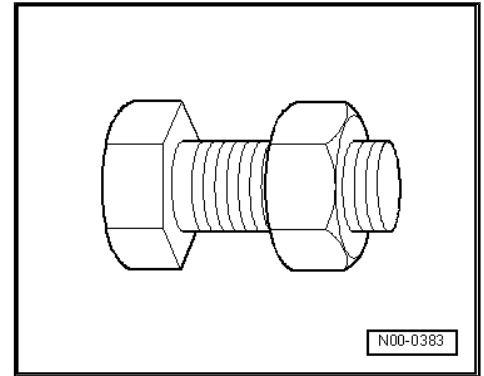
3.10 Gaskets and seals

- ◆ Always renew gaskets and seals.
- ◆ Check contact surface on housing or shafts for burrs and damage after removing the seals, and repair as required.
- ◆ Clean off all residues of liquid gasket thoroughly; make sure that no remaining material enters the steering rack housing.

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3.11 Bolts and nuts

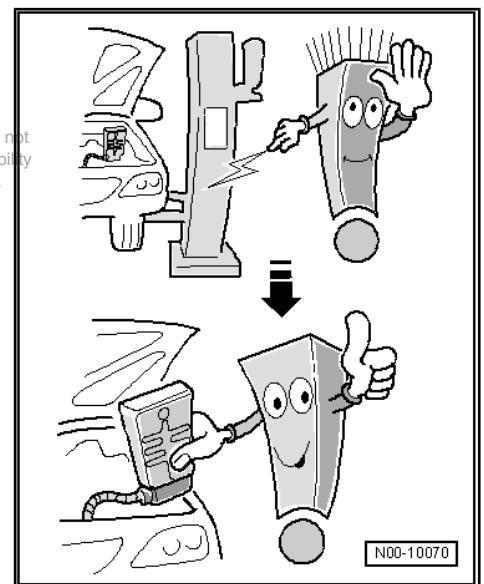
- ◆ Loosen and tighten bolts and nuts securing covers and housings in diagonal sequence.
- ◆ Take care not to tilt particularly sensitive components such as the servo motor with control unit; slacken off and tighten progressively in diagonal sequence.
- ◆ Tightening torques refer to uncoiled bolts and nuts.
- ◆ Always renew self-locking bolts/nuts.
- ◆ Always renew bolts and nuts which are tightened by turning through a specified angle.



3.12 Electrical components

You have certainly experienced light electric shocks when touching metal objects. This is due to the electrostatic charge accumulated by the human body. This charge can cause malfunctions if you touch the electric steering rack components.

- Before working on electrical components, touch an earthed object (e.g. water pipe or lifting platform). Do not touch the contact pins of the electrical connectors.



3.13 Repairing damaged threads in longitudinal member (subframe to body)

Instructions for repairing damaged threads ⇒ Body Repairs; Rep. gr. 50 .

3.14 Lifting suspension to unladen position (vehicles with coil springs)

Special tools and workshop equipment required

- ◆ Engine and gearbox jack - VAS 6931-



◆ Tensioning strap - T10038-



◆ Support - T10149-



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Note

All bolts on running gear components with bonded rubber bushes must always be tightened with the suspension in the unladen position (vehicle unladen).

- ◆ Bonded rubber bushes can only be turned to a limited extent.
- ◆ Therefore, before tightening the bolts, suspension components with bonded rubber bushes must be brought into a position corresponding to the normal position of the unladen vehicle while driving (unladen position).
- ◆ Otherwise, the bush would be subject to torsion loading and its service life would be shortened.
- ◆ This position can be simulated on the lifting platform by raising the appropriate part of the suspension with the engine and gearbox jack - VAS 6931- and support - T10149- .

- Before commencing work, use measuring tape or similar to measure dimension -a- from wheel centre to lower edge of wheel housing.
- This measurement must be taken with the suspension in the unladen position (vehicle unladen).
- Make a note of the measured value. This will be needed when tightening the bolts and/or nuts on the suspension.

Before raising wheel unit, secure vehicle to arms of lifting platform using tensioning straps - T10038- .

 Note

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

- Turn wheel hub until one of the wheel bolt holes is at the top.
- Attach support - T10149- to wheel hub using wheel bolt.
- Raise wheel bearing housing with engine and gearbox jack - VAS 6931- until distance -a- is obtained.

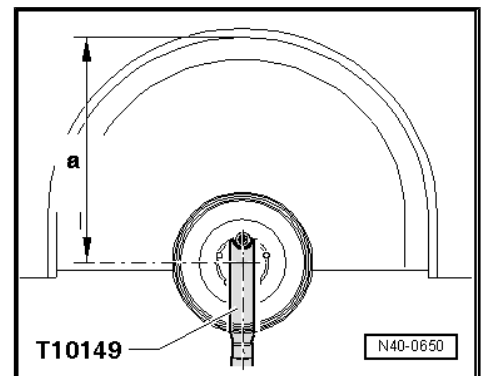
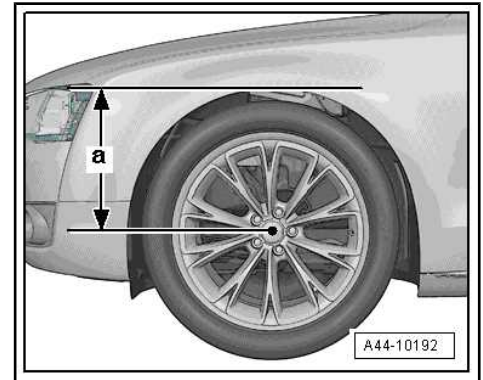
The bolts/nuts on the relevant suspension mountings must not be tightened until the distance -a- between the wheel centre and the lower edge of the wheel arch is the same as the distance measured before commencing work.



WARNING

- ◆ ***Do not lift or lower the vehicle while the engine/gearbox jack is under the vehicle.***
- ◆ ***Do not leave engine and gearbox jack - VAS 6931- under vehicle for longer than necessary.***

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



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4 Disposal

⇒ ["4.1 Releasing gas and draining front gas-filled shock absorbers", page 14](#)

⇒ ["4.2 Releasing gas and draining gas-filled shock absorbers \(rear\)", page 15](#)

4.1 Releasing gas and draining front gas-filled shock absorbers

A - Releasing gas by drilling

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



WARNING

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 fully 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 fluid comes out.

B - Opening with pipe cutter



WARNING

Safety goggles must be worn while drilling and cutting.

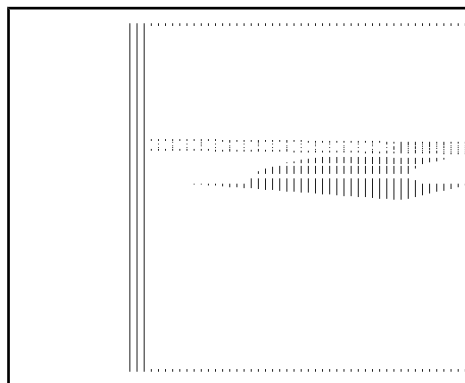
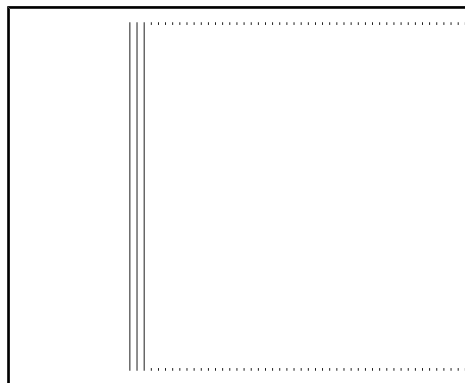
- Drill a 3 mm Ø hole -arrow- through outer tube of shock absorber, or saw through side of tube.



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 of shock absorber.
- 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 of shock absorber.
- Drain shock absorber tube.



4.2 Releasing gas and draining gas-filled shock absorbers (rear)

A - Releasing gas by drilling

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



WARNING

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 fully 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 fluid comes out.

B - Opening with pipe cutter



WARNING

Safety goggles must be worn while drilling and cutting.

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

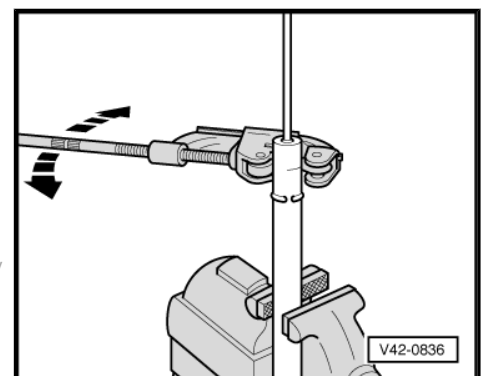
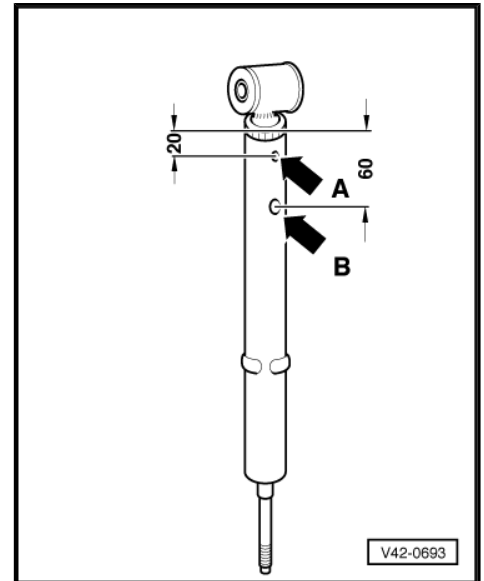


Note

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 of shock absorber.
- 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 of shock absorber.
- Drain shock absorber tube.

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40 – Front suspension

1 Subframe

⇒ [“1.1 Exploded view - subframe”, page 16](#)

⇒ [“1.2 Removing and installing subframe without steering rack”, page 17](#)

⇒ [“1.3 Removing and installing subframe with steering rack”, page 22](#)

⇒ [“1.4 Servicing subframe”, page 27](#)

⇒ [“1.5 Removing and installing anti-roll bar”, page 34](#)

⇒ [“1.6 Removing and installing coupling rod”, page 39](#)

⇒ [“1.7 Fixing position of subframe”, page 40](#)

⇒ [“1.8 Lowering subframe”, page 43](#)

1.1 Exploded view - subframe



Caution

Risk of damage to threads of bolts securing subframe to body.

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1 - Subframe

- ☐ Fixing position
⇒ [page 40](#)
- ☐ Lowering ⇒ [page 43](#)
- ☐ Removing and installing
without steering rack
⇒ [page 17](#)
- ☐ Removing and installing
with steering rack
⇒ [page 22](#)

2 - Bolt

- ☐ Always renew if re-
moved
- ☐ 70 Nm +180°

3 - Bonded rubber bush (top) for pendulum support

- ☐ Renewing ⇒ [page 27](#)

4 - Nut

- ☐ When tightening, coun-
terhold multi-point sock-
et of joint pin
- ☐ Always renew if re-
moved
- ☐ 65 Nm

5 - Anti-roll bar

- ☐ Removing and installing
⇒ [page 34](#)

6 - Nut

- ☐ When tightening, coun-
terhold multi-point sock-
et of joint pin
- ☐ Always renew if re-
moved
- ☐ 65 Nm

7 - Coupling rod

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

8 - Bolt

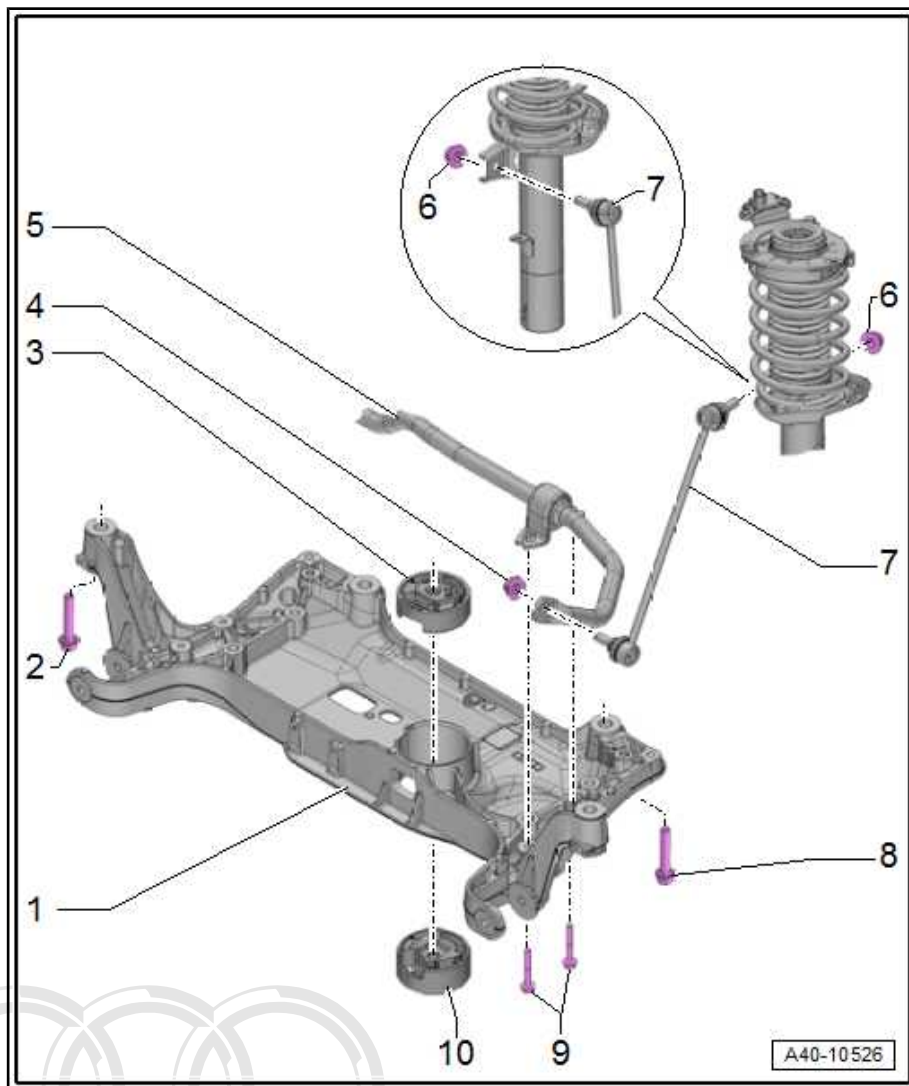
- ☐ Always renew if removed
- ☐ 70 Nm +180°

9 - Bolts

- ☐ Always renew if removed
- ☐ 20 Nm +90°

10 - Bonded rubber bush (bottom) for pendulum support

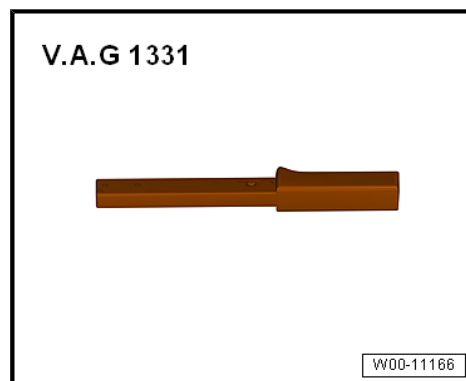
- ☐ Renewing ⇒ [page 27](#)



1.2 Removing and installing subframe with- out steering rack

Special tools and workshop equipment required

◆ Torque wrench - V.A.G 1331-



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



Removing



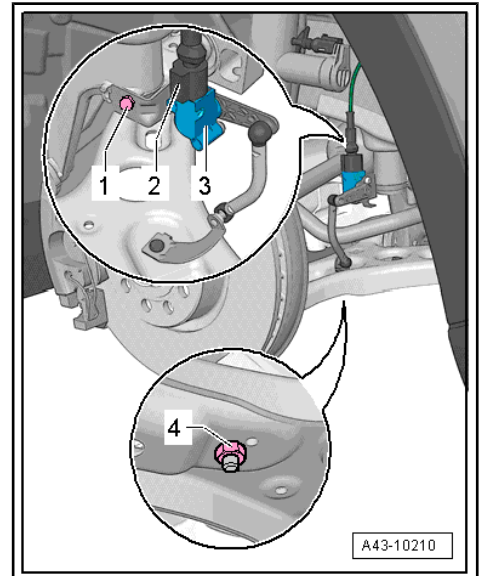
Note

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The subframe is removed together with the wishbones.

- Remove front wheels ➔ [page 241](#) .
- Fix position of subframe ➔ [page 40](#) .

- If fitted, unplug electrical connector -2- at front left vehicle level sender - G78- and front right vehicle level sender - G289- .
- Remove nut -4- and move coupling rod clear of vehicle level sender .

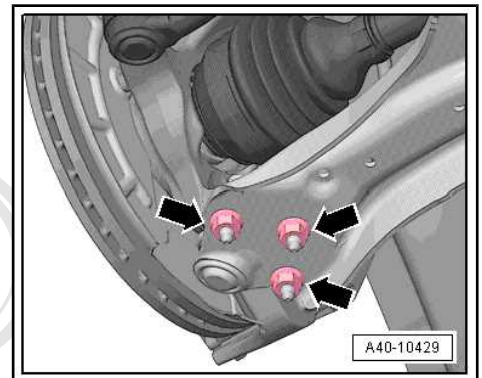


- Remove nuts -arrows- on both sides of vehicle.
- Pull wishbone out of swivel joint.



Note

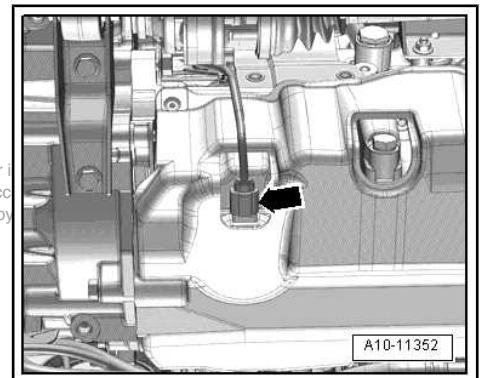
When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.



Vehicles with 4-cylinder engine:

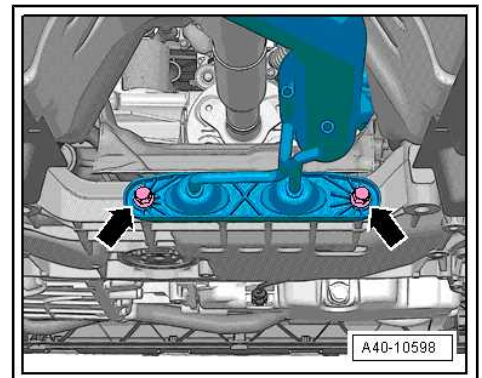
- Unplug connector for oil level and oil temperature sender - G266- -arrow- and move wiring clear.

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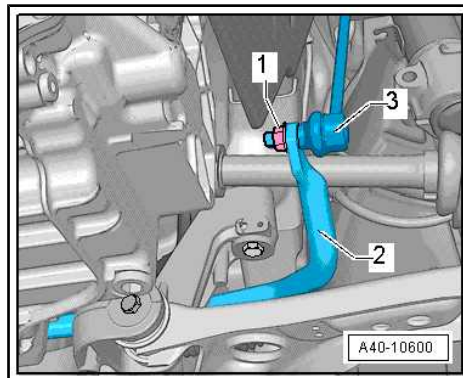


All vehicles (continued):

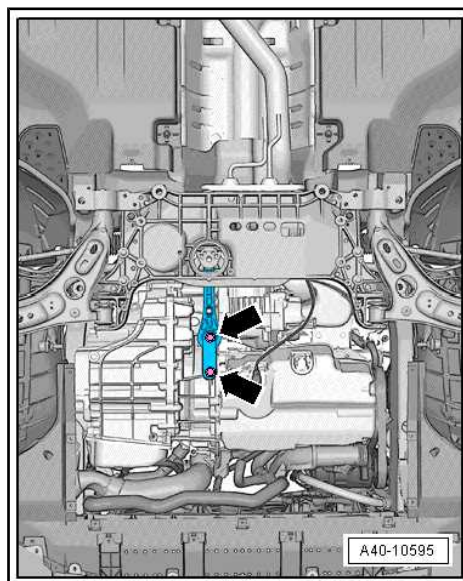
- Remove bolts -arrows-.



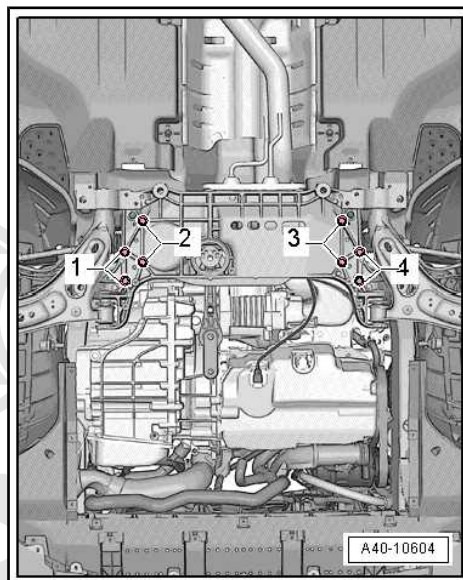
- Remove nut -1- from coupling rod -3- (left and right sides).
- Pull coupling rod -3- out of anti-roll bar -2- (left and right sides).



- Remove bolts -arrows- and detach pendulum support from gearbox.

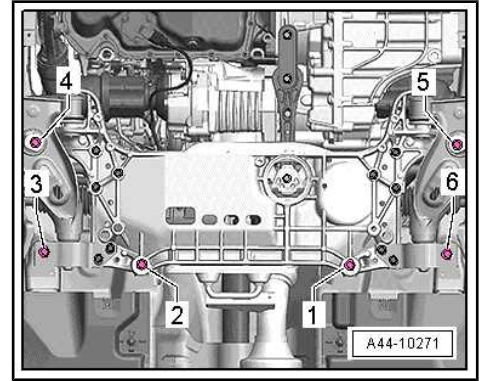


- Remove bolts -2- and -3- for steering rack.
- Remove bolts -1- and -4- for anti-roll bar.

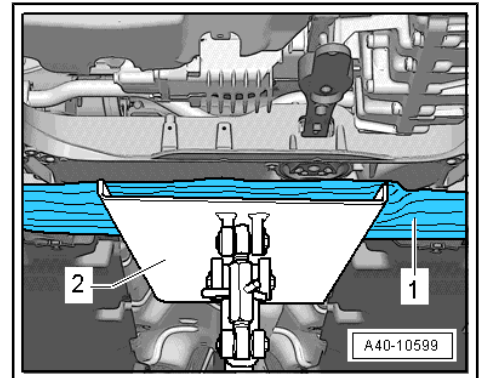


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- Remove bolts -1- and -2- for subframe.



- Lower subframe slightly with engine and gearbox jack - VAS 6931- -item 2-.

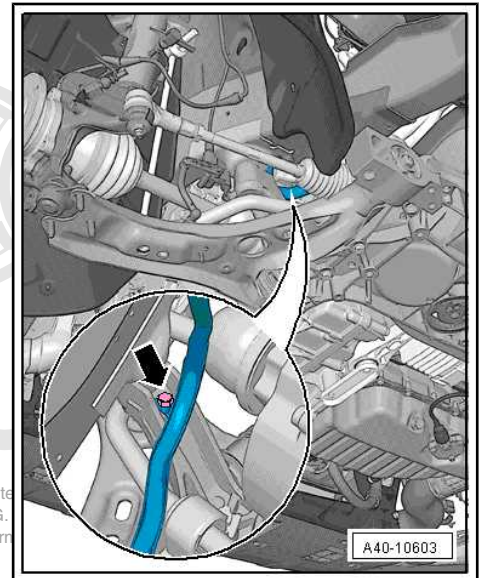


- Remove cable guide from subframe -arrow-.
- Secure steering rack to body.
- Remove subframe.

Installing

Installation is performed in reverse sequence; note the following:

- Fit front wheels ⇒ [page 241](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



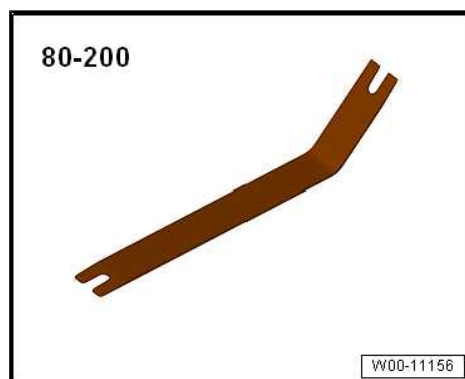
Tightening torques

- ◆ ⇒ [“1.1 Exploded view - subframe”, page 16](#)
- ◆ ⇒ [“3.1 Exploded view - steering rack”, page 272](#)
- ◆ ⇒ [“2.1 Exploded view - front vehicle level sender”, page 237](#)
- ◆ ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings
- ◆ ⇒ Rep. gr. 26 ; Emission control system; Exploded view - emission control system

1.3 Removing and installing subframe with steering rack

Special tools and workshop equipment required

- ◆ Removal lever - 80-200-



- ◆ Ball joint puller - 3287 A-



- ◆ Torque wrench - V.A.G 1332-

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- ◆ Engine and gearbox jack - VAS 6931-



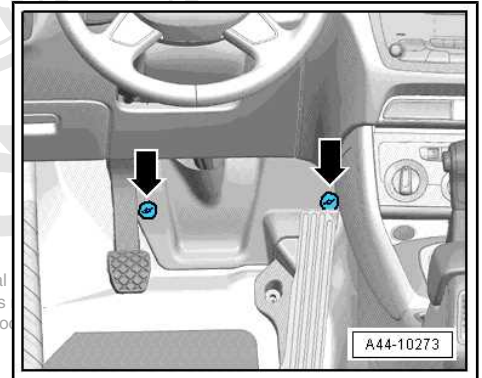
Removing

- Turn steering wheel to straight-ahead position and remove ignition key so that the steering lock engages.

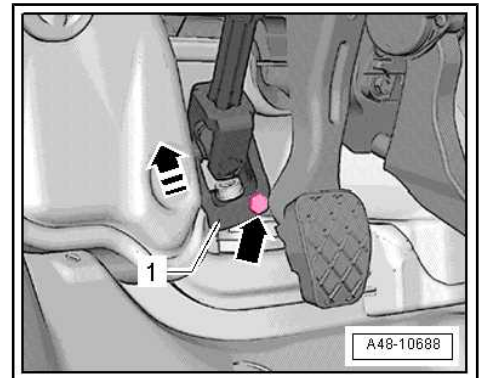
Vehicles with “keyless entry system”

- Switch off ignition and open driver's door so that steering lock engages.
- Unscrew nuts -arrows- and remove footwell trim.

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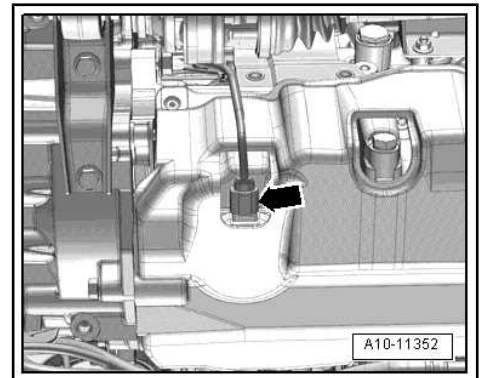


- Unscrew bolt -arrow- from universal joint -1- and pull universal joint off steering rack in direction of -arrow-.
- Remove front wheels ➔ [page 241](#) .
- Fix position of subframe ➔ [page 40](#) .

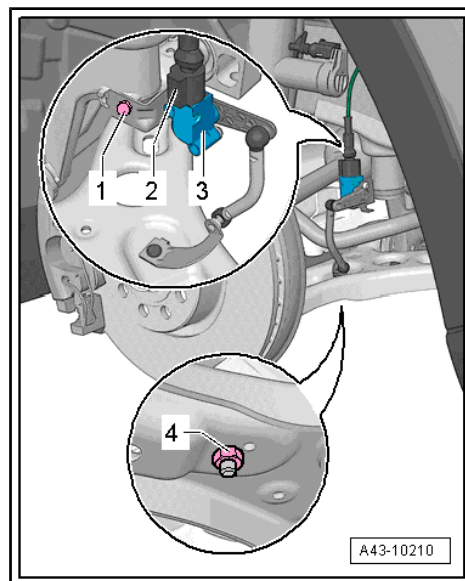


Vehicles with 4-cylinder engine:

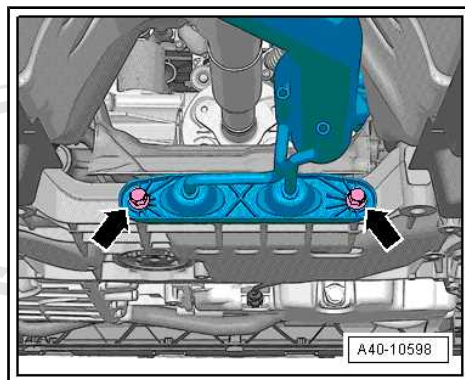
- Unplug connector for oil level and oil temperature sender - G266- -arrow- and move wiring clear.



- If fitted, unplug electrical connector -2- at front left vehicle level sender - G78- and front right vehicle level sender - G289- .
- Remove nut -4- and move coupling rod clear of vehicle level sender .

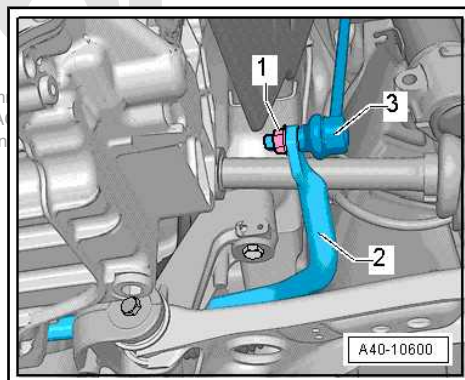


- Remove bolts -arrows-.



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

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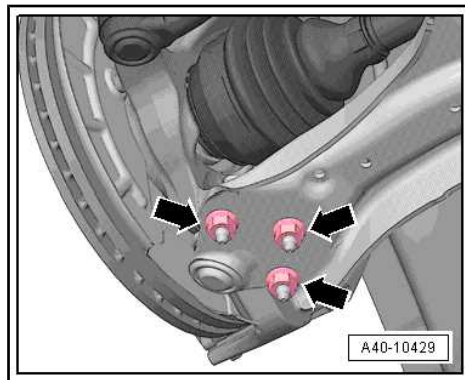


- Unscrew nuts -arrows-.



Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.



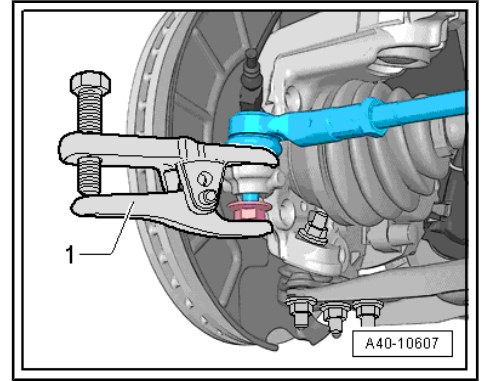
- Slacken off nuts on track rod ball joints (but do not remove yet).



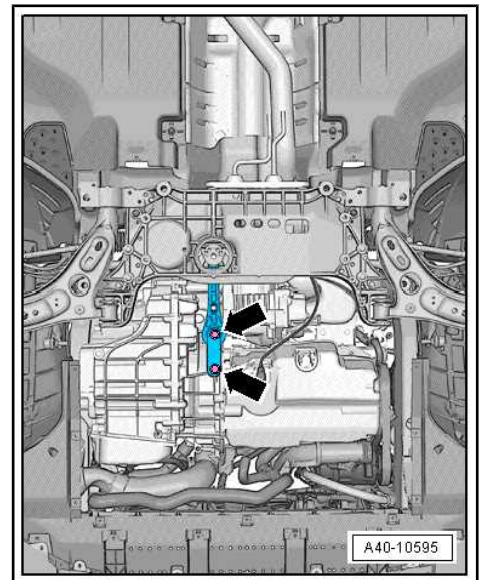
Note

Leave nut screwed on a few turns to protect threads on joint pin.

- Press track rod ball joint off wheel bearing housing using ball joint puller - 3287 A- -1- and then unscrew nut.



- Remove bolts -arrows- and detach pendulum support from gearbox.

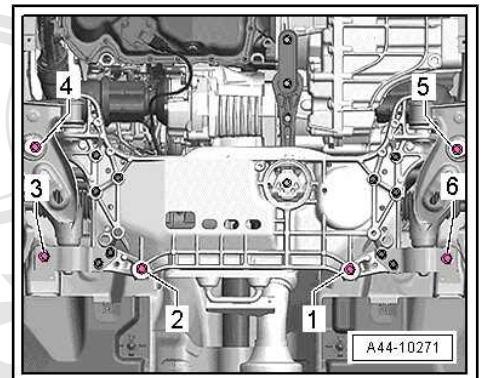


Caution

Risk of damage to threads of bolts securing subframe to body.

- ◆ ***DO NOT use an impact wrench when loosening or tightening the bolts that secure the subframe to the body.***
- ◆ ***Always fit all bolts by hand; make the first few turns by hand.***

- Remove bolts -1, 2- and lower subframe slightly with engine and gearbox jack - VAS 6931- .



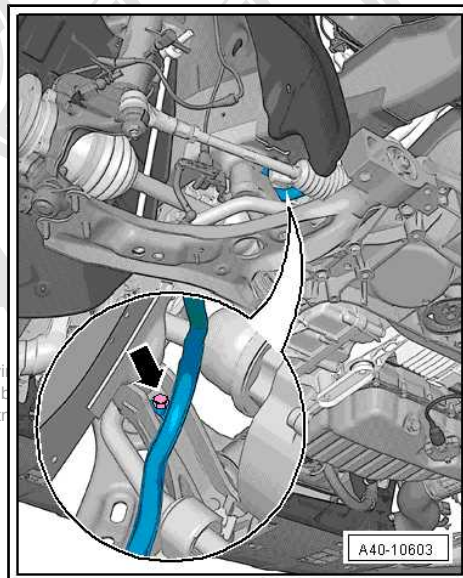
Note

Important: Take care to avoid overstretching the electrical wiring for the steering and the oil level and oil temperature sender - G266- .

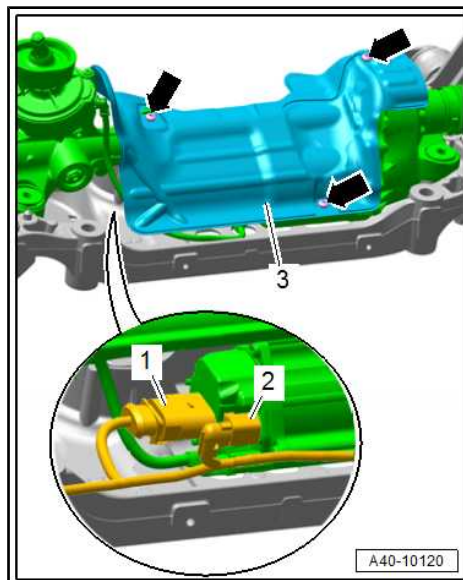
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- Pull out expanding clip -arrow- and move wiring duct clear at subframe.

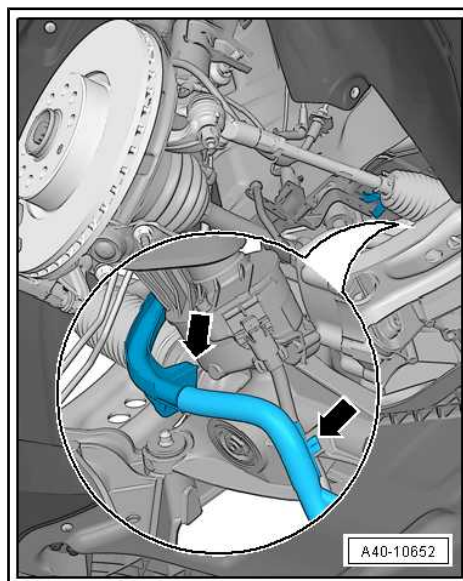
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- Remove bolts -arrows- and detach heat shield -3-.
- Unplug electrical connectors -1 and 2- at steering rack.



- Unclip wiring retainers on steering rack.
- Unclip all other wiring securing clips at steering rack.
- Lower engine and gearbox jack - VAS 6931- slowly.



- Secure subframe to engine and gearbox jack - VAS 6931- with the appropriate strap.

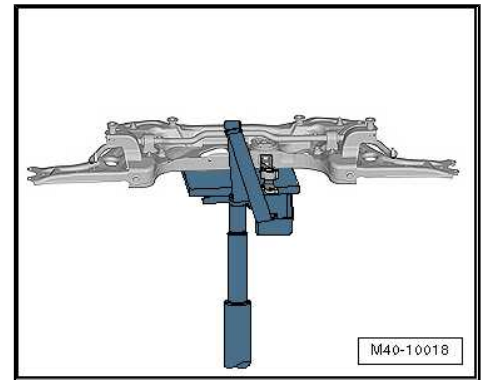
Installing

Installation is performed in reverse sequence; note the following:



Note

- ◆ *Coat seal on steering rack with suitable lubricant, e.g. soft soap, before installing.*
- ◆ *After positioning steering rack in relation to universal joint, ensure seal on steering rack makes snug contact with base plate, without kinks, and properly seals off opening to footwell. Otherwise, this can result in water leaks and/or noise.*
- ◆ *Make sure sealing surfaces are clean.*
- Fit front wheels ⇒ [page 241](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



Tightening torques

- ◆ ⇒ [“1.1 Exploded view - subframe”, page 16](#)
- ◆ ⇒ [“2.1 Exploded view - steering column”, page 263](#)
- ◆ ⇒ [“4.1 Exploded view - wheel bearing”, page 68](#)
- ◆ Pendulum support ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings
- ◆ Bracket for exhaust system ⇒ Rep. gr. 26 ; Emission control system; Exploded view - emission control system

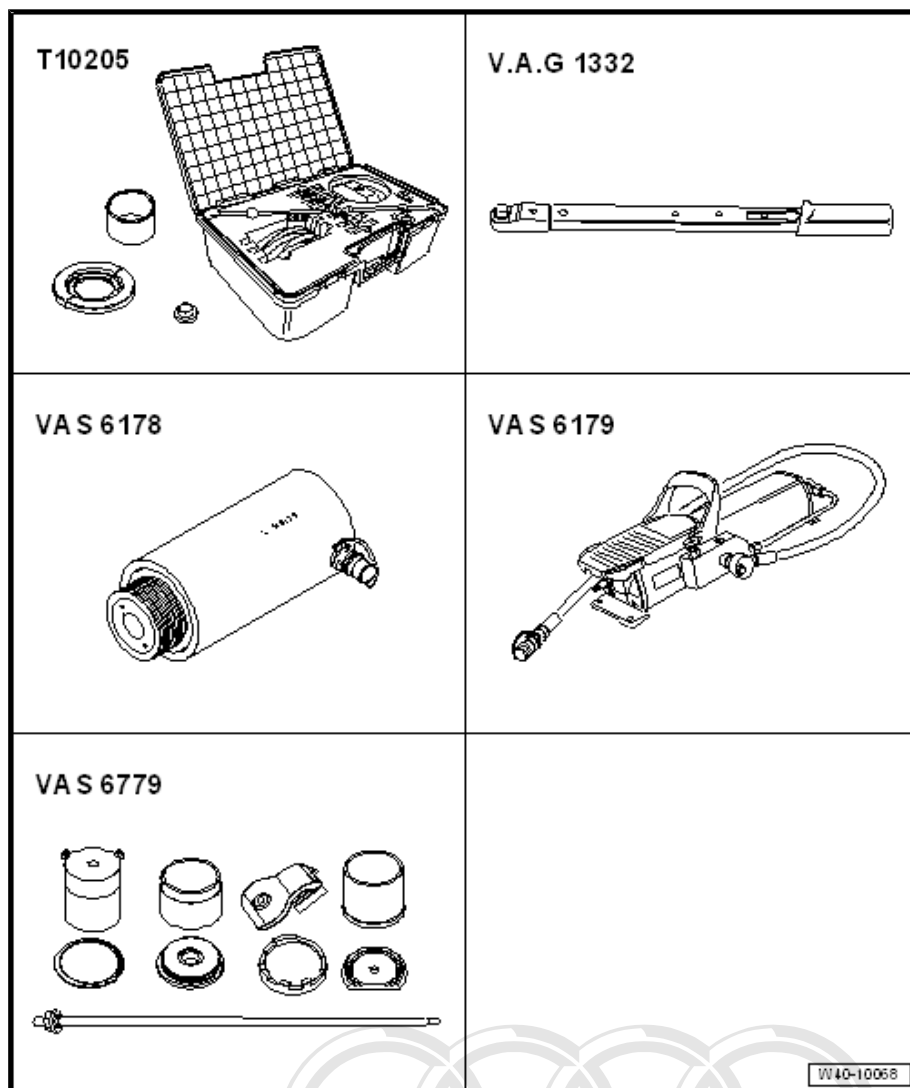
1.4 Servicing subframe



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Special tools and workshop equipment required

- ◆ Assembly tool - T10205-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Hydraulic press - VAS 6178-
- ◆ Foot pump - VAS 6179-
- ◆ Assembly tool - VAS 6779-

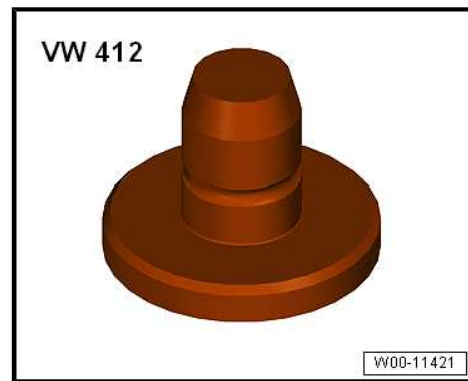


- ◆ Thrust plate - VW 401-



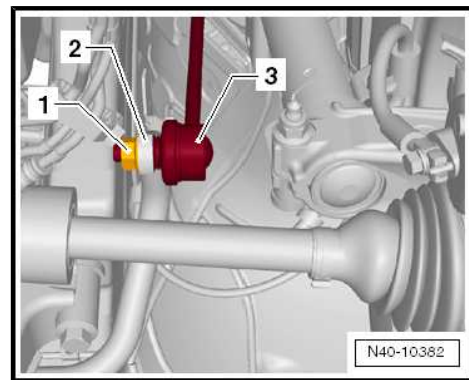
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◆ Press tool - VW 412-

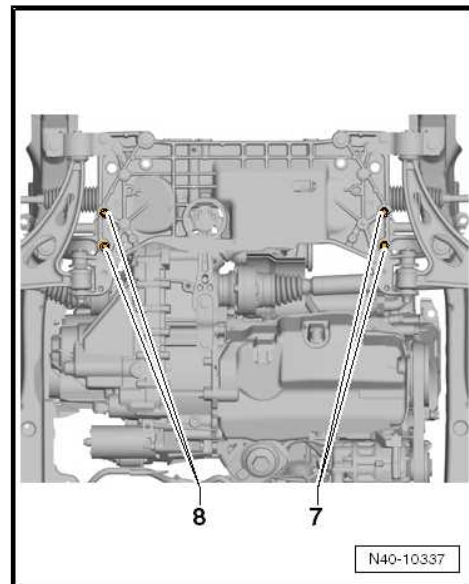


Renewing bonded rubber bushes for pendulum support

- Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .
- Remove hexagon nut -1- from coupling rod -3- (left and right sides).
- Pull coupling rod -3- out of anti-roll bar -2- (left and right sides).

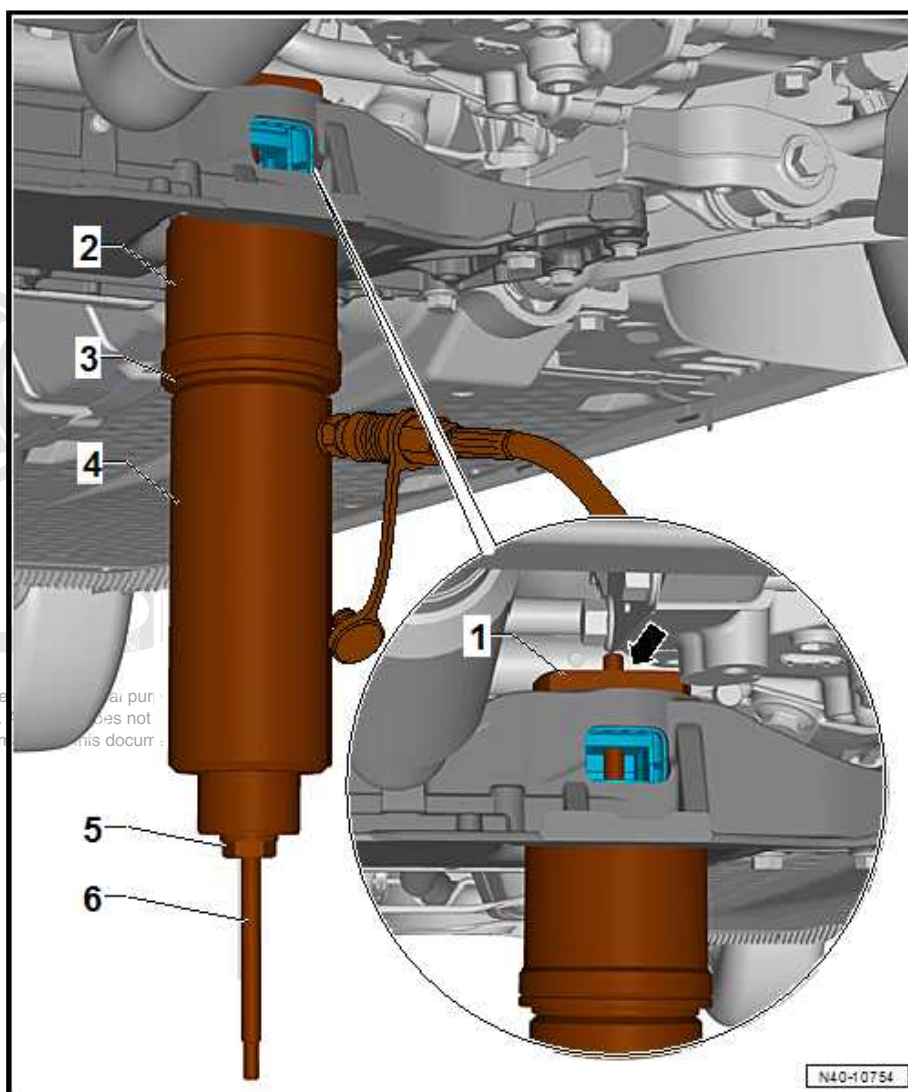
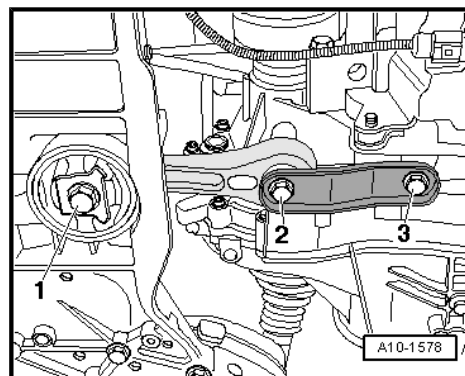


- Remove bolts -7- and -8- for anti-roll bar.
- Leave the anti-roll bar in its installation position in the vehicle.



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- Remove bolt -1-.
- Remove bolts -2- and -3-.
- Take out pendulum support.



Pressing out bonded rubber bush

- Attach assembly tool - VAS 6779- to subframe as shown in illustration.
- Place thrust piece (for removal) - VAS 6779-1- -item 1- on bonded rubber bush with flat side -arrow- facing in direction of travel.

1 - Thrust piece (for removal) - VAS 6779/1-

2 - Tube - VAS 6779/4- (side with smaller outer diameter faces towards subframe)

3 - Thrust piece - VAS 6779/5-

4 - Hydraulic press - VAS 6178- with press attachment - T10205/13-

5 - Hexagon nut - VAS 6779/3-

6 - Threaded spindle - VAS 6779/2-

- Press out both bonded rubber bushes simultaneously until upper bush -2- is visible in aperture for pendulum support -arrow- in subframe.
- Visually inspect outer ring of upper bonded rubber bush -2-.
- If the outer ring of the upper bonded rubber bush -2- is deformed, it must be chiselled open through the aperture for the pendulum support -arrow- in the subframe.
- Using a chisel or similar tool -1-, break out an opening in outer ring of upper bonded rubber bush -2-.



Note

This step is necessary to prevent the outer ring of the upper bonded rubber bush from tilting sideways and catching in the aperture for the pendulum support in the subframe.

- Press out bonded rubber bushes completely (both bushes are pressed out together).

Preparing bonded rubber bushes for installation



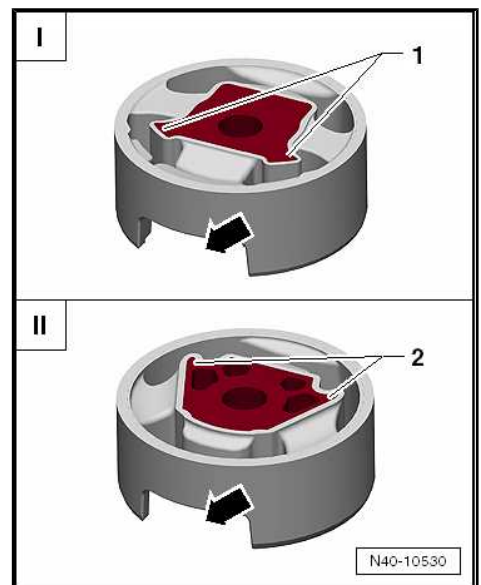
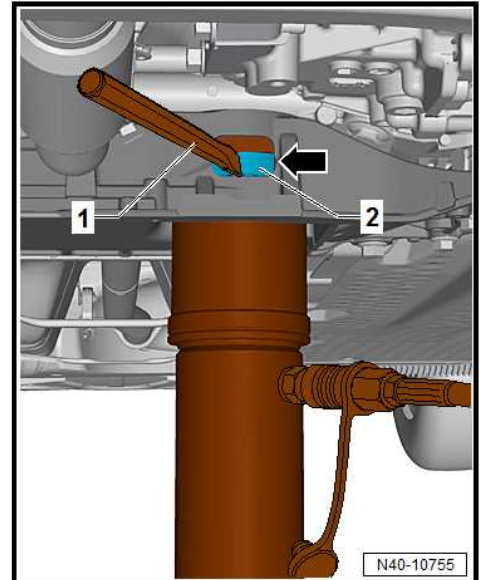
Note

- ◆ There are two different versions of the bonded rubber bush for the pendulum support: the "T version" -I- and the "V version" -II-.
- ◆ Select the correct version from ⇒ Electronic parts catalogue "ETKA"

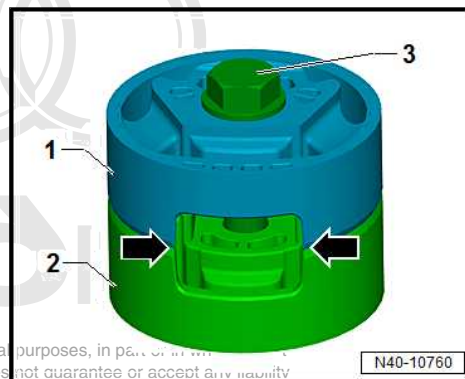
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I - The corners of the inner core -1- face towards the cut-out for the pendulum support -arrow- ("T version").

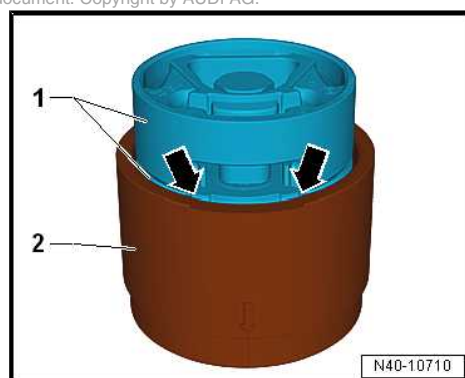
II - The corners of the inner core -2- face away from the cut-out for the pendulum support -arrow- ("V version").



- Fit the bonded rubber bushes -1- and -2- together so that the two cut-outs -arrows- are exactly above each other.
- Bolt together bonded rubber bushes -1- and -2- hand-tight with original bolt -3-.

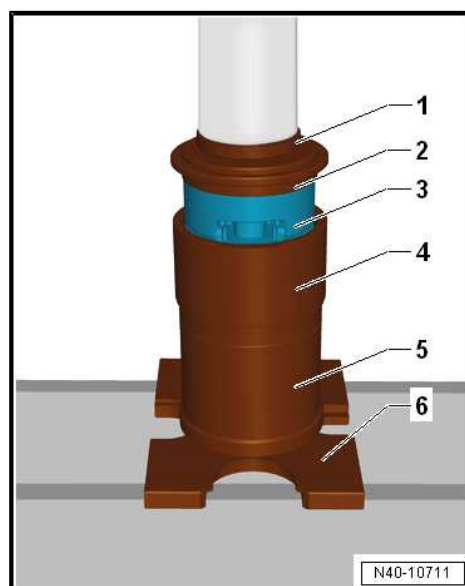


- Insert bonded rubber bushes -1- into larger diameter of funnel - VAS 6779/6- -2- (with bolt head pointing upwards).
- Align bonded rubber bushes -1- in funnel - VAS 6779/6- -2-. The cut-out in the bonded rubber bushes must be exactly in line with the recess -arrows- in funnel - VAS 6779/6- -2-.

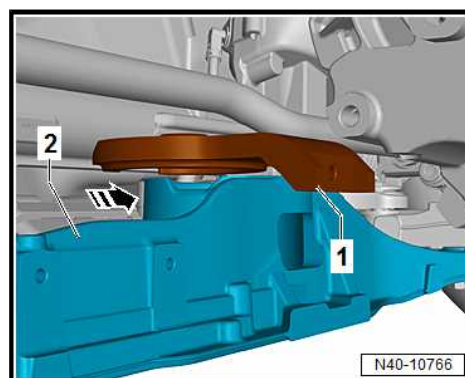


- Press bonded rubber bushes -3- into funnel - VAS 6779/6- as far as stop, as shown in illustration.

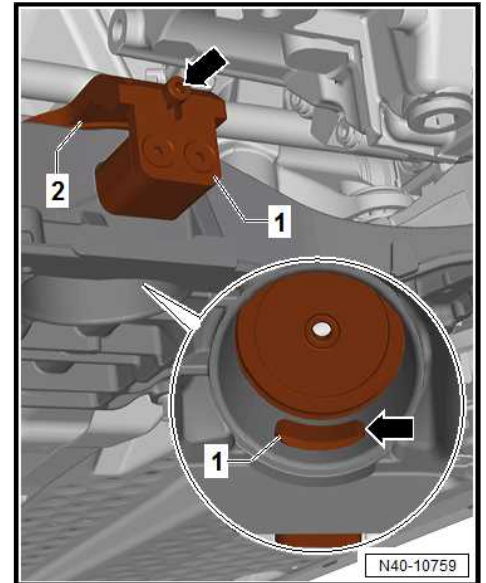
- 1 - Press tool - VW 412-
 - 2 - Thrust piece - VAS 6779/5- (side marked »A« faces upwards)
 - 3 - Bonded rubber bushes
 - 4 - Funnel - VAS 6779/6-
 - 5 - Tube - VAS 6779/4-
 - 6 - Thrust plate - VW 401-
- Remove bolt from bonded rubber bush.



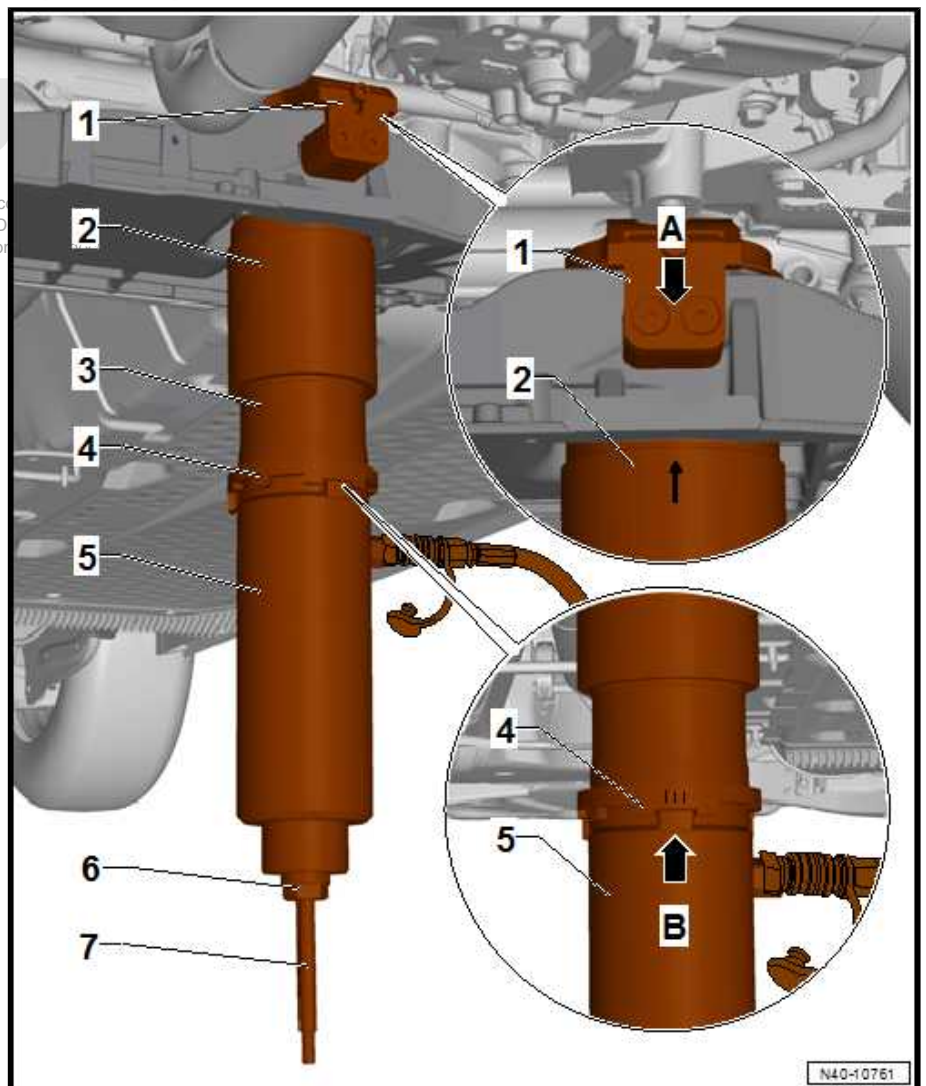
- Fit counterhold tool - VAS 6779/7- -1- on subframe -2- from left side in direction of -arrow-.



- Fit insert - VAS 6779/7-1A- -1- into opening for pendulum support in subframe.
- Secure insert - VAS 6779/7-1A- to counterhold tool - VAS 6779/7- -2- with bolt -arrow-.
- Make sure that insert - VAS 6779/7-1A- -1- is correctly located in opening in subframe -arrow-.



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Pressing in bonded rubber bush

- Screw threaded spindle - VAS 6779/2- -7- into counterhold tool
- VAS 6779/7- -1-.

- Attach assembly tool - VAS 6779- to subframe as shown in illustration.

1 - Counterhold tool - VAS 6779/7-

2 - Funnel - VAS 6779/6- (-arrow marking- on funnel must be aligned centrally between the two bolts -arrow A-)

3 - Thrust piece - VAS 6779/9-

4 - Stepped ring - VAS 6779/8- (marking -III- on stepped ring must be aligned with lug -arrow B- on thrust piece - VAS 6779/9-)

5 - Hydraulic press - VAS 6178- with press attachment - T10205/13-

6 - Hexagon nut - VAS 6779/3-

7 - Threaded spindle - VAS 6779/2-

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- Press in both bonded rubber bushes together.
- Detach assembly tool - VAS 6779- from subframe and check that pressed-in bonded rubber bushes are seated correctly.
- Secure anti-roll bar to subframe and coupling rods.
- Install pendulum support.
- Install noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .

Tightening torques

- ♦ ⇒ [“1.1 Exploded view - subframe”, page 16](#)
- ♦ Pendulum support ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

1.5 Removing and installing anti-roll bar

Special tools and workshop equipment required

- ♦ Locating pins - T10096-



◆ Torque wrench - V.A.G 1332-

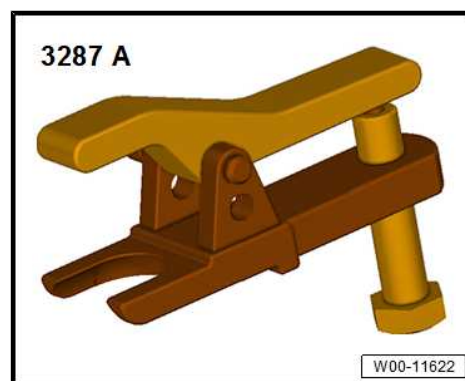


◆ Engine and gearbox jack - VAS 6931-



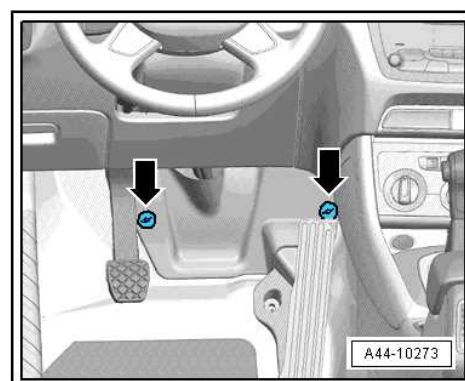
◆ Ball joint puller - 3287 A-

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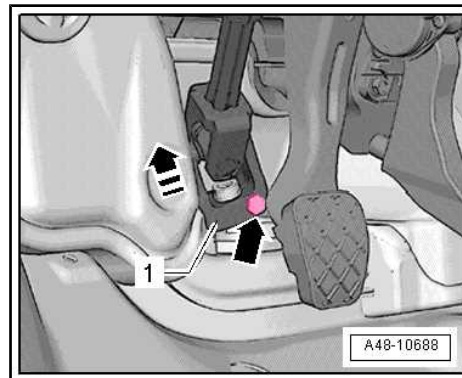


Removing

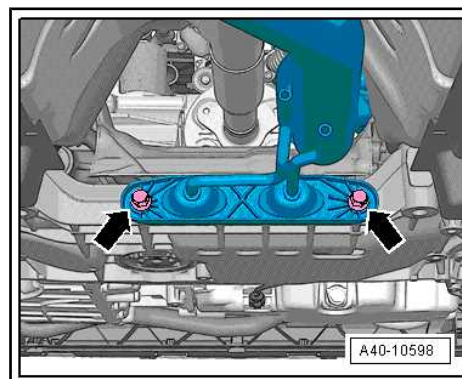
- Unscrew nuts -arrows- and remove footwell trim.



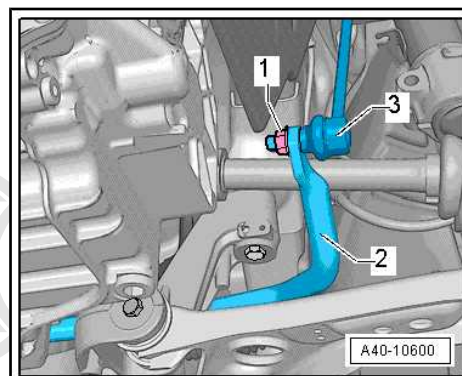
- Unscrew bolt -arrow- from universal joint -1- and pull universal joint off steering rack in direction of -arrow-.
- Remove front wheels ➔ [page 241](#) .
- Fix position of subframe ➔ [page 40](#) .



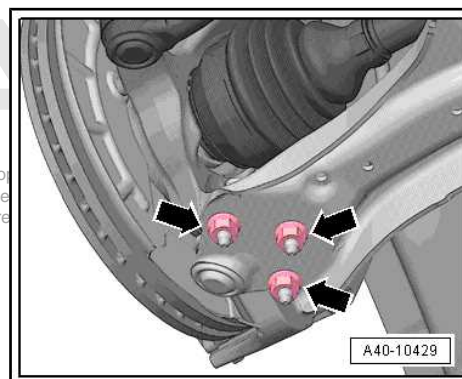
- Remove bolts -arrows-.
- If fitted, remove front vehicle level senders ➔ [page 238](#) .



- Remove nut -1- from coupling rod -3- (left and right sides).



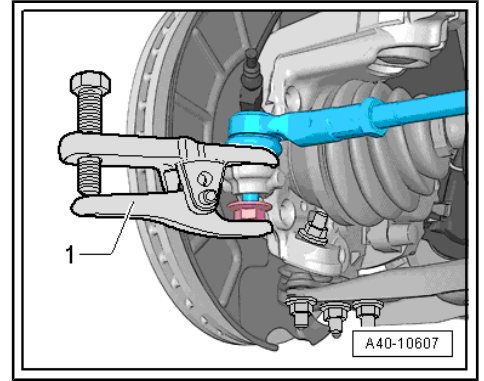
- Unscrew nuts -arrows-.



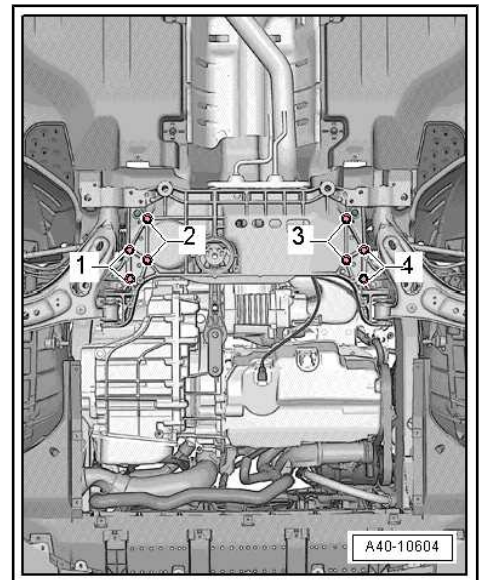
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- Slacken off nut on track rod ball joint (but do not remove yet).
- Press track rod ball joint off wheel bearing housing using ball joint puller - 3287 A- -1-.

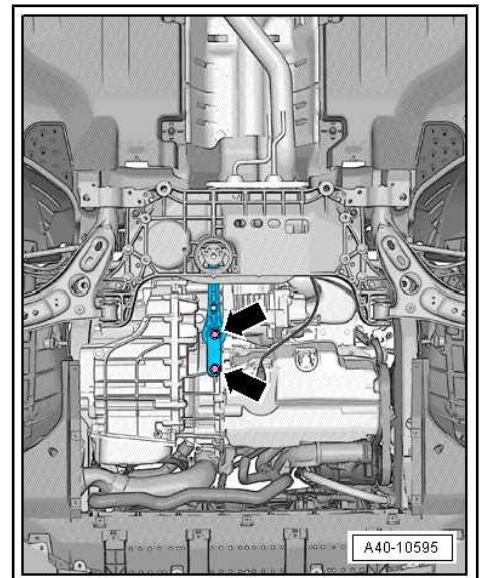


- Remove bolts -1 and 4- and detach anti-roll bar from subframe.



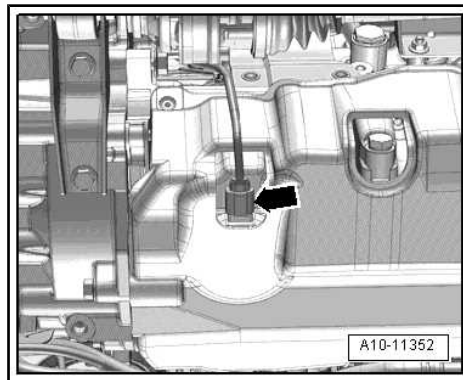
- Remove bolts -arrows- and detach pendulum support from gearbox.

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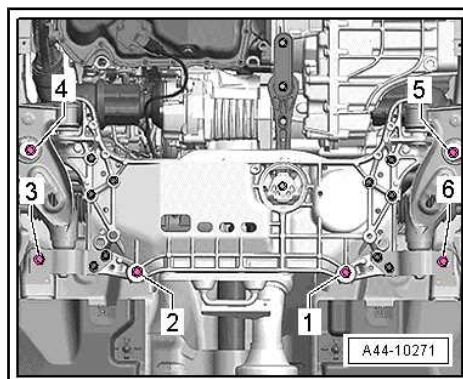
Vehicles with 4-cylinder engine:

- Unplug connector for oil level and oil temperature sender - G266- -arrow- and move wiring clear.

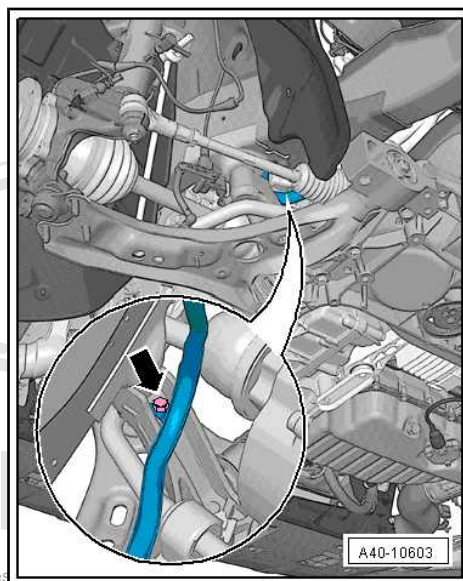


All vehicles (continued):

- Loosen bolts -1- and -2- and lower subframe slightly, taking care not to damage electrical wiring.

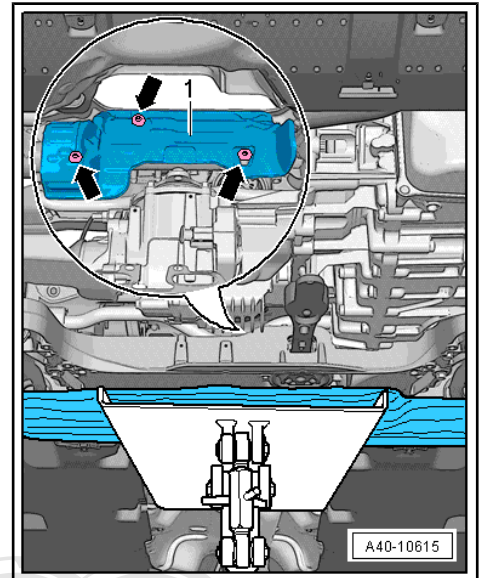


- Remove cable guide from subframe -arrow-.



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- Lower subframe until bolts -arrows- securing heat shield -1- for steering rack are accessible.
- Remove bolts -arrows- and detach heat shield -1-.

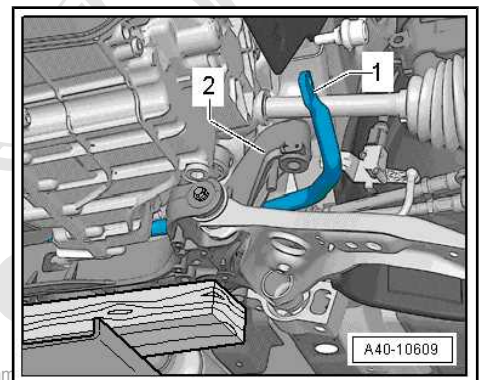


- Push anti-roll bar to the right as seen in direction of travel.
- Then remove anti-roll bar -1- from subframe and over suspension bracket -2- towards front of vehicle.

Installing

Installation is performed in reverse sequence; note the following:

- Remove locating pins of locating pin set - T10096-
⇒ [page 43](#) .
- Install subframe with steering rack ⇒ [page 22](#) .
- Fit front wheels ⇒ [page 241](#) .
- Check and adjust wheel alignment as required, see chart
⇒ [page 247](#) .



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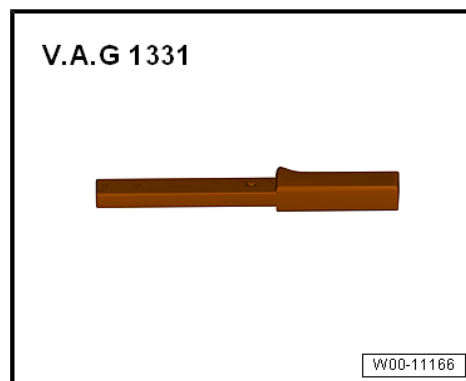
Tightening torques

- ◆ ⇒ [“1.1 Exploded view - subframe”, page 16](#)
- ◆ ⇒ [“2.1 Exploded view - front vehicle level sender”, page 237](#)
- ◆ ⇒ [“2.1 Exploded view - steering column”, page 263](#)
- ◆ Pendulum support ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings
- ◆ Bracket for exhaust system ⇒ Rep. gr. 26 ; Emission control system; Exploded view - emission control system

1.6 Removing and installing coupling rod

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



- ◆ Ring spanner insert (16 mm) - V.A.G 1331/12-

Removing

- Remove front wheel ➔ [page 241](#) .
- Unscrew nuts -arrows- from coupling rod -1- (if necessary, counterhold stud -2- with multi-point socket).
- Pull coupling rod -1- out of anti-roll bar and suspension strut.
- Take out coupling rod -1-.

Installing

Installation is performed in reverse sequence; note the following:

- Tighten nuts -arrows- securing coupling rod to suspension strut and anti-roll bar (counterhold stud -2- with multi-point socket).



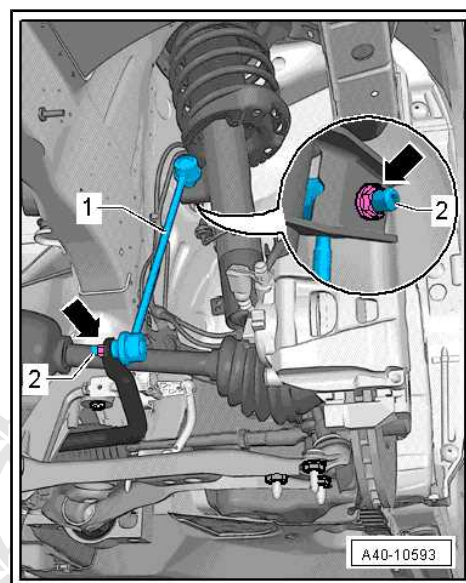
Note

The tool used for counterholding must be applied straight.

- Fit front wheel ➔ [page 241](#) .

Tightening torques

- ◆ ➔ ["1.1 Exploded view - subframe", page 16](#)



1.7 Fixing position of subframe

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



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◆ Engine and gearbox jack - VAS 6931-



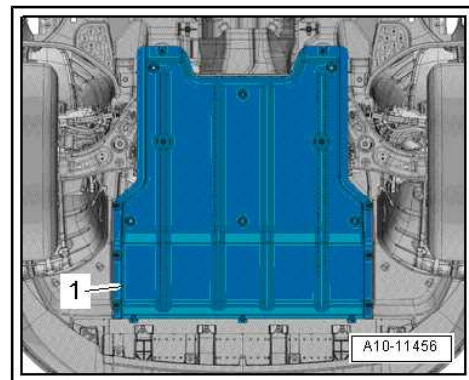
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◆ Locating pins - T10096-

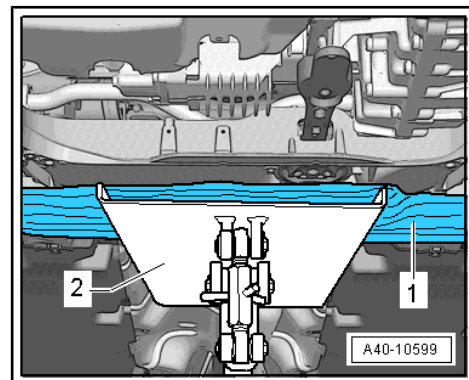


Procedure

- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



- Position engine and gearbox jack - VAS 6931- -item 2- under subframe.
- Place a wooden block -1- or similar between engine and gearbox jack - VAS 6931- and subframe.
- If necessary, clean thread of locating pins.



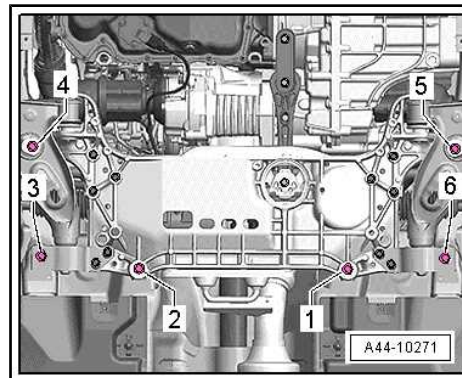
To fix position of subframe, locating pins from locating pin set - T10096- must be screwed in one after the other at positions -3 to 6-.

- Positions -4- and -5- must be fixed first.



Note

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



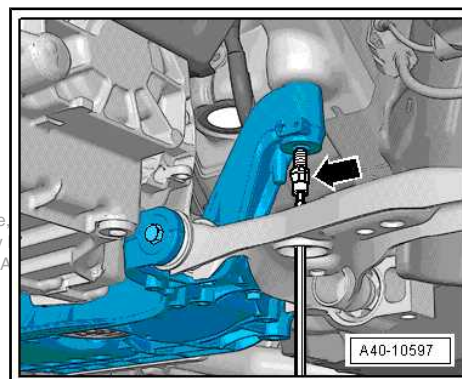
Fixing position of subframe



Caution

Risk of damage to threads of bolts securing subframe to body.

- ◆ ***DO NOT use an impact wrench when loosening or tightening the bolts that secure the subframe to the body.***
- ◆ ***Always fit all bolts by hand; make the first few turns by hand.***



- Fit locating pins -arrow- from locating pin set - T10096- one after the other in place of securing bolts on both sides of vehicle and tighten to 20 Nm.

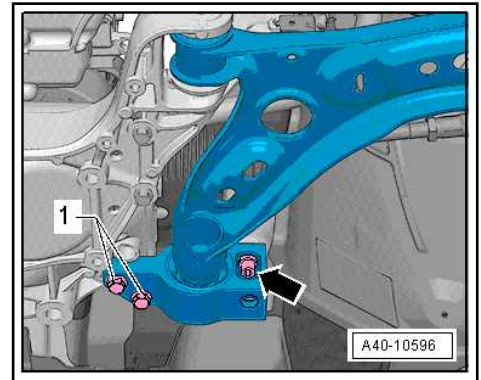
Fixing position of mounting bracket



Caution

Risk of damage to threads of bolts securing subframe to body.

- ◆ **DO NOT use an impact wrench when loosening or tightening the bolts that secure the subframe to the body.**
- ◆ **Always fit all bolts by hand; make the first few turns by hand.**



- Fit locating pins -arrow- from locating pin set - T10096- one after the other in place of securing bolts on both sides of vehicle and tighten to 20 Nm.
- The process of fixing the position of the subframe is complete when all the bolts referred to above have been replaced in turn with a locating pin from the locating pin set - T10096- .
- The position of the front axle is now fixed.

Removing locating pins of locating pin set - T10096-

Removal is performed in reverse sequence; note the following:

- Unscrew only one locating pin at a time and replace it with a new bolt.

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

- Check and adjust wheel alignment as required, see chart [⇒ page 247](#) .

Tightening torques

- ◆ [⇒ "1.1 Exploded view - subframe", page 16](#)
- ◆ [⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation](#)

1.8 Lowering subframe

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-

V.A.G 1332



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◆ Engine and gearbox jack - VAS 6931-



◆ Locating pins - T10096-



Removing

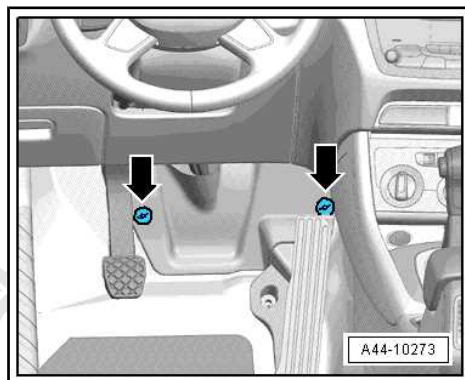
- Turn steering wheel to straight-ahead position and remove ignition key so that the steering lock engages.

Vehicles with “keyless entry system”

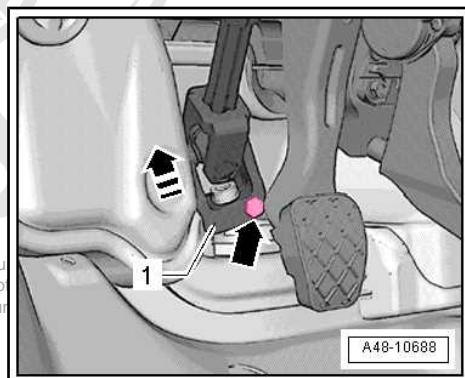
- Switch off ignition and open driver's door so that steering lock engages.

All vehicles (continued):

- Unscrew nuts -arrows- and remove footwell trim.

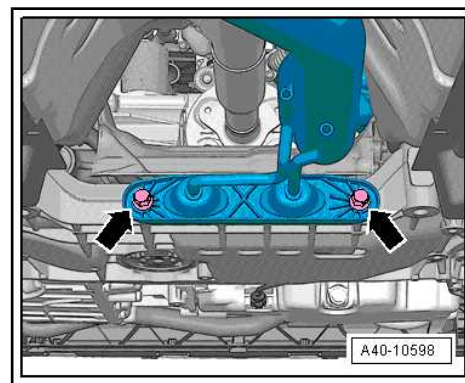


- Unscrew bolt -arrow- from universal joint -1- and pull universal joint off steering rack in direction of -arrow-.
- Fix position of subframe ➤ [page 40](#) .

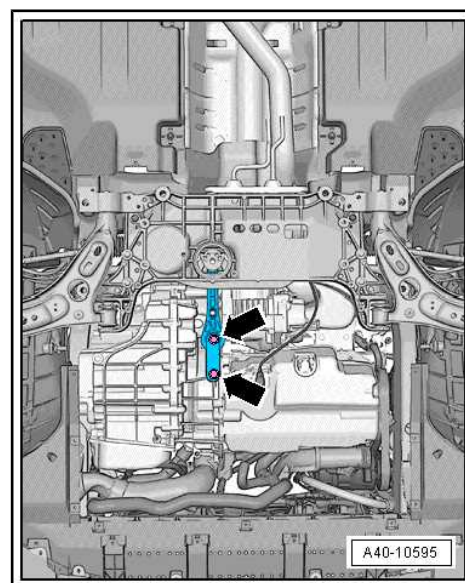


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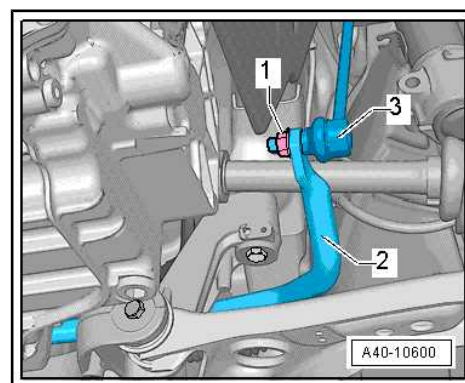
- Remove bolts -arrows-.



- Remove bolts -arrows- and detach pendulum support from gearbox.



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

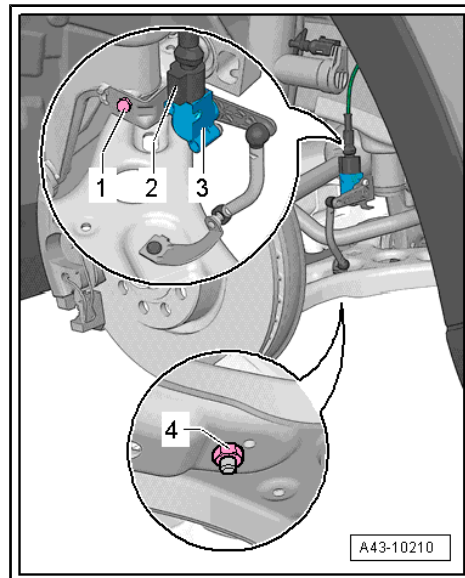


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- If fitted, unplug electrical connector -2- at front left vehicle level sender - G78- and front right vehicle level sender - G289- .
- Remove nut -4- and move coupling rod clear of vehicle level sender .

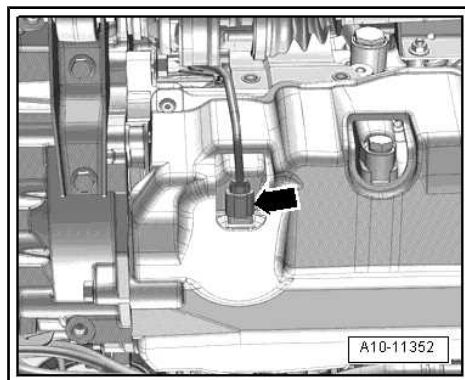
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Vehicles with 4-cylinder engine:

- Unplug connector for oil level and oil temperature sender - G266- -arrow- and move wiring clear.



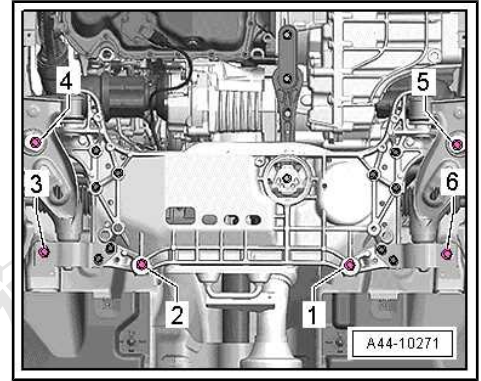
All vehicles (continued):

- Remove remaining bolts -1- and -2- and lower subframe a maximum of 10 cm.



Note

Important: Take care to avoid overstressing the electrical wiring for the steering and the oil level and oil temperature sender - G266-.



Installing

Installation is performed in reverse sequence; note the following:

- Remove locating pins of locating pin set - T10096-
⇒ [page 43](#) .
- Check and adjust wheel alignment as required, see chart
⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

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Tightening torques

- ◆ ⇒ [“1.1 Exploded view - subframe”, page 16](#)
- ◆ ⇒ [“2.1 Exploded view - front vehicle level sender”, page 237](#)
- ◆ ⇒ [“2.1 Exploded view - steering column”, page 263](#)
- ◆ Pendulum support ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings
- ◆ Bracket for exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers

2 Suspension strut, upper links

⇒ "2.1 Exploded view - suspension strut, upper links", page 48

⇒ "2.2 Removing and installing suspension strut", page 49

⇒ "2.3 Servicing suspension strut", page 54

2.1 Exploded view - suspension strut, upper links

1 - Shock absorber



If a shock absorber is renewed because the piston rod is bent on an RS Q3 with production control number (PR No.) G44, the track rod ball joint on that side of the vehicle will also have been damaged and must be renewed.

- ☐ On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ⇒ Vehicle diagnostic tester
- ☐ If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#)
- ☐ On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights

2 - Bump stop

3 - Protective sleeve

4 - Coil spring

- ☐ Removing and installing ⇒ [page 54](#)
- ☐ Surface of spring coil must not be damaged

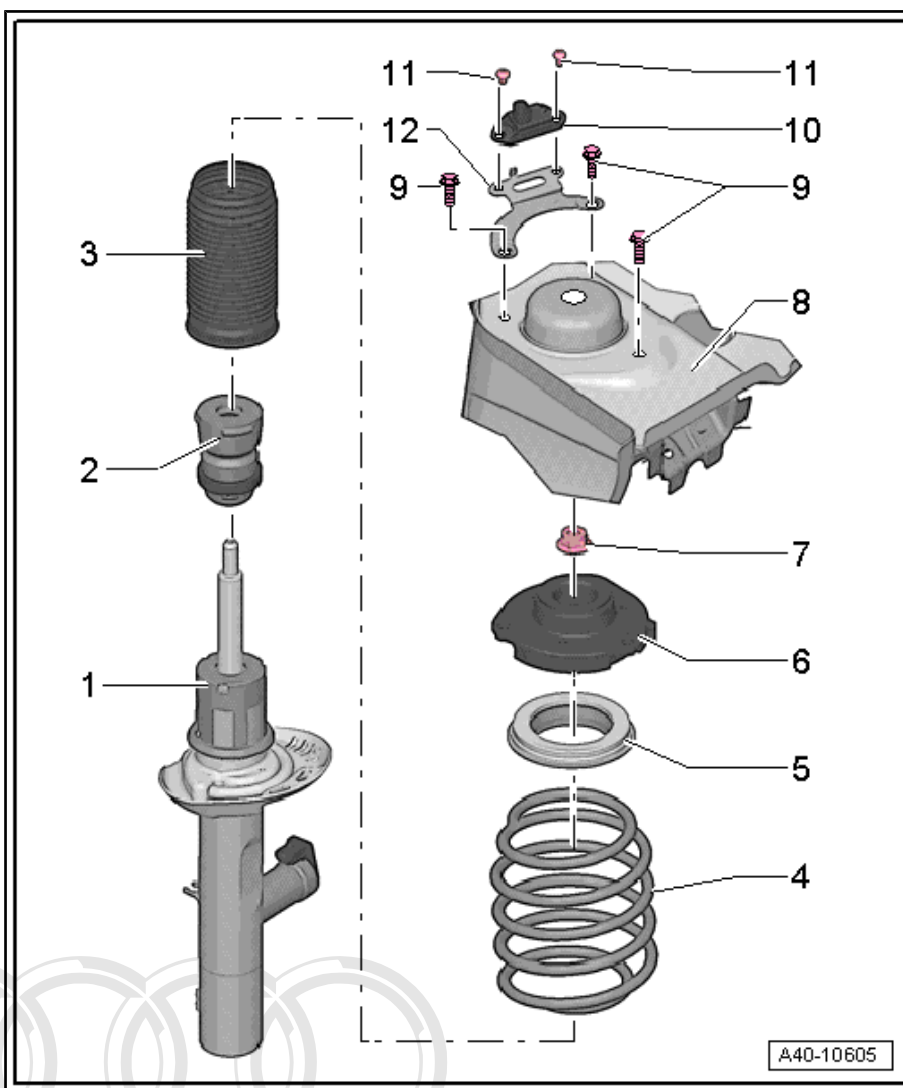
5 - Deep groove ball thrust bearing

6 - Suspension strut mounting

- ☐ Note correct installation position ⇒ [page 53](#)

7 - Nut

- ☐ Always renew if removed
- ☐ 60 Nm



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8 - Suspension turret

9 - Bolt

- ☐ Always renew if removed
- ☐ 15 Nm +90°

10 - Body acceleration sender

- ☐ Removing and installing ⇒ [page 232](#)
- ☐ Note correct installation position ⇒ [page 233](#)

11 - Bolt

- ☐ Always renew if removed
- ☐ 5 Nm

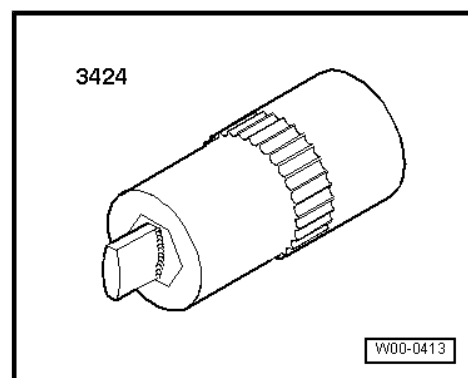
12 - Bracket

- ☐ Installed on vehicles with electronic damping control
- ☐ Note installation position on left and right sides of vehicle ⇒ [page 54](#)

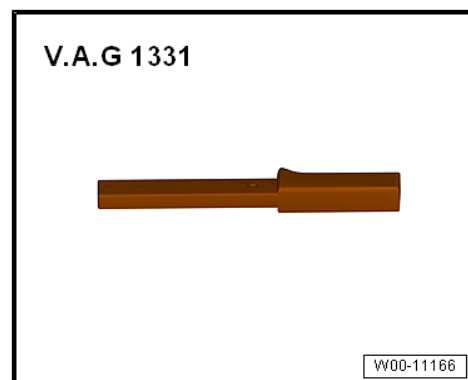
2.2 Removing and installing suspension strut

Special tools and workshop equipment required

- ◆ Spreader - 3424-



- ◆ Torque wrench - V.A.G 1331-



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



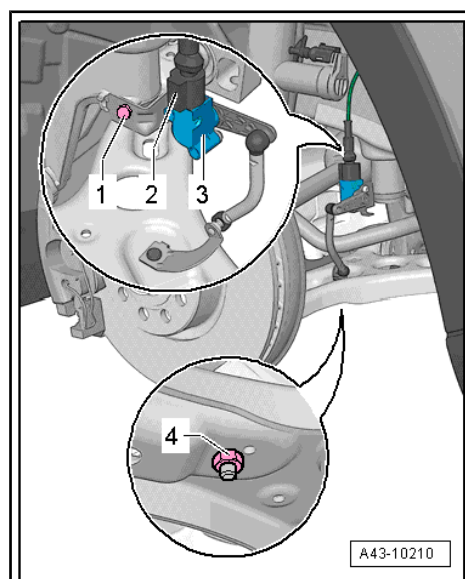
◆ Support - T10149-



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Removing

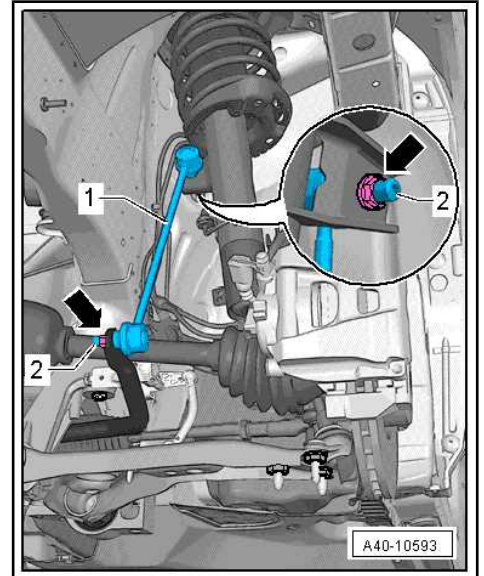
- Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
- Loosen drive shaft bolt at wheel hub ⇒ [page 102](#) .
- Remove front wheel ⇒ [page 241](#) .
- Unscrew nut -4- and detach coupling rod of vehicle level sender from wishbone.
- Unscrew nut -top arrow- from coupling rod -1- (if necessary, counterhold stud -2- with multi-point socket).



- Unscrew nut -right arrow- from coupling rod -1- at suspension strut (if necessary, counterhold stud -2- with multi-point socket).

 Note

-Left arrow- can be disregarded.

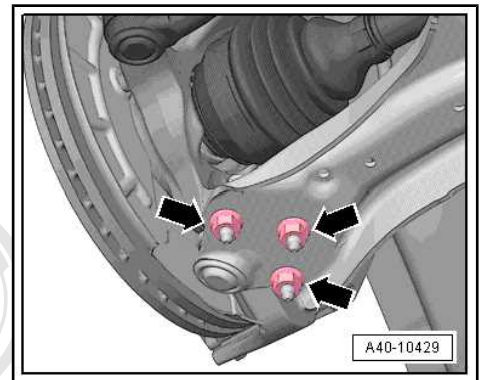


- Unscrew nuts -arrows-.
- Pull wheel bearing housing with swivel joint out of wishbone.

 Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

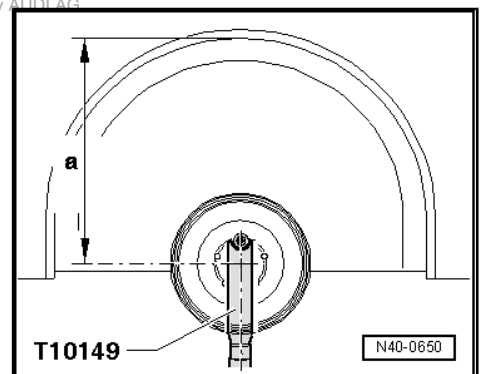
- Pull outer joint of drive shaft out of wheel hub.
- Tie up drive shaft to body with wire.



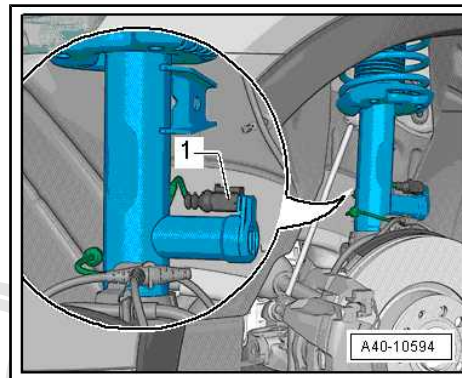
 Note

Do not let the drive shaft hang down under its own weight, as otherwise excessive bending could damage the inner CV joint.

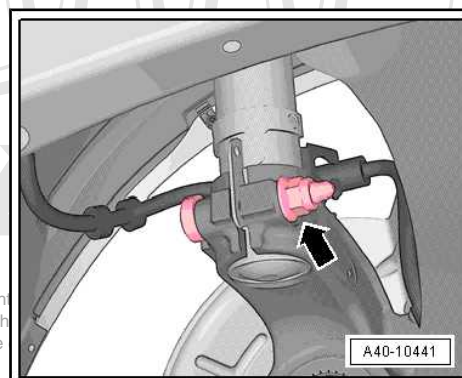
- Secure swivel joint back onto wishbone.
- Use wheel bolt to attach engine and gearbox jack - VAS 6931- with support - T10149- to wheel hub.



- On vehicles with electronic damping control, unplug connector -1- and move wiring clear at suspension strut.



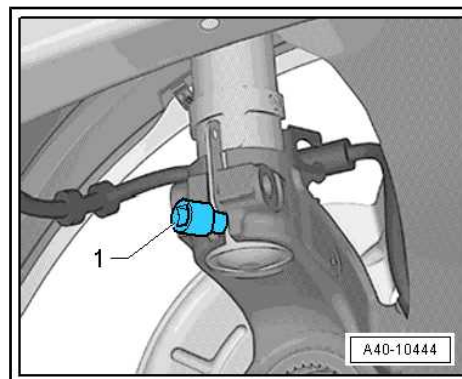
- Remove bolt and nut securing wheel bearing housing/suspension strut -arrow-.



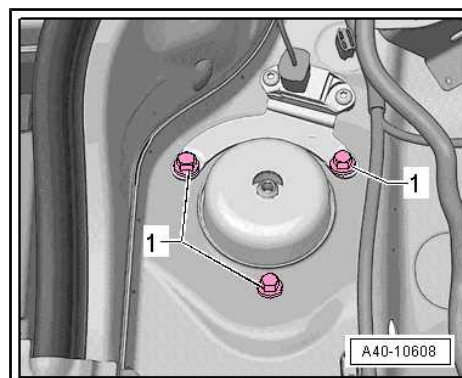
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- Insert spreader - 3424- -1- into slot in wheel bearing housing.
- Turn ratchet handle through 90° and pull ratchet handle off spreader - 3424- .
- Press the brake disc by hand towards the suspension strut, as the shock absorber tube may otherwise become skewed in the bore of the wheel bearing housing.
- Pull wheel bearing housing downwards off shock absorber tube and lower with engine and gearbox jack - VAS 6931- until shock absorber tube is free.
- Secure wheel bearing housing to bracket/subframe with binding wire.
- Remove engine/gearbox jack - VAS 6931- from under wheel bearing housing.
- Unscrew bolts -1- for upper shock absorber mounting and take out suspension strut.



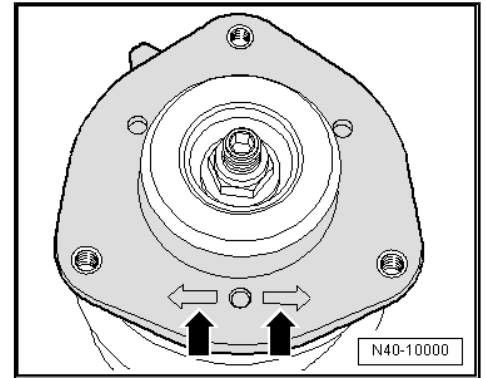
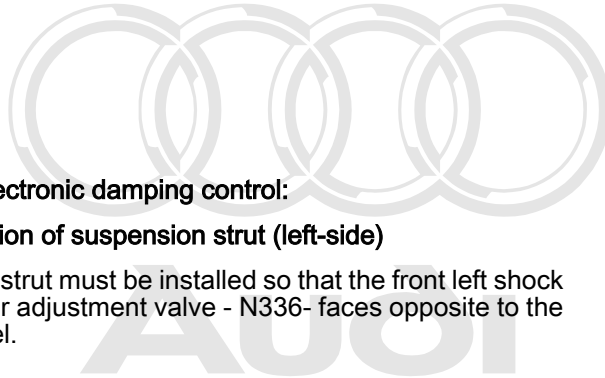
The illustration shows a vehicle with electronic damping control.



Installing

Installation is performed in reverse sequence; note the following:

One of the two markings -arrows- on the spring plate must point in the direction of travel.

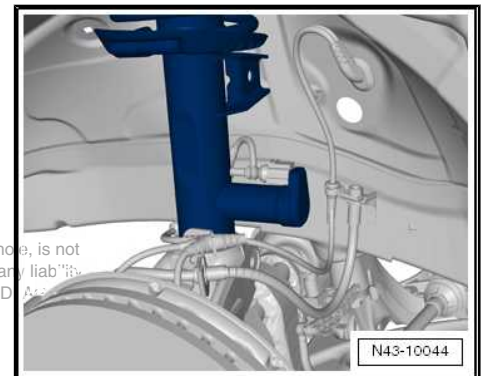


Vehicles with electronic damping control:

Installation position of suspension strut (left-side)

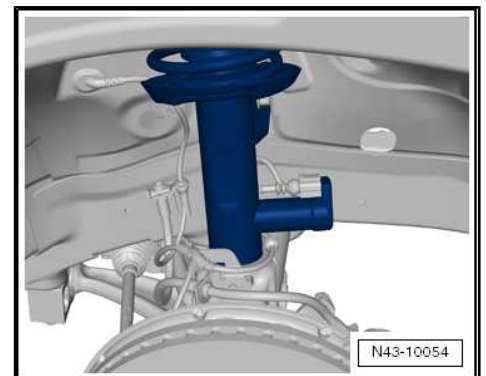
The suspension strut must be installed so that the front left shock absorber damper adjustment valve - N336- faces opposite to the direction of travel.

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Installation position of suspension strut (right-side)

The suspension strut must be installed so that the front right shock absorber damper adjustment valve - N337- faces in the direction of travel.



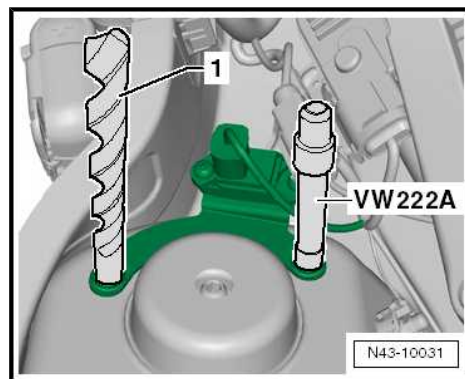
Both sides (continued):

- Check installation position of bracket for front left/right body acceleration sender - G341/G342- .



Note

- ◆ Use a drill bit with $\varnothing$ 11 mm -1- and drift - VW 222 A- for checking installation position.
- ◆ The holes in the bracket must line up with the holes in the shock absorber turret.
- Install plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
- Fit front wheel ⇒ [page 241](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



Tightening torques

- ◆ ⇒ [“1.1 Exploded view - subframe”, page 16](#)
- ◆ ⇒ [“2.1 Exploded view - suspension strut, upper links”, page 48](#)
- ◆ ⇒ [“2.1 Exploded view - front vehicle level sender”, page 237](#)
- ◆ ⇒ [“5.3 Loosening and tightening bolt securing drive shaft”, page 102](#)

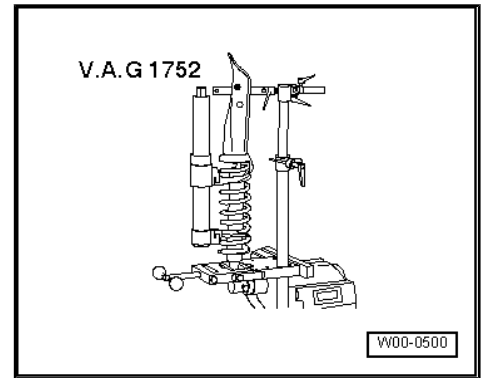
2.3 Servicing suspension strut

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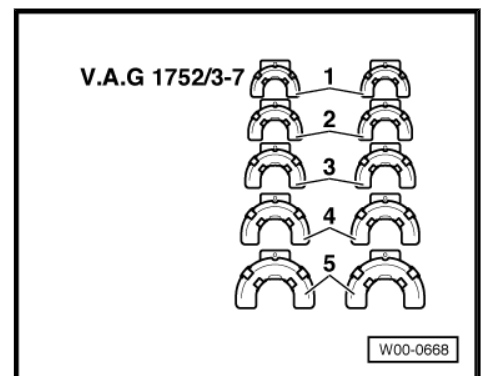
- ◆ Torque wrench - V.A.G 1332-



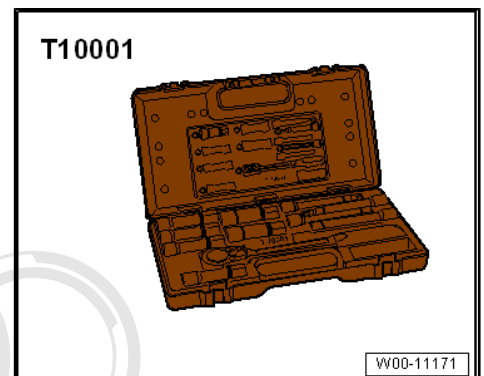
◆ Spring compressor - V.A.G 1752/1-



◆ Spring retainer - V.A.G 1752/4-



◆ Shock absorber set - T10001-



◆ Commercially available ratchet

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Removing coil spring

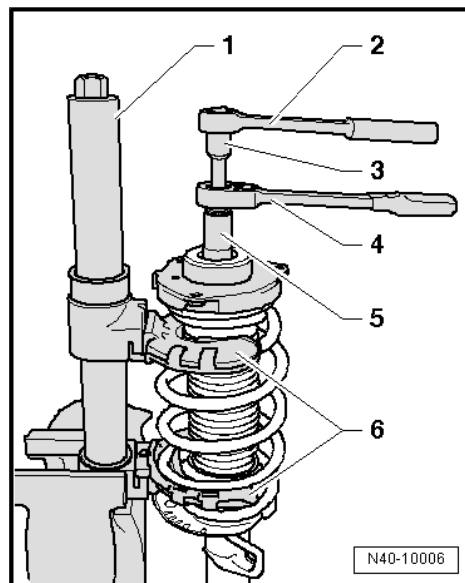
- Remove suspension strut ➤ [page 49](#) .
- Compress coil spring with spring compressor - V.A.G 1752/1- until thrust bearing is free at top.
- Unscrew hexagon nut from piston rod.
- Take off suspension strut components and coil spring together with spring compressor - V.A.G 1752/1- .

- 1 - Spring compressor - V.A.G 1752/1-
- 2 - Torque wrench - V.A.G 1332-
- 3 - Socket - T10001/8-
- 4 - Ratchet - T10001/11-
- 5 - Socket - T10001/5-
- 6 - Spring retainer - V.A.G 1752/4-

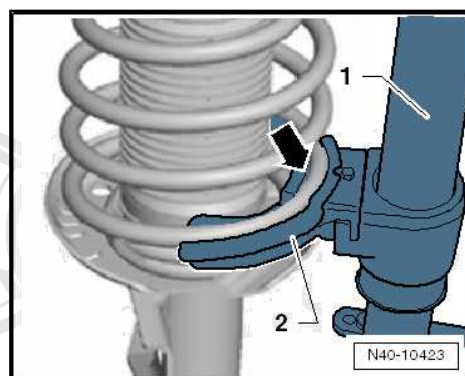


WARNING

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



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

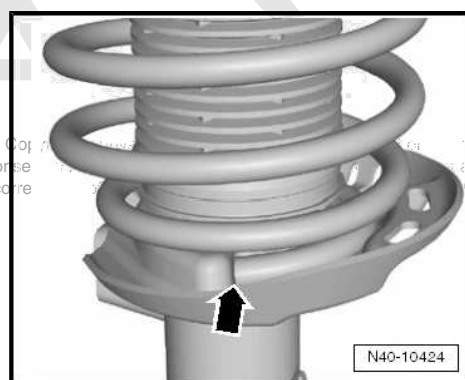


Installing coil spring

- 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-

- Tighten new nut on piston rod ➤ [page 48](#) .
- Slacken off spring compressor - V.A.G 1752/1- and detach from coil spring.
- Install suspension strut ➤ [page 49](#) .



3 Lower wishbone, swivel joint

⇒ [“3.1 Exploded view - lower wishbone, swivel joint”, page 57](#)

⇒ [“3.2 Removing and installing lower wishbone”, page 58](#)

⇒ [“3.3 Renewing mounting bracket with wishbone bush”, page 61](#)

⇒ [“3.4 Removing and installing swivel joint”, page 63](#)

⇒ [“3.5 Renewing bonded rubber bush for lower wishbone”, page 65](#)

3.1 Exploded view - lower wishbone, swivel joint

1 - Wishbone

- ☐ Removing and installing wishbone with mounting bracket ⇒ [page 58](#)

2 - Bonded rubber bush

- ☐ Renewing ⇒ [page 65](#)

3 - Bolt

- ☐ Always renew if removed
- ☐ Suspension must be in unladen position when tightening ⇒ [page 11](#)
- ☐ 70 Nm +180°

4 - Subframe

5 - Mounting bracket

- ☐ Fixing position ⇒ [page 43](#)

6 - Bolt

- ☐ Always renew if removed
- ☐ 70 Nm +180°

7 - Bolts

- ☐ Always renew if removed
- ☐ 50 Nm +90°

8 - Swivel joint

- ☐ Removing and installing ⇒ [page 63](#)

9 - Nut

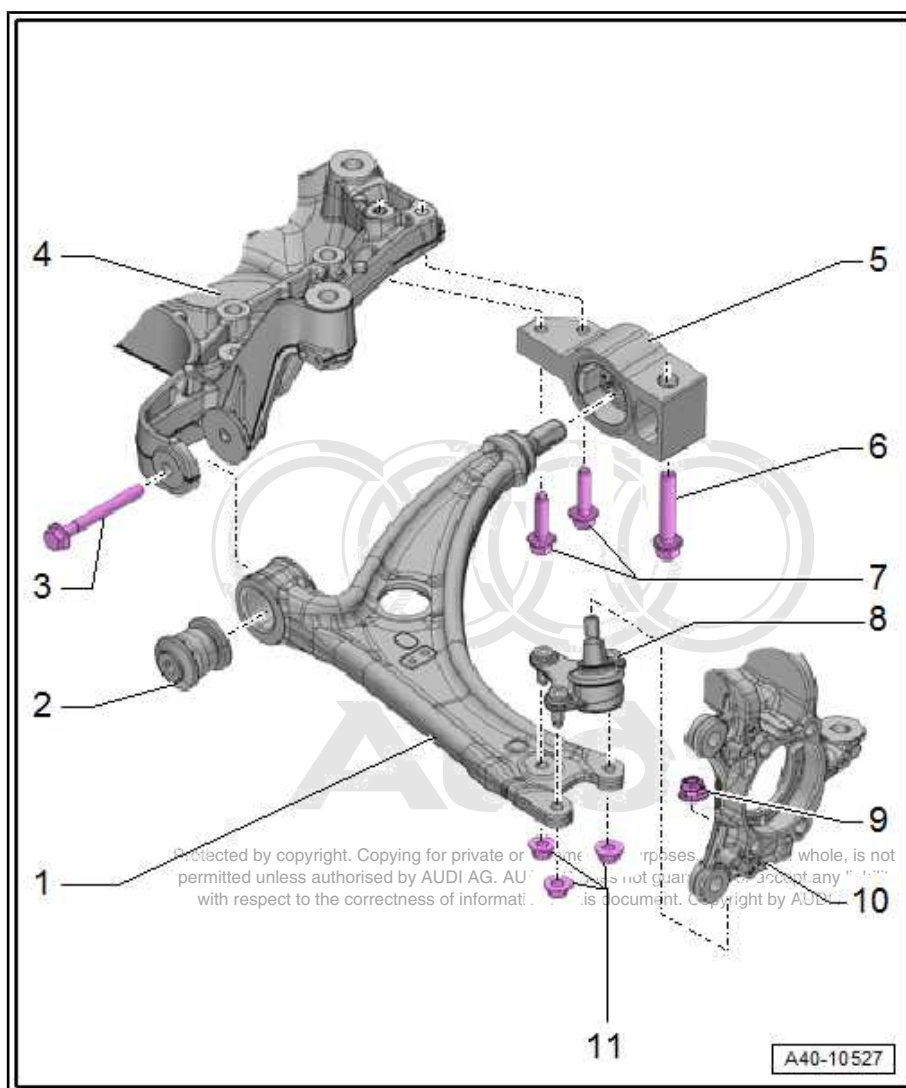
- ☐ When tightening, counterhold multi-point socket of joint pin
- ☐ Always renew if removed
- ☐ 60 Nm

10 - Wheel bearing housing

- ☐ Removing and installing ⇒ [page 69](#)

11 - Nut

- ☐ Always renew if removed



□ 100 Nm

3.2 Removing and installing lower wishbone

Special tools and workshop equipment required

◆ Torque wrench - V.A.G 1332-



◆ Locating pins - T10096-



Removing

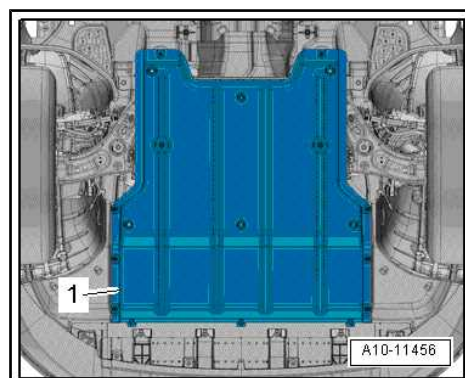
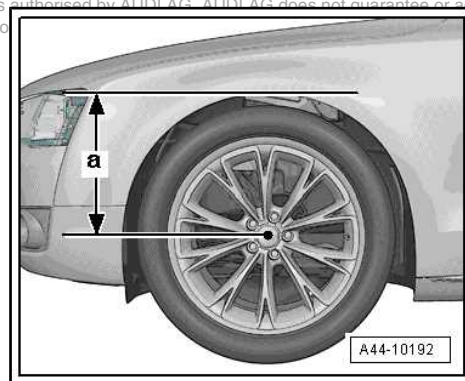
- Before commencing work, use measuring tape or similar to measure dimension -a- from wheel centre to lower edge of wheel housing.



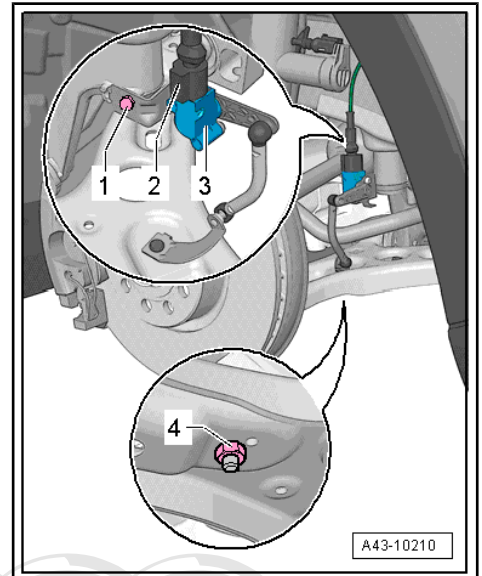
Note

This measurement must be taken with the suspension in the unladen position (vehicle unladen).

- Make a note of the measured value. This will be needed when tightening the bolts and/or nuts on the suspension.
- Remove front wheel ➔ [page 241](#) .
- Remove noise insulation -1- ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



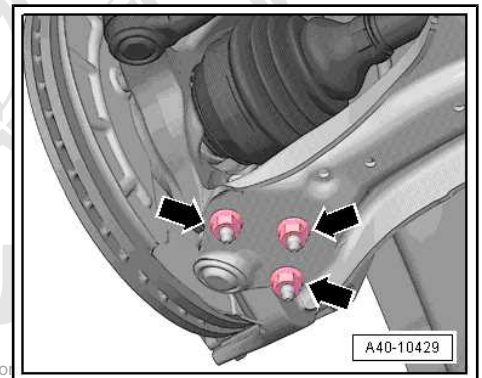
- If fitted, remove nut -4- and move coupling rod clear of vehicle level sender -3-.



- Unscrew nuts -arrows-.
- Pull wheel bearing housing with swivel joint out of wishbone.

 Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.



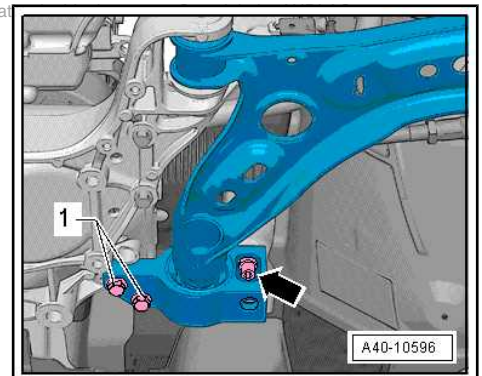
- Fit locating pin -arrow- from locating pin set -T10096- in place of securing bolt and tighten to 20 Nm.



Caution

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

- Remove bolts -1-.

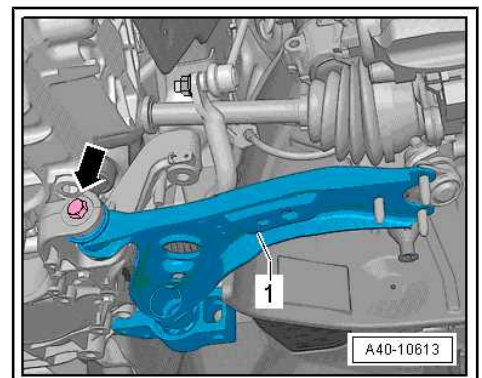


- Remove bolt -arrow-.

 Note

If the bolt -arrow- cannot be unscrewed, the subframe must be lowered on these vehicles ➔ [page 43](#).

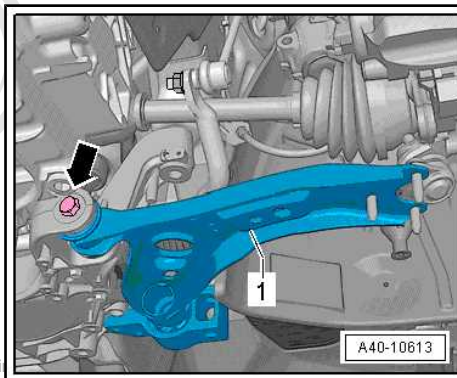
- Take out wishbone -1-.



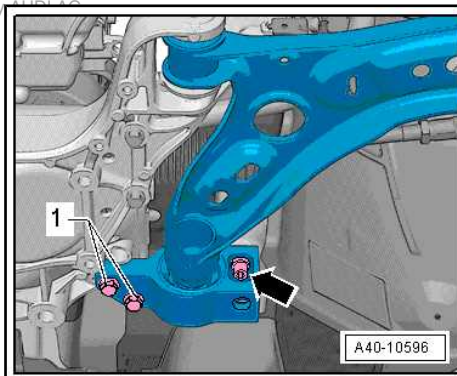
Installing

Installation is performed in reverse sequence; note the following:

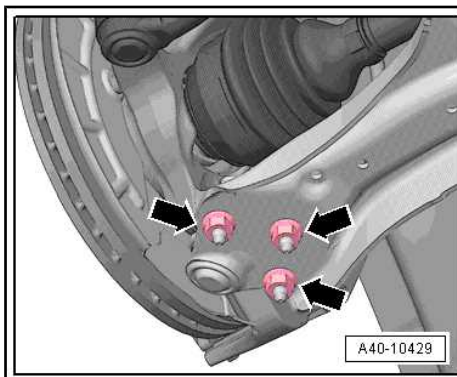
- Insert wishbone -1- with mounting bracket into subframe.
- Insert bolt -arrow- but do not tighten.



- Insert and tighten bolts -1-.
- Now fit new bolt in place of locating pin from locating pin set - T10096- and tighten bolt.



- Bolt wishbone to swivel joint and tighten -arrows-.

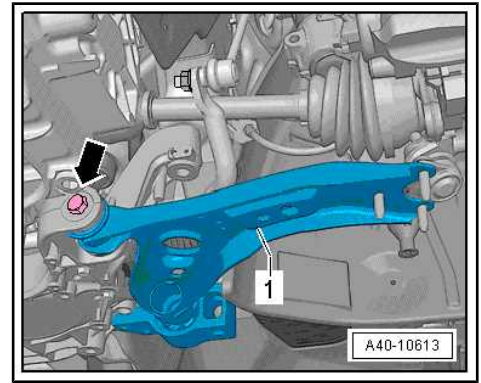


- Tighten bolt -arrow- with suspension in unladen position
⇒ [page 11](#) .

 Note

Ensure sealing boot is not damaged or twisted.

- Fit front wheel ⇒ [page 241](#) .
- Check and adjust wheel alignment as required, see chart
⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function
“Re-adapt reference (default) position” using ⇒ Vehicle diag-
nostic tester.
- If the reference position has been re-adapted, the front camera
for driver assist systems must be recalibrated on vehicles with
lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjust-
ment of headlights ⇒ Electrical system; Rep. gr. 94 ; Head-
lights; Adjusting headlights .



Tightening torques

- ◆ ⇒ [“3.1 Exploded view - lower wishbone, swivel joint”,
page 57](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insula-
tion; Exploded view - noise insulation

3.3 Renewing mounting bracket with wish- bone bush

Special tools and workshop equipment required

- ◆ Guide pin - VW 439-



- ◆ Thrust plate - VW 401-

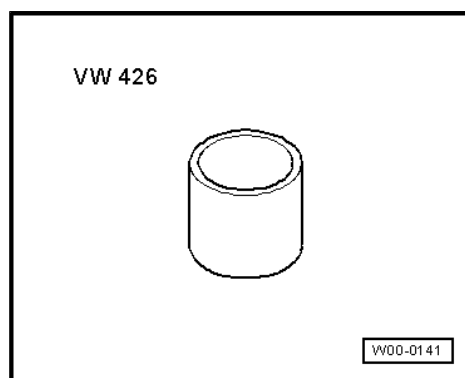


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◆ Thrust plate - VW 402-



◆ Tube - VW 426-



◆ Assembly lubricant - G 294 421 A1- ➔ Electronic parts catalogue "ETKA"

Pressing mounting bracket with bush off suspension link

- Wishbone removed ➔ [page 58](#)

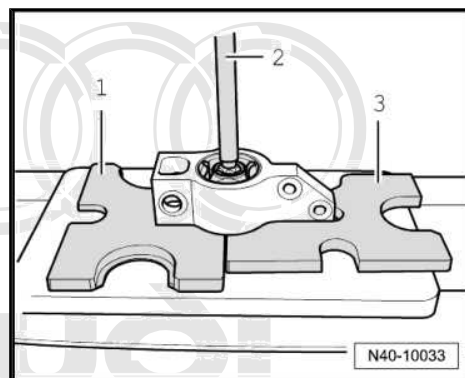
The bonded rubber bush is available as a replacement part only in conjunction with the mounting bracket.

- Press mounting bracket with bonded rubber bush off wishbone.



Note

Hold wishbone firmly while pressing out.



- 1 - Thrust plate - VW 401-
- 2 - Guide pin - VW 439-
- 3 - Thrust plate - VW 402-

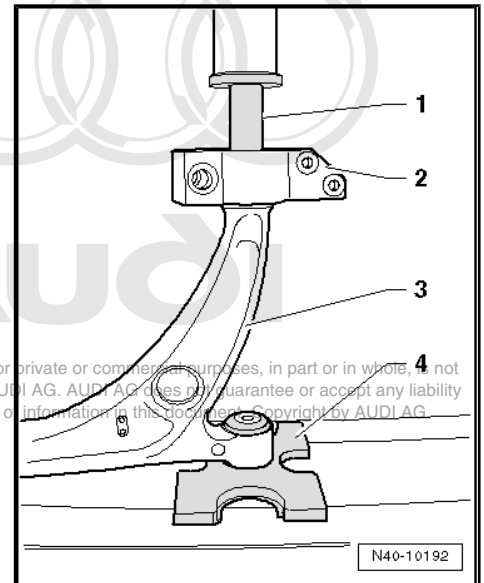
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Pressing mounting bracket with bush onto wishbone

- Lubricate hexagon profile of wishbone with assembly lubricant
- G 294 421 A1- .
- Carefully press bush onto wishbone as far as it will go.

- 1 - Tube - VW 426-
- 2 - Mounting bracket with bonded rubber bush
- 3 - Wishbone
- 4 - Thrust plate - VW 401-

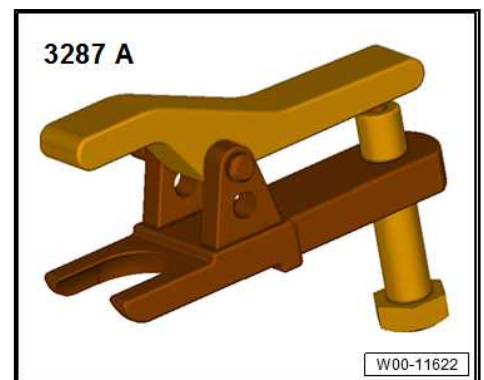
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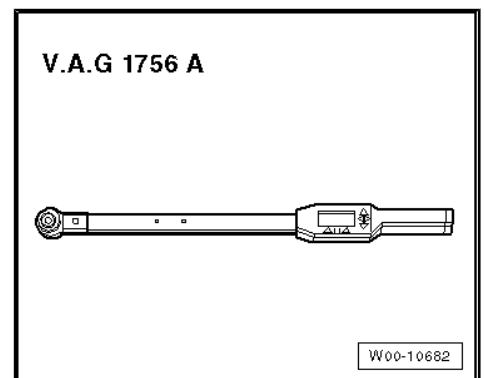
3.4 Removing and installing swivel joint

Special tools and workshop equipment required

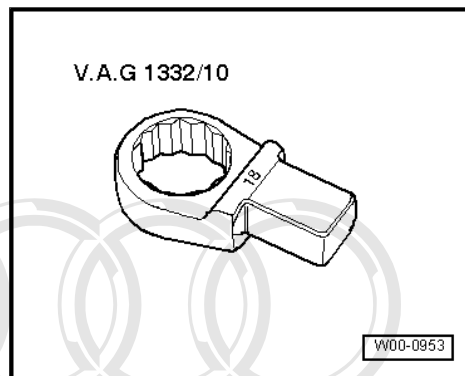
- ◆ Ball joint puller - 3287 A-



- ◆ Angle wrench - V.A.G 1756 A-



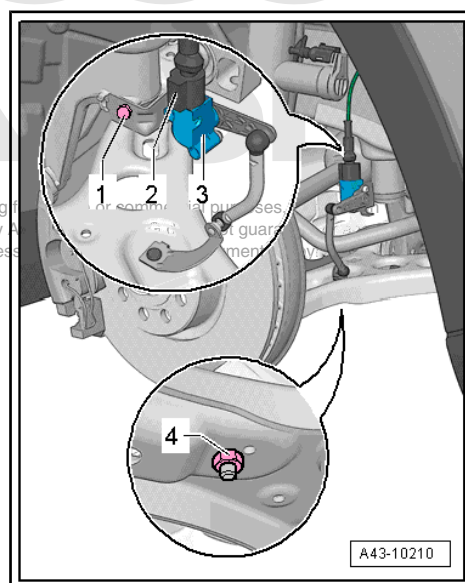
◆ Ring spanner insert - V.A.G 1332/10-



Removing

- Loosen drive shaft bolt at wheel hub ➔ [page 102](#) .
- Remove nut -4- and move coupling rod clear of vehicle level sender -3-.
- Remove front wheel ➔ [page 241](#) .

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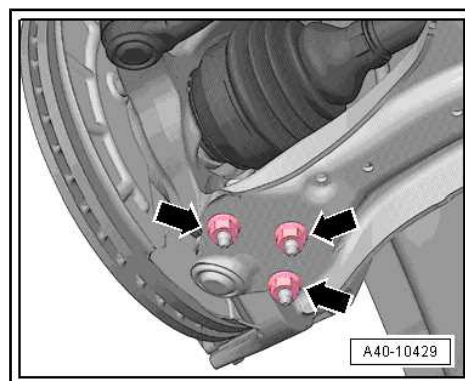
- Remove nuts -arrows- on swivel joint.
- Pull wishbone out of swivel joint.



Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

- Swivel out suspension strut and at the same time guide drive shaft out of wheel hub.



Note

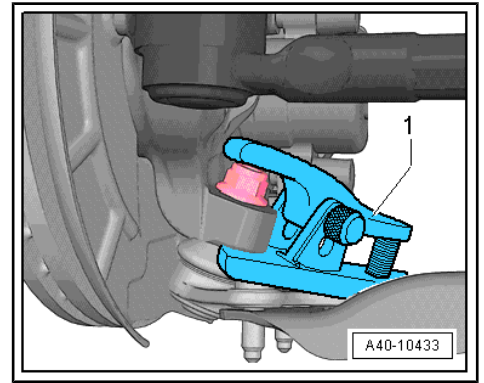
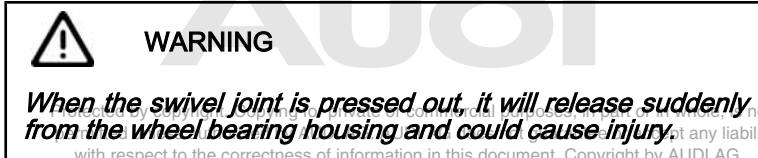
Do not allow the drive shaft to hang down under its own weight; this would bend the inner joint too far and damage it.

- Use wire to tie drive shaft to body.
- Loosen nut on swivel joint but do not remove completely.

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



Place gearbox jack - VAS 6931- or similar underneath (risk of accident from parts dropping out when swivel joint is pressed out).



- Unscrew nut on swivel joint and detach swivel joint.

Installing

Installation is performed in reverse sequence; note the following:

- Insert drive shaft into splines of wheel hub.
- Secure drive shaft: procedure for tightening twelve-point bolt ⇒ [page 102](#) .
- Fit front wheel ⇒ [page 241](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

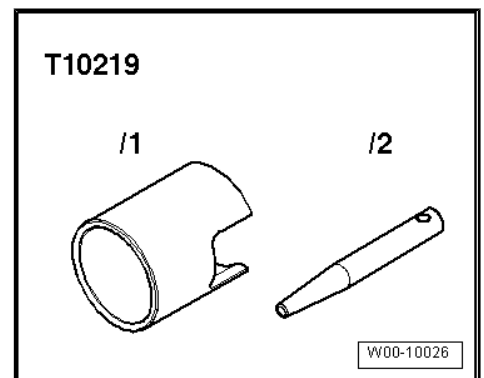
Tightening torques

- ♦ ⇒ [“3.1 Exploded view - lower wishbone, swivel joint”, page 57](#) .

3.5 Renewing bonded rubber bush for lower wishbone

Special tools and workshop equipment required

- ♦ Assembly tool - T10219-



◆ Thrust plate - VW 402-



◆ Press tool - VW 411-

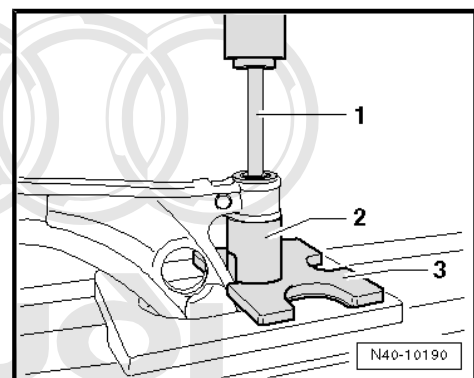


◆ Assembly lubricant - G 294 421 A1- ➔ Electronic parts catalogue "ETKA"

Pressing out bonded rubber bush

- Wishbone removed ➔ [page 58](#)
- Press out bonded rubber bush as shown.

- 1 - Press tool - VW 411-
- 2 - Tube - T10219/1-
- 3 - Thrust plate - VW 402-



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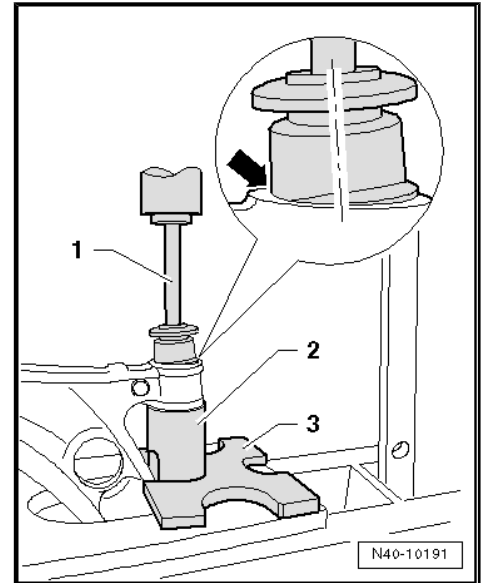
Pressing in bonded rubber bush

- The bonded rubber bush must be applied at an angle to prevent damage when pressing in. The bush will then straighten up as it is pressed in.
- Apply assembly lubricant - G 294 421 A1- to outside of bonded rubber bush.
- Position bonded rubber bush at an angle (towards wishbone) so that lip slides into hole.

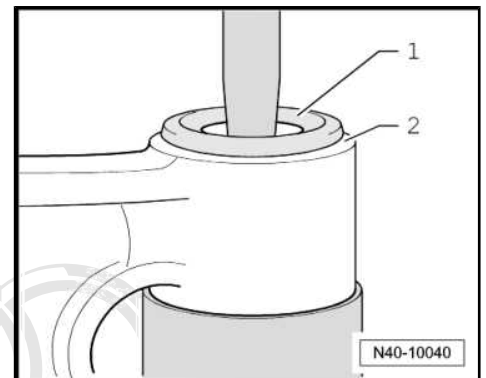
1 - Mandrel - T10219/2-

2 - Tube - T10219/1-

3 - Thrust plate - VW 402-



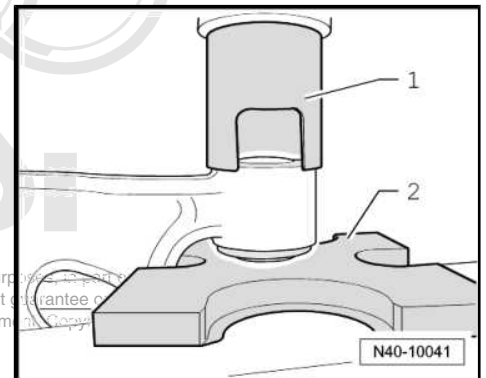
- Press in bonded rubber bush until core of bush -1- and hole in wishbone -2- are on a level.



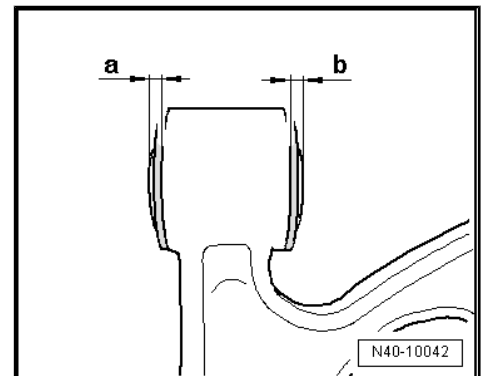
- Press bush back slightly in wishbone.

1 - Tube - T10219/1-

2 - Thrust plate - VW 402-



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



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4 Wheel bearing

⇒ ["4.1 Exploded view - wheel bearing", page 68](#)

⇒ ["4.2 Removing and installing wheel bearing housing", page 69](#)

⇒ ["4.3 Removing and installing wheel bearing unit", page 73](#)

4.1 Exploded view - wheel bearing

1 - Suspension strut

2 - Bolt

- ☐ Threaded end of bolt points in direction of travel
- ☐ Always renew if removed
- ☐ 70 Nm +90°

3 - Speed sensor (front)

- ☐ Removing and installing ⇒ Brake system; Rep. gr. 45 ; Sensors; Removing and installing front speed sensors - G45- / -G47-

4 - Bolt

- ☐ Tightening torque ⇒ Brake system; Rep. gr. 45 ; Sensors; Exploded view - front wheel speed sensor

5 - Track rod ball joint

6 - Splash plate for brakes

7 - Bolt

- ☐ Tightening torque ⇒ Brake system; Rep. gr. 46 ; Front brakes; Exploded view - front brake

8 - Bolt

- ☐ Tightening torque ⇒ Brake system; Rep. gr. 46 ; Front brakes; Exploded view - front brake

9 - Bolt

- ☐ Always renew if removed
- ☐ Before securing, clean the threads in the CV joint using a thread tap
- ☐ 200 Nm +180° ⇒ [page 102](#)

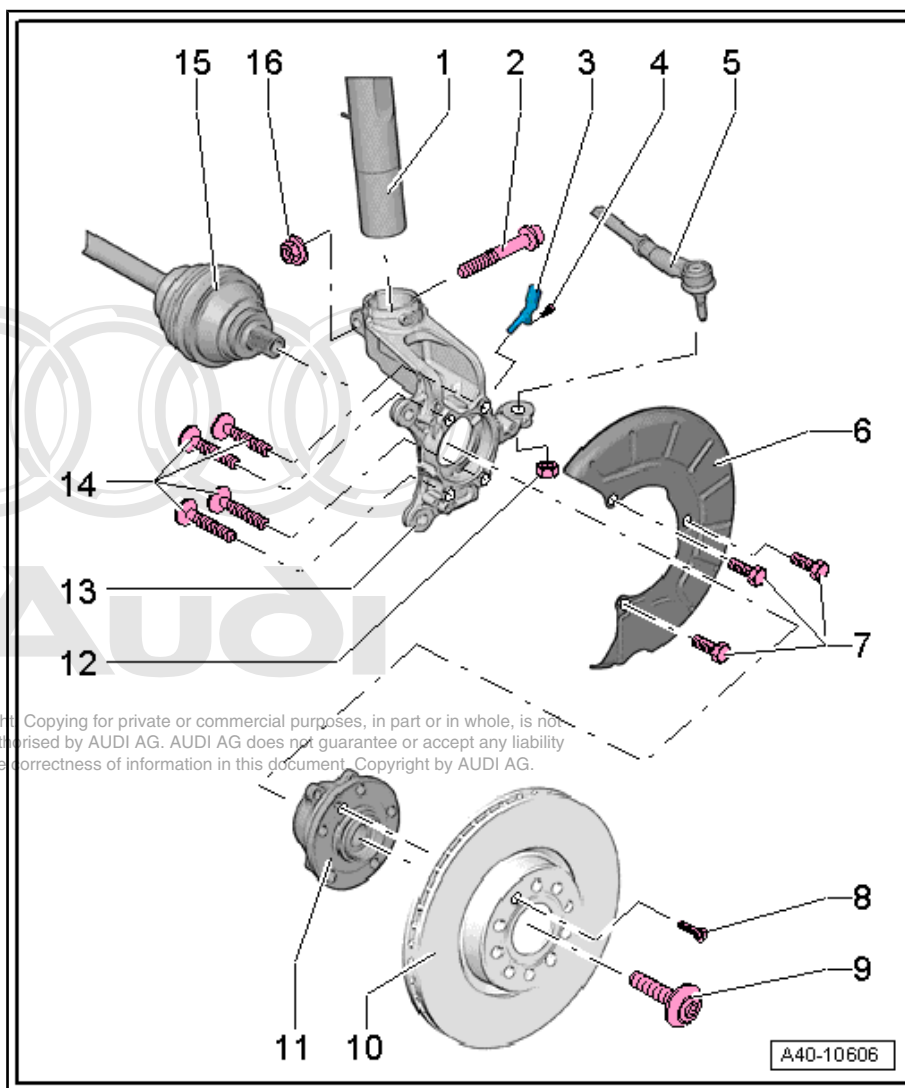
10 - Brake disc

11 - Wheel bearing unit

- ☐ Removing and installing ⇒ [page 73](#)

12 - Nut

- ☐ Always renew if removed
- ☐ 50 Nm



13 - Wheel bearing housing

- ❑ Removing and installing ⇒ [page 69](#)

14 - Bolt

- ❑ Always renew if removed
- ❑ 70 Nm +90°

15 - Drive shaft

- ❑ Do not let drive shaft hang down under its own weight when performing repair work, as otherwise excessive bending could damage inner CV joint.
- ❑ Before fitting the outer joint in the wheel hub, apply a thin coat of assembly paste to the splines on the outer joint ⇒ Electronic parts catalogue .

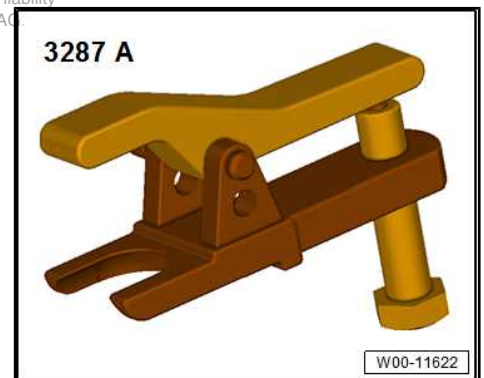
16 - Hexagon nut

- ❑ Always renew if removed

4.2 Removing and installing wheel bearing housing

Special tools and workshop equipment required

- ◆ Ball joint puller - 3287A-



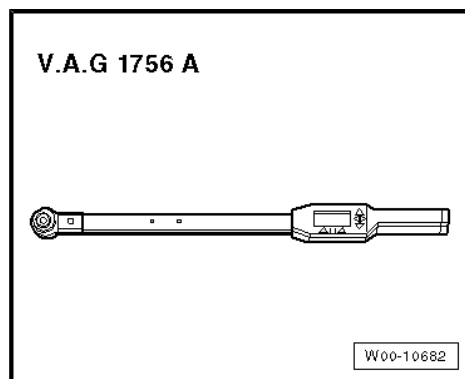
- ◆ Torque wrench - V.A.G 1332-



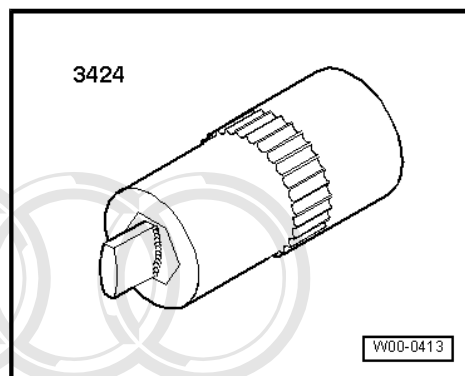
◆ Engine and gearbox jack - VAS 6931-



◆ Angle wrench - V.A.G 1756 A-



◆ Spreader - 3424-

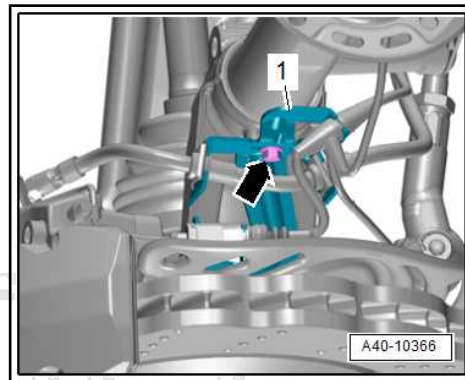


Removing

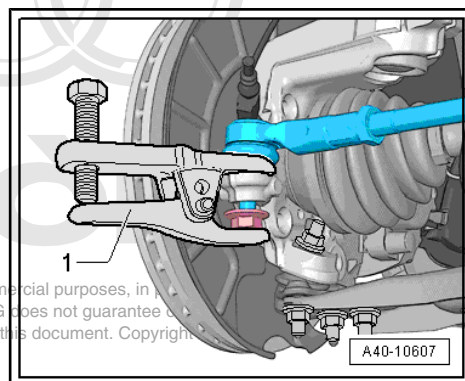
- Loosen bolt securing drive shaft at wheel hub ⇒ [page 102](#) .
- Remove ABS speed sensor ⇒ Brake system; Rep. gr. 45 ; Sensors; Removing and installing front speed sensor -G45- / -G47- .
- Remove brake disc ⇒ Brake system; Rep. gr. 46 ; Front brakes; Removing and installing brake disc .

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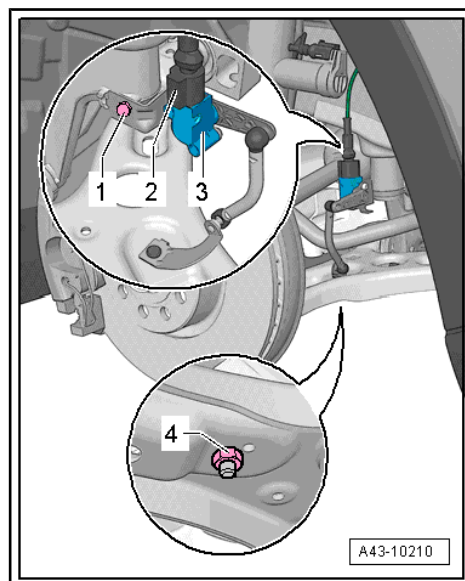
- Remove bolt -arrow- and detach bracket -1- for brake line and electrical wiring from wheel bearing housing.



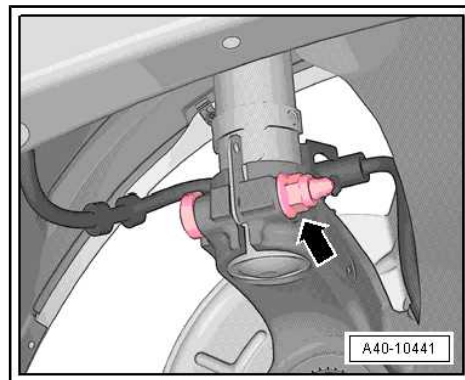
- Slacken off nut on track rod ball joint (but do not remove yet).
- Press track rod ball joint off wheel bearing housing using ball joint puller - 3287 A- -1- and then unscrew nut.



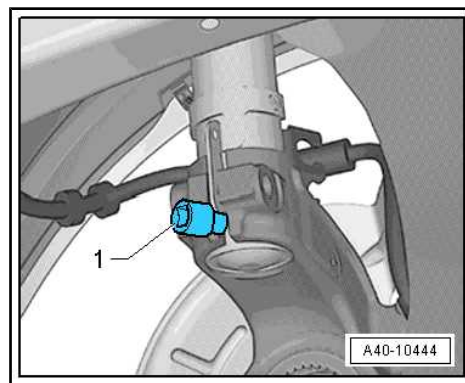
- If fitted, remove nut -4- and move coupling rod clear of vehicle level sender -3-.



- Remove bolt and nut securing wheel bearing housing/suspension strut -arrow-.



- Insert spreader - 3424- -1- into slot in wheel bearing housing.
- Turn ratchet handle through 90° and pull ratchet handle off spreader - 3424- -1-.



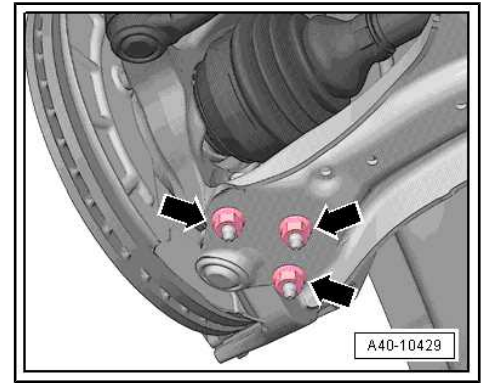
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- Unscrew nuts -arrows-.
- Pull wishbone out of wheel bearing housing together with swivel joint.

 Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

- Pull wheel bearing housing downwards off shock absorber tube and pull drive shaft out of wheel hub.



 Note

- ◆ *Do not let the drive shaft hang down under its own weight, as otherwise excessive bending could damage the inner CV joint.*
- ◆ *Tie up drive shaft to body with wire.*

- Remove wheel bearing housing with swivel joint.

Installing

Installation is performed in reverse sequence; note the following:

- Install brake caliper ⇒ Brake system; Rep. gr. 46 ; Front brakes; Removing and installing brake caliper .
- Tighten twelve-point bolt securing drive shaft ⇒ [page 102](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

Tightening torques

- ◆ ⇒ [“3.1 Exploded view - lower wishbone, swivel joint”, page 57](#)
- ◆ ⇒ [“4.1 Exploded view - wheel bearing”, page 68](#)
- ◆ ⇒ Brake system; Rep. gr. 45 ; Sensors; Exploded view - front wheel speed sensor
- ◆ Brake disc ⇒ Brake system; Rep. gr. 46 ; Front brakes; Exploded view - front brake

4.3 Removing and installing wheel bearing unit

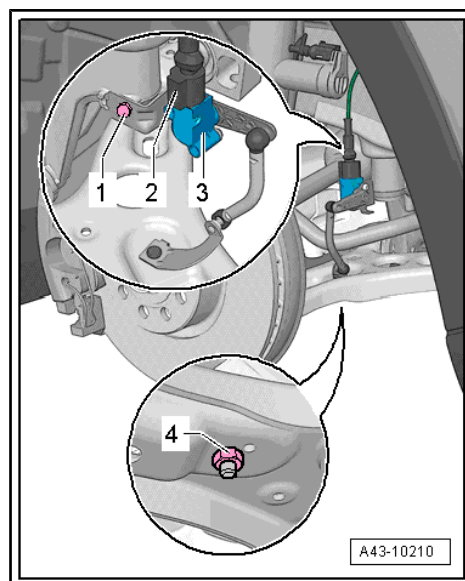
Special tools and workshop equipment required

◆ Torque wrench - V.A.G 1332-

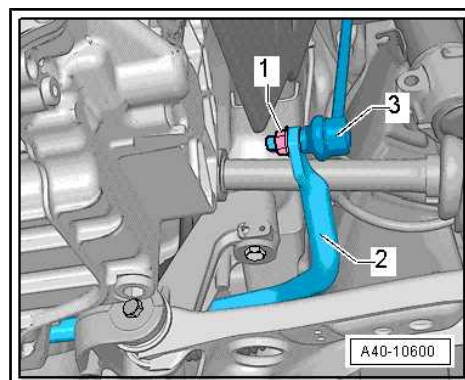


Removing

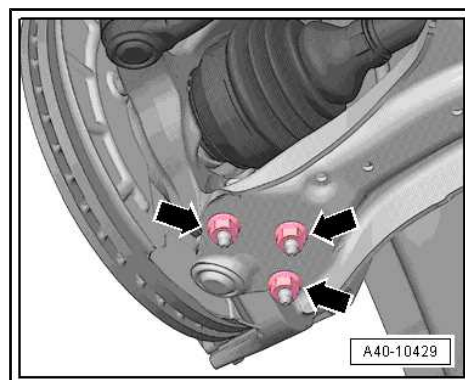
- Loosen bolt securing drive shaft at wheel hub ➔ [page 102](#) .
- If fitted, remove nut -4- and move coupling rod clear of vehicle level sender -3-.
- Remove ABS speed sensor ➔ Brake system; Rep. gr. 45 ; Sensors; Removing and installing front speed sensor -G45- / -G47- .
- Remove brake disc ➔ Brake system; Rep. gr. 46 ; Front brakes; Removing and installing brake disc .



- Remove nut -1-, pull coupling rod -3- out of anti-roll bar -2- and pivot to one side.



- Unscrew nuts -arrows-.
- Pull wishbone out of swivel joint.
- Pull outer joint of drive shaft out of wheel hub.
- Tie up drive shaft to body with wire.
- Fit swivel joint back into wishbone.
- Install nuts -arrows-.

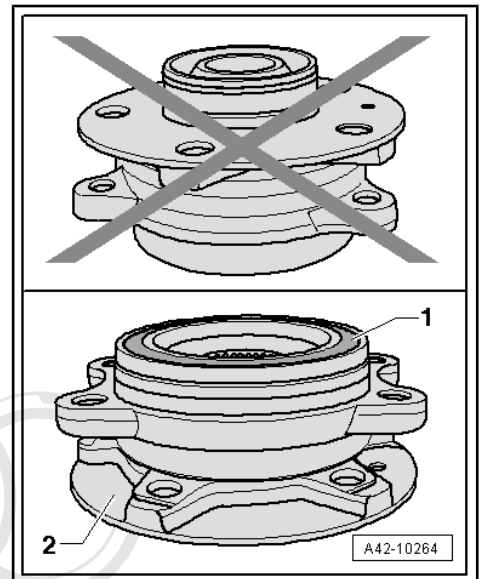
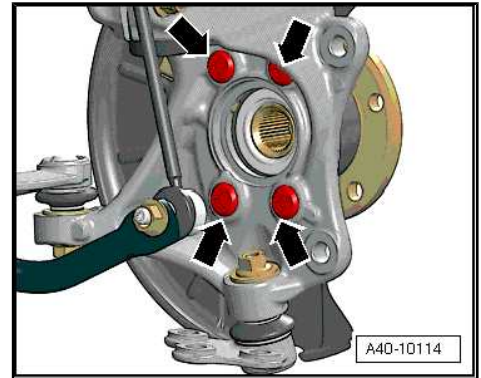


- Remove bolts -arrows-.
- Take wheel bearing unit out of wheel bearing housing.



Caution

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



- The wheel bearing -1- must always face upwards when laying down the wheel bearing unit.
- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.
- Do not touch the inside of the wheel bearing when you pick it up.
- Always take hold of the outside of the wheel bearing.

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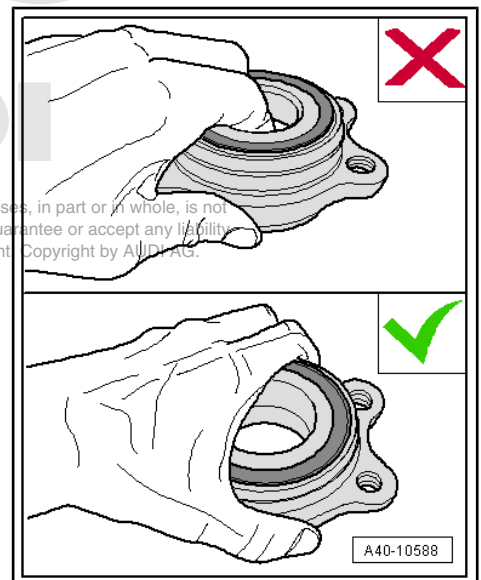
Installing

Installation is performed in reverse sequence; note the following:

- Install brake caliper ⇒ Brake system; Rep. gr. 46 ; Front brakes; Removing and installing brake caliper .

Tightening torques

- ◆ ⇒ ["1.1 Exploded view - subframe", page 16](#)
- ◆ ⇒ ["3.1 Exploded view - lower wishbone, swivel joint", page 57](#)
- ◆ ⇒ ["4.1 Exploded view - wheel bearing", page 68](#)
- ◆ ⇒ ["5.3 Loosening and tightening bolt securing drive shaft", page 102](#)
- ◆ ⇒ Brake system; Rep. gr. 45 ; Sensors; Exploded view - front wheel speed sensor
- ◆ Brake disc ⇒ Brake system; Rep. gr. 46 ; Front brakes; Exploded view - front brake



5 Drive shaft

⇒ [“5.1 Exploded view - drive shaft”, page 76](#)

⇒ [“5.2 Removing and installing drive shaft”, page 83](#)

⇒ [“5.3 Loosening and tightening bolt securing drive shaft”, page 102](#)

⇒ [“5.4 Removing and installing heat shield for drive shaft”, page 103](#)

⇒ [“5.5 Servicing constant velocity joint”, page 104](#)

⇒ [“5.6 Checking outer constant velocity joint”, page 123](#)

⇒ [“5.7 Checking inner constant velocity joint”, page 124](#)

5.1 Exploded view - drive shaft

⇒ [“5.1.1 Exploded view - drive shaft with constant velocity joint VL107”, page 76](#)

⇒ [“5.1.2 Exploded view - drive shaft with triple roller joint AAR3300i \(with external splines for insertion in gearbox\)”, page 79](#)

⇒ [“5.1.3 Exploded view - drive shaft with triple roller joint AAR3300i \(with internal splines for gearbox stub shaft\)”, page 80](#)

⇒ [“5.1.4 Exploded view - drive shaft with sliding constant velocity joint \(version with internal splines on inner joint\)”, page 81](#)

5.1.1 Exploded view - drive shaft with constant velocity joint VL107

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1 - Bolt

- ☐ Always renew if removed
- ☐ Loosening and tightening twelve-point bolt
⇒ [page 102](#)
- ☐ Before securing, clean the threads in the CV joint using a thread tap
- ☐ 200 Nm +180°

2 - Outer constant velocity joint

- ☐ Checking ⇒ [page 123](#)
- ☐ Removing ⇒ [page 104](#)
- ☐ Installing ⇒ [page 105](#)
- ☐ Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft

3 - Circlip

- ☐ Always renew if removed
- ☐ Insert in groove on shaft

4 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 107](#)

5 - Boot for outer constant velocity joint

- ☐ Check for splits and chafing

6 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 107](#)

7 - Profile shaft

8 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 107](#)

9 - Boot for inner constant velocity joint

- ☐ Check for splits and chafing

10 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 107](#)

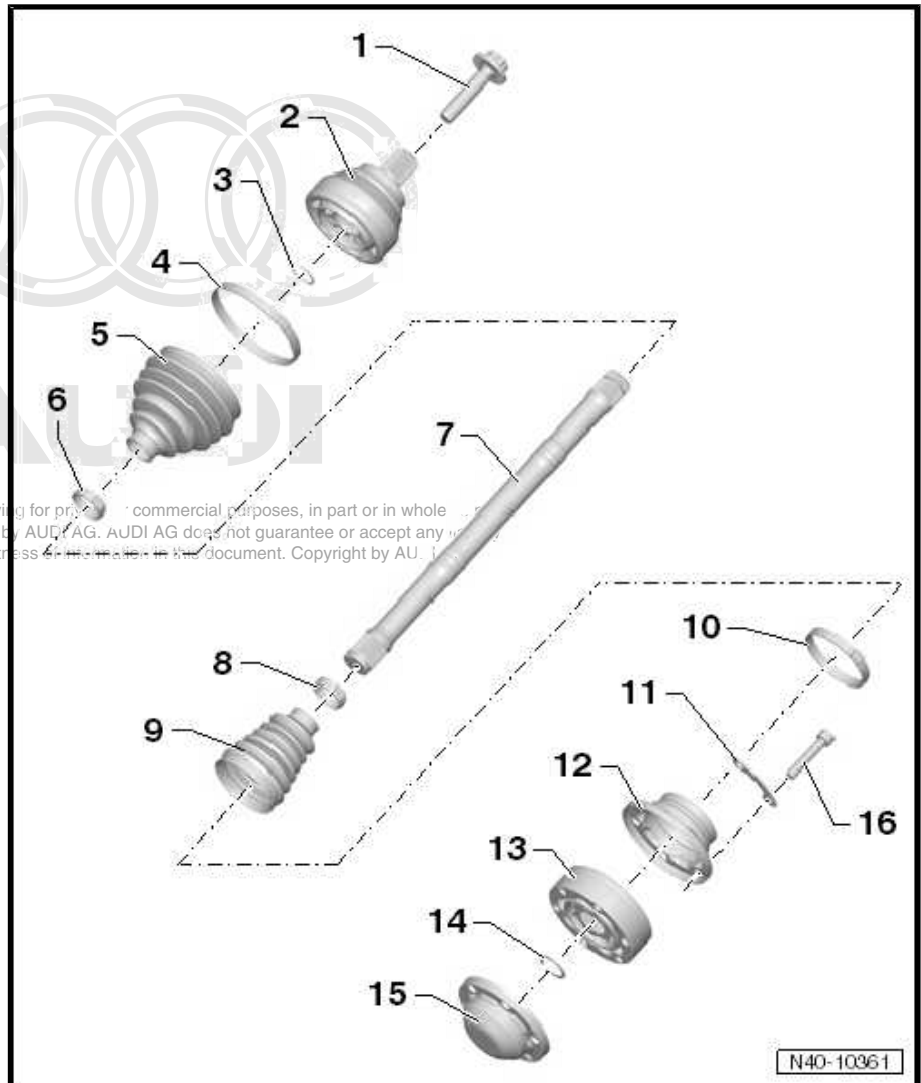
11 - Lock plate

12 - Cap

- ☐ Always renew if removed
- ☐ Drive off constant velocity joint with a drift
- ☐ Apply sealant between joint and cover ⇒ [page 107](#)
- ☐ Adhesive surface must be free of oil and grease

13 - Inner constant velocity joint

- ☐ Renew only as complete unit





- ☐ Checking ⇒ [page 124](#)
- ☐ Pressing off ⇒ [page 105](#)
- ☐ Pressing on ⇒ [page 106](#)
- ☐ Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft

14 - Circlip

- ☐ Always renew if removed
- ☐ Removing and installing with -VW 161 A- ⇒ [page 106](#)

15 - Cover

- ☐ Always renew if removed
- ☐ Drive off constant velocity joint with a drift
- ☐ Apply sealant between joint and cover ⇒ [page 107](#)

16 - Bolt

- ☐ Always renew if removed
- ☐ Initial tightening torque: 10 Nm in diagonal sequence
- ☐ Tightening torque, M8: 40 Nm in diagonal sequence
- ☐ Tightening torque, M10: 70 Nm in diagonal sequence

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5.1.2 Exploded view - drive shaft with triple roller joint AAR3300i (with external splines for insertion in gearbox)

1 - Outer constant velocity joint

- ☐ Renew only as complete unit
- ☐ Removing ⇒ [page 110](#)
- ☐ Installing: drive onto shaft with plastic hammer until compressed circlip seats
- ☐ Checking ⇒ [page 123](#)

2 - Bolt

- ☐ Always renew if removed
- ☐ 200 Nm + 180°

3 - Circlip

- ☐ Always renew if removed
- ☐ Insert in groove on shaft

4 - Thrust washer

- ☐ Not installed in all versions
- ☐ Installation position ⇒ [page 110](#)

5 - Dished spring

- ☐ Not installed in all versions
- ☐ Installation position ⇒ [page 110](#)

6 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 112](#)

7 - Boot for constant velocity joint

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

8 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 112](#)

9 - Drive shaft

10 - Hose clip

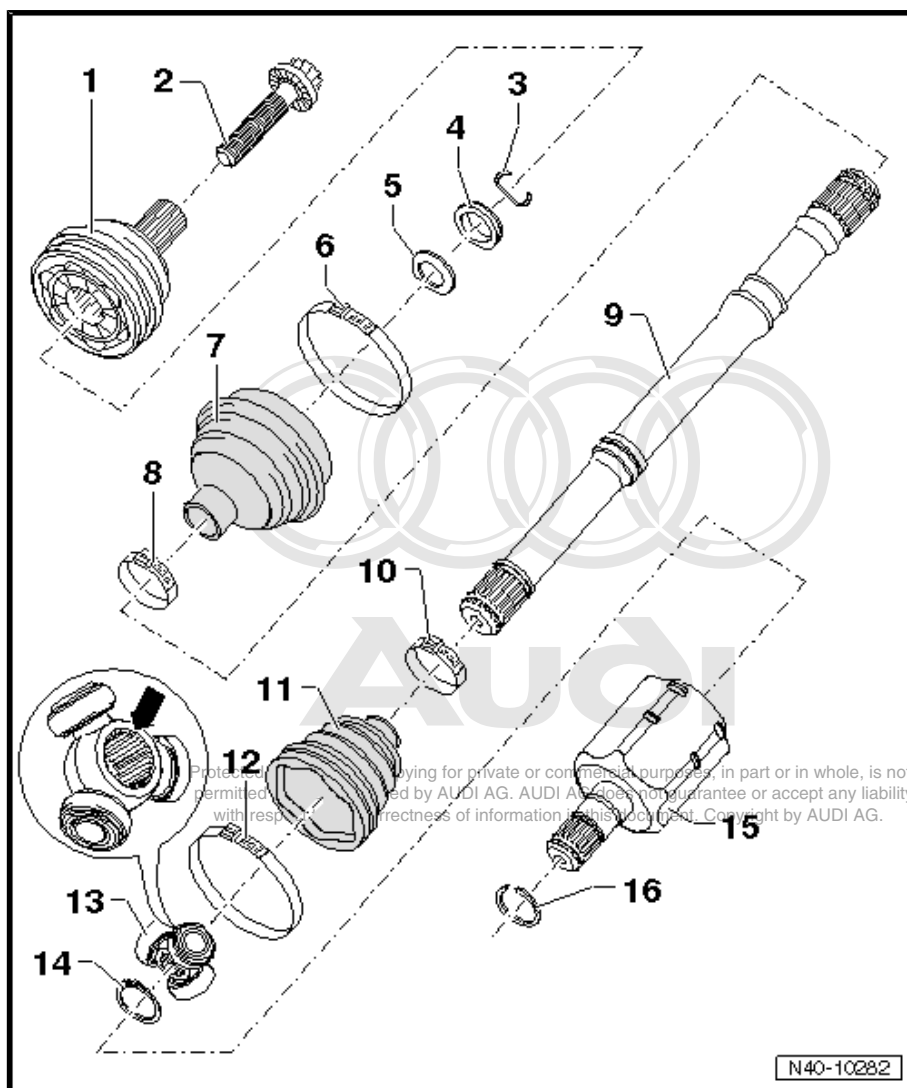
- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 112](#)

11 - Boot for triple roller joint

- ☐ Check for splits and chafing

12 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 112](#)



13 - Triple roller spider with rollers

Chamfer -arrow- faces towards drive shaft splines

14 - Circlip

- ☐ Always renew if removed
- ☐ Insert in groove on shaft

15 - Joint body

16 - Circlip

- ☐ Always renew if removed

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5.1.3 Exploded view - drive shaft with triple roller joint AAR3300i (with internal splines for gearbox stub shaft)

1 - Outer constant velocity joint

- ☐ Renew only as complete unit
- ☐ Removing ➤ [page 115](#)
- ☐ Installing: drive onto shaft with plastic hammer until compressed circlip seats
- ☐ Checking ➤ [page 123](#)

2 - Bolt

- ☐ Always renew if removed
- ☐ 200 Nm + 180°

3 - Circlip

- ☐ Always renew if removed
- ☐ Insert in groove on shaft

4 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ➤ [page 117](#)

5 - Boot for constant velocity joint

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

6 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ➤ [page 117](#)

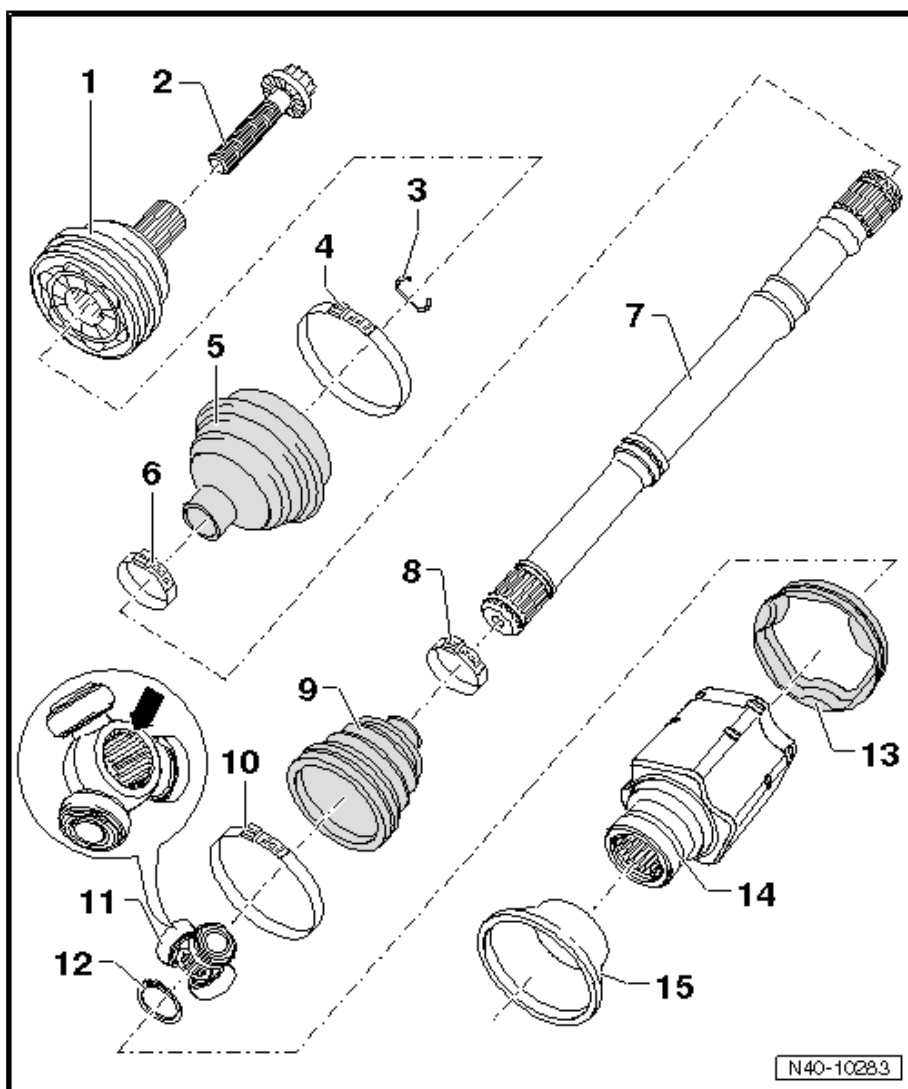
7 - Drive shaft

8 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ➤ [page 117](#)

9 - Boot for triple roller joint

- ☐ Check for splits and chafing



10 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 117](#)

11 - Triple roller spider with rollers

Chamfer -arrow- faces towards drive shaft splines

12 - Circlip

- ☐ Always renew if removed
- ☐ Insert in groove on shaft

13 - Adapter

14 - Joint body

15 - Protective cap

- ☐ Detaching ⇒ [page 118](#)
- ☐ Driving on ⇒ [page 118](#)

5.1.4 Exploded view - drive shaft with sliding constant velocity joint (version with internal splines on inner joint)

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1 - Bolt

- ☐ Always renew if removed
- ☐ Before securing, clean the threads in the CV joint using a thread tap
- ☐ 200 Nm + 180°

2 - Outer constant velocity joint

- ☐ Renew only as complete unit
- ☐ Distribute grease filling through ball races
- ☐ Removing ⇒ [page 120](#)
- ☐ Installing: drive onto shaft as far as stop using a plastic head hammer
- ☐ Checking ⇒ [page 123](#)

3 - Circlip

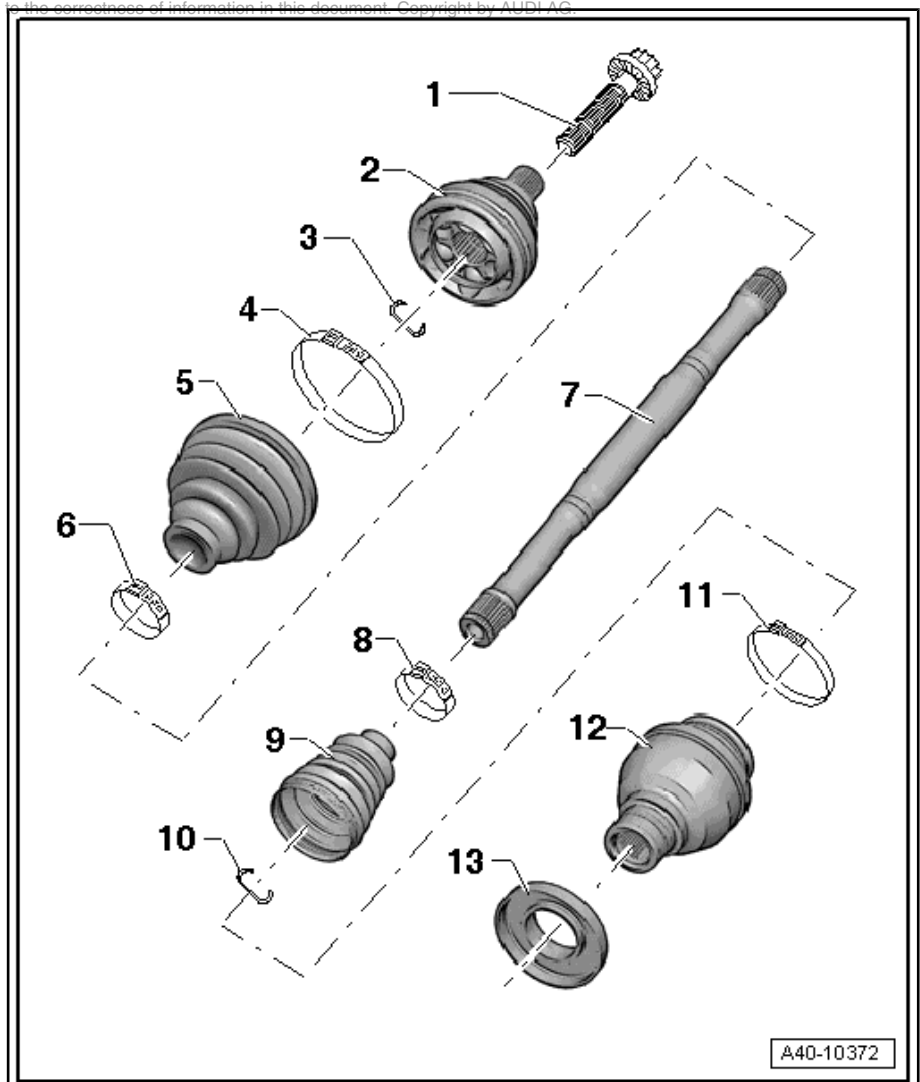
- ☐ Always renew if removed
- ☐ Insert in groove on shaft

4 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 122](#)

5 - Boot

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



6 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 122](#)

7 - Drive shaft

8 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 122](#)

9 - Boot for sliding constant velocity joint

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

10 - Circlip

- ☐ Always renew if removed
- ☐ Insert in groove on shaft

11 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 122](#)

12 - Sliding constant velocity joint

- ☐ Renew only as complete unit
- ☐ Removing ⇒ [page 120](#)
- ☐ Distribute grease filling through ball races
- ☐ Installing: drive onto shaft as far as stop using a plastic head hammer

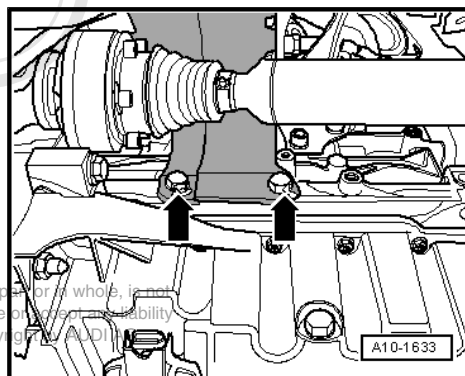
13 - Protective cap

- ☐ Detaching ⇒ [page 123](#)
- ☐ Driving on ⇒ [page 123](#)

5.1.5 Exploded view - drive shaft, heat shield for drive shaft

Front-wheel drive vehicles:

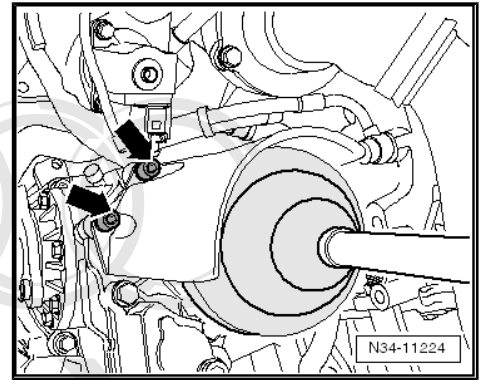
- Tighten nuts -arrows- to 35 Nm.



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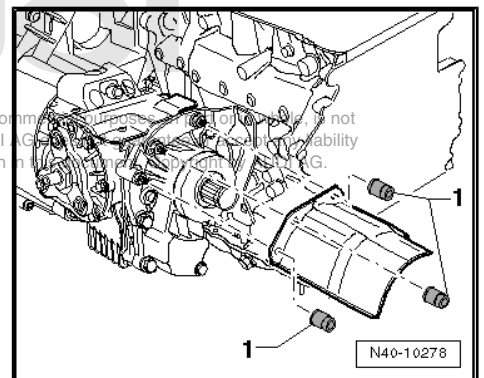
Four-wheel drive vehicles, version 1:

- Tighten nuts -arrows- to 20 Nm.



Four-wheel drive vehicles, version 2:

- Tighten nuts -1- to 20 Nm.



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5.2 Removing and installing drive shaft

⇒ [“5.2.1 Removing and installing drive shaft with constant velocity joint VL107 \(version with bolted flange\)”, page 83](#)

⇒ [“5.2.2 Removing and installing drive shaft with triple roller joint AAR3300i \(with external splines for insertion in gearbox\)”, page 85](#)

⇒ [“5.2.3 Removing and installing drive shaft with triple roller joint AAR3300i \(with internal splines for gearbox stub shaft\)”, page 88](#)

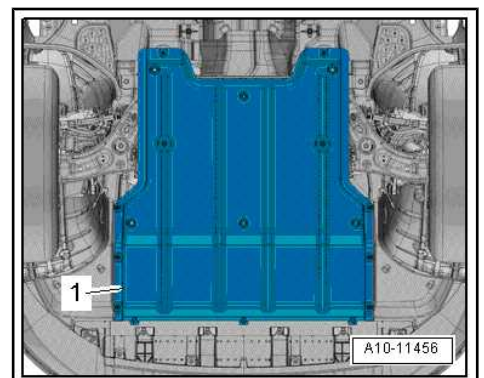
⇒ [“5.2.4 Removing and installing drive shaft \(left-side\) with sliding CV joint \(version with internal splines on inner joint\)”, page 93](#)

⇒ [“5.2.5 Removing and installing drive shaft \(right-side\) with sliding CV joint \(version with internal splines on inner joint\)”, page 98](#)

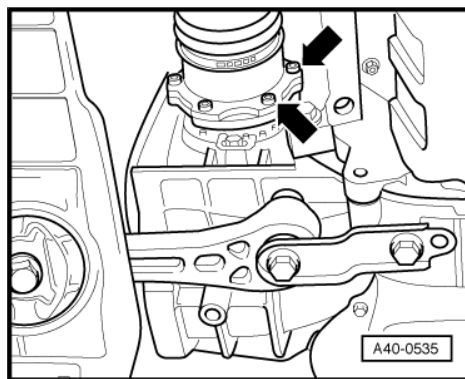
5.2.1 Removing and installing drive shaft with constant velocity joint VL107 (version with bolted flange)

Removing

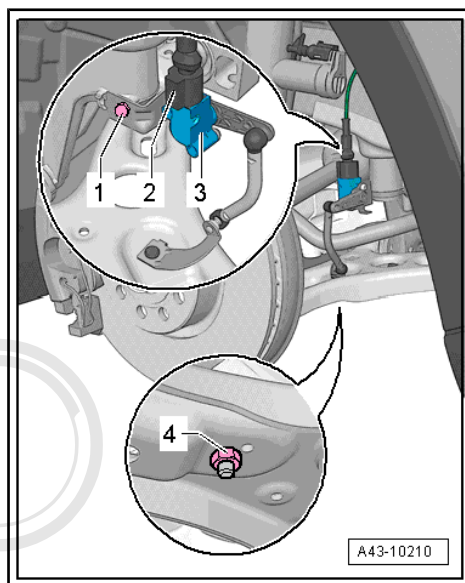
- Loosen bolt securing drive shaft at wheel hub ⇒ [page 102](#) .
- Remove front wheel ⇒ [page 241](#) .
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



- Unbolt drive shaft from gearbox flange -arrows-.



- If fitted, unscrew nut -4- and detach coupling rod of vehicle level sender from wishbone.



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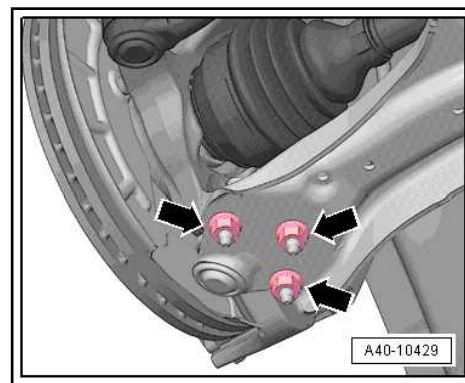
- Remove nuts -arrows- on swivel joint.
- Pull wishbone out of swivel joint.



Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

- Swivel out suspension strut and at the same time guide drive shaft out of wheel bearing unit.
- Take out drive shaft.



Installing

Installation is performed in reverse sequence; note the following:

- Before fitting the outer joint in the wheel hub, apply a thin coat of assembly paste to the splines on the outer joint ⇒ Electronic parts catalogue .
- Tighten twelve-point bolt securing drive shaft ⇒ [page 102](#) .
- Fit front wheel ⇒ [page 241](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

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Tightening torques

- ◆ ⇒ [“1.1 Exploded view - subframe”, page 16](#)
- ◆ ⇒ [“3.1 Exploded view - lower wishbone, swivel joint”, page 57](#)
- ◆ ⇒ [“5.1.1 Exploded view - drive shaft with constant velocity joint VL107”, page 76](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

5.2.2 Removing and installing drive shaft with triple roller joint AAR3300i (with external splines for insertion in gearbox)

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-

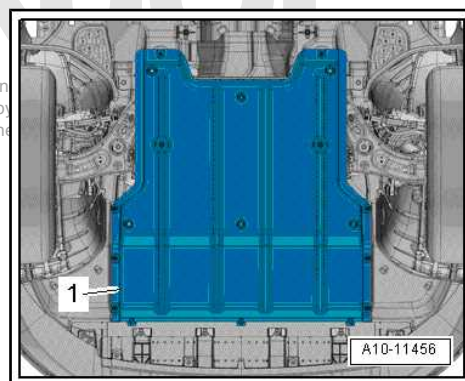


- ◆ Wedge (aluminium) - T10161-

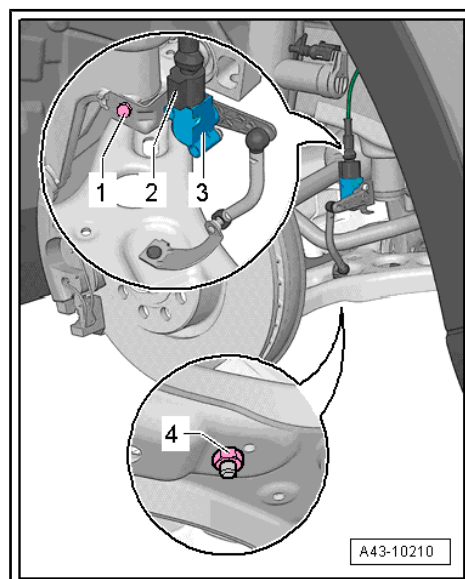


Removing

- Loosen bolt securing drive shaft at wheel hub ➔ [page 102](#) .
- Remove front wheel ➔ [page 241](#) .
- Remove noise insulation -1- ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



- If fitted, unscrew nut -4- and detach coupling rod of vehicle level sender from wishbone.

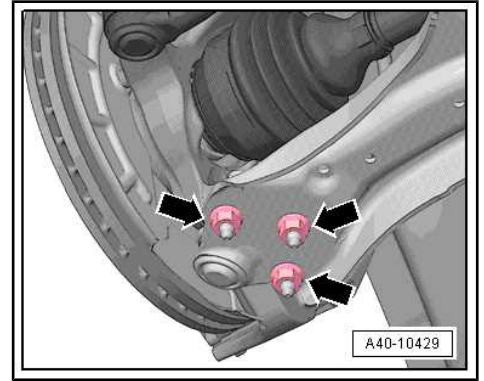


- Remove nuts -arrows- on swivel joint.
- Pull wishbone out of swivel joint.

 Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

- Swivel out suspension strut and at the same time press drive shaft out of wheel hub.
- Tie up drive shaft to body.



 Note

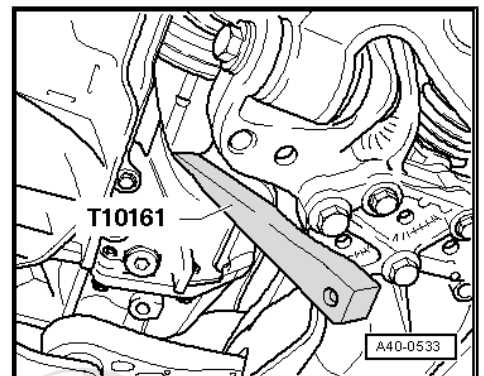
Do not allow the drive shaft to hang down under its own weight; this would bend the inner joint too far and damage it.

- A second person is required for the next steps.
- Apply aluminium wedge - T10161- between gearbox housing and inner triple roller joint.
- Force inner joint out of gearbox by striking wedge - T10161- with hammer.
- Take out drive shaft.

Installing

Installation is performed in reverse sequence; note the following:

- Circlip on drive shaft must always be renewed following removal.



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- Grease pin on end of joint in area -A- all round with approx. 0.5 g of grease ⇒ Electronic parts catalogue .
- Install drive shaft at gearbox end first.
- Mesh outer and inner splines of joint body and gearbox.
- Take hold of drive shaft and slide it into joint body as far as it will go.
- Then push joint body firmly into gearbox with a sudden, hard push so that circlip engages.



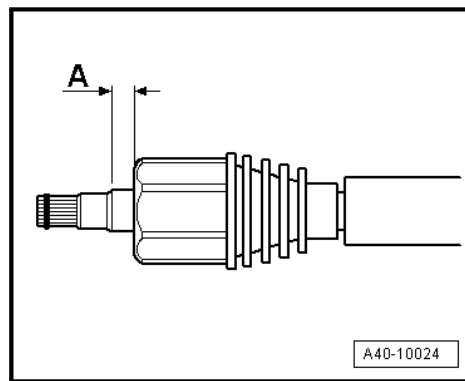
Note

- ♦ *If the drive shaft cannot be pushed in easily, even though the splines are aligned correctly, you can make use of the sliding travel in the constant velocity joint. However, do not pull the drive shaft too far out of the joint body.*
- ♦ *DO NOT use a hammer or the like.*
- Check that the joint body is fitted securely by pulling the joint against the resistance of the circlip.



Caution

When making this check, only pull on the joint body. Do not pull the drive shaft.



- Push outer joint of drive shaft into wheel hub.
- Tighten twelve-point bolt securing drive shaft ⇒ [page 102](#)
- Fit front wheel ⇒ [page 241](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

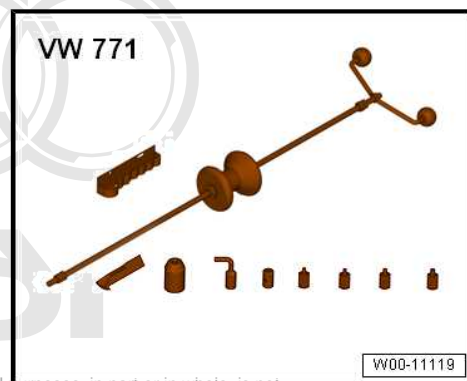
Tightening torques

- ♦ ⇒ [“1.1 Exploded view - subframe”, page 16](#)
- ♦ ⇒ [“3.1 Exploded view - lower wishbone, swivel joint”, page 57](#)
- ♦ ⇒ [“4.1 Exploded view - wheel bearing”, page 68](#)
- ♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

5.2.3 Removing and installing drive shaft with triple roller joint AAR3300i (with internal splines for gearbox stub shaft)

Special tools and workshop equipment required

◆ Multi-purpose tool - VW 771-



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◆ Tensioning strap - T10038-



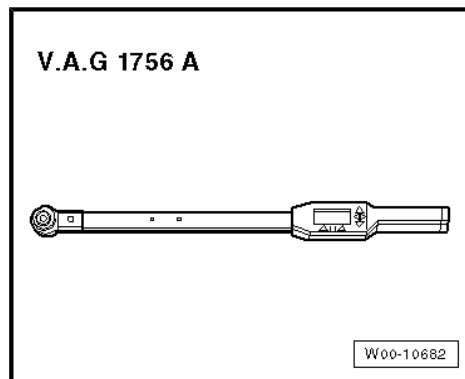
◆ Drive shaft puller - T10382-



◆ Torque wrench - V.A.G 1332-

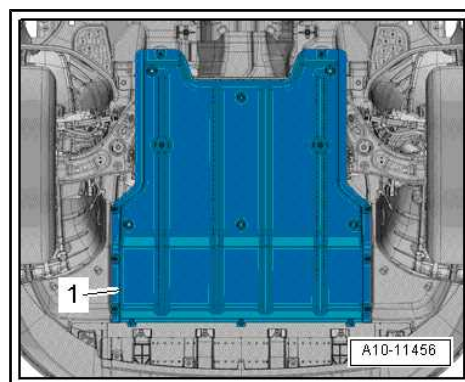


◆ Angle wrench - V.A.G 1756 A-

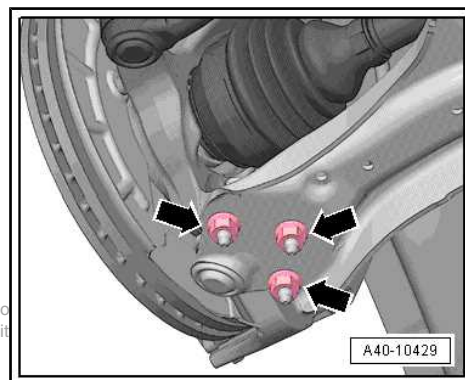


Removing

- Loosen bolt securing drive shaft at wheel hub ➔ [page 102](#) .
- Remove front wheel ➔ [page 241](#) .
- Remove noise insulation -1- ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



- Unscrew nuts -arrows-.



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- If fitted, unscrew nut -4- and detach coupling rod of vehicle level sender from wishbone.
- Pull wheel bearing housing with swivel joint out of wishbone.

 Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

- Slide outer joint by hand out of wheel hub.
- Secure drive shaft to prevent it from dropping.

 Note

Do not allow the drive shaft to hang down under its own weight; this would bend the inner joint too far and damage it.

- Remove heat shield for drive shaft (right-side) ➔ [page 103](#) .
- Set up drive shaft puller - T10382- .

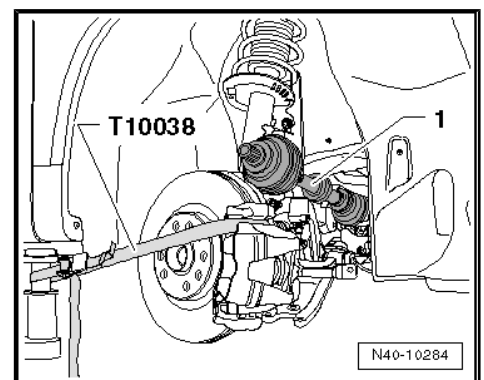
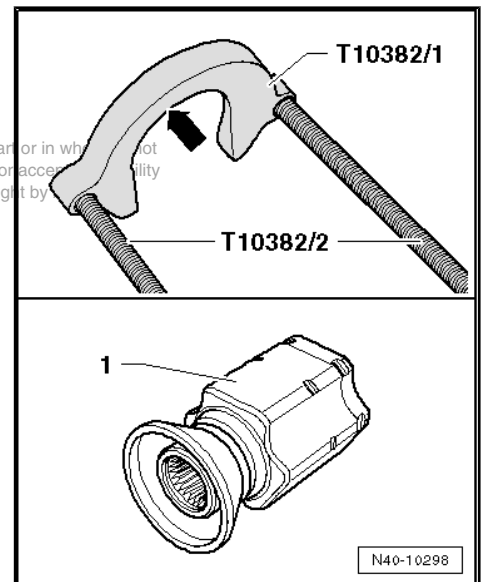
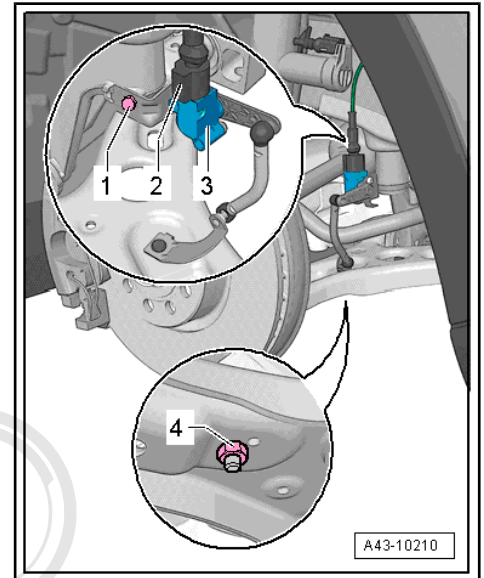
For the joint body -1- the surface -arrow- on the puller plate - T10382/1- must face the spindles - T10382/2- .

- Assemble the drive shaft puller - T10382- together with the multi-purpose tool - VW 771- .

 Note

The suspension strut with all the attached components must be pulled towards the rear in order to extract the drive shaft from the gearbox using drive shaft puller - T10382- .

- Pull suspension strut with attached components towards the rear using tensioning strap - T10038- (e.g. secured to arm of lifting platform) until drive shaft puller - T10382- can be inserted parallel with drive shaft.



- Insert drive shaft puller - T10382- and pull out drive shaft.
- Take drive shaft out of vehicle.

Installing

Installation is performed in reverse sequence; note the following:

- Remove any paint residue and/or corrosion on thread and splines of outer joint.

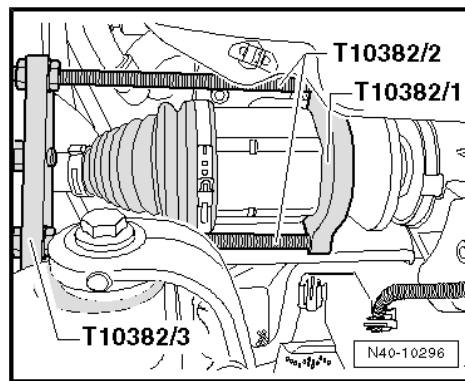
Only for right side of vehicle and all-wheel drive

- Strike end of stub shaft using a plastic hammer.



Caution

- ◆ *This ensures that the circlip on the stub shaft engages correctly in the differential pinion.*
- ◆ *It will also help to prevent leakage.*



Both sides (continued):

- Fit new circlip in groove on stub shaft of gearbox.
- Apply approx. 2 g of grease all round splines on end of gearbox shaft ⇒ Electronic parts catalogue .
- Mesh outer and inner splines of gearbox and joint body.
- Take hold of drive shaft and slide it into joint body as far as it will go.
- Now push joint body onto stub shaft of gearbox with a sudden, hard push.
- Push drive shaft joint onto end of gearbox shaft until circlip engages.

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Note

DO NOT use a hammer or the like.

- Check that the joint body is fitted correctly by pulling the joint against the resistance of the circlip.



Caution

When making this check, only pull on the joint body. Do not pull the drive shaft.

- Before fitting the outer joint in the wheel hub, apply a thin coat of assembly paste to the splines on the outer joint ⇒ Electronic parts catalogue .
- Tighten twelve-point bolt securing drive shaft ⇒ [page 102](#) .
- Fit front wheel ⇒ [page 241](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .

- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

Tightening torques

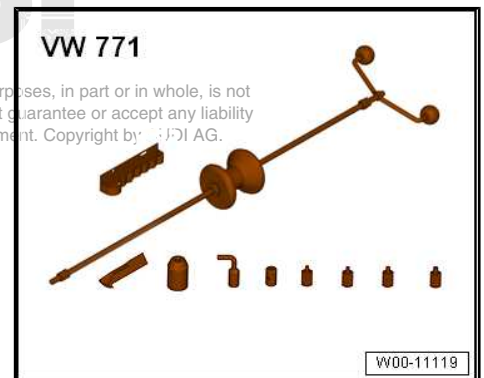
- ◆ ⇒ [“1.1 Exploded view - subframe”, page 16](#)
- ◆ ⇒ [“3.1 Exploded view - lower wishbone, swivel joint”, page 57](#)
- ◆ ⇒ [“4.1 Exploded view - wheel bearing”, page 68](#)
- ◆ ⇒ [“5.1.5 Exploded view - drive shaft, heat shield for drive shaft”, page 82](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

5.2.4 Removing and installing drive shaft (left-side) with sliding CV joint (version with internal splines on inner joint)

Special tools and workshop equipment required

- ◆ Multi-purpose tool - VW 771-

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- ◆ Puller - T10382-



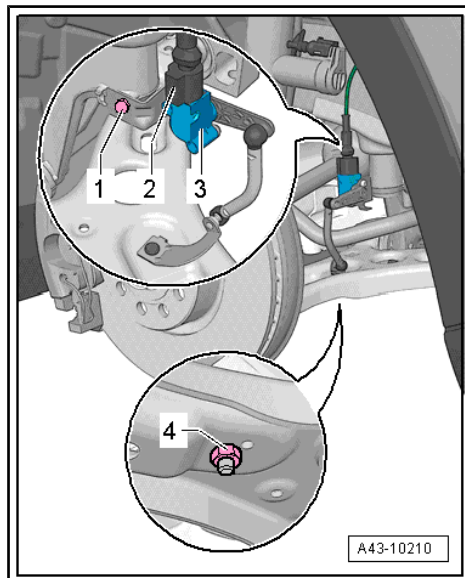
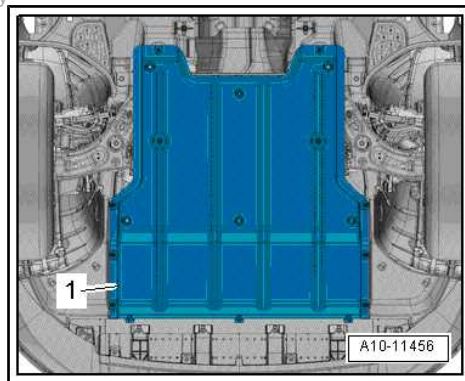
◆ Torque wrench - V.A.G 1332-



Removing

- Loosen bolt securing drive shaft at wheel hub ⇒ [page 102](#) .
- Remove front wheel ⇒ [page 241](#) .
- Remove noise insulation ⇒ [General body repairs, exterior](#);
Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

- If fitted, unscrew nut -4- and detach coupling rod of vehicle level sender from wishbone.
- Remove heat shield for drive shaft (right-side) ⇒ [page 103](#) .

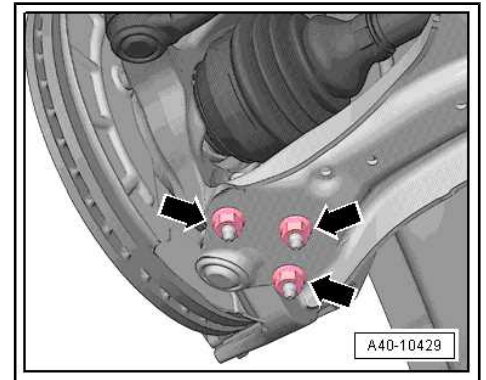


- Unscrew nuts -arrows-.
- Pull wishbone out of swivel joint.

 Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

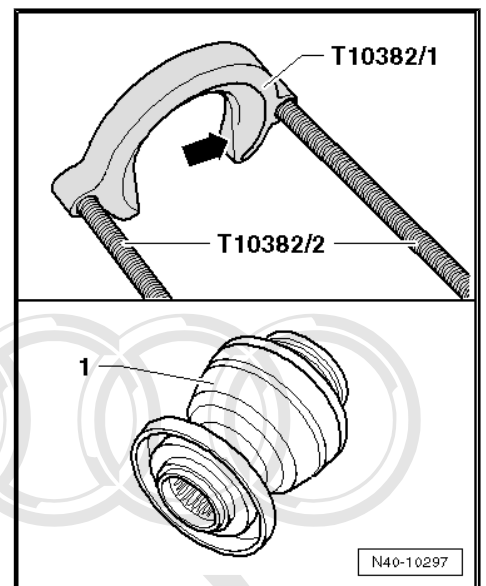
- Swivel out suspension strut and at the same time guide drive shaft out of wheel bearing unit.
- Slide outer joint by hand out of wheel hub.
- Secure drive shaft to prevent it from dropping.



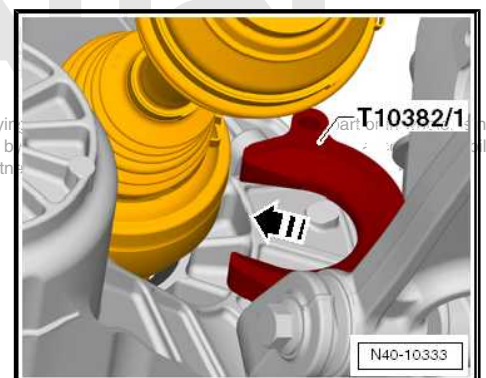
 Note

The suspension strut with all the attached components must be pulled towards the rear in order to extract the drive shaft from the gearbox using drive shaft puller - T10382-. When doing this, take care not to damage any other parts (such as the brake hose or ABS wiring).

- Set up drive shaft puller - T10382- .
- For the sliding constant velocity joint -1- the recess -arrow- on the puller plate - T10382/1- must face the spindles - T10382/2- .



- Apply puller plate - T10382/1- behind sliding constant velocity joint -1-.
- The recess -arrow- on puller plate - T10382/1- must face towards sliding constant velocity joint -1-.



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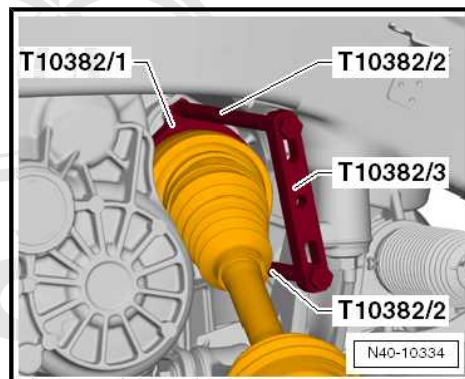
- Attach spindles - T10382/2- and cross piece - T10382/3- to puller plate - T10382/1- .
- Attach multi-purpose tool - VW 771- to cross piece - T10382/3- .
- Pull out drive shaft by striking multi-purpose tool - VW 771- as required.
- Take drive shaft out of vehicle.

Installing

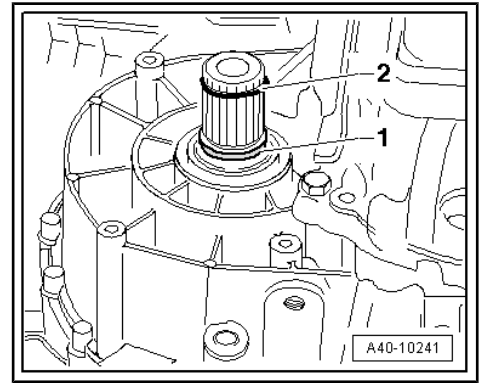
Installation is performed in reverse sequence; note the following:

- Before fitting the outer joint in the wheel hub, apply a thin coat of assembly paste to the splines on the outer joint ➤ Electronic parts catalogue .

Remove any paint residue and/or corrosion on thread and splines of outer joint.



- Fit new seal -1- and circlip -2- in groove of stub shaft on gear-box.
- Apply approx. 2 g of grease all round splines on end of gearbox shaft ⇒ Electronic parts catalogue .
- Mesh outer and inner splines of gearbox shaft and sliding constant velocity joint.
- Take hold of drive shaft and slide it into constant velocity joint as far as it will go.
- Then push constant velocity joint onto stub shaft on gearbox with a sudden, hard push.



 Note

- ◆ *If the drive shaft cannot be pushed in easily, even though the splines are aligned correctly, you can make use of the sliding travel in the constant velocity joint.*
- ◆ *DO NOT use a hammer or the like.*
- Check that the sliding constant velocity joint is fitted securely by pulling the joint against the resistance of the circlip.



Caution

When making this check, only pull on the CV joint. Do not pull the drive shaft.

- Guide outer joint into wheel hub splines as far as possible.

 Note

Ensure sealing boot is not damaged or twisted.

- Tighten bolt securing drive shaft to wheel hub ⇒ [page 102](#)
- Fit front wheel ⇒ [page 241](#) .
- On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

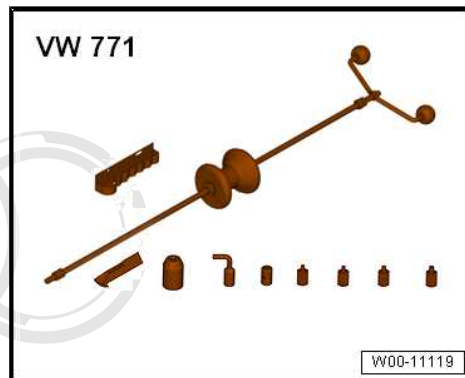
Tightening torques

- ◆ ⇒ ["1.1 Exploded view - subframe", page 16](#)
- ◆ ⇒ ["3.1 Exploded view - lower wishbone, swivel joint", page 57](#)
- ◆ ⇒ ["4.1 Exploded view - wheel bearing", page 68](#)
- ◆ ⇒ ["5.1.5 Exploded view - drive shaft, heat shield for drive shaft", page 82](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

5.2.5 Removing and installing drive shaft (right-side) with sliding CV joint (version with internal splines on inner joint)

Special tools and workshop equipment required

- ◆ Multi-purpose tool - VW 771-



- ◆ Tensioning strap - T10038-



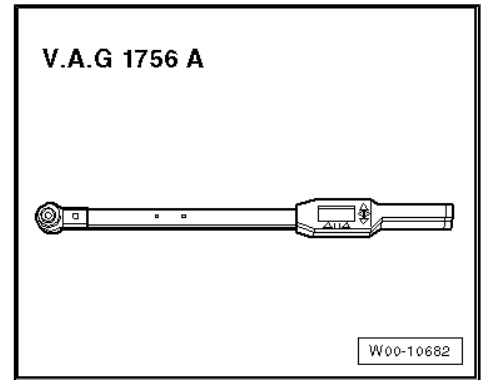
- ◆ Drive shaft puller - T10382-



- ◆ Torque wrench - V.A.G 1332-



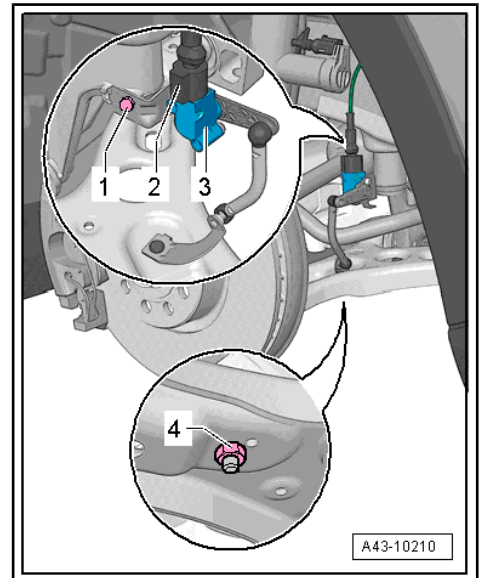
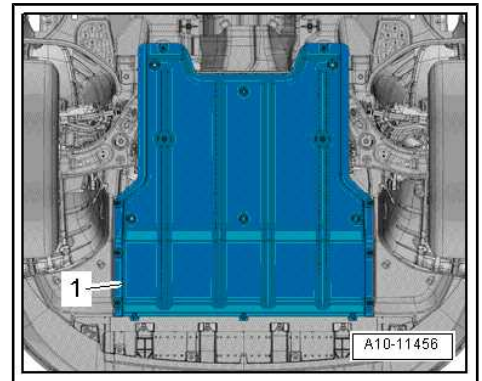
- ◆ Angle wrench - V.A.G 1756 A-



Removing

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- Loosen bolt securing drive shaft at wheel hub ➔ [page 102](#) .
- Remove front wheel ➔ [page 241](#) .
- Remove noise insulation -1- ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- If fitted, unscrew nut -4- and detach coupling rod of vehicle level sender from wishbone.
- Remove heat shield for drive shaft (right-side) ➔ [page 103](#) .



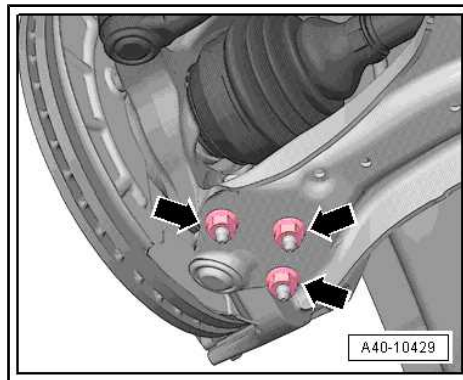
- Remove nuts -arrows- on swivel joint.
- Pull wishbone out of swivel joint.



Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

- Swivel out suspension strut and at the same time guide drive shaft out of wheel bearing unit.
- Slide outer joint by hand out of wheel hub.
- Secure drive shaft to prevent it from dropping.



Note

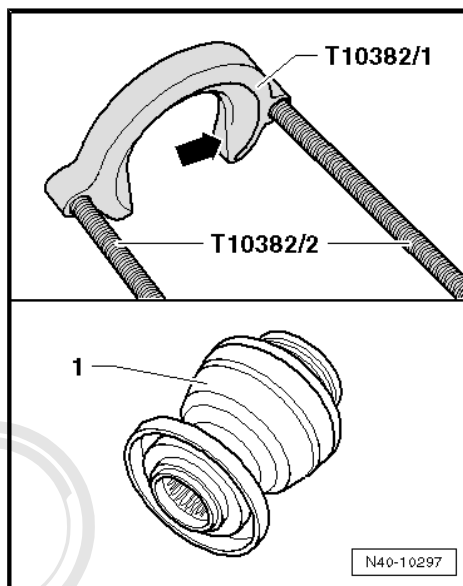
The suspension strut with all the attached components must be pulled towards the rear in order to extract the drive shaft from the gearbox using drive shaft puller - T10382-. When doing this, take care not to damage any other parts (such as the brake hose or ABS wiring).

- Set up drive shaft puller - T10382- .
- For the sliding constant velocity joint -1- the recess -arrow- on the puller plate - T10382/1- must face the spindles - T10382/2- .
- Assemble the drive shaft puller - T10382- together with the multi-purpose tool - VW 771- .

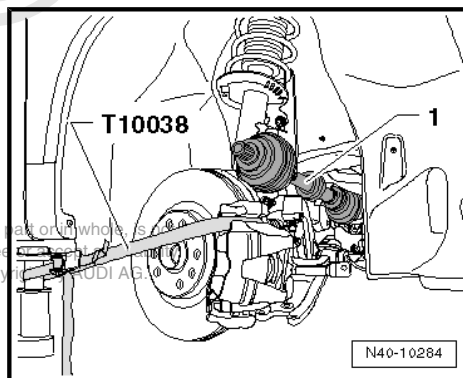


Note

The suspension strut with all the attached components must be pulled towards the rear in order to extract the drive shaft from the gearbox using drive shaft puller - T10382- .



- Pull suspension strut with attached components towards the rear using tensioning strap - T10038- (e.g. secured to arm of lifting platform) until drive shaft puller - T10382- can be inserted parallel with drive shaft.



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- Insert drive shaft puller - T10382- and pull out drive shaft by striking multi-purpose tool - VW 771- as required.
- Take drive shaft out of vehicle.

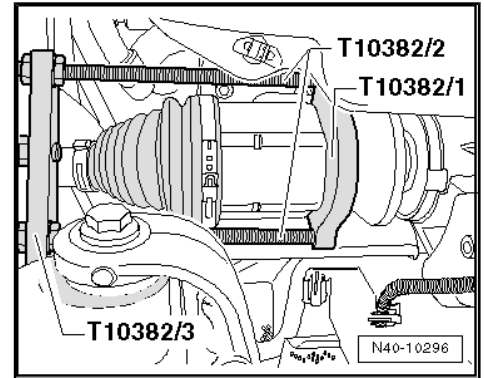
Installing

Installation is performed in reverse sequence; note the following:

Remove any paint residue and/or corrosion on thread and splines of outer joint.

Vehicles with four-wheel drive

- Strike end of stub shaft using a plastic hammer.



Caution

- ◆ *This ensures that the circlip on the stub shaft engages correctly in the differential pinion.*
- ◆ *It will also help to prevent leakage.*

All vehicles (continued):

- Fit new circlip in groove on stub shaft of gearbox.
- Lightly grease splines of stub shaft with universal grease → Electronic parts catalogue .
- Mesh outer and inner splines of gearbox shaft and sliding constant velocity joint.
- Take hold of drive shaft and slide it into constant velocity joint as far as it will go.
- Then push constant velocity joint onto stub shaft on gearbox with a sudden, hard push.



Note

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DO NOT use a hammer or the like.

- Check that the sliding constant velocity joint is fitted securely by pulling the joint against the resistance of the circlip.



Caution

When making this check, only pull on the CV joint. Do not pull the drive shaft.

- Detach tensioning strap - T10038- .
- Guide outer joint into wheel hub splines as far as possible.
- Bolt swivel joint to wishbone -arrows-.



Note

Ensure sealing boot is not damaged or twisted.

- Tighten bolt securing drive shaft to wheel hub ⇒ [page 102](#) .
- Fit front wheel ⇒ [page 241](#) .

- On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

Tightening torques

- ◆ ⇒ ["1.1 Exploded view - subframe", page 16](#)
- ◆ ⇒ ["3.1 Exploded view - lower wishbone, swivel joint", page 57](#)
- ◆ ⇒ ["4.1 Exploded view - wheel bearing", page 68](#)
- ◆ ⇒ ["5.1.5 Exploded view - drive shaft, heat shield for drive shaft", page 82](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

5.3 Loosening and tightening bolt securing drive shaft

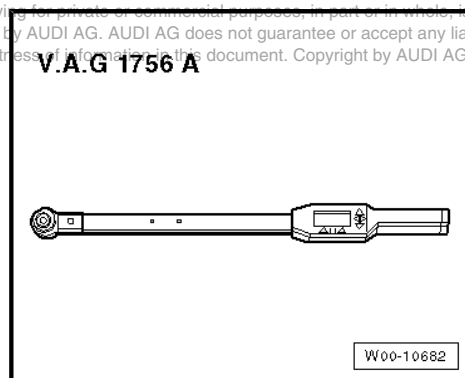
Special tools and workshop equipment required

- ◆ Socket AF 24 mm - T10361A-



- ◆ Angle wrench - V.A.G 1756 A-

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Wheel bearings must not be subjected to load after loosening bolt securing drive shaft at wheel hub.

If the wheel bearings are subjected to the full weight of the vehicle they will be overloaded, resulting in reduced service life. For this reason please note the following points:

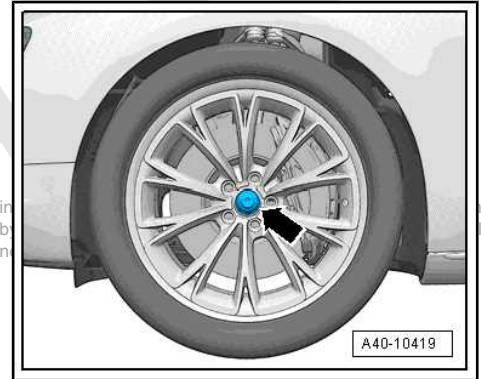
- ◆ Procedure for loosening twelve-point bolt

Do not attempt to move the vehicle without the drive shafts fitted; this would result in wheel bearing damage. If moving the vehicle is unavoidable, note the following points:

- Fit an outer joint in place of the drive shaft.
- Tighten outer joint to 200 Nm.

Loosening 12-point bolt

- To avoid damage to wheel bearing, slacken off twelve-point bolt -arrow- no further than 90° with vehicle standing on its wheels, using socket (24 mm) - T10361A- .
- Raise vehicle so that wheels are off the ground.
- Have a second mechanic press the brake pedal.
- Remove 12-point bolt -arrow-.



Note

Before securing, clean the threads in the CV joint using a thread tap

Installing 12-point bolt

- Renew twelve-point bolt.



Note

The wheels must not be in contact with the ground when initially tightening the drive shaft bolt; otherwise the wheel bearing can be damaged.

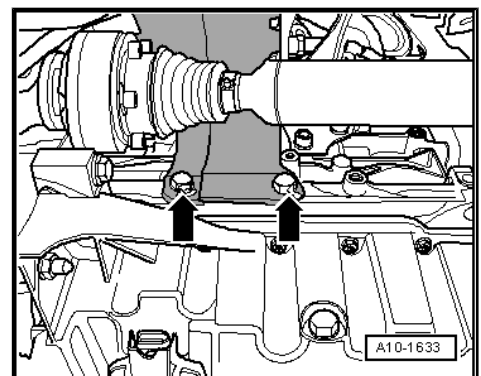
- Have a second mechanic press the brake pedal.
- Tighten 12-point bolt to 200 Nm.
- Lower vehicle onto its wheels.
- Turn 12-point bolt 180° further.

5.4 Removing and installing heat shield for drive shaft

Removing

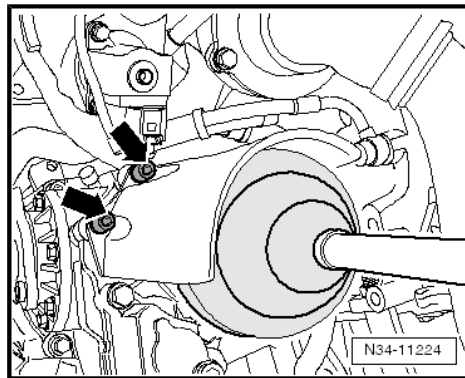
Front-wheel drive vehicles:

- Unscrew nuts -arrows- and detach heat shield.



Four-wheel drive vehicles, version 1:

- Unscrew nuts -1- and detach heat shield.



Four-wheel drive vehicles, version 2:

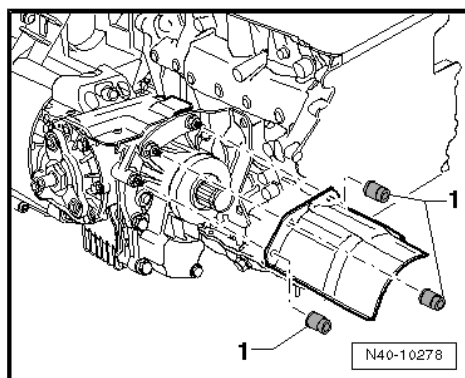
- Unscrew nuts -arrows- and detach heat shield.

Installing

Installation is carried out in the reverse sequence.

Tightening torques

- ◆ ⇒ "5.1.5 Exploded view - drive shaft, heat shield for drive shaft", page 82



5.5 Servicing constant velocity joint

⇒ "5.5.1 Servicing constant velocity joint, drive shaft with constant velocity joint VL107", page 104

⇒ "5.5.2 Servicing constant velocity joint, drive shaft with triple roller joint AAR3300i (with external splines for insertion in gearbox)", page 107

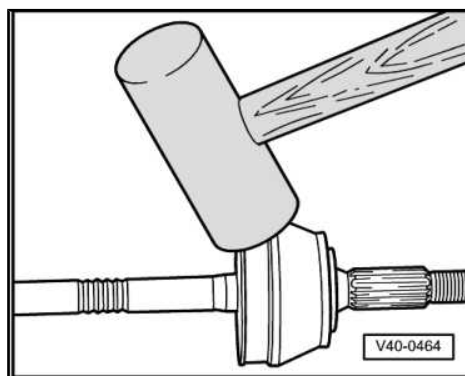
⇒ "5.5.3 Servicing constant velocity joint, drive shaft with triple roller joint AAR3300i (with internal splines for gearbox stub shaft)", page 112

⇒ "5.5.4 Servicing constant velocity joint, drive shaft with sliding constant velocity joint (version with internal splines on inner joint)", page 119

5.5.1 Servicing constant velocity joint, drive shaft with constant velocity joint VL107

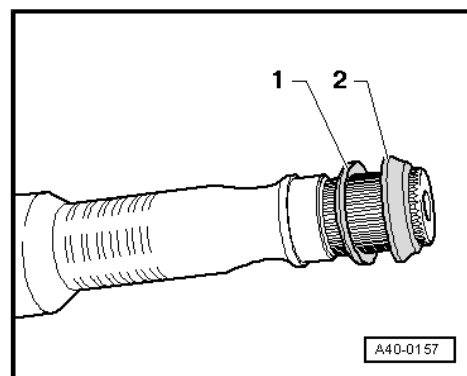
Removing outer constant velocity joint

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



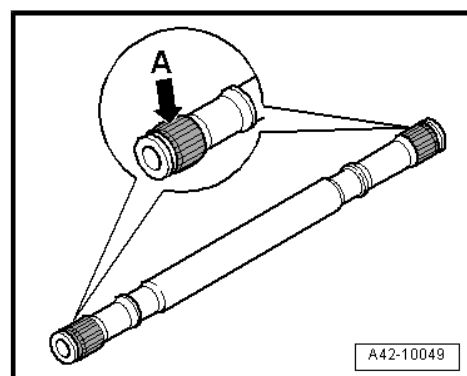
Installation position of spacer ring and dished spring on outer joint (if fitted)

- 1 - Dished spring
- 2 - Spacer ring (plastic)



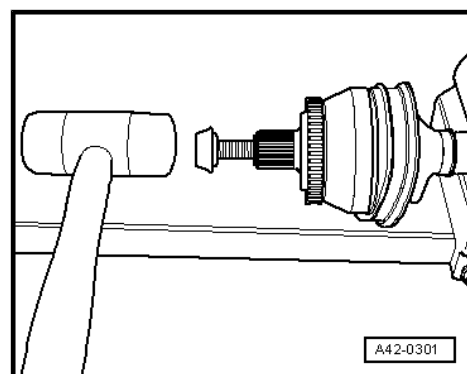
Installing outer constant velocity joint with bolt

- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint body onto drive shaft.



- Screw old bolt into CV joint as shown.
- Use plastic-headed hammer to drive joint onto shaft until circlip engages.

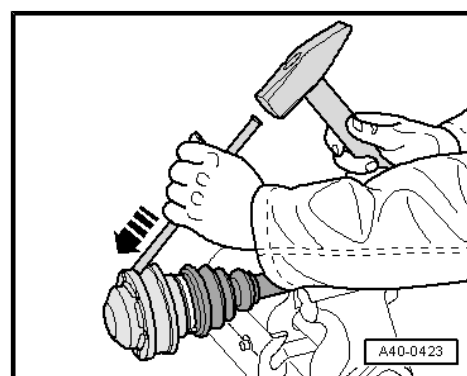
Pressing off inner constant velocity joint



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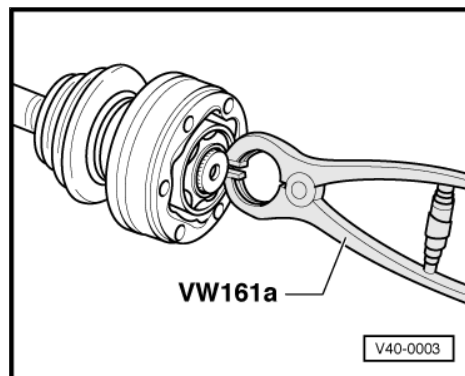
Detaching cover

- Drive off cover with a copper or brass drift.



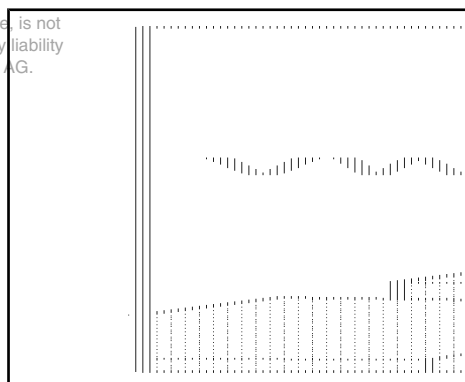
Removing and installing circlip

- Use drift to drive off boot.



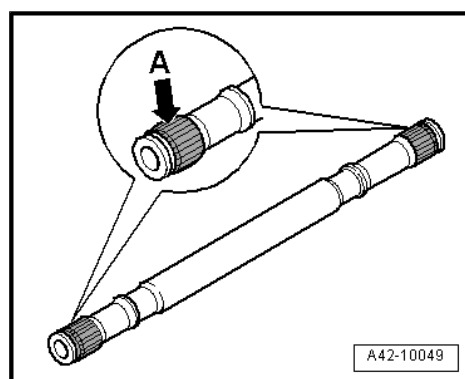
- Support ball hub while pressing off.

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Pressing on inner constant velocity joint

- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint body onto drive shaft.

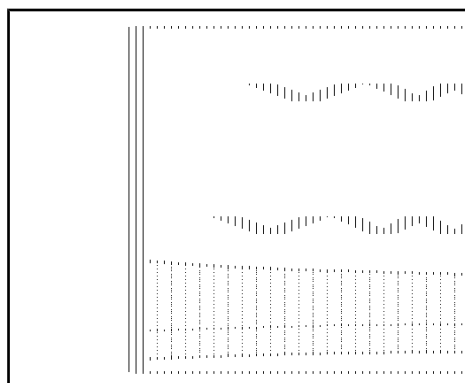


- Press on joint as far as stop.
- Fit circlip.



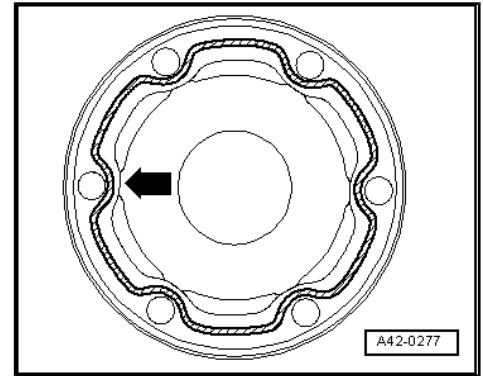
Note

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

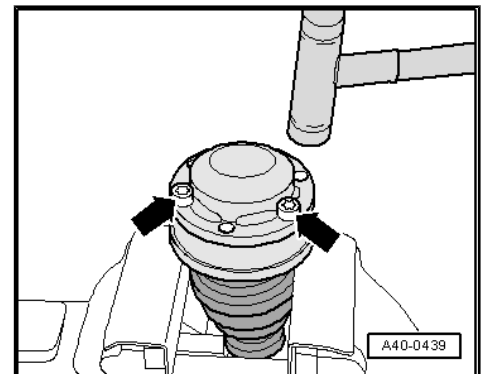


Applying sealing compound to sealing surface on cover and installing cover

- Apply sealant -hatched area- to clean surface of cover.
- ◆ Route continuous bead of sealant (2 ... 3 mm Ø) around inside of holes -arrow-.



- Using bolts -arrows-, align new cover in relation to bolt holes.
- The alignment must be very accurate, because no further alignment is possible once the part has been hammered on.
- Drive on cover using a plastic hammer.
 - Wipe off surplus sealant.

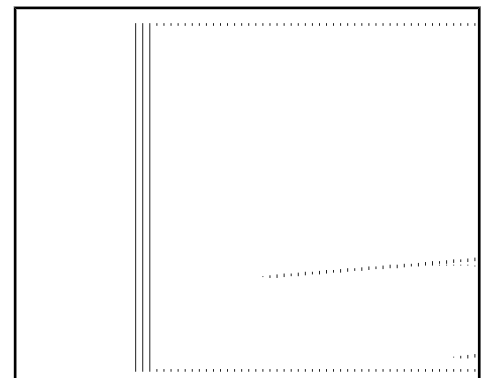


Venting rubber boot

The CV joint boot is often squashed when it is installed on the joint body. This creates a partial vacuum inside the boot, which draws in a fold -arrow- whilst driving.

For this reason, please note the following:

- Before tightening the hose clips, vent the boot to equalise pressure by briefly lifting the lip.



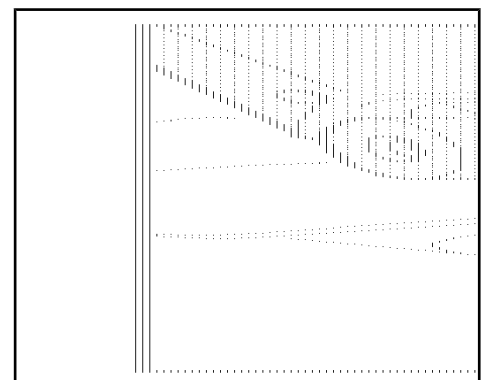
Tightening stainless-steel hose clips for Hytrel boots

- 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 -A- with torque wrench (take care to keep clamp tensioner straight).
- ◆ Tightening torque: 20 Nm



Note

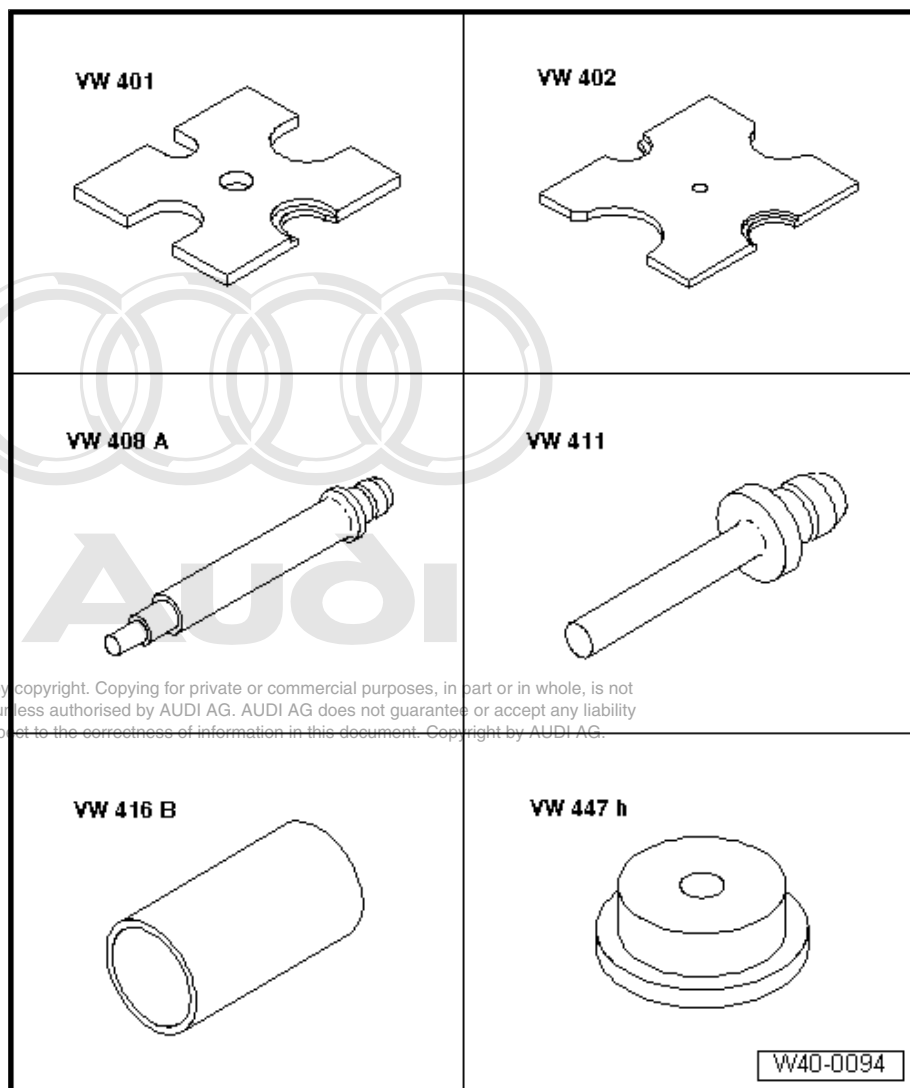
- ◆ Make sure thread of spindle on clamp tensioner moves freely. Lubricate with MoS₂ grease if necessary.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.



5.5.2 Servicing constant velocity joint, drive shaft with triple roller joint AAR3300i (with external splines for insertion in gearbox)

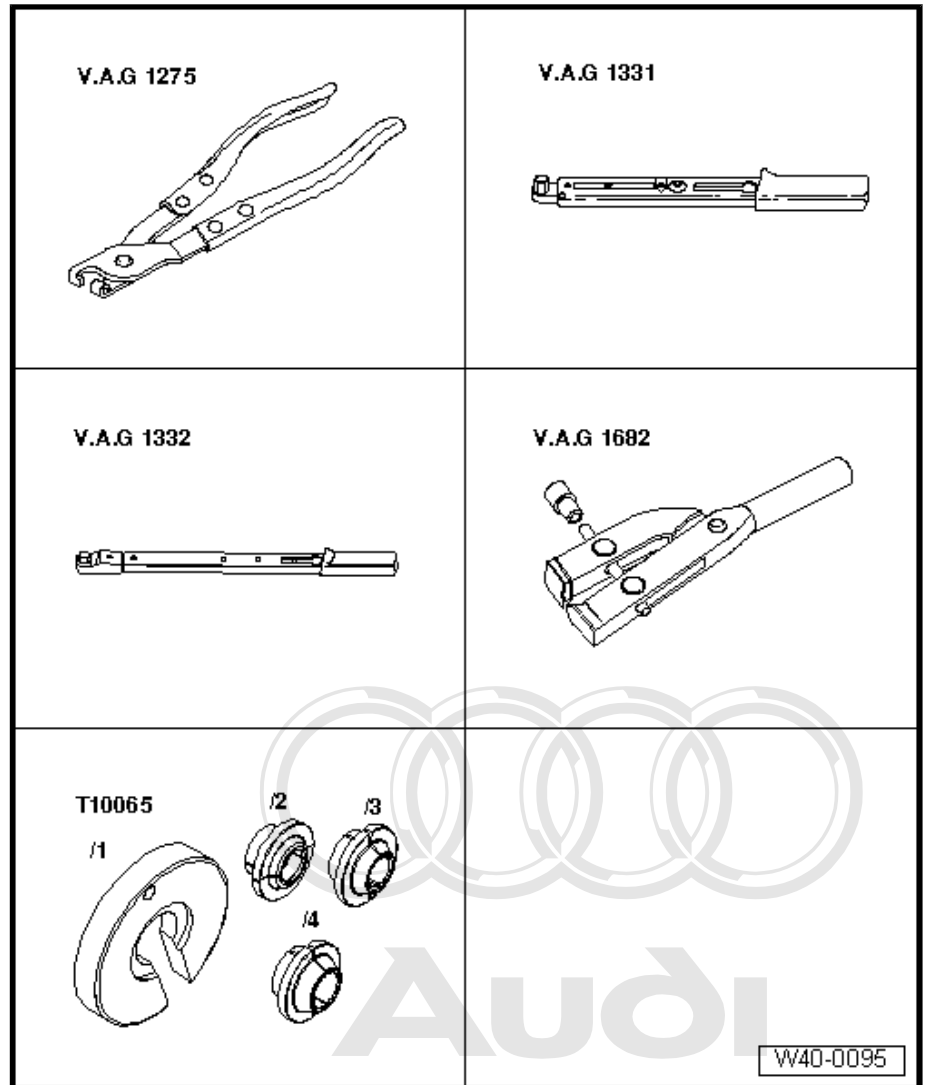
Special tools and workshop equipment required

- ◆ 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-



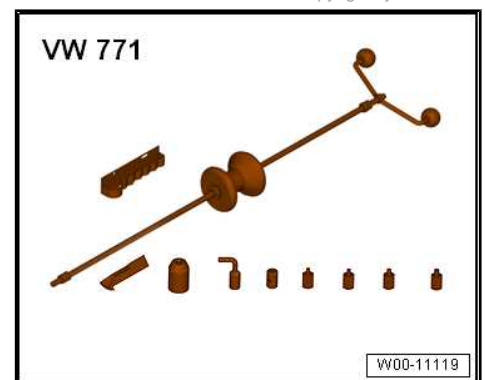
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- ◆ Hose clip pliers - V.A.G 1275-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Clamp tensioner - V.A.G 1682-
- ◆ Assembly tool - T10065-



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- ◆ Multi-purpose tool - VW 771-



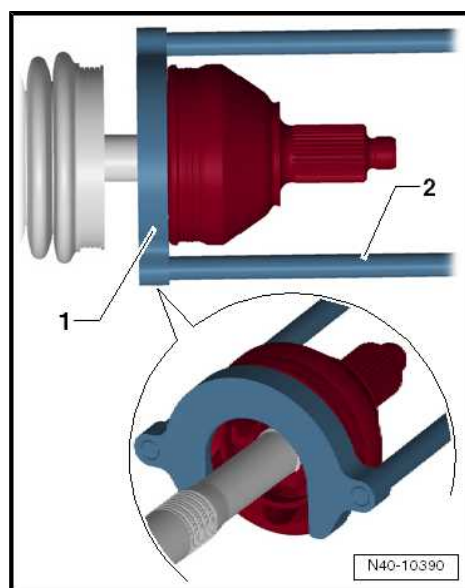
◆ Puller - T10382-



Removing outer constant velocity joint

- Clamp drive shaft in vice using protective jaw covers.
- Fold back rubber boot.
- Set up puller - T10382- so that smooth side of puller plate - T10382/1- faces towards spindles - T10382/2- .
- Assemble puller - T10382- together with multi-purpose tool - VW 771- .
- Pull CV joint off drive shaft using puller - T10382- and multi-purpose tool - VW 771- .

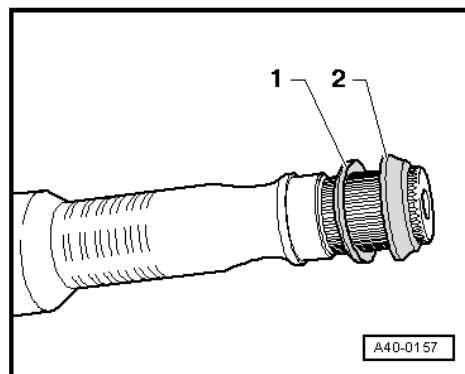
- 1 - Puller plate - T10382/1-
- 2 - Spindles - T10382/2-



Driving on outer constant velocity joint

Installation position of dished spring and spacer ring on outer joint (if fitted)

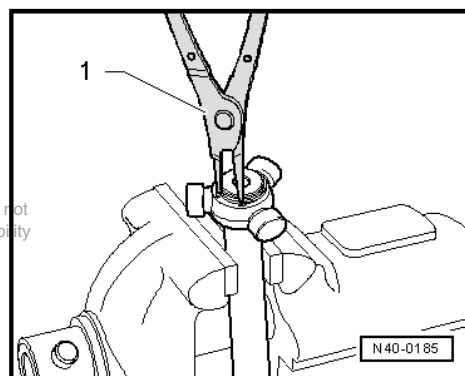
- 1 - Dished spring
- 2 - Thrust washer
- Install new circlip.
- If necessary, push new joint boot onto drive shaft.
- Knock onto shaft with plastic hammer until circlip engages.



Dismantling

- Open both hose clips on inner joint and push back boot.
- Pull joint body off drive shaft.
- Remove circlip.

- 1 - Pliers (commercial type)

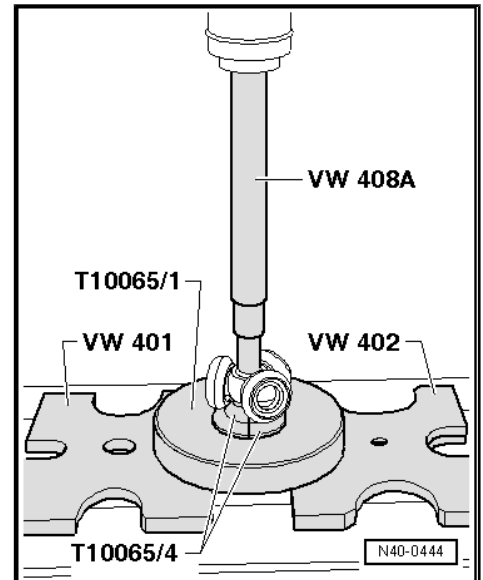


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- Insert drive shaft in press.
- Press triple roller spider off drive shaft.
- Pull boot off drive shaft.
- Clean shaft, joint body and groove for seal.

Assembling

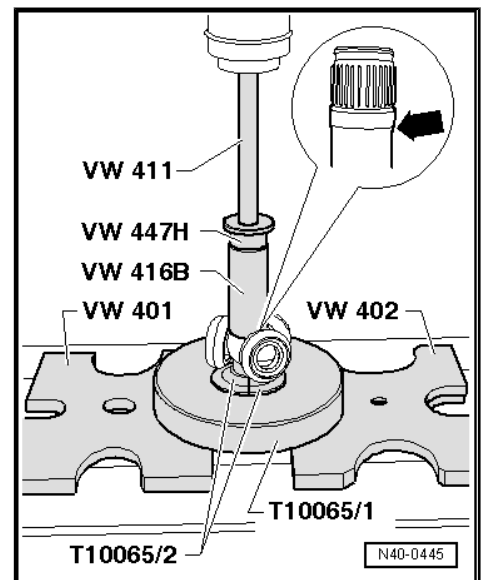
- Push small hose clip for boot onto shaft.
- Slide boot onto shaft.
- Push joint body onto shaft.



Fitting triple roller spider (tapered drive shaft version)

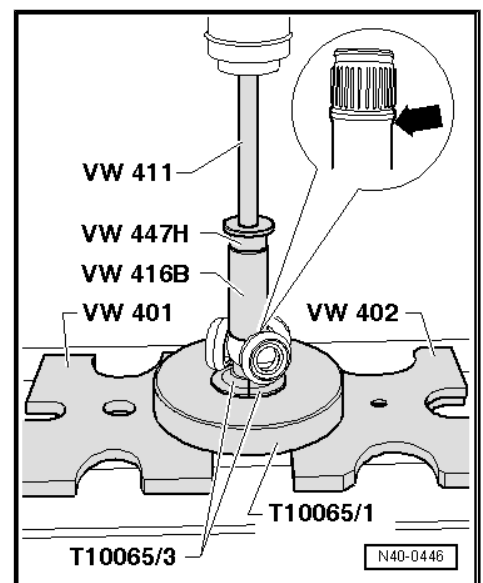
Chamfer on spider faces towards shaft and is used as an assembly aid.

- Fit triple roller spider on shaft and press on as far as stop.
- Make sure pressure does not exceed 3.0 t.
- If necessary, grease splines of drive shaft and triple roller spider with lubricating paste - G 052 142 A2- .
- Install circlip (ensure proper seating).
- Press half the quantity of drive shaft grease from the repair kit into the triple roller joint.
- Slide joint body over rollers and hold in position.
- Press the other half of the drive shaft grease from the repair kit into the back of the triple roller joint.
- Install joint boot.



Fitting triple roller spider (cylindrical drive shaft version)

- Fit triple roller spider on shaft and press on as far as stop.
- Make sure pressure does not exceed 3.0 t.
- If necessary, grease splines of drive shaft and triple roller spider with lubricating paste - G 052 142 A2- .
- Install circlip (ensure proper seating).
- Press half the quantity of drive shaft grease from the repair kit into the triple roller joint.
- Slide joint body over rollers and hold in position.
- Press the other half of the drive shaft grease from the repair kit into the back of the triple roller joint.
- Install joint boot.
- Push boot onto joint body and fit hose clip.



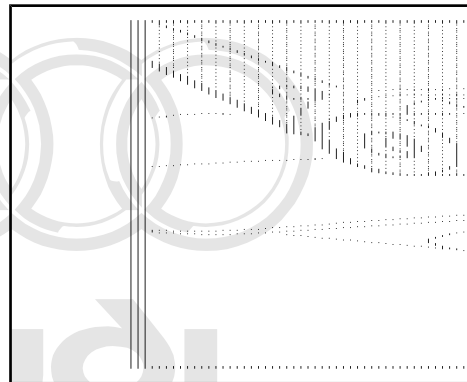
Tightening hose clip on outer joint

- Apply clamp tensioner - V.A.G 1682- as illustrated. 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 tool straight).

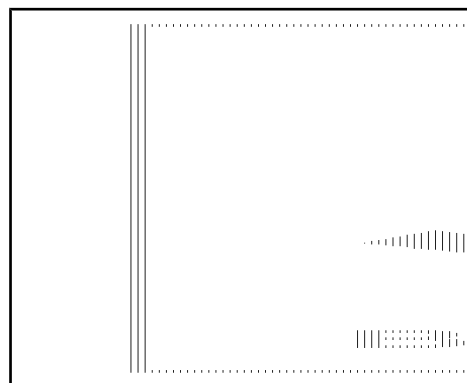


Note

- ◆ *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: 25 Nm.*
- ◆ *Use torque wrench -C- with 5 ... 50 Nm adjustment range (e.g. torque wrench - V.A.G 1331-).*
- ◆ *Ensure that the thread of spindle -A- is not tight. If necessary lubricate with MOS 2 grease.*
- ◆ *If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.*



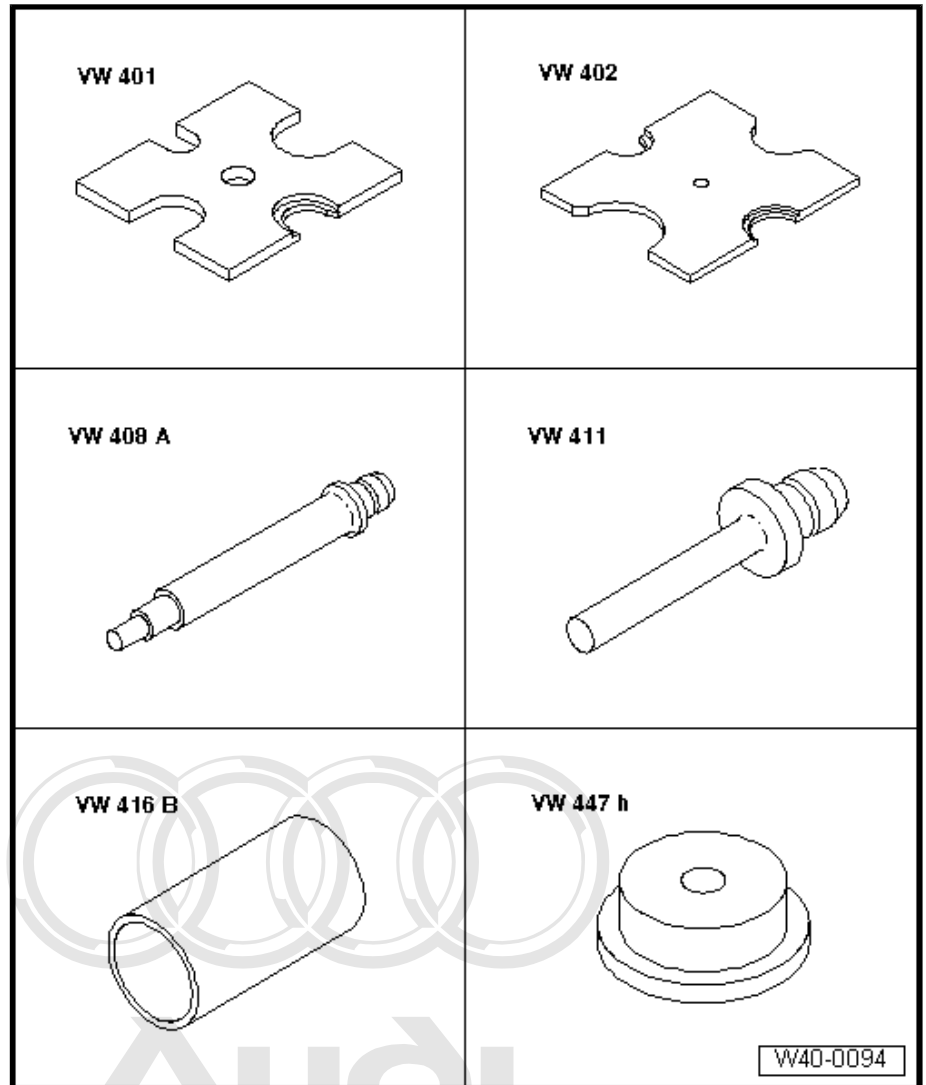
Tightening hose clip at small diameter of boot



5.5.3 Servicing constant velocity joint, drive shaft with triple roller joint AAR3300i (with internal splines for gearbox stub shaft)

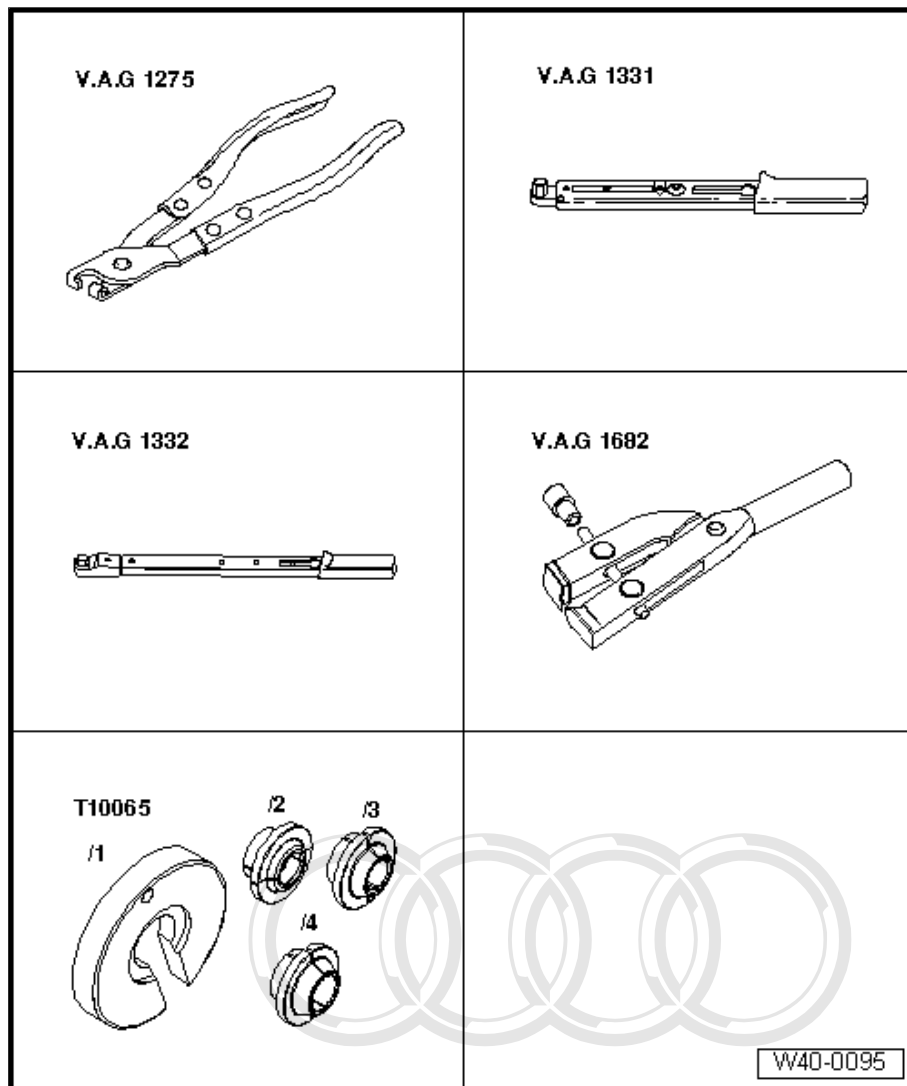
Special tools and workshop equipment required

- ◆ 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-



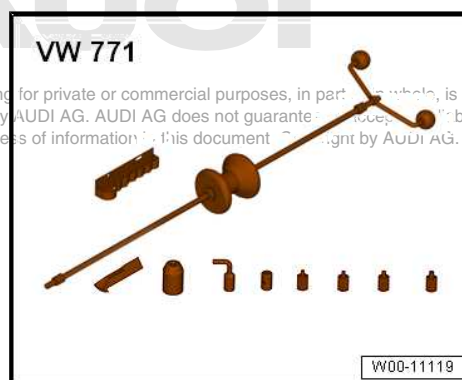
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- ◆ Hose clip pliers - V.A.G 1275-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Clamp tensioner - V.A.G 1682-
- ◆ Assembly tool - T10065-

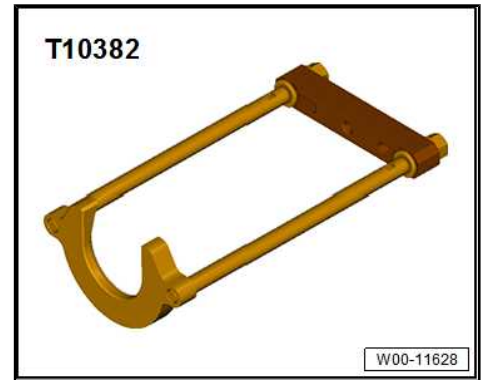


- ◆ Multi-purpose tool - VW 771-

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◆ Puller - T10382-

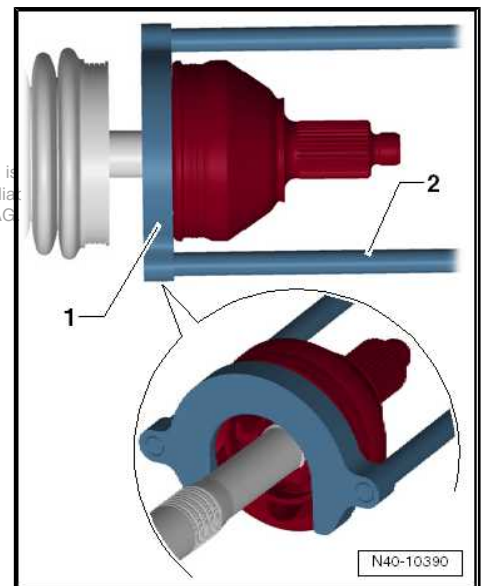


Removing outer constant velocity joint

- Clamp drive shaft in vice using protective jaw covers.
- Fold back rubber boot.
- Set up puller - T10382- so that smooth side of puller plate - T10382/1- faces towards spindles - T10382/2-.
- Assemble puller - T10382- together with multi-purpose tool - VW 771-.
- Pull CV joint off drive shaft using puller - T10382- and multi-purpose tool - VW 771-.

1 - Puller plate - T10382/1-

2 - Spindles - T10382/2-



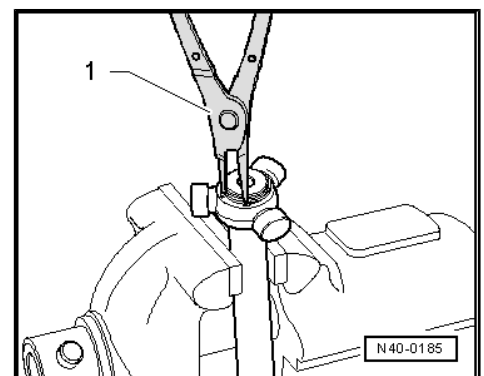
Driving on outer constant velocity joint

- Install new circlip.
- If necessary, push new joint boot onto drive shaft.
- Knock onto shaft with plastic hammer until circlip engages.

Dismantling

- Open hose clip at inner joint and push back boot from adapter.
- Pull joint body off drive shaft.
- Remove circlip.

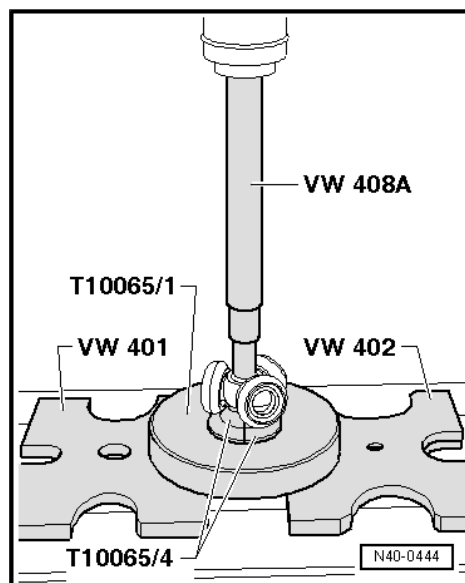
1 - Pliers (commercial type)



- Insert drive shaft in press.
- Press triple roller spider off drive shaft.
- Pull boot off drive shaft.
- Clean shaft, joint body and groove for seal.

Assembling

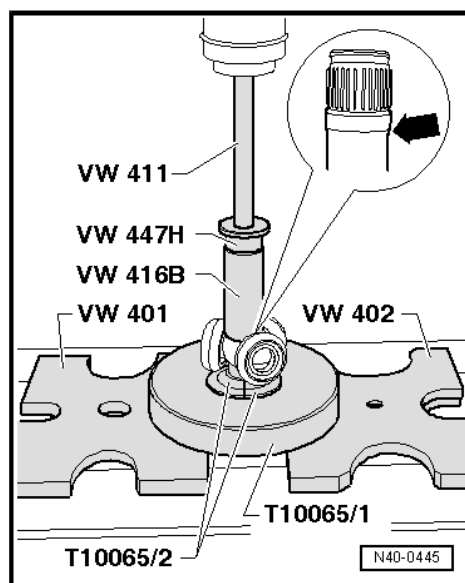
- Push small hose clip for boot onto shaft.
- Slide boot onto shaft.
- Push joint body onto shaft.



Fitting triple roller spider (tapered drive shaft version)

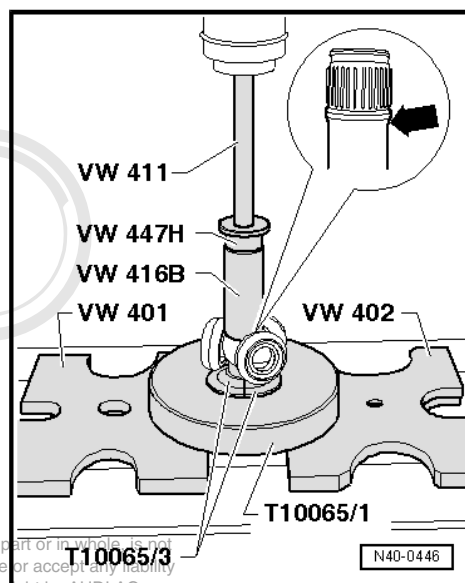
Chamfer on spider faces towards shaft and is used as an assembly aid.

- Fit triple roller spider on shaft and press on as far as stop.
- Make sure pressure does not exceed 3.0 t.
- If necessary, grease splines of drive shaft and triple roller spider with lubricating paste - G 052 142 A2- .
- Install circlip (ensure proper seating).
- Press half the quantity of drive shaft grease from the repair kit into the triple roller joint.
- Slide joint body over rollers and hold in position.
- Press the other half of the drive shaft grease from the repair kit into the back of the triple roller joint.
- Install joint boot.



Fitting triple roller spider (cylindrical drive shaft version)

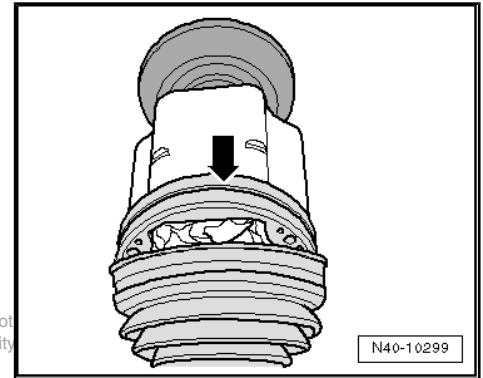
- Fit triple roller spider on shaft and press on as far as stop.
- Make sure pressure does not exceed 3.0 t.
- If necessary, grease splines of drive shaft and triple roller spider with lubricating paste - G 052 142 A2- .
- Install circlip (ensure proper seating).
- Press half the quantity of drive shaft grease from the repair kit into the triple roller joint.
- Slide joint body over rollers and hold in position.
- Press the other half of the drive shaft grease from the repair kit into the back of the triple roller joint.



- Push joint boot onto adapter, making sure that boot engages properly in groove on adapter -arrow-.
- Fit hose clip and tighten sufficiently to ensure reliable sealing.

Audi

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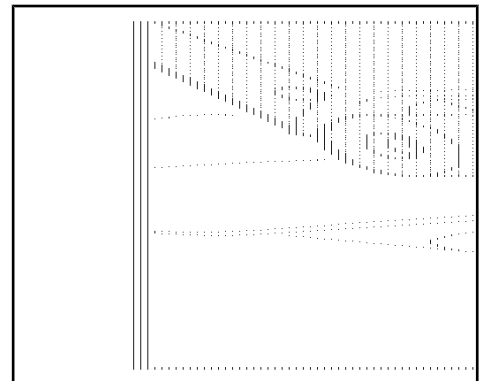
Tightening hose clip on outer joint

- Apply clamp tensioner - V.A.G 1682- as illustrated. 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 tool straight).

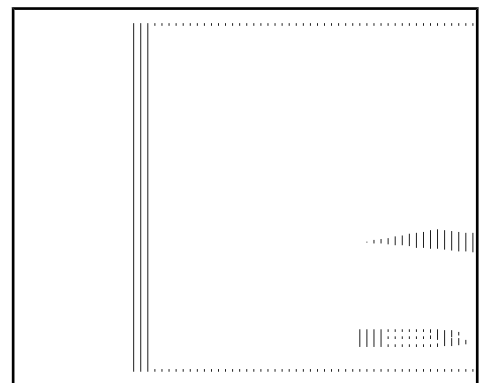


Note

- ◆ 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: 25 Nm.
- ◆ Use torque wrench -C- with 5 ... 50 Nm adjustment range (e.g. torque wrench - V.A.G 1331-).
- ◆ Ensure that the thread of spindle -A- is not tight. If necessary lubricate with MOS 2 grease.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.

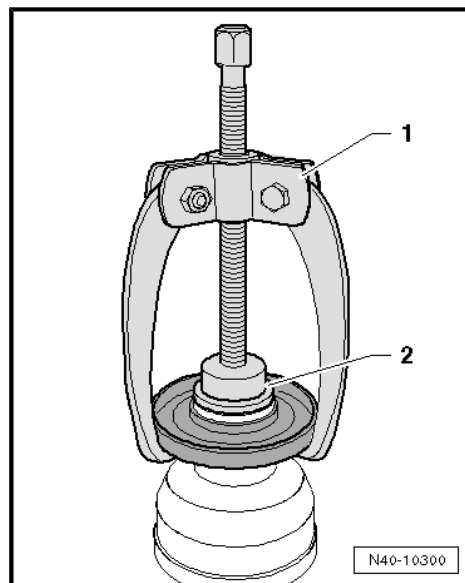


Tightening hose clip at small diameter of boot



Pulling protective cap off triple roller joint

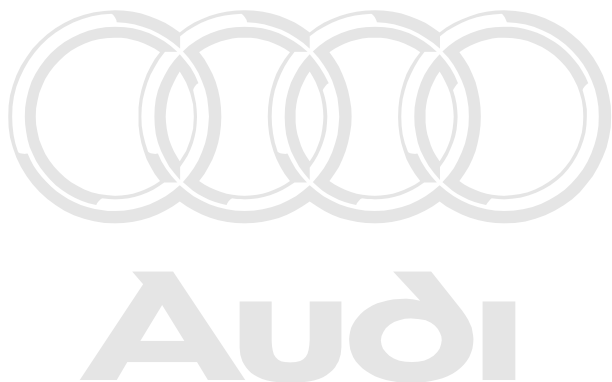
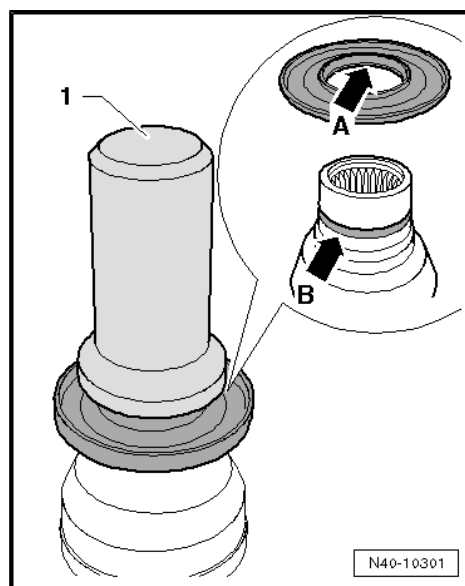
- 1 - Three-arm puller, e.g. Kukko 45-2
- 2 - Thrust plate - VW 447 H-



Driving protective cap onto triple roller joint

- 1 - Thrust piece - T10243-

Drive protective cap onto joint until shoulder -arrow A- engages in groove -arrow B-.



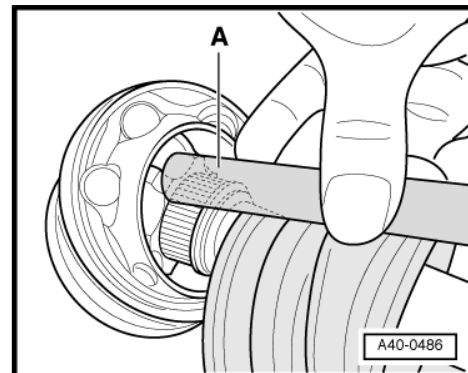
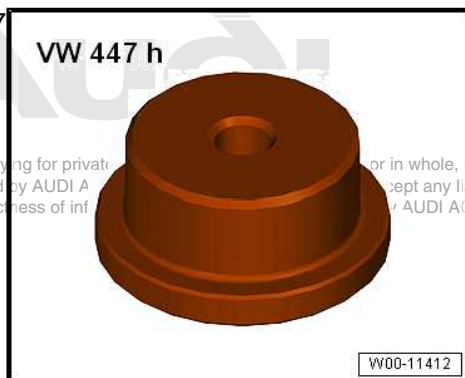
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5.5.4 Servicing constant velocity joint, drive shaft with sliding constant velocity joint (version with internal splines on inner joint)

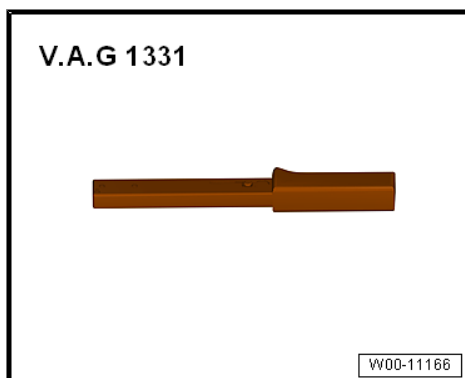
Special tools and workshop equipment required

- ◆ Thrust plate - VW 447 H-

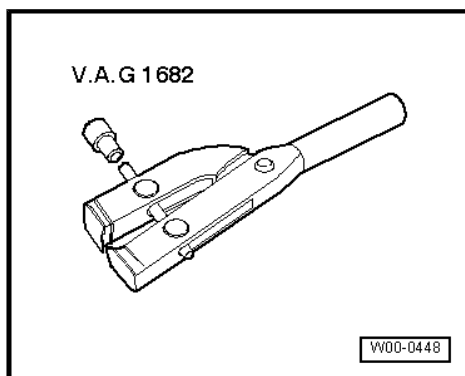
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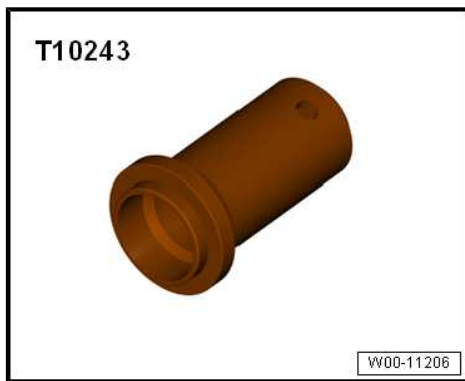
- ◆ Torque wrench - V.A.G 1331-



- ◆ Clamp tensioner - V.A.G 1682 A-



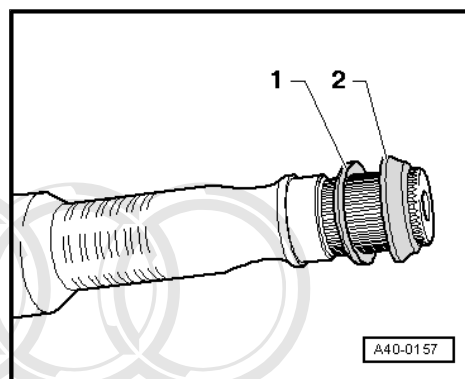
- ◆ Thrust piece - T10243-



- ◆ Copper or brass drift, commercially available
- ◆ Three-arm puller, e.g. Kukko 45-2

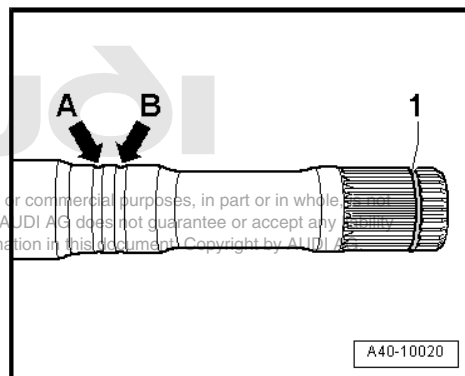
Removing outer constant velocity joint

- Clamp drive shaft in vice using protective jaw covers.
- Unfasten both clips and detach boot from outer joint.
- Use hammer to tap copper or brass drift -A- against inner race of constant velocity joint.
- Detach joint and boot.
- If fitted, detach dished spring -1- and spacer ring -2-.



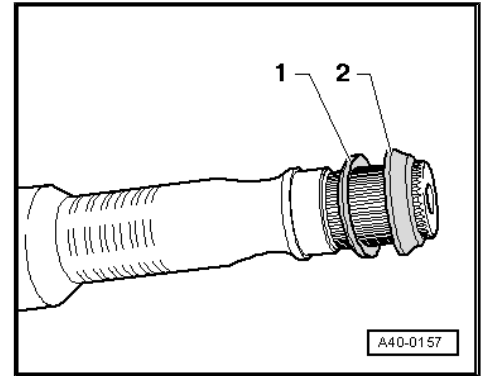
Installing outer joint

- Boot and drive shaft must be free from grease.
- Always renew circlip -1-.

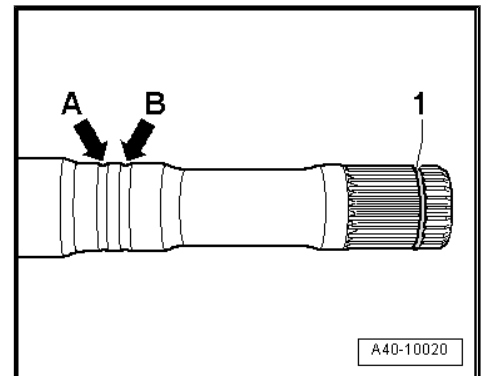


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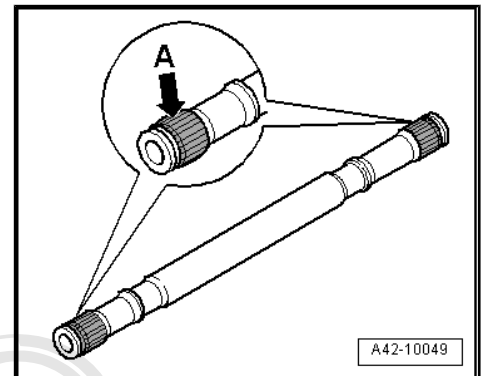
- If originally fitted, install dished spring -1- and spacer ring -2- as shown in illustration.
- Push on small hose clip with joint boot and bring boot into position on drive shaft.



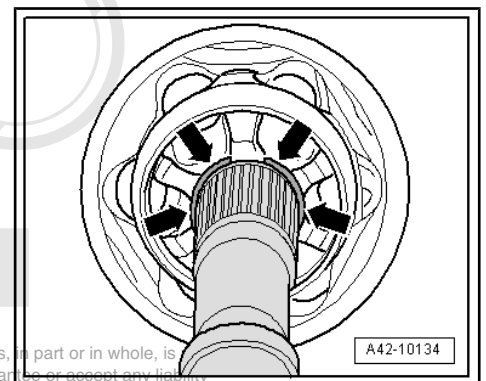
- Position boot in outer groove -arrow B-.
- The inner groove -arrow A- must remain visible ("identification groove" for correct boot assembly).
- Pack approx. 70% of quantity of grease from tube inside joint body.



- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint body onto drive shaft.

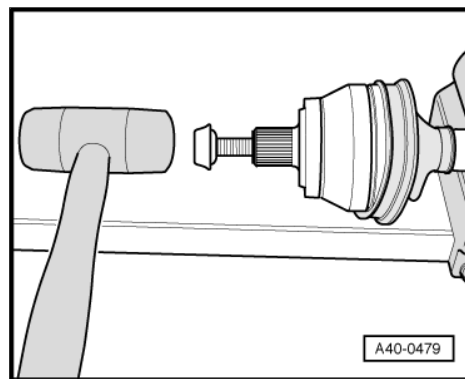


- Slide on constant velocity joint as far as circlip.
- Align circlip so that opening faces upwards -arrows-.



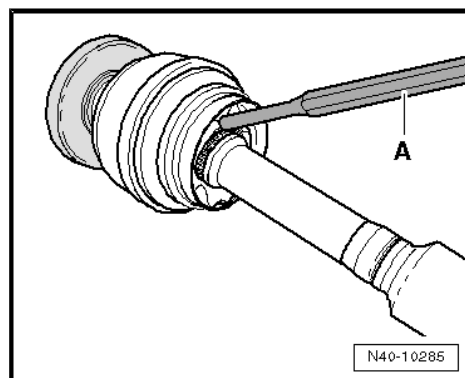
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- Screw old drive shaft bolt into joint body as shown.
- Use plastic hammer to drive joint onto drive shaft until circlip engages.
- Pack remaining quantity of grease into boot side of joint body.
- Push boot onto joint body.
- Vent air from boot.
- Make sure boot is properly positioned on joint body.
- Boot must rest in groove and on contour of joint body.
- Tighten hose clips on outer joint ➔ [page 122](#) .



Removing inner sliding constant velocity joint

- Clamp drive shaft in vice using protective jaw covers.
- Fold back rubber boot.
- Use drift -A- to force sliding constant velocity joint off drive shaft.
- The drift must be applied exactly on the ball hub of the sliding constant velocity joint.

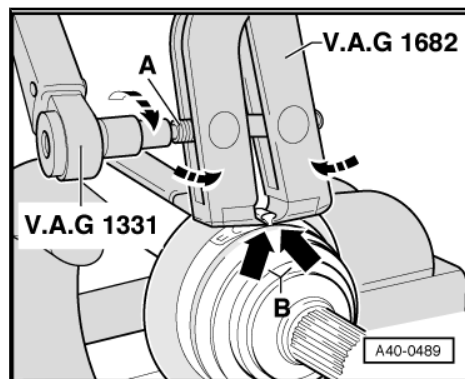


Installing inner sliding constant velocity joint

- Knock joint onto shaft with plastic hammer until circlip engages.

Use clamp tensioner - V.A.G 1682- to fit and tighten stainless steel hose clip, as shown in illustration.

- Apply clamp tensioner - V.A.G 1682 A- as illustrated. 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 tool straight).

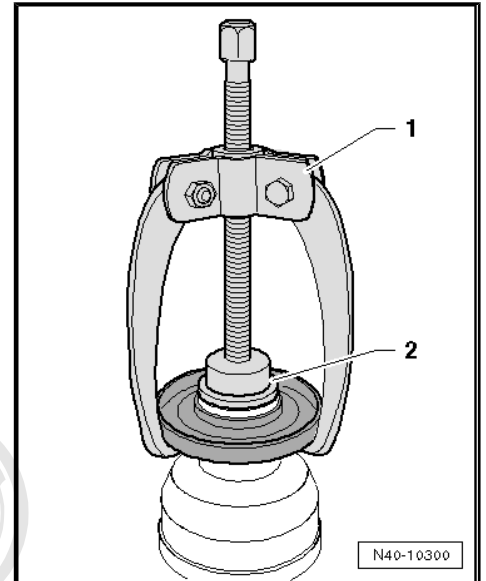


Note

- ◆ 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 A- .
- ◆ Tightening torque: 25 Nm.
- ◆ Use torque wrench -C- with 5 ... 50 Nm adjustment range (e.g. torque wrench - V.A.G 1331-).
- ◆ Ensure that the thread of spindle -A- is not tight. If necessary lubricate with MOS 2 grease.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.

Removing protective cap from sliding constant velocity joint

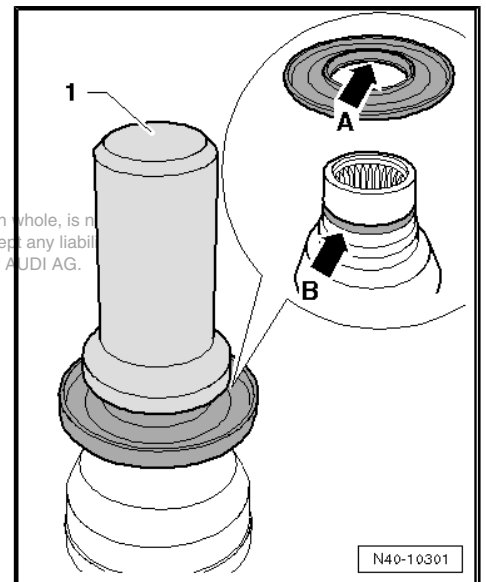
- 1 - Three-arm puller, e.g. Kukko 45-2
- 2 - Thrust plate - VW 447 H-



Driving protective cap onto sliding constant velocity joint

- 1 - Thrust piece - T10243-

Drive protective cap onto joint until shoulder -arrow A- engages in groove -arrow B-.



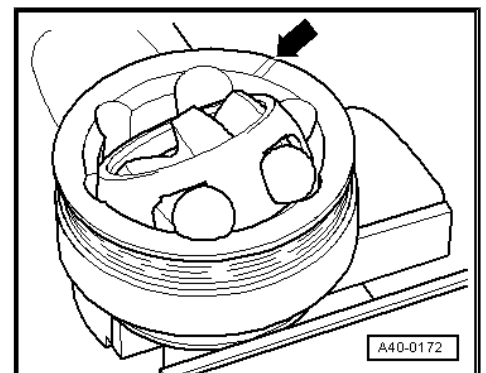
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5.6 Checking outer constant velocity joint

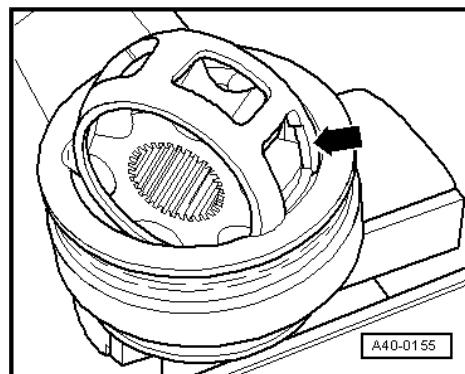
The joint should be dismantled to renew dirty grease or for checking the balls and ball races for wear and damage.

Removing

- Before dismantling, mark position of ball hub in relation to ball cage and joint body with an electric scriber or oil stone -arrow-.
- Swivel ball hub and ball cage and 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.

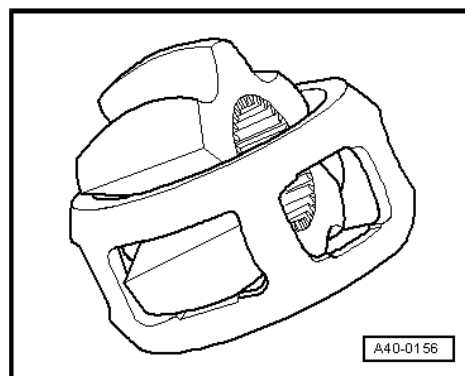


- Swivel one segment of the hub into one of the cage openings.
- Pivot hub out of cage.



Note

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



Installing

Installation is performed in reverse sequence; note the following:

- 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.
- Fit new circlip in shaft.

5.7 Checking inner constant velocity joint

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



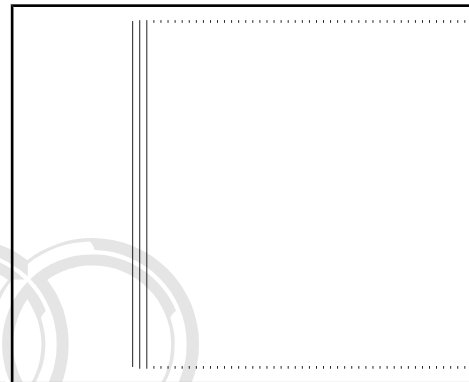
Note

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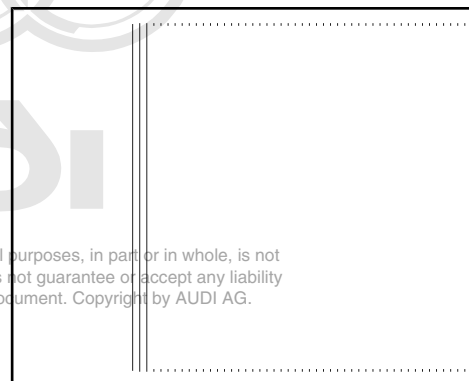
Ball hub and joint body are paired. Mark position in relation to each other with a waterproof felt-tip pen prior to removal.

Removing

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



- Align ball hub with cage as shown -arrows- and pivot hub out of cage.
- Check joint, ball hub, ball cage and balls for pitting and signs of seizure.



Note

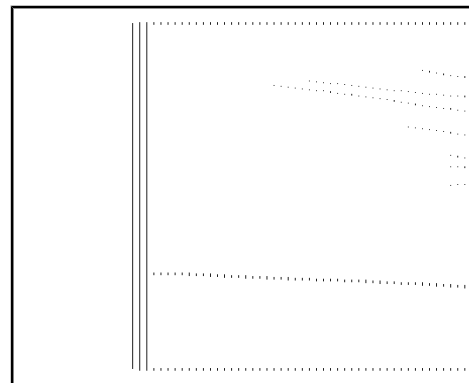
Excessive backlash in the joint will cause knocking or jolts under load change. In such cases the joint must be renewed. Polished areas and visible tracks in the ball races are not a reason for renewing the joint.

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Installing

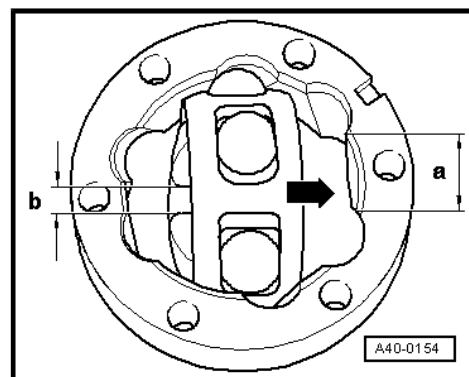
Installation is performed in reverse sequence; note the following:

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



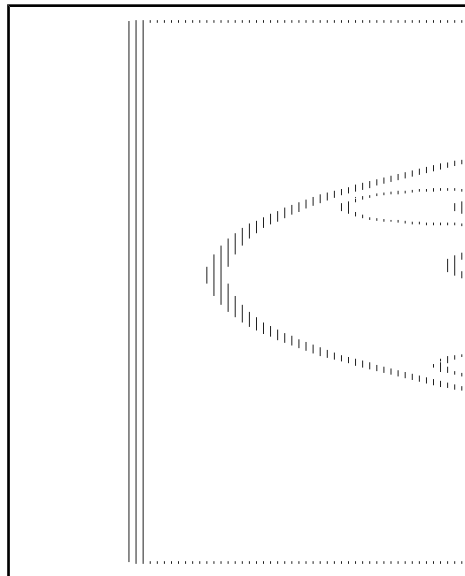
Note

- ◆ 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.
- ◆ Chamfer on internal diameter of ball hub (splines) must face large diameter of joint body.
- ◆ On installation, also use felt-tip pen mark made on removal as a guide.





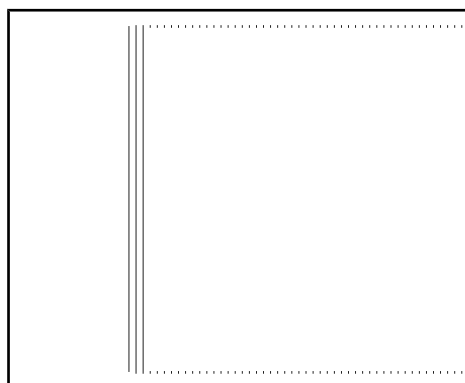
- Swivel the hub into the joint body; at the same time the hub must be swivelled out of the cage -arrows- far enough to allow the balls to fit into the ball races.



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

Checking function of constant velocity joint:

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



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42 – Rear suspension

1 Subframe

⇒ [“1.1 Exploded view - subframe”, page 127](#)

⇒ [“1.2 Removing and installing subframe”, page 128](#)

⇒ [“1.3 Servicing subframe”, page 140](#)

1.1 Exploded view - subframe

⇒ [“1.1.1 Exploded view - subframe, front-wheel drive vehicles”, page 127](#)

⇒ [“1.1.2 Exploded view - subframe, four-wheel drive vehicles”, page 128](#)

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1.1.1 Exploded view - subframe, front-wheel drive vehicles



Caution

Risk of damage to threads of bolts securing subframe to body.

1 - Bolt

- ☐ Always renew if removed
- ☐ 90 Nm +90°

2 - Subframe

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

3 - Bolt

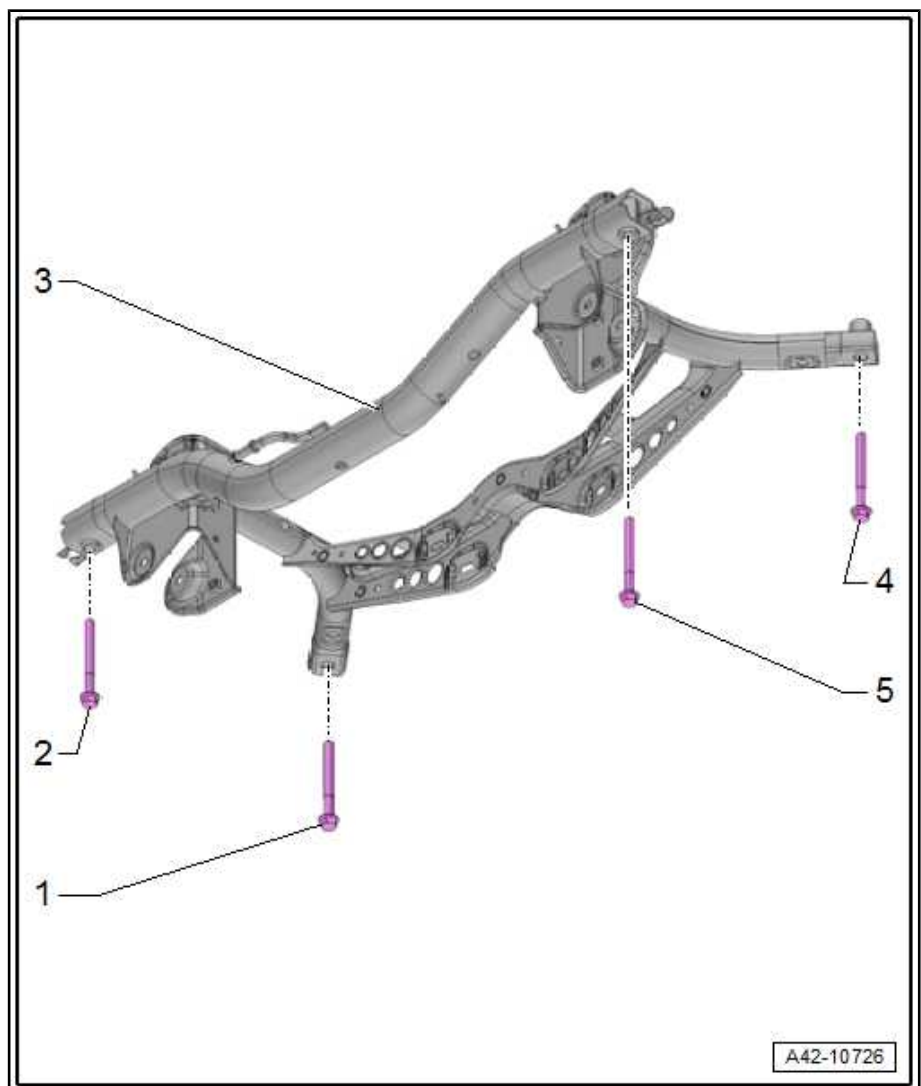
- ☐ Always renew if removed
- ☐ 90 Nm +90°

4 - Bolt

- ☐ Always renew if removed
- ☐ 90 Nm +90°

5 - Bolt

- ☐ Always renew if removed
- ☐ 90 Nm +90°



1.1.2 Exploded view - subframe, four-wheel drive vehicles



Caution

Risk of damage to threads of bolts securing subframe to body.

1 - Bolt

- ☐ Always renew if removed
- ☐ 90 Nm +90°

2 - Bonded rubber bush

- ☐ Renewing ⇒ [page 140](#)

3 - Bolt

- ☐ Always renew if removed
- ☐ 90 Nm +90°

4 - Bonded rubber bush

- ☐ Renewing ⇒ [page 140](#)

5 - Subframe

- ☐ Removing and installing ⇒ [page 133](#)

6 - Bonded rubber bush

- ☐ Renewing ⇒ [page 140](#)

7 - Bolt

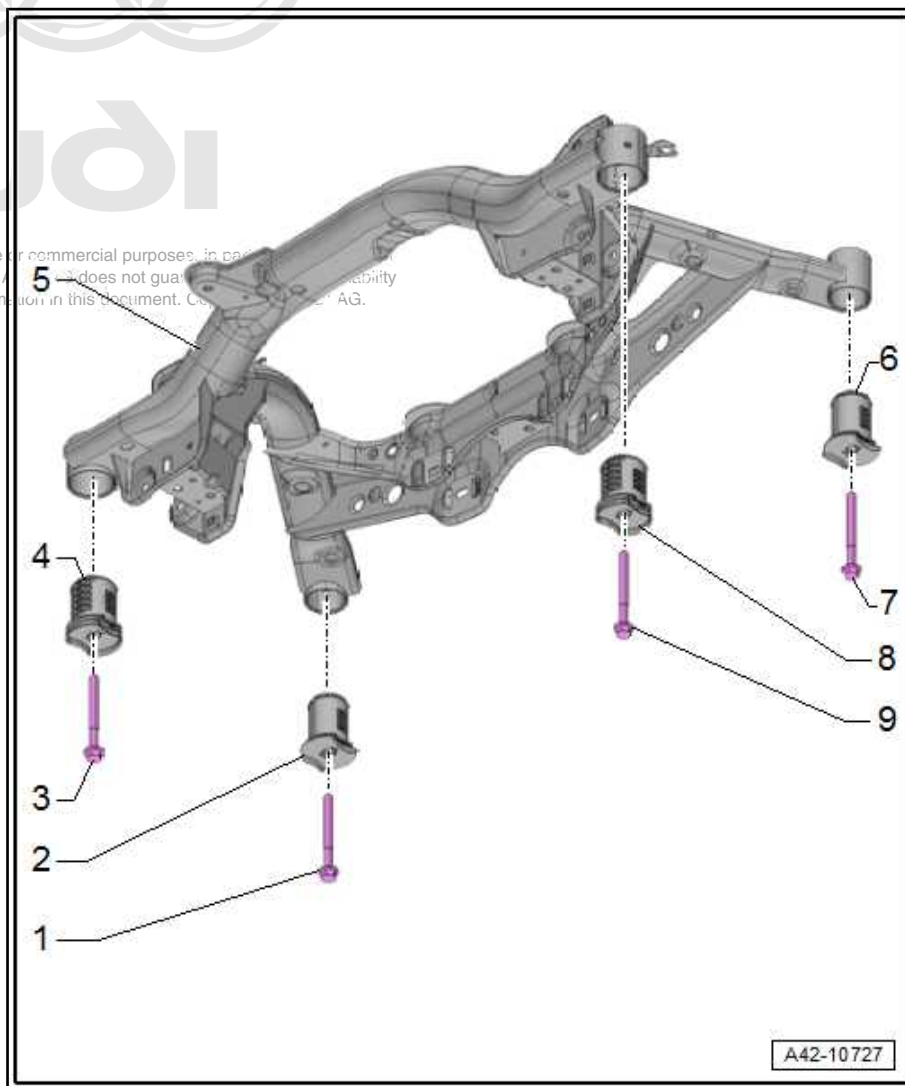
- ☐ Always renew if removed
- ☐ 90 Nm +90°

8 - Bonded rubber bush

- ☐ Renewing ⇒ [page 140](#)

9 - Bolt

- ☐ Always renew if removed
- ☐ 90 Nm +90°



1.2 Removing and installing subframe

⇒ ["1.2.1 Removing and installing subframe, front-wheel drive vehicles", page 128](#)

⇒ ["1.2.2 Removing and installing subframe, four-wheel drive vehicles", page 133](#)

1.2.1 Removing and installing subframe, front-wheel drive vehicles

Special tools and workshop equipment required

◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



◆ Locating pins - T10096-

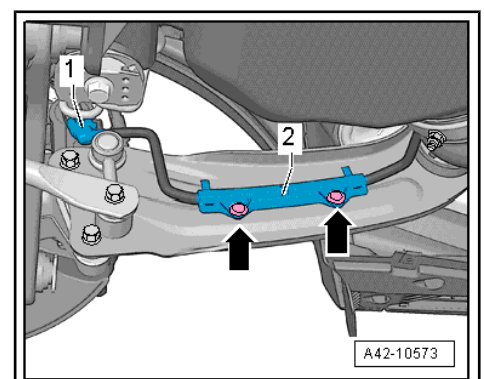


Removing subframe with attachments

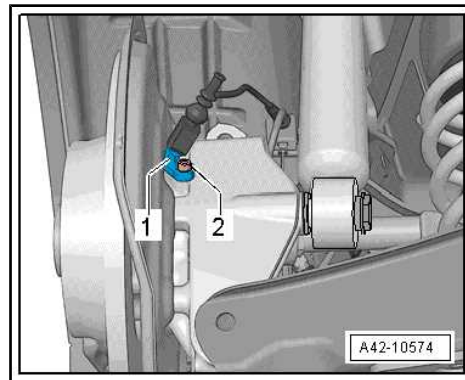
- Unplug electrical connector -1- from electromechanical parking brake motor on brake caliper on both sides.
- Remove retainer -2- by pushing out inner pins of rivets -arrows-.
- Detach brake calipers on both sides and tie to body with brake lines connected ⇒ Brake system; Rep. gr. 46 ; Rear brakes;

Removing and installing brake caliper

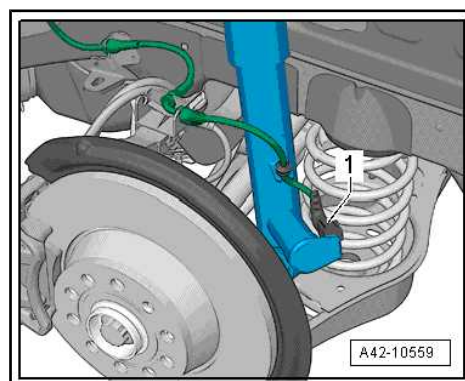
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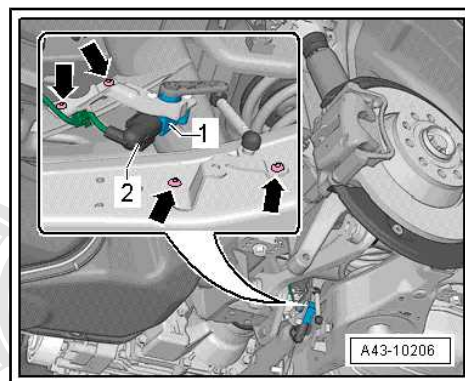
- Unplug electrical wiring from ABS speed sensor -1- and move wiring clear.



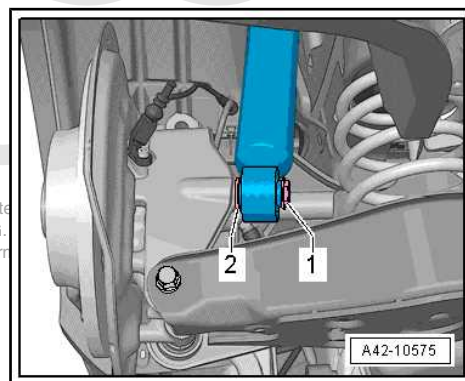
- On vehicles with electronic damping control, unplug connector -1- and move connector clear.



- Unplug connector -2- for rear left vehicle level sender - G76-1-.
- Move electrical wiring clear at subframe.
- Remove coil springs ⇒ [page 171](#) .



- Unscrew bolt -1- and remove together with washer -2-.



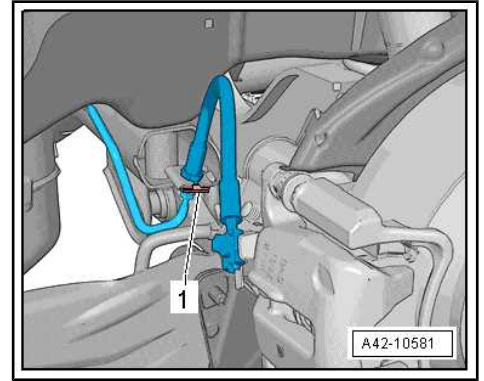
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- Pull out retaining clip -1- on both sides of vehicle.
- Move brake line clear of retainer.

 Note

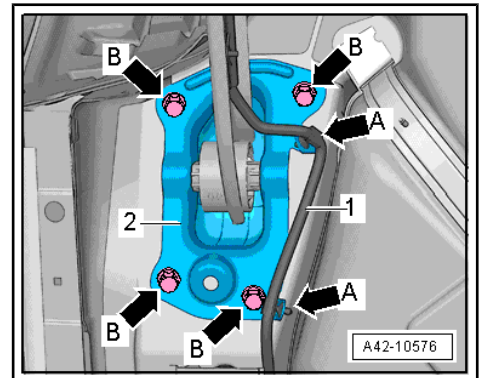
Do not disconnect brake line.

- Remove rear silencer for exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers
- Remove underbody trim ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .
- Detach line -1- from mounting bracket -arrows A-.
- Mark installation position of mounting bracket -2- on body.
- Remove bolts -arrows B-.

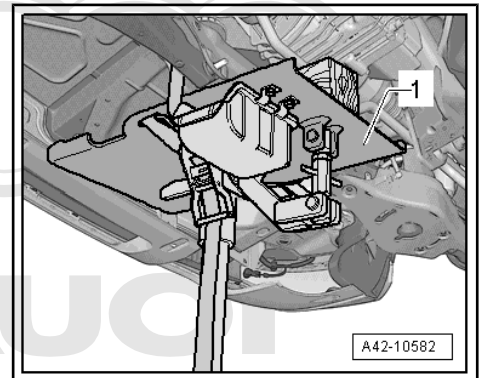


WARNING

BEFORE slackening subframe bolts, secure vehicle against tipping over (e.g. by placing a weight of approx. 50 kg in the luggage compartment).



- Position engine and gearbox jack - VAS 6931- -item 1- under subframe and secure with tensioning strap.



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Caution

Risk of damage to threads of bolts securing subframe to body.

- ◆ **DO NOT use an impact wrench when loosening or tightening the bolts that secure the subframe to the body.**
- ◆ **Always fit all bolts by hand; make the first few turns by hand.**

- Remove one of the hexagon bolts -1- at the front or rear on both sides.



Note

For clarity, illustration only shows left side of vehicle.

- To fix position of subframe, locating pins from locating pin set - T10096- must be screwed in one after the other at positions -1- on both sides of vehicle.
- Fix position of subframe using locating pins -1-.



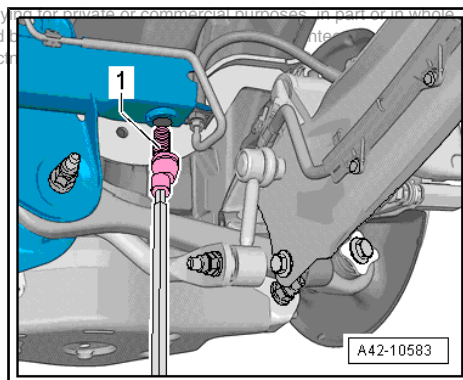
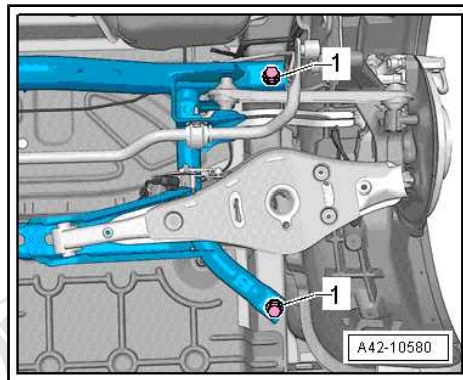
Note

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

- Fit locating pins one after the other in place of subframe securing bolts on both sides of vehicle and tighten locating pins to 20 Nm.

The position of the subframe is now fixed.

- Carefully lower subframe with attachments a maximum of 30 mm.



- Unclip brake line from clips -arrows-.

 Note

- ◆ *Clips will be destroyed and must be renewed.*
- ◆ *For greater clarity, the illustration shows the subframe from above after removal.*
- Lower subframe with attached components.

 Note

When lowering, ensure sufficient clearance to brake lines and electrical wiring.

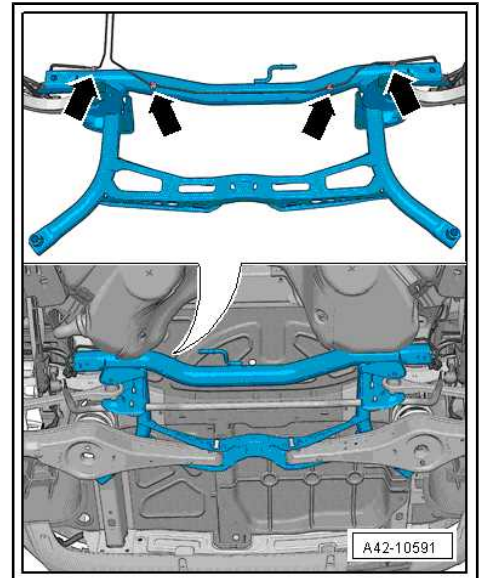
Installing subframe with attachments

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

- Install brake calipers ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

Tightening torques

- ◆ ⇒ ["1.1.1 Exploded view - subframe, front-wheel drive vehicles", page 127](#)
- ◆ ⇒ ["2.1 Exploded view - anti-roll bar", page 149](#)
- ◆ ⇒ ["4.1 Exploded view - suspension strut/shock absorber, spring", page 167](#)
- ◆ ⇒ ["5.1.1 Exploded view - wheel bearing, front-wheel drive vehicles", page 174](#)
- ◆ ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 , Underbody trim; Exploded view - underbody trim



1.2.2 Removing and installing subframe, four-wheel drive vehicles

Special tools and workshop equipment required



◆ Torque wrench - V.A.G 1332-



◆ Engine and gearbox jack - VAS 6931-



◆ Locating pins - T10096-



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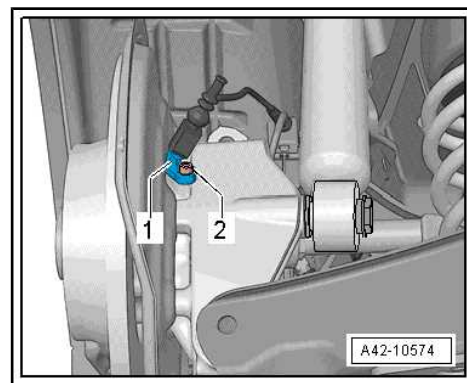
Removing subframe with attachments



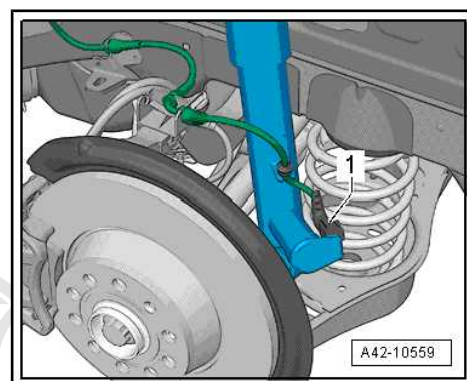
Note

*If the bolt securing the drive shaft has to be loosened for later operations, remember that this must be done with the vehicle standing on its wheels. Loosening twelve-point bolt for drive shaft
⇒ [page 225](#)*

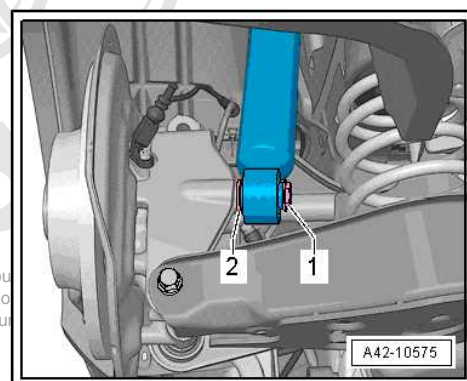
- Unplug electrical wiring from ABS speed sensor -1- and move wiring clear.



- On vehicles with electronic damping control, unplug connector -1- and move connector clear.
- Remove coil springs ⇒ [page 171](#) .
- Remove silencer for exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencer; Exploded view - silencer .
- Disconnect electrical wiring from Haldex coupling, ABS speed sensors and vehicle level sender, unclip electrical connectors and move clear.



- Remove bolt -1- and take off washer -2-.



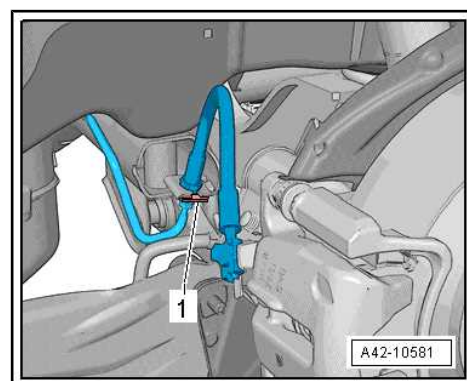
- Pull out clip -1- and detach brake line from bracket.



Note

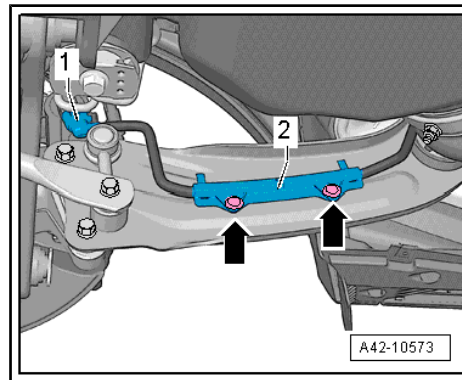
Do not disconnect brake line.

- Remove underbody trim ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .

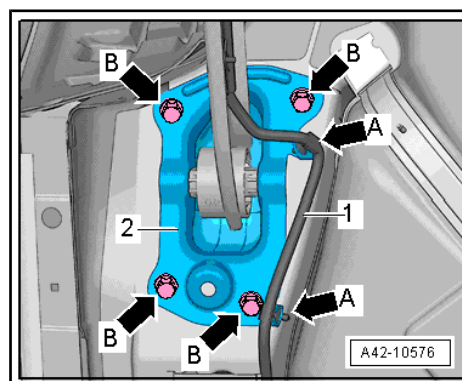


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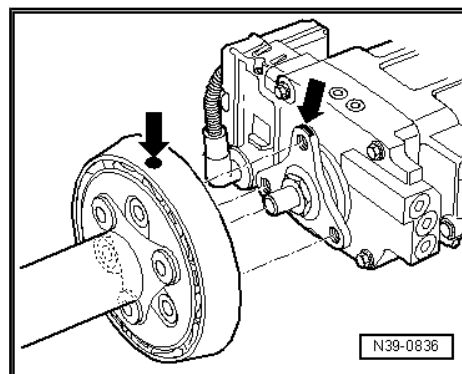
- Unplug electrical connector -1- from electromechanical parking brake motor on brake caliper on both sides.
- Remove retainer -2- by pushing out inner pins of rivets -arrows-.
- Detach brake calipers on both sides and tie to body with brake lines connected ➔ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .



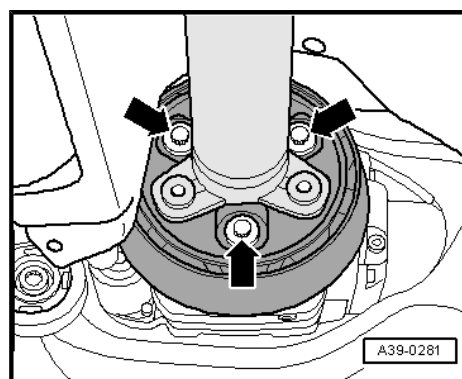
- Detach line -1- from mounting bracket -arrows A-.
- Mark installation position of mounting bracket -2- on body.
- Remove bolts -arrows B-.



- Check for factory marks (coloured spot -arrows-) on flexible coupling and Haldex coupling flange. If necessary, mark position of flexible coupling and Haldex coupling flange in relation to each other -arrows-.



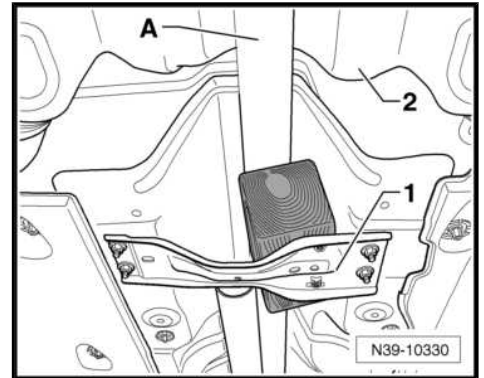
- Unbolt rear propshaft tube with flexible coupling and vibration damper from rear final drive -arrows-.



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Audi Q3

- Support propshaft -A- on tunnel cross piece -1- using a wooden block.
- Push rear propshaft tube towards gearbox as far as possible.



Audi RS Q3

- Tie propshaft up to body.

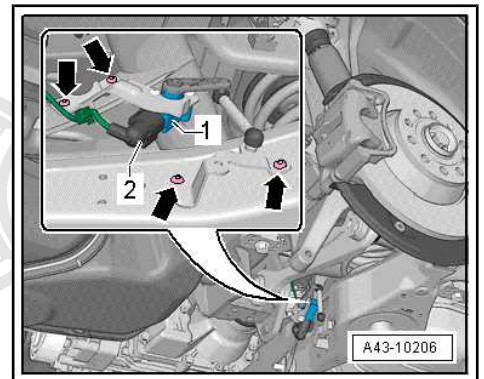
All vehicles (continued):

- Unplug electrical connector -2- and move clear.



-Arrows- can be disregarded.

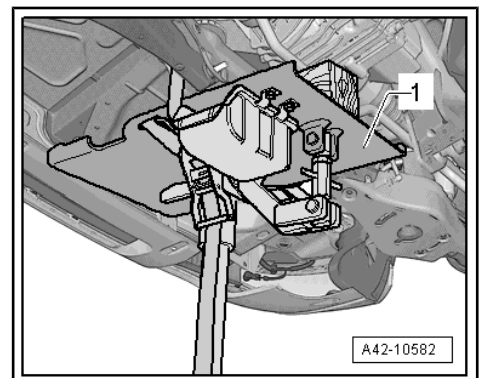
- Unplug electrical connector on Haldex coupling above final drive.



WARNING

BEFORE slackening subframe bolts, secure vehicle against tipping over (e.g. by placing a weight of approx. 50 kg in the luggage compartment).

- Position engine and gearbox jack - VAS 6931- -item 1- under subframe and secure with tensioning strap.



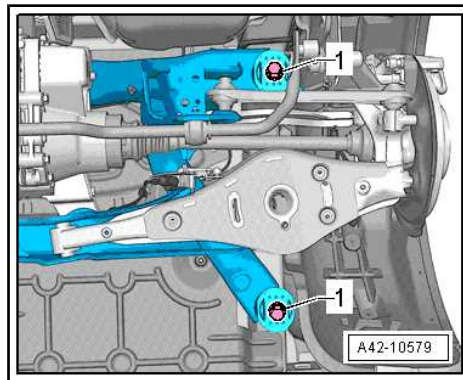
To fix position of subframe, locating pins from locating pin set - T10096- must be screwed in one after the other at positions -1- on both sides of vehicle.



Caution

Risk of damage to threads of bolts securing subframe to body.

- ◆ **DO NOT use an impact wrench when loosening or tightening the bolts that secure the subframe to the body.**
- ◆ **Always fit all bolts by hand; make the first few turns by hand.**



- Remove one hexagon bolt -1- on both sides.



Note

For clarity, illustration only shows left side of vehicle.

- Fix position of subframe using locating pins -1-.



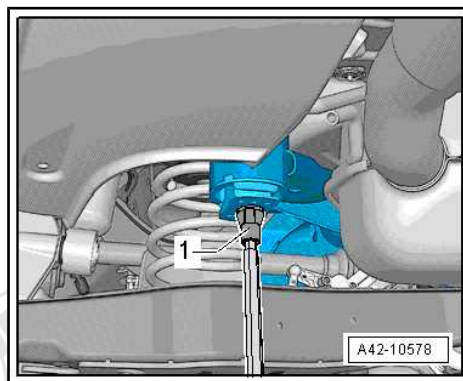
Note

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

- Fit locating pins one after the other in place of subframe securing bolts on both sides of vehicle and tighten locating pins to 20 Nm.

The position of the subframe is now fixed.

- Carefully lower subframe with attachments approx. 2 cm.



Note

When lowering, make sure there is enough clearance for brake lines, electrical wiring and propshaft centring pin.

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- Detach brake line from clips -arrows- on both sides.

 Note

Clips will be destroyed and must be renewed.

- Carefully lower subframe with attachments.

 Note

When lowering, make sure there is enough clearance for brake lines, electrical wiring and propshaft centring pin.

Installing subframe with attachments

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

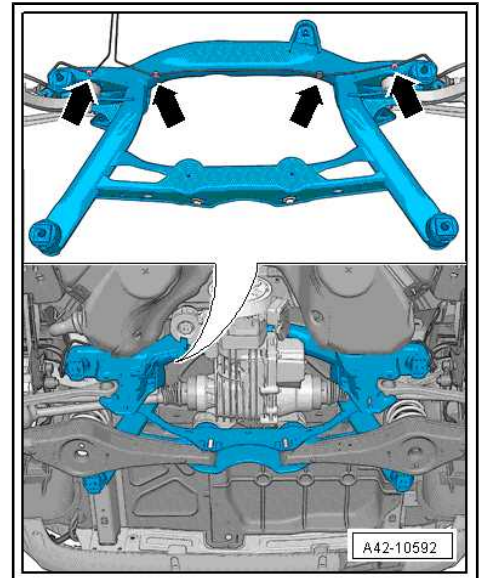
 Note

Renew clips for brake line on subframe (destroyed when detaching brake line).

- Install brake calipers ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .
- Connect propshaft to rear final drive ⇒ Rep. gr. 39 ; Propshaft; Removing and installing propshaft .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

Tightening torques

- ◆ ⇒ [“1.1.2 Exploded view - subframe, four-wheel drive vehicles”, page 128](#)
- ◆ ⇒ [“2.1 Exploded view - anti-roll bar”, page 149](#)
- ◆ ⇒ [“4.1 Exploded view - suspension strut/shock absorber, spring”, page 167](#)
- ◆ ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .



1.3 Servicing subframe

⇒ ["1.3.1 Tools and preparations", page 140](#)

⇒ ["1.3.2 Servicing bonded rubber bushes \(front\)", page 144](#)

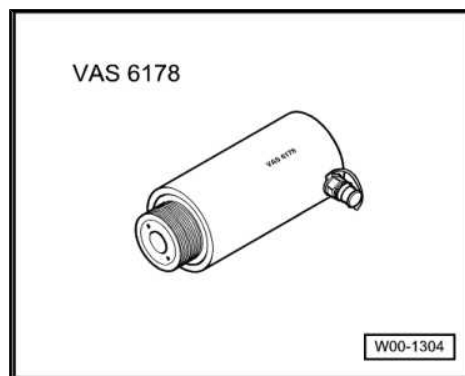
⇒ ["1.3.3 Servicing bonded rubber bushes \(rear\)", page 145](#)

1.3.1 Tools and preparations

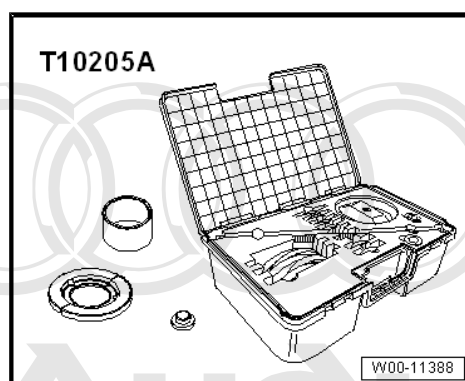
Renewing bonded rubber bushes for subframe, vehicles with four-wheel drive only

Special tools and workshop equipment required

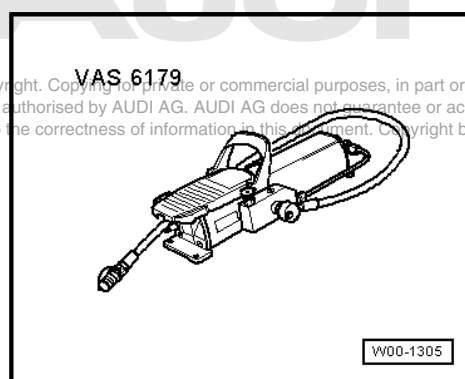
◆ Hydraulic press - VAS 6178-



◆ With press attachment - T10205/13- from assembly tool - T10205A-



◆ Foot pump - VAS 6179-

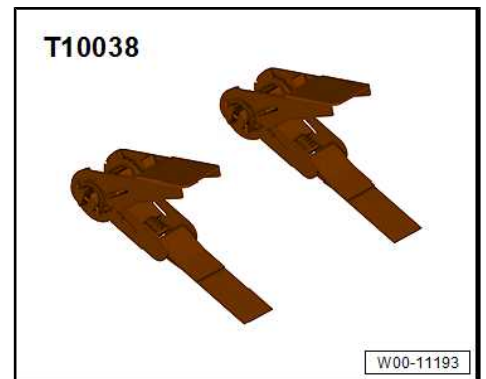


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- ◆ Engine and gearbox jack - VAS 6931-



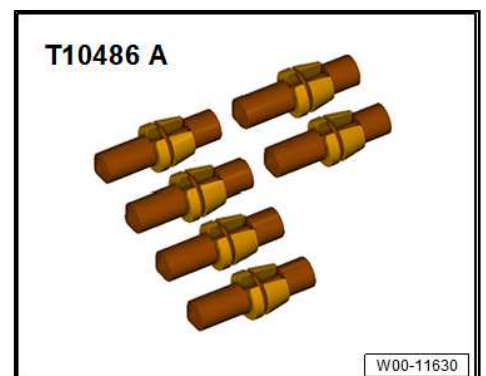
- ◆ Tensioning strap - T10038-



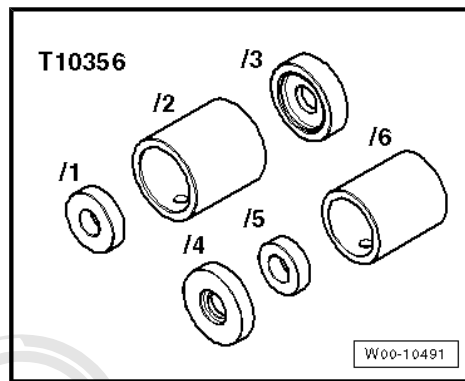
- ◆ Up to model year 2012: locating pins - T10096-



- ◆ From model year 2013 onwards: locating pins - T10486A-



◆ Assembly tool - T10356-



Procedure

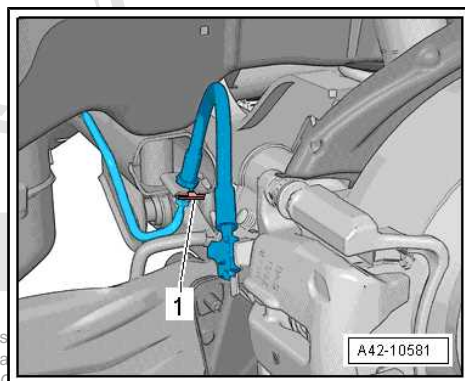
- Remove coil springs ➔ [page 171](#) .
- Remove anti-roll bar ➔ [page 149](#) .
- Remove clip -1-.
- Move brake line clear.



Note

Do not disconnect brake line.

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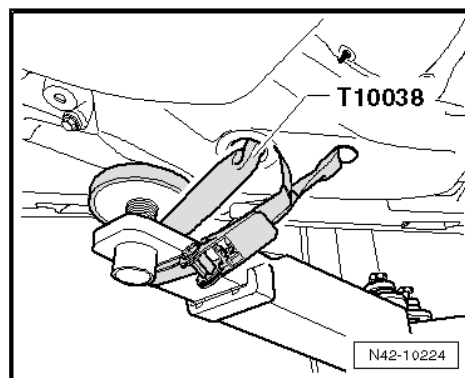


- Now strap vehicle to arms of lifting platform on both sides using tensioning straps - T10038- .

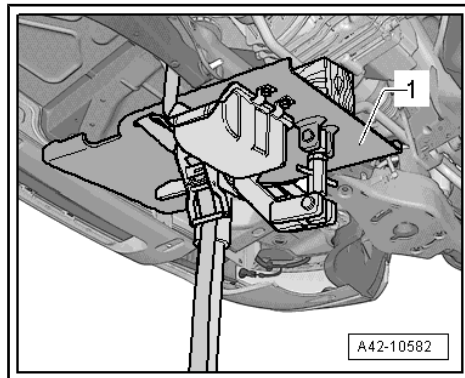


WARNING

If the vehicle is not strapped down, there is a danger that it can slip off the lifting platform.



- Position engine and gearbox jack - VAS 6931- -item 1- under subframe and secure with tensioning strap.





Caution

Risk of damage to threads of bolts securing subframe to body.

- ◆ **DO NOT use an impact wrench when loosening or tightening the bolts that secure the subframe to the body.**
- ◆ **Always fit all bolts by hand; make the first few turns by hand.**

- Remove front hexagon bolt -1- on both sides.



Note

For clarity, illustration only shows left side of vehicle.

To fix the position of the subframe, locating pins must be screwed in one after the other at positions -1- on both sides of the vehicle. On vehicles up to model year 2012 use locating pins from locating pin set - T10096- ; on vehicles from model year 2013 onwards use locating pins from locating pin set - T10486 A- .

- Fix position of subframe using locating pins -1-.



Note

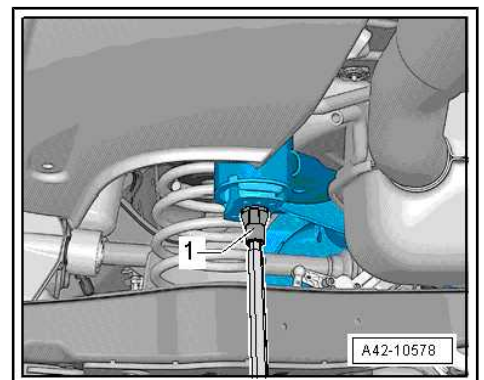
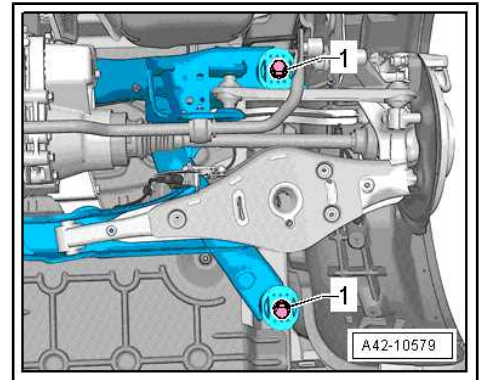
The locating pins must not be tightened to more than 20 Nm, otherwise the threads of the pins will be damaged.

- Screw in locating pins one after the other in place of subframe securing bolts on both sides and tighten locating pins to 20 Nm.

The position of the subframe is now fixed.

- Lower subframe 10 cm with engine and gearbox jack - VAS 6931- .
- Use felt-tip pen or similar to mark position of bonded rubber bush in relation to subframe.

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1.3.2 Servicing bonded rubber bushes (front)

Removing front bonded rubber bush

- Apply special tools as shown in illustration.
- 1 - Nut - T10263/5-
- 2 - Thrust piece - T10356/1-
- 3 - Subframe
- 4 - Tube - T10356/2-
- 5 - Hydraulic press - VAS 6178- with press attachment - T10205/13-
- 6 - Nut - T10263/5-
- 7 - Spindle - T10263/4-
- Take up play in special tools.
- Extract bonded rubber bush by actuating pump.



Note

The outer ring of the bonded rubber bush will shear off with a loud bang when the bush is removed.

- The bonded rubber bush must be removed from the tube - T10356/2- **once the bush has been pulled out**.

Fitting front bonded rubber bush

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

Distinguishing features of bonded rubber bushes

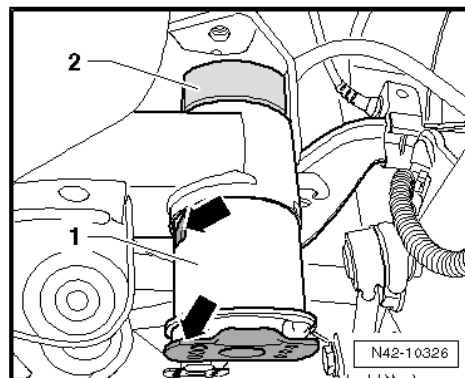
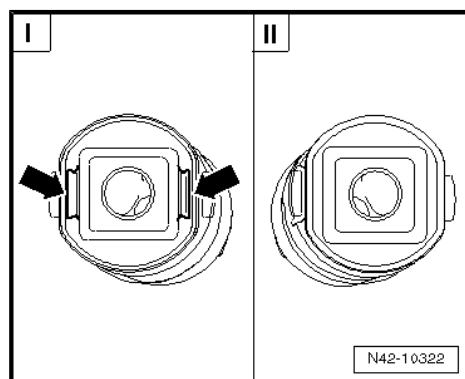
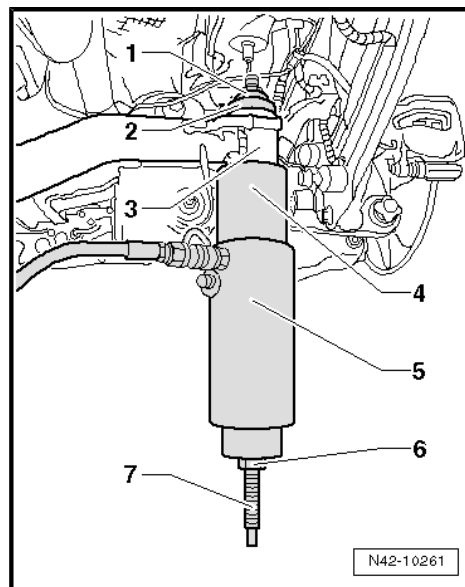
I - Bonded rubber bush (front)

II - Bonded rubber bush (rear)

The front bonded rubber bushes have two recesses -arrows- on the top and are slightly different in height ⇒ Electronic parts catalogue .

The bonded rubber bush must be installed facing in the correct direction; note the marks on the subframe for this purpose.

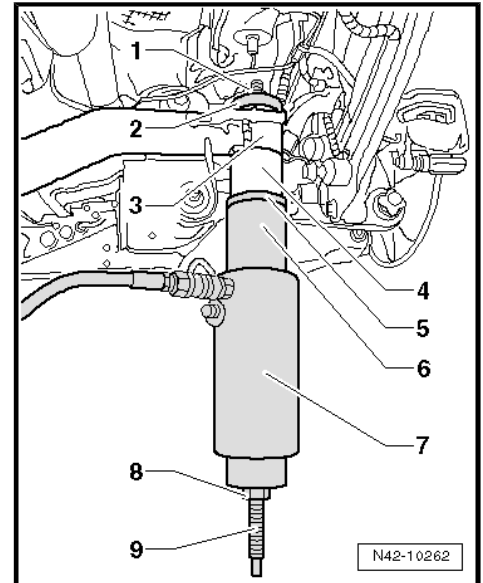
- Fit bonded rubber bush -1- into subframe so that lug and plate -arrows- are perpendicular to direction of travel.



- Set up special tools with bonded rubber bush on subframe as shown in illustration.

Up to model year 2013 ⇒ Electronic parts catalogue

- 1 - Nut - T10263/5-
- 2 - Guide piece - T10356/3- with side A towards subframe
- 3 - Subframe
- 4 - Bonded rubber bush
- 5 - Thrust piece - T10356/4- with side A towards bonded rubber bush
- 6 - Tube - T10356/2-
- 7 - Hydraulic press - VAS 6178- with press attachment - T10205/13-
- 8 - Nut - T10263/5-
- 9 - Spindle - T10263/4-



From model year 2013 onwards ⇒ Electronic parts catalogue

- 1 - Nut - T10263/5-
- 2 - Guide piece - T10356/7- with side A towards subframe
- 3 - Subframe
- 4 - Bonded rubber bush
- 5 - Thrust piece - T10356/8- with side A towards bonded rubber bush
- 6 - Tube - T10356/2-
- 7 - Hydraulic press - VAS 6178- with press attachment - T10205/13-
- 8 - Nut - T10263/5-
- 9 - Spindle - T10263/4-

- Take up play in special tools with bonded rubber bush.
- Carefully press in bonded rubber bush by actuating pump until collar is flush with subframe.

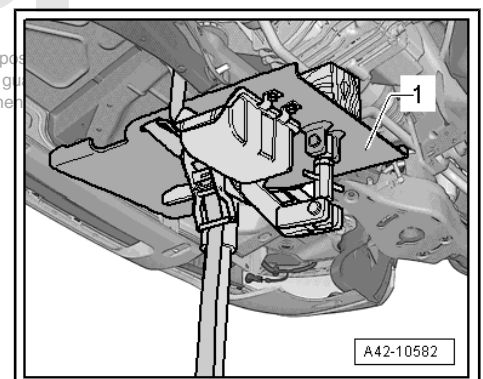
Tightening torques

- ◆ ⇒ [“1.1.2 Exploded view - subframe, four-wheel drive vehicles”, page 128](#)
- ◆ ⇒ [“2.1 Exploded view - anti-roll bar”, page 149](#)

1.3.3 Servicing bonded rubber bushes (rear)

Removing rear bonded rubber bush

- Position engine and gearbox jack - VAS 6931 - item 1 - under subframe and secure with tensioning strap.





Caution

Risk of damage to threads of bolts securing subframe to body.

- ◆ **DO NOT use an impact wrench when loosening or tightening the bolts that secure the subframe to the body.**
- ◆ **Always fit all bolts by hand; make the first few turns by hand.**

- Remove rear hexagon bolt -1- on both sides.



Note

For clarity, illustration only shows left side of vehicle.

To fix the position of the subframe, locating pins must be screwed in one after the other at positions -1- on both sides of the vehicle. On vehicles up to model year 2012 use locating pins from locating pin set - T10096- ; on vehicles from model year 2013 onwards use locating pins from locating pin set -T10486 A- .

- Fix position of subframe using locating pins.



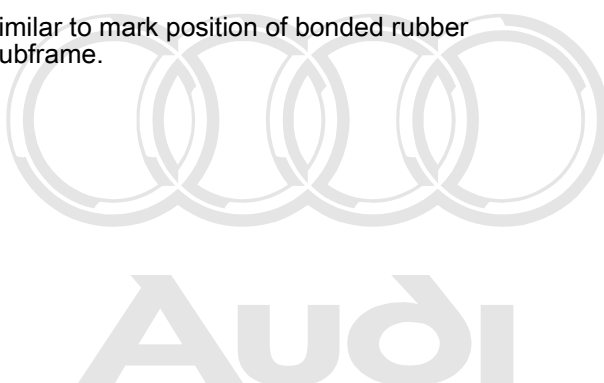
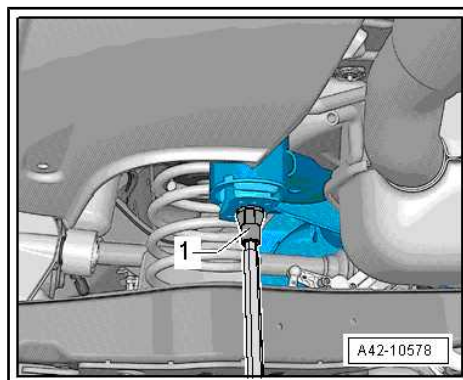
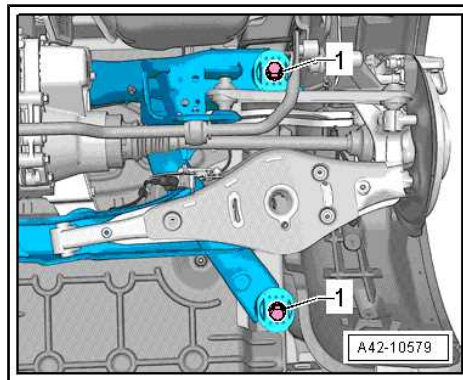
Note

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

- Screw in locating pins one after the other in place of subframe securing bolts on both sides and tighten locating pins to 20 Nm.

The position of the subframe is now fixed.

- Lower subframe 10 cm with engine and gearbox jack - VAS 6931- .
- Use felt-tip pen or similar to mark position of bonded rubber bush in relation to subframe.



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– Apply special tools as shown in illustration.

- 1 - Nut - T10263/5-
- 2 - Thrust piece -T10356/5-
- 3 - Subframe
- 4 - Tube - T10356/6-
- 5 - Hydraulic press - VAS 6178- with press attachment - T10205/13-
- 6 - Nut - T10263/5-
- 7 - Spindle - T10263/4-

– Take up play in special tools.

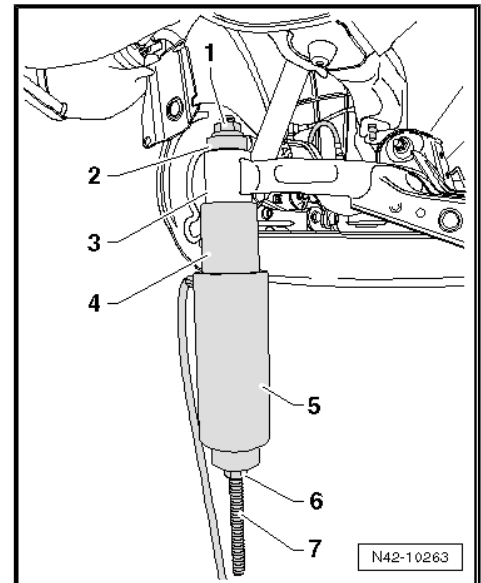
– Extract bonded rubber bush by actuating pump.



Note

The outer ring of the bonded rubber bush will shear off with a loud bang when the bush is removed.

– When the bonded rubber bush has been extracted, it must be removed from the tube - T10356/2- .



Fitting rear bonded rubber bush

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

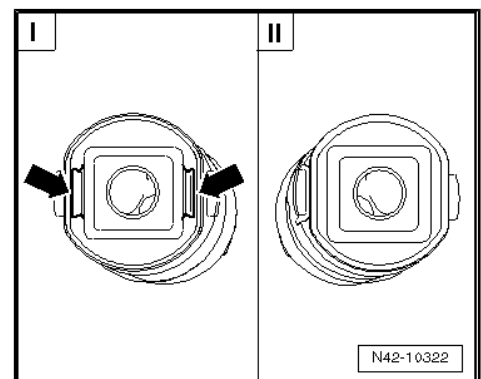
Distinguishing features of bonded rubber bushes

I - Bonded rubber bush (front)

II - Bonded rubber bush (rear)

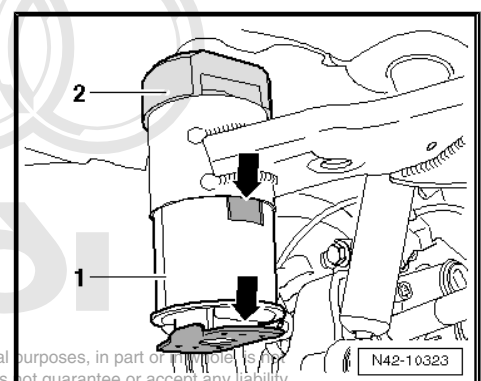
The front bonded rubber bushes have two recesses -arrows- on the top and are slightly different in height ⇒ Electronic parts catalogue .

The bonded rubber bush must be installed facing in the correct direction; note the marks on the subframe for this purpose.



Up to model year 2013 ⇒ Electronic parts catalogue

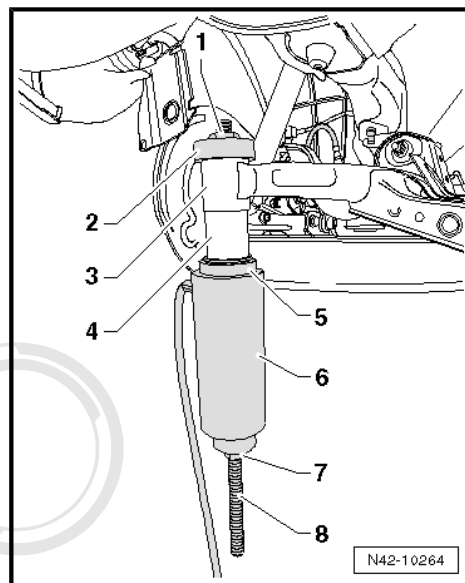
- Fit bonded rubber bush -1- into subframe so that lug and plate -arrows- are perpendicular to direction of travel.
- Apply thrust piece - T10263/3- -2- so that flattened side is also perpendicular to direction of travel.



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- Set up special tools with bonded rubber bush on subframe as shown in illustration.

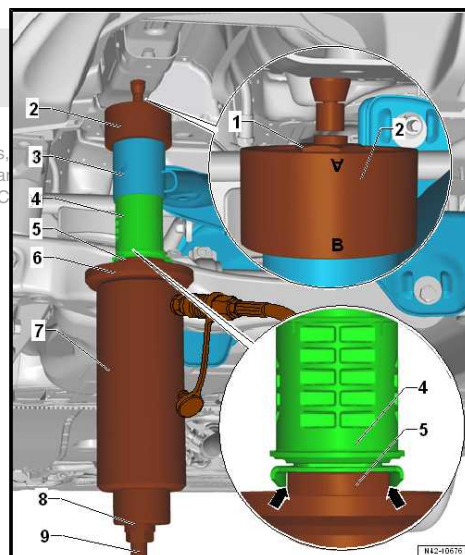
- 1 - Nut - T10263/5-
- 2 - Guide piece - T10356/3- with side B towards subframe
- 3 - Subframe
- 4 - Bonded rubber bush
- 5 - Thrust piece - T10356/4- with side B towards bonded rubber bush
- 6 - Hydraulic press - VAS 6178- with press attachment - T10205/13-
- 7 - Nut - T10263/5-
- 8 - Spindle - T10263/4-



From model year 2013 onwards ⇒ Electronic parts catalogue

- Set up special tools with bonded rubber bush on subframe as shown in illustration.

- 1 - Hexagon nut - T10263/5-
- 2 - Thrust piece - T10356/7- (marking -B- faces towards subframe)
- 3 - Subframe
- 4 - Bonded rubber bush (align according to markings made earlier; markings must be in line)
- 5 - Thrust piece - T10356/8- (flat sides must engage in cover of bonded rubber bush -arrows-)
- 6 - Thrust plate - T10205/1-
- 7 - Hydraulic press - VAS 6178- with press attachment - T10205/13-
- 8 - Hexagon nut - T10263/5-
- 9 - Threaded spindle - T10263/4-



- Take up play in special tools with bonded rubber bush.
- Carefully press in bonded rubber bush by actuating pump until collar is flush with subframe.

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

- Install coil springs ⇒ [page 171](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .

Tightening torques

- ♦ ⇒ [“1.1.2 Exploded view - subframe, four-wheel drive vehicles”, page 128](#)
- ♦ ⇒ [“2.1 Exploded view - anti-roll bar”, page 149](#)

2 Anti-roll bar

⇒ ["2.1 Exploded view - anti-roll bar", page 149](#)

⇒ ["2.2 Removing and installing anti-roll bar", page 149](#)

⇒ ["2.3 Removing and installing coupling rod", page 151](#)

2.1 Exploded view - anti-roll bar

1 - Subframe

2 - Bolt

- ☐ Always renew if removed
- ☐ Tighten evenly
- ☐ 25 Nm +45°

3 - Clamp

4 - Bush

- ☐ Always renew bushes on both sides of vehicle

5 - Anti-roll bar

- ☐ Removing and installing
⇒ [page 149](#)

6 - Bolt

7 - Nut

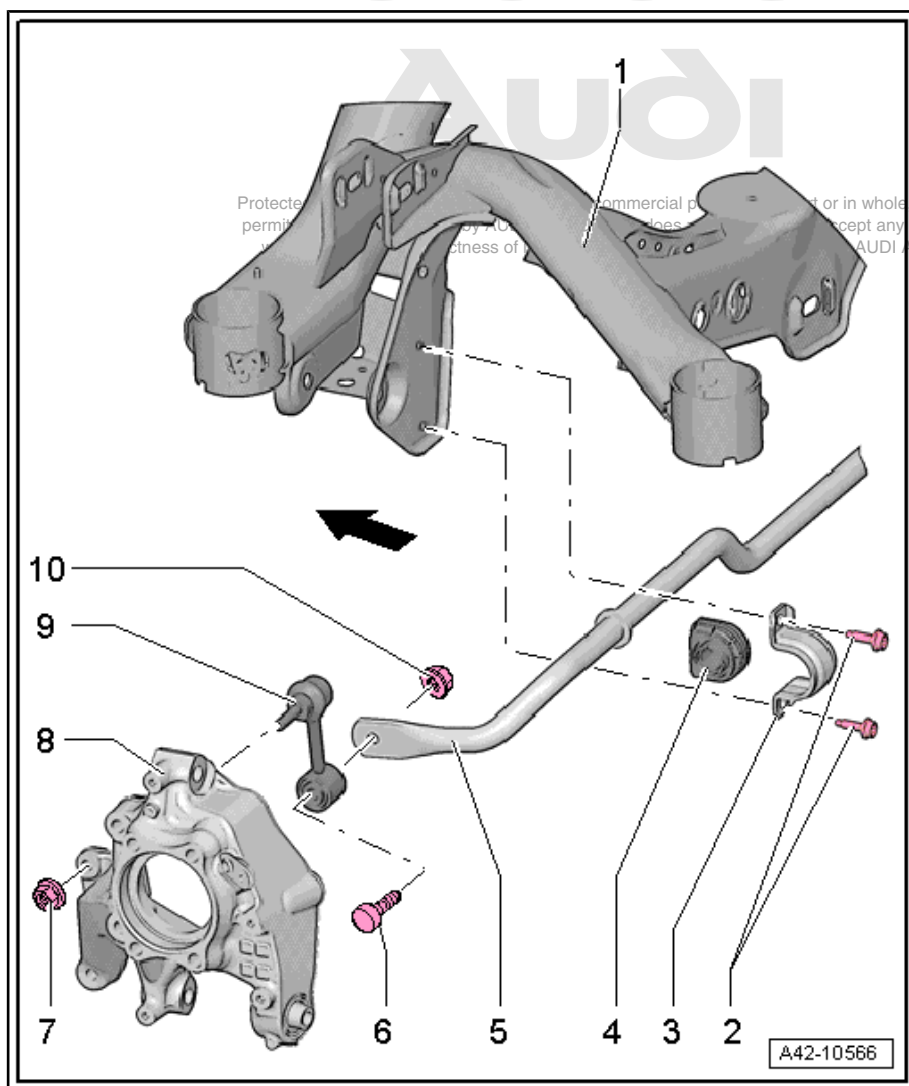
- ☐ Always renew if removed
- ☐ When tightening, counterhold at multi-point socket
- ☐ 40 Nm

8 - Wheel bearing housing

9 - Coupling rod

10 - Nut

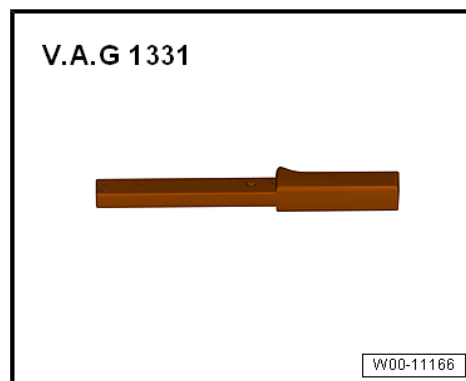
- ☐ Always renew if removed
- ☐ Tighten in unladen position ⇒ [page 11](#)
- ☐ When tightening, counterhold at multi-point socket of bolt
⇒ [Item 6 \(page 149\)](#)
- ☐ 40 Nm



2.2 Removing and installing anti-roll bar

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



Removing

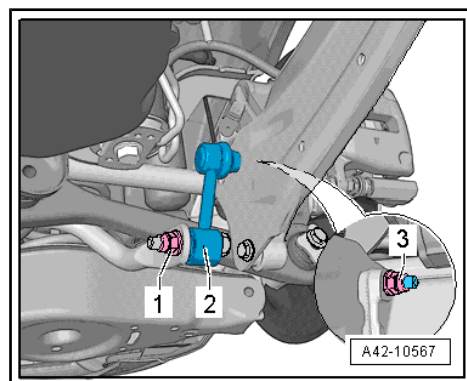
- Remove rear wheels ➔ [page 241](#) .



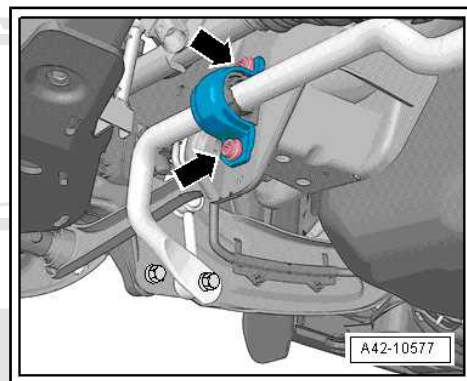
Note

*The following steps are described for the left side of the vehicle.
The procedure for the right side of the vehicle is identical.*

- Unscrew nut -1- and pull coupling rod -2- out of anti-roll bar.



- Unscrew bolts -arrows- for anti-roll bar clamp.



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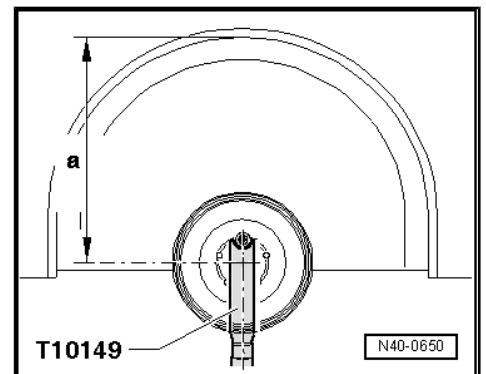
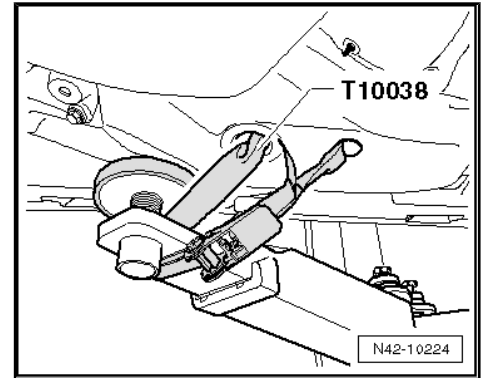
- If the upper bolt of the anti-roll bar clamp cannot be removed because of the drive shaft, then the following additional work must be performed:
- Use tensioning straps - T10038- to strap vehicle to support arms of lifting platform on both sides.



WARNING

If the vehicle is not strapped down, there is a danger that it can slip off the lifting platform.

- Attach support - T10149- to wheel hub using wheel bolt.
- Raise wheel hub with support - T10149- and engine and gear-box jack - VAS 6931- until bolts of anti-roll bar clamp (right-side) are accessible.
- Remove anti-roll bar.



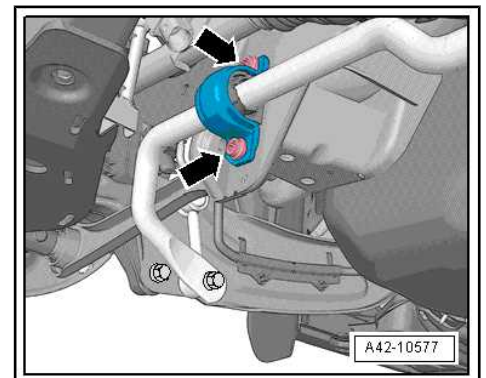
Installing

Installation is performed in reverse sequence; note the following:

- Evenly tighten bolts -arrows- for anti-roll bar clamp.
- When tightening coupling rod attachment, counterhold at multi-point socket.
- Fit rear wheels ⇒ [page 241](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - anti-roll bar”, page 149](#)



2.3 Removing and installing coupling rod

Special tools and workshop equipment required

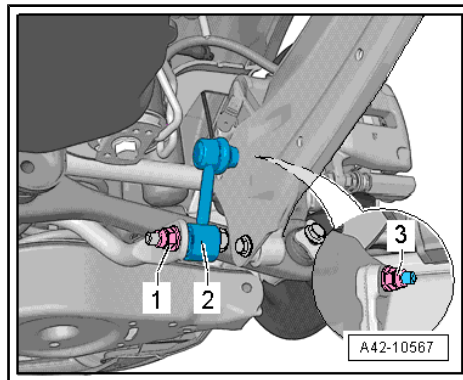
- ◆ Torque wrench - V.A.G 1331-

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Removing

- Remove rear wheel ➔ [page 241](#) .
- Unscrew nuts -1 and 3- and pull coupling rod -2- out of anti-roll bar and trailing arm.



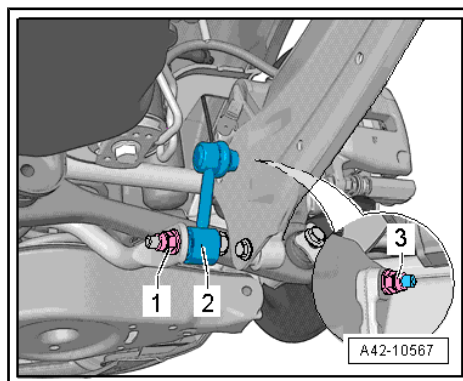
Installing

Installation is performed in reverse sequence; note the following:

- Insert coupling rod -2-, fit nuts -1 and 3- and tighten with suspension in unladen position ➔ [page 11](#) .
- When tightening nuts -1 and 3-, counterhold at multi-point socket of bolts.
- Fit rear wheel ➔ [page 241](#) .

Tightening torques

- ♦ ➔ [“2.1 Exploded view - anti-roll bar”, page 149](#)



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3 Suspension links, track rod

⇒ [“3.1 Exploded view - transverse links”, page 153](#)

⇒ [“3.2 Exploded view - track rod”, page 155](#)

⇒ [“3.3 Removing and installing upper transverse link”, page 155](#)

⇒ [“3.4 Removing and installing lower transverse link”, page 159](#)

⇒ [“3.5 Removing and installing track rod”, page 163](#)

3.1 Exploded view - transverse links

1 - Stone deflector

- ☐ For correct version refer to ⇒ Electronic parts catalogue .

2 - Lower transverse link

- ☐ Removing and installing ⇒ [page 159](#)

3 - Nut

- ☐ Always renew if removed
- ☐ Always tighten bolted joints with suspension in unladen position ⇒ [page 11](#)
- ☐ 90 Nm +90°

4 - Eccentric bolt

- ☐ For toe adjustment
- ☐ After slackening off, perform wheel alignment ⇒ [“2.5 Wheel alignment procedure”, page 246](#)
- ☐ Do not turn more than 90° in either direction (i.e. from minimum to maximum adjustment position)

5 - Eccentric washer

- ☐ With lug on inner bore

6 - Nut

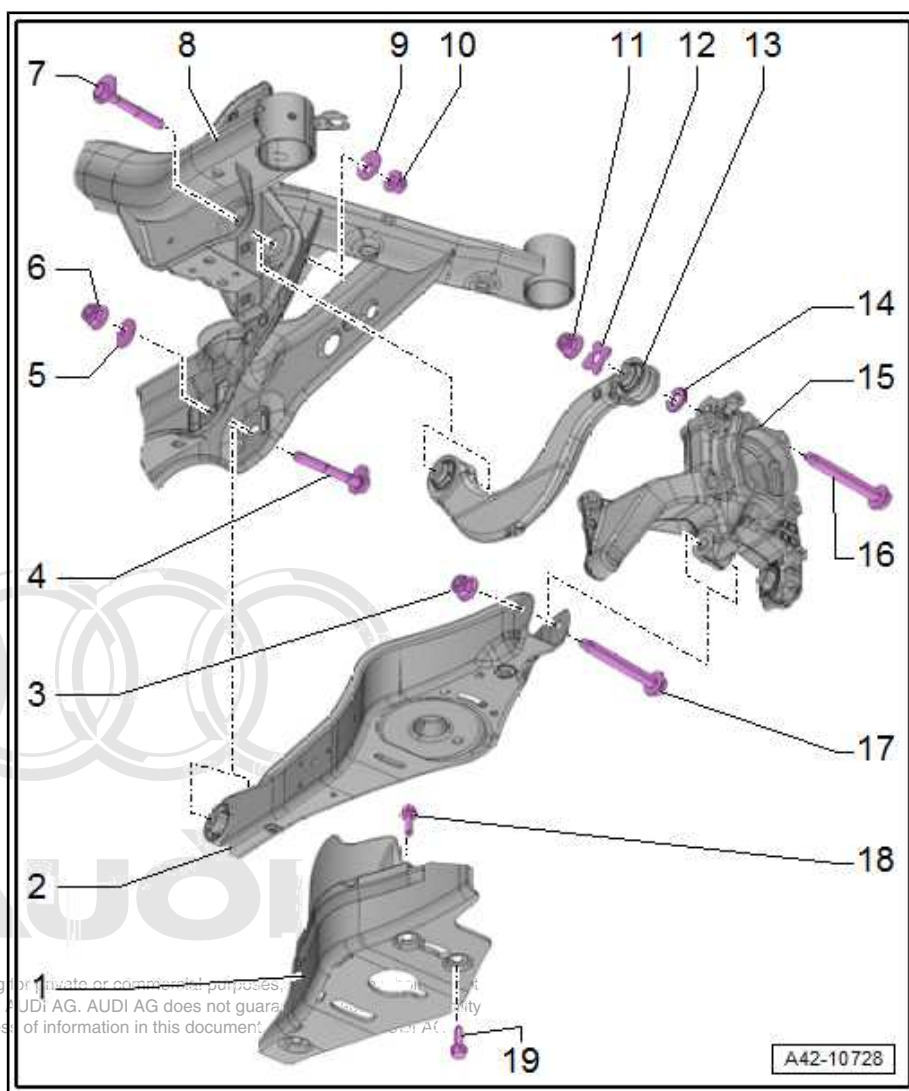
- ☐ Always renew if removed
- ☐ Always tighten bolted joints with suspension in unladen position ⇒ [page 11](#)
- ☐ 95 Nm

7 - Eccentric bolt

- ☐ For camber adjustment
- ☐ After slackening off, perform wheel alignment ⇒ [“2.5 Wheel alignment procedure”, page 246](#)
- ☐ Do not turn more than 90° in either direction (i.e. from minimum to maximum adjustment position)

8 - Subframe

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





9 - Eccentric washer

- ☐ With lug on inner bore

10 - Nut

- ☐ Always renew if removed
- ☐ Always tighten bolted joints with suspension in unladen position ⇒ [page 11](#)
- ☐ 95 Nm
- ☐ 80 Nm (this tightening torque only applies in conjunction with insert tool, 18 mm - T10179-)

11 - Nut

- ☐ Always renew if removed

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12 - Washer

13 - Upper transverse link

- ☐ Removing and installing ⇒ [page 155](#)

14 - Washer

15 - Wheel bearing housing

16 - Bolt

- ☐ Always renew if removed
- ☐ Always tighten bolted joints with suspension in unladen position ⇒ [page 11](#)
- ☐ 130 Nm +90°

17 - Bolt

- ☐ Always renew if removed

18 - Spreader rivet

- ☐ 2x

19 - Bolt

- ☐ 3x
- ☐ 8 Nm

3.2 Exploded view - track rod

1 - Track rod

- ☐ Removing and installing
⇒ [page 163](#)

2 - Washer

3 - Bolt

- ☐ Always renew if removed
- ☐ Always tighten bolted joints with suspension in unladen position
⇒ [page 11](#)
- ☐ 130 Nm +90°

4 - Bolt

- ☐ Always renew if removed

5 - Subframe

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

6 - Nut

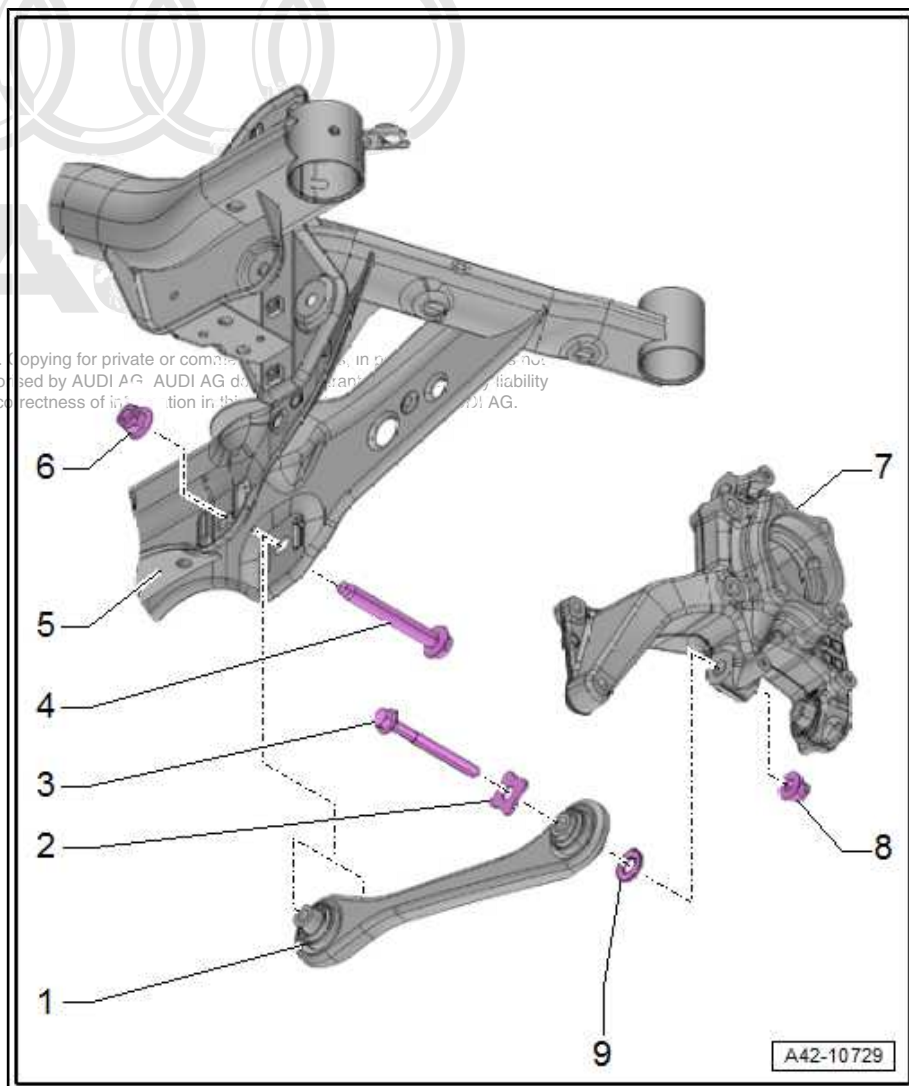
- ☐ Always renew if removed
- ☐ 90 Nm +90°

7 - Wheel bearing housing

8 - Nut

- ☐ Always renew if removed

9 - Washer



3.3 Removing and installing upper transverse link

⇒ ["3.3.1 Removing and installing upper transverse link, front-wheel drive vehicles", page 155](#)

⇒ ["3.3.2 Removing and installing upper transverse link, four-wheel drive vehicles", page 157](#)

3.3.1 Removing and installing upper transverse link, front-wheel drive vehicles

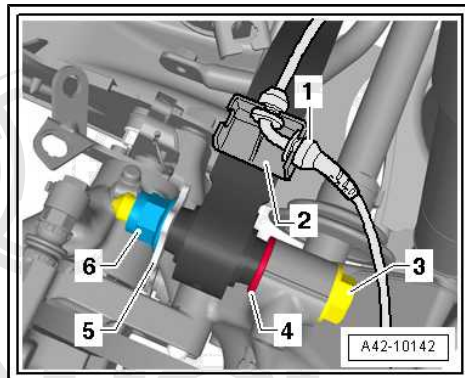
Special tools and workshop equipment required

◆ Torque wrench - V.A.G 1332-

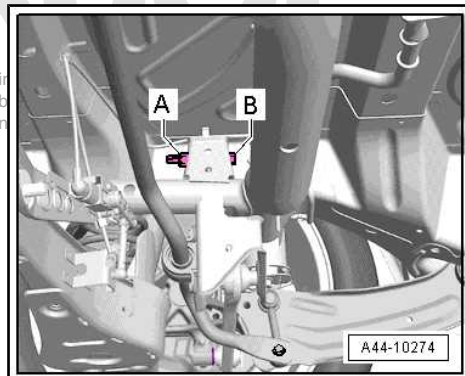


Removing

- Measure distance from centre of wheel to lower edge of wheel housing ➤ [page 11](#) .
- Remove coil spring ➤ [page 171](#) .
- Unhook wire -1- from bracket -2-.
- Unscrew nut -6- and take off washer -5-.
- Remove bolt -3- and washer -4-.



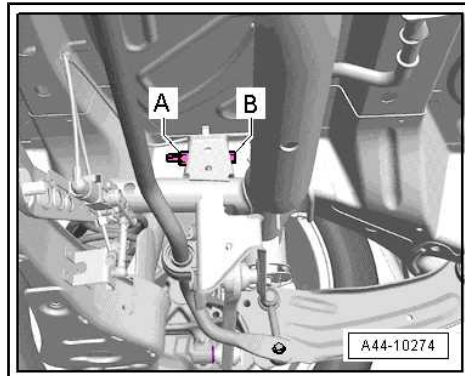
- Use felt-tip pen or similar to mark position of eccentric bolt -B- relative to subframe.
- Unscrew nut -A- and pull out eccentric bolt -B-.
- Take out upper transverse link.



Installing

Installation is performed in reverse sequence; note the following:

- Before tightening bolt securing transverse link, obtain the same distance between wheel hub centre and lower edge of wheel housing as measured before dismantling ➤ [page 11](#) .
- Observe marking made previously for position of eccentric bolt -B- relative to subframe.



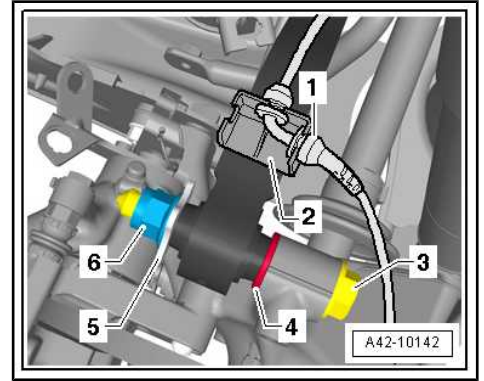
 Note

Washer -5- must be installed so that there is a gap between washer and brake splash plate.

- Install coil spring ➔ [page 171](#) .
- Check and adjust wheel alignment as required, see chart ➔ [page 247](#) .

Tightening torques

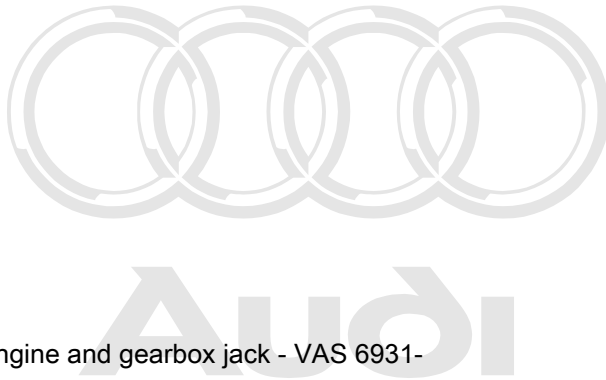
- ◆ ➔ ["3.1 Exploded view - transverse links", page 153](#)



3.3.2 Removing and installing upper transverse link, four-wheel drive vehicles

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



- ◆ Engine and gearbox jack - VAS 6931-

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- ◆ Gearbox support - T10337-

V.A.G 1332



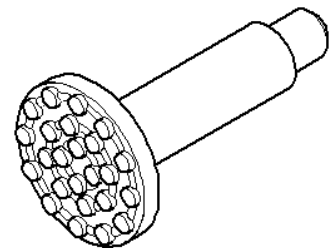
W00-11185

VAS 6931



W00-11607

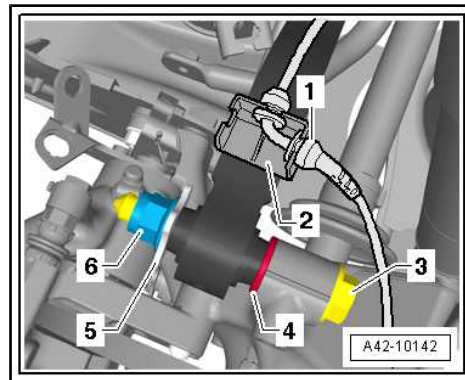
T10337



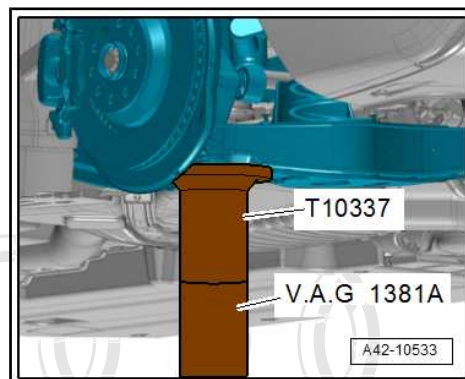
W00-10418

Removing

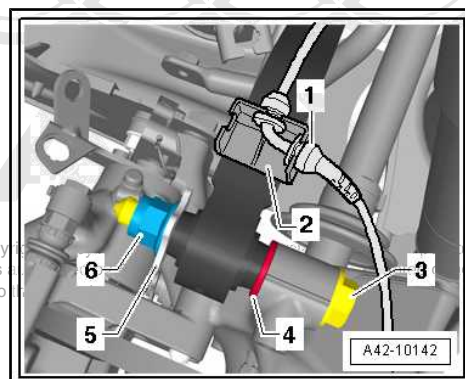
- Measure distance from centre of wheel to lower edge of wheel housing ➤ [page 11](#) .
- Remove rear wheel ➤ [page 241](#) .
- Unhook wire -1- from bracket -2- on both sides.



- Fit gearbox support - T10337- onto engine and gearbox jack and apply to lower suspension link.



- Unscrew nut -6- and remove bolt -3- with washers -4 and 5-; to do so, lift hub carrier slightly with engine and gearbox jack - VAS 6931- .

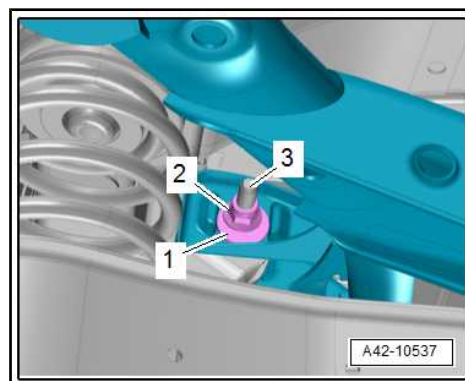


- Use felt-tip pen or similar to mark position of eccentric washer -1- relative to subframe on both sides.
- Unscrew nut -2- and pull out eccentric bolt -3-.
- Take out upper transverse link.

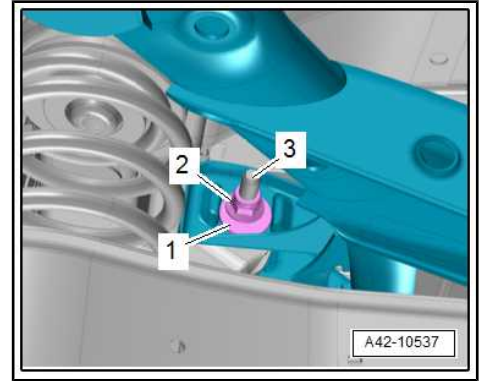
Installing

Installation is performed in reverse sequence; note the following:

- Before tightening bolt securing transverse link, obtain the same distance between wheel hub centre and lower edge of wheel housing as measured before dismantling ➤ [page 11](#) .



- Note mark for position of eccentric washer -1- in relation to subframe.



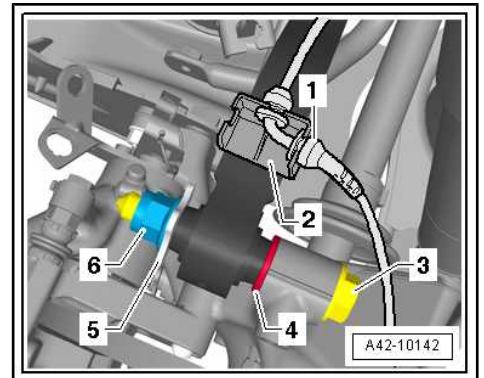
Note

Washer -5- must be installed so that there is a gap between washer and brake splash plate.

- Check and adjust wheel alignment as required, see chart
⇒ [page 247](#).

Tightening torques

- ◆ ⇒ [“3.1 Exploded view - transverse links”, page 153](#)



3.4 Removing and installing lower transverse link

⇒ [“3.4.1 Removing and installing lower transverse link, front-wheel drive vehicles”, page 159](#)

⇒ [“3.4.2 Removing and installing lower transverse link, four-wheel drive vehicles”, page 161](#)

3.4.1 Removing and installing lower transverse link, front-wheel drive vehicles

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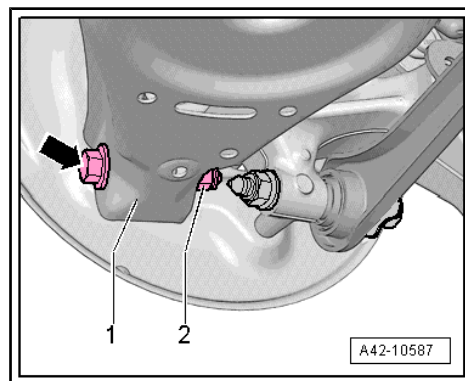
Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



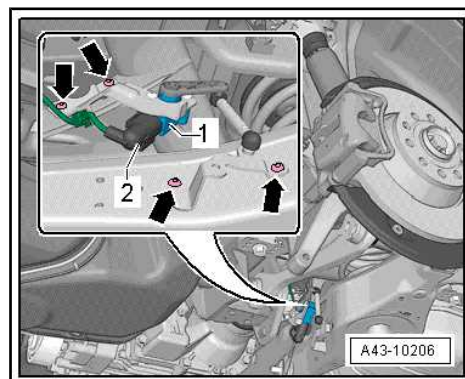
Removing

- Measure distance from centre of wheel to lower edge of wheel housing ⇒ [page 11](#) .
- Remove coil spring ⇒ [page 171](#) .
- Unscrew nut -2- and pull out bolt -arrow- for lower suspension link -1-.



Vehicles with vehicle level senders

- Remove bolts -bottom arrows-.



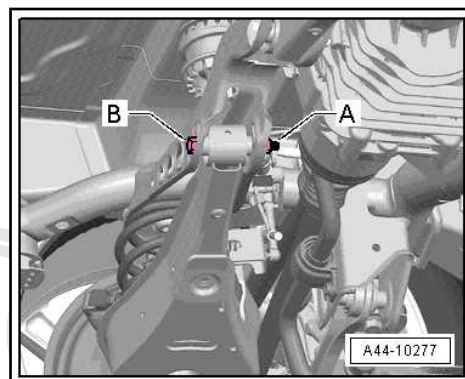
All vehicles (continued):

- To remove suspension link on left side, first disengage and lower rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .
- Use felt-tip pen or similar to mark position of eccentric bolt -B- relative to subframe.
- Unscrew nut -A- and pull out eccentric bolt -B-.
- Take out lower suspension link.

Installing

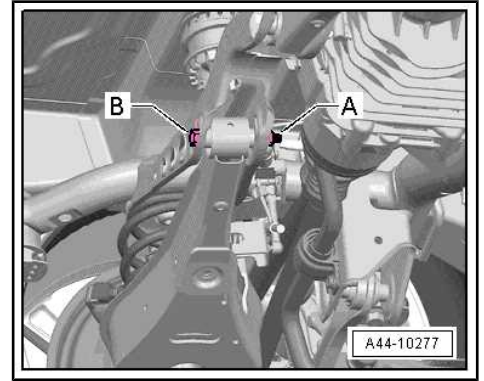
Installation is performed in reverse sequence; note the following:

- Before tightening bolted connection securing suspension link, obtain the same distance between wheel hub centre and lower edge of wheel housing as measured before dismantling ⇒ [page 11](#) .



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- Observe marking made previously for position of eccentric bolt -B- relative to subframe.
- Install coil spring ➔ [page 171](#) .
- Check and adjust wheel alignment as required, see chart ➔ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ➔ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ➔ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ➔ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



Tightening torques

- ◆ ➔ [“3.1 Exploded view - transverse links”, page 153](#)

3.4.2 Removing and installing lower transverse link, four-wheel drive vehicles

Special tools and workshop equipment required

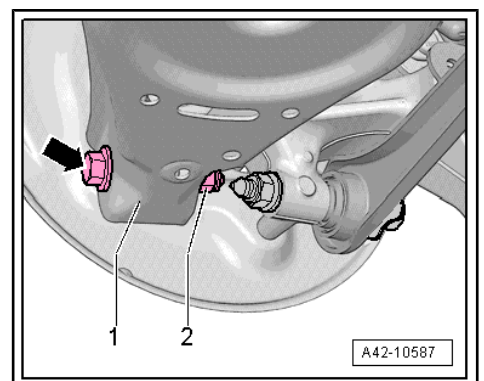
- ◆ Torque wrench - V.A.G 1332-



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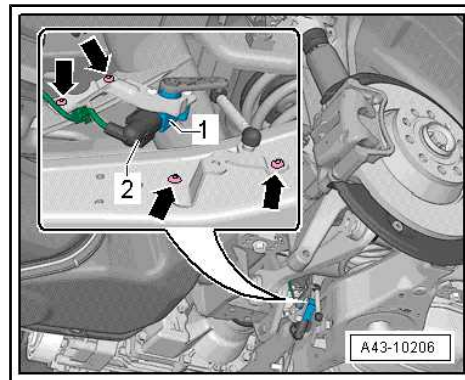
Removing

- Measure distance from centre of wheel to lower edge of wheel housing ➔ [page 11](#) .
- Remove coil spring ➔ [page 171](#) .
- Unscrew nut -2- and pull out bolt -arrow- for lower suspension link -1-.



Vehicles with vehicle level senders

- Remove bolts -bottom arrows-.



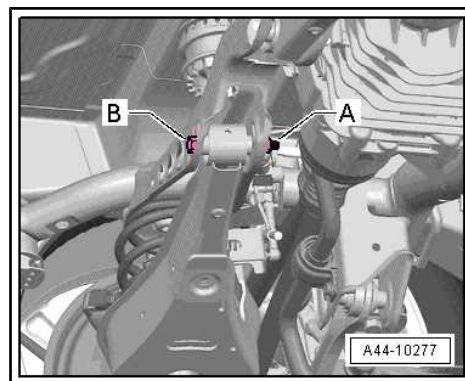
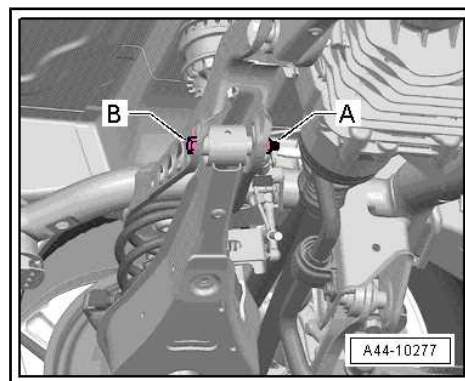
All vehicles (continued):

- To remove suspension link on left side, first disengage and lower rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .
- Use felt-tip pen or similar to mark position of eccentric bolt -B- relative to subframe.
- Unscrew nut -A- and pull out bolt -B-.
- Take out lower suspension link.

Installing

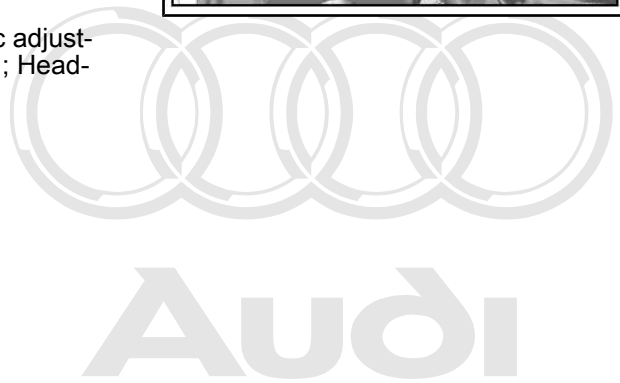
Installation is performed in reverse sequence; note the following:

- Before tightening bolted connection securing suspension link, obtain the same distance between wheel hub centre and lower edge of wheel housing as measured before dismantling ⇒ [page 11](#) .
- Observe mark made for position of eccentric bolt -arrow B- in relation to subframe.
- Install coil spring ⇒ [page 171](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



Tightening torques

- ◆ ⇒ ["3.1 Exploded view - transverse links", page 153](#)



3.5 Removing and installing track rod

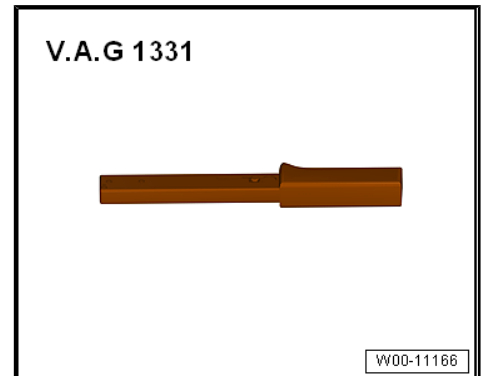
⇒ [“3.5.1 Removing and installing track rod, front-wheel drive vehicles”, page 163](#)

⇒ [“3.5.2 Removing and installing track rod, four-wheel drive vehicles”, page 164](#)

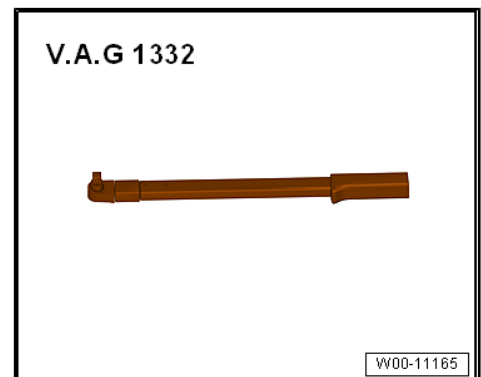
3.5.1 Removing and installing track rod, front-wheel drive vehicles

Special tools and workshop equipment required

◆ Torque wrench - V.A.G 1331-

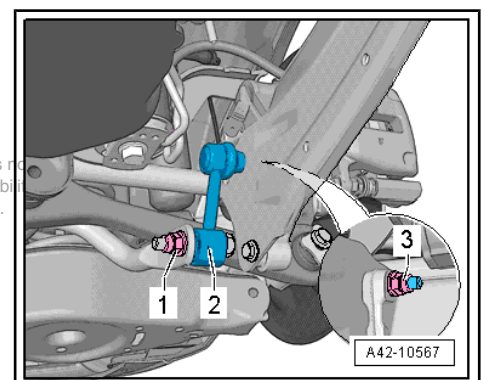


◆ Torque wrench - V.A.G 1332-



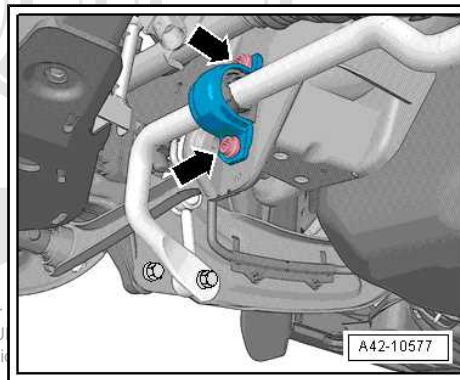
Removing

- Measure distance from centre of wheel to lower edge of wheel housing ⇒ [page 11](#) .
- Remove rear wheel on relevant side ⇒ [page 241](#) .
- Unscrew nut -1- and pull coupling rod -2- out of anti-roll bar.



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- Unscrew bolts -arrows- for anti-roll bar clamp ➔ [page 149](#) .



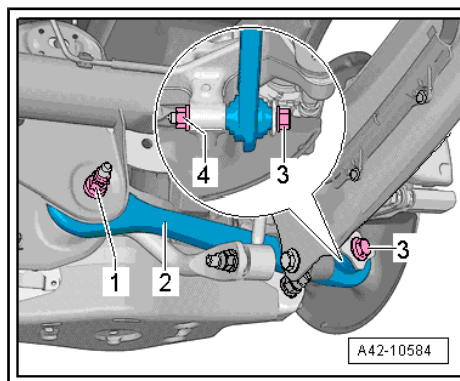
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- Unscrew nut -4- and remove bolt -3-.
- Unscrew nut -1- and remove bolt towards rear.
- Take out track rod -2-.

Installing

Installation is performed in reverse sequence; note the following:

- Before tightening bolt securing track rod, obtain the same distance between wheel hub centre and lower edge of wheel housing as measured before dismantling ➔ [page 11](#) .
- Check and adjust wheel alignment as required, see chart ➔ [page 247](#) .



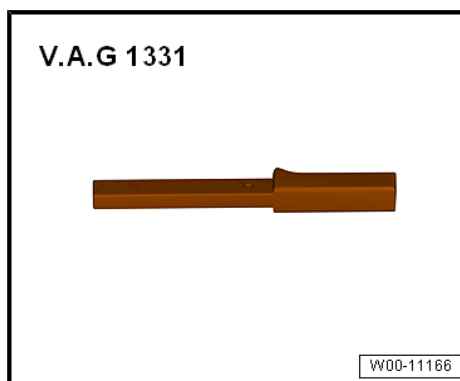
Tightening torques

- ♦ ➔ [“3.2 Exploded view - track rod”, page 155](#)
- ♦ ➔ [“2.1 Exploded view - anti-roll bar”, page 149](#)
- ♦ ➔ [“1 Wheels, tyres”, page 241](#)

3.5.2 Removing and installing track rod, four-wheel drive vehicles

Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1331-

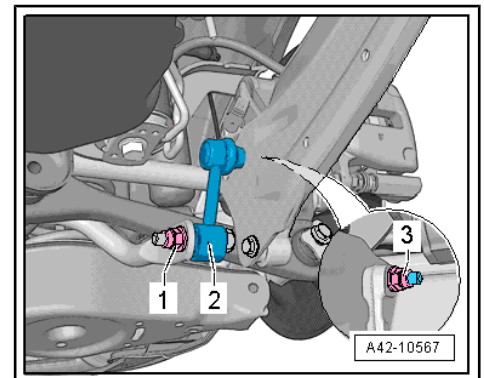


◆ Torque wrench - V.A.G 1332-



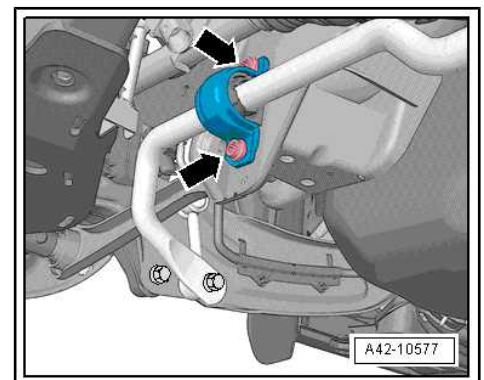
Removing

- Measure distance from centre of wheel to lower edge of wheel housing ➔ [page 11](#) .
- Remove rear wheel on relevant side ➔ [page 241](#) .
- Unscrew nut -1- and pull coupling rod -2- out of anti-roll bar.



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- Unscrew bolts -arrows- for anti-roll bar clamp.



- Unscrew nut -4- and remove bolt -3-.
- Unscrew nut -1- and remove bolt towards rear.
- Remove bolt -2-.

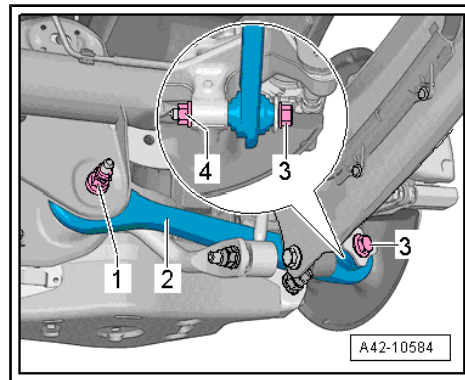
Installing

Installation is performed in reverse sequence; note the following:

- Before tightening bolted connection securing suspension link, obtain the same distance between wheel hub centre and lower edge of wheel housing as measured before dismantling
⇒ [page 11](#) .
- Install coil spring ⇒ [page 171](#) .
- Check and adjust wheel alignment as required, see chart
⇒ [page 247](#) .

Tightening torques

- ◆ ⇒ [“3.2 Exploded view - track rod”, page 155](#)
- ◆ ⇒ [“2.1 Exploded view - anti-roll bar”, page 149](#)
- ◆ ⇒ [“1 Wheels, tyres”, page 241](#)



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4 Suspension strut/shock absorber, spring

⇒ ["4.1 Exploded view - suspension strut/shock absorber, spring", page 167](#)

⇒ ["4.2 Removing and installing shock absorber", page 168](#)

⇒ ["4.3 Servicing shock absorber", page 169](#)

⇒ ["4.4 Removing and installing spring", page 171](#)

4.1 Exploded view - suspension strut/shock absorber, spring

1 - Bottom spring seat

- ☐ Turn end of spring against stop

2 - Coil spring

- ☐ Removing and installing ⇒ [page 171](#)

3 - Top spring seat

4 - Bracket for rear body acceleration sender - G343-

- ☐ Installed on vehicles with electronic damping control

5 - Rear body acceleration sender - G343-

- ☐ Removing and installing ⇒ [page 235](#)
- ☐ Installed on vehicles with electronic damping control

6 - Bolt

- ☐ Installed on vehicles with electronic damping control
- ☐ 5 Nm

7 - Bolt

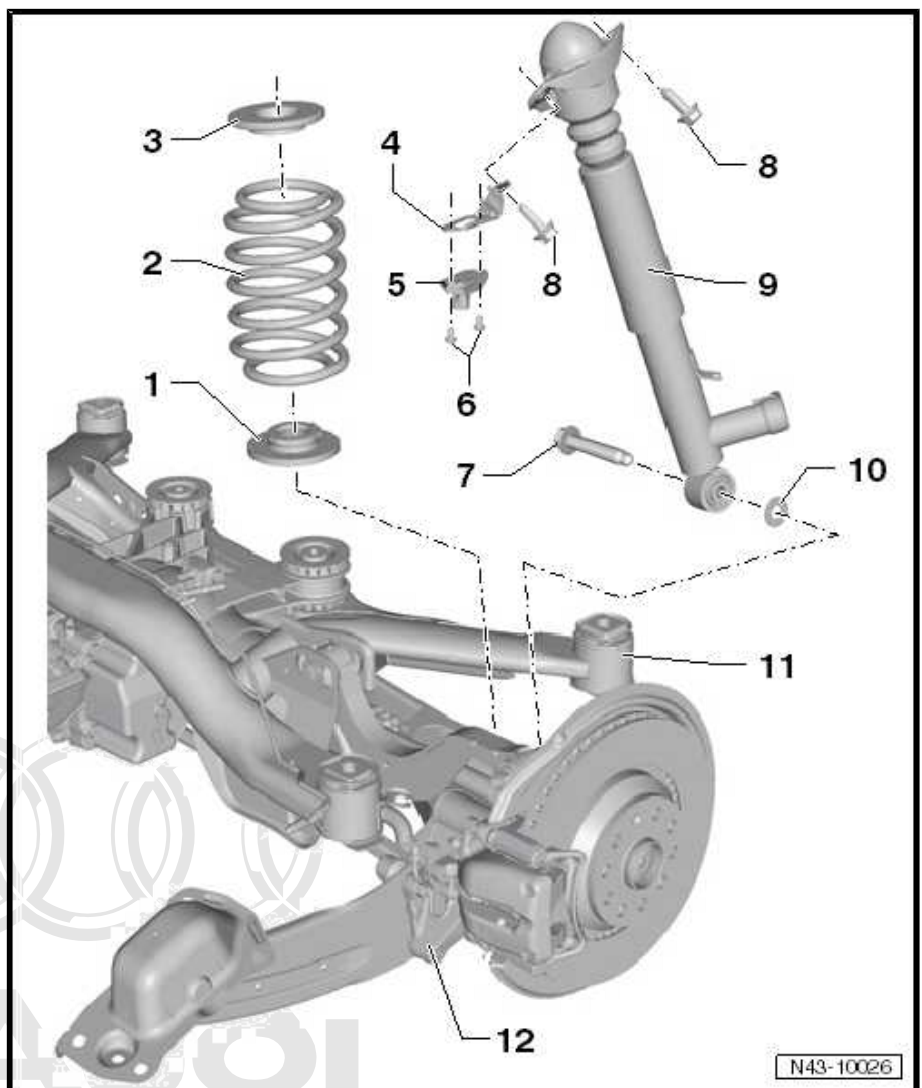
- ☐ Always renew if removed
- ☐ 180 Nm

8 - Bolt

- ☐ Always renew if removed
- ☐ 50 Nm +45°

9 - Shock absorber

- ☐ Removing and installing ⇒ [page 168](#)
- ☐ Defective shock absorbers must always be degassed and drained before disposal ⇒ [page 15](#)
- ☐ On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ⇒ Vehicle diagnostic tester
- ☐ If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#)
- ☐ On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights



10 - Washer

11 - Subframe

12 - Wheel bearing housing

4.2 Removing and installing shock absorber

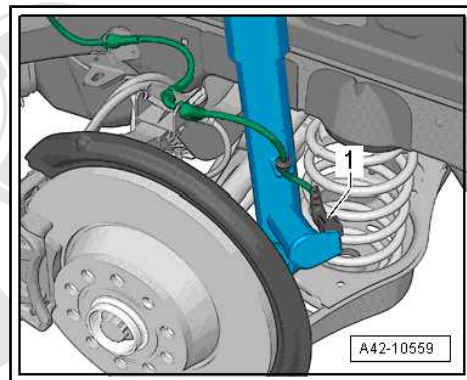
Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-

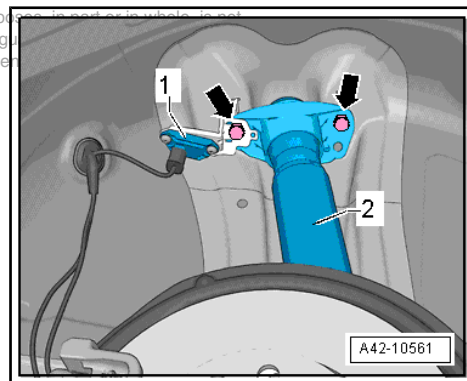


Removing

- Measure distance from centre of wheel to lower edge of wheel housing ⇒ [page 11](#) .
- Remove wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (rear) .
- Remove coil spring ⇒ [page 171](#) .
- If fitted, unplug electrical connector -1- and move electrical wiring clear at shock absorber.



- Remove bolts -arrows-. Protected by copyright. Copying for private or commercial purposes is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee the accuracy of the information in this document.
- If fitted, pull rear body acceleration sender - G343 -1- off shock absorber mounting.



- Remove bolt -1- and take off washer -2-.
- Take out shock absorber.

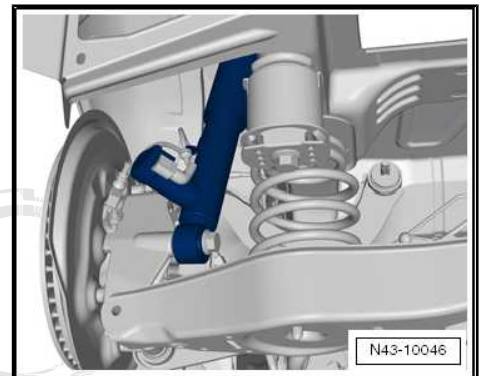
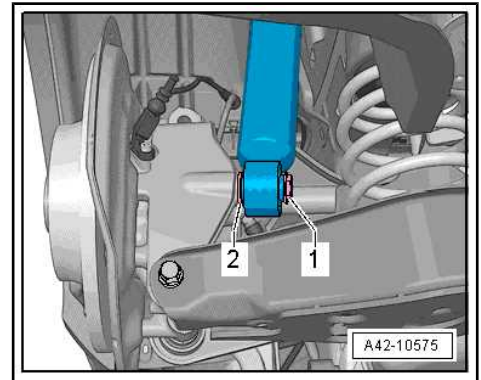
Installing

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

Bolt securing shock absorber to wheel bearing housing may only be tightened when distance between centre of wheel hub and lower edge of wheel housing corresponds to that measured prior to removal ➔ [page 11](#) .

Note installation position of shock absorber.

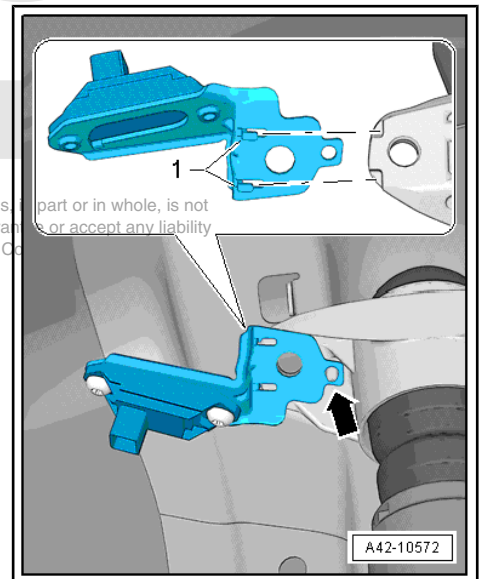
The rear left/right shock absorber damper adjustment valve - N338/N339- must point to the rear and outwards to the wheel.



- On vehicles with electronic damping control, fit rear body acceleration sender - G343- on shock absorber mounting.
- Fit bracket from rear onto shock absorber mounting so that lugs of bracket -1- engage in recesses in shock absorber mounting.
- Turn bracket forwards so it makes contact with shock absorber mounting.

The lug -arrow- is used for adjusting the bracket for rear body acceleration sender - G343- .

- Install coil spring ➔ [page 171](#) .
- Check and adjust wheel alignment as required, see chart ➔ [page 247](#) .
- On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ➔ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ➔ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ➔ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



Tightening torques

- ◆ ➔ ["4.1 Exploded view - suspension strut/shock absorber, spring", page 167](#)
- ◆ ➔ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (rear)

4.3 Servicing shock absorber

1 - Shock absorber

- ☐ Removing and installing
⇒ [page 168](#)
- ☐ Defective shock absorbers must always be degassed and drained before disposal ⇒ [page 15](#)
- ☐ Checking shock absorber following removal
⇒ [page 6](#)
- ☐ On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ⇒ Vehicle diagnostic tester
- ☐ If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function
⇒ [page 254](#)
- ☐ On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights

2 - Protective cap

3 - Protective tube

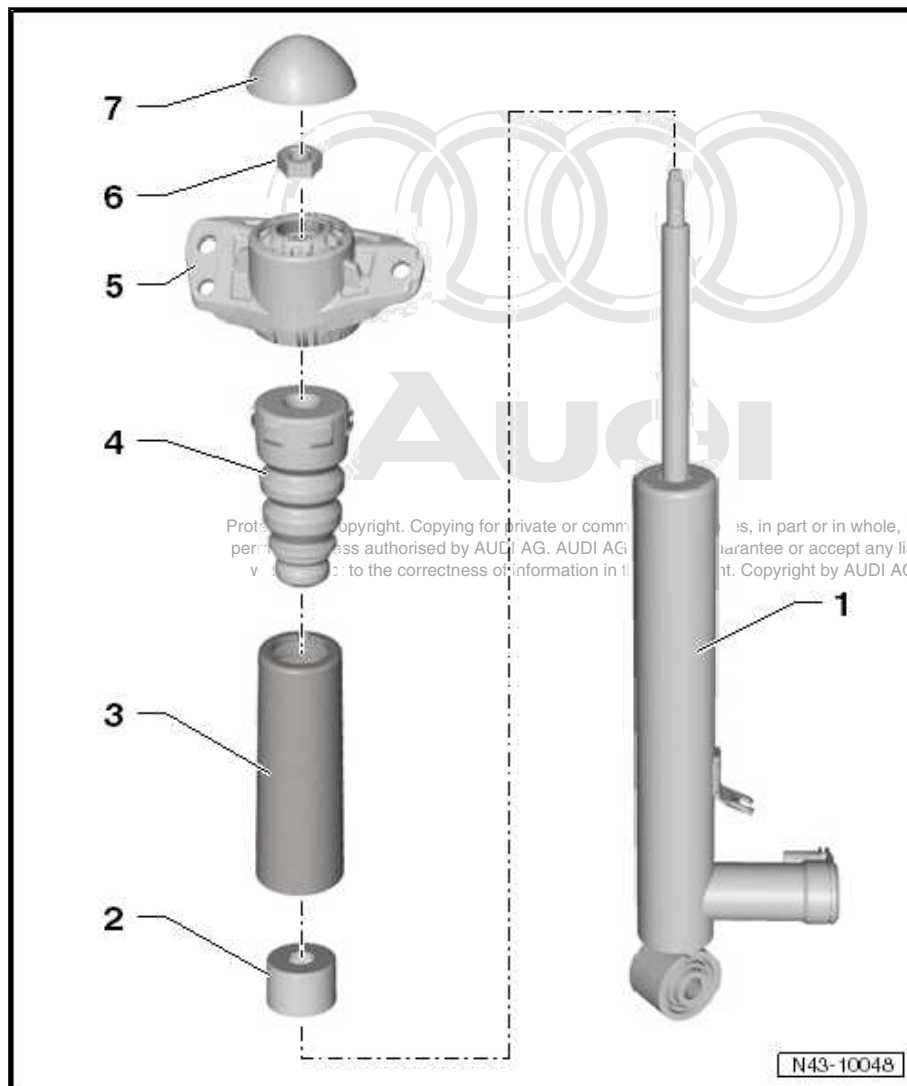
4 - Bump stop

5 - Shock absorber mounting

6 - Nut

- ☐ Always renew if removed
- ☐ Loosening and tightening ⇒ [page 171](#)
- ☐ 25 Nm

7 - Cover

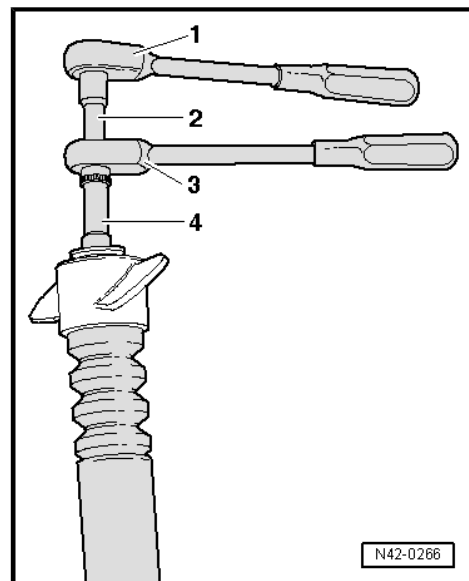
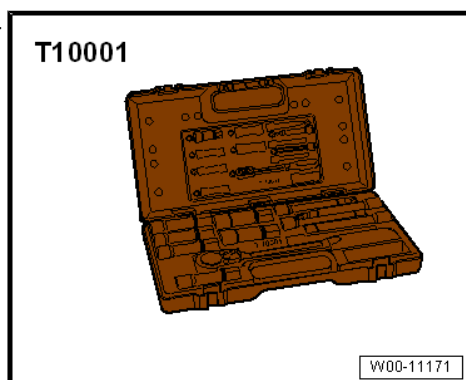


Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



- ◆ Shock absorber set - T10001-



Loosening and tightening nut on shock absorber mounting

- 1 - Commercially available ratchet
- 2 - Insert tool - T10001/9-
- 3 - Ratchet - T10001/11-
- 4 - Insert tool - T10001/1-

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

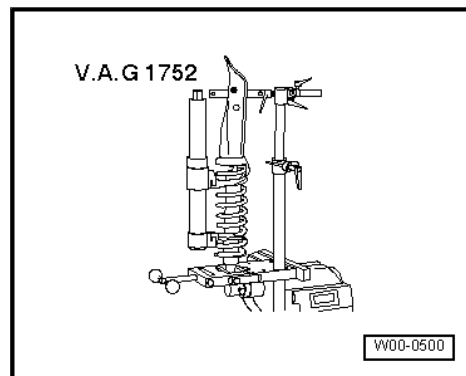
Tightening torque
⇒ [Item 6 \(page 170\)](#)

4.4 Removing and installing spring

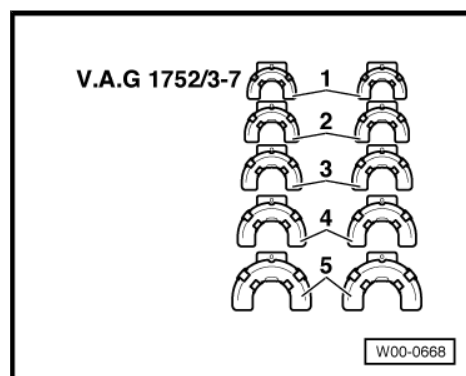
Special tools and workshop equipment required

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◆ Spring compressor - V.A.G 1752/1-



◆ Spring retainer - V.A.G 1752/3A-



◆ Adapter - V.A.G 1752/9- , not illustrated

Removing

- Remove rear wheel ➔ [page 241](#) .
- Insert spring compressor -3-.



WARNING

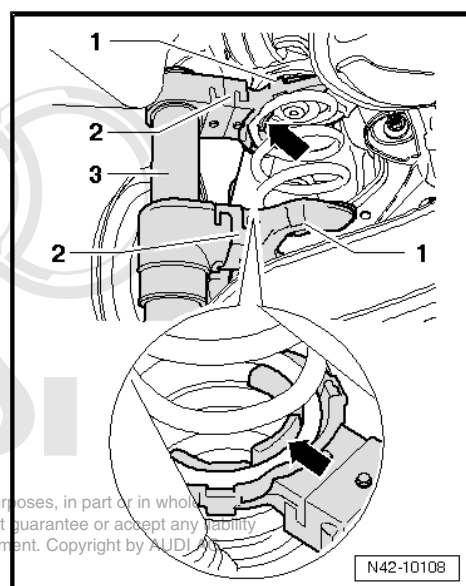
Make sure coil spring is properly seated in spring retainer - V.A.G 1752/3A- -2- (risk of accident).

- Compress coil spring until it can be removed.
- Remove spring.

1 - Spring retainer - V.A.G 1752/3A-

2 - Adapter - V.A.G 1752/9-

3 - Spring compressor - V.A.G 1752/1-

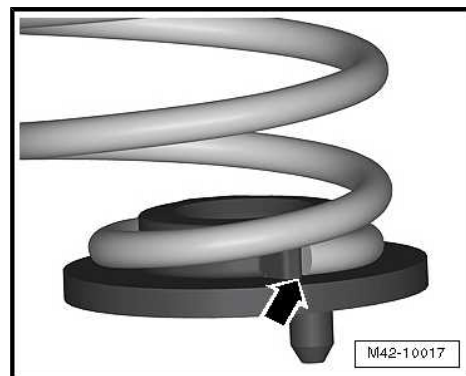


Installing

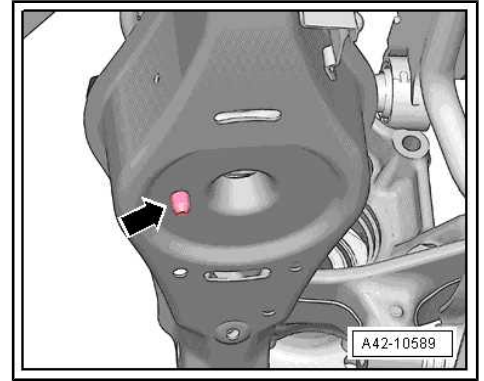
Installation is performed in reverse sequence; note the following:

End of spring -arrow- must lie against stop on bottom spring seat.

- Install spring together with spring seat.



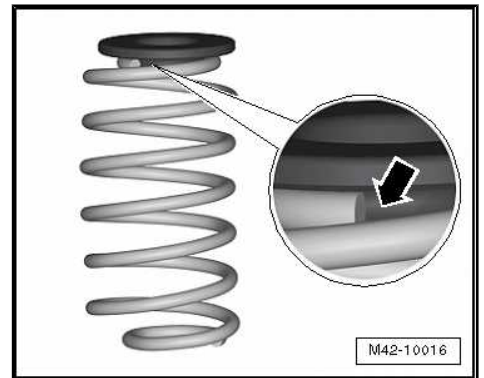
- The bottom spring seat has a pin.
- Insert this pin in hole in lower suspension link -arrow-.



- Insert top spring seat into upper end of spring.
- Slacken off spring. When doing so, locate upper spring seat onto lug on body.
- Take out spring compressor.
- Fit rear wheel ➔ [page 241](#) .
- Check and adjust wheel alignment as required, see chart ➔ [page 247](#) .

If one or both springs have been renewed:

- On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ➔ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ➔ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ➔ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



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5 Wheel bearing, trailing arm

⇒ ["5.1 Exploded view - wheel bearing", page 174](#)

⇒ ["5.2 Removing and installing wheel bearing housing", page 177](#)

⇒ ["5.3 Removing and installing wheel bearing unit", page 185](#)

⇒ ["5.4 Renewing bonded rubber bush for wheel bearing housing", page 190](#)

⇒ ["5.5 Removing and installing trailing arm with mounting bracket", page 196](#)

⇒ ["5.6 Servicing trailing arm", page 203](#)

5.1 Exploded view - wheel bearing

⇒ ["5.1.1 Exploded view - wheel bearing, front-wheel drive vehicles", page 174](#)

⇒ ["5.1.2 Exploded view - wheel bearing, four-wheel drive vehicles", page 176](#)

5.1.1 Exploded view - wheel bearing, front-wheel drive vehicles

1 - Cover

2 - Mounting bracket

3 - Bolt

☐ Always renew if re-

moved

50 Nm +45°

4 - Coupling rod

5 - Bolt

☐ Observe correct tighten-

ing sequence

⇒ [page 196](#)

☐ Always renew if re-

moved

☐ 90 Nm +45°

6 - Bolt

☐ Tightening torque ⇒
Brake system; Rep. gr.
45 ; Sensors; Exploded
view - rear wheel speed
sensor

7 - Rear left speed sensor -
G46-

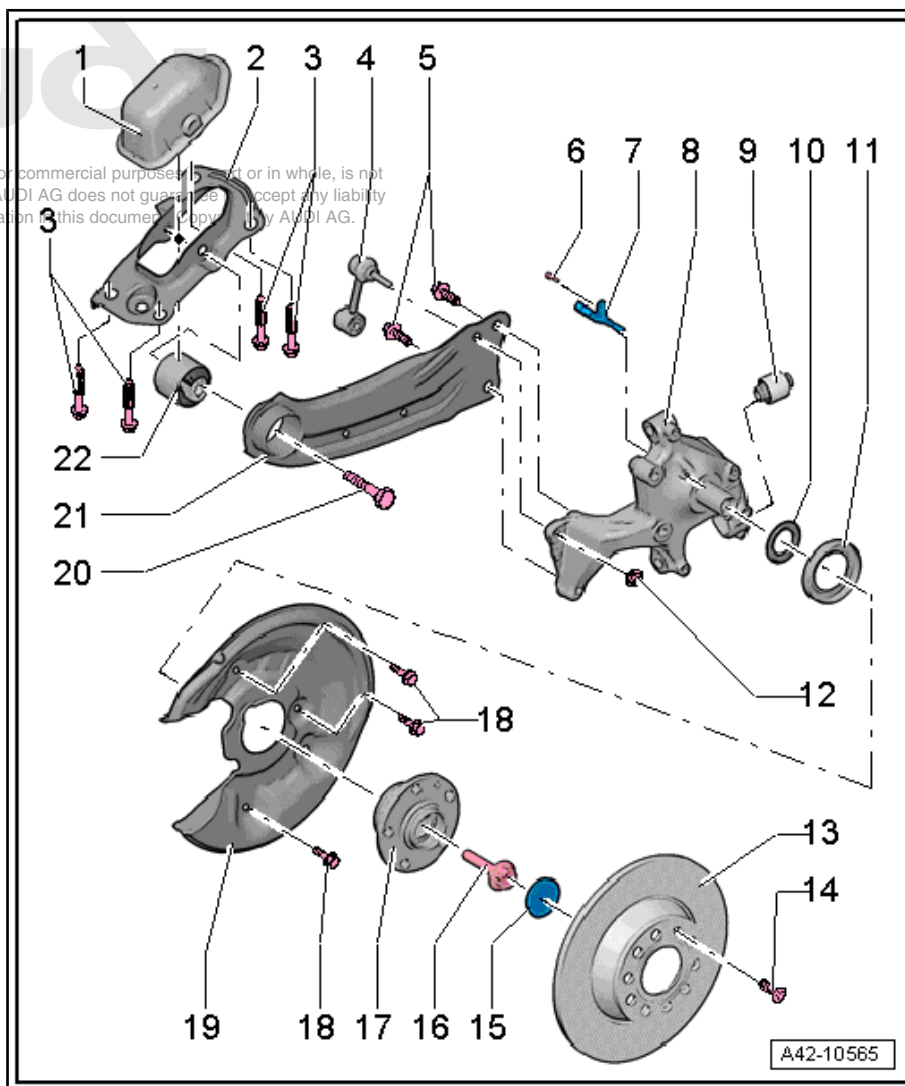
☐ Removing and installing
⇒ Brake system; Rep.
gr. 45 ; Sensors; Re-
moving and installing
rear speed sensor -
G44- / -G46-

8 - Wheel bearing housing

☐ Removing and installing
⇒ [page 177](#)

9 - Bonded rubber bush

☐ Renewing ⇒ [page 190](#)



10 - Washer

- ☐ Only fitted on versions for certain countries; for correct version, refer to ⇒ Electronic parts catalogue

11 - Additional seal for wheel bearing

- ☐ Only fitted on versions for certain countries; for correct version, refer to ⇒ Electronic parts catalogue
- ☐ Note correct installation position ⇒ [page 176](#)

12 - Nut

- ☐ Always renew if removed
- ☐ 45 Nm

13 - Brake disc

14 - Bolt

- ☐ Tightening torque ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake

15 - Grease cap

- ☐ Always renew if removed
- ☐ Removing and installing ⇒ [page 185](#)
- ☐ Proper sealing can only be achieved by installing a new grease cap.

16 - Bolt

- ☐ Always renew if removed
- ☐ Before securing, clean threads in wheel bearing housing using a thread tap
- ☐ Loosening and tightening ⇒ [page 225](#)
- ☐ Bolt -WHT.005.437- / black = 200 Nm + turn 180° further
- ☐ Bolt -WHT.005.437.A- / silver = 200 Nm + turn 90° further

17 - Wheel hub with wheel bearing

- ☐ 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.
- ☐ Removing and installing ⇒ [page 185](#)

18 - Bolt

- ☐ Tightening torque ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake

19 - Splash plate for brakes

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20 - Bolt

- ☐ Always renew if removed
- ☐ 90 Nm +90°

21 - Trailing arm

- ☐ Removing and installing ⇒ [page 196](#)
- ☐ Servicing ⇒ [page 203](#)

22 - Bonded rubber bush

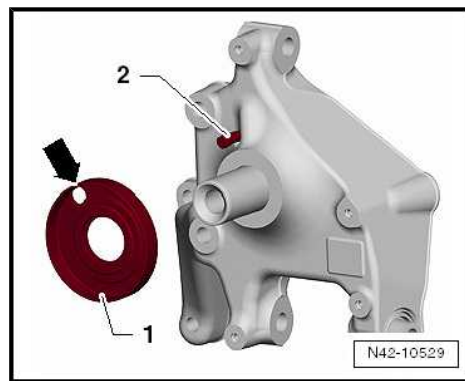
- ☐ Renewing ⇒ [page 203](#)

Installation position of additional seal for wheel bearing



Note

When installing the wheel bearing seal -1-, make sure that the hole -arrow- is centred on the speed sensor -2-.



5.1.2 Exploded view - wheel bearing, four-wheel drive vehicles

1 - Cover

2 - Mounting bracket

3 - Bolt

- ☐ Always renew if removed
- ☐ 50 Nm +45°

4 - Coupling rod

5 - Bolt

- ☐ Always renew if removed
- ☐ Observe correct tightening sequence
⇒ [page 202](#)
- ☐ 90 Nm +45°

6 - Bolt

- ☐ Always renew if removed
- ☐ 70 Nm +90°

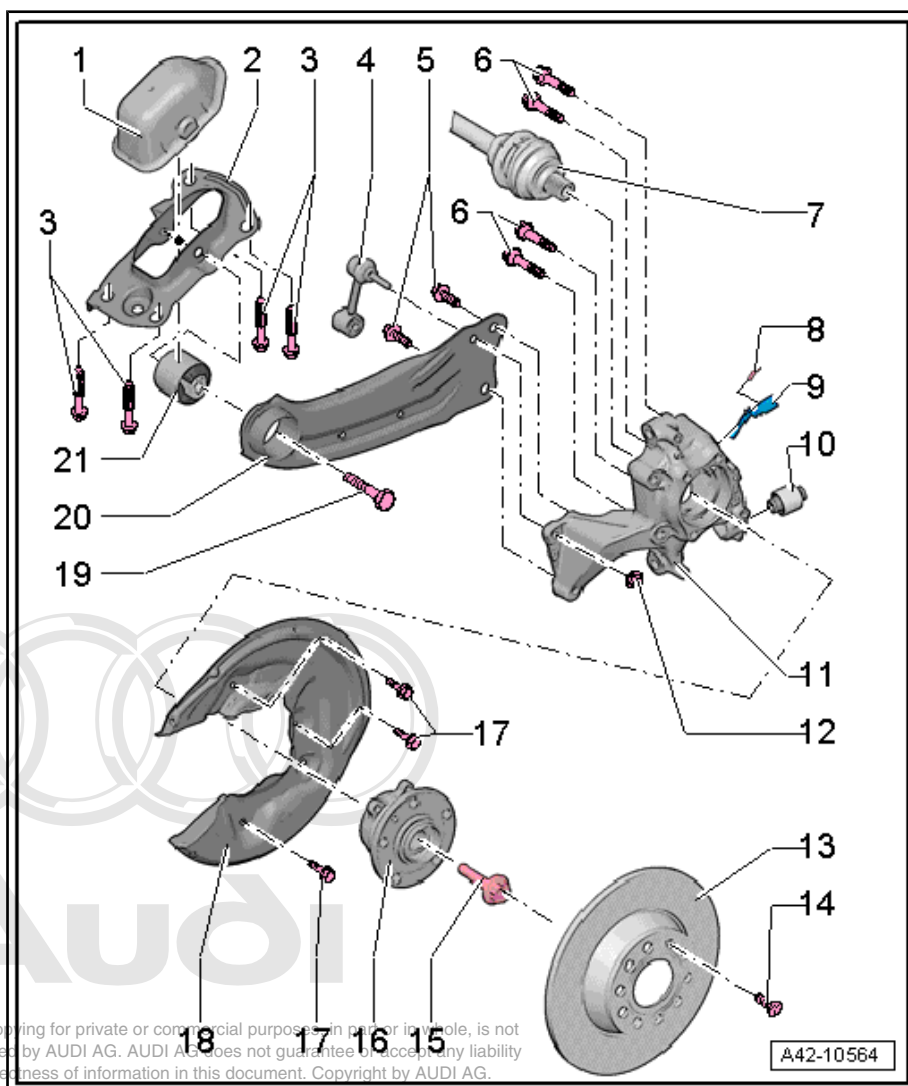
7 - Drive shaft

- ☐ Do not let drive shaft hang down under its own weight when performing repair work, as otherwise excessive bending could damage inner CV joint.

8 - Bolt

- ☐ Tightening torque ⇒
Brake system; Rep. gr. 45 ; Sensors; Exploded

view - rear wheel speed sensor



9 - Rear left speed sensor - G46-

- ☐ Removing and installing ⇒ Brake system; Rep. gr. 45 ; Sensors; Removing and installing rear speed sensor -G44- / -G46-

10 - Bonded rubber bush

- ☐ Renewing ⇒ [page 193](#)

11 - Wheel bearing housing

- ☐ Removing and installing ⇒ [page 181](#)

12 - Nut

- ☐ Always renew if removed
- ☐ 40 Nm

13 - Brake disc

14 - Bolt

- ☐ Tightening torque ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake

15 - Bolt

- ☐ Always renew if removed
- ☐ Before securing, clean the threads in the CV joint using a thread tap
- ☐ Loosening and tightening ⇒ [page 225](#)
- ☐ Bolt -WHT.005.437- / black = 200 Nm + turn 180° further
- ☐ Bolt -WHT.005.437.A- / silver = 200 Nm + turn 90° further

16 - Wheel bearing unit

- ☐ Removing and installing ⇒ [page 188](#)
- ☐ The wheel bearing unit is maintenance-free and has zero play. There is no provision for adjustment or repair.

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17 - Bolt

- ☐ Tightening torque ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake

18 - Splash plate for brakes

19 - Bolt

- ☐ Always renew if removed
- ☐ 90 Nm +90°

20 - Trailing arm

- ☐ Removing and installing ⇒ [page 200](#)

21 - Bonded rubber bush

- ☐ Renewing ⇒ [page 206](#)

5.2 Removing and installing wheel bearing housing

⇒ [“5.2.1 Removing and installing wheel bearing housing, front-wheel drive vehicles”, page 177](#)

⇒ [“5.2.2 Removing and installing wheel bearing housing, four-wheel drive vehicles”, page 181](#)

5.2.1 Removing and installing wheel bearing housing, front-wheel drive vehicles

Special tools and workshop equipment required

◆ Torque wrench - V.A.G 1332-



Removing

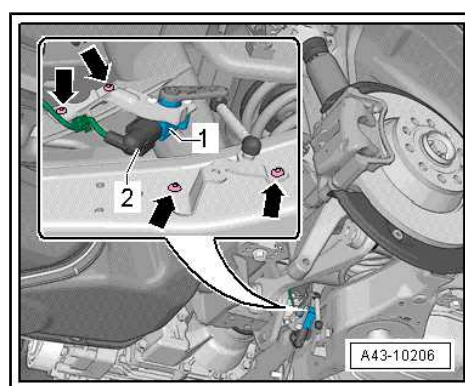
- Measure distance from centre of wheel to lower edge of wheel housing ⇒ [page 11](#) .

Vehicles with vehicle level senders

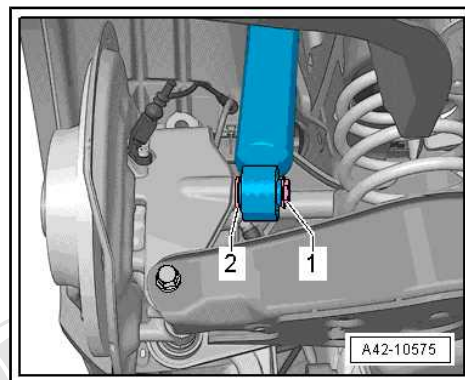
- Remove bolts -bottom arrows-.

All vehicles (continued):

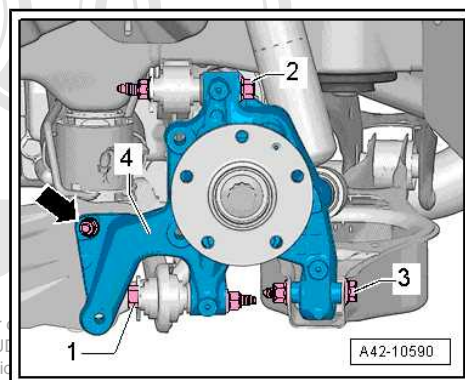
- Remove coil spring ⇒ [page 171](#) .
- Remove ABS speed sensor from wheel bearing housing ⇒ Brake system; Rep. gr. 45 ; Sensors; Removing and installing rear speed sensor -G44- / -G46- .
- Remove splash plate ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing splash plate .



- Remove bolt -1- and take off washer -2-.

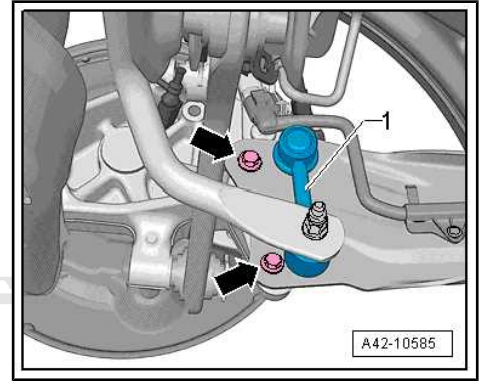


- Unscrew bolts for track rod -1-, upper suspension link -2- and lower suspension link -3- from wheel bearing housing -4-.
- Detach coupling rod -arrow- from wheel bearing housing.
- Detach coupling rod from trailing arm -1-.



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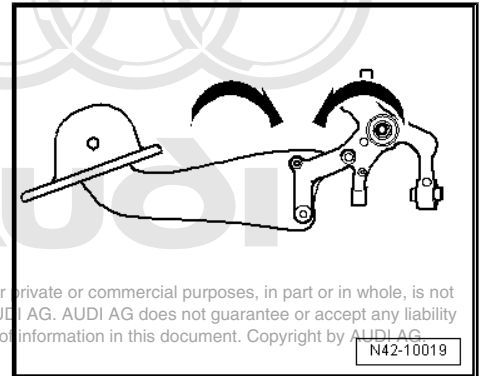
- Hold wheel bearing housing and unscrew bolts -arrows-.
- Pull coupling rod -1- out of trailing arm.
- Take out wheel bearing housing.



Installing

Installation is performed in reverse sequence; note the following:

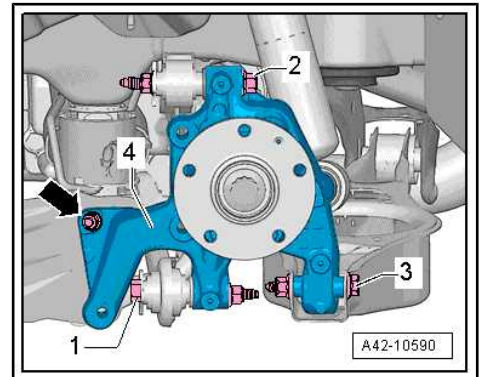
Do not tighten bolts securing trailing arm to wheel bearing housing until all other suspension components (especially spring and shock absorber) on that side are fitted. The suspension must be in extended position before securing. The trailing arm and the wheel bearing housing will only then move into the required position -arrows-.



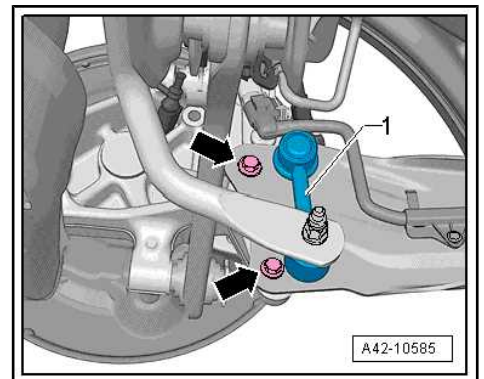
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It is important to keep to the specified sequence for the following operations.

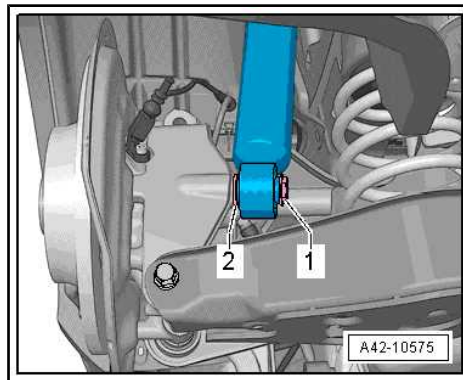
- Fit bolts for track rod -1-, upper suspension link -2- and lower suspension link -3-, and tighten hand-tight.



- Attach coupling rod -arrow- to wheel bearing housing -4- hand-tight.

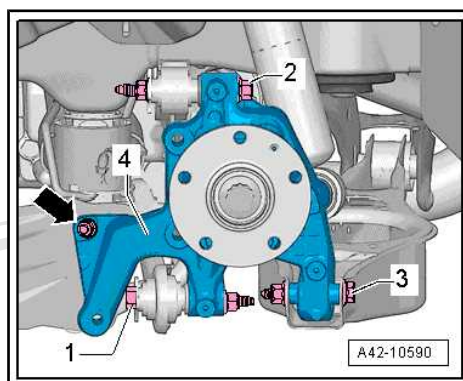


- Screw in bolts -arrows- and fit coupling rod -1- on trailing arm.
- Tighten bolt -1- together with washer -2-.



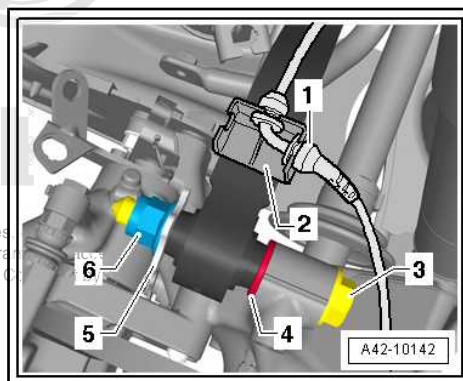
The bolted connections on the wheel bearing housing may only be tightened when dimension "a" has been obtained ➔ [page 11](#) .

- Install coil spring ➔ [page 171](#) .
- Tighten bolts for track rod -1-, upper suspension link -2- and lower suspension link -3-.
- Tighten nut for coupling rod -arrow-.



Note

Washer -5- must be installed so that there is a gap between washer and brake splash plate.

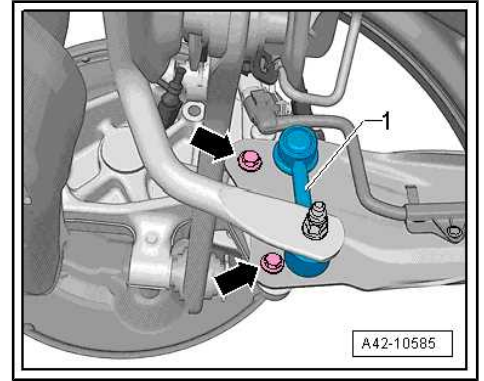


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- Tighten bolts -arrows-.

Installation is performed in reverse sequence; note the following:

- Install brake caliper ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



Tightening torques

- ◆ ⇒ [“1.1.1 Exploded view - subframe, front-wheel drive vehicles”, page 127](#)
- ◆ ⇒ [“2.1 Exploded view - anti-roll bar”, page 149](#)
- ◆ ⇒ [“4.1 Exploded view - suspension strut/shock absorber, spring”, page 167](#)
- ◆ ⇒ [“5.1.1 Exploded view - wheel bearing, front-wheel drive vehicles”, page 174](#)
- ◆ ⇒ Brake system; Rep. gr. 45 ; Sensors; Exploded view - rear speed sensor
- ◆ ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view rear brake

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5.2.2 Removing and installing wheel bearing housing, four-wheel drive vehicles

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



Removing

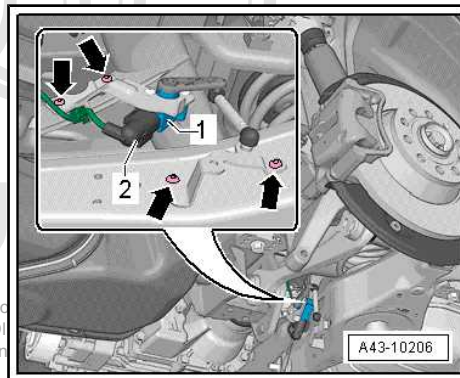
- Measure distance from centre of wheel to lower edge of wheel housing ⇒ [page 11](#) .
- Loosen bolt securing drive shaft at wheel hub ⇒ [“6.4 Loosening and tightening bolt securing drive shaft”, page 225](#) .

Vehicles with vehicle level senders

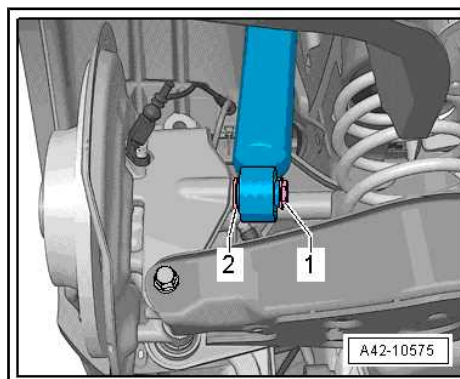
- Remove bolts -bottom arrows-.

All vehicles (continued):

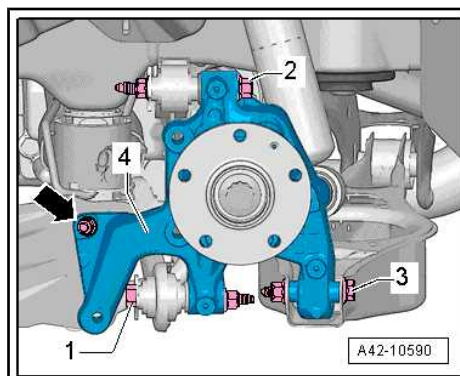
- Remove coil spring ➔ [page 171](#) .
- Remove splash plate ➔ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing splash plate .
- Remove ABS speed sensor from wheel bearing housing ➔ Brake system; Rep. gr. 45 ; Sensors; Removing and installing rear speed sensor -G44- / -G46- .



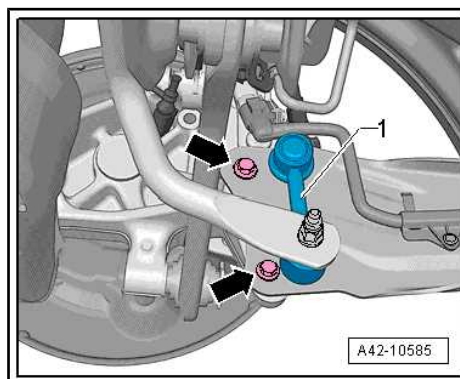
- Remove bolt -1- and take off washer -2-.



- Unscrew bolts for track rod -1-, upper suspension link -2- and lower suspension link -3- from wheel bearing housing -4-.
- Unbolt coupling rod from wheel bearing housing -arrow-.



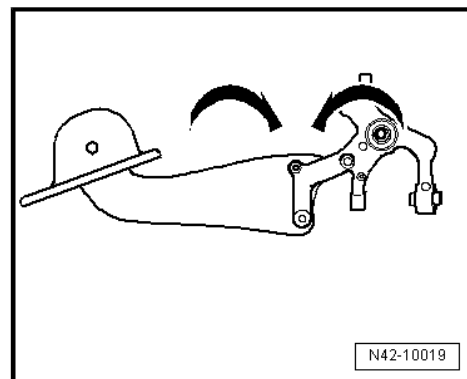
- Pull coupling rod -1- out of trailing arm.
- Hold wheel bearing housing and unscrew bolts -arrows-.
- Take out wheel bearing housing.



Installing

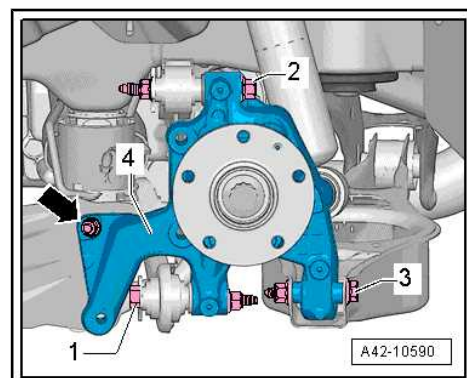
Installation is performed in reverse sequence; note the following:

Do not tighten bolts securing trailing arm to wheel bearing housing until all other suspension components (especially spring and shock absorber) on that side are fitted. The suspension must be in extended position before securing. The trailing arm and the wheel bearing housing will only then move into the required position -arrows-.

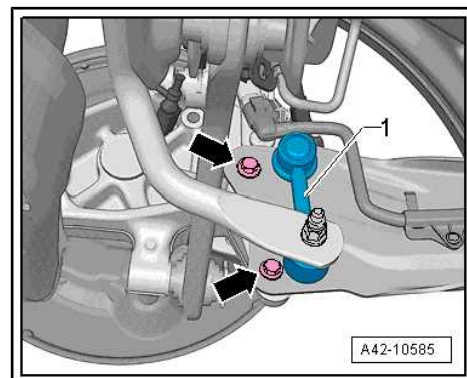


It is important to keep to the specified sequence for the following operations.

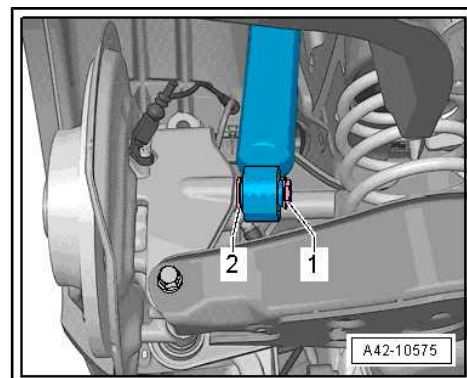
- Fit bolts for track rod -1-, upper suspension link -2- and lower suspension link -3-, and tighten hand-tight.



- Attach coupling rod -arrow- to wheel bearing housing -4- hand-tight.



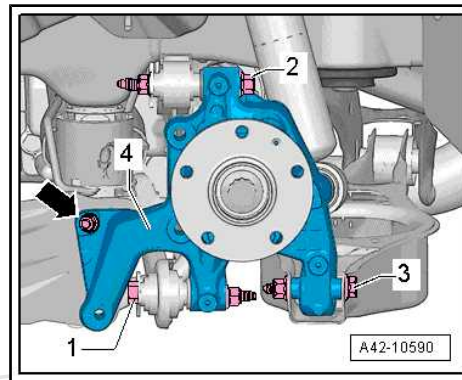
- Screw in bolts -arrows- and fit coupling rod -1- on trailing arm.
- Tighten bolt -1- together with washer -2-.



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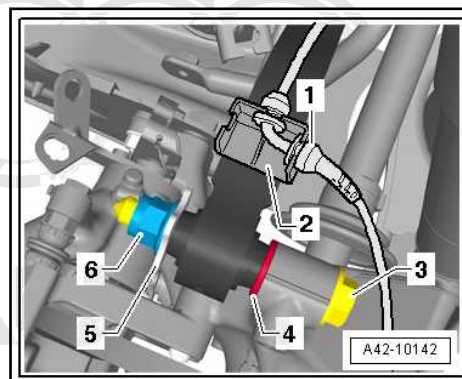
The bolted connections on the wheel bearing housing may only be tightened when dimension "a" has been obtained ➔ [page 11](#) .

- Install coil spring ➔ [page 171](#) .
- Tighten bolts for track rod -1-, upper suspension link -2- and lower suspension link -3-.
- Tighten nut for coupling rod -arrow-.



Note

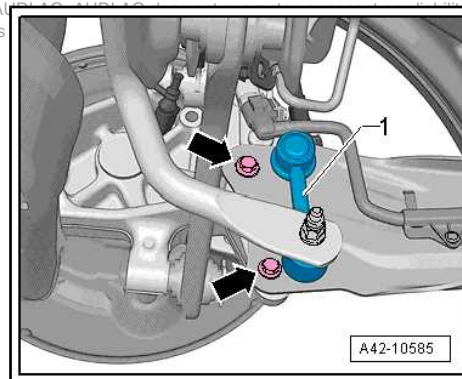
Washer -5- must be installed so that there is a gap between washer and brake splash plate.



- Tighten bolts -arrows-.

Perform further installation in reverse order; note the following:

- Install brake caliper ➔ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .
- Check and adjust wheel alignment as required, see chart ➔ [page 247](#) .
- On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ➔ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ➔ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ➔ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



Tightening torques

- ◆ ➔ ["1.1.2 Exploded view - subframe, four-wheel drive vehicles", page 128](#)
- ◆ ➔ ["2.1 Exploded view - anti-roll bar", page 149](#)
- ◆ ➔ ["4.1 Exploded view - suspension strut/shock absorber, spring", page 167](#)
- ◆ ➔ ["5.1.2 Exploded view - wheel bearing, four-wheel drive vehicles", page 176](#)
- ◆ ➔ Brake system; Rep. gr. 45 ; Sensors; Exploded view - rear speed sensor
- ◆ ➔ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake

5.3 Removing and installing wheel bearing unit

⇒ [“5.3.1 Removing and installing wheel bearing unit, front-wheel drive vehicles”, page 185](#)

⇒ [“5.3.2 Removing and installing wheel bearing unit, four-wheel drive vehicles”, page 188](#)

5.3.1 Removing and installing wheel bearing unit, front-wheel drive vehicles

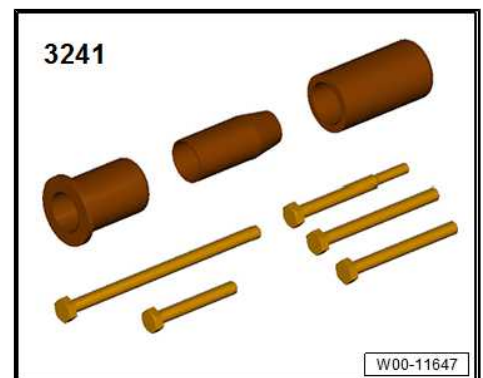
Special tools and workshop equipment required

- ◆ Hub grease cap puller - VW 637/2-

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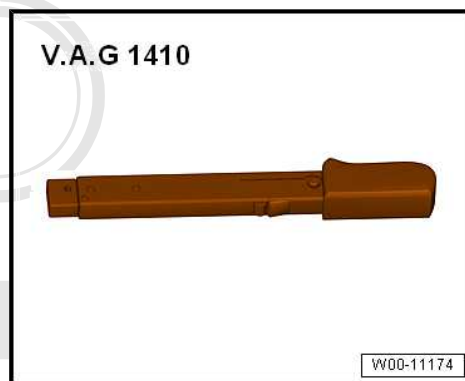
- ◆ Fitting sleeve - 3241/4- from fitting sleeves - 3241-



- ◆ Torque wrench - V.A.G 1332-

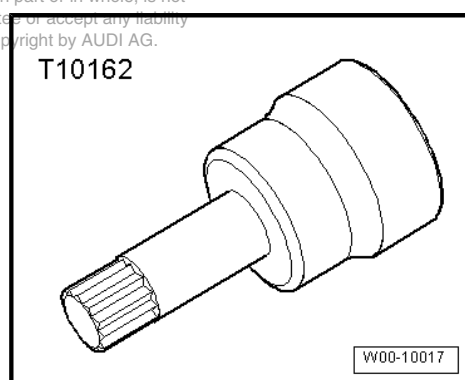


- ◆ Torque wrench - V.A.G 1410-



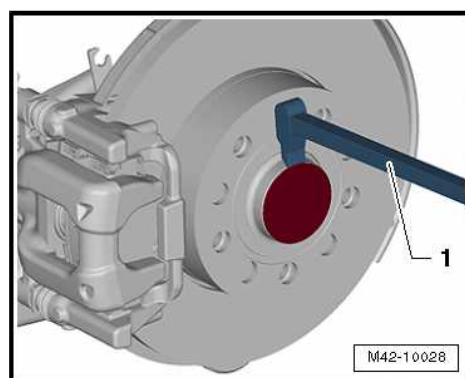
- ◆ Bit XZN 18 - T10162-

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Removing

- Loosen grease cap from seat by tapping lightly on claw of hub grease cap puller - VW 637/2- -1-.

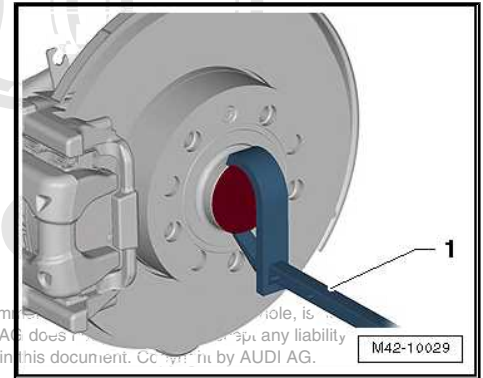


- Lever off grease cap using hub grease cap puller - VW 637/2-1-.
- Detach brake caliper with brake carrier and tie to body with wire ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .

 Note

Do not suspend the brake caliper from the brake hose.

- Remove cross-head screw for brake disc and take off brake disc.
- Remove multi-point socket head bolt using bit XZN 18 - T10162- .
- Pull wheel bearing unit off stub axle.



Caution

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

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

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

Installing

Installation is performed in reverse sequence; note the following:

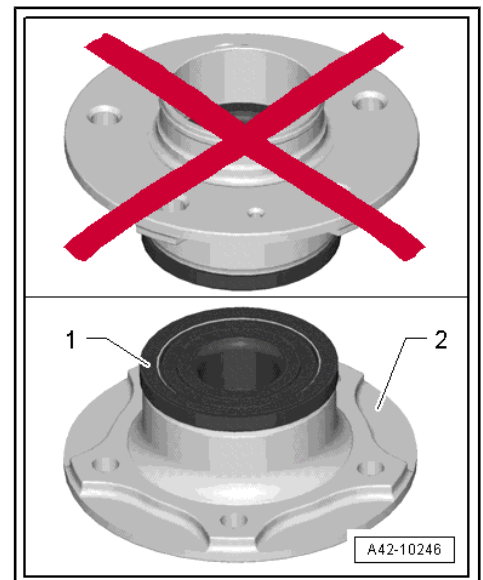
- Carefully slide wheel hub/wheel bearing unit onto stub axle.

Take care to keep wheel hub/wheel bearing unit straight.

- Use a new multi-point socket head bolt and tighten it.

 Note

- ◆ *First tighten bolt with torque wrench to specified tightening torque.*
- ◆ *Use fixed wrench to turn bolt further through specified angle.*



- Drive in new grease cap using fitting sleeve - 3241/4- -1-.



Note

- ◆ Always renew grease caps.
- ◆ Damaged grease caps allow moisture to enter the bearing. For this reason it is important to use the tool shown in the illustration.

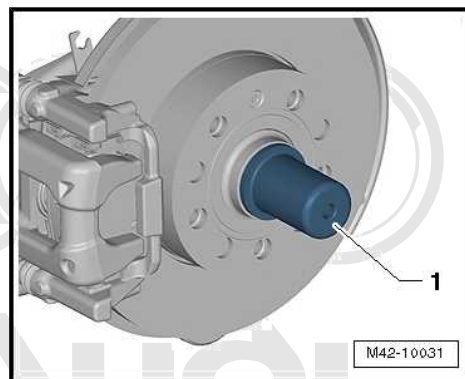
Remaining installation steps are carried out in reverse sequence.

- Install brake caliper ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .

Tightening torques

- ◆ ⇒ ["5.1.1 Exploded view - wheel bearing, front-wheel drive vehicles", page 174](#)

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5.3.2 Removing and installing wheel bearing unit, four-wheel drive vehicles

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



- ◆ Torque wrench - V.A.G 1410-



Removing

- Measure distance from centre of wheel to lower edge of wheel housing ⇒ [page 11](#) .
- Loosen bolt securing drive shaft at wheel hub ⇒ [page 225](#) .
- Remove coil spring ⇒ [page 171](#) .
- Remove drive shaft ⇒ [page 213](#) .
- Detach brake caliper with brake carrier and tie to body with wire ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .

 Note

Risk of damage - do not leave the brake caliper hanging from the brake hose.

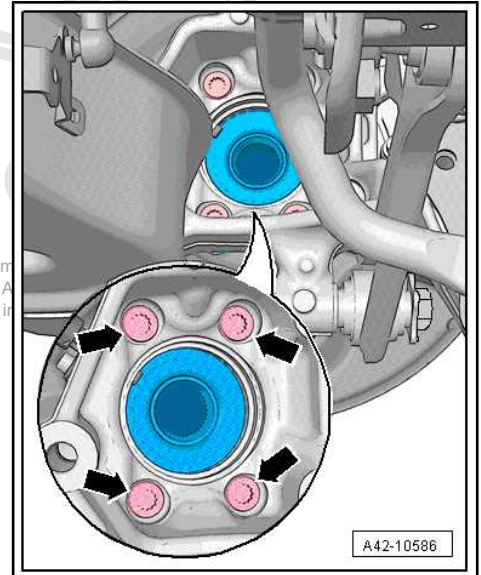
- Remove cross-head screw for brake disc and take off brake disc.
- Remove bolts -arrows-.
- Pull wheel bearing unit out of wheel bearing housing.



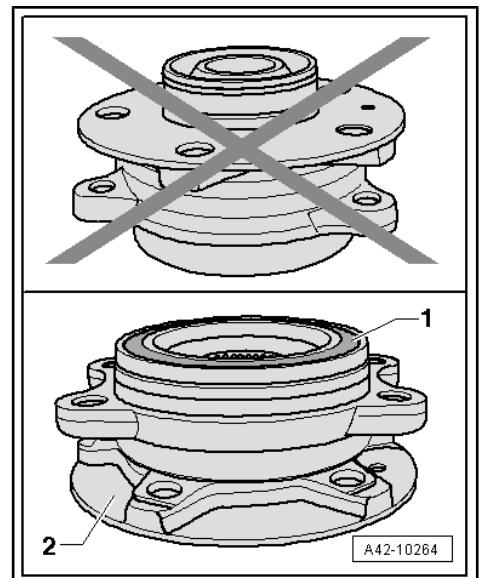
Caution

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

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- The wheel bearing -1- must always be pointing upwards.
- Always put down the wheel bearing unit with the wheel hub -2- facing downwards.



- Do not touch the inside of the wheel bearing when you pick it up.
- Always take hold of the outside of the wheel bearing.

The same procedure applies to the wheel bearing without wheel hub.

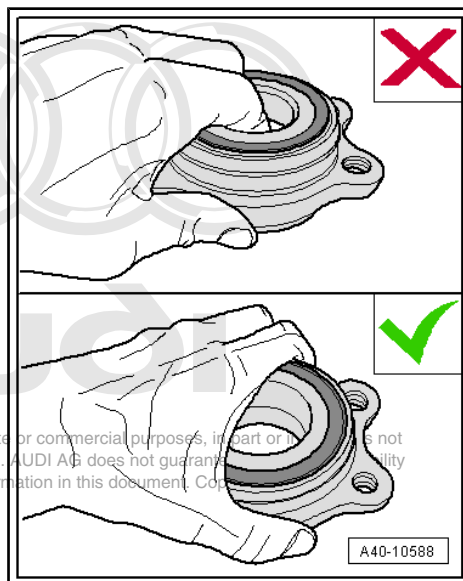
Installing

Installation is performed in reverse sequence; note the following:

- Install brake caliper ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .

Tightening torques

- ♦ ⇒ [“5.1.2 Exploded view - wheel bearing, four-wheel drive vehicles”, page 176](#)



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5.4 Renewing bonded rubber bush for wheel bearing housing

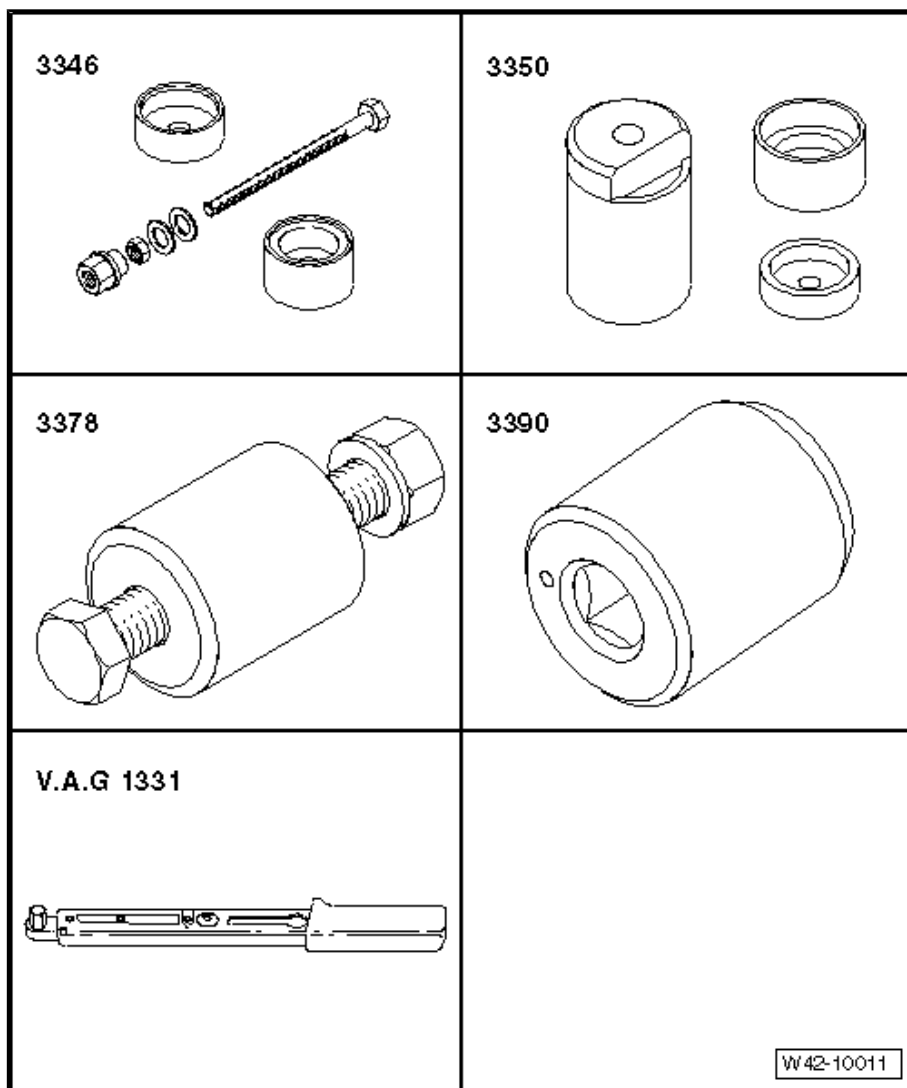
⇒ [“5.4.1 Renewing bonded rubber bush for wheel bearing housing, front-wheel drive vehicles”, page 190](#)

⇒ [“5.4.2 Renewing bonded rubber bush for wheel bearing housing, four-wheel drive vehicles”, page 193](#)

5.4.1 Renewing bonded rubber bush for wheel bearing housing, front-wheel drive vehicles

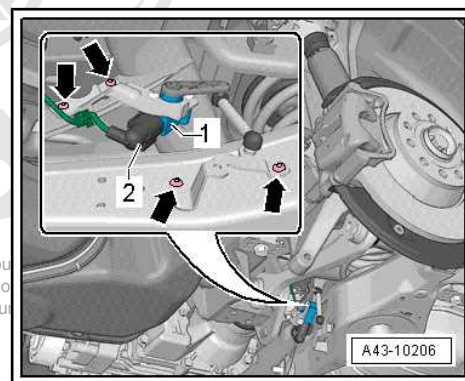
Special tools and workshop equipment required

- ◆ Assembly tool - 3346-
- ◆ Assembly tool - 3350-
- ◆ Fitting sleeve - 3378-
- ◆ Carrier - 3390-
- ◆ Torque wrench - V.A.G 1332-



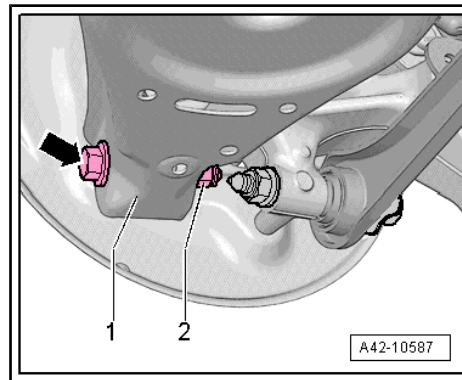
Removing

- Measure distance from centre of wheel to lower edge of wheel housing ⇒ [page 11](#) .
- Remove coil spring ⇒ [page 171](#) .
- Remove wheel bearing/wheel bearing unit ⇒ [page 185](#) .
- Remove splash plate ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing splash plate .
- On vehicles with vehicle level sender, remove bolts -bottom arrows-.



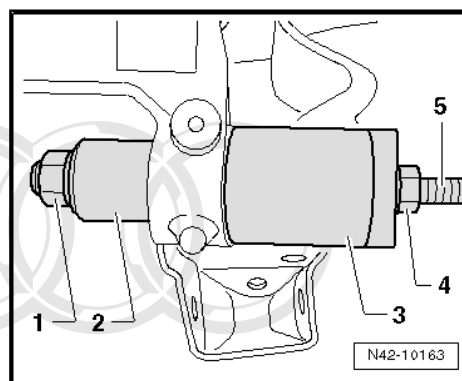
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- Unscrew nut -2- and pull out bolt -arrow- for lower suspension link -1-.



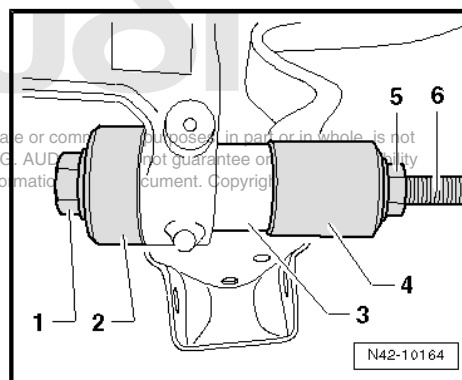
Pressing out bonded rubber bush

- 1 - Nut - 3346/3-
- 2 - Carrier - 3390-
- 3 - Assembly tool - 3350-
- 4 - Nut (commercially available type)
- 5 - Spindle - 3346/2-
- Pull out bonded rubber bush by turning spindle.



Installing bonded rubber bush

- 1 - Nut - 3346/3-
- 2 - Assembly tool - 3346-
- 3 - Bonded rubber bush
- 4 - Fitting sleeve - 3378-
- 5 - Nut (commercially available type)
- 6 - Spindle - 3346/2-
- Draw in the bonded rubber bush by turning the spindle.



Note

- ◆ *Do not use lubricant.*
- ◆ *Insert bush carefully to keep it straight.*

- After installing, check that bonded rubber bush is in correct position.
- Dimensions -A- and -B- must be equal (measured at points without projecting seam or burrs on casting).
- Press bush in further if dimensions -A- and -B- are not equal.

If the bonded rubber bush has to be pressed in further, use a 27 mm socket (commercially available type) in place of fitting sleeve - 3378- .

Installing

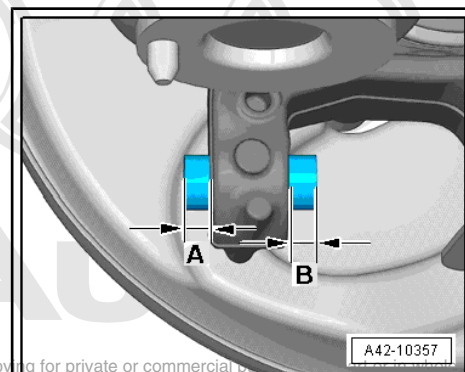
Installation is performed in reverse sequence; note the following:

The bolted connections on the wheel bearing housing may only be tightened when the original distance between the wheel hub centre and the lower edge of the wheel housing (as measured before assembly) has been obtained ⇒ [page 11](#) .

- Install wheel bearing/wheel bearing unit ⇒ [page 185](#) .
- Install coil spring ⇒ [page 171](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

Tightening torques

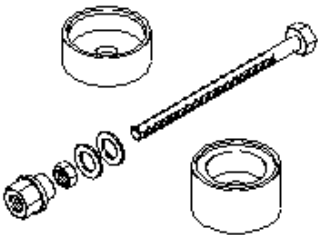
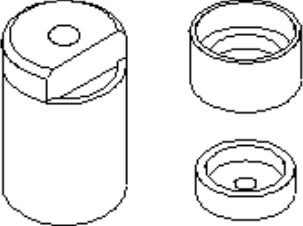
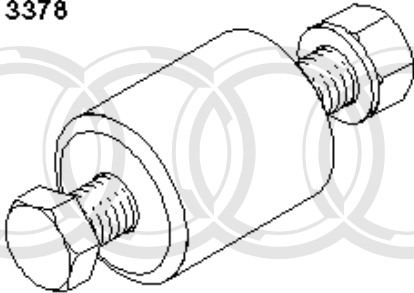
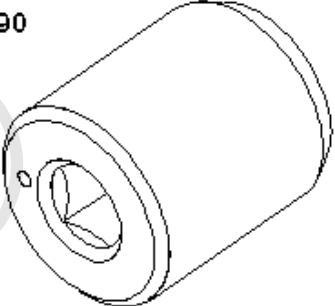
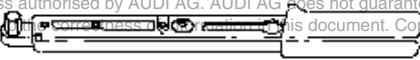
- ◆ ⇒ [“1.1.1 Exploded view - subframe, front-wheel drive vehicles”, page 127](#)
- ◆ ⇒ [“2.1 Exploded view - anti-roll bar”, page 149](#)
- ◆ ⇒ [“4.1 Exploded view - suspension strut/shock absorber, spring”, page 167](#)
- ◆ ⇒ [“5.1.1 Exploded view - wheel bearing, front-wheel drive vehicles”, page 174](#)
- ◆ ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake



5.4.2 Renewing bonded rubber bush for wheel bearing housing, four-wheel drive vehicles

Special tools and workshop equipment required

- ◆ Assembly tool - 3346-
- ◆ Assembly tool - 3350-
- ◆ Fitting sleeve - 3378-
- ◆ Carrier - 3390-
- ◆ Torque wrench - V.A.G 1332-

3346 	3350 
3378 	3390 
V.A.G 1331 	W42-10011

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Removing

- Measure distance from centre of wheel to lower edge of wheel housing ⇒ [page 11](#) .
- Remove coil spring ⇒ [page 171](#) .
- Detach brake caliper with brake carrier and tie to body with wire ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .

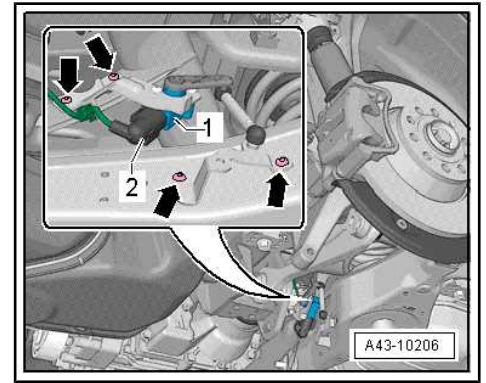


Note

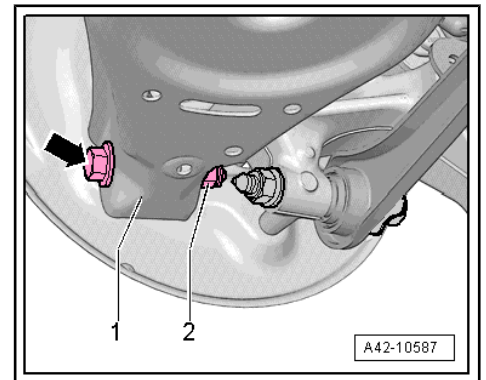
Risk of damage - do not leave the brake caliper hanging from the brake hose.

- Remove splash plate ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing splash plate .

- On vehicles with vehicle level sender , remove bolts -bottom arrows-.

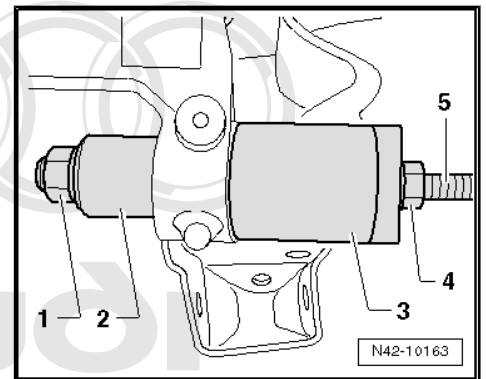


- Unscrew nut -2- and remove bolt -arrow- for lower suspension link -1-.



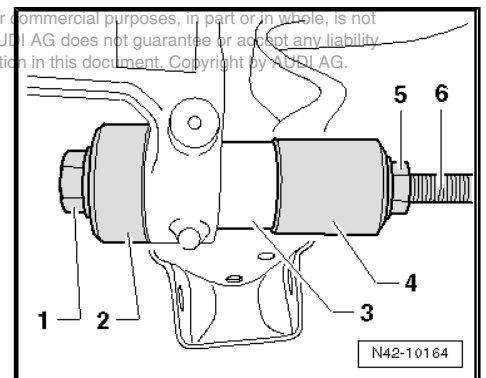
Pressing out bonded rubber bush

- Attach tools as shown in illustration.
- 1 - Nut - 3346/3-
- 2 - Carrier - 3390-
- 3 - Assembly tool - 3350-
- 4 - Nut (commercially available type)
- 5 - Spindle - 3346/2-
- Pull out bonded rubber bush by turning spindle.



Installing bonded rubber bush

- Attach tools as shown in illustration.
- 1 - Nut - 3346/3-
- 2 - Assembly tool - 3346-
- 3 - Bonded rubber bush
- 4 - Fitting sleeve - 3378-
- 5 - Nut (commercially available type)
- 6 - Spindle - 3346/2-
- Draw in the bonded rubber bush by turning the spindle.



Note

- ◆ Do not use lubricant.
- ◆ Insert bush carefully to keep it straight.

- After installing, check that bonded rubber bush is in correct position.
- Dimensions -A- and -B- must be equal (measured at points without projecting seam or burrs on casting).
- Press bush in further if dimensions -A- and -B- are not equal.

If the bonded rubber bush has to be pressed in further, use a 27 mm socket (commercially available type) in place of fitting sleeve - 3378- .

Installing

Installation is performed in reverse sequence; note the following:

The bolted connections on the wheel bearing housing may only be tightened when the original distance between the wheel hub centre and the lower edge of the wheel housing (as measured before assembly) has been obtained ⇒ [page 11](#) .

- Install brake caliper ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Removing and installing brake caliper .
- Install coil spring ⇒ [page 171](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

Tightening torques

- ◆ ⇒ [“1.1.2 Exploded view - subframe, four-wheel drive vehicles”, page 128](#)
- ◆ ⇒ [“2.1 Exploded view - anti-roll bar”, page 149](#)
- ◆ ⇒ [“4.1 Exploded view - suspension strut/shock absorber, spring”, page 167](#)
- ◆ ⇒ [“5.1.2 Exploded view - wheel bearing, four-wheel drive vehicles”, page 176](#)
- ◆ ⇒ Brake system; Rep. gr. 46 ; Rear brakes; Exploded view - rear brake

5.5 Removing and installing trailing arm with mounting bracket

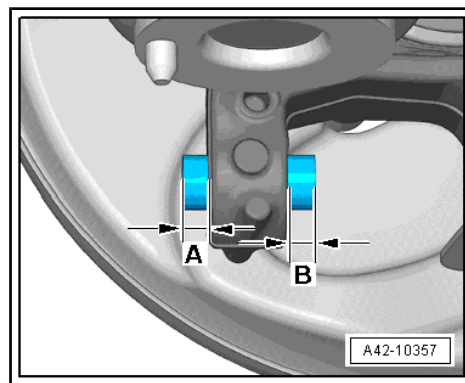
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⇒ [“5.5.1 Removing and installing trailing arm with mounting bracket, front-wheel drive vehicles”, page 196](#)

⇒ [“5.5.2 Removing and installing trailing arm with mounting bracket, four-wheel drive vehicles”, page 200](#)

5.5.1 Removing and installing trailing arm with mounting bracket, front-wheel drive vehicles

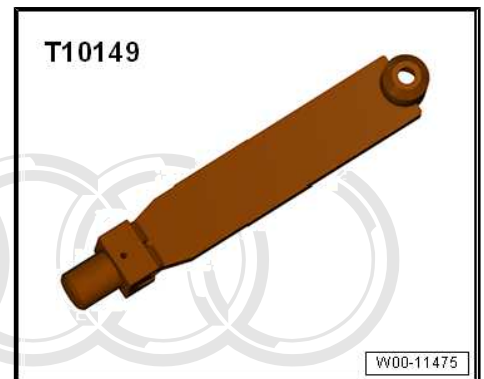
Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1332-



- ◆ Support - T10149-



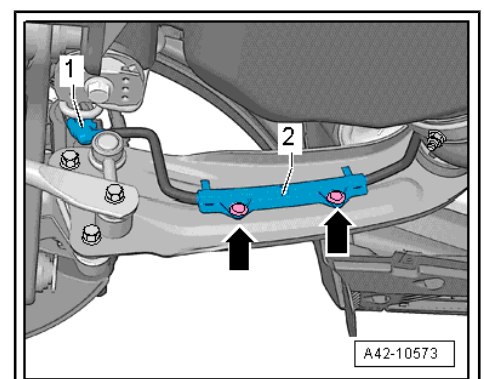
- ◆ Engine and gearbox jack - VAS 6931-



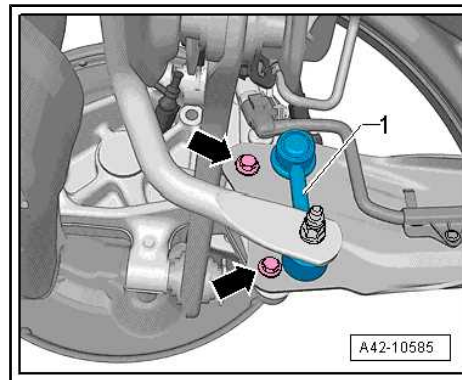
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Removing

- Remove coil spring ⇒ [page 171](#) .
- Unplug electrical connector -1- from electromechanical parking brake motor on brake caliper.
- Remove retainer -2- by pushing out inner pins of rivets -arrows-.

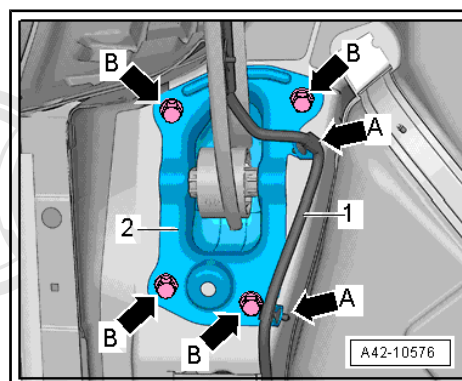


- Unbolt coupling rod -1- from trailing arm.
- Remove bolts -arrows-.
- Remove underbody trim ➤ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .



- Detach line -1- from mounting bracket -arrows A-.
- Mark installation position of mounting bracket -2- on body.
- Remove bolts -arrows B-.
- Take out trailing arm with mounting bracket.

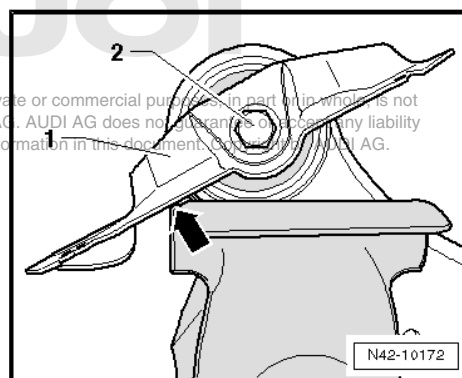
The mounting bracket must be detached from the trailing arm if the trailing arm is to be renewed.



The position of the mounting bracket must then be adjusted in relation to the trailing arm.

- Clamp trailing arm in vice so that mounting bracket -1- lies against vice -arrow-.
- Remove bolt -2-.

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Determining installation position of mounting bracket in relation to trailing arm

Dimension -a- is 57.5 ± 1 mm.

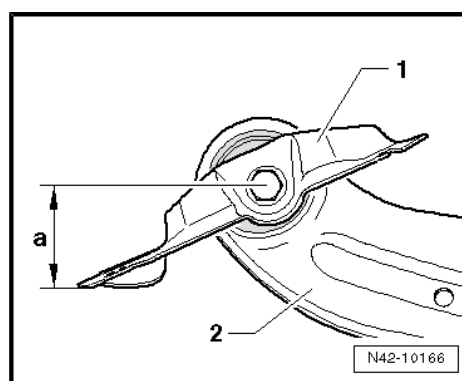
1 - Mounting bracket

2 - Trailing arm

- Tighten bolt when dimension -a- is set.

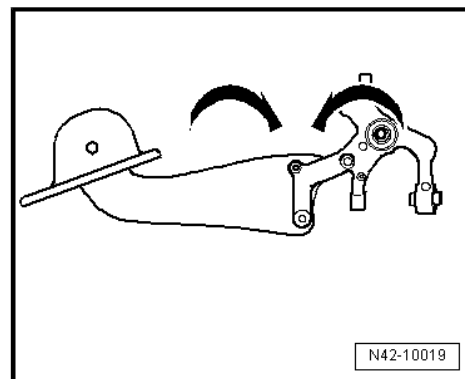
Installing

Installation is performed in reverse sequence; note the following:



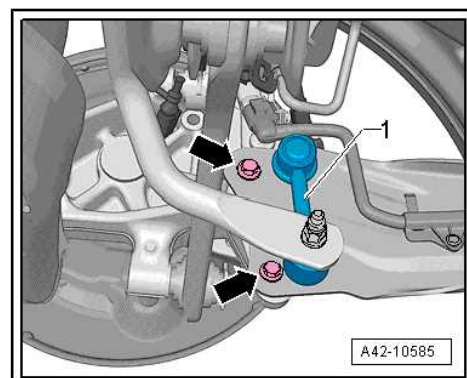
Installation position: Bolted connection between trailing arm and wheel bearing housing

Do not tighten bolts securing trailing arm to wheel bearing housing until all other suspension components (especially spring and shock absorber) on that side are fitted. The suspension must be in extended position before securing. The trailing arm and the wheel bearing housing will only then move into the required position -arrows-.

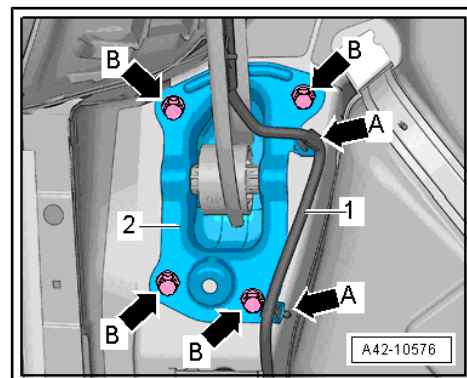


It is important to keep to the specified sequence for the following operations.

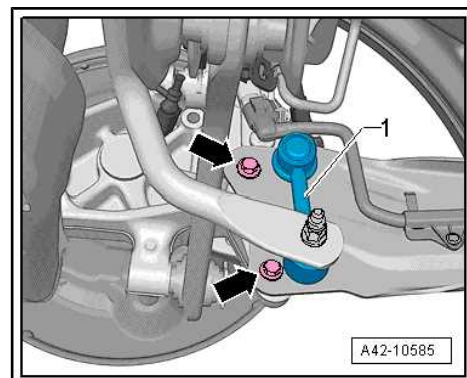
- Fit trailing arm and mounting bracket to wheel bearing housing with bolts -arrows- (do not tighten at this stage).
- Insert coupling rod -1- in trailing arm (do not tighten nut at this stage).
- Lift suspension with engine and gearbox jack - VAS 6931- and support - T10149- until mounting bracket makes contact with body.



- Tighten bolts -arrows B- on positions of old imprints.
- Secure line -1- on mounting bracket -arrow A-.
- Lower suspension with engine and gearbox jack - VAS 6931- and remove support - T10149- from wheel hub.
- Install coil spring ➤ [page 171](#) .



- Tighten trailing arm bolts -arrows- to torque (ensure that components are positioned as required) ➤ [page 199](#) .
- Tighten nut -1- securing coupling rod to trailing arm.

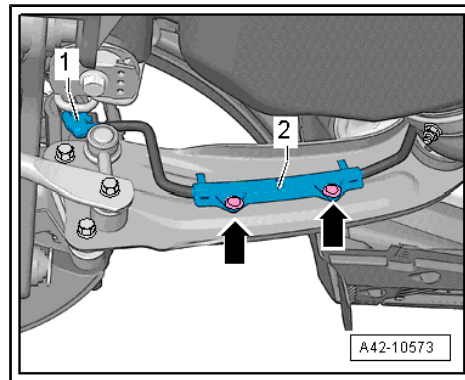


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- Install retainer -2- by pushing in inner pins of rivets -arrows-.
- Plug in electrical connector -1- at electromechanical parking brake motor on brake caliper.
- Check and adjust wheel alignment as required, see chart
⇒ [page 247](#) .

Tightening torques

- ◆ ⇒ ["1.1.1 Exploded view - subframe, front-wheel drive vehicles", page 127](#)
- ◆ ⇒ ["2.1 Exploded view - anti-roll bar", page 149](#)
- ◆ ⇒ ["4.1 Exploded view - suspension strut/shock absorber, spring", page 167](#)
- ◆ ⇒ ["5.1.1 Exploded view - wheel bearing, front-wheel drive vehicles", page 174](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .



5.5.2 Removing and installing trailing arm with mounting bracket, four-wheel drive vehicles

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



- ◆ Support - T10149-



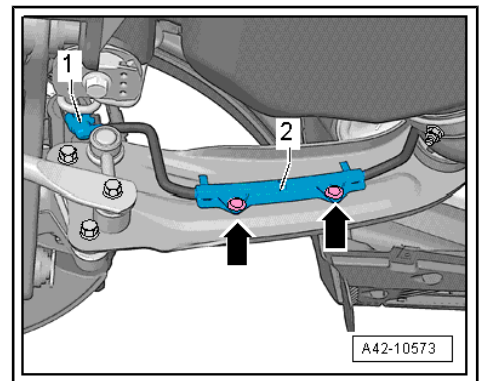
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◆ Engine and gearbox jack - VAS 6931-

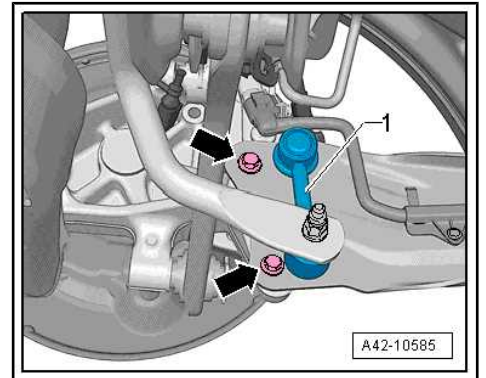


Removing

- Remove coil spring ⇒ [page 171](#) .
- Unplug electrical connector -1- from electromechanical parking brake motor on brake caliper.
- Remove retainer -2- by pushing out inner pins of rivets -arrows-.

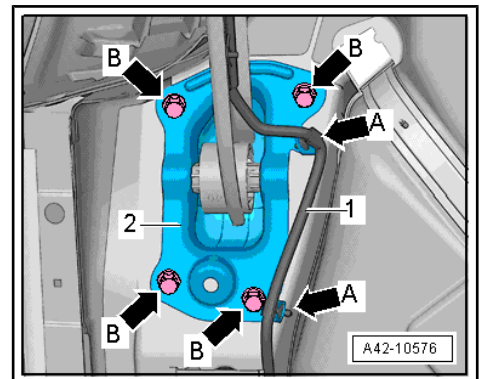


- Unbolt coupling rod -1- from trailing arm.
- Remove bolts -arrows-.
- Remove underbody trim ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .



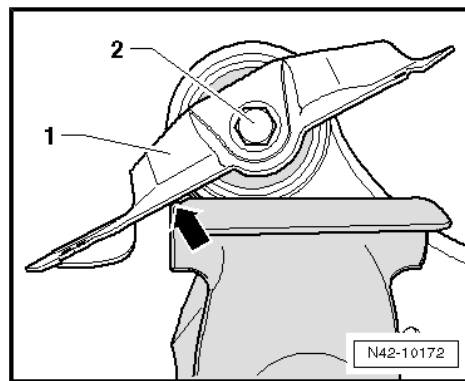
- Detach line -1- from mounting bracket -arrows A-.
- Mark installation position of mounting bracket -2- on body.
- Remove bolts -arrows B-.
- Take out trailing arm with mounting bracket.

The mounting bracket must be detached from the trailing arm if the trailing arm is to be renewed.



The position of the mounting bracket must then be adjusted in relation to the trailing arm.

- Clamp trailing arm in vice so that mounting bracket -1- lies against vice -arrow-.
- Remove bolt -2-.



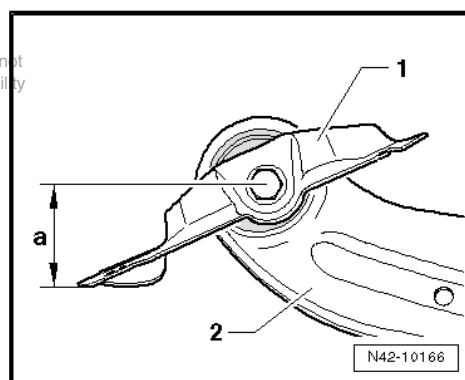
Determining installation position of mounting bracket in relation to trailing arm

Dimension **a** is 57.5 ± 1 mm.

1 - Mounting bracket

2 - Trailing arm

- Tighten bolt when dimension -a- is set.

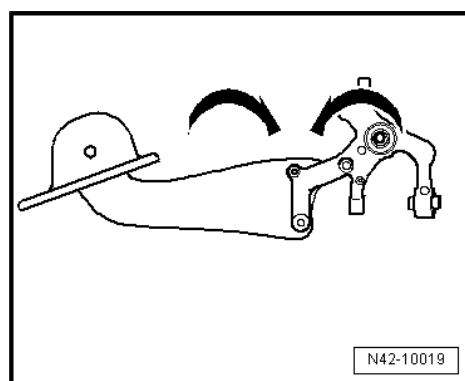


Installing

Installation is performed in reverse sequence; note the following:

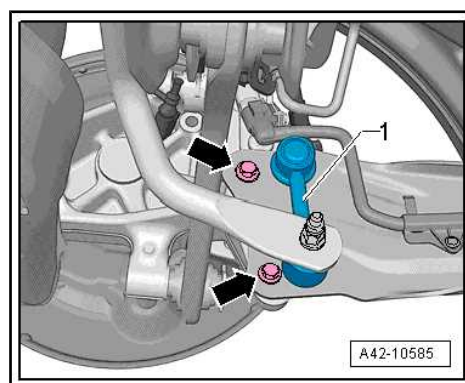
Installation position: Bolted connection between trailing arm and wheel bearing housing

Do not tighten bolts securing trailing arm to wheel bearing housing until all other suspension components (especially spring and shock absorber) on that side are fitted. The suspension must be in extended position before securing. The trailing arm and the wheel bearing housing will only then move into the required position -arrows-.

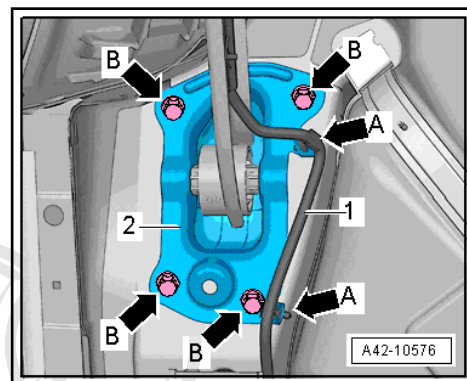


It is important to keep to the specified sequence for the following operations.

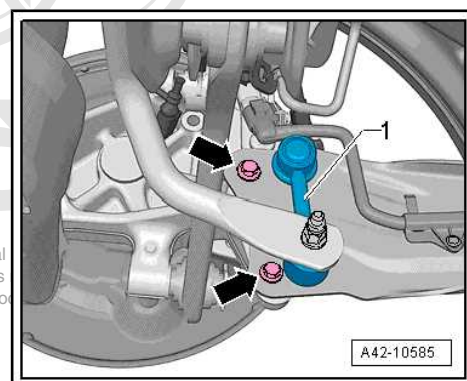
- Fit trailing arm and mounting bracket to wheel bearing housing with bolts -arrows- (do not tighten at this stage).
- Insert coupling rod -1- in trailing arm (do not tighten nut at this stage).
- Lift suspension with engine and gearbox jack - VAS 6931- and support - T10149- until mounting bracket makes contact with body.



- Tighten bolts -arrows B- on positions of old imprints.
- Lower suspension with engine and gearbox jack - VAS 6931- and remove support - T10149- from wheel hub.
- Install coil spring ⇒ [page 171](#) .



- Tighten trailing arm bolts -arrows- to torque (ensure that components are positioned as required) ⇒ [page 202](#) .
- Tighten nut -1- securing coupling rod to trailing arm.
- Install coil spring ⇒ [page 171](#) .
- Check and adjust wheel alignment as required, see chart ⇒ [page 247](#) .



Tightening torques

- ◆ ⇒ [“5.1.2 Exploded view - wheel bearing, four-wheel drive vehicles”, page 176](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .

5.6 Servicing trailing arm

⇒ [“5.6.1 Servicing trailing arm, front-wheel drive vehicles”, page 203](#)

⇒ [“5.6.2 Servicing trailing arm, four-wheel drive vehicles”, page 206](#)

5.6.1 Servicing trailing arm, front-wheel drive vehicles

Special tools and workshop equipment required

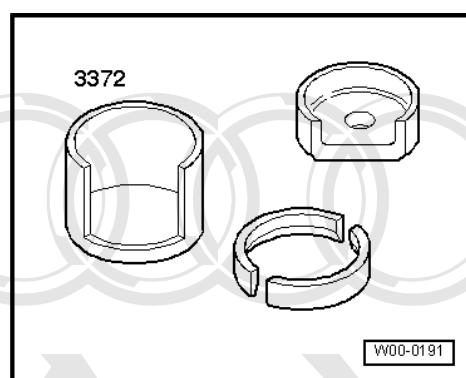
- ◆ Thrust plate - VW 401-



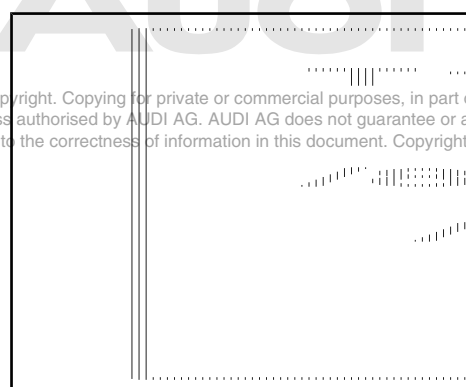
◆ Thrust plate - VW 402-



◆ Removal tool - 3372-



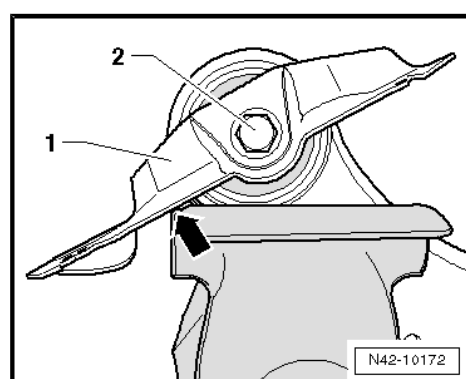
◆ Assembly tool - T10230-



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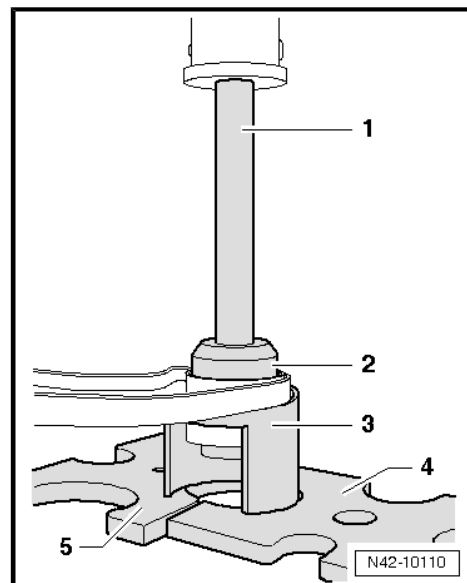
Pressing out bonded rubber bush

- Remove trailing arm with mounting bracket ⇒ [page 196](#) .
- Clamp trailing arm in a vice so that mounting bracket -1- lies against vice -arrow-.
- Remove bolt -2-.



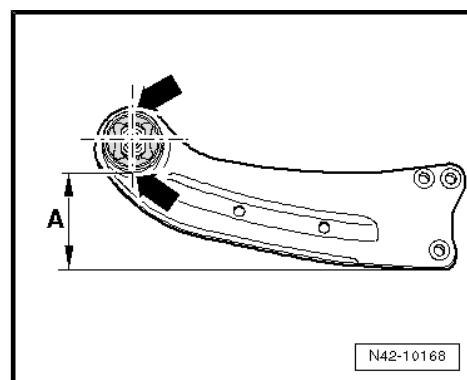
– Apply special tools as shown in illustration.

- 1 - Tube - T10230/3-
 - 2 - Thrust piece - T10230/10-
 - 3 - Removal tool - 3372-
 - 4 - Thrust plate - VW 401-
 - 5 - Thrust plate - VW 402-
- Press out bonded rubber bush.



Pressing in bonded rubber bush

- Position the trailing arm on a flat surface.
- Position trailing arm so that dimension -A- = 113 mm is obtained.
- In this position mark a vertical line (marking at upper and lower edges of bush -arrows-) through centre of trailing arm bush.

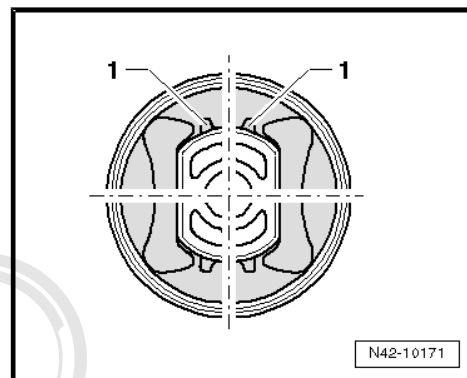


- Position bonded rubber bush on trailing arm so that marked vertical line lies between raised portions -1-.

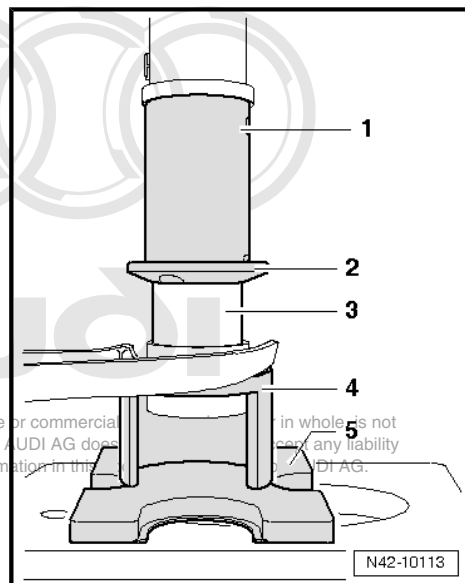


Note

It is very important that the bonded rubber bush is installed in the correct position relative to the bush of the trailing arm.



- Apply special tools as shown in illustration.
- 1 - Tube - T10230/5-
- 2 - Thrust plate - T10230/12- (chamfer must face bonded rubber bush)
- 3 - Bonded rubber bush
- 4 - Removal tool - 3372-
- 5 - Thrust plate - VW 402-
- Press in bonded rubber bush until flush.
- Attach mounting bracket to trailing arm ➔ [page 198](#) .
- Install trailing arm with mounting bracket ➔ [page 196](#)



5.6.2 Servicing trailing arm, four-wheel drive vehicles

Special tools and workshop equipment required

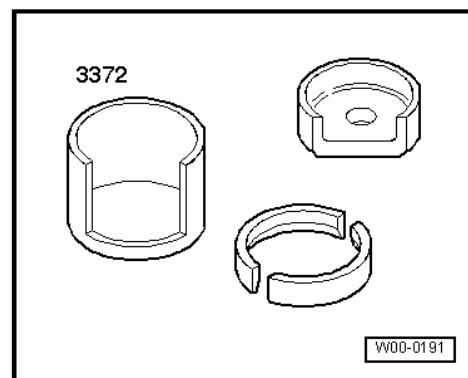
- ◆ Thrust plate - VW 401-



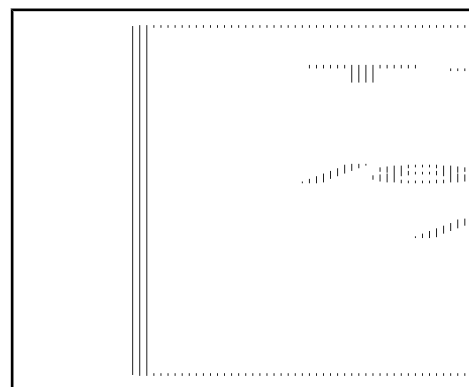
- ◆ Thrust plate - VW 402-



◆ Removal tool - 3372-

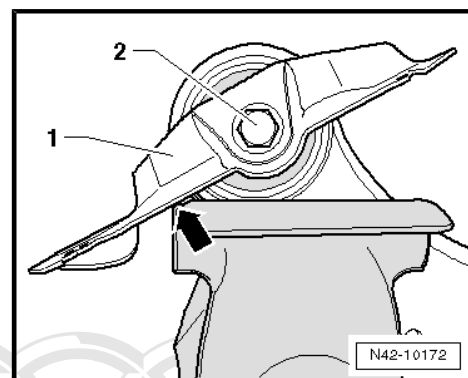


◆ Assembly tool - T10230-



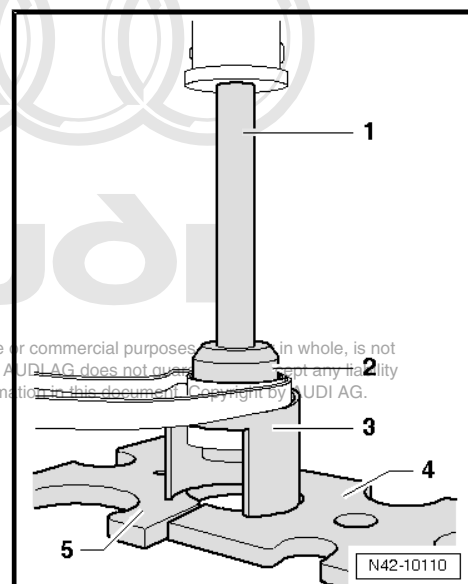
Pressing out bonded rubber bush

- Remove trailing arm with mounting bracket ➔ [page 196](#) .
- Clamp trailing arm in a vice so that mounting bracket -1- lies against vice -arrow-.



- Remove bolt -2-.
- Apply special tools as shown in illustration.

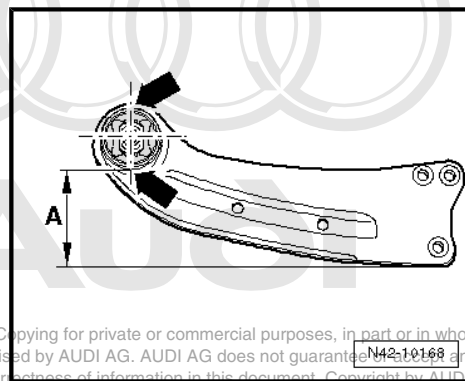
- 1 - Tube - T10230/3-
- 2 - Thrust piece - T10230/10-
- 3 - Removal tool - 3372-
- 4 - Thrust plate - VW 401-
- 5 - Thrust plate - VW 402-
- Press out bonded rubber bush.



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Pressing in bonded rubber bush

- Position the trailing arm on a flat surface.
- Position trailing arm so that dimension -A- = 113 mm is obtained.
- In this position mark a vertical line (marking at upper and lower edges of bush -arrows-) through centre of trailing arm bush.

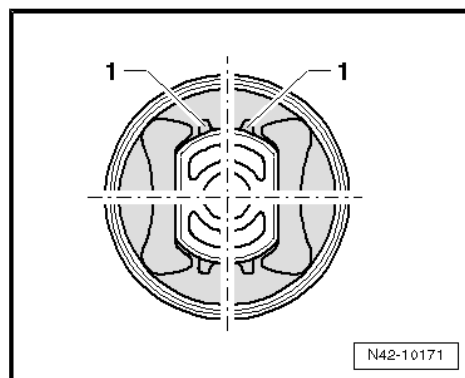


- Position bonded rubber bush on trailing arm so that marked vertical line lies between raised portions -1-.

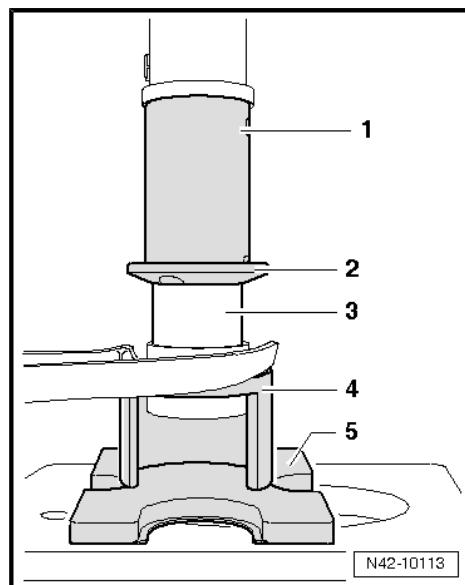


Note

It is very important that the bonded rubber bush is installed in the correct position relative to the bush of the trailing arm.



- Apply special tools as shown in illustration.
- 1 - Tube - T10230/5-
 - 2 - Thrust plate - T10230/12- (chamfer must face bonded rubber bush)
 - 3 - Bonded rubber bush
 - 4 - Removal tool - 3372-
 - 5 - Thrust plate - VW 402-
- Press in bonded rubber bush until flush.
 - Attach mounting bracket to trailing arm ➔ [page 198](#) .
 - Install trailing arm with mounting bracket ➔ [page 196](#) .



6 Drive shaft

⇒ [“6.1 Exploded view - drive shaft”, page 209](#)

⇒ [“6.2 Removing and installing drive shaft”, page 213](#)

⇒ [“6.3 Dismantling and assembling drive shaft”, page 215](#)

⇒ [“6.4 Loosening and tightening bolt securing drive shaft”, page 225](#)

⇒ [“6.5 Checking outer constant velocity joint”, page 226](#)

⇒ [“6.6 Checking inner constant velocity joint”, page 228](#)

6.1 Exploded view - drive shaft

⇒ [“6.1.1 Exploded view - drive shaft with 100 mm dia. inner constant velocity joint”, page 209](#)

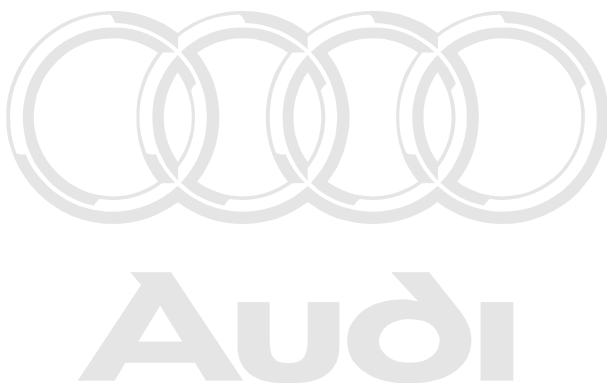
⇒ [“6.1.2 Exploded view - drive shaft with 82 mm dia. outer constant velocity joint”, page 212](#)

6.1.1 Exploded view - drive shaft with 100 mm dia. inner constant velocity joint



Note

Regrease joint when renewing boot.



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1 - Outer constant velocity joint

- ☐ Renew only as complete unit
- ☐ Checking ⇒ [page 226](#)
- ☐ Removing ⇒ [page 217](#)
- ☐ Greasing ⇒ see table ⇒ [page 213](#)
- ☐ Installing ⇒ [page 219](#)
- ☐ Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft

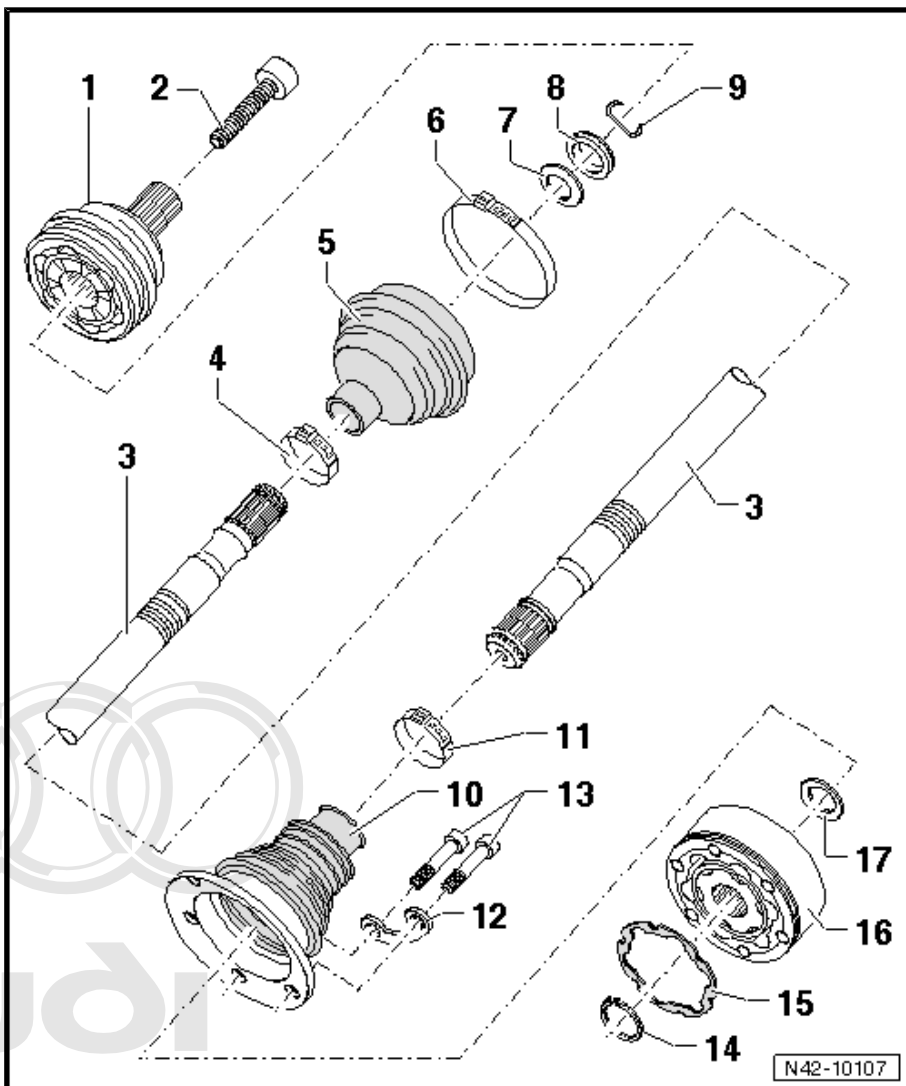
2 - Bolt

- ☐ Always renew if removed
- ☐ Loosening and tightening ⇒ [page 225](#)
- ☐ Before securing, clean the threads in the CV joint using a thread tap
- ☐ Bolt -WHT.005.437- / black = 200 Nm + turn 180° further
- ☐ Bolt -WHT.005.437.A- / silver = 200 Nm + turn 90° further

3 - Profile shaft

4 - Hose clip

- ☐ Renew
- ☐ Tightening ⇒ [page 221](#)



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or ⇒ [page 221](#)

5 - Boot for outer constant velocity joint

- ☐ Without vent hole
- ☐ Check for splits and chafing

6 - Hose clip

- ☐ Renew
- ☐ Tightening ⇒ [page 221](#) or ⇒ [page 221](#)

7 - Dished spring

- ☐ Installation position ⇒ [page 219](#)

8 - Spacer ring (plastic)

- ☐ Installation position ⇒ [page 219](#)

9 - Circlip

- ☐ Renew
- ☐ Insert in groove on shaft

10 - Boot for inner constant velocity joint

- ☐ Without vent hole
- ☐ Check for splits and chafing
- ☐ Drive off constant velocity joint with a drift
- ☐ Before fitting on constant velocity joint, coat sealing surface with D 454 300 A2

11 - Hose clip

- ☐ Renew
- ☐ Tightening ⇒ [page 221](#) or ⇒ [page 221](#)

12 - Lock plate

13 - Multi-point socket head bolt

- ☐ Always renew if removed
- ☐ Initial tightening torque: 10 Nm in diagonal sequence
- ☐ Tightening torque, M8: 40 Nm in diagonal sequence
- ☐ Tightening torque, M10: 70 Nm in diagonal sequence

14 - Circlip

- ☐ Renew
- ☐ Removing and installing with VW 161 A ⇒ [page 218](#)

15 - Gasket

- ☐ Adhesive surface on constant velocity joint must be free of oil and grease

16 - Inner constant velocity joint

- ☐ Renew only as complete unit
- ☐ Checking ⇒ [page 228](#)
- ☐ Pressing off ⇒ [page 218](#)
- ☐ Greasing ⇒ see table ⇒ [page 213](#)
- ☐ Pressing on ⇒ [page 220](#)
- ☐ Grease splines on drive shaft lightly with grease used in joint when fitting joint onto drive shaft

17 - Dished spring

- ☐ Installation position ⇒ [page 219](#)

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6.1.2 Exploded view - drive shaft with 82 mm dia. outer constant velocity joint

1 - Outer constant velocity joint

- ☐ Renew only as complete unit
- ☐ Removing ⇒ [page 223](#)
- ☐ Installing: drive onto shaft as far as stop using a plastic head hammer
- ☐ Distribute grease filling evenly in joint
- ☐ Checking ⇒ [page 226](#)

2 - Bolt

- ☐ Always renew if removed
- ☐ Before securing, clean the threads in the CV joint using a thread tap
- ☐ Loosening and tightening ⇒ [page 225](#)
- ☐ Bolt -WHT.005.437- / black = 200 Nm + turn 180° further
- ☐ Bolt -WHT.005.437.A- / silver = 200 Nm + turn 90° further

3 - Drive shaft

- ☐ For correct version refer to ⇒ Electronic parts catalogue

4 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 225](#)

5 - Boot

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

6 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 225](#)

7 - Dished spring

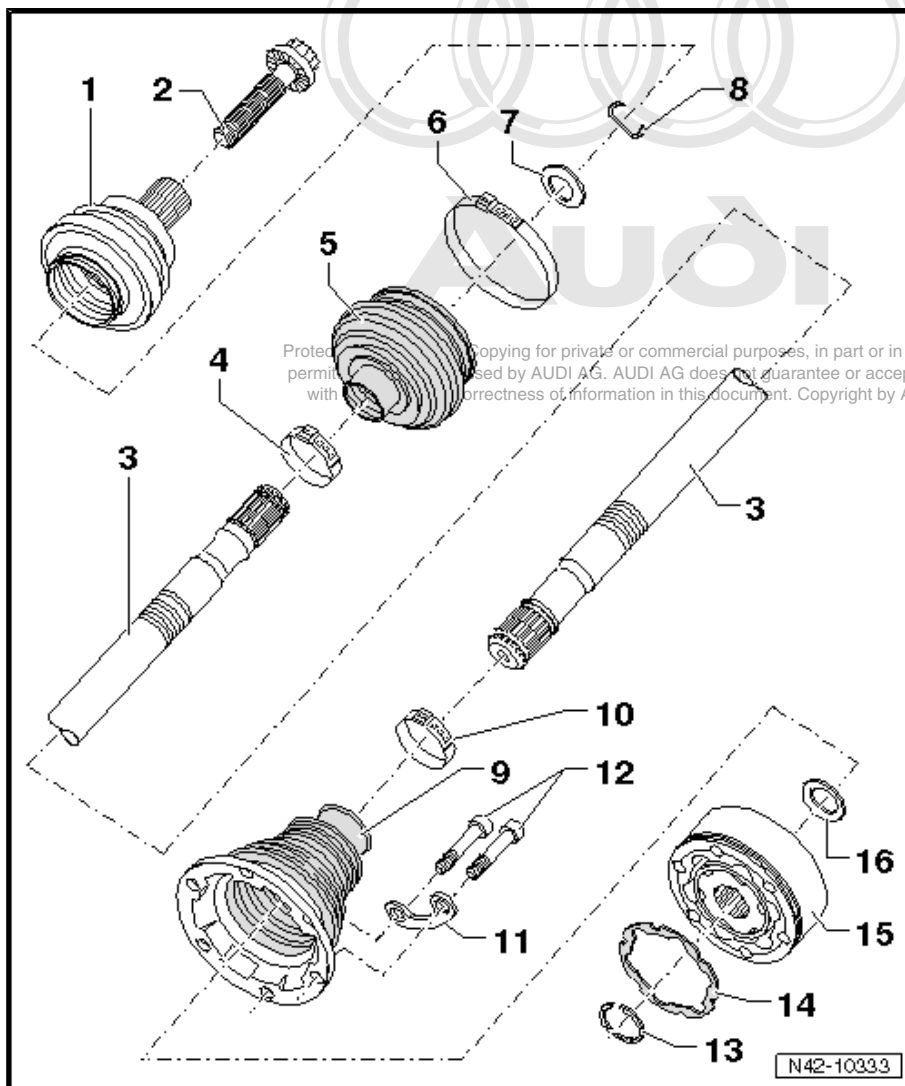
- ☐ With internal splines
- ☐ Installation position ⇒ [page 224](#)

8 - Circlip

- ☐ Always renew if removed
- ☐ Insert in groove on shaft

9 - Boot for constant velocity joint

- ☐ Material: Hytrel (polyelastomer)
- ☐ Without vent hole
- ☐ Check for splits and chafing
- ☐ Drive off constant velocity joint with a drift



- ☐ Before fitting on constant velocity joint, coat sealing surface with -D 454 300 A2-

10 - Hose clip

- ☐ Always renew if removed
- ☐ Tightening ⇒ [page 225](#)

11 - Lock plate

12 - Multi-point socket head bolt

- ☐ Always renew if removed
- ☐ First pre-tighten in diagonal sequence to 10 Nm, then tighten in diagonal sequence to final specified torque
- ☐ Tightening torque, M8: 40 Nm in diagonal sequence
- ☐ Tightening torque, M10: 70 Nm in diagonal sequence

13 - Circlip

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

14 - Gasket

- ☐ Always renew if removed
- ☐ Adhesive surface on constant velocity joint must be free of oil and grease

15 - Inner constant velocity joint

- ☐ Renew only as complete unit
- ☐ Distribute grease filling evenly in joint
- ☐ Pressing off ⇒ [page 224](#)
- ☐ Pressing on ⇒ [page 224](#)
- ☐ Checking ⇒ [page 228](#)

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16 - Dished spring

- ☐ With internal splines
- ☐ Installation position ⇒ [page 224](#)

Grease filling of joints

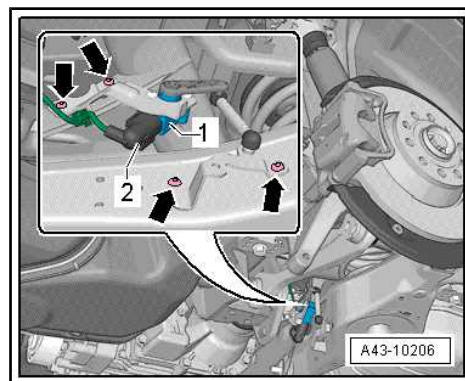
Grease	Outer joint Ø	Inner joint Ø
See ⇒ Electronic parts catalogue	82 mm	100 mm
Total quantity	45 g	110 g
In joint	25 g	50 g
In boot	20 g	60 g

6.2 Removing and installing drive shaft

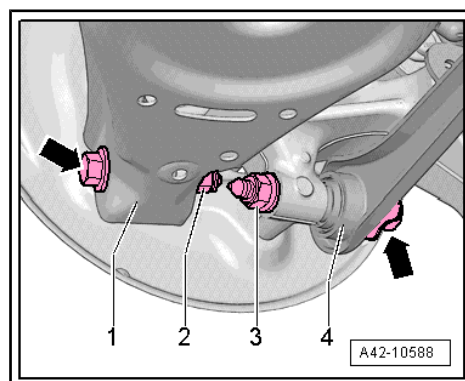
Removing

- Measure distance from centre of wheel to lower edge of wheel housing ⇒ [page 11](#) .
- Loosen bolt securing drive shaft ⇒ [page 225](#) .
- Remove coil spring ⇒ [page 171](#) .

- On vehicles with vehicle level sender , remove bolts -bottom arrows-.



- Remove bolts -arrows- for lower suspension link -1- and track rod -4- from wheel bearing housing.



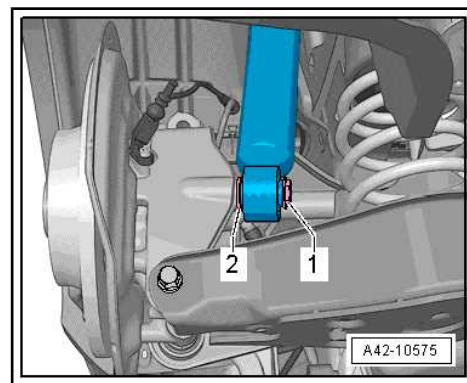
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- Unscrew bolt -1- and remove together with washer -2-.
- Detach drive shaft from final drive.
- Pivot wheel bearing housing outwards and pull drive shaft out of wheel bearing splines.
- Take out drive shaft.

Installing

Installation is performed in reverse sequence; note the following:

- The bolted connections on the wheel bearing housing may only be tightened when the original distance between the wheel hub centre and the lower edge of the wheel housing (as measured before assembly) has been obtained ⇒ [page 11](#) .
- Before fitting the outer joint in the wheel hub, apply a thin coat of assembly paste to the splines on the outer joint ⇒ Electronic parts catalogue .
- Install coil spring ⇒ [page 171](#) .
- On vehicles with electronic damping control, perform function “Re-adapt reference (default) position” using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



Tightening torques

- ◆ ⇒ [“1.1.2 Exploded view - subframe, four-wheel drive vehicles”, page 128](#)
- ◆ ⇒ [“4.1 Exploded view - suspension strut/shock absorber, spring”, page 167](#)
- ◆ Drive shaft flange joint at rear final drive
⇒ [“6.1 Exploded view - drive shaft”, page 209](#)
- ◆ ⇒ [“6.4 Loosening and tightening bolt securing drive shaft”, page 225](#)

6.3 Dismantling and assembling drive shaft

⇒ [“6.3.1 Dismantling and assembling drive shaft with 100 mm dia. inner constant velocity joint”, page 215](#)

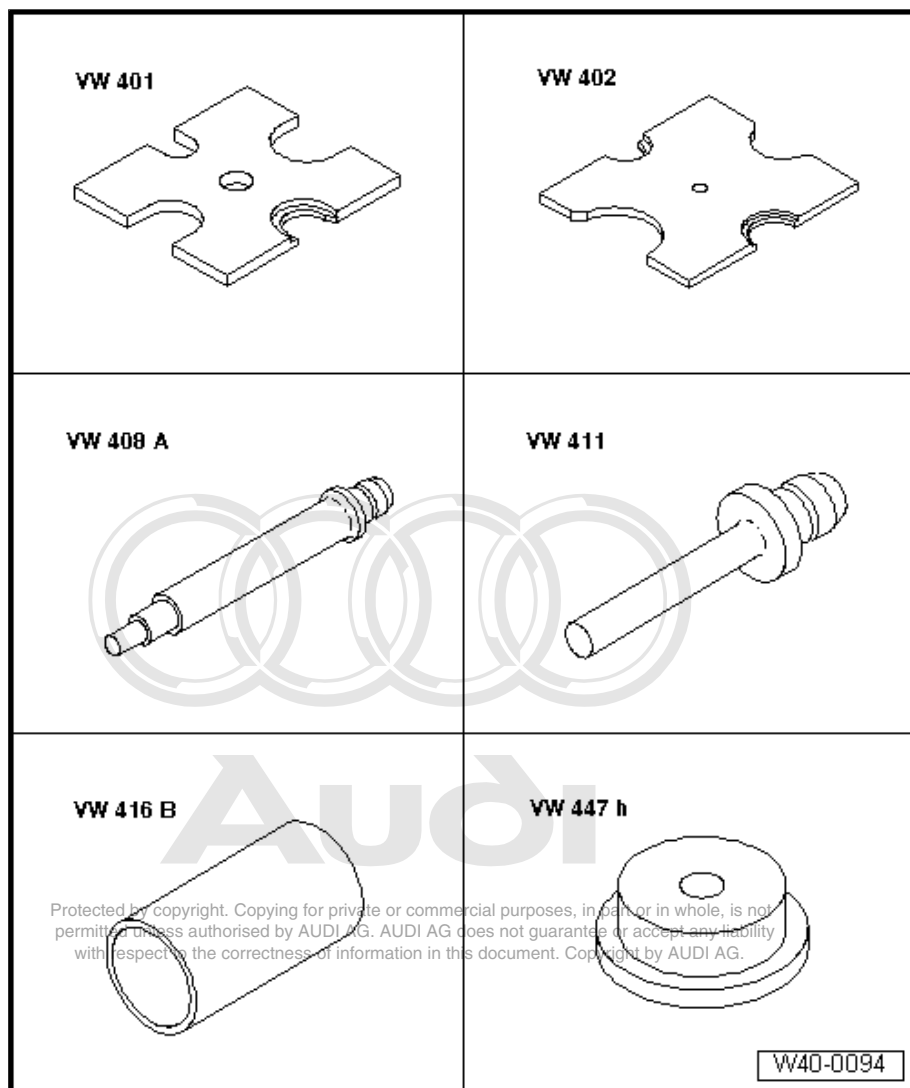
⇒ [“6.3.2 Dismantling and assembling drive shaft with 82 mm dia. outer constant velocity joint”, page 221](#)

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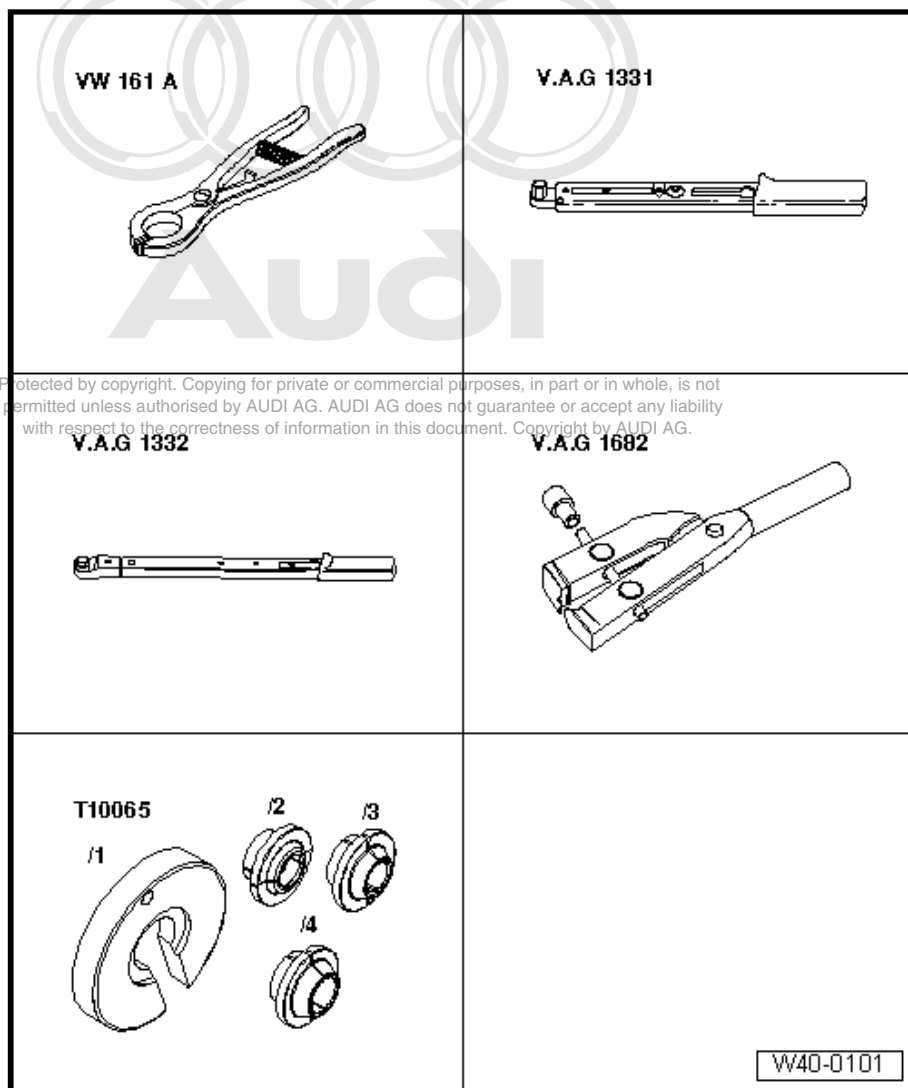
6.3.1 Dismantling and assembling drive shaft with 100 mm dia. inner constant velocity joint

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-

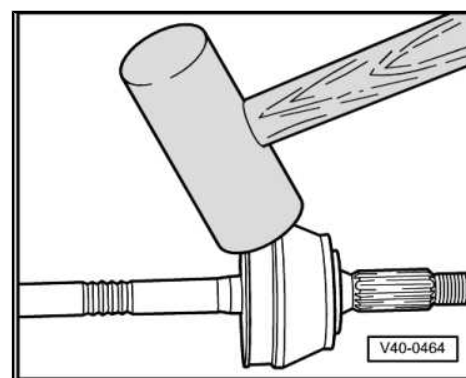


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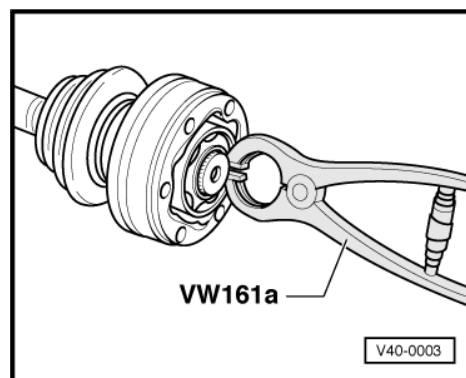
Dismantling constant velocity joint

Removing outer constant velocity joint

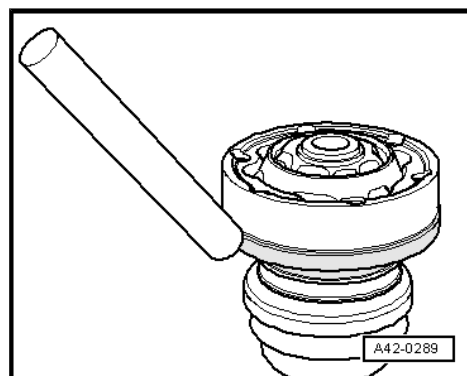
- Drive joint off drive shaft with a firm blow from an aluminium hammer.



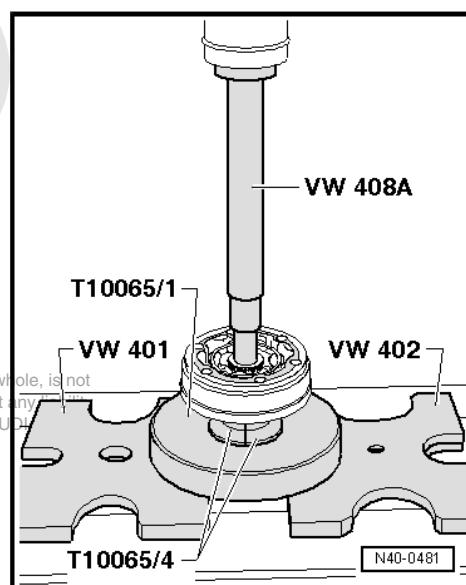
Removing and installing circlip



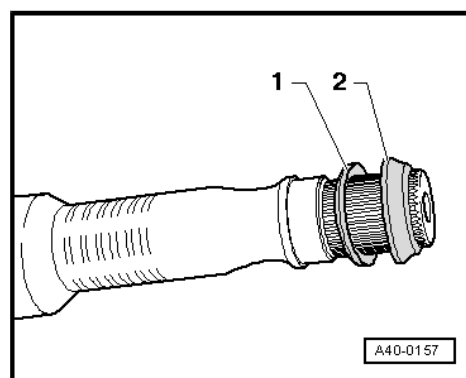
Knocking off cap (attached to boot) using a brass or copper drift



Pressing off inner constant velocity joint

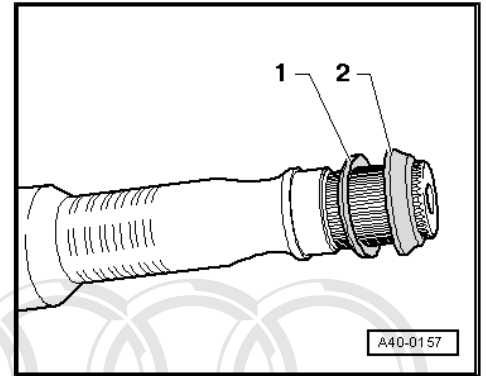


Assembling constant velocity joint



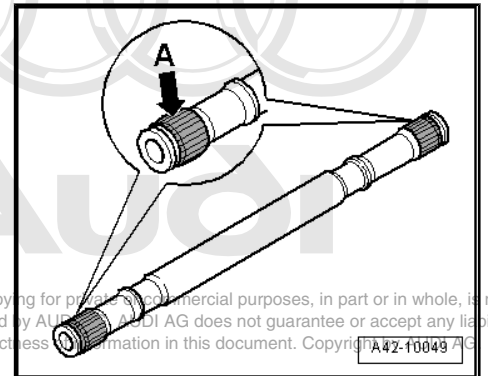
Installation position of dished spring and thrust washer at outer joint

- 1 - Dished spring
- 2 - Thrust washer



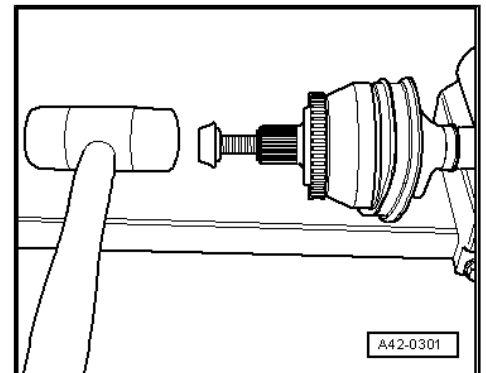
Installing outer constant velocity joint with bolt

- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint body onto drive shaft.

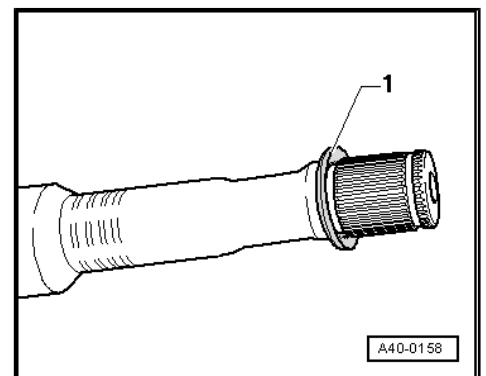


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- Screw old bolt into CV joint as shown.
- Use plastic-headed hammer to drive joint onto shaft until circlip engages.

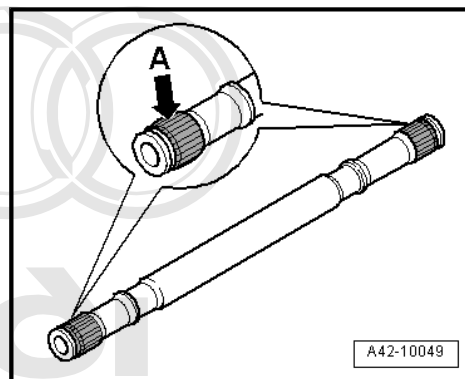


Installation position of dished spring at inner joint



Pressing on inner constant velocity joint

- Grease splines -A- on drive shaft lightly with grease used in joint before fitting joint body onto drive shaft.



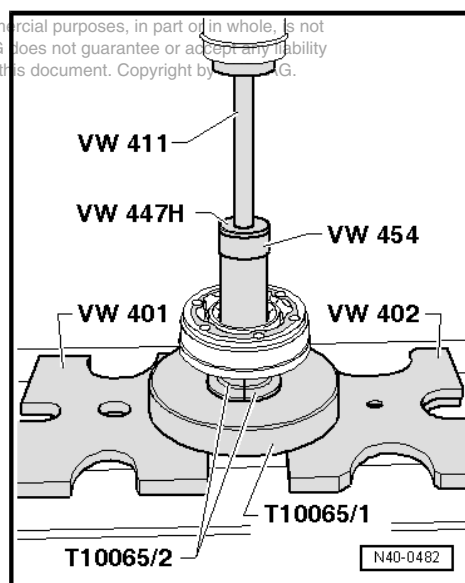
- Apply special tools as shown in illustration.

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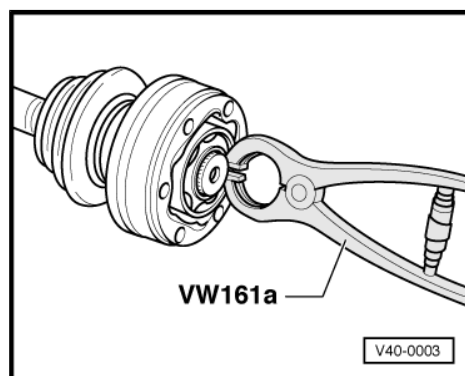


Note

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



- Fit circlip.



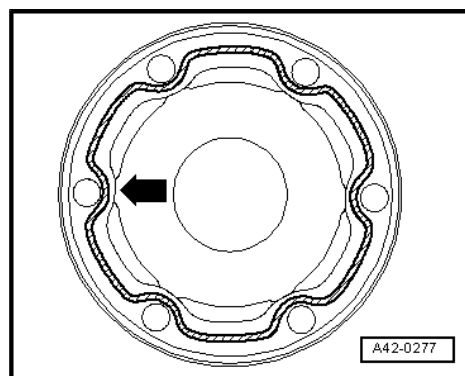
- Apply sealant -hatched area- on clean inner surface of cap on CV joint boot. Sealant bead: continuous, 2...3 mm Ø. Route around inside of holes -arrow-.

- Use sealant as listed in ⇒ Electronic parts catalogue .

- Push joint boot onto drive shaft.

Drive shaft, boot and contact surface of cap must be free from grease!

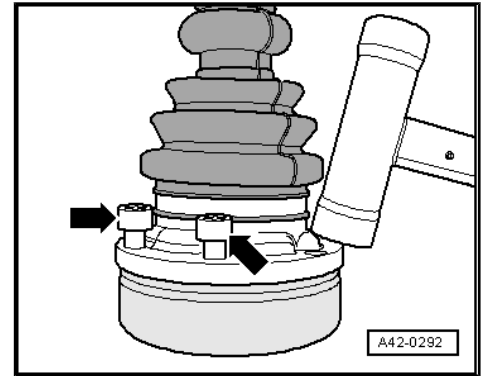
Take care not to damage sealant bead.



- Using bolts -arrows-, align CV joint boot with cap in relation to bolt holes.

The alignment must be very accurate, because no further alignment is possible once the part has been hammered on.

- Drive on CV joint boot with cap using a plastic hammer.
- Remove surplus sealant immediately as it is pressed out.



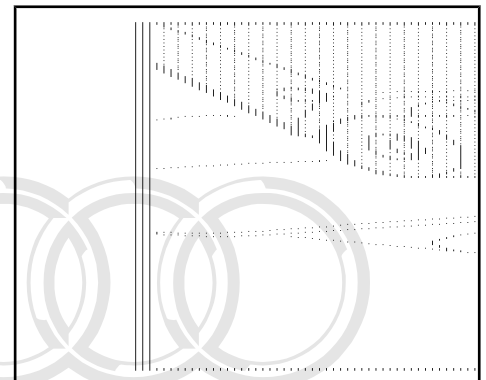
Tightening stainless-steel hose clips for Hytrel boots

- 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 -A- with torque wrench (take care to keep clamp tensioner straight).
- ♦ Tightening torque: 20 Nm



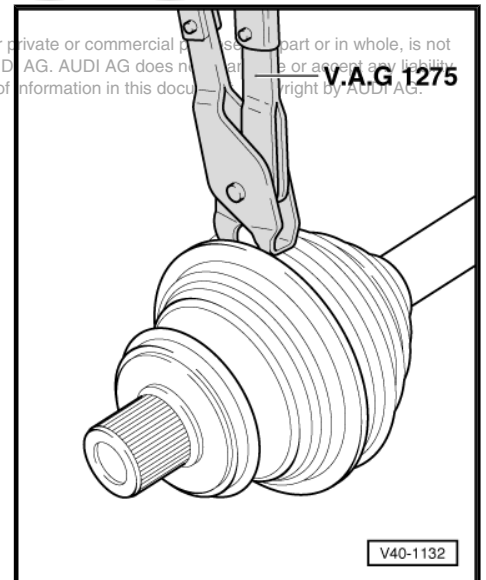
Note

- ♦ *Make sure thread of spindle 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 the specified tightening torque is applied.*



Tightening hose clip for rubber boot

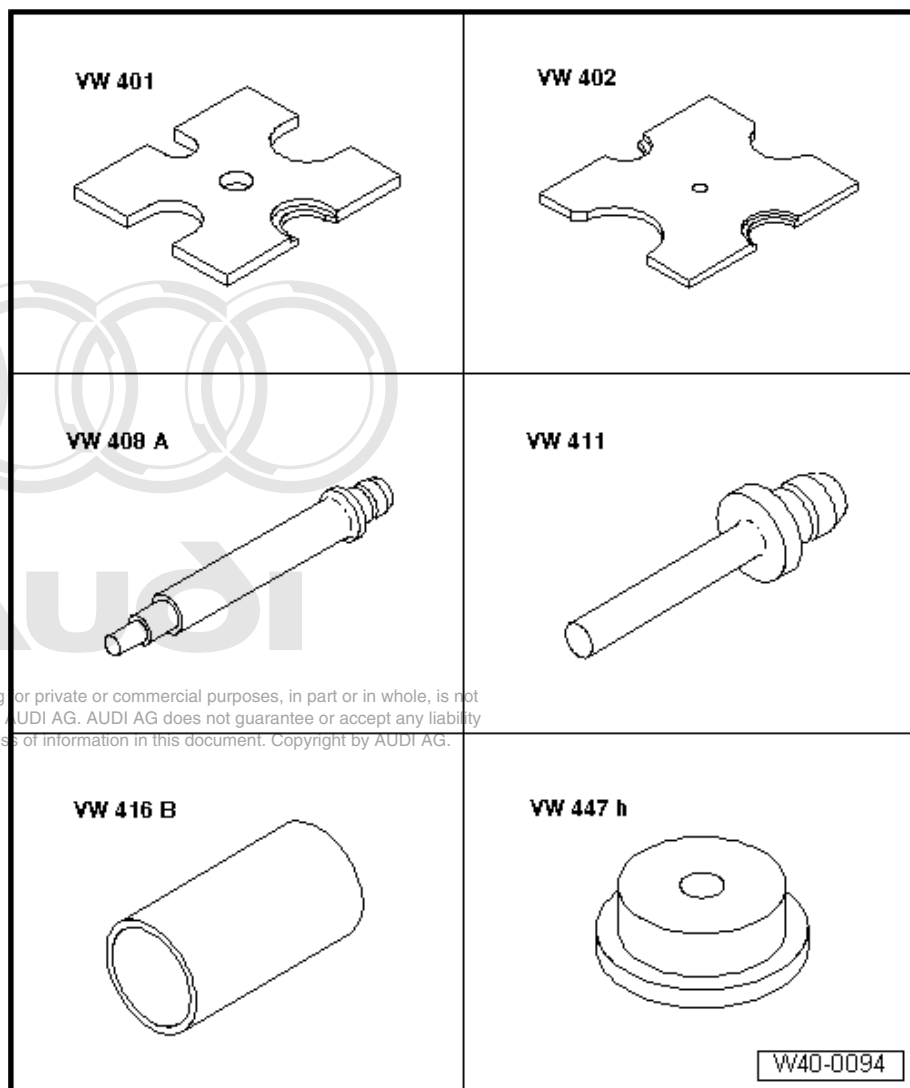
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6.3.2 Dismantling and assembling drive shaft with 82 mm dia. outer constant velocity joint

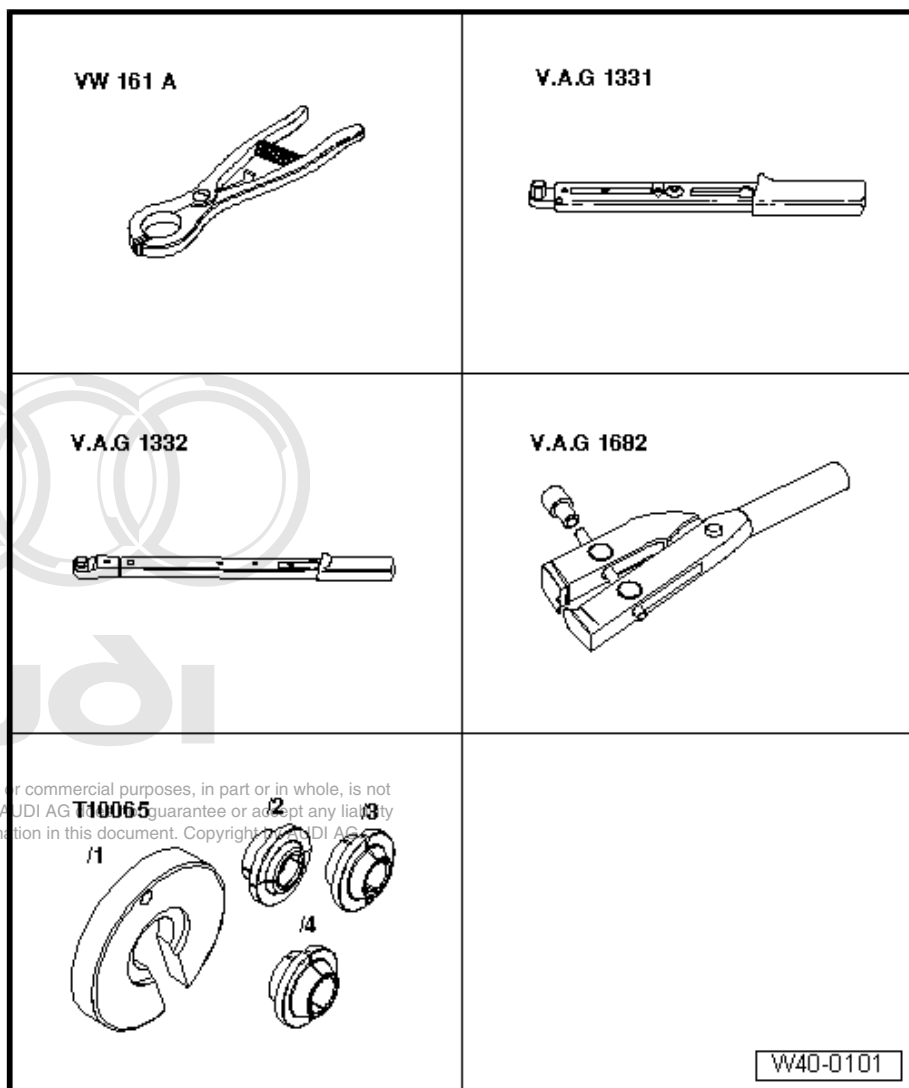
Special tools and workshop equipment required

- ◆ 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-



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- ◆ 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-



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Dismantling

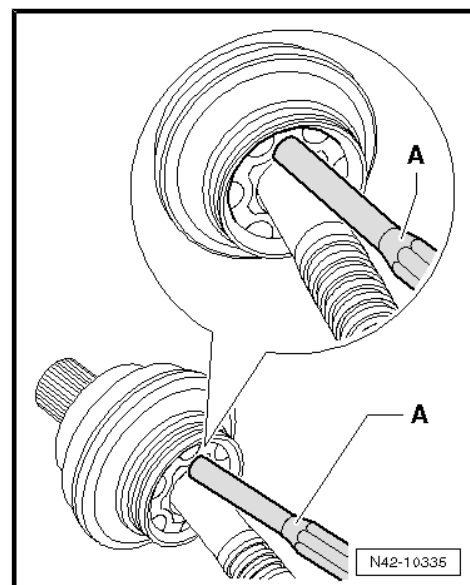
Driving off outer constant velocity joint

- Clamp drive shaft in vice using protective jaw covers.
- Fold back rubber boot.
- Drive constant velocity joint off drive shaft using a drift -A-.

The drift must be applied exactly on the ball hub of the constant velocity joint.

Installing joint

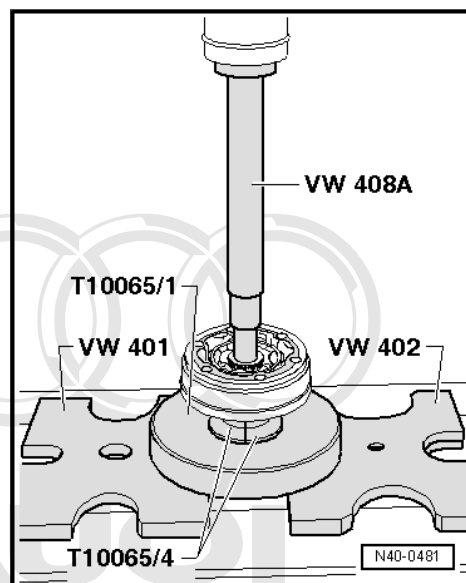
- Knock joint onto shaft with plastic hammer until circlip engages.



Pressing off inner constant velocity joint

- Use a drift to press boot off joint.
- Remove circlip.
- Detach both hose clips and slide boot towards outer joint.

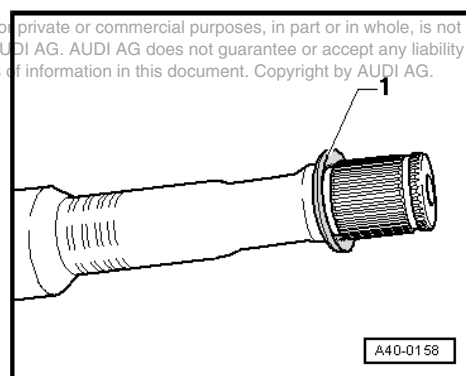
Assembling



Installation position of dished spring at inner and outer joint

1 - Dished spring

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

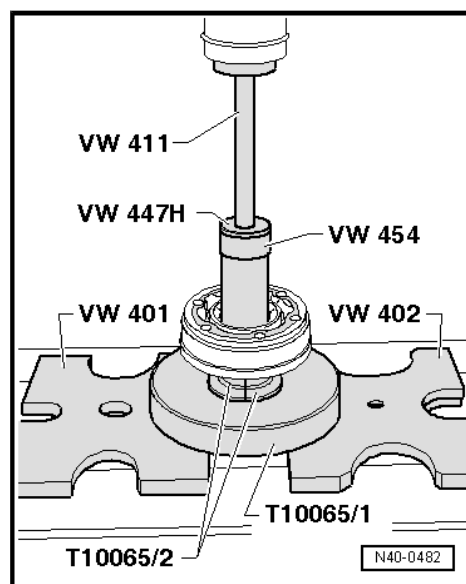


Pressing on inner constant velocity joint



Note

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



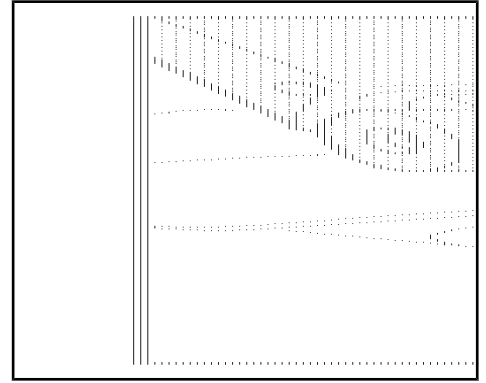
Tightening hose clip on outer joint

- Apply clamp tensioner - V.A.G 1682- as illustrated. 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 tool straight).



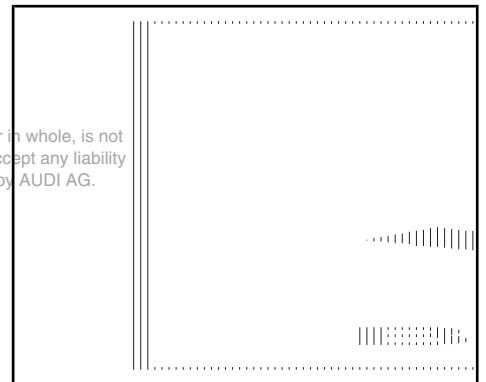
Note

- ◆ 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: 25 Nm.
- ◆ Use torque wrench -C- with 5 ... 50 Nm adjustment range (e.g. torque wrench - V.A.G 1331-).
- ◆ Ensure that the thread of spindle -A- is not tight. If necessary lubricate with MOS 2 grease.
- ◆ If the thread is stiff (e.g. due to dirt), the required clamping force will not be attained at the hose clip when the specified tightening torque is applied.



Tightening hose clip at small diameter of boot

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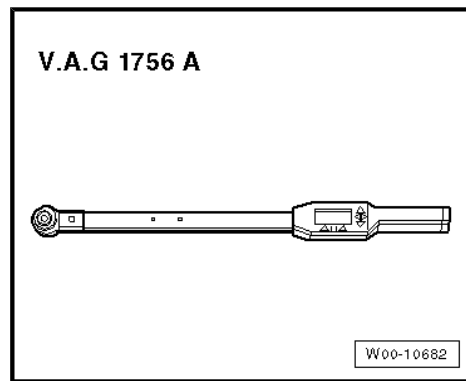
6.4 Loosening and tightening bolt securing drive shaft

Special tools and workshop equipment required

- ◆ Socket AF 24 mm - T10361A-



◆ Angle wrench - V.A.G 1756 A-



Wheel bearings must not be subjected to load after loosening bolt securing drive shaft at wheel hub.

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

◆ Procedure for slackening bolt

Do not attempt to move the vehicle without the drive shafts fitted; this would result in wheel bearing damage. If the vehicle does have to be moved, always note the following points:

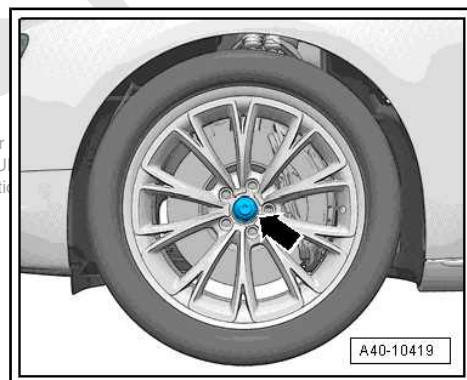
- Fit an outer joint in place of the drive shaft.
- Tighten the outer joint to 200 Nm.

Loosening bolt

- To avoid damage to wheel bearing, slacken off bolt no further than 90° with vehicle still standing on its wheels, using socket AF 24 mm - T10361A- .
- Raise vehicle so that wheels are off the ground.
- Have a second mechanic press the brake pedal.
- Remove bolt -arrow-.

Tightening bolt

- Clean the threads in the CV joint using a thread tap.
- Renew bolt.



Note

The wheels must not be in contact with the ground when initially tightening the drive shaft bolt; otherwise the wheel bearing can be damaged.

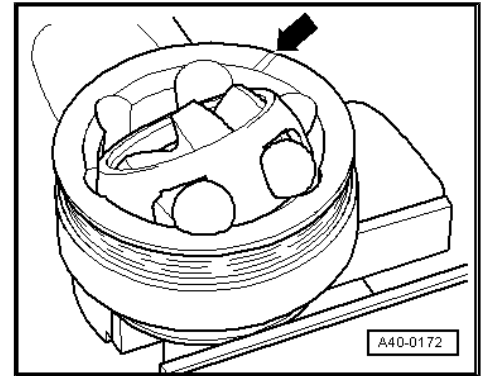
- Have a second mechanic press the brake pedal.
- Tighten bolt to 200 Nm.
- Lower vehicle onto its wheels.
- Turn bolt -WHT.005.437- / black 180° further.
- Turn bolt -WHT.005.437.A- / silver 90° further.

6.5 Checking outer constant velocity joint

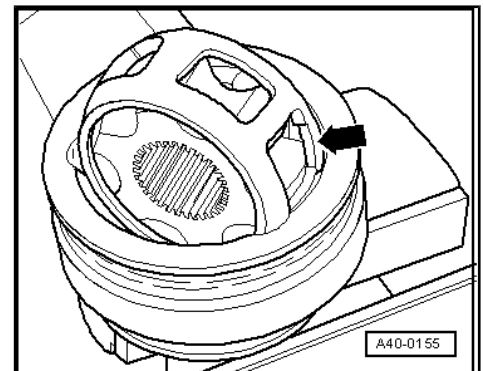
The joint should be dismantled to renew dirty grease or for checking the balls and ball races for wear and damage.

Removing

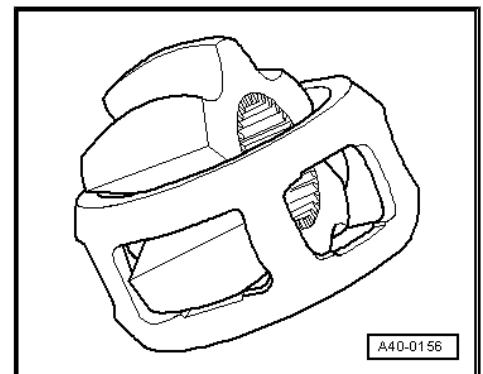
- Before dismantling, mark position of ball hub in relation to ball cage and joint body with an electric scribe or oil stone -arrow-.
- Swivel ball hub and ball cage and take out balls one after the other.



- 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.



Note

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

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Installing

Installation is performed in reverse sequence; note the following:

- Pack required amount of grease into joint body (check table)
⇒ [page 213](#).
- 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.
- Fit new circlip in shaft.
- Distribute remaining grease in boot.

6.6 Checking inner constant velocity joint

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



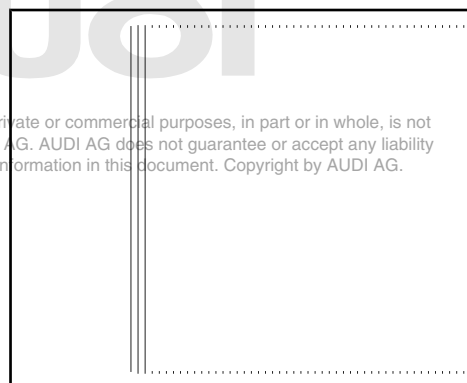
Note

Ball hub and joint body are paired. Mark position in relation to each other with a waterproof felt-tip pen prior to removal.

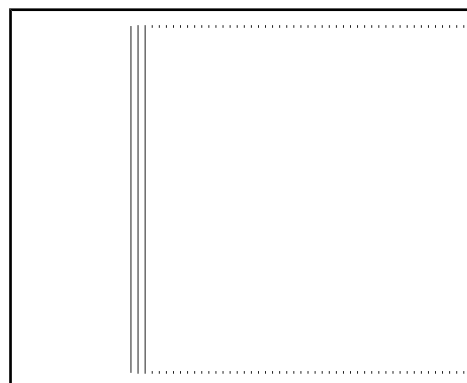
Removing

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

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- Align ball hub with cage as shown -arrows- and pivot hub out of cage.
- Check joint, ball hub, ball cage and balls for pitting and signs of seizure.



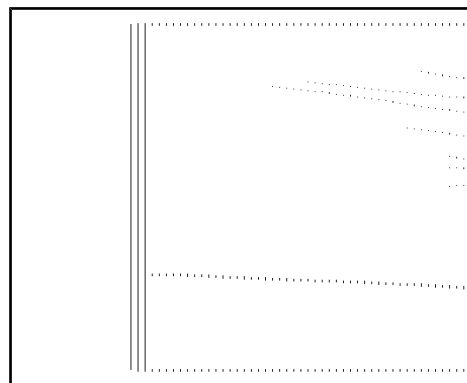
Note

Excessive backlash in the joint will cause knocking or jolts under load change. In such cases the joint must be renewed. Polished areas and visible tracks in the ball races are not a reason for renewing the joint.

Installing

Installation is performed in reverse sequence; note the following:

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

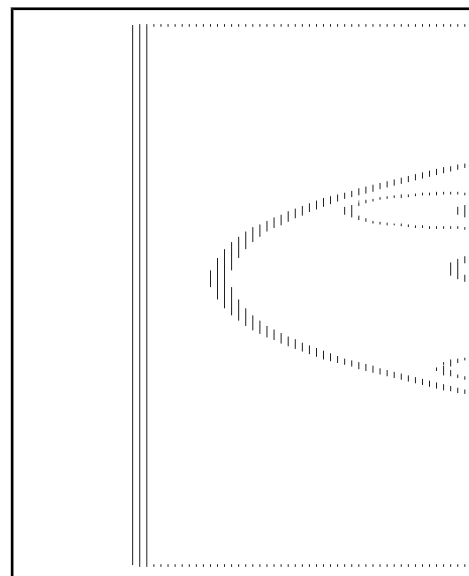
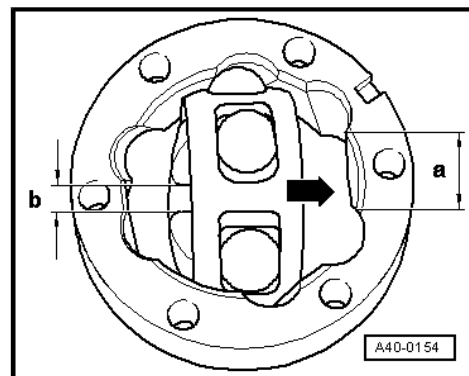




Note

- ◆ *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.*
- ◆ *Chamfer on internal diameter of ball hub (splines) must face large diameter of joint body.*
- ◆ *On installation, also use felt-tip pen mark made on removal as a guide.*

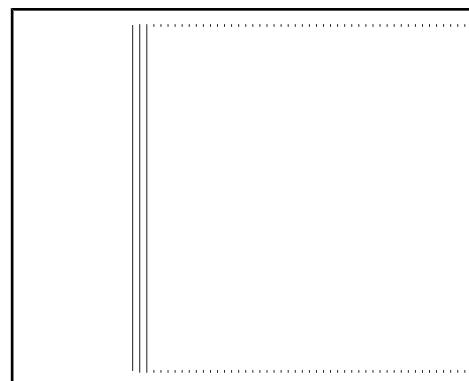
- Swivel the hub into the joint body; at the same time the hub must be swivelled out of the cage -arrows- far enough to allow the balls to fit into the ball races.



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

Checking function of constant velocity joint:

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



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43 – Self-levelling suspension

1 Electronic damping control

⇒ [“1.1 Overview of fitting locations - electronic damping control”, page 230](#)

⇒ [“1.2 Removing and installing electronically controlled damping control unit J250”, page 231](#)

⇒ [“1.3 Removing and installing front body acceleration senders G341 / G342”, page 232](#)

⇒ [“1.4 Removing and installing rear body acceleration sender G343”, page 235](#)

1.1 Overview of fitting locations - electronic damping control



Note

It is not permissible to interchange the body acceleration senders.

1 - Front right body acceleration sender - G342-

- ❑ Removing and installing
⇒ [page 232](#)

2 - Switch module for driving mode selection - E592-

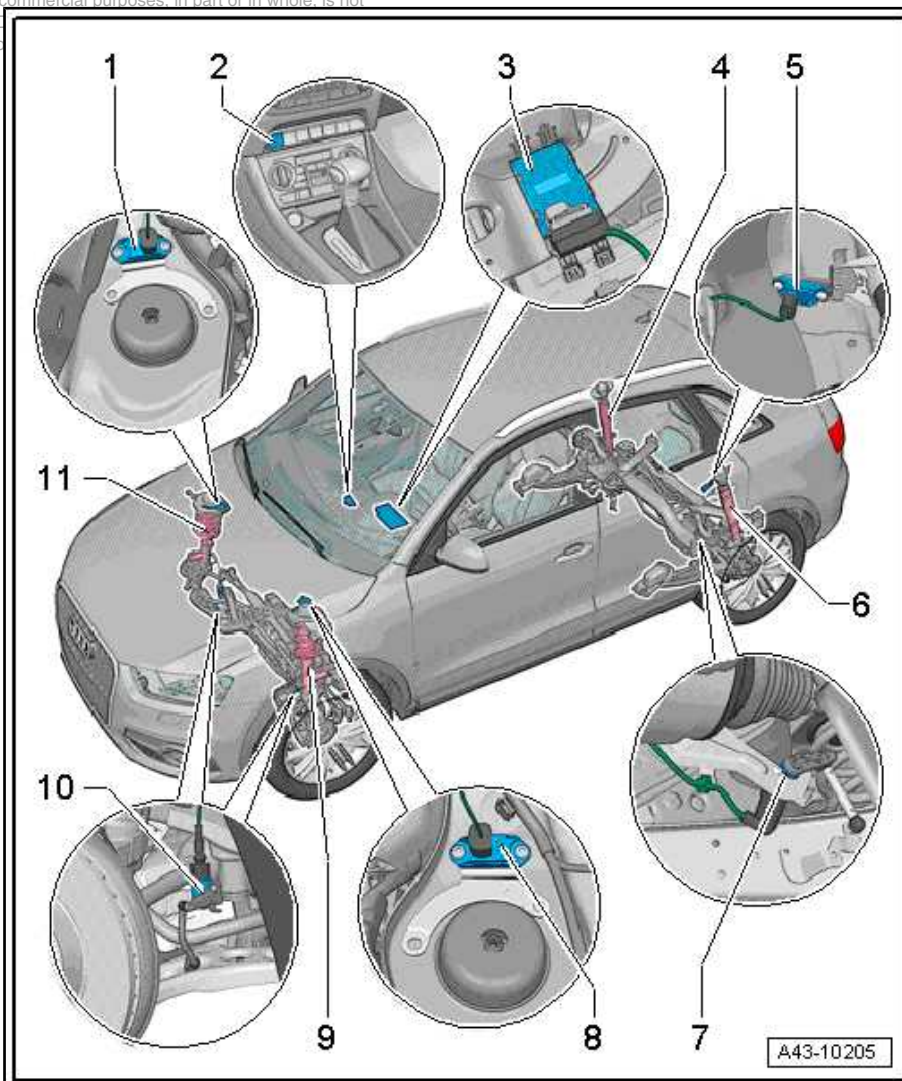
- ❑ Fitting location: switch module for driving mode selection - E592- is fitted in switch unit in centre console

3 - Electronically controlled damping control unit - J250-

- ❑ Removing and installing
⇒ [page 231](#)
- ❑ Fitting location: electronically controlled damping control unit - J250- is located under front right seat
- ❑ If the electronically controlled damping control unit - J250- is renewed, the basic setting must be performed for the electronic damping control ⇒ Vehicle diagnostic tester.

4 - Shock absorber with rear right shock absorber damper adjustment valve - N339-

- ❑ Removing and installing shock absorber
⇒ [page 168](#)
- ❑ Servicing shock absorber
⇒ [page 169](#)



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5 - Rear body acceleration sender - G343-

- ❑ Removing and installing ⇒ [page 235](#)

6 - Shock absorber with rear left shock absorber damper adjustment valve - N338-

- ❑ Removing and installing shock absorber ⇒ [page 168](#)
- ❑ Servicing shock absorber ⇒ [page 169](#)

7 - Rear left vehicle level sender - G76-

- ❑ Removing and installing ⇒ [page 239](#)

8 - Front left body acceleration sender - G341-

- ❑ Removing and installing ⇒ [page 232](#)

9 - Shock absorber with front left shock absorber damper adjustment valve - N336-

- ❑ Removing and installing suspension strut ⇒ [page 49](#)
- ❑ Servicing suspension strut ⇒ [page 54](#)

10 - Front left vehicle level sender - G78-

- ❑ Removing and installing ⇒ [page 238](#)

11 - Shock absorber with front right shock absorber damper adjustment valve - N337-

- ❑ Removing and installing suspension strut ⇒ [page 49](#)
- ❑ Servicing suspension strut ⇒ [page 54](#)

1.2 Removing and installing electronically controlled damping control unit - J250-

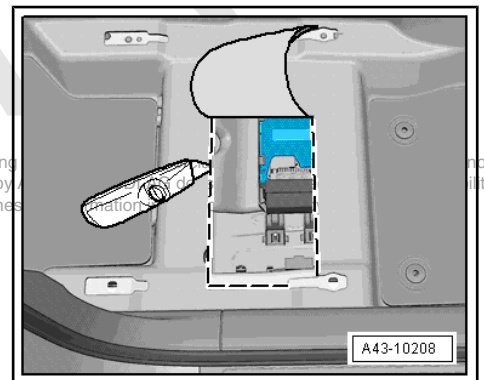
Special tools and workshop equipment required

- ◆ Carpet knife, commercially available
- ◆ Vehicle diagnostic tester

Removing

The electronically controlled damping control unit - J250- is located under the front right seat.

- Unbolt front seat (right-side) and tip towards the rear ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat . Make sure you do not damage any components.
- Using a carpet knife (commercially available type), cut out carpeting at the markings shown.
- Fold back carpet.

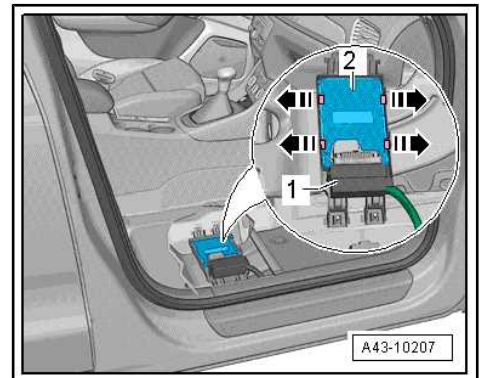


- Unclip electronically controlled damping control unit - J250-2- from bracket -arrows- and take control unit out of electronics box.
- Unplug electrical connector -1-.

Installing

Installation is performed in reverse sequence; note the following:

- Install front seat ⇒ General body repairs, interior; Rep. gr. 72 ; Front seats; Removing and installing front seat . Make sure you do not damage any components.
- If the electronically controlled damping control unit - J250- is renewed, the basic setting must be performed for the electronic damping control ⇒ Vehicle diagnostic tester.



1.3 Removing and installing front body acceleration senders -G341- / -G342-

⇒ ["1.3.1 Removing and installing front body acceleration senders G341 / G342", page 232](#)

⇒ ["1.3.2 Removing and installing bracket for front body acceleration senders", page 233](#)

1.3.1 Removing and installing front body acceleration senders -G341- / -G342-

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



Removing

- Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
- Release connector -arrow- and unplug.
- Unscrew bolts -2- and remove front body acceleration sender -1- from bracket.

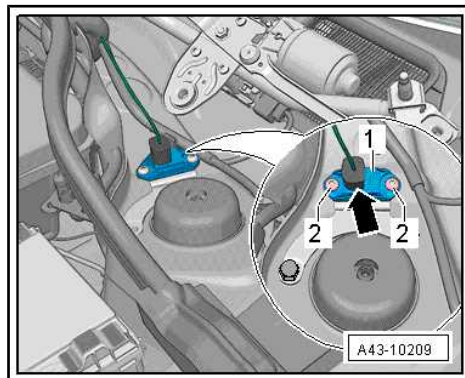
Installing

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



Caution

The front body acceleration senders must NOT be swapped over with the rear body acceleration sender ; for allocation refer to ⇒ [Electronic parts catalogue](#) .



Note installation position of front right body acceleration sender on bracket.

- The lug on the bracket -1- must engage in the recess in the front body acceleration sender -arrow-.



Note

Be sure to use the correct bracket. The bracket is marked "L" or "R".

- Install plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

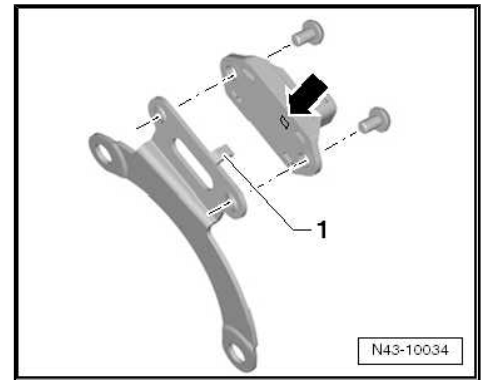
Tightening torques

- ◆ ⇒ ["2.1 Exploded view - suspension strut, upper links", page 48](#)

1.3.2 Removing and installing bracket for front body acceleration senders

Special tools and workshop equipment required

- ◆ Mandrel - VW 222 A-



- ◆ Torque wrench - V.A.G 1331-



- ◆ Drill bit with $\varnothing$ 11 mm

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Removing

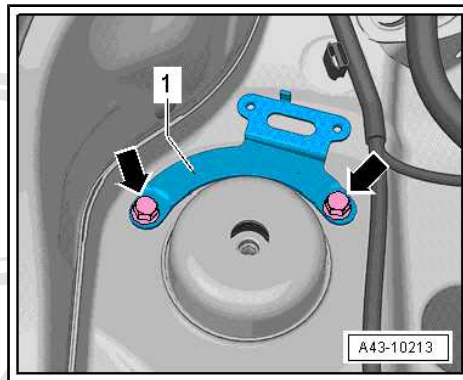
- Remove front body acceleration sender ➔ [page 232](#) .
- Unscrew bolts -arrows- and detach bracket -1- from shock absorber turret.

Installing



Caution

*It is not permissible to interchange the body acceleration senders; for correct allocation refer to ➔ **Electronic parts catalogue** .*



- Clean shock absorber turret.

Front left body acceleration sender - G341-

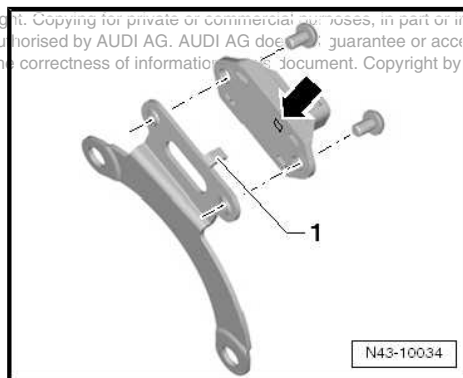
- Bolt front left body acceleration sender - G341- onto bracket.
- Note installation position of front left body acceleration sender - G341- on bracket.
- Lug of bracket -1- must engage in recess in front left body acceleration sender - G341- -arrow-.



Note

Be sure to use the correct bracket. An "L" is stamped on the bracket.

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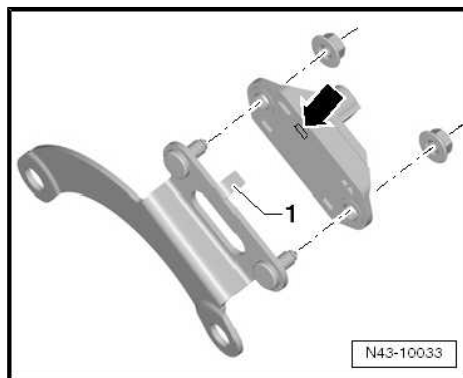
Front right body acceleration sender - G342-

- Bolt front right body acceleration sender - G342- onto bracket.
- Note installation position of front right body acceleration sender - G342- on bracket.
- Lug of bracket -1- must engage in recess in front right body acceleration sender - G342- -arrow-.



Note

Be sure to use the correct bracket. An "R" is stamped on the bracket.



Both sides (continued):

- Pull off foil from bonding surface on bracket, or apply double-sided adhesive tape as required.
- Locate bracket in position using drill bit (Ø 11 mm) and drift - VW 222 A -.



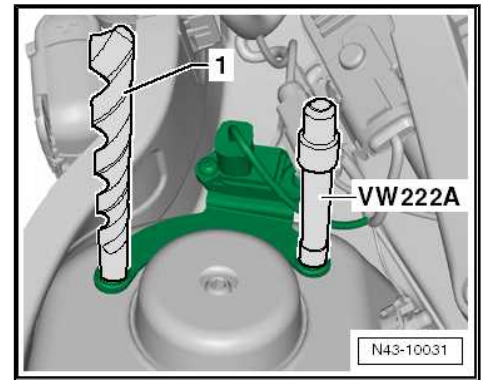
Note

The holes in the bracket must line up with the holes in the shock absorber turret.

- Screw in bolts one after the other until hand-tight and then tighten to specified torque.
- Plug in connector on body acceleration sender.

Tightening torques

- ◆ ⇒ ["2.1 Exploded view - suspension strut, upper links", page 48](#)



1.4 Removing and installing rear body acceleration sender - G343-

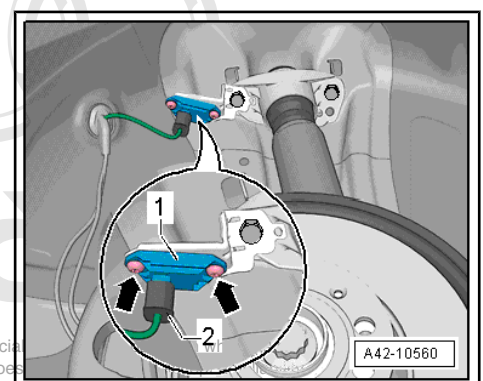
Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1410-



Removing

- Remove rear wheel (left-side) ⇒ [page 241](#) .
- Remove rear left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (rear) .
- Release connector -2- and unplug.
- Remove bolts -arrows- and detach rear body acceleration sender - G343- -1-.



Installing

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



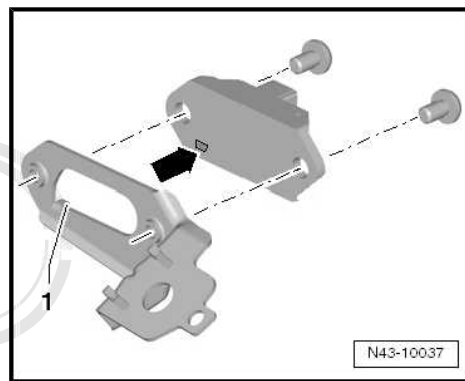
Caution

It is not permissible to interchange the rear body acceleration sender with the front body acceleration senders; for correct allocation refer to ⇒ [Electronic parts catalogue](#) .

- Note installation position of rear body acceleration sender - G343- on bracket.
- Lug of bracket -1- must engage in recess in rear body acceleration sender - G343- -arrow-.
- Install rear left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (rear) .
- Fit rear left wheel ⇒ [page 241](#) .

Tightening torques

- ♦ ⇒ ["4.1 Exploded view - suspension strut/shock absorber, spring", page 167](#)



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2 Vehicle level senders

⇒ "2.1 Exploded view - front vehicle level sender", page 237

⇒ "2.2 Exploded view - rear vehicle level sender", page 238

⇒ "2.3 Removing and installing front vehicle level senders G78 / G289", page 238

⇒ "2.4 Removing and installing rear vehicle level senders G76 / G77", page 239

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2.1 Exploded view - front vehicle level sender



Note

The front left/right vehicle level sender - G78/G289- is only available as a replacement part complete with coupling rod and upper and lower retaining plates.

1 - Subframe

2 - Front left vehicle level sender - G78- and front right vehicle level sender - G289-

- ☐ Complete with mounting parts
- ☐ Lever must face outwards
- ☐ Removing and installing
⇒ [page 238](#)
- ☐ If the front left vehicle level sender - G78- or front right vehicle level sender - G289- is removed and installed, the basic setting must be performed for the electronic damping control
⇒ Vehicle diagnostic tester.

3 - Electrical connector

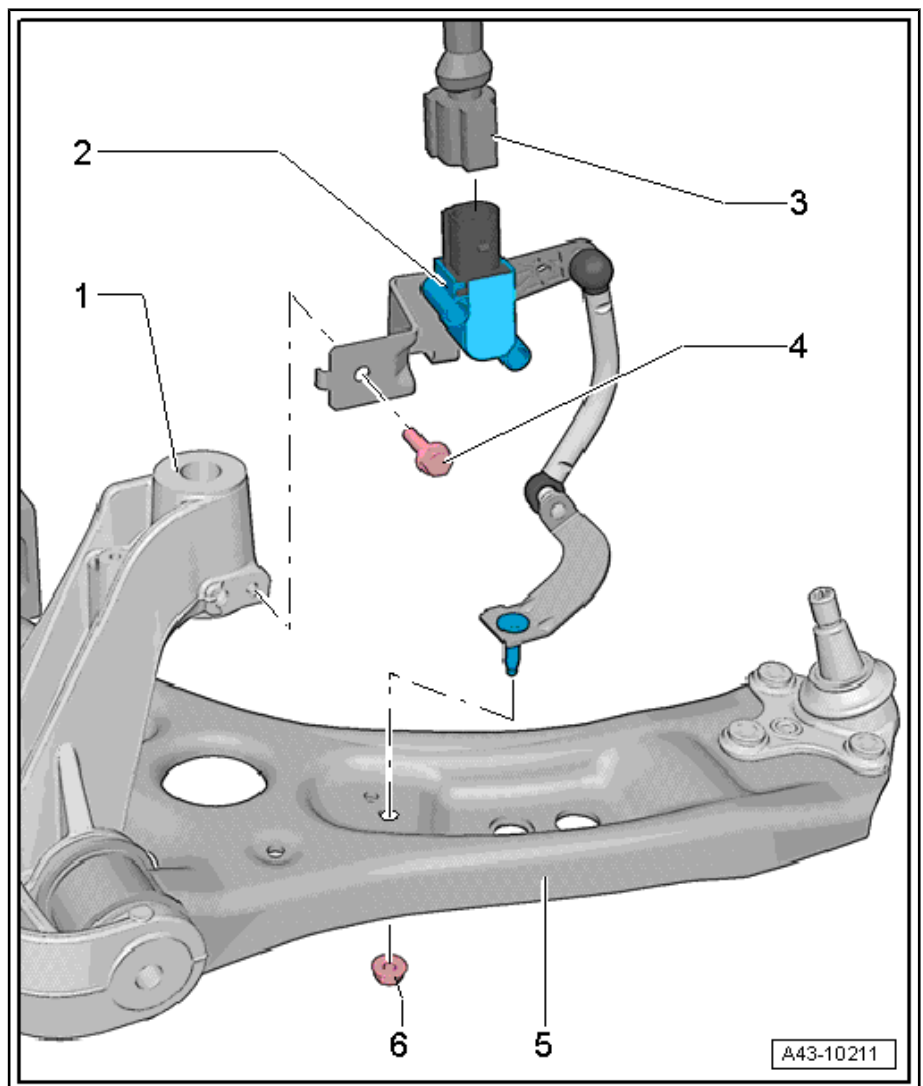
4 - Bolt

- ☐ 9 Nm

5 - Wishbone

6 - Nut

- ☐ Always renew if removed
- ☐ 9 Nm



2.2 Exploded view - rear vehicle level sender



Note

The vehicle level sender is only available as a replacement part complete with coupling rod and upper and lower retaining plates.

1 - Bolt

- 5 Nm

2 - Vehicle level sender (rear)

- Complete with mounting parts
- Lever must face outwards
- Removing and installing
⇒ [page 239](#)
- If the rear vehicle level sender is removed and installed, the basic setting must be performed for the electronic damping control ⇒ Vehicle diagnostic tester.
- Perform basic setting of headlights following replacement ⇒ Vehicle diagnostic tester

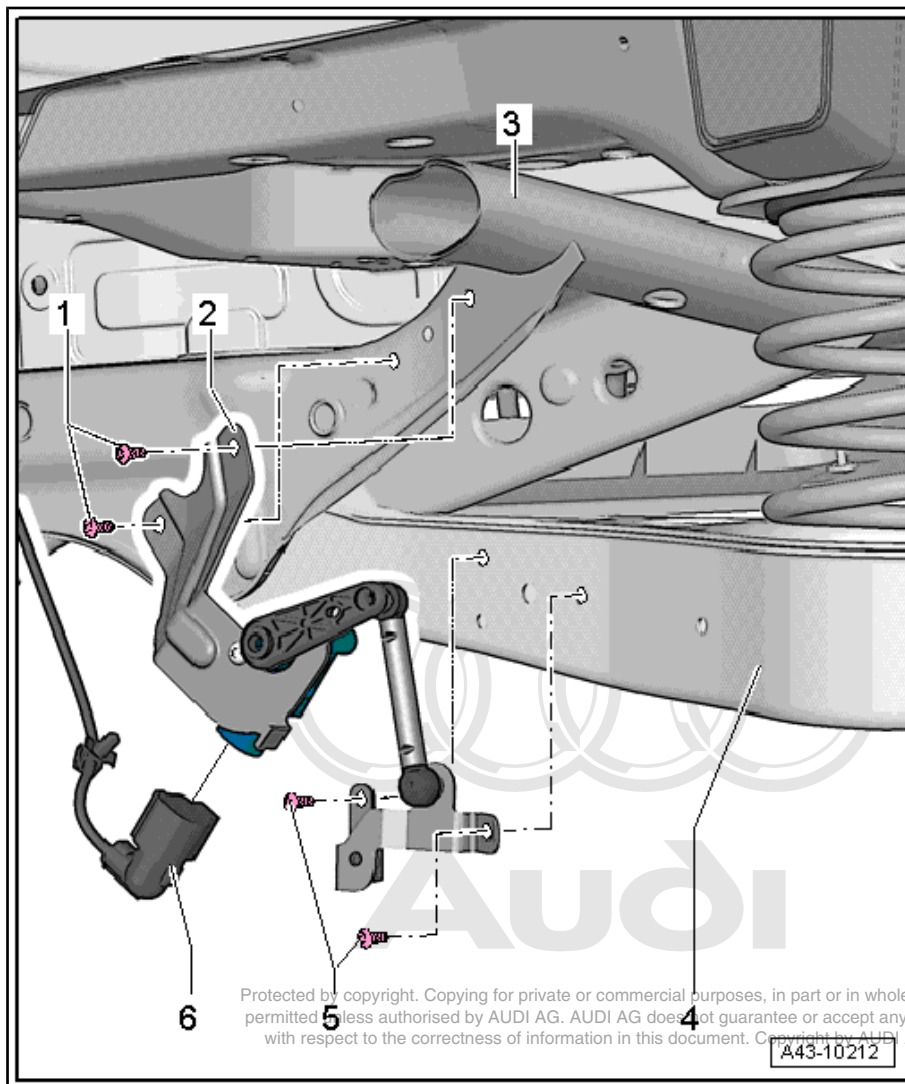
3 - Subframe

4 - Lower suspension link

5 - Bolt

- 5 Nm

6 - Electrical connector



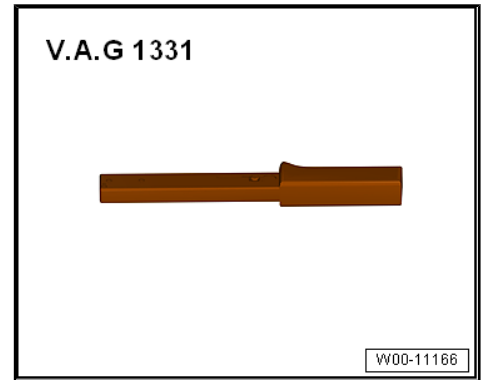
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A43-10212

2.3 Removing and installing front vehicle level senders -G78- / -G289-

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



Removing

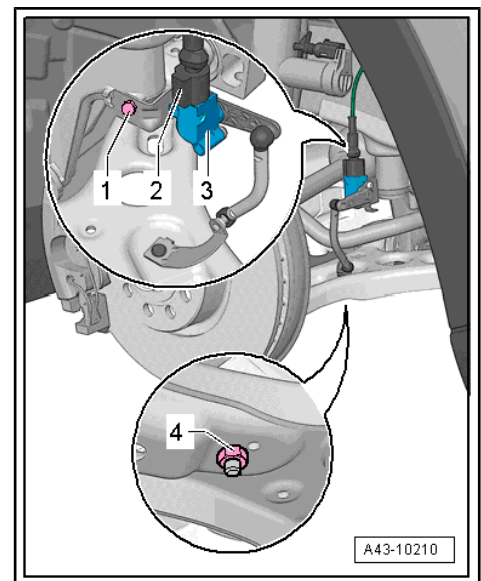


Note

- ◆ *To remove the front left vehicle level sender - G78-, the steering must be turned to full right lock to give clearance between the wishbone and the anti-roll bar.*
- ◆ *To remove the front right vehicle level sender - G289-, the steering must be turned to full left lock to give clearance between the wishbone and the anti-roll bar.*
- Unplug connector -2-.
- Unscrew nut -4- and bolt -1-.
- Take out vehicle level sender -3-.

Installing

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



Note

- ◆ *The lever on the vehicle level sender must face outwards.*
- ◆ *The thread of the vehicle level sender must be screwed into the front hole in the wishbone. The lug on the bracket for the vehicle level sender must engage in the rear hole to obtain the correct installation position.*
- On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

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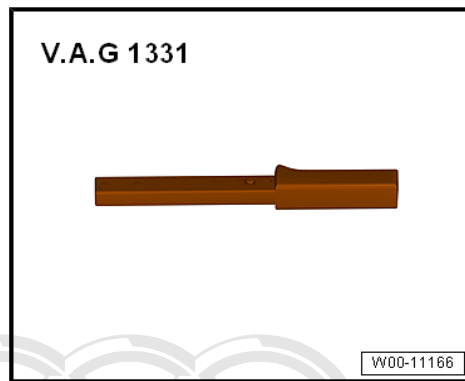
Tightening torques

- ◆ ⇒ ["2.1 Exploded view - front vehicle level sender", page 237](#)

2.4 Removing and installing rear vehicle level senders -G76- / -G77-

Special tools and workshop equipment required

◆ Torque wrench - V.A.G 1331-



Removing

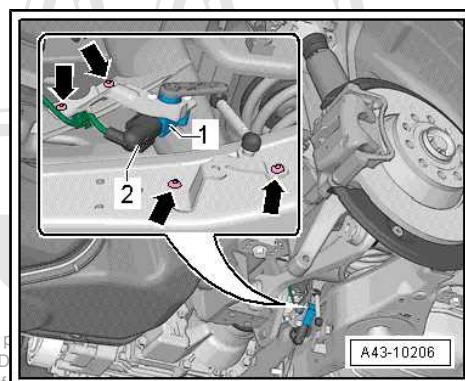
- Unplug connector -2-.
- Remove bolts -arrows-.
- Take out rear vehicle level sender -1-.

Installing

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

The lever on the vehicle level sender must face outwards.

- On vehicles with electronic damping control, perform function "Re-adapt reference (default) position" using ⇒ Vehicle diagnostic tester.
- If the reference position has been re-adapted, the front camera for driver assist systems must be recalibrated on vehicles with lane departure warning function ⇒ [page 254](#) .
- On vehicles with vehicle level sender, carry out basic adjustment of headlights ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .



Tightening torques

- ◆ ⇒ ["2.2 Exploded view - rear vehicle level sender", page 238](#)

44 – Wheels, tyres, vehicle geometry

1 Wheels, tyres

This information is contained in the Workshop Manual on Wheels and tyres ⇒ Wheels and tyres; Rep. gr. 44 ; Fitting wheels / tyres / Tyre Pressure Monitoring System / Tyre Pressure Loss Indicator .



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2 Wheel alignment

⇒ [“2.1 Notes on wheel alignment”, page 242](#)

⇒ [“2.2 Requirements for test”, page 243](#)

⇒ [“2.3 Preparations for measurement”, page 244](#)

⇒ [“2.4 Wheel alignment specifications”, page 245](#)

⇒ [“2.5 Wheel alignment procedure”, page 246](#)

⇒ [“2.6 When does wheel alignment have to be checked?”, page 247](#)

⇒ [“2.7 Explanatory notes on production control numbers \(PR numbers\)”, page 247](#)

⇒ [“2.8 Adjusting camber at front wheels”, page 248](#)

⇒ [“2.9 Adjusting camber at rear wheels”, page 249](#)

⇒ [“2.10 Adjusting toe setting at rear wheels”, page 251](#)

⇒ [“2.11 Adjusting toe setting at front wheels”, page 252](#)

⇒ [“2.12 Wheel runout compensation”, page 252](#)

⇒ [“2.13 Checking full steering lock”, page 252](#)

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2.1 Notes on wheel alignment

Wheel alignment must always be performed using wheel alignment equipment approved by VW/Audi.

The alignment check must always include both the front and the rear axles.

This is important to achieve proper handling and road behaviour.

Otherwise, the rack may not be located in the central position.



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.*
- ◆ *When making adjustments, try to obtain the specified settings as accurately as possible.*
- ◆ *Vibrations can also be caused by excessive residual imbalance and/or radial runout of the wheels.*

Vehicles pulling to one side; accident vehicles

This may be due to the rack not being positioned exactly in the centre of the steering rack unit when driving in a straight line.

This is enough to result in slight steering assistance in one direction, which causes the vehicle to pull to the left or right.

Always check centre position of steering rack when performing wheel alignment on a vehicle which “pulls to one side”.



WARNING

If adjustments are made to the suspension geometry, the steering angle sender - G85- must be calibrated on vehicles with ESP or ABS ⇒ Vehicle diagnostic tester.



WARNING

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



WARNING

Risk of personal injury caused by automatic engine start on vehicles with start/stop system.

- ◆ *On vehicles with activated start/stop system (indicated by a symbol in the instrument cluster) the engine can start automatically under certain conditions.*
- ◆ *When working on the vehicle, it is therefore important to ensure that the start/stop system is deactivated (switch off ignition and switch on again if required).*

2.2 Requirements for test

- Check suspension, steering and steering linkage for excessive play or damage and service if necessary.
- Tread depth difference of no more than 2 mm on one axle.
- Tyres inflated to correct pressures.
- Drive vehicle onto wheel alignment unit and ensure that suspension is not under stress, if necessary by moving vehicle backwards and forwards several times.
- Vehicle accurately aligned, suspension bounced and rocked several times.
- Ensure that the sliding plates and turntables are not touching the end stop when checking the alignment.
- Before starting the initial measurement and before making any adjustments, make sure that the steering is returned correctly to the centre position by turning the steering wheel uniformly in both directions using the steering wheel balance - VAS 6458- .
- Vehicle in unladen position ²⁾

2) "Unladen condition" means: the height of the vehicle ready for the road (with full tank, spare wheel, vehicle tools and vehicle jack).

- Perform compensation of wheel rim runout: A certain amount of axial runout at the wheel rims is permissible, but this may already exceed the specified toe-in tolerance. In such cases it is not possible to set the toe-in correctly without first compensating for the wheel runout.
- Sensors must be properly attached and adjusted; refer to operating instructions of equipment manufacturer.
- If necessary, contact the manufacturer for familiarisation with the proper use of the wheel alignment equipment.
- Wheel alignment platforms and computer measuring equipment can lose their original levelling setting and calibration over a period of time, and they should therefore be serviced and calibrated at least once a year.
- Precision equipment should be treated with appropriate care.

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2.3 Preparations for measurement

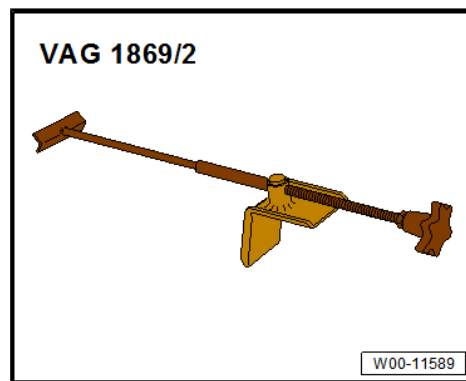
⇒ [“2.3.1 Preparations for measurement”, page 244](#)

⇒ [“2.3.2 Preparations required before calibration/adjustment of driver assist systems”, page 244](#)

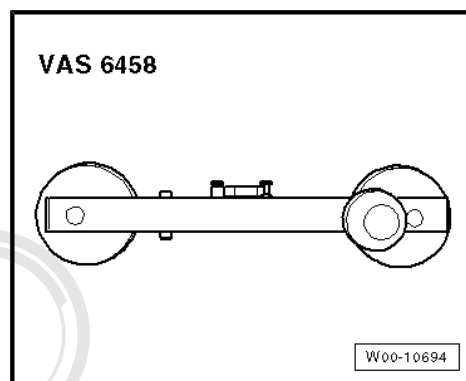
2.3.1 Preparations for measurement

Special tools and workshop equipment required

- ◆ Brake pedal actuator - V.A.G 1869/2-



- ◆ Steering wheel balance - VAS 6458-



- ◆ Wheel alignment computer approved by VW/Audi
- Sensors must be properly attached and adjusted; refer to operating instructions of equipment manufacturer.
- Ensure that the sliding plates and turntables are not touching the end stop when checking the alignment.
- Drive vehicle onto wheel alignment unit and ensure that suspension is not under stress, if necessary by moving vehicle backwards and forwards several times.
- Before starting the initial measurement and before making any adjustments, make sure that the steering is returned correctly to the centre position by turning the steering wheel uniformly in both directions using the steering wheel balance - VAS 6458-.

2.3.2 Preparations required before calibration/adjustment of driver assist systems

The following steps are required if one or more driver assist systems on the vehicle are to be calibrated or adjusted via the “Quick-start” procedure (i.e. without first checking and adjusting the wheel alignment):

- Before driving the vehicle onto the alignment platform, make sure there is sufficient space between the vehicle and the set-

ting device. The distance between the setting device and the vehicle must be $120 \text{ cm} \pm 2.5 \text{ cm}$.

- If the available space is not adequate, drive the vehicle backwards onto the alignment platform as required.
- Before commencing calibration/adjustment, interrogate event memory and rectify any faults.
- Vehicle accurately aligned, suspension bounced and rocked several times.
- Ensure that the sliding plates and turntables are not touching the end stop when checking the alignment.
- Connect battery charger $\Rightarrow$ Electrical system; Rep. gr. 27 ; Battery; Charging battery .
- Set front wheels to straight-ahead position.
- Connect up $\Rightarrow$ Vehicle diagnostic tester to vehicle and run diagnostic cable out through open window.
- Exterior lighting switched off.
- All vehicle doors closed.
- Press button to select required calibration/adjustment on wheel alignment computer.

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2.4 Wheel alignment specifications

These specifications are applicable for all engines.

Front axle	Standard running gear G05, G11, G12, G14, G15	Standard running gear with electronic damping control G43	Sports running gear (S line) G09, G13	Sports running gear with electronic damping control G44
Toe setting at each wheel	$5' \pm 5'$	$5' \pm 5'$	$5' \pm 5'$	$5' \pm 5'$
Total toe	$10' \pm 10'$	$10' \pm 10'$	$10' \pm 10'$	$10' \pm 10'$
Camber (in straight-ahead position) ³⁾	$-36' \pm 30'$	$-36' \pm 30'$	$-52' \pm 30'$	$-52' \pm 30'$
Maximum permissible difference between left and right	max. $30'$	max. $30'$	max. $30'$	max. $30'$
Toe-out on turns with 20° steering angle ⁴⁾	$1^\circ 35' \pm 20'$	$1^\circ 35' \pm 20'$	$1^\circ 28' \pm 20'$	$1^\circ 28' \pm 20'$
Caster	$7^\circ 44' \pm 30'$	$7^\circ 44' \pm 30'$	$8^\circ 07' \pm 30'$	$8^\circ 07' \pm 30'$
Maximum permissible difference between left and right	max. $30'$	max. $30'$	max. $30'$	max. $30'$
Maximum steering angle at inner wheel	$34^\circ 34'$	$34^\circ 34'$	$34^\circ 34'$	$34^\circ 34'$

3) Camber cannot be adjusted. It can only be corrected slightly by moving the subframe.

4) The wheel on the outside of a curve is turned in less than the inside wheel. This value shows the difference in the steering angles. It can be displayed as a negative value on the wheel alignment computer, depending on the manufacturer.

Rear axle	Standard running gear G05, G11, G12, G14, G15	Standard running gear with electronic damping control G43	Sports running gear (S line) G09, G13	Sports running gear with electronic damping control G44
Total toe	$10' \pm 10'$	$10' \pm 10'$	$10' \pm 10'$	$10' \pm 10'$
Toe setting at each wheel	$5' \pm 5'$	$5' \pm 5'$	$5' \pm 5'$	$5' \pm 5'$

Rear axle	Standard running gear G05, G11, G12, G14, G15	Standard running gear with electronic damping control G43	Sports running gear (S line) G09, G13	Sports running gear with electronic damping control G44
Maximum permissible deviation from direction of travel	max. 10'	max. 10'	max. 10'	max. 10'
Camber	-1° 20' ± 30'	-1° 20' ± 30'	-1° 20' ± 30'	-1° 20' ± 30'
Maximum permissible difference between left and right	max. 30'	max. 30'	max. 30'	max. 30'

2.5 Wheel alignment procedure

Sequence of operations for checking and adjusting wheel alignment



Note

The vehicle must always be in unladen condition when measuring wheel alignment ⇒ [page 243](#) .

Always keep to the following sequence of operations.

- 1 - Drive vehicle onto wheel alignment unit and ensure that suspension is not under stress, if necessary by moving vehicle backwards and forwards several times.
- 2 - Before starting the initial measurement and before making any adjustments, make sure that the steering is returned correctly to the centre position by turning the steering wheel uniformly in both directions using the steering wheel balance - VAS 6458-
with respect to the correctness of information in this document. Copyright by AUDI AG.
- 3 - Carry out wheel rim runout compensation ⇒ [page 252](#) .
- 4 - Check full steering lock ⇒ [page 252](#) .
- 5 - Check camber at front wheels and centralise if necessary ⇒ [page 248](#) .
- 6 - Check camber at rear wheels and adjust if necessary ⇒ [page 249](#) .
- 7 - Check toe setting at rear wheels and adjust if necessary ⇒ [page 251](#) .
- 8 - Check toe setting at front wheels and adjust if necessary ⇒ [page 252](#) .



Note

- ◆ If adjustments have been made to the suspension after a wheel alignment check on vehicles with ESP or ABS, the steering angle sender - G85- must be calibrated using the ⇒ Vehicle diagnostic tester.
- ◆ If any changes are made to the rear wheel alignment settings, the lane departure warning system must be recalibrated on vehicles with lane departure warning ⇒ [page 254](#) and the reversing camera system must be recalibrated on vehicles with reversing camera ⇒ Communication; Rep. gr. 91 ; Reversing camera system; Calibrating reversing camera system .

2.6 When does wheel alignment have to be checked?

- ◆ In the event of handling problems
- ◆ Following accident damage
- ◆ If suspension components have been removed.
- ◆ If tyres are worn unevenly.

Front suspension component renewed:	Wheel alignment check required		Rear suspension component renewed:	Wheel alignment check required	
	Yes	No		Yes	No
Suspension strut		X	Shock absorber		X
Wishbone/bonded rubber bush		X ¹⁾	Coil spring		X
Swivel joint		X	Wheel bearing housing	X	
Wheel bearing housing	X		Subframe	X	
Track rod ball joint/ track rod	X		Lower suspension link	X	
Steering rack	X		Upper suspension link	X	
Subframe	X		Track rod	X	
Anti-roll bar		X ¹⁾	Trailing arm	X	
			Anti-roll bar		X

- ¹⁾ Wheel alignment check is required if position of subframe has not been fixed using locating pins - T10096- .

Front suspension component removed and re-installed:	Wheel alignment check required		Rear suspension component removed and re-installed:	Wheel alignment check required	
	Yes	No		Yes	No
Suspension strut		X	Shock absorber		X
Wishbone/bonded rubber bush		X ¹⁾	Coil spring		X
Swivel joint		X	Wheel bearing housing	X	
Wheel bearing housing		X	Subframe	X	
Track rod ball joint/ track rod	X		Lower suspension link	X	
Steering rack		X ¹⁾	Upper suspension link	X	
Subframe		X ¹⁾	Track rod	X	
Anti-roll bar		X ¹⁾	Trailing arm	X	
			Anti-roll bar		X

- ¹⁾ Wheel alignment check is required if position of subframe has not been fixed using locating pins - T10096- .

2.7 Explanatory notes on production control numbers (PR numbers)

The PR no. on the vehicle data sticker indicates the type of running gear (for front axle and rear axle) and which version of the Tyre Pressure Monitoring System / Tyre Pressure Loss Indicator is fitted in the vehicle.

Running gear, axles, steering - Edition 02.2016

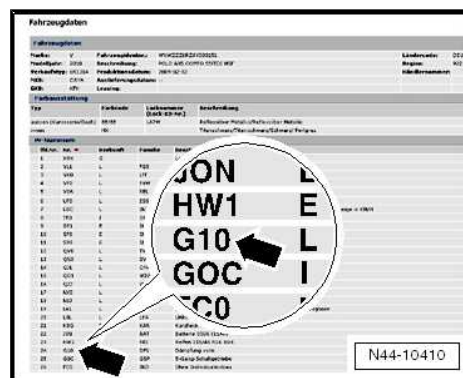
The required information on the type of running gear installed in the vehicle can be found in ELSA in the ⇒ Vehicle-specific notes in the document "Vehicle data".

G05, G11, G12, G14, G15 = Standard running gear

G09, G13 = Sports running gear (S line)

G43 = Standard running gear with electronic damping control

G44 = Sports running gear with electronic damping control



Special tools and workshop equipment required

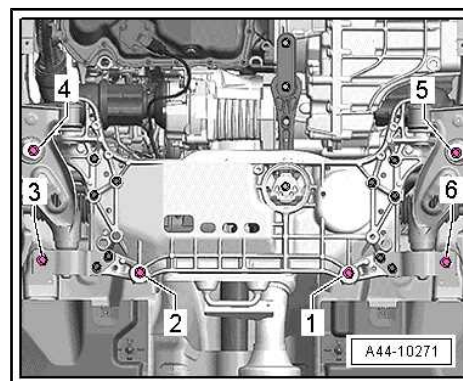
- ◆ Torque wrench - V.A.G 1332-



The camber cannot be adjusted.

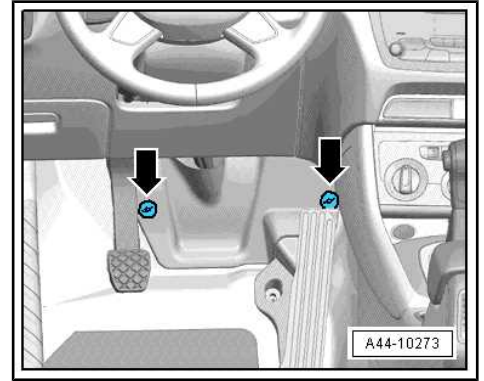
By moving the subframe, it is possible to centralise the camber setting symmetrically within the specified tolerance range.

- The subframe may be moved to the left or right, but NOT forwards or backwards in a longitudinal direction.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Unscrew bolts -1 to 6- one after the other and loosely screw in new ones.
- Move subframe sideways until camber is the same on both sides.
- Tighten subframe bolts -1 to 6-.



After moving subframe and consequently steering rack, ensure sufficient clearance between universal joint of steering column and aperture in bulkhead.

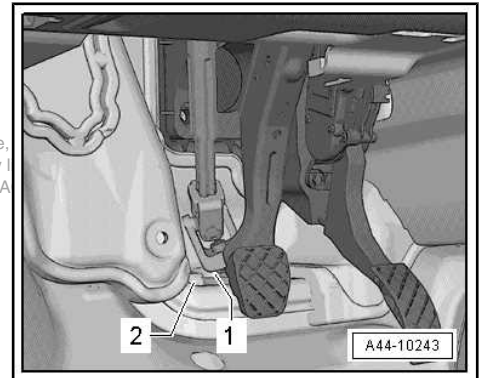
- Unscrew securing nuts -arrows- and remove footwell trim.



There must be a clearance of at least 5 mm all round between universal joint -1- and cutout in bulkhead -2-.

Tightening torques

- ◆ ⇒ "1.1 Exploded view - subframe" page 16
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66; Noise insulation; Exploded view - noise insulation



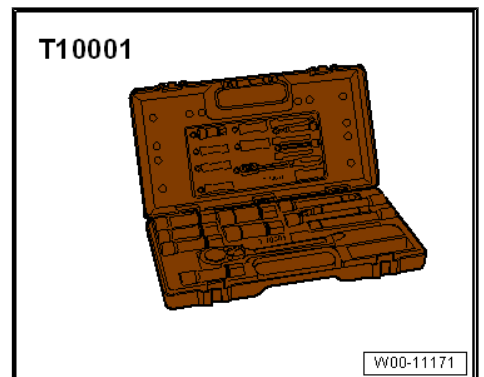
2.9 Adjusting camber at rear wheels

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



- ◆ 18 mm socket from shock absorber set - T10001-



- ◆ Insert tool, 18 mm - T10179-



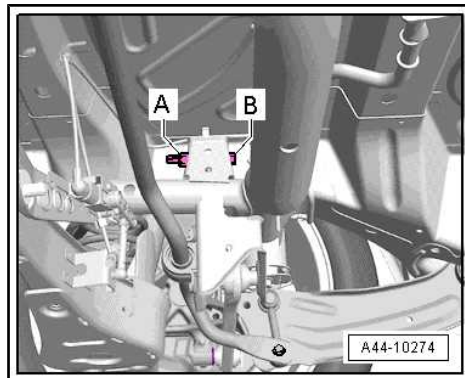
Procedure



Note

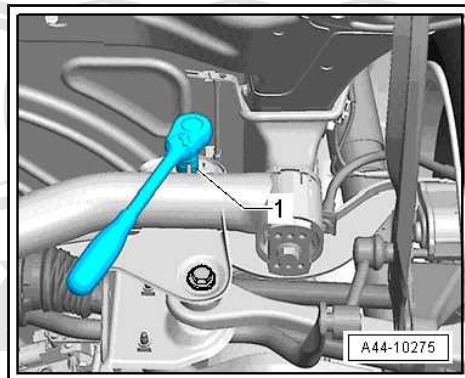
The following description applies to front-wheel drive vehicles; the procedure for four-wheel drive vehicles is similar.

- Unscrew nut -A- on bolted connection between upper suspension link and subframe, and loosely screw on new nut.
- The eccentric bolt -B- can also be turned via the hexagon flats at the tip of the bolt.
- Adjust camber by turning eccentric bolt -B- with 18 mm socket -item 1-.



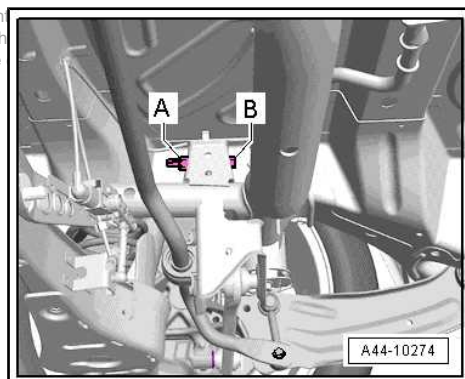
Note

The maximum adjustment range is 90° to the left or right of the centre position.



- Tighten nut -A- using insert tool 18 mm - T10179- .

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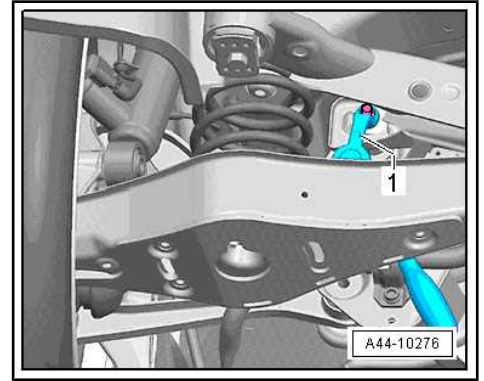


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any liability
DI AG.

- Use insert tool 18 mm - T10179- -item 1- as shown in illustration.
- Check camber setting once again after tightening nut -A-
⇒ [“2.4 Wheel alignment specifications”, page 245](#) .

Tightening torques

- ◆ ⇒ [“1.1.1 Exploded view - subframe, front-wheel drive vehicles”, page 127](#)



2.10 Adjusting toe setting at rear wheels

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



Procedure

- Unscrew nut -A- on bolted connection between lower suspension link and subframe and loosely screw on new nut.
- Adjust toe setting by turning eccentric bolt -B-.



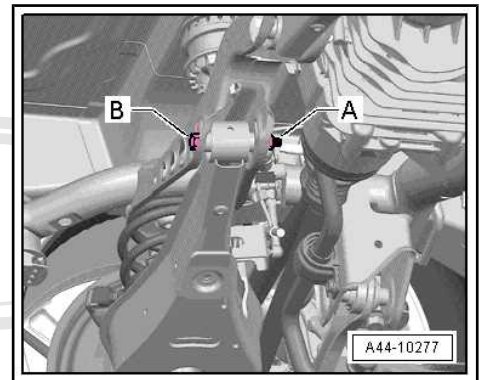
Note

The maximum adjustment range is 90° to the left or right of the centre position.

- Tighten nut -A-.
- Check toe setting once again after tightening nut -A-
⇒ [“2.4 Wheel alignment specifications”, page 245](#) .

Tightening torques

- ◆ ⇒ [“1.1.1 Exploded view - subframe, front-wheel drive vehicles”, page 127](#)



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2.11 Adjusting toe setting at front wheels

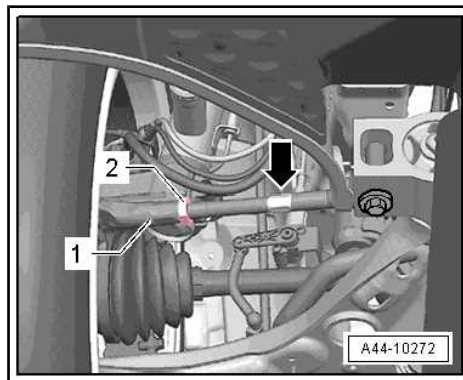
Procedure

- Counterhold track rod ball joint -1- with a suitable tool when loosening and tightening lock nut -2-.
- Loosen lock nut -2-.
- Adjust toe setting at left and right wheels via hexagon flats -arrow-.



Note

- ◆ *Make sure boot on steering rack is not damaged or twisted. Twisted rubber boots wear out quickly.*
- ◆ *The vehicle must be standing on the ground and the track rod ball joint must be parallel with the contact surface on the steering arm of the wheel bearing housing when tightening the lock nuts on the track rod.*



- Tighten lock nut -2- and check toe setting again.

The setting may change slightly after tightening lock nut -2-.

However, the adjustment is correct if the measured toe value is still inside the tolerance

⇒ ["2.4 Wheel alignment specifications", page 245](#) .

Tightening torques

- ◆ ⇒ ["3.1 Exploded view - steering rack", page 272](#)

2.12 Wheel runout compensation

The toe-in cannot be set correctly without performing wheel runout compensation.

The existing lateral runout of the wheel rims must be compensated accordingly. Otherwise false results will be obtained.

A certain amount of axial runout at the wheel rims is permissible, but this may already exceed the specified toe-in tolerance. In such cases it is not possible to set the toe-in correctly without first compensating for the wheel runout.

Please observe the operating instructions provided by the manufacturer of the wheel alignment unit.

2.13 Checking full steering lock

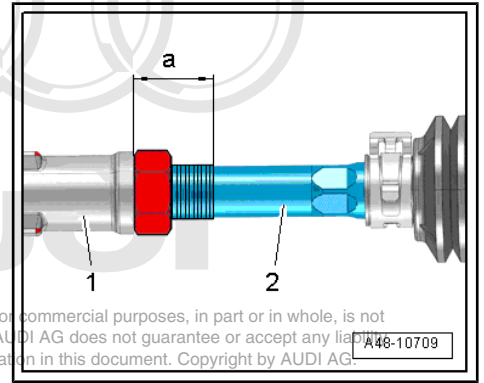
The wheel alignment computer is used to determine the full steering lock.

- If the value was outside the tolerance when determining the full steering lock on the wheel alignment unit, inspect the steering and suspension for any damage or distortion and check the symmetry of the track rods. If necessary, shorten the "longer" track rod ball joint (by screwing it further onto the track rod) and renew any damaged components.
- If the steering wheel was found to be out of alignment when checking the centre position of the steering on the wheel alignment unit, inspect the steering and suspension for damage or distortion and renew any damaged parts. Also check the symmetry of the track rods.

- Measure dimension -a- on “shorter” track rod ball joint. Shorten the “longer” track rod ball joint to the same dimension. To do so, screw track rod ball joint -1- further onto track rod -2-.

Dimension -a- on track rod ball joint (right-side) = dimension -a- on track rod ball joint (left-side); maximum permissible difference between right and left < 2.5 mm.

- When returning steering to centre position, allow steering wheel to “settle” by rocking it evenly back and forth past centre position a few times.



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3 Front camera for driver assist systems

⇒ ["3.1 Calibrating front camera for driver assist systems", page 254](#)

3.1 Calibrating front camera for driver assist systems

Re-calibration is required when:

- ◆ The fault "No or incorrect basic setting / adaption" is registered in the event memory.
- ◆ The front camera for driver assist systems - R242- is removed and installed or renewed.
- ◆ The windscreen is removed or renewed.
- ◆ The rear axle toe setting has been changed.
- ◆ The running gear of the vehicle has been modified in any way – e.g. conversion from standard running gear to sports running gear.
- ◆ The vehicle level senders have been re-adapted on vehicles with electronic damping control.

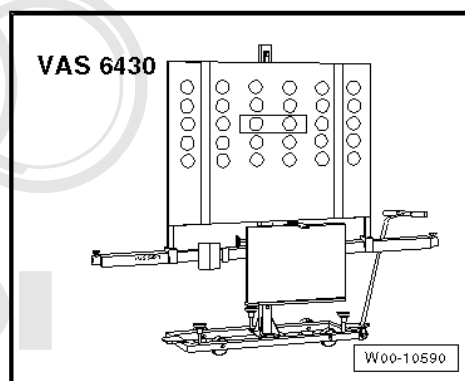


Note

Before calibrating the front camera for driver assist systems - R242- , check the event memory and rectify any faults. The direction of travel of the vehicle must be determined in order to provide the reference position of the setting device -VAS 6430- when calibrating the front camera for driver assist systems - R242- . Calibration of the front camera for driver assist systems - R242- must always be performed using wheel alignment equipment approved by VW/Audi. Always use the setting device -VAS 6430- for calibrating the system.

Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester
- ◆ ACC setting device - VAS 6430-



- ◆ Wheel alignment computer

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Note

- ◆ Check that the front camera for driver assist systems - R242- is seated correctly in the bracket.
- ◆ Check that the camera vision is unobstructed (visual inspection).
- ◆ Before commencing calibration, interrogate event memory and rectify any faults.

There are two options for performing the calibration:

“Quick-start”

This procedure (calibration only) should be selected if:

- ◆ The fault “No or incorrect basic setting / adaption” is registered in the event memory.
- ◆ The front camera for driver assist systems - R242- is removed and installed or renewed.
- ◆ The windscreen is removed or renewed.
- ◆ The reference position has been re-adapted on vehicles with air suspension.

“Full wheel alignment”

This procedure (calibration and wheel alignment) should be selected if:

- ◆ The rear axle toe setting has been changed.
- ◆ The running gear of the vehicle is modified in any way – e.g. conversion from standard running gear to sports running gear.



Note

The two procedures are programmed on the wheel alignment computer. Each procedure runs automatically. All you have to do is select the relevant program.

Please note preparations required before calibration/adjustment of driver assist systems ➔ [page 244](#) .

Calibration/adjustment procedure (when wheel alignment has not been previously checked)

- Select calibration procedure for lane departure warning system in wheel alignment computer.
- Attach quick-release clamps to all four wheels.
- Attach rear wheel alignment sensors.
- Carry out wheel rim runout compensation for rear wheels.

Calibration/adjustment procedure (when wheel alignment has been previously checked)

- Connect battery charger ➔ Electrical system; Rep. gr. 27 ; Battery; Charging battery .
- Set front wheels to straight-ahead position.
- Connect up diagnostic tester to vehicle and run diagnostic cable out through open window.
- Switch off exterior lights on vehicle.

- Close all vehicle doors.

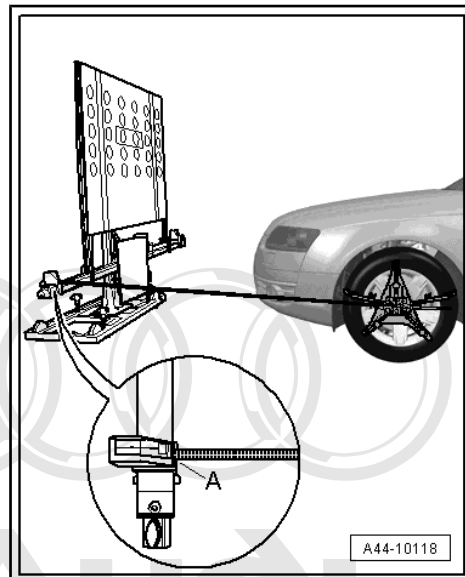
Calibration/adjustment procedure (irrespective of previous wheel alignment check)

- Press button to select calibration/adjustment procedure in wheel alignment computer.
- Set up -VAS 6430- as shown in illustration so that distance -A- measured from hub centres of front wheels to cross bar of -VAS 6430- is $150 \text{ cm} \pm 2.5 \text{ cm}$.



Note

Do not take hold of the cross bar when moving the -VAS 6430- .



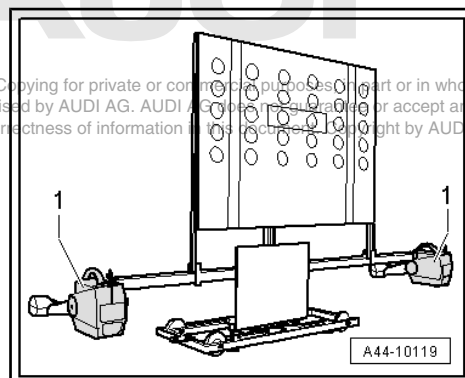
- Attach front wheel alignment sensors -1- to -VAS 6430- .



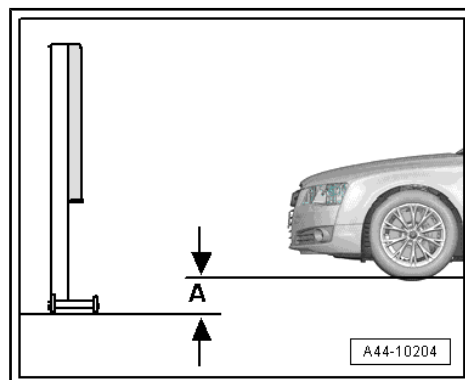
Note

For the next step the wheel alignment platform must be set at the lowest available position.

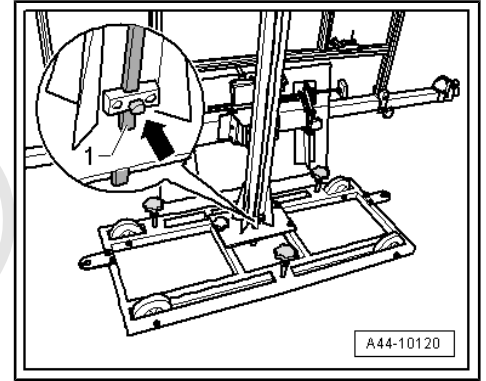
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- Determine height difference -A- between floor level where -VAS 6430- is set up and tyre contact surface as shown in illustration and enter this value in the wheel alignment computer.



- Loosen bolt -arrow- and set measuring bar -1- on floor.



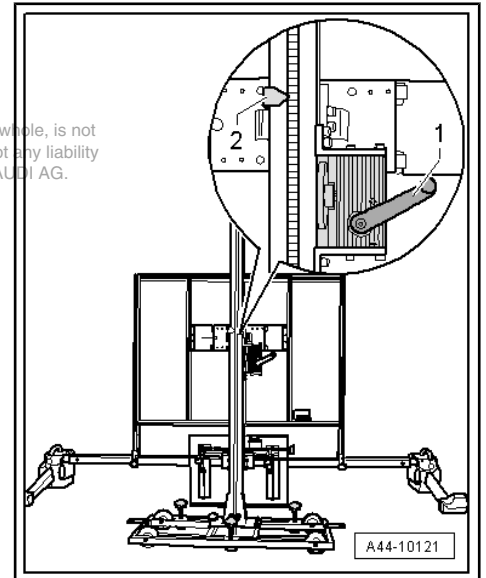
- Using crank -1-, adjust calibration screen to specified height -2- as indicated by wheel alignment computer.

When specified height -2- has been set, move measuring bar up slightly and tighten securing bolt.



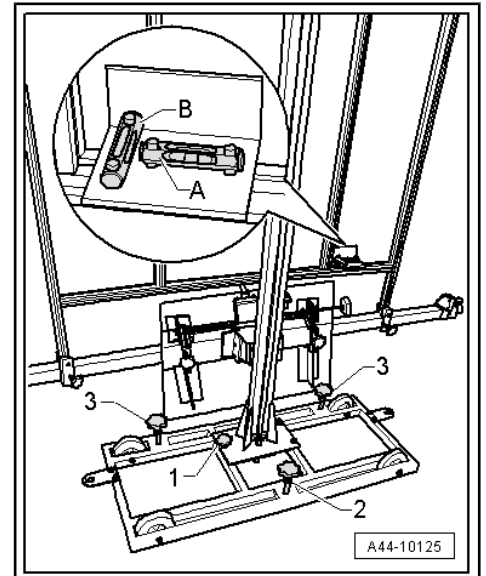
Note

If the height of the calibration screen has to be corrected at a later stage of the procedure, the measuring bar must be set on the floor when making the adjustment.

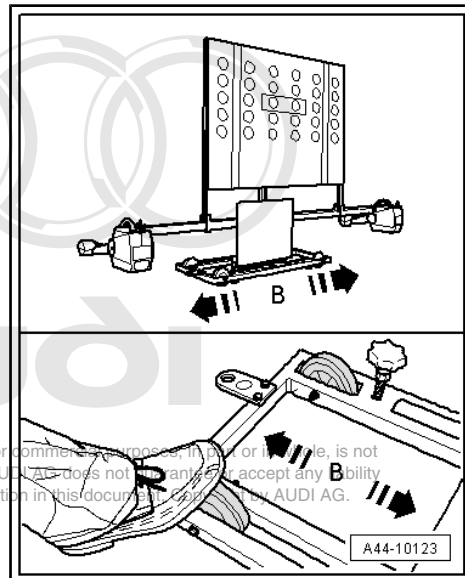


- Set spirit level -A- to horizontal position with adjuster screw -1-.

The spirit level -A- has to be adjusted at this point to compensate for any floor irregularities.

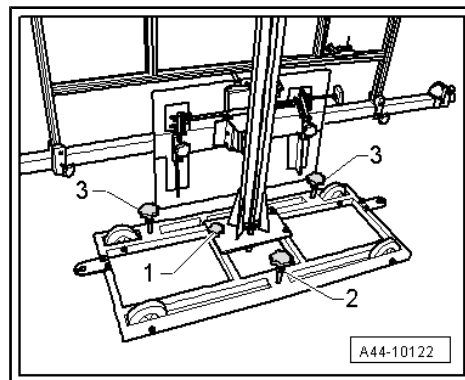


- Move -VAS 6430- sideways -arrow B- until display on wheel alignment computer is within tolerance.

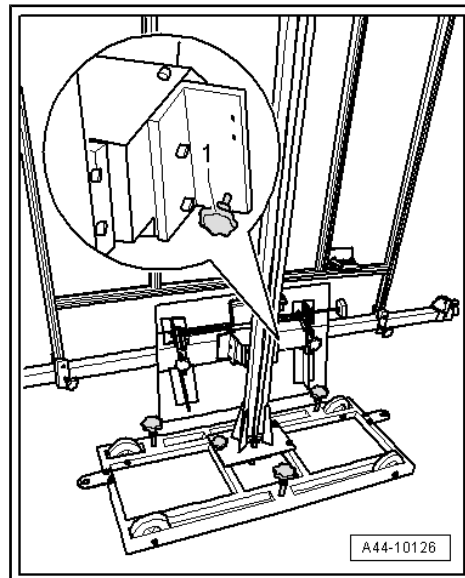


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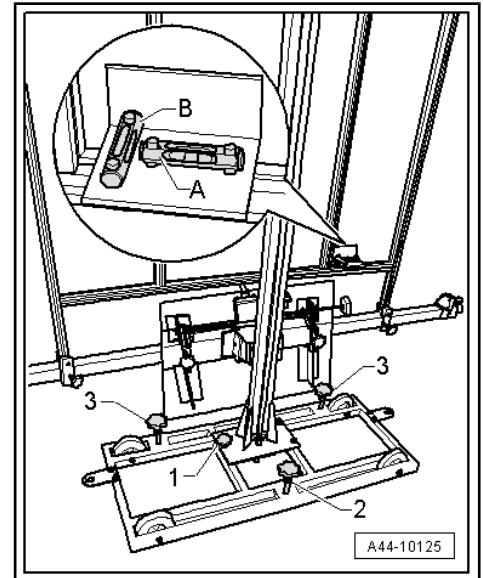
- Secure by tightening bolts -2- and -3- -VAS 6430- lightly. (This will prevent the -VAS 6430- from rolling away).



- Turn fine adjustment screw -1- until display on wheel alignment computer is within tolerance.



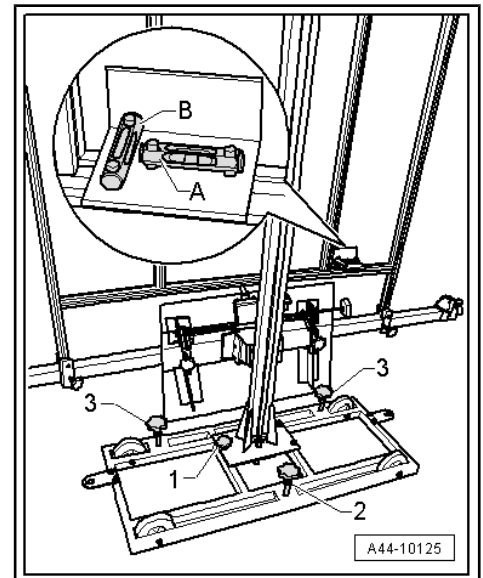
- Set spirit level -A- to horizontal position with adjuster screw -1-.



- Set spirit level -B- to horizontal position with adjuster screw -2-.

The next steps are performed using the ➔ Vehicle diagnostic tester in Guided Fault Finding mode.

- Switch on ignition.
- Touch the **Guided Fault Finding** button on the display screen.
- Select the following:
 - ◆ Make
 - ◆ Model
 - ◆ Model year
 - ◆ Version
 - ◆ Engine code letters
- Confirm the entered information.



Wait until the ➔ Vehicle diagnostic tester has interrogated all the control units in the vehicle.

- Press the **Go to** button and select the option “Function/component selection”.
- Select the relevant program in “Guided Functions”.

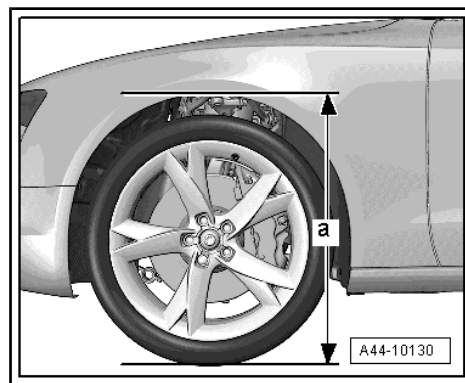
Then follow the instructions on the screen to perform the calibration.



Note

The next step required in the Guided Fault Finding program is to measure the height of the body.

- Measure height of body -a- at all four wheels between tyre contact surface and bottom edge of wing panel/wheel housing at centre of wheel.



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48 – Steering

1 Steering wheel

⇒ [“1.1 Exploded view - steering wheel”, page 261](#)

⇒ [“1.2 Removing and installing steering wheel”, page 262](#)

1.1 Exploded view - steering wheel

1 - Steering column electronics control unit - J527-

- ☐ With airbag coil connector and return ring with slip ring - F138-
- ☐ Removing and installing ⇒ Electrical system; Rep. gr. 94 ; Steering column switch module; Removing and installing steering column electronics control unit - J527-

2 - Wiring harness

- ☐ For driver side airbag igniter - N95-

3 - Airbag unit

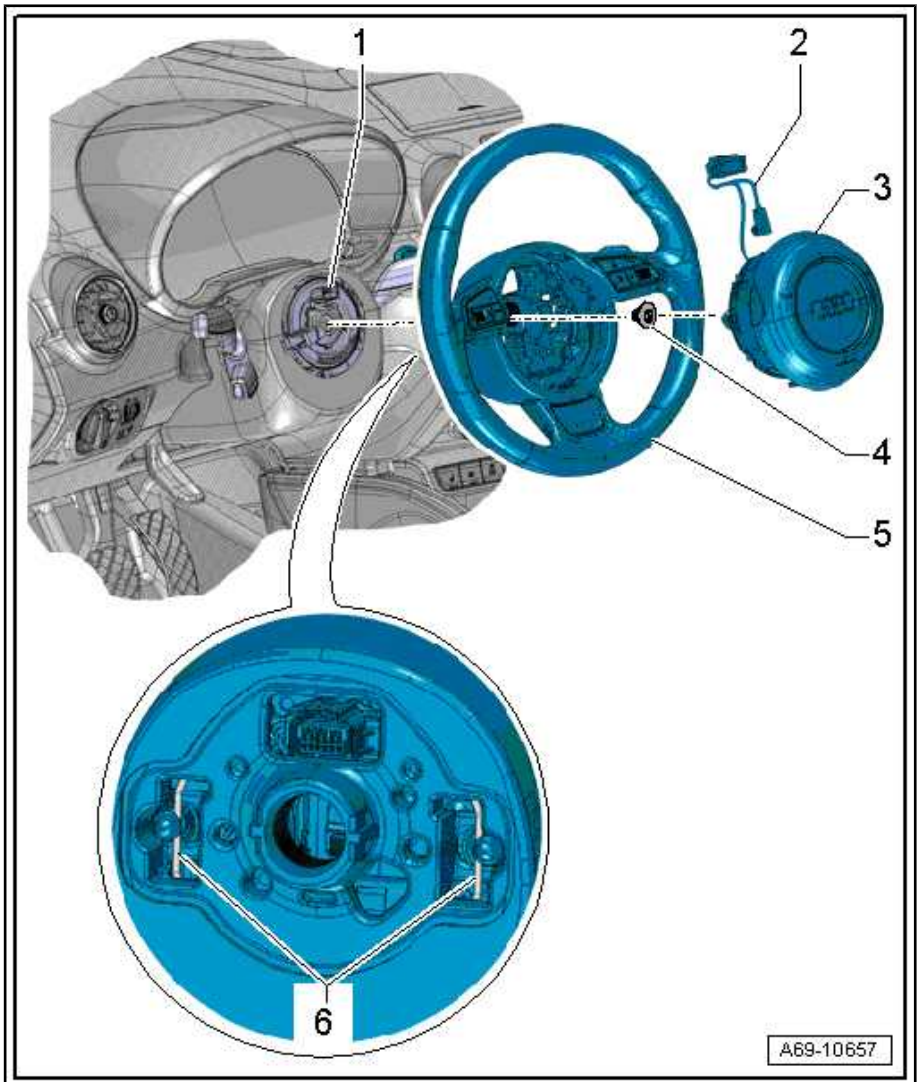
- ☐ With driver side airbag igniter - N95-



WARNING

Observe safety precautions for working on airbags ⇒ General body repairs, interior; Rep. gr. 00 ; Safety precautions; Safety precautions when working with pyrotechnic components .

- ☐ Removing and installing ⇒ General body repairs, interior; Rep. gr. 69 ; Airbag (driver side); Removing and installing airbag unit with igniters



4 - Bolt

- ☐ Always renew if removed
- ☐ 50 Nm

5 - Airbag steering wheel

- ☐ Removing and installing ⇒ [page 262](#)
- ☐ Different versions; for correct version, refer to ⇒ Electronic parts catalogue

6 - Connector

- ☐ For airbag coil connector and return ring with slip ring - F138-
- ☐ Renewing ⇒ General body repairs, interior; Rep. gr. 69 ; Airbag (driver side); Renewing connector at airbag

7 - Locking bar

1.2 Removing and installing steering wheel

Removing

- Move steering wheel upwards and rearwards as far as possible, using the full range of the steering column adjuster.
- Remove airbag unit ⇒ General body repairs, interior; Rep. gr. 69 ; Airbag (driver side); Removing and installing airbag unit with igniters .



Note

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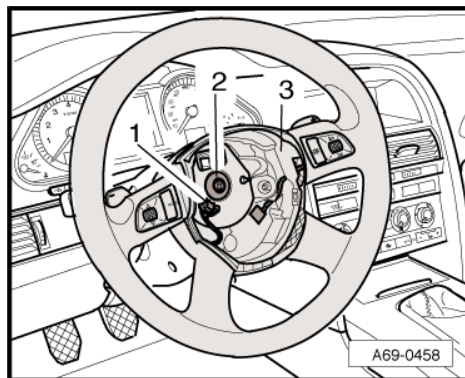
The steering must be in the centre position (wheels straight-ahead) when the steering wheel is removed and installed.

- Turn wheels to straight ahead position.
- Remove bolt -2-.
- Mark relative position of steering wheel to steering column with a felt-tip pen.
- Pull steering wheel -3- off steering column.

Installing

Installation is performed in reverse sequence; note the following:

- Before fitting steering wheel, make sure wheels are in straight ahead position.
- If installing original steering wheel: Make sure marks on steering column and steering wheel coincide.
- If installing new steering wheel (no marks): Steering wheel must be mounted in centre position (spoke horizontal and wheels in straight-ahead position).
- Install airbag unit ⇒ General body repairs, interior; Rep. gr. 69 ; Airbag (driver side); Removing and installing airbag unit with igniters .
- Test-drive vehicle.
- If steering wheel is not straight, remove it again and adjust it on steering column splines.



Tightening torques

- ♦ ⇒ ["1.1 Exploded view - steering wheel", page 261](#)

2 Steering column

⇒ ["2.1 Exploded view - steering column", page 263](#)

⇒ ["2.2 Checking steering column for damage", page 264](#)

⇒ ["2.3 Handling and transporting steering column", page 264](#)

⇒ ["2.4 Removing and installing steering column", page 265](#)

⇒ ["2.5 Removing and installing control unit for electronic steering column lock J764", page 270](#)

2.1 Exploded view - steering column



Note

Always renew corroded nuts/bolts.

1 - Central tube for dash panel

2 - Shear bolt

- ☐ Tighten shear bolt until head shears off

3 - Steering column

- ☐ Removing and installing
⇒ [page 265](#)

4 - Bolt

- ☐ Always renew if removed
- ☐ 20 Nm

5 - Steering lock housing with lock cylinder and ignition/starter switch

- ☐ Removing and installing
⇒ Electrical system;
Rep. gr. 94 ; Steering column switch module;
Removing and installing steering lock housing

6 - Control unit for electronic steering column lock - J764-

- ☐ Installed on vehicles with "keyless entry system"
- ☐ Removing and installing
⇒ [page 270](#)

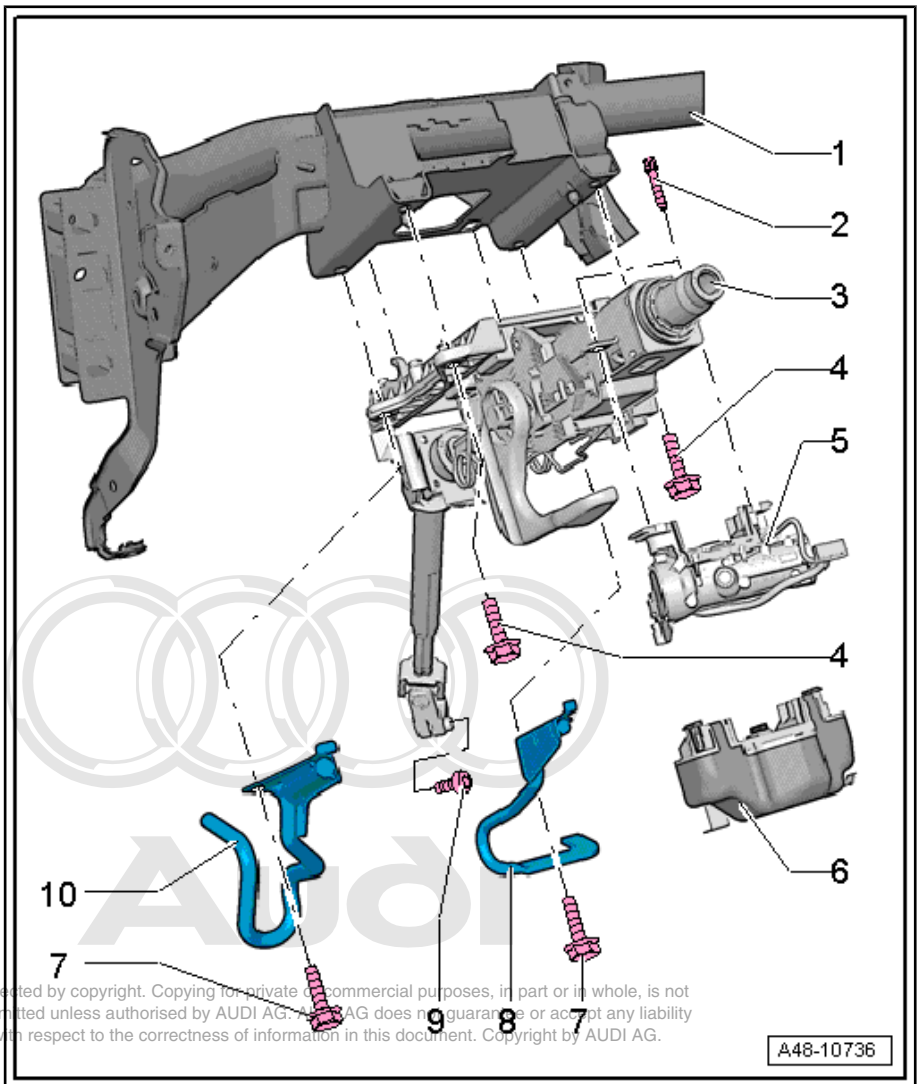
7 - Bolt

- ☐ Always renew if removed
- ☐ 20 Nm

8 - Crash bar (brake pedal)

9 - Bolt

- ☐ Always renew if removed
- ☐ Clean threaded hole (e.g. with a thread tap) before fitting new bolt
- ☐ 30 Nm



10 - Crash bar (clutch pedal)

2.2 Checking steering column for damage

Visual inspection

- Check all steering column parts for damage.

Checking function

- Check that steering column turns easily and smoothly.
- Check that steering column can be adjusted for height and reach.

2.3 Handling and transporting steering column



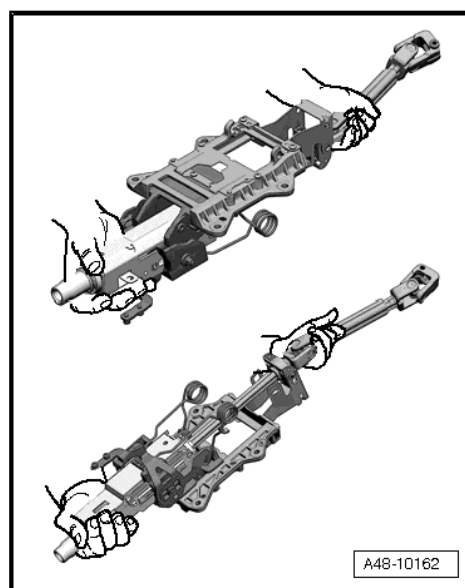
WARNING

- ◆ ***These instructions for handling the steering column MUST be observed at all times.***
- ◆ ***Incorrect handling can damage the steering column and thus cause a safety risk.***

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Correct handling and transportation of steering column

- Use both hands to carry the steering column.
- Take hold of the steering column at the top column tube and the upper universal joint.

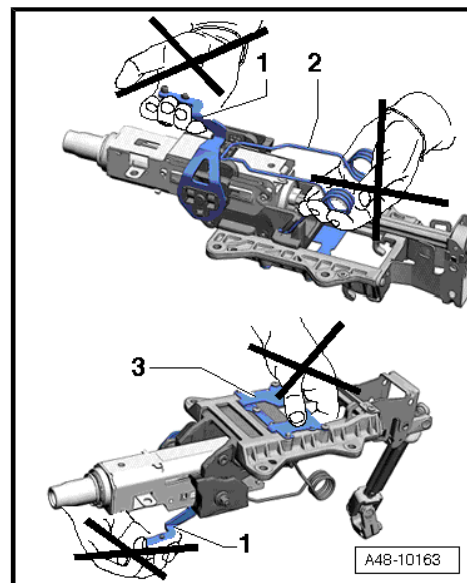


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Incorrect handling of steering column

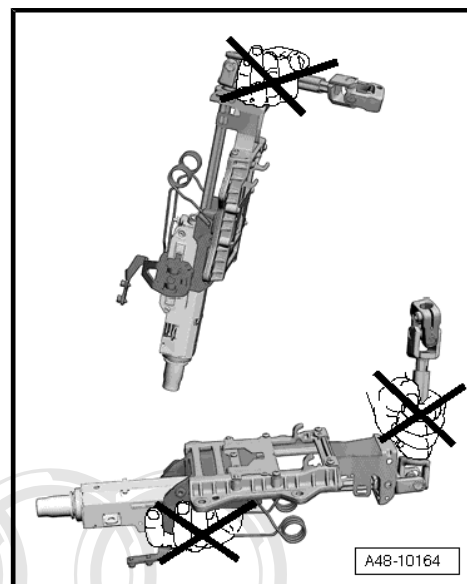
Carrying the steering column by the following parts will cause damage:

- 1 - Clamping lever
- 2 - Balance springs
- 3 - Deformation element



The bushes of the universal joint at the lower steering column bearing will be damaged by:

- Picking up and carrying the steering column by the jointed shaft with one hand.
- Bending the universal joints further than 90°.



2.4 Removing and installing steering column

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-

V.A.G 1331

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W00-11166

◆ Torque wrench - V.A.G 1332-



Removing

The replacement steering column is only supplied as a complete unit. Repair is not possible.

The steering lock housing can be transferred from the old unit.

The control unit for electronic steering column lock - J764- can be transferred from the old unit.

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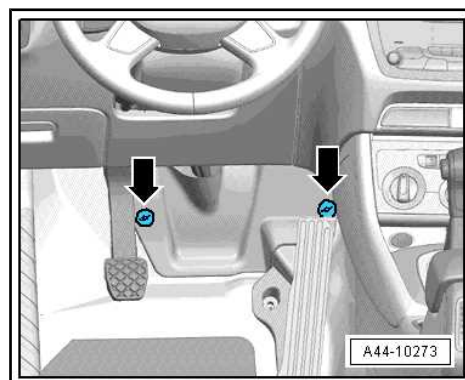
WARNING

Observe the following points before working on the electrical system and removing the steering wheel:

- ◆ **Unscrew earth strap from battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .**
- ◆ **Make sure wheels are in straight-ahead position.**

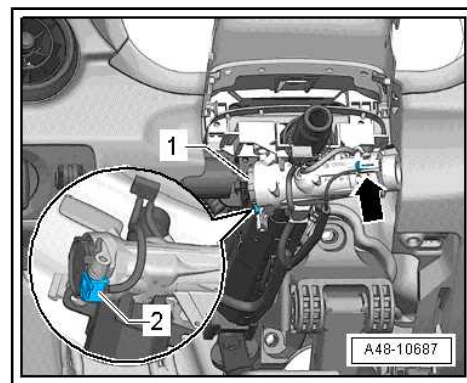
Failure to comply with these precautions may lead to subsequent failure of the airbag system.

- Turn wheels to straight ahead position.
- Pull down lever beneath steering column.
- Push steering column down as far as possible and pull out.
- Remove steering wheel ⇒ [page 262](#) .
- Remove footwell vent below steering column ⇒ Heating, air conditioning; Rep. gr. 87 ; Air routing; Removing and installing driver side footwell vent .
- Unscrew securing nuts -arrows- and remove footwell trim.
- Remove steering column switch module ⇒ Electrical system; Rep. gr. 94 ; Steering column switch module; Removing and installing steering column switch module .



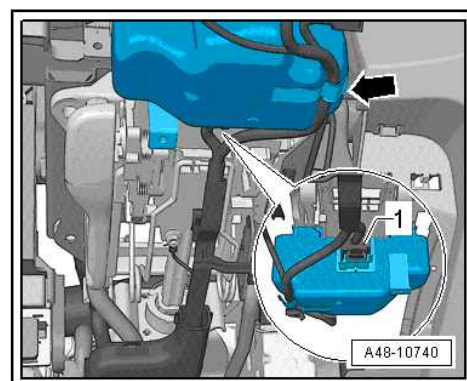
Vehicles with ignition/starter switch

- Unplug connector -arrow- from immobiliser reader coil - D2- .
- Unplug connector -2- from ignition/starter switch -1-.
- Move electrical wiring clear.



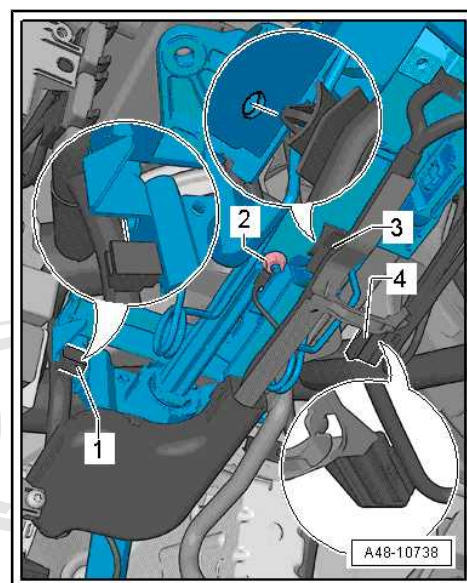
Vehicles with "keyless entry system"

- Release connector -1- and detach from control unit for electronic steering column lock - J764- .
- Move electrical wiring clear at retaining bracket -arrow-.



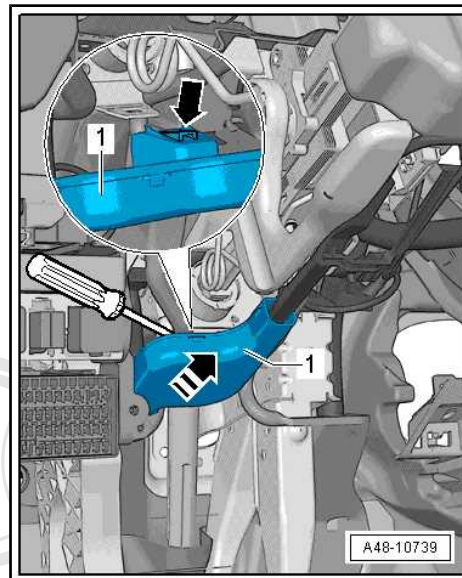
All vehicles (continued):

- Pull off clips -1, 3 and 4-.
- Unscrew nut -2- for earth wire.

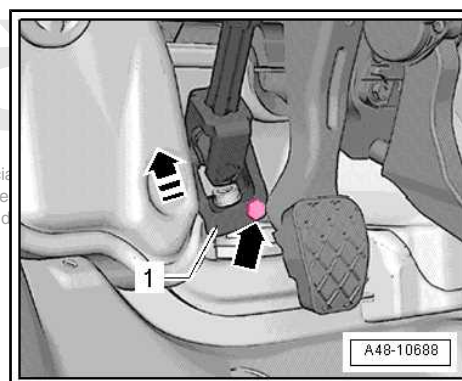


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- Remove cable duct -1- beneath steering column. To do this, lift lug -arrow- slightly and pull cable duct out of guide on steering column in direction of -arrow-.
- Move steering column wiring harness clear.



- Unscrew bolt -arrow- and pull universal joint -1- off steering rack in direction of -arrow-.



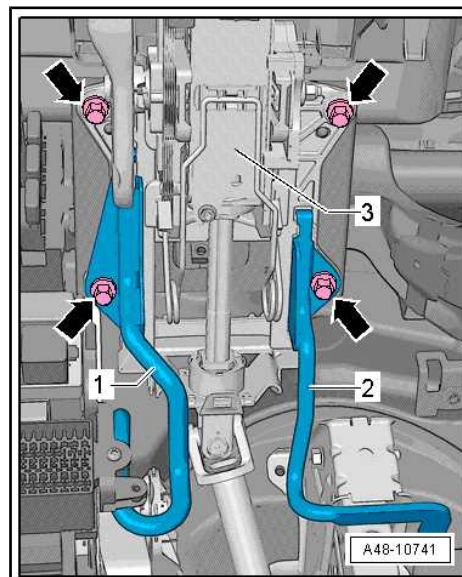
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- Remove bolts -arrows- (while supporting top section of steering column with one hand) and take out crash bars -1 and 2- if fitted.
- Lower steering column -3- slightly and carefully pull out upwards.



Caution

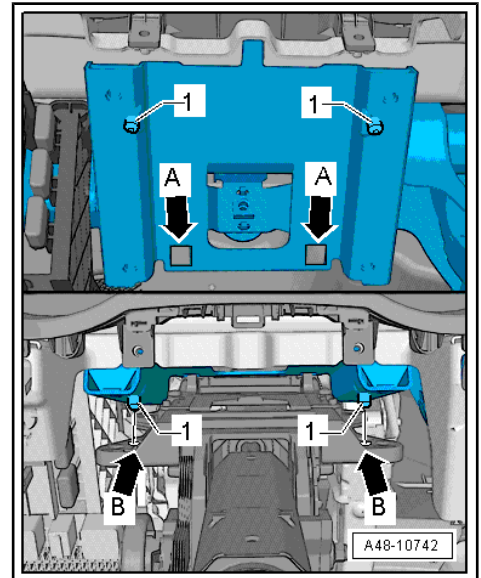
Observe instructions for handling and transporting steering column ➔ [page 264](#).



Installing

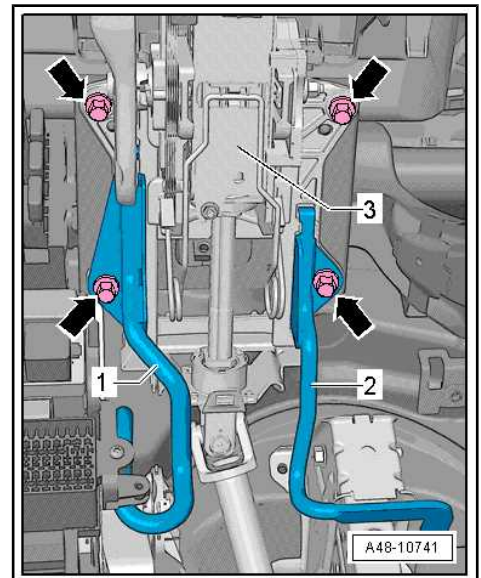
Installation is performed in reverse sequence; note the following:

- Hook steering column into installation aids on mounting bracket -arrows A-.
- Align steering column with mounting bracket and fit in position.
- When fitting the steering column, the pins -1- on the mounting bracket must be aligned with and inserted into the holes -arrows B- in the steering column.
- If this is not done, it will not be possible to locate the steering column correctly in relation to the mounting bracket.



- Tighten top bolts -arrows- for steering column -3-.
- If originally fitted, install crash bars -1 and 2- and tighten bottom bolts -arrows- securing steering column.

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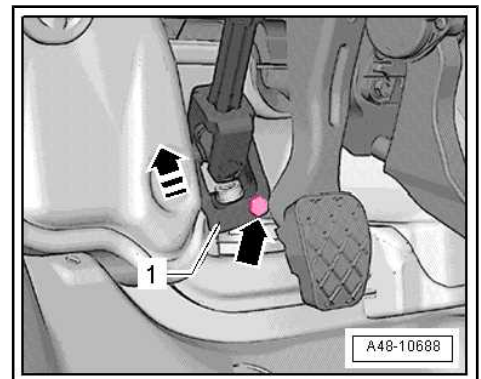
- Before fitting new bolt -arrow-, clean threaded hole with a thread tap or similar.



WARNING

With bolt -arrow- screwed in by hand, try to pull off universal joint to check that it is correctly seated. Then tighten bolt -arrow-.

- After installing the steering column switch module, the steering angle sender - G85- must be calibrated; start the appropriate program on the ⇒ Vehicle diagnostic tester.



Tightening torques

- ◆ ⇒ [“2.1 Exploded view - steering column”, page 263](#)
- ◆ ⇒ Heating, air conditioning; Rep. gr. 87 ; Air routing; Exploded view - routing of air flow and air distribution in passenger compartment
- ◆ ⇒ Electrical system; Rep. gr. 94 ; Steering column switch module; Exploded view - steering column switch module

2.5 Removing and installing control unit for electronic steering column lock - J764-

Special tools and workshop equipment required

- ◆ Right angle drill
- ◆ Drill bit, 8.5 mm Ø

Removing

When renewing control unit, select "Replace" function for relevant control unit in "Guided Functions" on ⇒ Vehicle diagnostic tester.

Follow the instructions on the screen.

- Turn wheels to straight ahead position.
- Pull down lever on side of steering column.
- Swing steering column down as far as possible and pull out.
- Press lever on side of steering column back up.
- Remove steering wheel ⇒ [page 262](#) .
- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Shelves/trim panels; Removing and installing dash panel cover (driver side) .
- Remove steering column electronics control unit - J527- ⇒ Electrical system; Rep. gr. 94 ; Steering column switch module; Removing and installing steering column electronics control unit - J527- .
- Remove steering column switch module ⇒ Electrical system; Rep. gr. 94 ; Steering column switch module; Removing and installing steering column switch module .

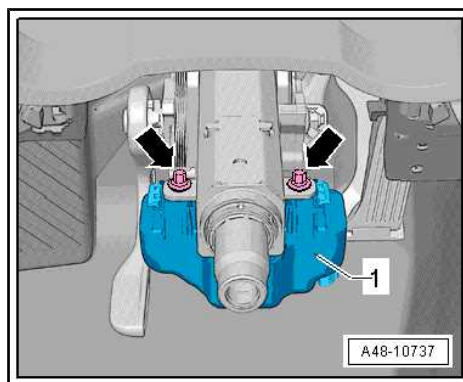


Caution

No swarf must enter the steering column.

Use a cloth or similar to prevent swarf from dropping into the steering column.

- Drill out shear bolts-arrows- using right angle drill with 8.5 mm Ø bit.
- Remove swarf with small brush.

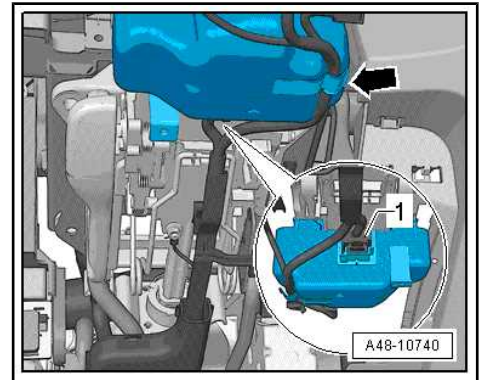


- Unplug connector -1-, move electrical wiring clear at retaining bracket -arrow- and carefully detach control unit for electronic steering column lock - J764- from steering column.



WARNING

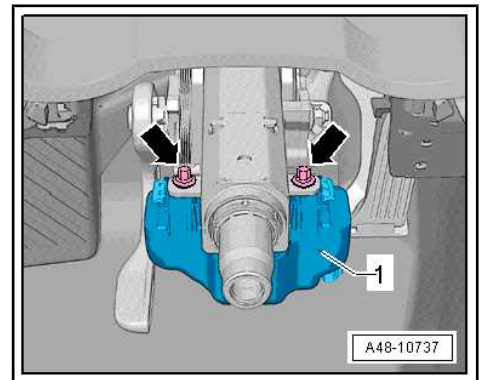
After removing the control unit for electronic steering column lock - J764- , make sure no dirt or foreign bodies get into the steering column.



Installing

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

- Secure control unit for electronic steering column lock - J764- -1- with new shear bolts -arrows-.
- Tighten shear bolts -arrows- evenly until bolt heads shear off.
- Install steering wheel ➔ [page 262](#) .
- If the control unit for electronic steering column lock - J764- has been renewed it must be adapted; select “Replace” function in “Guided Functions” on ➔ Vehicle diagnostic tester.
- Perform basic setting for steering angle sender - G85- using ➔ Vehicle diagnostic tester.
- Follow the instructions on the screen.



Tightening torques

- ◆ ➔ General body repairs, interior; Rep. gr. 68 ; Shelves/trim panels; Exploded view - dash panel cover (driver side)
- ◆ ➔ Electrical system; Rep. gr. 94 ; Steering column switch module; Exploded view - steering column switch module

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3 Steering rack

⇒ [“3.1 Exploded view - steering rack”, page 272](#)

⇒ [“3.2 Removing and installing steering rack”, page 274](#)

⇒ [“3.3 Removing and installing boot”, page 275](#)

⇒ [“3.4 Removing and installing track rod”, page 278](#)

⇒ [“3.5 Servicing steering rack”, page 281](#)

3.1 Exploded view - steering rack

Part 1

1 - Bolt

- ☐ Secures electrical wiring
- ☐ 6 Nm

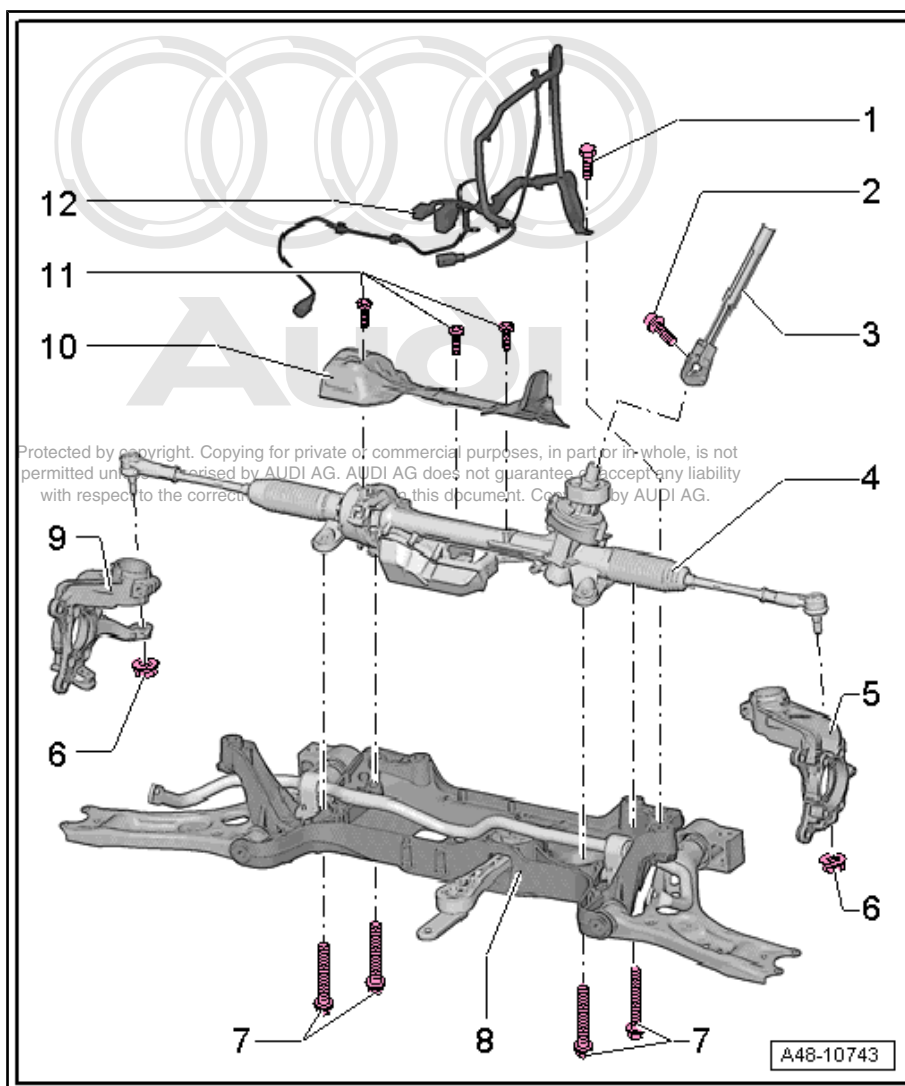
2 - Bolt

- ☐ Always renew if removed
- ☐ Clean threaded hole (e.g. with a thread tap) before fitting new bolt
- ☐ Tightening torque
⇒ [Item 9 \(page 263\)](#)

3 - Steering shaft with universal joint

4 - Power steering rack

- ☐ With power steering control unit - J500-
- ☐ Can be checked via “Guided Fault Finding” with ⇒ Vehicle diagnostic tester
- ☐ Removing and installing
⇒ [page 274](#)
- ☐ Coat seal on steering rack with suitable lubricant, e.g. soft soap, before installing
- ☐ After positioning steering rack in relation to universal joint, ensure seal on steering rack makes snug contact with base plate, without kinks, and properly seals off opening to footwell. Otherwise, this can result in water leaks and/or noise.



5 - Wheel bearing housing (left-side)

6 - Nut

- ☐ Always renew if removed
- ☐ 50 Nm

7 - Bolt

- ☐ Always renew if removed
- ☐ 50 Nm +90°

8 - Subframe

9 - Wheel bearing housing (right-side)

10 - Heat shield

- ☐ Different versions (depending on engine version)

11 - Bolt

- ☐ 6 Nm

12 - Electrical wiring

Part 2

1 - Track rod ball joint (right-side)

- ☐ Check that grease caps are seated correctly and not damaged

2 - Nut

- ☐ Counterhold track rod ball joint with spanner when loosening and tightening nut
- ☐ 70 Nm

3 - Spring-type clip

4 - Boot

- ☐ Removing and installing
⇒ [page 275](#)
- ☐ Check for damage
- ☐ Must not be twisted when toe setting has been adjusted

5 - Hose clip

- ☐ Always renew if removed
- ☐ Secure new hose clip using locking pliers for steering rack - VAS 6199-

6 - Track rod

- ☐ If defective, also renew track rod ball joint
- ☐ Removing and installing
⇒ [page 278](#)
- ☐ 100 Nm

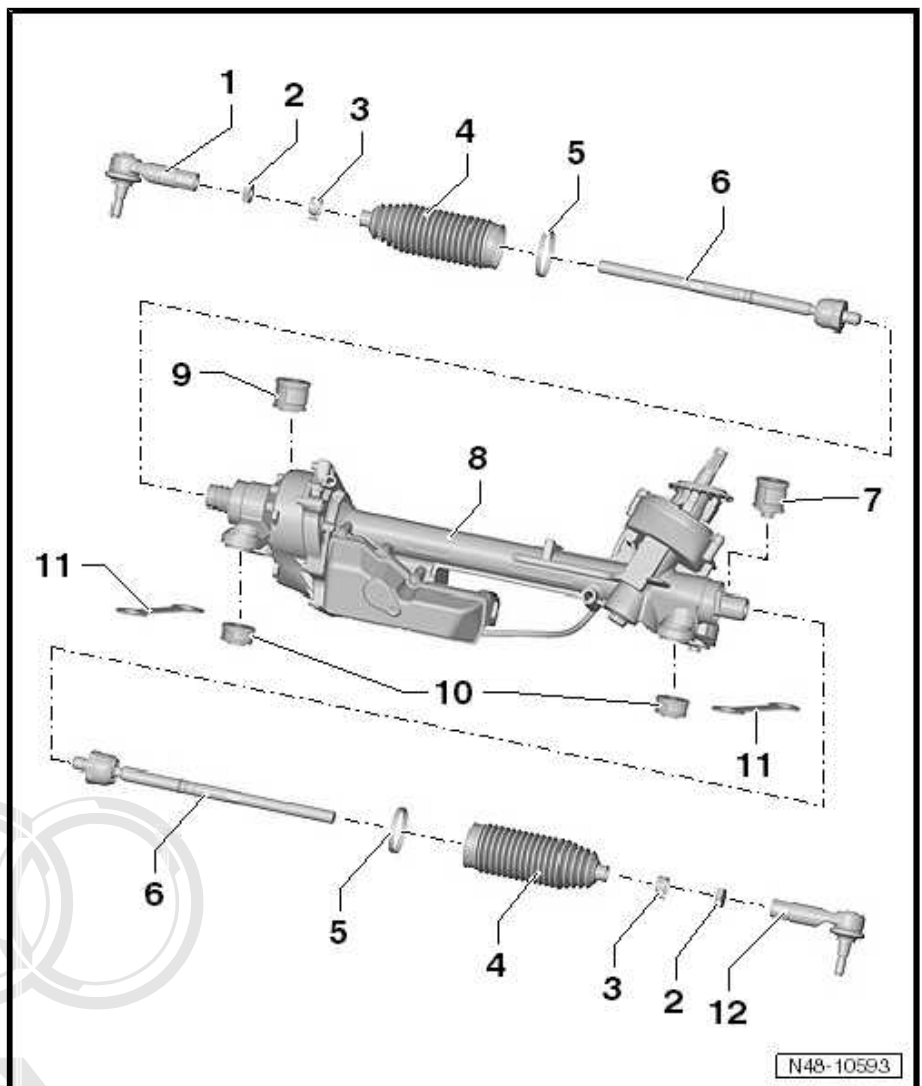
7 - Long bonded rubber bush

- ☐ Rear left with centring projection
- ☐ Renewing ⇒ [page 281](#)

8 - Steering rack housing

9 - Long bonded rubber bush

- ☐ Rear right
- ☐ Renewing ⇒ [page 281](#)
- ☐ For correct version refer to ⇒ Electronic parts catalogue



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8 - Steering rack housing

9 - Long bonded rubber bush

- ☐ Rear right
- ☐ Renewing ⇒ [page 281](#)
- ☐ For correct version refer to ⇒ Electronic parts catalogue



10 - Short bonded rubber bush

- ☐ Front left and right
- ☐ Renewing ⇒ [page 281](#)
- ☐ For correct version refer to ⇒ Electronic parts catalogue

11 - Lock plate

12 - Track rod ball joint (left-side)

- ☐ Check that grease caps are seated correctly and not damaged

3.2 Removing and installing steering rack

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-



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Removing

- Remove subframe with steering rack ➔ [page 22](#) .
- Remove bolts -2- and -3- for steering rack.
- Remove bolts -1- and -4- for anti-roll bar.



Note

Illustration shows vehicle with subframe installed.

- Detach anti-roll bar from subframe, then detach steering rack.

Installing

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

Threaded sleeves of steering rack must be located in subframe holes.



Note

Ensure sealing boot is not damaged or twisted.

- Install subframe with steering rack ➔ [page 22](#) .

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

Perform wheel alignment if the steering wheel is not horizontal, or after installing a new steering rack
➔ [“2.5 Wheel alignment procedure”, page 246](#) .

- Calibrate steering angle sender - G85- using ➔ [Vehicle diagnostic tester ➔ page 242](#) .
- If a new steering rack has been installed, the power steering control unit - J500- must be adapted using the ➔ [Vehicle diagnostic tester](#).

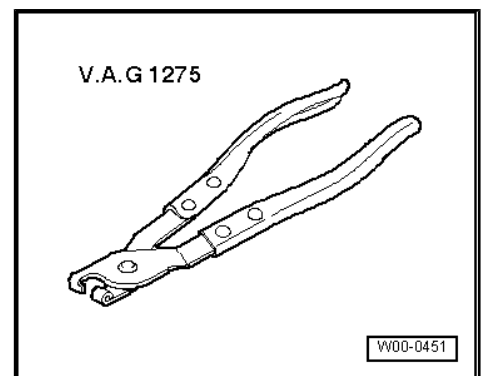
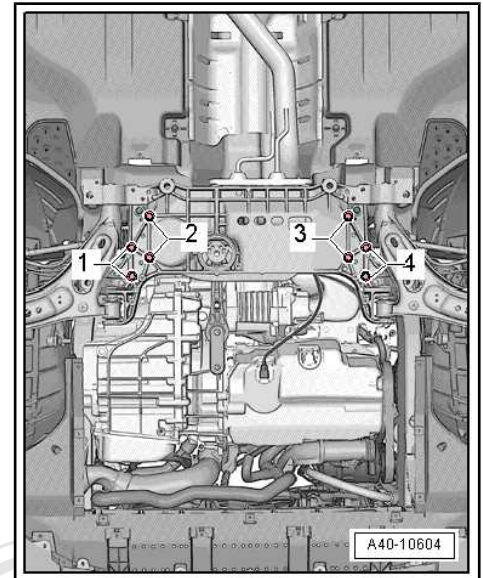
Tightening torques

- ◆ ➔ [“1.1 Exploded view - subframe”, page 16](#)
- ◆ ➔ [“3.1 Exploded view - steering rack”, page 272](#)

3.3 Removing and installing boot

Special tools and workshop equipment required

- ◆ Hose clip pliers - V.A.G 1275-



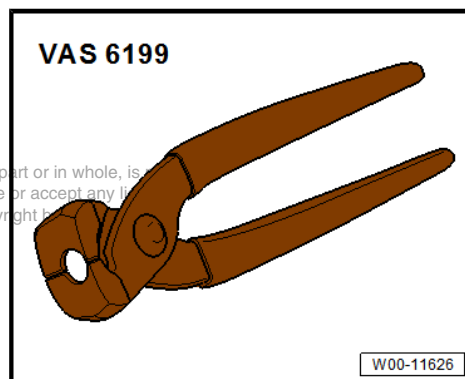
◆ Torque wrench - V.A.G 1332-



◆ Tool insert (24 mm) - V.A.G 1332/11-



◆ Locking pliers for Phaeton steering rack - VAS 6199-



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Removing

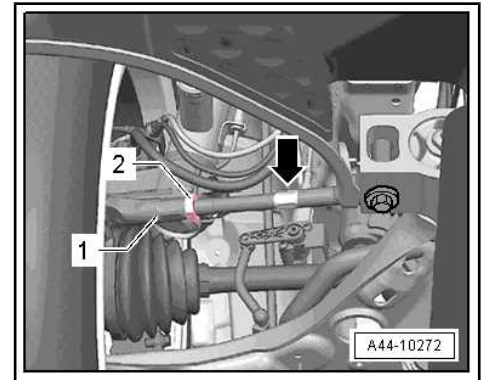


Note

Moisture and dirt will enter the steering rack if the rubber boot is defective. It should be possible to feel a film of lubricant on and around the teeth of the steering rack. Renew steering rack if no film of lubricant can be felt. Also renew steering rack unit if the teeth show signs of corrosion, damage or wear.

- Turn steering wheel to straight-ahead position.
- Remove front wheel ⇒ [page 241](#) .
- Clean outside of steering rack in area of rubber boot.
- No dirt must be allowed to enter the steering rack through a defective rubber boot during this operation.

- Mark position of nut -2- on track rod.
- Loosen nut -2- (counterhold track rod ball joint -1-).
- Loosen spring-type hose clip ⇒ [Item 3 \(page 273\)](#) on rubber boot using hose clip pliers - V.A.G 1275- and push onto track rod.
- Remove O-type hose clip ⇒ [Item 5 \(page 273\)](#) and detach rubber boot from steering rack housing.
- Now unscrew track rod from track rod ball joint.
- Detach rubber boot with spring-type clip from track rod.



 Note

- ◆ *Renew the complete steering rack unit if there are signs of corrosion, damage, wear or dirt on the rack.*
- ◆ *The complete steering rack unit must also be renewed if there is no visible lubricating film on the rack.*

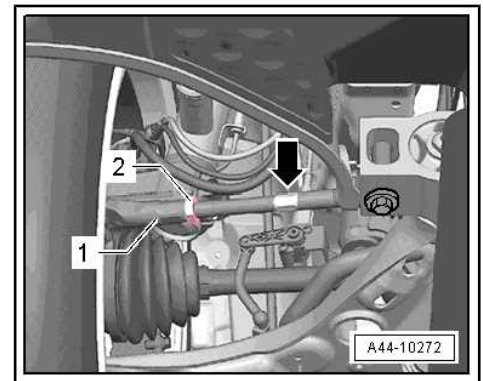
Installing



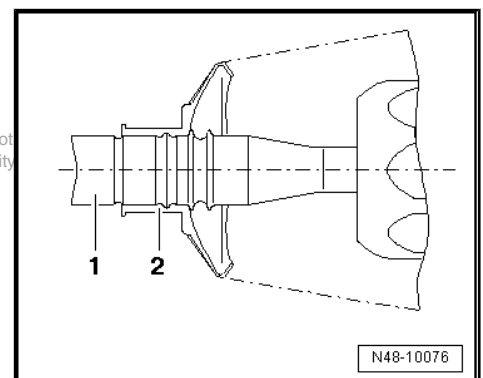
Caution

Do not grease rack.

- Turn steering wheel to straight-ahead position.
- Fit new hose clips and rubber boot onto track rod.
- Screw in track rod until the mark applied upon removal is just visible.
- Tighten lock nut -2- to specified torque (counterhold track rod ball joint -1- for this purpose).
- Lightly grease sealing point between rubber boot and track rod with grease from repair kit.



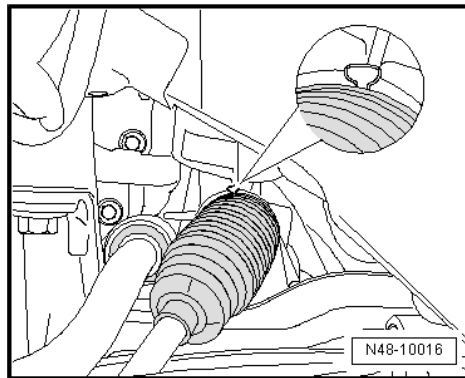
- Push rubber boot -2- onto track rod -1- as shown in illustration.
- Secure spring-type hose clip onto rubber boot using hose clip pliers - V.A.G 1275- .
- Lightly grease sealing point between rubber boot and steering rack housing with grease from repair kit.



- Push rubber boot onto steering rack housing.
- Tighten new O-type hose clip using locking pliers for steering rack - VAS 6199- as far as shown in illustration.

Remaining installation steps are carried out in reverse sequence.

- Fit front wheel ➔ [page 241](#) .
- Check wheel alignment
➔ [“2.5 Wheel alignment procedure”, page 246](#) .
- Perform basic setting of steering angle sender - G85- ➔ Vehicle diagnostic tester, “Guided Fault Finding”.
- Then perform basic setting of steering ➔ Vehicle diagnostic tester, “Guided Fault Finding”.



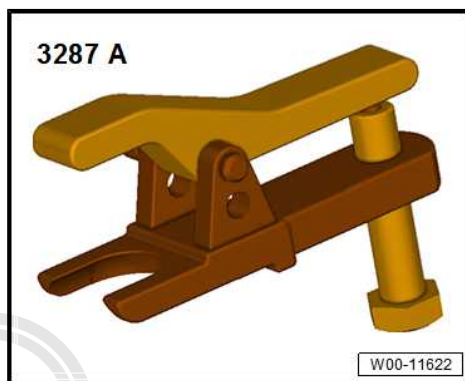
Tightening torques

- ♦ ➔ [“3.1 Exploded view - steering rack”, page 272](#)

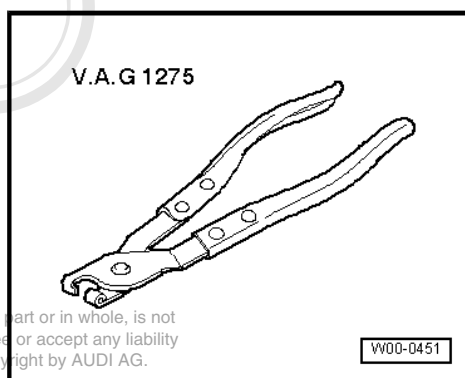
3.4 Removing and installing track rod

Special tools and workshop equipment required

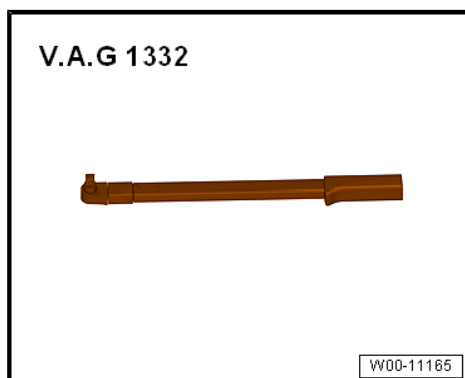
- ♦ Ball joint puller - 3287 A-



- ♦ Hose clip pliers - V.A.G 1275-



- ♦ Torque wrench - V.A.G 1332-

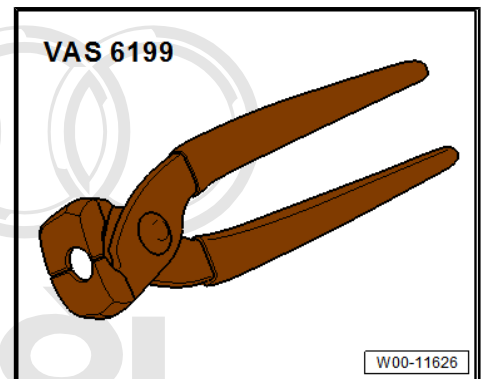


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- ◆ Open-end spanner attachment (38 mm) - V.A.G 1923-

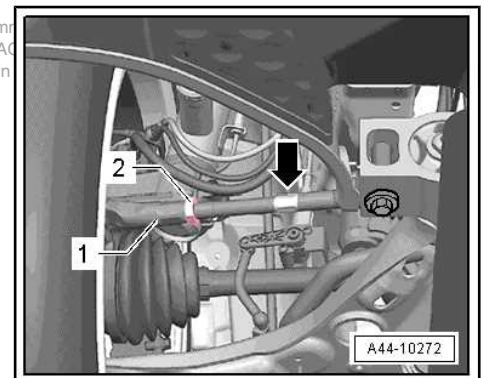


- ◆ Locking pliers for Phaeton steering rack - VAS 6199-

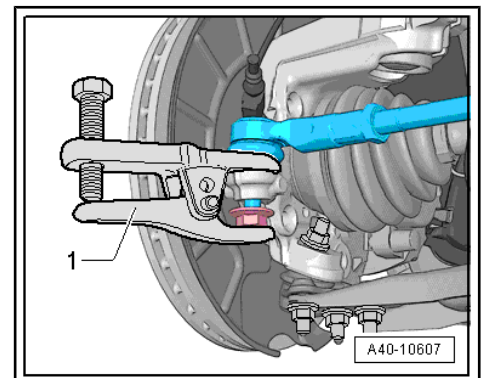


Removing track rod

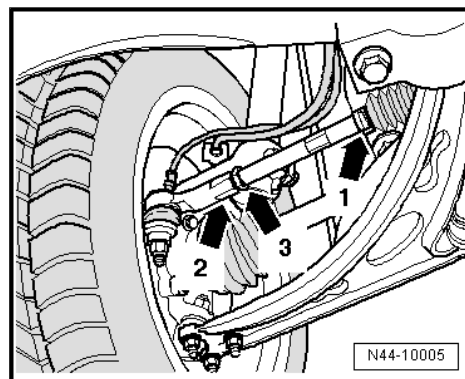
- Turn steering wheel to straight-ahead position.
- Remove front wheel ➔ [page 241](#) .
- Clean outside of steering rack in area of rubber boot.
- Loosen nut -2- (counterhold track rod ball joint -1-).



- Slacken off nut on track rod ball joint (but do not remove yet).
- Leave nut screwed on a few turns to protect threads on joint pin.
- Press track rod ball joint off wheel bearing housing using ball joint puller - 3287 A- -1- and then remove nut.



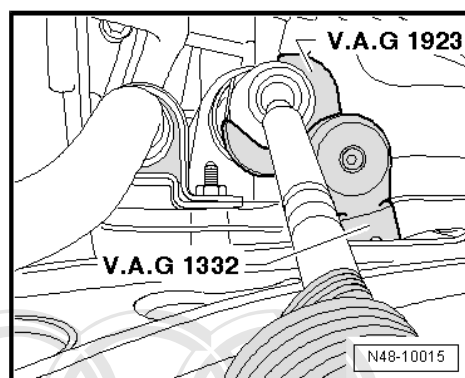
- Loosen spring-type hose clip -1- on rubber boot using hose clip pliers - V.A.G 1275- and push onto track rod.
- Remove hose clip and detach rubber boot from steering rack housing.



- Unscrew track rod from rack using open end spanner attachment (38 mm) - V.A.G 1923- .

Note

- ◆ *Renew the complete steering rack unit if there are signs of corrosion, damage, wear or dirt on the rack.*
- ◆ *The complete steering rack unit must also be renewed if there is no visible lubricating film on the rack.*



Installing track rod



Caution

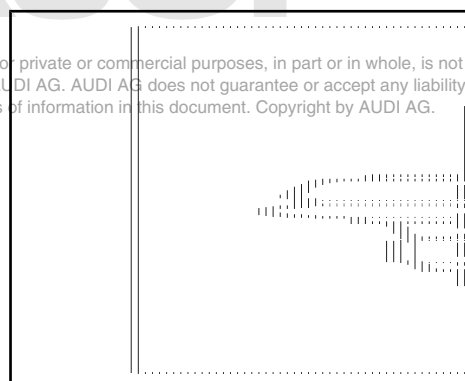
Do not grease rack.

- Turn steering wheel to straight-ahead position.
- Fit new hose clips and rubber boot onto track rod.
- Screw track rod into track rod ball joint until dimension -a- is obtained.

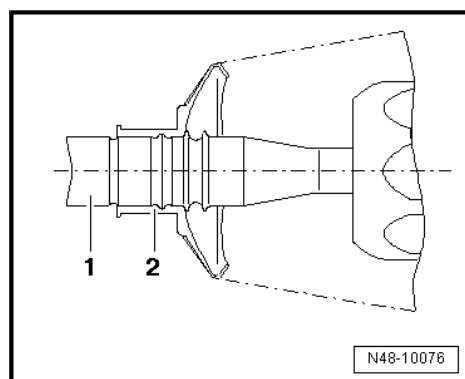
Dimension -a- = 367 ± 1 mm

- Screw track rod into rack and tighten to specified torque.

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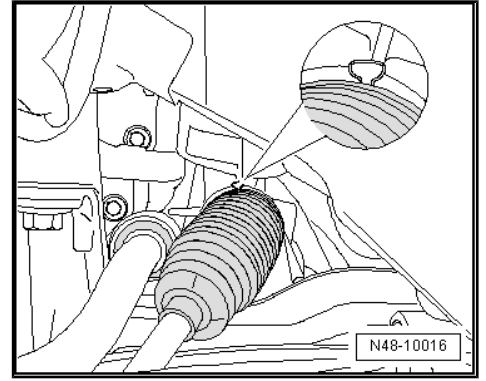
- Lightly grease sealing point between rubber boot and track rod with grease from repair kit.
- Push rubber boot -2- onto track rod -1- (make sure boot is positioned correctly).
- Lightly grease sealing point between rubber boot and steering rack housing with grease from repair kit.



- Push rubber boot onto steering rack housing as far as stop.
- Tighten new O-type hose clip using locking pliers for steering rack - VAS 6199- as far as shown in illustration.

Remaining installation steps are carried out in reverse sequence.

- Remove front wheel ➔ [page 241](#) .
- Check wheel alignment
➔ [“2.5 Wheel alignment procedure”, page 246](#) .
- Perform basic setting of steering angle sender - G85- ➔ Vehicle diagnostic tester.
- Perform basic setting of steering ➔ Vehicle diagnostic tester.



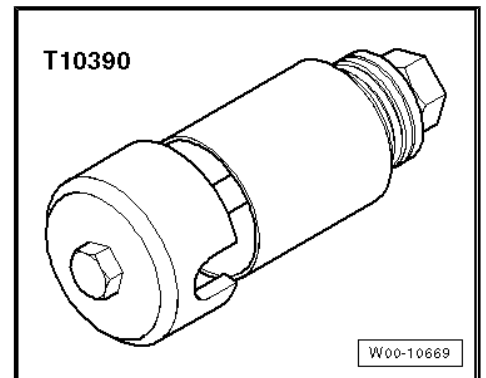
Tightening torques

- ◆ ➔ [“3.1 Exploded view - steering rack”, page 272](#)

3.5 Servicing steering rack

Special tools and workshop equipment required

- ◆ Assembly tool - T10390-



Removing



Note

- ◆ *Always renew bonded rubber bushes in pairs on at least one side of the vehicle.*
- ◆ *Removal and installation are described for only one bonded rubber bush. The procedure for the second bonded rubber bush is similar.*
- ◆ *Always note positions of bonded rubber bushes on power steering rack ➔ [page 282](#) .*

- Remove power steering rack ➔ [page 274](#)

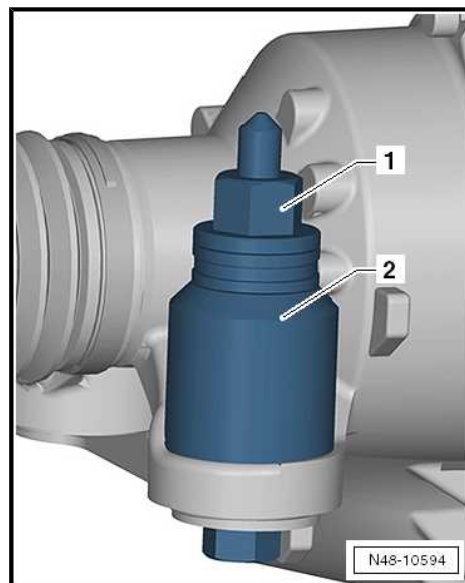
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– Attach tools from above as shown in illustration.

1 - Nut - T10390/3-

2 - Tube - T10390/1-

– Pull out bonded rubber bush.



Positions of bonded rubber bushes on power steering rack

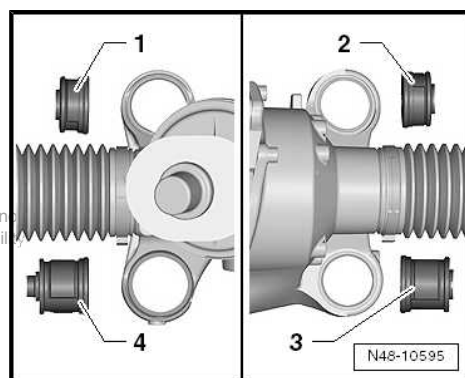
1 - Short bonded rubber bush (front left)

2 - Short bonded rubber bush (front right)

3 - Long bonded rubber bush (rear right)

4 - Long bonded rubber bush (rear left) with centring projection

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Installing

– Note positions of bonded rubber bushes on power steering rack ➤ [page 282](#) .

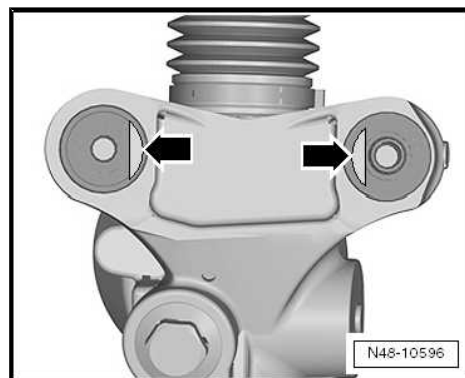
– Lubricate outside of bonded rubber bush with soapy water.

– Position bonded rubber bushes so that flattened sections are parallel and face inwards -arrows-.



Note

Always draw in bonded rubber bush from above from direction of steering shaft.



– Apply tools as shown in illustration.

1 - Nut - T10390/3-

2 - Bonded rubber bush

3 - Tube - T10390/2-

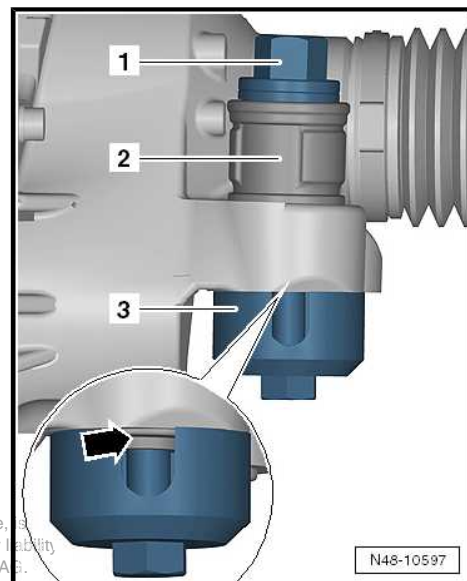
– Draw bonded rubber bush in as far as stop until rubber lip has folded over edge -arrow-.



Note

The bonded rubber bush will slide back slightly after the assembly tool - T10390- is released.

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– Place lock plate -1- onto bonded rubber bushes so that edges and flattened areas engage.

– Fix lock plate -1- in position with a cable tie -2-.



Note

Tighten cable tie as securely as possible so that lock plate does not slip when installing power steering rack.

– Install power steering rack ➔ [page 274](#) .

– Remove cable tie from steering rack.

