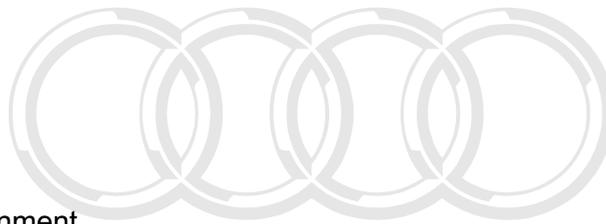


List of Workshop Manual Repair Groups

Repair Group

- 00 - General, Technical Data
- 40 - Front Suspension
- 42 - Rear Suspension
- 43 - Self-Leveling Suspension
- 44 - Wheels, Tires, Wheel Alignment
- 48 - Steering



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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 – General, Technical Data

1 General Information

(Edition 03.2022)

A005A003821 - 04.28.2022

[⇒ 1.1 , page 1](#)

[⇒ 1.2 , page 1](#)

[⇒ T1.3 ypes", page 1](#)

1.1 Chassis

FWD and AWD	
Front Axle	McPherson struts with lower control arm, subframe, stabilizer bar or optional shock absorber with variable damping characteristics
Rear axle for vehicles with base engine.	Torsion beam axle with separate spring-shock absorber configuration.
Rear axle for vehicles with high performance engine	Multi-link suspension with separate spring-shock absorber configuration, stabilizer bar or optional shock absorber with variable damping characteristics

1.2 Steering

FWD and AWD	
Steering Gear	Electro-mechanically supported, maintenance-free rack-and-pinion steering

1.3 Tire Types

General information for wheel/tire combination, winter tires, snow chains, recommended tire brands. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 and ⇒ Wheel and Tire Guide; Rep. Gr. 44.



2 Safety Precautions

⇒ [P2.1 recautions when Working on Vehicles with High-Voltage System", page 2](#)

⇒ [P2.2 recautions when Working near High-Voltage Components", page 2](#)

⇒ [P2.3 recautions when Working on Vehicles with Start/Stop System", page 3](#)

⇒ [P2.4 recautions during Road Test with Testing Equipment", page 3](#)

2.1 Safety Precautions when Working on Vehicles with High-Voltage System

High voltage is extremely dangerous.

The high-voltage system is under high voltage. Electrocutation can cause death or very serious personal injury.

- Individuals with electronic/medical life and health sustaining machines in or on their person cannot perform any work on high-voltage systems. Life and health sustaining machines are for example pain killer pumps, implanted defibrillators, pacemakers, insulin pumps, and hearing aids.
- Have the high-voltage system de-energized by a qualified person.

There is a risk of injury due to the engine starting unexpectedly.

Active drive ready mode is difficult to identify in electric and hybrid vehicles. Parts of the body can be pinched or pulled in.

- Switch off the ignition.
- Place the ignition key outside of the vehicle interior.

There is a risk of damaging the high-voltage cables.

Incorrect handling can damage the insulation on high-voltage cables or high-voltage connectors.

- Never use the high-voltage cables and the high-voltage connectors for support.
- Never support tools on the high-voltage cables and the high-voltage connectors.
- Never sharply bend or kink the high-voltage cables.
- Pay attention to the coding when connecting the high-voltage connectors.

2.2 Safety Precautions when Working near High-Voltage Components

High voltage is extremely dangerous.

The high-voltage system is under high voltage. Electrocutation can cause death or very serious personal injury from damaged high-voltage components and high-voltage cables.

- Visually inspect the high-voltage components and the high-voltage cables.
- Never use tools that are for cutting, deformed, or sharp edged.
- Never weld, solder, or use thermal adhesive or hot air.

2.3 Safety Precautions when Working on Vehicles with Start/Stop System

There is a risk of injury due to the engine starting unexpectedly.

The engine may start unexpectedly in vehicles with the Start/Stop System activated. A message in the instrument cluster indicates whether the Start/Stop System is activated.

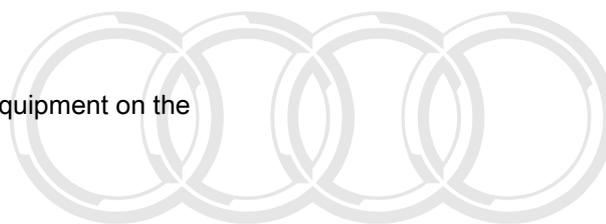
- Deactivate the Start/Stop System: switch off the ignition.

2.4 Safety Precautions during Road Test with Testing Equipment

There is a risk of injury due to unsecured testing equipment.

If the front passenger airbag activates during a collision, unsecured testing equipment becomes a dangerous projectile.

- Secure testing equipment on the rear seat.
- or
- Have a second person operate the testing equipment on the rear seat.



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3 Repair Information

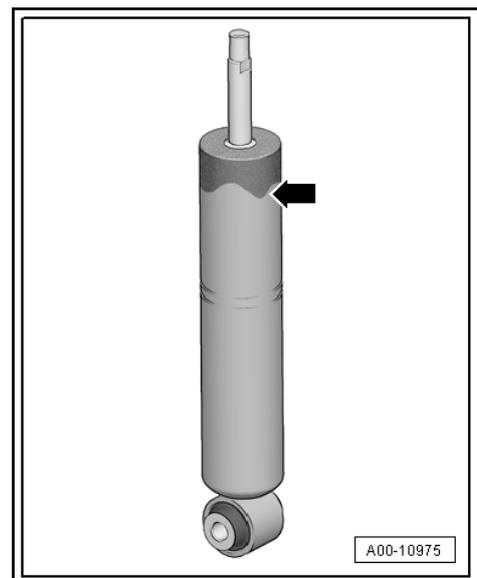
- ⇒ [A3.1 bsorber Leaks", page 4](#)
- ⇒ [A3.2 bsorber Noises", page 5](#)
- ⇒ [A3.3 bsorbers, Checking when Removed", page 5](#)
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3.1 Shock Absorber Leaks

Shock absorbers are frequently rejected and replaced because of leaks. Examinations on the test stand and on the vehicle have shown that the replacement of a large number of rejected shock absorbers was not justified.

Slight leaking of oil ("sweating") at piston rod seal is no reason to replace a shock absorber. A shock absorber damp with oil is OK under the following circumstances:

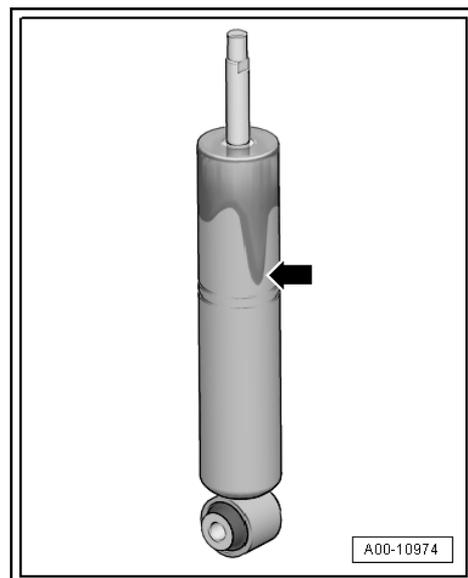


 Note

Minor oil excretion is an advantage, since the piston rod oil seal gets lubricated, which thus increases service life. This applies to shock absorbers on the front and rear axles.

- ◆ Oil leakage (shaded in illustration -arrow-) is visible, but dull, matte and possibly dry due to dust.
- ◆ One-sided oil or dirt film formation, no dripping.

A shock absorber is not OK under the following circumstances:



- ◆ Dripping -arrow-, completely coated with oil film
- ◆ ~~A wet oil film that runs down the pipe indicates a leaky shock absorber. A replacement is required in this instance.~~

3.2 Shock Absorber Noises

Shock absorbers are frequently rejected and exchanged because of rumbling noises. Examinations on the test stand and vehicle have shown that there was no concern with approximately 70% of the rejected shock absorbers and the replacement was not justified.

In case of complaints that are interpreted as rumbling or knocking sounds, proceed as follows.

- Determine with the customer where, when and how the sounds change during a road test on a dry stretch of road with irregularities, if possible.

 Note

Shock absorbers are the cause of noises only in the rarest of cases.

3.3 Shock Absorbers, Checking when Removed

Defective shock absorbers are noticeable when driving due to loud rumbling noises - a result of wheel hopping - especially on



poor stretches of road. Moreover, they can be recognized by a large loss of oil.



Note

Shock absorbers are maintenance-free, shock absorber oil cannot be filled.

A removed shock absorber can be checked by hand as follows:

- Push the shock absorber together by hand.
- The piston rod must move with even resistance throughout the entire stroke and without jerking.
- Release the piston rod.
- For shock absorbers with sufficient gas pressure, the piston rod returns automatically to its starting position.

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Note

- ◆ *If this is not the case, the shock absorber does not necessarily need to be replaced. As long as there is not a large loss of oil, the effectiveness corresponds to that of a standard shock absorber.*
- ◆ *The damping function is also completely available without gas pressure, as long as there is no large loss of oil. However, this can increase the noise level.*

3.4 Shock Absorbers, Checking on Shock Tester

Special tools and workshop equipment required

- ◆ Maha Shock Absorber Tester -VAS1990S-
- ◆ Suspension Strut Test Bed -VAS6636-
- ◆ Suspension Strut Test Bed -VAS6640-

Shock absorbers can be checked while installed using the shock tester (shock absorber testing device). The damping effect can be evaluated based on the dial reading or printout.

Test Requirements

- Temperature +10 to 40 °C (50 to 104 °F)
- Driver must be in vehicle.
- Tire pressure OK
- Drive vehicle straight onto center of wheel contact plates.
- Front wheels in straight position.
- Parking brake not engaged, foot brake not pressed.

Threshold

Shock absorber condition can only be judged as follows:

- ◆ Sufficient damping effect
- or
- ◆ Insufficient damping effect

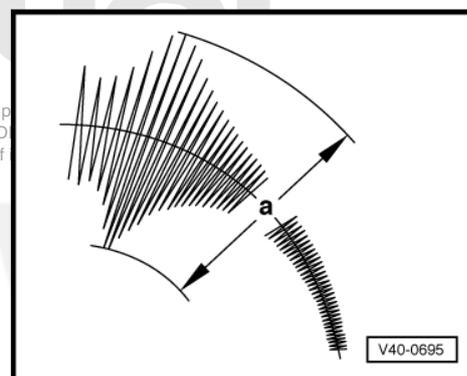
 **Note**

- ◆ *Shock absorber test for vehicles with regulated suspension (Audi magnetic ride). Refer to ⇒ Technical Service Handbook (HST).*
- ◆ *Intermediate values for reduced damping performance cannot be read out.*
- ◆ *A prognosis on service life is not permitted.*
- ◆ *Measured values that occur with the involvement of the suspension travel end stops are incorrect.*

The following values apply only to the test stands named above. If the specified values are exceeded, the shock absorber function has weakened enough that a replacement is recommended.

Example:

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Threshold = 70

- ◆ a = greater than 70: insufficient damping effect
- ◆ a = less than 70: sufficient damping effect

The shock absorber combination installed in the vehicle is indicated by the corresponding PR number on the vehicle data label.

Production Control Number (PR number) explanation. Refer to ⇒ [C2.5 ontrol Number \(PR Number\) Explanations](#), page 415 .

3.5 Threshold "a" in mm

 **Note**

- ◆ *If the readout value is greater than the threshold "a" (table value): insufficient damping effect ⇒ replace shock absorber.*
- ◆ *If the readout value is less than the threshold "a" (table value): sufficient damping effect ⇒ shock absorber does not need to be replaced.*

Vehicle Type	Front Axle	Rear Axle	Note
Standard suspension 2UA	43 mm	52 mm	no load tank full
Heavy duty suspension 2UA	43 mm	52 mm	no load tank full
Sport suspension 2UC	42 mm	50 mm	no load tank full



Vehicle Type	Front Axle	Rear Axle	Note
S-line Sport suspension 2UG	42 mm	50 mm	no load tank full

The Tires Must be "partially loaded" when Measuring the Tire Pressure.

3.6 Guidelines for Clean Working Conditions

- ◆ Always clean the connection points and the area around them and then loosen them.
- ◆ Place removed parts on a clean surface and cover them so that they do not get dirty. Use foil and paper. Only use lint-free cloths.
- ◆ Only install clean parts: remove the replacement parts from their packaging just before installing them.
- ◆ Only use greases and sealants that are designated with part numbers.
- ◆ Carefully cover or seal opened components if the repair is not performed immediately.

3.7 General Information

Extreme caution, cleanliness, and properly functioning tools are an essential requirement in performing a faultless and successful steering gear repair. Of course the general safety precautions also apply when carrying out repair work.

General information that applies to various different repair procedures is listed here instead of repeating it multiple times throughout the manual. They apply to this repair manual.

3.8 General Repair Information

When installing waxed components, contact surfaces must be cleaned. Contact surfaces must be free of wax and grease.

The tightening specifications given apply to non-lubricated bolts and nuts.

Always replace self-locking nuts and bolts.

Always replace the bolts and nuts, which are tightened with an additional turn.

Welding or adjustment procedures are not permitted on load-bearing or wheel-controlling components.

Avoid hammering, welding beads or applying color identification later to coil springs.

Do not perform any welding or grinding (separating work) near the coil springs or suspension struts. Cover coil springs or suspension struts if necessary.

When loosening or removing and installing hydraulic, pneumatic lines or wires, draw sketches or take pictures. This ensures installation is the same as the original.

If the cable ties, brackets or mounting elements were removed during the repair procedure, they must be installed at their original location that corresponds to the series production.

Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).

Never allow the drive axle to hang loose under the vehicle or to bend them at the joints during repair procedures.

Vehicles without a drive axle must not be moved, otherwise the wheel bearing will be damaged. If a vehicle must be moved, be sure to note the following:

- Install an outer joint in place of the drive axle.
- Tighten the outer joint to 200 Nm.

Bonded rubber bushings have a limited range of rotation. For this reason only tighten threaded connections at control arms if vehicle is in curb weight position. Refer to [⇒ B3.16 bearing in Curb Weight Position, Lifting Vehicles with Coil Spring, page 11](#).

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3.9 Contact Corrosion

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

For this reason, only fasteners with a special surface coating may be installed.

Furthermore, only rubber/plastic parts and adhesive made of electrically non-conductive materials are used.

If there are doubts about whether parts can be reused or not, then use new parts. Refer to the Electronic Parts Catalog (ET-KA).

Note:

- ◆ The use of original replacement parts is recommended, since they are tested and are compatible with aluminum.
- ◆ The use of Audi accessories is recommended.
- ◆ Contact corrosion damage is not covered under warranty!

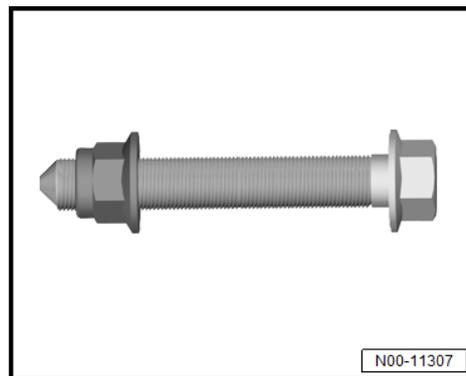
3.10 Steering Gear

- ◆ Always clean the connection points and the area around them and then loosen them.
- ◆ When installing the steering gear, make sure the alignment sleeves are correctly positioned between the bracket and steering gear.
- ◆ Place removed parts on a clean surface and cover them so that they do not get dirty. Use foil and paper. Only use lint-free cloths.
- ◆ Only install clean parts: remove the replacement parts from their packaging just before installing them.
- ◆ Only use lubricants and sealants marked with part numbers.
- ◆ Carefully cover or seal opened components if the repair is not performed immediately.

3.11 Seals and Gaskets

- ◆ Always replace seals and gaskets.
- ◆ After removing seals, inspect the contact surfaces on housings and shafts for burrs and damage and repair if necessary.
- ◆ Remove all sealant residue of fluid seals from the sealing surfaces. Sealant residue must not enter the steering gear housing when doing this.

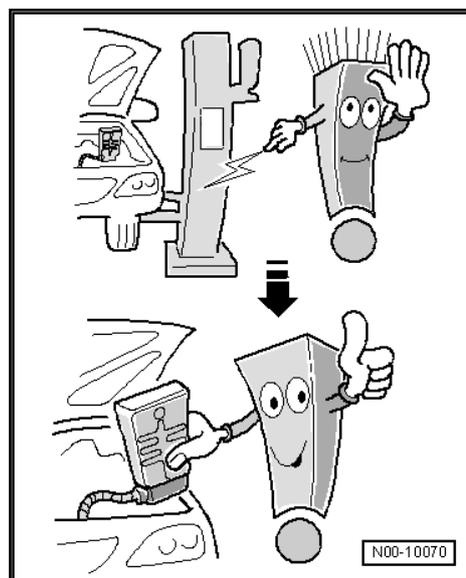
3.12 Bolts and Nuts



- ◆ Loosen and tighten the bolts and nuts from the covers and housings diagonally.
- ◆ Do not tilt but rather loosen and tighten particularly sensitive parts (for example, the servo motor with control module) diagonally and in stages.
- ◆ The tightening specifications given apply to non-lubricated bolts and nuts.
- ◆ Always replace self-locking nuts and bolts.
- ◆ Always replace the bolts and nuts, which are tightened with an additional turn.

3.13 Electrical Components

It is safe to assume that everyone has been shocked at one time or another when coming into contact with a metal object. The reason for this is the build-up of static electricity in the human body. This charge can cause malfunctions when contacting the electrical components for the steering gear.



- Touch a grounded object, such as a water line or a hoist, before working on electrical components. Do not make direct contact with the connector terminals.

3.14 Drive Axle, Repair Information

Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).

Never allow the drive axle to hang loose under the vehicle or to bend them at the joints during repair procedures.

Do not load the wheel bearing if the wheel-side drive axle threaded connection is loose.

If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings. Note the following when doing so:

Procedure for loosening the drive axle threaded connection on the wheel side. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .

Tightening the threaded connection between the drive axle and flange shaft:

First diagonally tighten all six bolts to 10 Nm. Then diagonally tighten them again to the tightening specification.

Vehicles without a drive axle must not be moved, otherwise the wheel bearing will be damaged. If the vehicle must be moved, be sure to note the following:

- Install an outer joint in place of the drive axle.
- Tighten the outer joint to 200 Nm.

3.15 Damaged Threads in Longitudinal Member, Repairing (Subframe to Body)

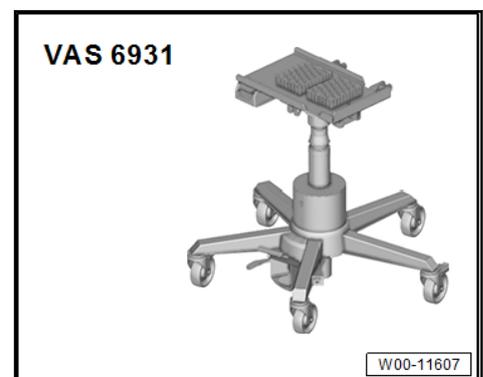
It is possible to service the weld nut threads in the longitudinal member under certain circumstances.

Instructions for repairing damaged threads. Refer to ⇒ Body Repair; Rep. Gr. 50; Suspension Subframe Securing Threads, Servicing.

3.16 Wheel Bearing in Curb Weight Position, Lifting Vehicles with Coil Spring

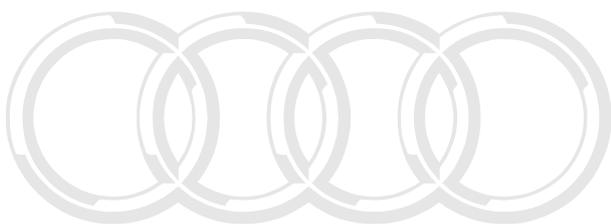
Special tools and workshop equipment required

- ◆ Engine and Gearbox Jack -VAS6931-





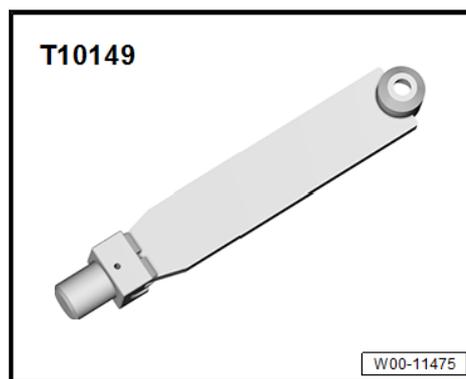
◆ Tensioning Strap -T10038-



◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-



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Note

All bolts at suspension parts with bonded rubber bushings must always be tightened in curb weight position (unloaded condition).

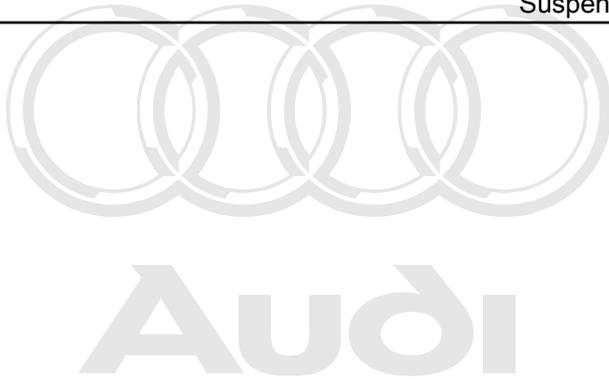
Bonded rubber bushings have a limited range of rotation.

Axle components with bonded rubber bushings must be brought into the position they will be in when driving before they are tightened (curb weight position).

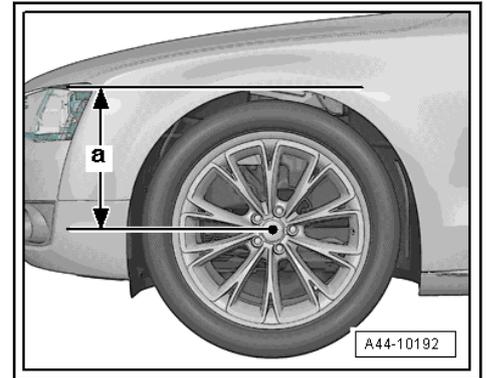
Otherwise, the bonded rubber bushing will have tension, which will reduce the service life.

By raising the corresponding suspension using the Engine and Gearbox Jack -VAS6931- and Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149-, this position can be simulated on the hoist.

- Before starting the procedure, determine the dimension -a-, for example with tape measure, from the center of the wheel to the lower edge of the wheel housing.



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 **Note**

The measurement must be performed in curb weight position (unloaded condition).

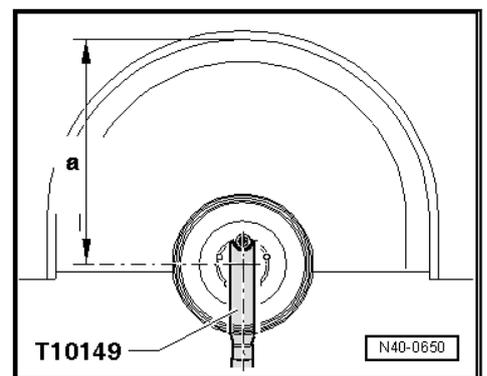
- Note the measurement. This will be needed when tightening the bolts/nuts.

Before the applicable suspension is raised, the vehicle must be secured to the hoist lifting arms using Tensioning Straps -T10038-.

 **Note**

There is a risk that the vehicle could fall off the hoist if it is not secured.

- Turn the wheel hub until one of the holes for the wheel bolts is on top.
- Install the Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149- with a wheel bolt on the wheel hub.
- Lift the wheel bearing housing using the Engine and Gearbox Jack -VAS6931- until the dimension -a- is reached.



Tightening of the applicable bolts/nuts must only occur if the dimension -a- that was measured before starting the procedures



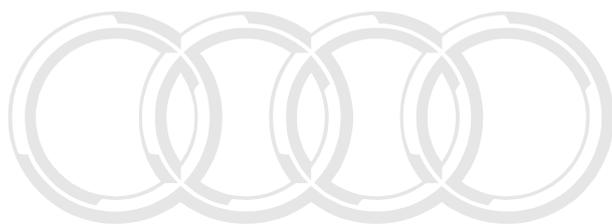
has been attained between the center of the wheel hub and the lower edge of the wheel housing.



WARNING

- ◆ *Do not lift or lower the vehicle when the Engine and Gearbox Jack -VAS6931- is below the vehicle.*
- ◆ *Do not leave the Engine and Gearbox Jack -VAS6931- under the vehicle any longer than necessary.*

- Tighten the applicable bolts and nuts.
- Lower the wheel bearing housing.
- Move engine and gearbox jack away from under vehicle.
- Remove the Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149-



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4 Technical Data

⇒ [4.1](#) , [page 15](#)

⇒ [4.2](#) , [page 15](#)

4.1 Chassis

		FWD and AWD
Wheelbase 2 door/ 4 door	mm	2595 / 2630
Front/rear track width. Refer to ¹⁾ .	mm	1555/1526

1) Front/rear track width, applies only to standard suspension with standard tires 205/55/R16 on 7.0Jx16 ET40 rims.

4.2 Steering

		FWD and AWD
Maximum wheel turning angle		Approximately 40°



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5 Disposal

⇒ [G5.1 as-Filled Shock Absorbers, Venting and Draining](#)", page 16

⇒ [G5.2 as-Filled Shock Absorbers, Venting and Draining](#)", page 18

5.1 Front Gas-Filled Shock Absorbers, Venting and Draining

⇒ [G5.1.1 as-Filled Shock Absorbers, Venting and Draining, Standard Shock Absorber](#)", page 16

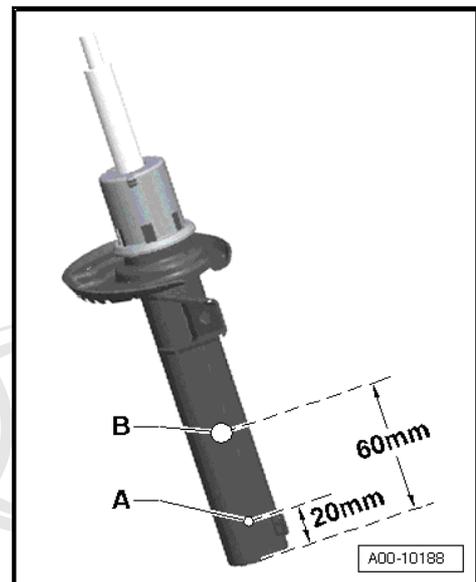
⇒ [G5.1.2 as-Filled Strut, Venting \(Controlled Shock Absorber\)](#)", page 17

5.1.1 Front Gas-Filled Shock Absorbers, Venting and Draining, Standard Shock Absorber

Special tools and workshop equipment required

- ◆ Hand drill
- ◆ 3 mm diameter drill bit.
- ◆ 6 mm diameter drill bit
- ◆ Oil collecting container
- ◆ Protective Eyewear

Procedure



- Secure the gas-filled shock absorber vertically in a vise, with piston rod facing down.



WARNING

Risk of eye injury.

- ◆ *Wear protective eyewear!*

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



Gas escapes when drilling.

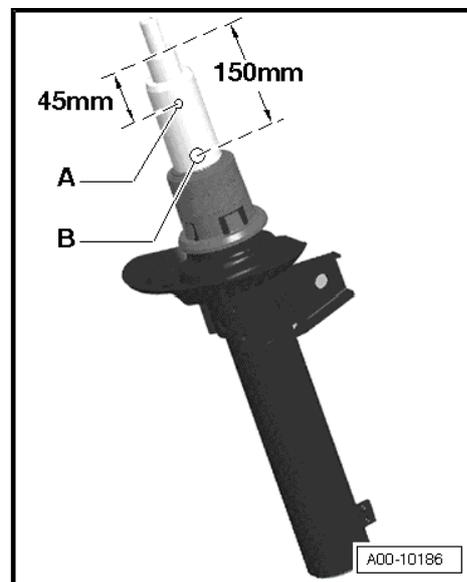
- Continue drilling until the tube inside is drilled through (approximately 25 mm deep).
- Drill a second 6 mm hole -arrow B- through the outer and inner shock absorber tubes.
- Hold the shock absorber over a suitable container for catching oil and move the piston rod repeatedly over the entire stroke until no more oil flows out.

5.1.2 Front Gas-Filled Strut, Venting (Controlled Shock Absorber)

Special tools and workshop equipment required

- ◆ Hand drill
- ◆ 3 mm thread tap
- ◆ 6 mm thread tap
- ◆ Oil collecting container
- ◆ Protective Eyewear

Procedure



- Tension the gas-filled shock absorber vertically in the vise.



WARNING

Risk of eye injury.

- ◆ *Wear protective eyewear!*

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



i Note

Gas escapes when drilling.

- Drill a second 6 mm hole -arrow B- through the shock absorber outer tube.
- Hold the shock absorber over a suitable container for catching oil and move the piston rod repeatedly over the entire stroke until no more oil flows out.

5.2 Rear Gas-Filled Shock Absorbers, Venting and Draining

Special tools and workshop equipment required

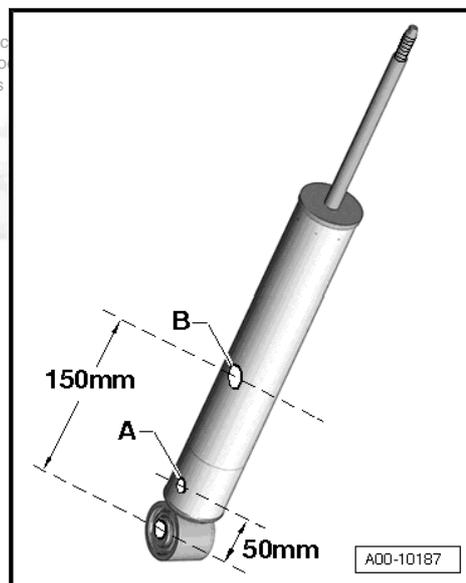
- ◆ Hand drill
- ◆ 3 mm thread tap
- ◆ 6 mm thread tap
- ◆ Oil collecting container
- ◆ Protective Eyewear

i Note

The procedure is the same for standard shock absorber and controlled shock absorbers.

Procedure

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- Secure the gas-filled shock absorber vertically in a vise, with piston rod facing down.



WARNING

Risk of eye injury.

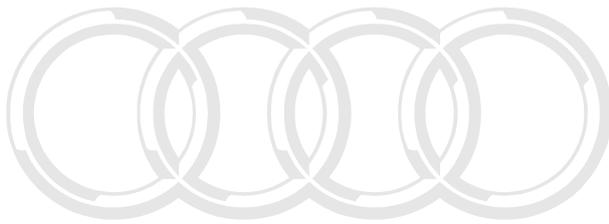
- ◆ *Wear protective eyewear!*

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

 **Note**

Gas escapes when drilling.

- Continue drilling until the tube inside is drilled through (approximately 25 mm deep).
- Drill a second 6 mm hole -arrow B- through the outer and inner shock absorber tubes.
- Hold the shock absorber over a suitable container for catching oil and move the piston rod repeatedly over the entire stroke until no more oil flows out.



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40 – Front Suspension

1 Front Axle

⇒ [L1.1 Location Overview - Front Axle](#), page 20

1.1 Component Location Overview - Front Axle

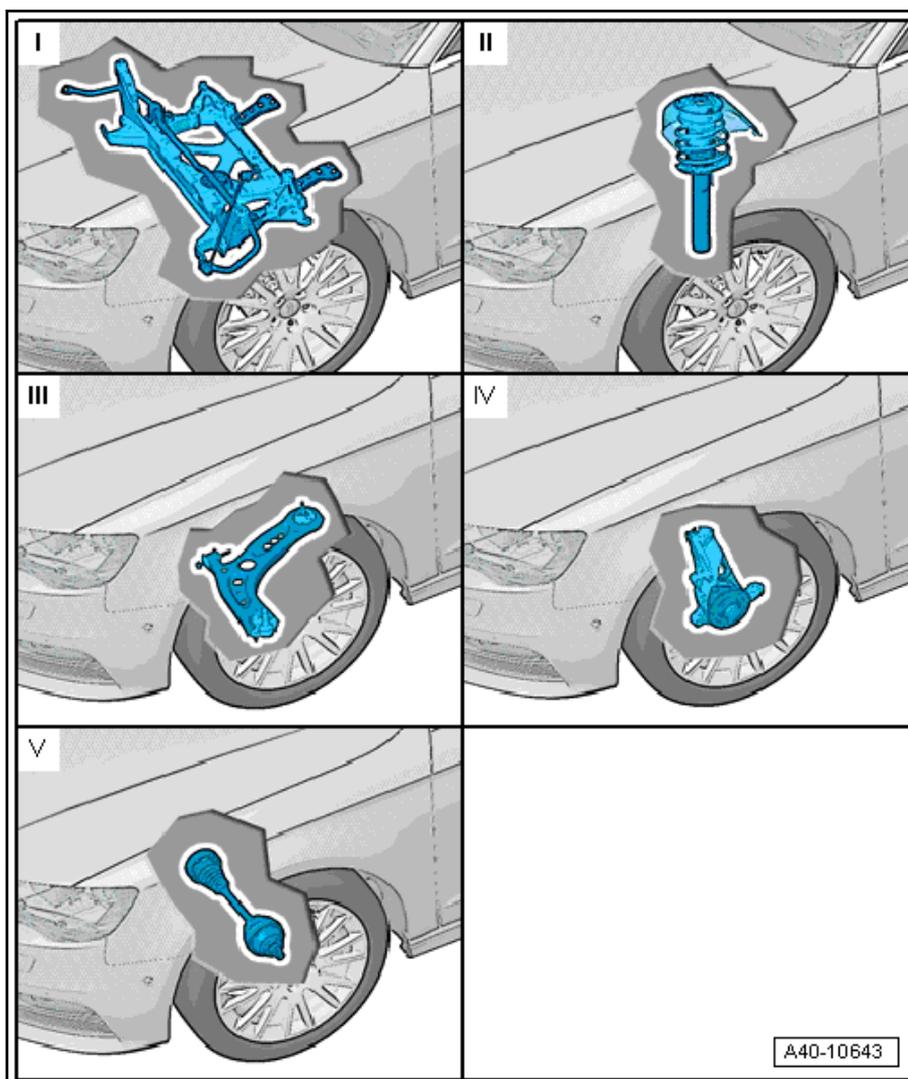
I - Refer to ⇒ [2](#), page 21

II - Refer to ⇒ [S3 Strut and Upper Control Arm](#), page 93

III - Refer to ⇒ [C4 Control Arm and Ball Joint](#), page 106

IV - Refer to ⇒ [B5 Steering](#), page 124

V - Refer to ⇒ [A6 Axle](#), page 136



2 Subframe

⇒ [-2.1 Subframe", page 21](#)

⇒ [S2.2 securing", page 23](#)

⇒ [L2.3 lowering", page 27](#)

⇒ [w2.4 without Steering Gear, Removing and Installing", page 40](#)

⇒ [w2.5 with Steering Gear, Removing and Installing", page 51](#)

⇒ [S2.6 servicing", page 66](#)

⇒ [B2.7 rear, Removing and Installing", page 90](#)

⇒ [R2.8 front, Removing and Installing", page 91](#)

2.1 Overview - Subframe



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- ◆ *The subframe bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*

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1 - Bolt

- ❑ Tightening Specification: Overview - Subframe. Refer to ⇒ Engine Mechanical; Rep. Gr. 10; Assembly Mounts; Overview - Assembly Mounts.

2 - Lower Bonded Rubber Bushing for Pendulum Support

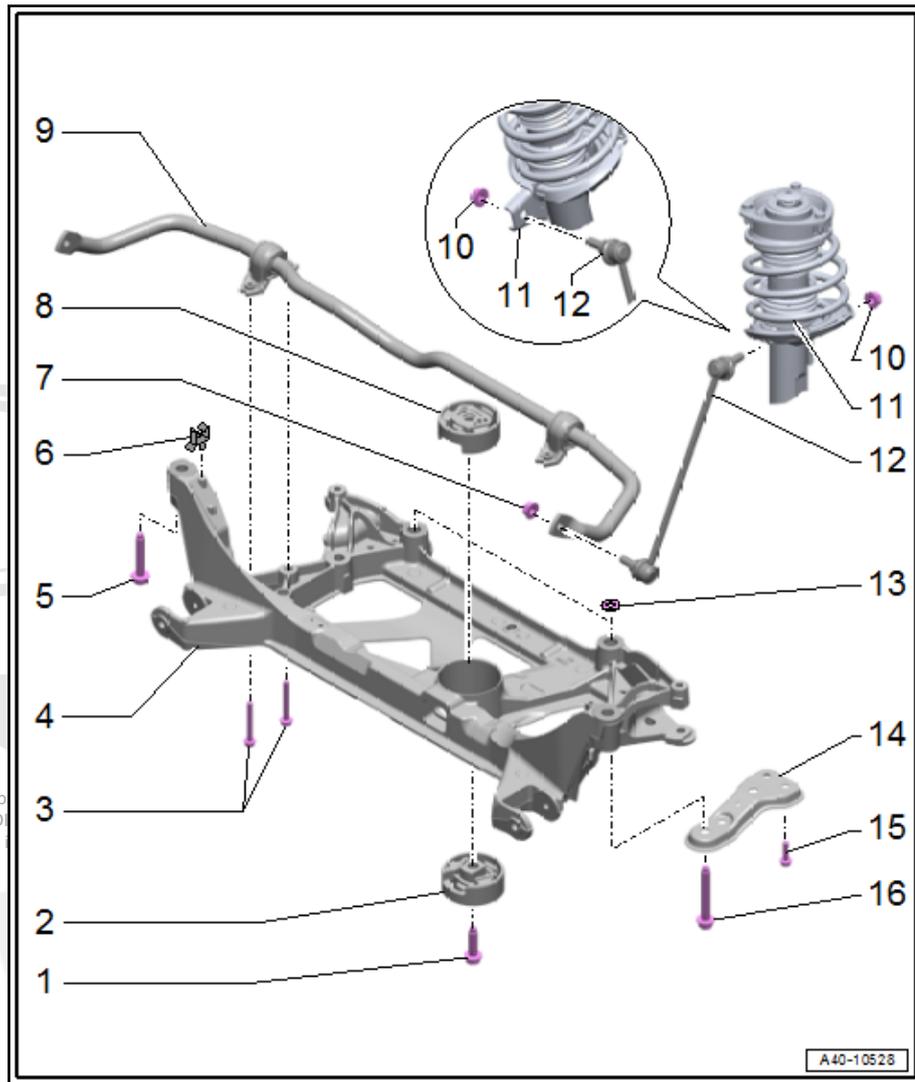
- ❑ Replacing. Refer to ⇒ [S2.6 ervicing", page 66](#) .

3 - Bolt

- ❑ 20 Nm +180°
- ❑ Always replace if removed

4 - Subframe

- ❑ There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA) for the allocation.
- ❑ Securing. Refer to ⇒ [S2.2 ecuring", page 23](#) .
- ❑ Lowering. Refer to ⇒ [L2.3 owering", page 27](#) .
- ❑ Removing and Installing, without Steering Gear. Refer to ⇒ [w2.4 ithout Steering Gear, Removing and Installing", page 40](#) .



- ❑ Removing and Installing, with Steering Gear. Refer to ⇒ [w2.5 ith Steering Gear, Removing and Installing", page 51](#) .

5 - Bolt

- ❑ 70 Nm + 180°
- ❑ Always replace if removed

6 - Clip

- ❑ Only for A3 g-tron

7 - Nut

- ❑ 65 Nm
- ❑ Always replace if removed
- ❑ Counterhold at socket head of the joint pin when tightening

8 - Upper Bonded Rubber Bushing for Pendulum Support

- ❑ Replacing. Refer to ⇒ [S2.6 ervicing", page 66](#) .

9 - Stabilizer Bar with Rubber Bushings

- ❑ Removing and Installing. Refer to ⇒ [B2.7 ar, Removing and Installing", page 90](#) .

10 - Nut

- ❑ 65 Nm
- ❑ Always replace if removed

- Counterhold at socket head of the joint pin when tightening

11 - Suspension Strut

- Removing and Installing. Refer to ⇒ [S3.2 strut, Removing and Installing](#), page 95 .

12 - Coupling Rod

- Removing and Installing. Refer to ⇒ [R2.8 od, Removing and Installing](#), page 91 .

13 - Intermediate Plate

- Allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).

14 - Support

- There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.

15 - Bolt

- 20 Nm +90°
- Always replace if removed

16 - Bolt

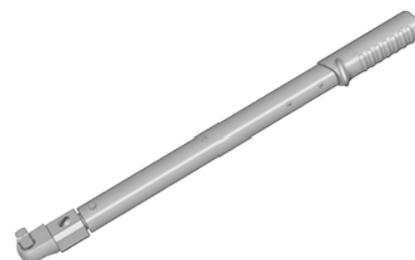
- 70 Nm + 180°
- Always replace if removed

2.2 Subframe, Securing

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm - VAG1332A

V.A.G 1332



W00-11165

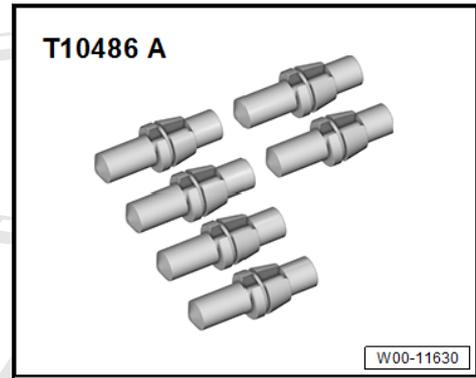
- ◆ Engine and Gearbox Jack -VAS6931-

VAS 6931



W00-11607

- ◆ Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A-



For certain assemblies on the vehicle, subframe or complete front axle must be removed. The original position of the subframe to the body can be maintained with assistance of the Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A-. The Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A- must always be installed just before lowering the subframe or the complete front axle. A road test must be performed after completing repairs. If steering wheel is crooked, the wheels must be aligned. Refer to [⇒ A2 alignment", page 412](#) .

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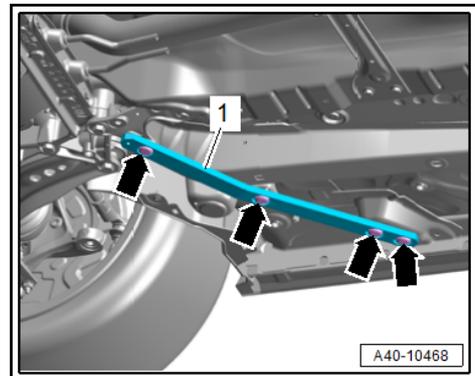
Note

- ◆ *Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- (quantity 2) are part of the Assembly Tool, Sub-frame Alignment -T10486-. If the Assembly Tool, Sub-frame Alignment -T10486- is already in the service operation, then only the supplement from the Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- (quantity 2) are required.*
- ◆ *If the Assembly Tool, Sub-frame Alignment -T10486- is not already in the service operation, then the Assembly Tool, Sub-frame Alignment -T0486A- is used. This has four Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- and two Locating Pins -T10486/2- The Locating Pins -T10486/2- are not necessary for the following steps.*

Procedure

- Remove the front and rear noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.

Audi A3 Cabriolet:

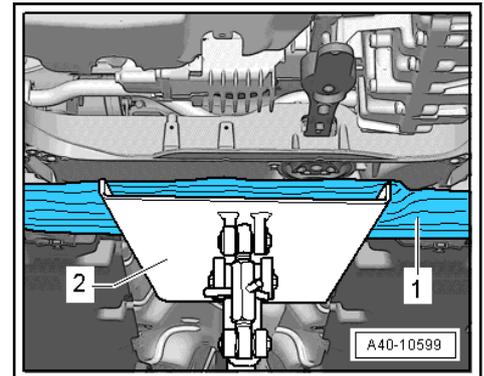


- Remove the left and right underbody trim panels. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- Remove the left and right bolts -arrows- and then remove the diagonal brace -1-.

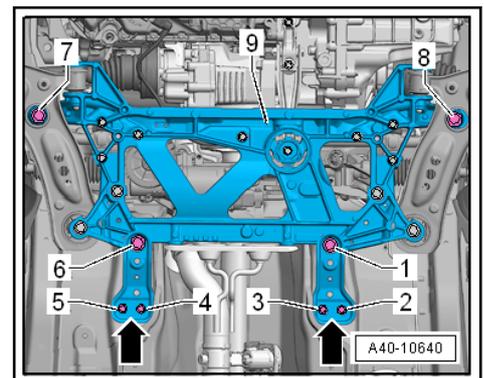
Vehicles with High-Voltage System:

- Loosen the left and right underbody trim panels to the center of the vehicle and lower. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.

Continuation for All Vehicles:



- Position the Engine and Gearbox Jack -VAS6931- -2- under the subframe.
- Place, for example, a block of wood -1- between the Engine and Gearbox Jack -VAS6931- and the subframe.
- Clean the Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A- threads if necessary.
- Loosen the bolts -2 to 5- for the left and right support -arrows-.





Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- ◆ *The subframe bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*



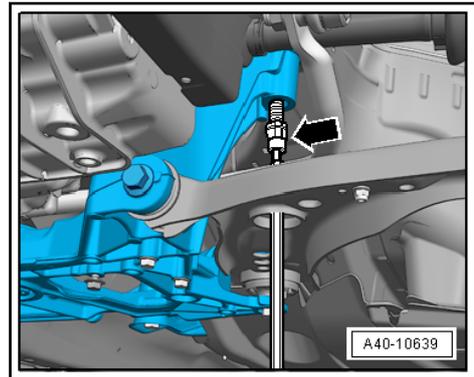
- To secure the subframe, Subframe Alignment Assembly Tool Kit- Locating Pins -T10096/1- or Assembly Tool, Sub-frame Alignment -T10486A- must be screwed in one after the other at positions -1, 6, 7, and 8-.



Note

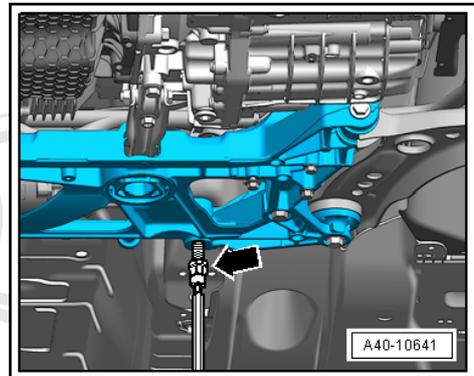
The Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A- may only be tightened to a maximum of 20 Nm, since otherwise the threads of the locating bolts will be damaged.

Front Subframe, Securing



- Replace the bolts of the subframe one after the other on both sides of the vehicle using Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A- -arrow- and tighten them to 20 Nm.

Rear Subframe, Securing



- Remove the support bolts, remove the subframe bolt, and remove the support. Install the Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A- -arrow- and tighten to 20 Nm.

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- Repeat this procedure on the opposite side.
- Securing the subframe is finished after all the bolts specified above are replaced by locating pins one after the other from Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A-.
- The position of front axle is now secured.

Subframe Alignment Assembly Tool Kit- Locating Pins - T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A-, Removing

The removal is reverse of installation, noting the following:

- Always only remove one locating pin and replace it with a new bolt.
- After installation, the position of steering wheel must be checked with a road test. If the steering wheel is crooked, the wheels must be aligned. Refer to ⇒ [A2 alignment](#)”, page 412 .

Tightening Specifications

- ◆ Refer to ⇒ [-2.1 Subframe](#)”, page 21
- ◆ Diagonal braces. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.

2.3 Subframe, Lowering

⇒ [L2.3.1 Lowering \(Vehicles without a High-Voltage System\)](#)”, page 27

⇒ [L2.3.2 Lowering \(Vehicles with a High-Voltage System\)](#)”, page 33

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2.3.1 Subframe, Lowering (Vehicles without a High-Voltage System)

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-



Procedure

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

Vehicles with “Keyless Access Authorization System”

- Switch the ignition off and open the driver door so the steering wheel lock engages.

Continuation for All Vehicles



- Secure the steering wheel in the straight-ahead position using adhesive tape -arrow- so that it does not turn.



Note

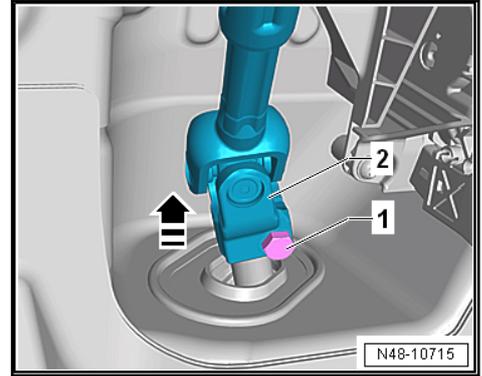
- ◆ *Be sure to use adhesive tape that will not leave behind any residue when it is removed.*
- ◆ *Be careful not to turn the steering wheel during the repair because the Airbag Spiral Spring/Return Spring with Slip Ring -F138- can become damaged.*

- Remove the nuts -arrows- and the footwell trim panel.

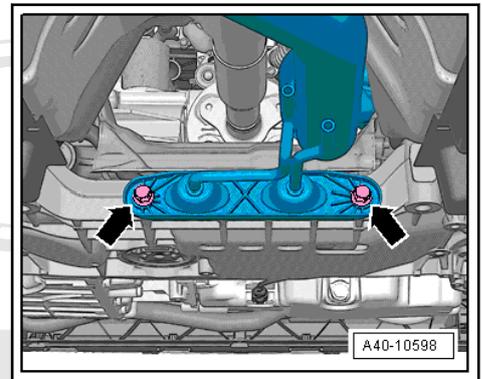
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- Remove the screw -1- for the universal joint -2- and then remove the universal joint in direction of -arrow-.

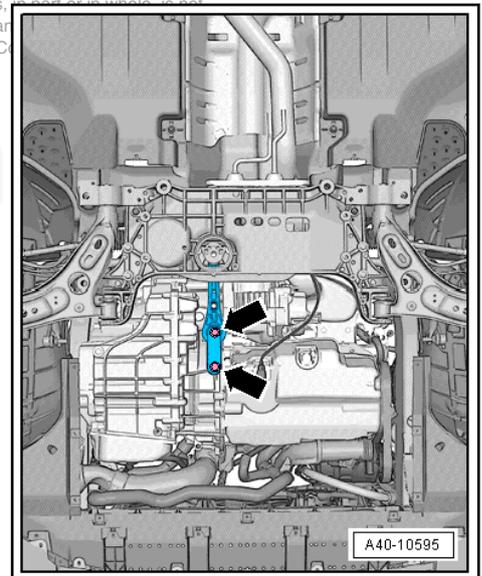


- Remove the front and rear noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- Remove the bolts -arrows- from the exhaust pipe bracket.

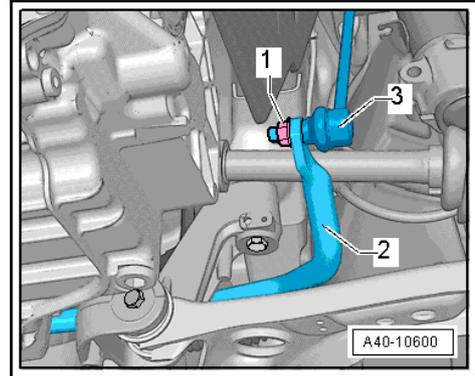


- Remove the screws -arrows- on the pendulum support.

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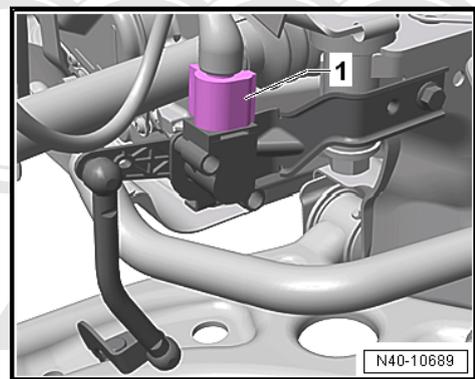


- Remove the left and right nut -1- from the coupling rod -3-. Refer to ⇒ [R2.8 od, Removing and Installing", page 91](#).



- Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.

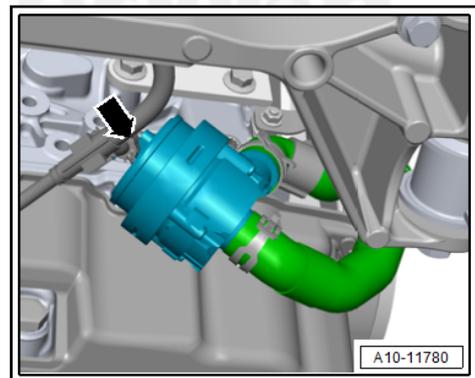
Vehicles with Level Control System Sensor:



- Disconnect the connector -1- from the Left Front Level Control System Sensor -G78- or Right Front Level Control Sensor -G289-.

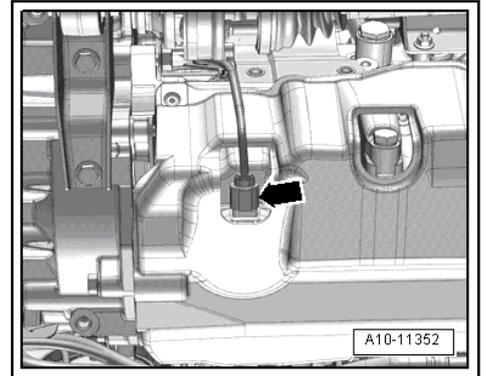
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Vehicles with TDI Engine:



- Disconnect the connector -arrow- from the Heater Support Pump -V488-.

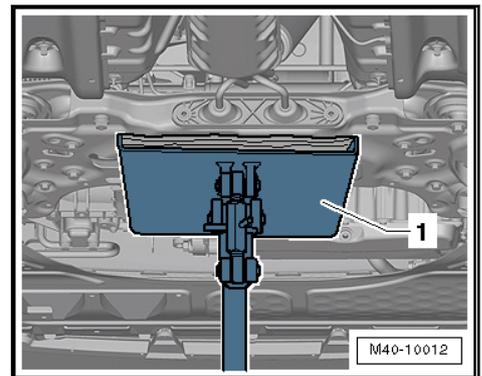
Vehicles with 4-Cylinder Engine:



- Disconnect the connector for the Oil Level Thermal Sensor -G266- -arrow- and free up the wire from the subframe.

Continuation for All Vehicles:

- Secure the subframe. Refer to [⇒ S2.2 securing](#), page 23 .
- Slightly lower the subframe with the Engine and Gearbox Jack -VAS6931- -item 1-.



Note

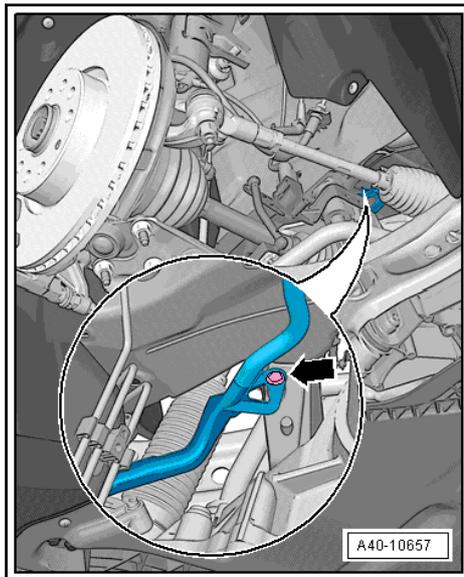
Be careful not to overstretch the wire for the steering and the Oil Level Thermal Sensor -G266-.

- Free up the cable guide from the subframe by removing the expanding clip -arrow-.

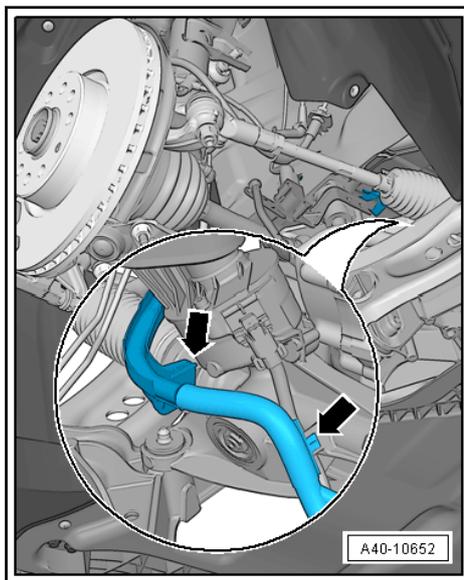
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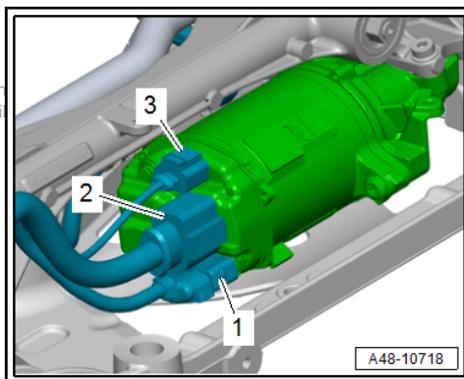


- Unclip the cable brackets -arrows- from the steering gear.



- Unclip all other cable clips on the steering gear.
- Disconnect the connectors -2 and 3- from the steering gear.

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 Note

Ignore -item 1-.

- Lower the subframe a maximum of 100 mm.

Installing

Install in reverse order of removal while noting the following:

 Note

- ◆ *Coat the seal on the steering gear with lubricant such as soft soap before installing the steering gear.*
- ◆ *After placing the steering gear onto the universal joint, make sure that the seal -item 13- ⇒ **Item 13 (page 474)** on the steering gear contacts the assembly plate without kinks and seals the opening to the footwell correctly. Water leak and/or noises may be the result.*
- ◆ *Make sure sealing surfaces are clean.*
- Remove the Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A-. Refer to ⇒ [page 27](#) .
- Overview table for when an axle alignment is needed. Refer to ⇒ [f2.2 or Axle Alignment, Evaluating](#) , [page 413](#) .

Tightening Specifications

- ◆ Refer to ⇒ [-2.1 Subframe](#) , [page 21](#)
- ◆ Refer to ⇒ [-2.1 Steering Column](#) , [page 461](#)
- ◆ Refer to ⇒ Transmission; Rep. Gr. 34; Assembly Mounts; Overview - Assembly Mounts.
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.

2.3.2 Subframe, Lowering (Vehicles with a High-Voltage System)

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-



Procedure



DANGER!

High voltage is extremely dangerous.

Electrocution can cause death or very serious personal injury.

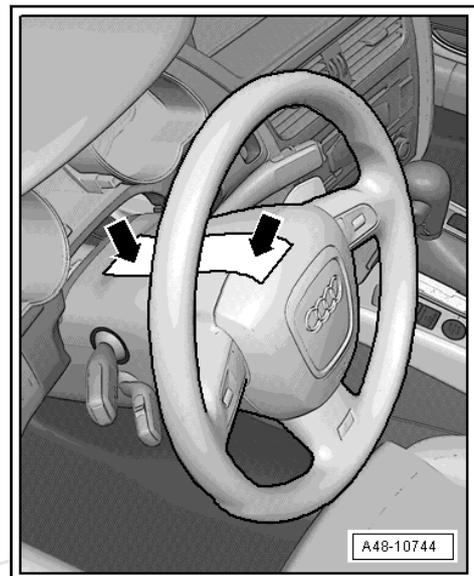
- ◆ *Have the high-voltage system de-energized by a "high-voltage technician".*
- ◆ *Procedures performed on a de-energized high-voltage system may only be done by a "technician trained in electrical systems".*

- De-energize the high-voltage system. Refer to ⇒ Motor; Rep. Gr. 93; High-Voltage System De-Energizing.
- Turn the steering wheel in the straight position and remove the ignition key so that the steering wheel lock engages.

Vehicles with "Keyless Access Authorization System"

- Switch the ignition off and open the driver door so the steering wheel lock engages.

Continuation for All Vehicles



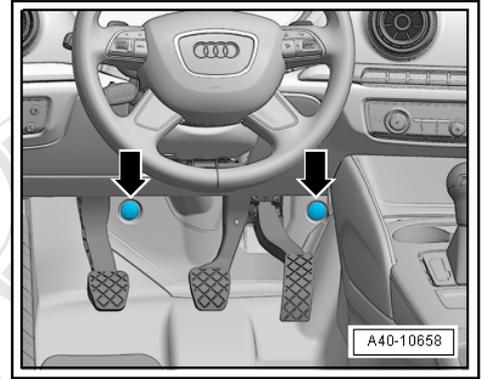
- Secure the steering wheel in the straight-ahead position using adhesive tape -arrow- so that it does not turn.



Note

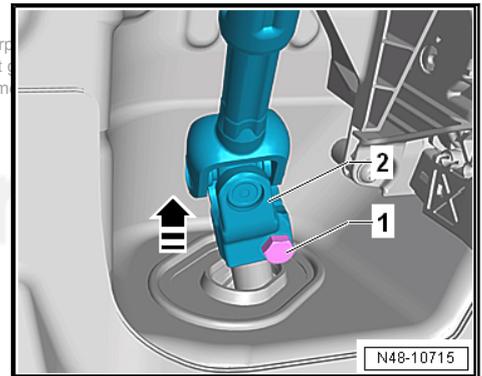
- ◆ *Be sure to use adhesive tape that will not leave behind any residue when it is removed.*
- ◆ *Be careful not to turn the steering wheel during the repair because the Airbag Spiral Spring/Return Spring with Slip Ring -F138- can become damaged.*
- Remove the nuts -arrows- and the footwell trim panel.

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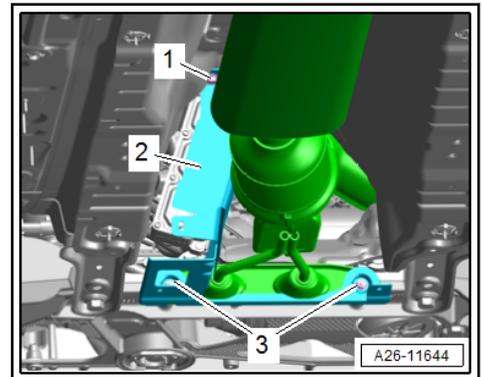


- Remove the screw -1- for the universal joint -2- and then remove the universal joint in direction of -arrow-.

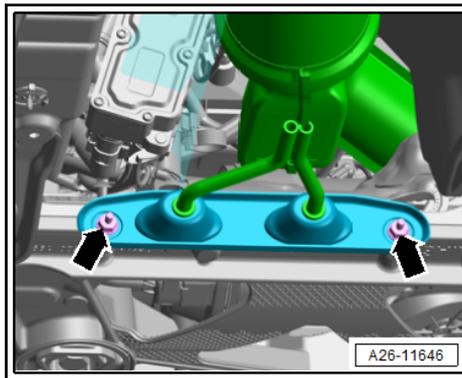
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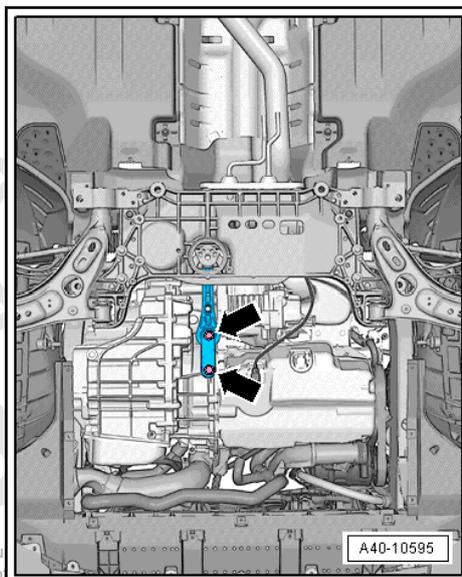
- Remove the front and rear noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- Remove the bolt -1- and the nuts -3-.



- Tie up the bracket -2- with the High-Voltage Heater (PTC) -Z115- to the side.
- Remove the double bolts -arrows- on the bracket for the exhaust pipe.

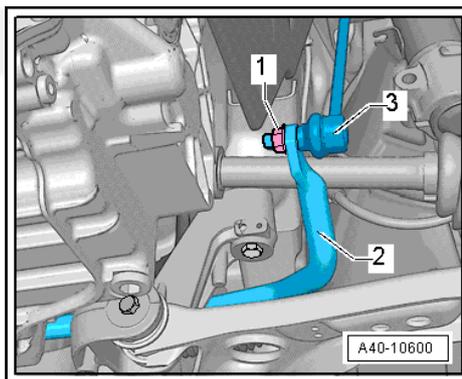


- Remove the screws -arrows- on the pendulum support.



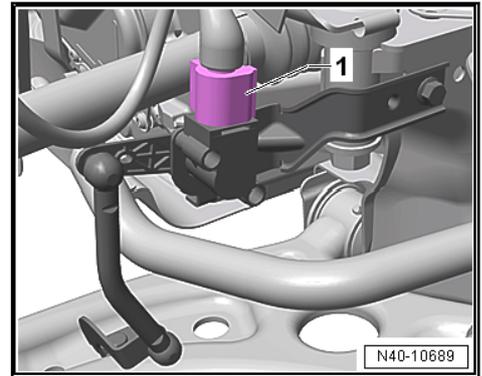
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- Remove the left and right nut -1- from the coupling rod -3-.
Refer to [⇒ R2.8 od, Removing and Installing”, page 91](#) .



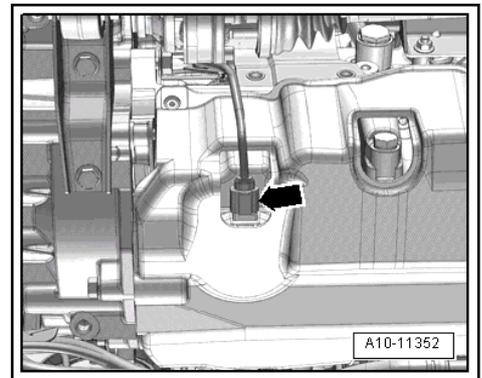
- Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.

Vehicles with Level Control System Sensor:

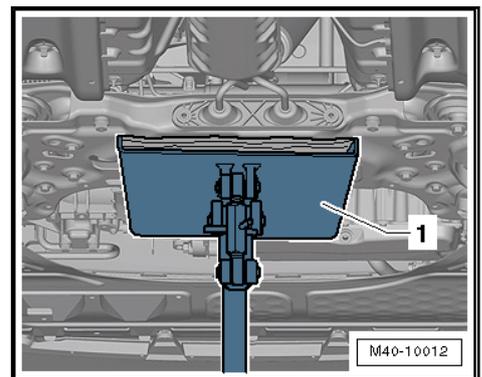


- Disconnect the connector -1- from the Left Front Level Control System Sensor -G78- or Right Front Level Control Sensor -G289-.

Continuation for All Vehicles:



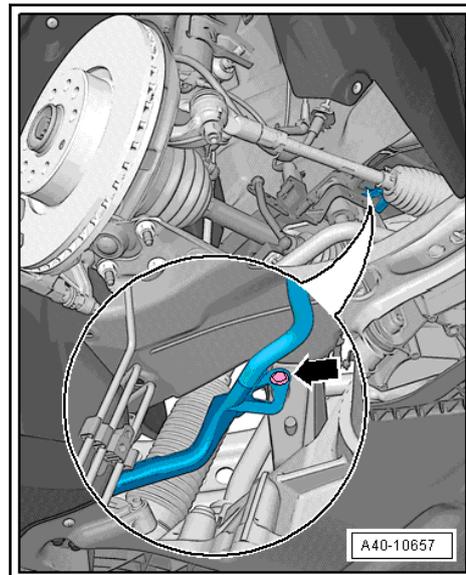
- Disconnect the connector for the Oil Level Thermal Sensor -G266- -arrow- and free the wire from the subframe.
- Secure the subframe. Refer to [⇒ S2.2 securing](#), page 23 .
- Slightly lower the subframe with the Engine and Gearbox Jack -VAS6931- -1-.



Note

Be careful not to overstretch the wire for the steering and the Oil Level Thermal Sensor -G266-.

- Free up the cable guide from the subframe by removing the expanding clip -arrow-.

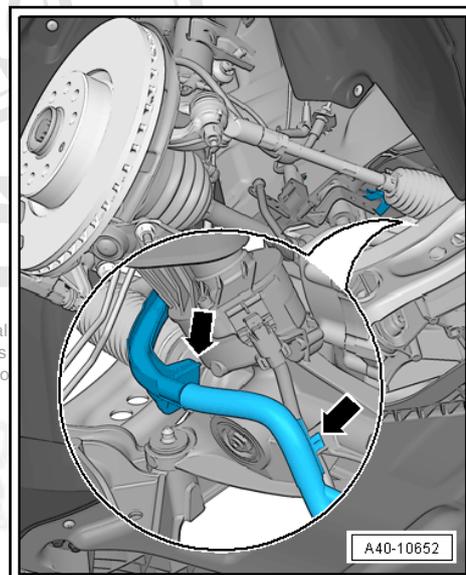


 **Note**

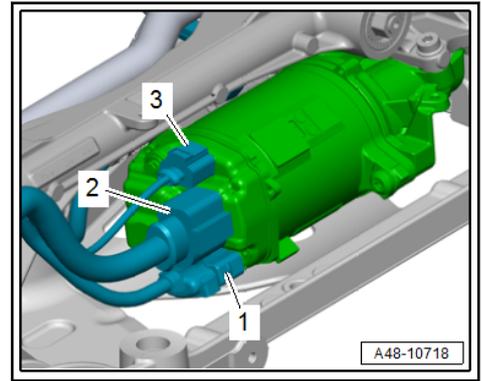
The installation position is shown in the illustration on a vehicle with a high-voltage system.

- Unclip the cable brackets -arrows- from the steering gear.

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- Unclip all other cable clips on the steering gear.
- Disconnect the connectors -2 and 3- from the steering gear.



 **Note**

Ignore -item 1-.

- Lower the subframe a maximum of 100 mm.

Installing

Install in reverse order of removal while noting the following:

 **Note**

- ◆ Coat the seal on the steering gear with lubricant such as soft soap before installing the steering gear.
- ◆ After placing the steering gear onto the universal joint, make sure that the seal -item 13- ⇒ [Item 13 \(page 474\)](#) on the steering gear contacts the assembly plate without kinks and seals the opening to the footwell correctly. Water leak and/or noises may be the result.
- ◆ Make sure sealing surfaces are clean.
- Remove the Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment -T10486A-. Refer to ⇒ [page 27](#) .
- Secure the bracket with the High-Voltage Heater (PTC) -Z115-. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Coolant Circuit; High-Voltage Heater (PTC) -Z115-/High-Voltage Heater (PTC) Control Module -J848-, Removing and Installing.



DANGER!

High voltage is extremely dangerous.

Electrocution can cause death or very serious personal injury.

- ◆ Have a "high-voltage technician" energize the high-voltage system.

- Re-energize the high-voltage system. Refer to ⇒ Motor; Rep. Gr. 93; Re-Energizing the High-Voltage System.
- Overview table for when an axle alignment is needed. Refer to ⇒ [f2.2 or Axle Alignment, Evaluating](#), [page 413](#) .

Tightening Specifications

- ◆ Refer to ⇒ [-2.1 Subframe](#), [page 21](#)



- ◆ Refer to ⇒ [-2.1 Steering Column", page 461](#)
- ◆ Refer to ⇒ Transmission; Rep. Gr. 34; Assembly Mounts; Overview - Assembly Mounts.
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.

2.4 Subframe without Steering Gear, Removing and Installing

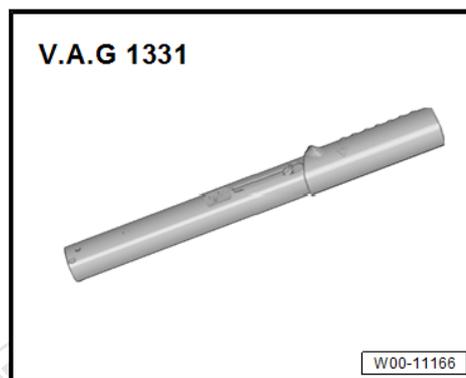
⇒ [w2.4.1 without Steering Gear, Removing and Installing \(Vehicles without High-Voltage System\)", page 40](#)

⇒ [w2.4.2 without Steering Gear, Removing and Installing \(Vehicles with High-Voltage System\)", page 45](#)

2.4.1 Subframe without Steering Gear, Removing and Installing (Vehicles without High-Voltage System)

Special tools and workshop equipment required

- ◆ Torque Wrench, 6-50Nm -VAG1331A-

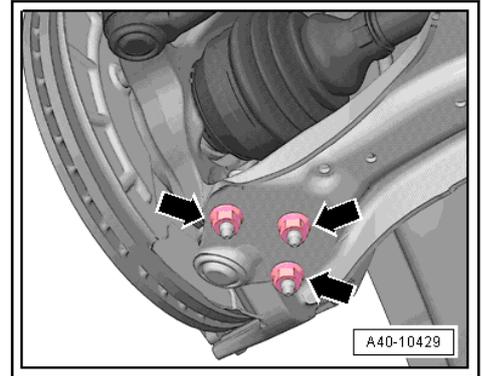


- ◆ Torque Wrench, 40-200Nm -VAG1332A-



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Removing

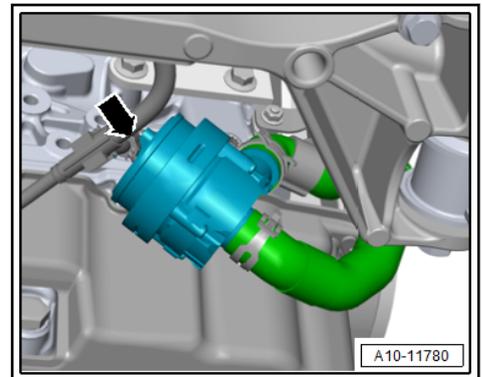


Note

Subframe is removed together with the control arms.

- Remove the front wheels. Refer to [⇒ a1 nd Tires”, page 411](#) .
- Remove the nuts -arrows- on the left and right side of the vehicle.
- Remove the control arm from the ball joint.
- Remove the front and rear noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.

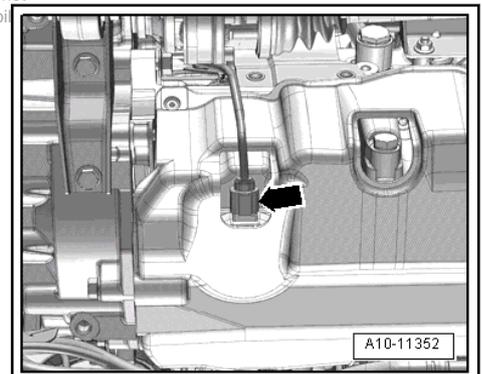
Vehicles with TDI Engine:



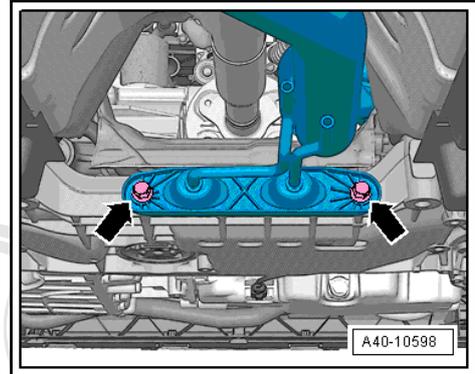
- Disconnect the connector -arrow- from the Heater Support Pump -V488-.

Vehicles with 4-Cylinder Engine:

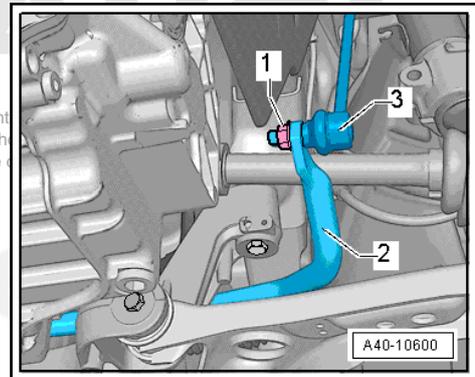
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- Disconnect the connector for the Oil Level Thermal Sensor -G266- -arrow- and free up the wire from the subframe.

Continuation for All Vehicles:

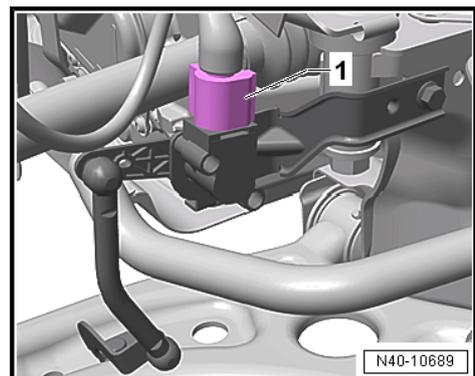
- Remove the bolts -arrows- from the exhaust pipe bracket.
- Remove the left and right nuts -1- from the coupling rod -3-. Refer to ⇒ [R2.8 od, Removing and Installing", page 91](#) .



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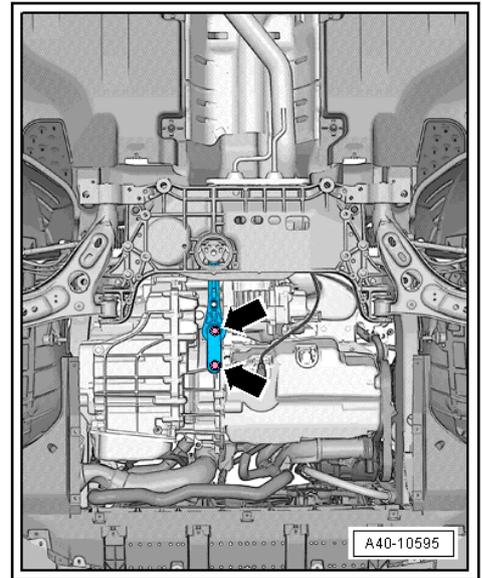
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- Remove the left and right coupling rod -3- from the stabilizer bar -2-.

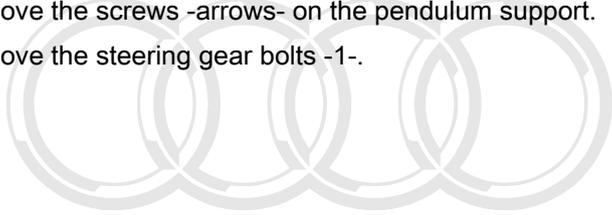
Vehicles with Level Control System Sensor:

- Disconnect the connector -1- from the Left Front Level Control System Sensor -G78- or Right Front Level Control Sensor -G289-.

Continuation for All Vehicles:



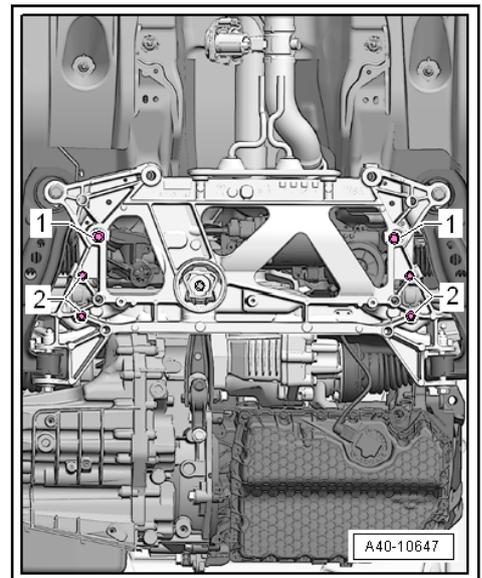
- Remove the screws -arrows- on the pendulum support.
- Remove the steering gear bolts -1-.



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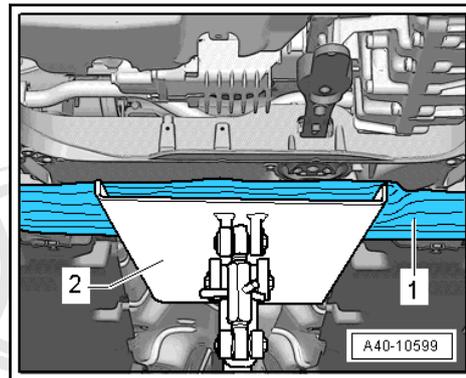
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 Note

Ignore -item 2-.

- Secure the subframe. Refer to ⇒ [S2.2 securing](#) , page 23 .
- Slightly lower the subframe with the Engine and Gearbox Jack -VAS6931- -2-.

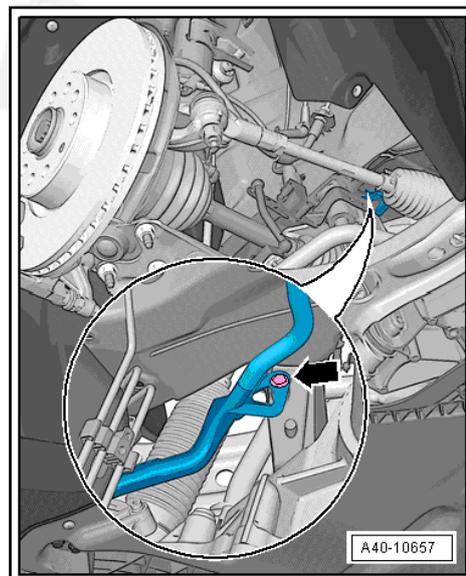


 **Note**

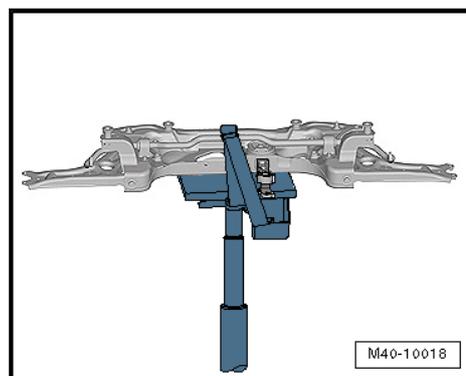
Be careful not to overstretch the wire for the steering and the Oil Level Thermal Sensor -G266-.

- Free up the cable guide from the subframe by removing the expanding clip -arrow-.

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- Secure the steering gear to the body.
- Secure the subframe to the Engine and Gearbox Jack - VAS6931- with the accompanying strap.



Installing

Install in reverse order of removal while noting the following:



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- ◆ *The subframe bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*

– Overview table for when an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

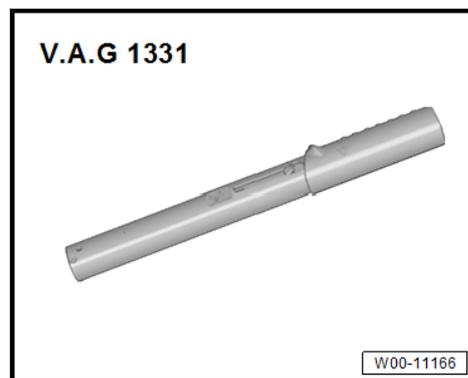
- ◆ Refer to [⇒ -2.1 Subframe](#), page 21
- ◆ Refer to [⇒ -3.1 Steering Gear](#), page 473
- ◆ Refer to ⇒ Transmission; Rep. Gr. 34; Assembly Mounts; Overview - Assembly Mounts.
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.
- ◆ Refer to [⇒ a1 nd Tires](#), page 411

2.4.2 Subframe without Steering Gear, Removing and Installing (Vehicles with High-Voltage System)

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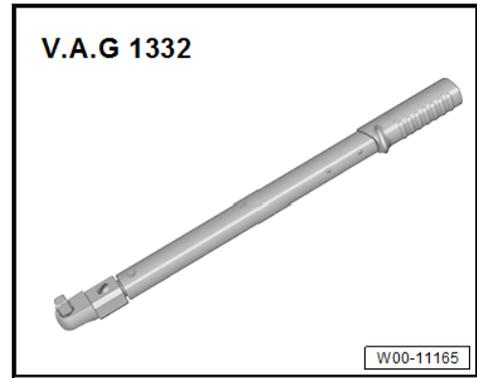
Special tools and workshop equipment required

- ◆ Torque Wrench, 6-50Nm -VAG1331A-





- ◆ Torque Wrench, 40-200Nm -VAG1332A-



Removing



Note

Subframe is removed together with the control arms.



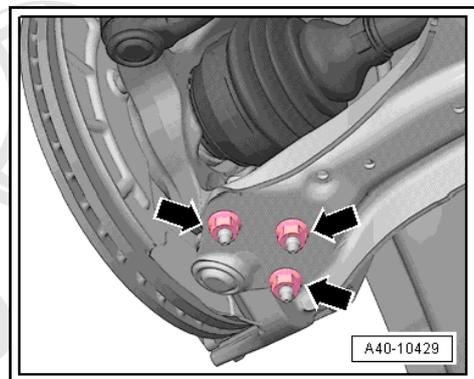
DANGER!

High voltage is extremely dangerous.

Electrocution can cause death or very serious personal injury.

- ◆ **Have the high-voltage system de-energized by a "high-voltage technician".**
- ◆ **Procedures performed on a de-energized high-voltage system may only be done by a "technician trained in electrical systems".**

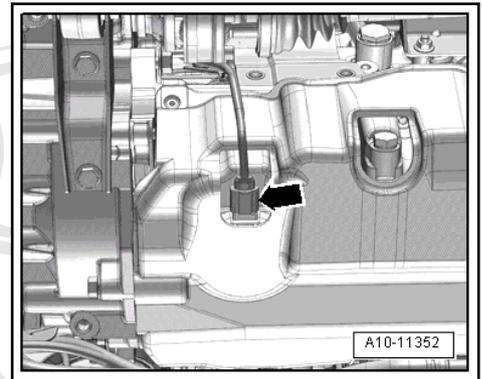
- De-energize the high-voltage system. Refer to ⇒ Motor; Rep. Gr. 93; High-Voltage System De-Energizing.
- Remove the front wheels. Refer to ⇒ [a1 nd Tires](#)", page 411 .
- Remove the nuts -arrows- on the left and right side of the vehicle.



- Remove the control arm from the ball joint.
- Remove the front and rear noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.

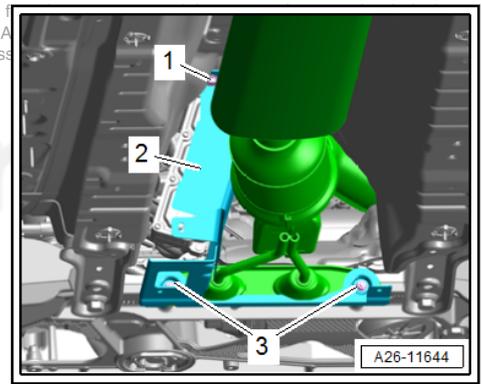
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- Disconnect the connector for the Oil Level Thermal Sensor -G266- -arrow- and free up the wire from the subframe.

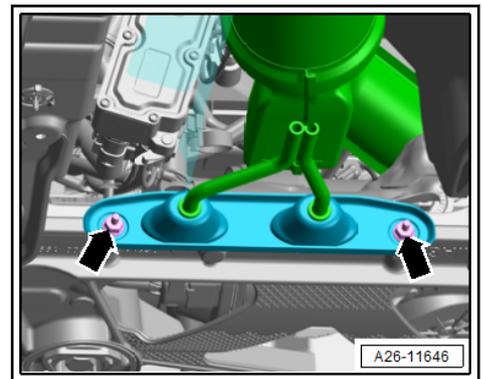


- Remove the bolt -1- and the nuts -3-.

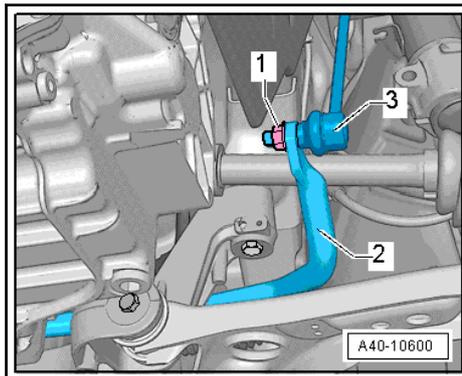
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- Tie up the bracket -2- with the High-Voltage Heater (PTC) -Z115- to the side.
- Remove the double bolts -arrows- on the bracket for the exhaust pipe.

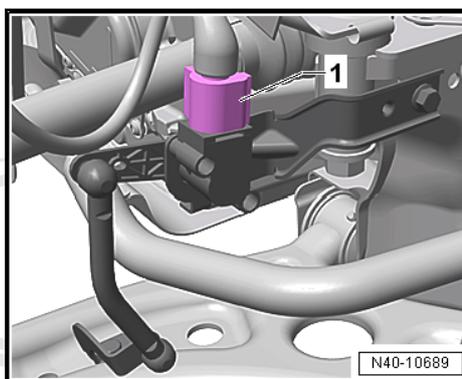


- Remove the left and right nuts -1- from the coupling rod -3-.
Refer to [⇒ R2.8 od, Removing and Installing", page 91](#) .



- Remove the left and right coupling rod -3- from the stabilizer bar -2-.

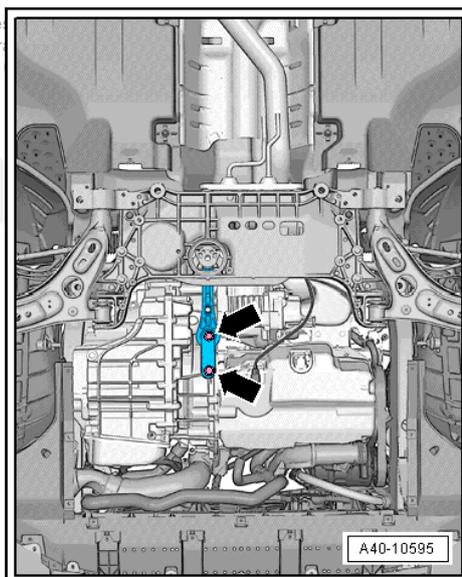
Vehicles with Level Control System Sensor:



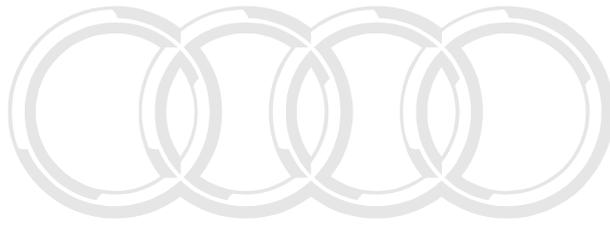
- Disconnect the connector -1- from the Left Front Level Control System Sensor -G78- or Right Front Level Control Sensor -G289-.

Continuation for All Vehicles:

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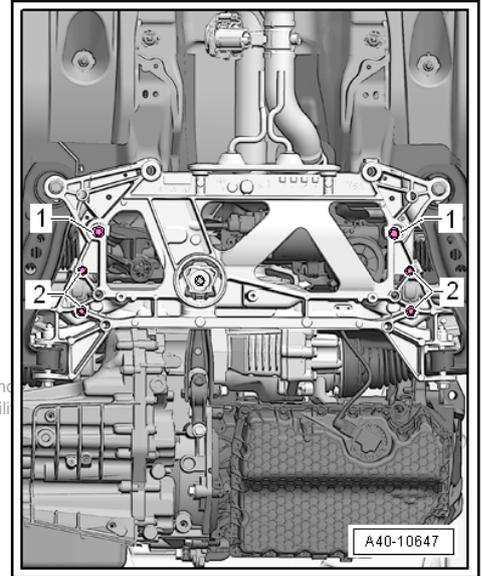
- Remove the screws -arrows- on the pendulum support.
- Remove the steering gear bolts -1-.



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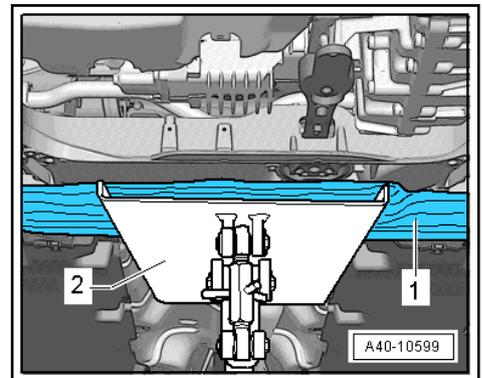
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 Note

Ignore -item 2-.

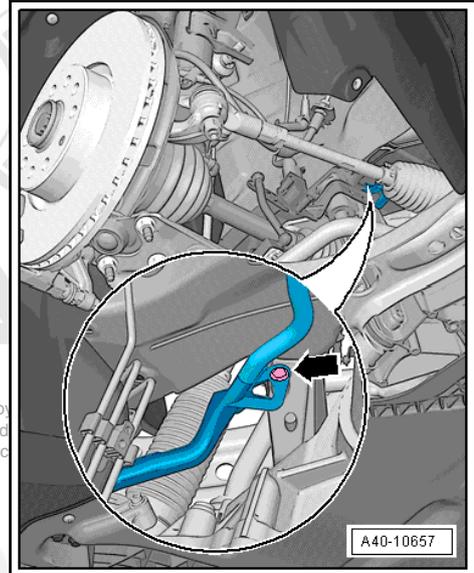
- Secure the subframe. Refer to ⇒ [S2.2 securing](#), page 23 .
- Slightly lower the subframe with the Engine and Gearbox Jack -VAS6931- -2-.



 Note

Be careful not to overstretch the wire for the steering and the Oil Level Thermal Sensor -G266-.

- Free up the cable guide from the subframe by removing the expanding clip -arrow-.



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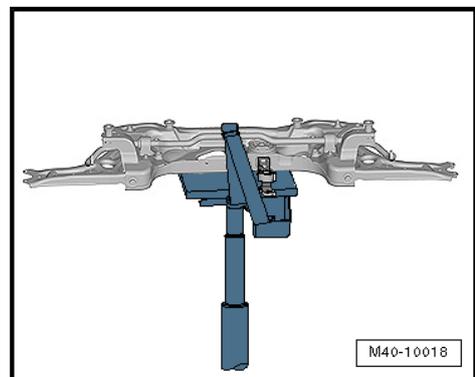
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bility



Note

The installation position is shown in the illustration on a vehicle with a high-voltage system.

- Secure the steering gear to the body.
- Secure the subframe to the Engine and Gearbox Jack - VAS6931- with the accompanying strap.



Installing

Install in reverse order of removal while noting the following:



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- ◆ *The subframe bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*

- Install the ball joints. Refer to [⇒ J4.4 oint, Removing and Installing”, page 120](#) .
- Secure the bracket with the High-Voltage Heater (PTC) - Z115-. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Coolant Circuit; High-Voltage Heater (PTC)

-Z115-/High-Voltage Heater (PTC) Control Module -J848-,
Removing and Installing.



DANGER!

High voltage is extremely dangerous.

Electrocution can cause death or very serious personal injury.

- ◆ *Have a "high-voltage technician" energize the high-voltage system.*

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- Re-energize the high-voltage system. Refer to [Motor, Rep. Gr. 93; Re-Energizing the High-Voltage System.](#)
- Overview table for when an axle alignment is needed. Refer to [f2.2 or Axle Alignment, Evaluating", page 413](#) .

Tightening Specifications

- ◆ Refer to [-2.1 Subframe", page 21](#)
- ◆ Refer to [-3.1 Steering Gear", page 473](#)
- ◆ Refer to [Transmission; Rep. Gr. 34; Assembly Mounts; Overview - Assembly Mounts.](#)
- ◆ Refer to [Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.](#)
- ◆ Refer to [Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview - Muffler.](#)
- ◆ Refer to [and Tires", page 411](#)

2.5 Subframe with Steering Gear, Removing and Installing

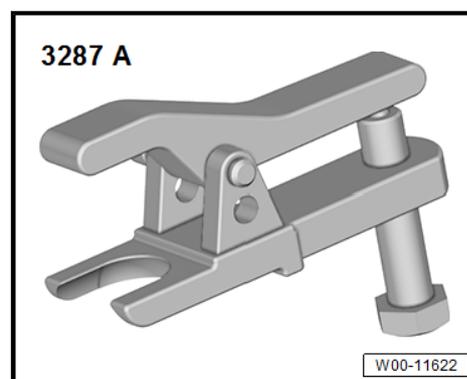
[w2.5.1 ith Steering Gear, Removing and Installing \(Vehicles without High-Voltage System\)", page 51](#)

[w2.5.2 ith Steering Gear, Removing and Installing \(Vehicles with High-Voltage System\)", page 59](#)

2.5.1 Subframe with Steering Gear, Removing and Installing (Vehicles without High-Voltage System)

Special tools and workshop equipment required

- ◆ Puller - Ball Joint -3287A-



- ◆ Torque Wrench, 40-200Nm -VAG1332A-



Removing

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

Vehicles with "Keyless Access Authorization System"

- Switch the ignition off and open the driver door so the steering wheel lock engages.

Continuation for All Vehicles:

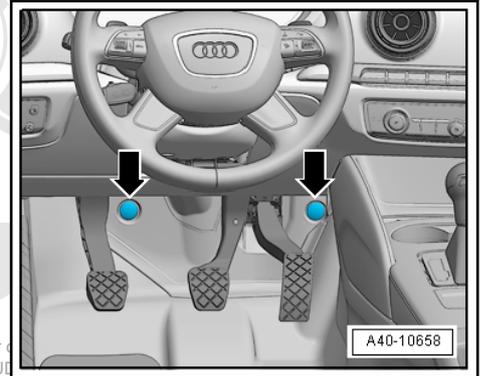


- Secure the steering wheel in the straight-ahead position using adhesive tape -arrow- so that it does not turn.



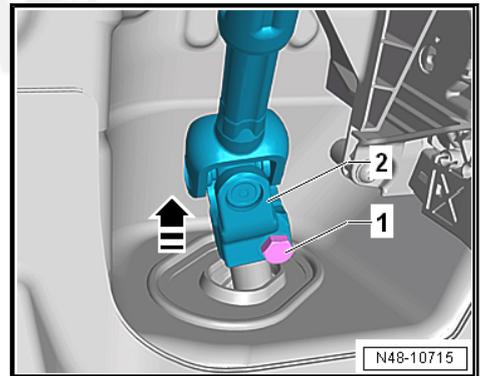
Note

- ◆ *Be sure to use adhesive tape that will not leave behind any residue when it is removed.*
- ◆ *Be careful not to turn the steering wheel during the repair because the Airbag Spiral Spring/Return Spring with Slip Ring -F138- can become damaged.*
- Remove the nuts -arrows- and the footwell trim panel.



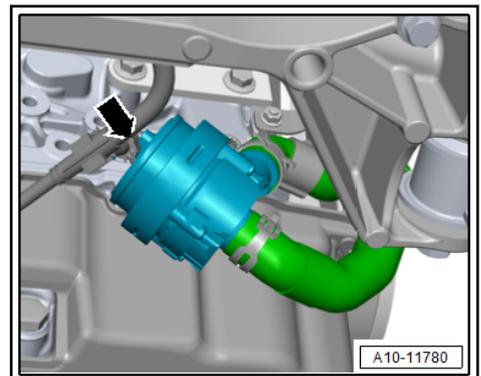
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- Remove the screw -1- for the universal joint -2- and then remove the universal joint in direction of -arrow-.



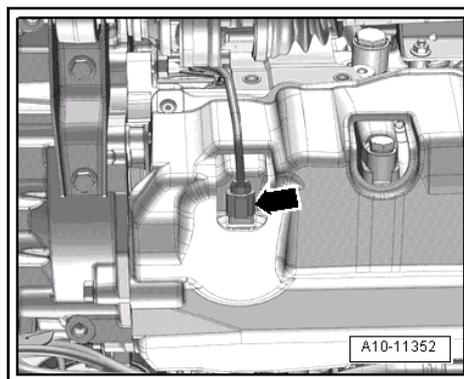
- Remove the front wheels. Refer to [⇒ a1 nd Tires](#), page 411 .
- Remove the front and rear noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.

Vehicles with TDI Engine:



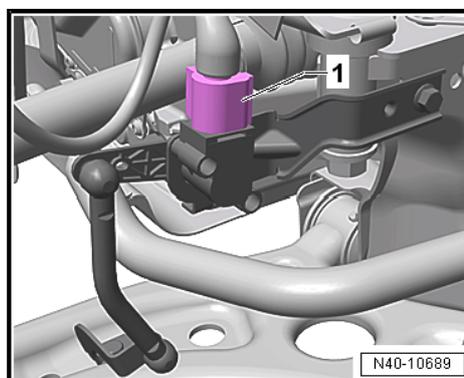
- Disconnect the connector -arrow- from the Heater Support Pump -V488-.

Vehicles with 4-Cylinder Engine:



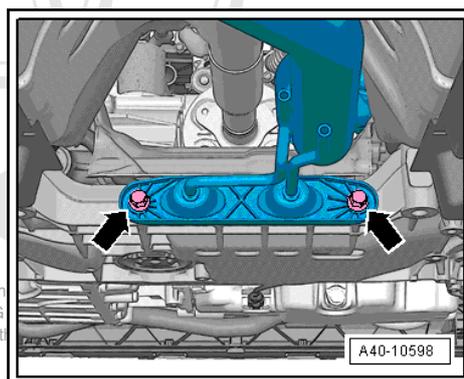
- Disconnect the connector for the Oil Level Thermal Sensor -G266- -arrow- and free up the wire from the subframe.

Vehicles with Level Control System Sensor:



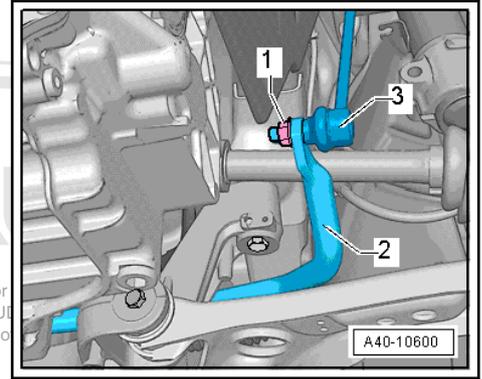
- Disconnect the connector -1- from the Left Front Level Control System Sensor -G78- or Right Front Level Control Sensor -G289-.

Continuation for All Vehicles:

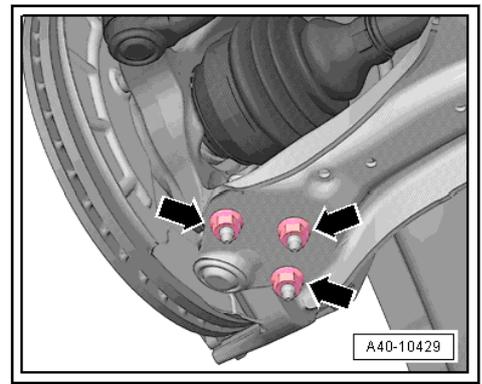


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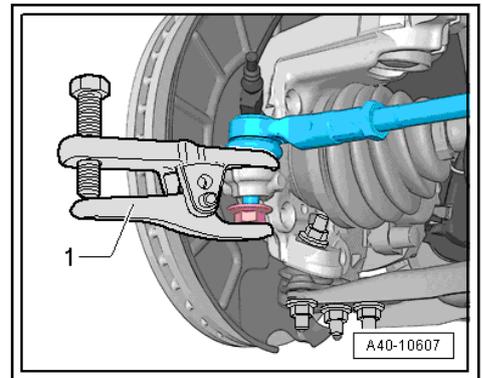
- Remove the bolts -arrows- from the exhaust pipe bracket.
- Remove the left and right nuts -1- from the coupling rod -3-. Refer to [⇒ R2.8 od, Removing and Installing”, page 91](#) .



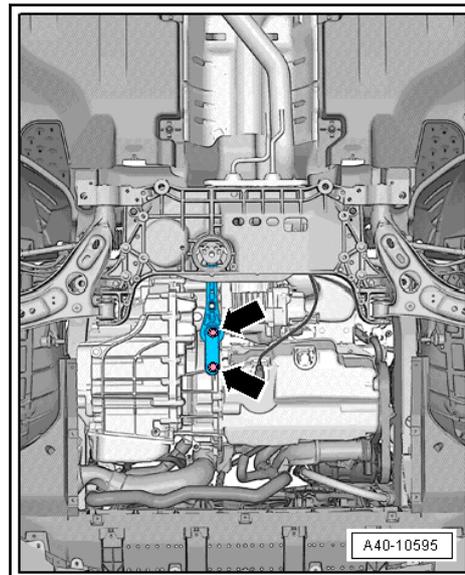
- Remove the left and right coupling rod -3- from the stabilizer bar -2-.
- Remove the nuts -arrows-.



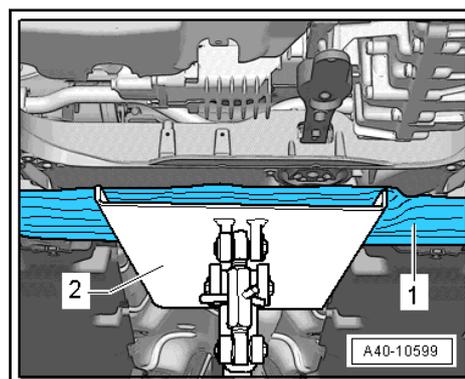
To Protect the Thread, Screw the Nut on the Pin Several Turns.



- Loosen the nuts from the tie rod end, but do not remove yet.
- Press off tie rod end from wheel bearing housing with Puller - Ball Joint -3287A- -1- and then remove the nut.
- Remove the screws -arrows- on the pendulum support.



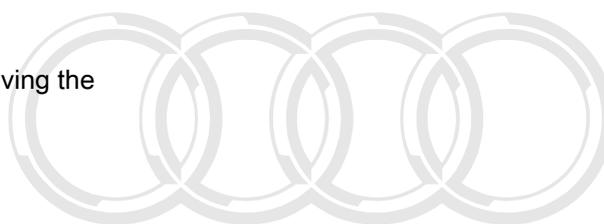
- Secure the subframe. Refer to ⇒ [S2.2 securing](#), page 23 .
- Slightly lower the subframe with the Engine and Gearbox Jack -VAS6931- -2-.



Note

Be careful not to overstretch the wire for the steering and the Oil Level Thermal Sensor -G266-.

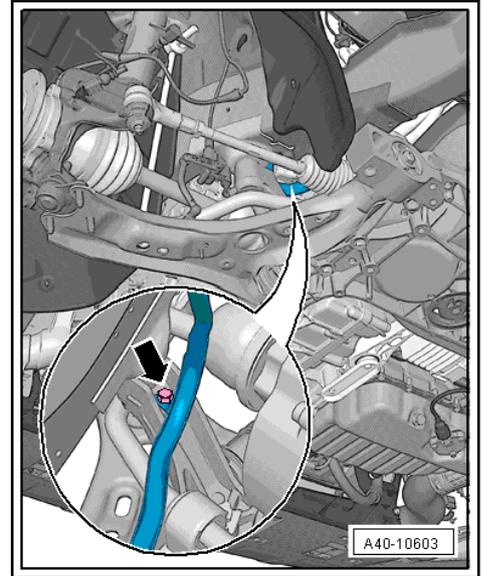
- Free up the cable guide from the subframe by removing the expanding clip -arrow-.



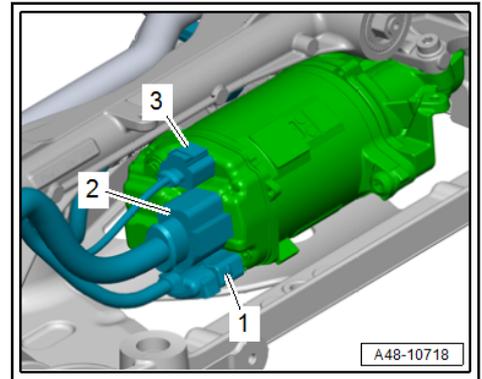
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- Disconnect the connectors -2 and 3- from the steering gear.

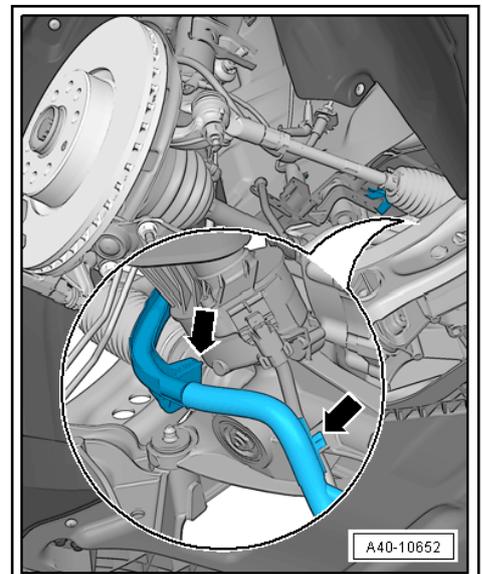


 Note

Ignore -item 1-.

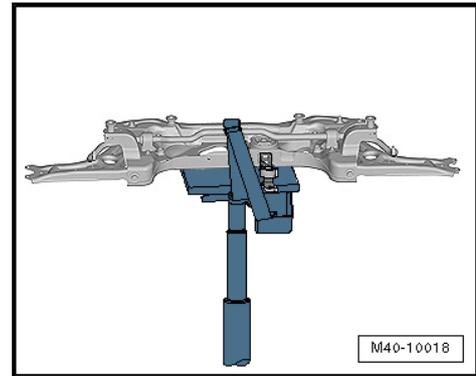
- Unclip the cable brackets -arrows- from the steering gear.

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- Unclip all other cable clips on the steering gear.
- Slightly lower the subframe. Pay attention to the wires while doing this.
- Lower the Engine and Gearbox Jack -VAS6931- slowly while guiding the steering gear wiring harness.
- Secure the subframe to the Engine and Gearbox Jack - VAS6931- with the accompanying strap.



Installing

Install in reverse order of removal while noting the following:



Note

- ◆ *Coat the seal on the steering gear with lubricant such as soft soap before installing the steering gear.*
 - ◆ *After placing the steering gear onto the universal joint, make sure that the seal -item 13- → [Item 13 \(page 474\)](#) on the steering gear contacts the assembly plate without kinks and seals the opening to the footwell correctly. Water leak and/or noises may be the result.*
 - ◆ *Make sure sealing surfaces are clean.*
- Overview table for when an axle alignment is needed. Refer to → [f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

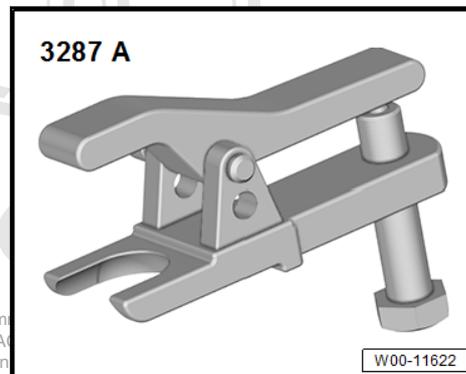
- ◆ Refer to → [-2.1 Subframe](#), page 21
- ◆ Refer to → [-4.1 Lower Control Arm and Ball Joint](#), page 106
- ◆ Refer to → [-2.1 Steering Column](#), page 461
- ◆ Refer to → [-3.1 Steering Gear](#), page 473
- ◆ Refer to → Transmission; Rep. Gr. 34; Assembly Mounts; Overview - Assembly Mounts.
- ◆ Refer to → Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to → Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.
- ◆ Refer to → [a1 nd Tires](#), page 411

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2.5.2 Subframe with Steering Gear, Removing and Installing (Vehicles with High-Voltage System)

Special tools and workshop equipment required

- ◆ Puller - Ball Joint -3287A-



- ◆ Torque Wrench, 40-200Nm -VAG1332A-



Removing

 **DANGER!**

High voltage is extremely dangerous.

Electrocution can cause death or very serious personal injury.

- ◆ *Have the high-voltage system de-energized by a "high-voltage technician".*
- ◆ *Procedures performed on a de-energized high-voltage system may only be done by a "technician trained in electrical systems".*

- De-energize the high-voltage system. Refer to ⇒ Motor; Rep. Gr. 93; High-Voltage System De-Energizing.
- Turn the steering wheel in the straight position and remove the ignition key so that the steering wheel lock engages.

Vehicles with "Keyless Access Authorization System"

- Switch the ignition off and open the driver door so the steering wheel lock engages.

Continuation for All Vehicles:



- Secure the steering wheel in the straight-ahead position using adhesive tape -arrow- so that it does not turn.

 **Note**

- ◆ *Be sure to use adhesive tape that will not leave behind any residue when it is removed.*

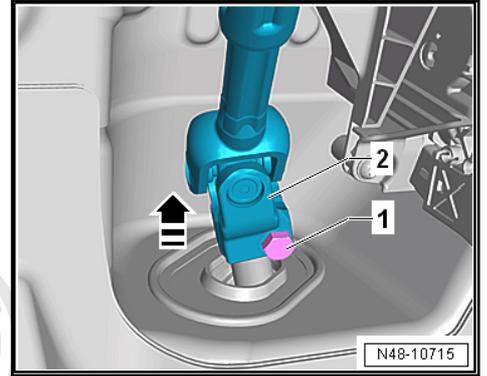
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- ◆ *Be careful not to turn the steering wheel during the repair because the Airbag Spiral Spring/Return Spring with Slip Ring -F138- can become damaged.*

- Remove the nuts -arrows- and the footwell trim panel.

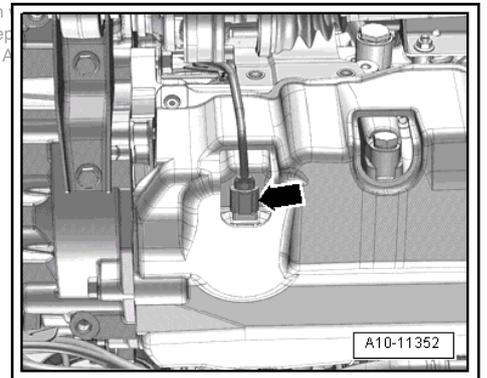


- Remove the screw -1- for the universal joint -2- and then remove the universal joint in direction of -arrow-.

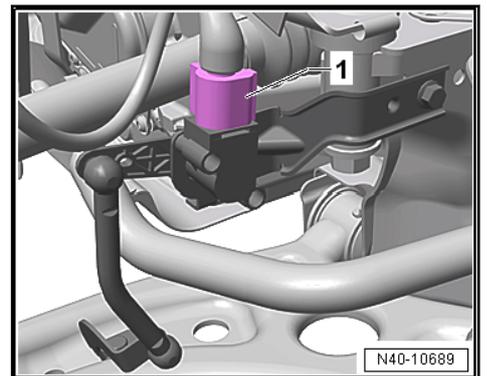


- Remove the front wheels. Refer to [⇒ a1 nd Tires”, page 411](#) .
- Remove the front and rear noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- Disconnect the connector for the Oil Level Thermal Sensor -G266- -arrow- and free up the wire from the subframe.

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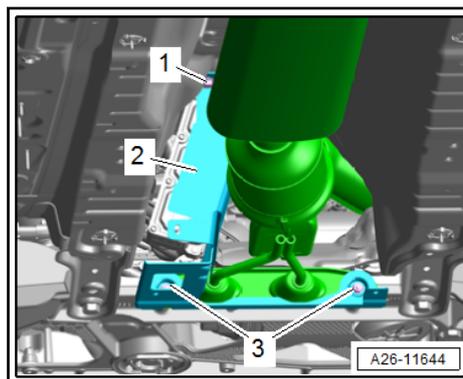


Vehicles with Level Control System Sensor:

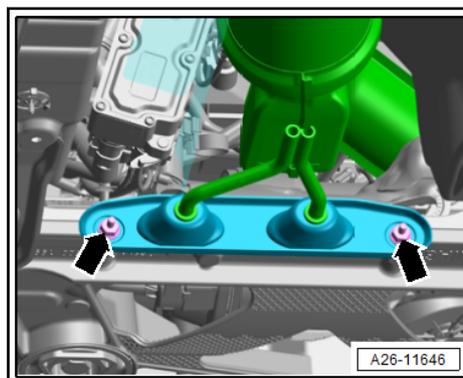


- Disconnect the connector -1- from the Left Front Level Control System Sensor -G78- or Right Front Level Control Sensor -G289-.

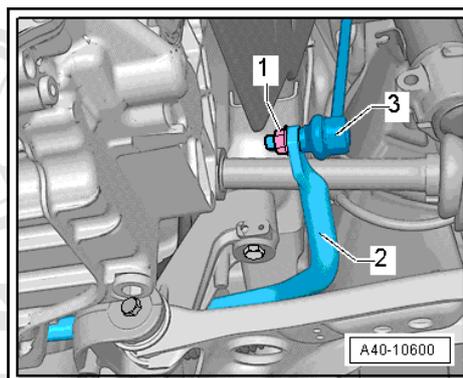
Continuation for All Vehicles:



- Remove the bolt -1- and the nuts -3-.
- Tie up the bracket -2- with the High-Voltage Heater (PTC) -Z115- to the side.
- Remove the double bolts -arrows- on the bracket for the exhaust pipe.

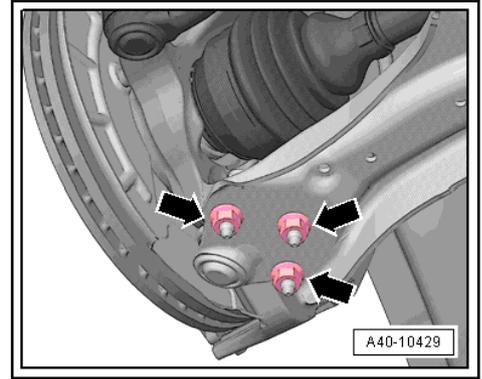


- Remove the left and right nuts -1- from the coupling rod -3-.
Refer to ⇒ [R2.8 od, Removing and Installing](#), page 91 .

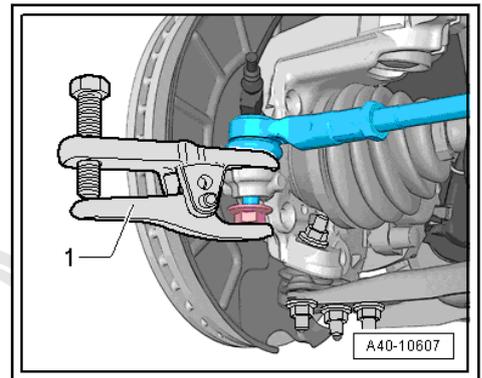


- Remove the left and right coupling rod -3- from the stabilizer bar -2-.
- Remove the nuts -arrows-.

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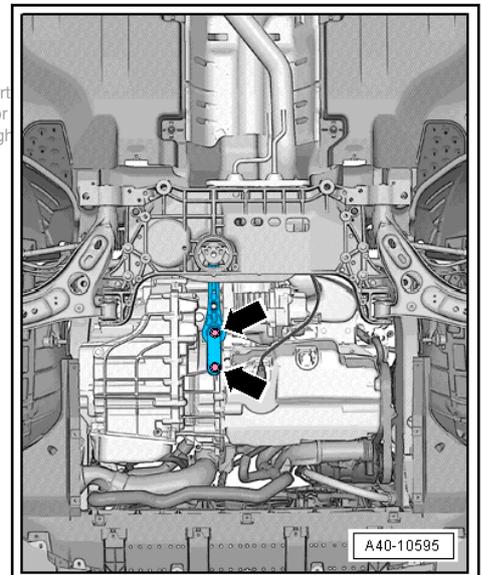


To Protect the Thread, Screw the Nut on the Pin Several Turns.

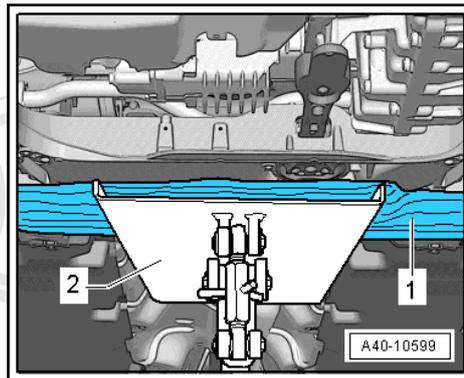


- Loosen the nuts from the tie rod end, but do not remove yet.
- Press off tie rod end from wheel bearing housing with Puller - Ball Joint -3287A- -1- and then remove the nut.
- Remove the screws -arrows- on the pendulum support.

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- Secure the subframe. Refer to ⇒ [S2.2 securing](#), page 23 .
- Slightly lower the subframe with the Engine and Gearbox Jack -VAS6931- -2-.

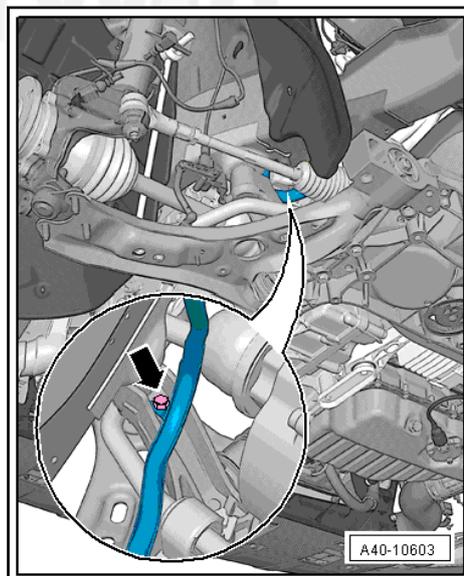


i Note

Be careful not to overstretch the wire for the steering and the Oil Level Thermal Sensor -G266-.

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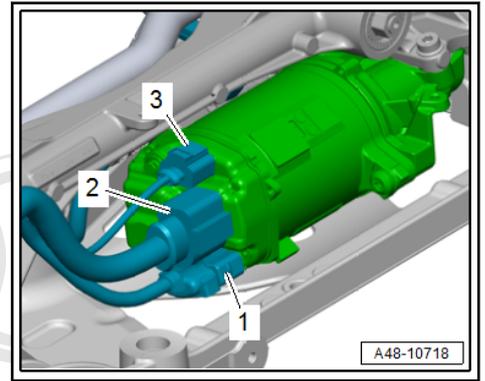
- Free up the cable guide from the subframe by removing the expanding clip -arrow-.



i Note

The installation position is shown in the illustration on a vehicle with a high-voltage system.

- Disconnect the connectors -2 and 3- from the steering gear.

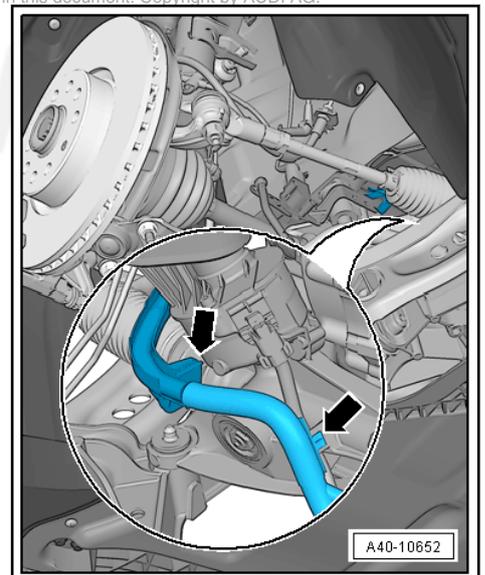


 Note

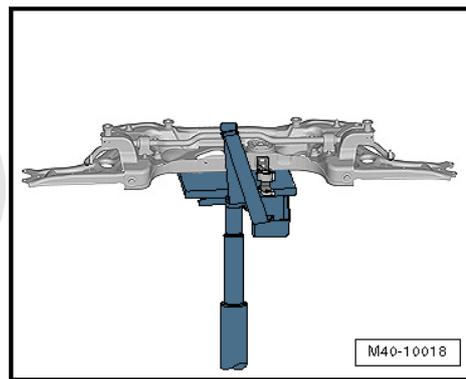
Ignore -item 1-.

- Unclip the cable brackets -arrows- from the steering gear.

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- Unclip all other cable clips on the steering gear.
- Slightly lower the subframe. Pay attention to the wires while doing this.
- Lower the Engine and Gearbox Jack -VAS6931- slowly while guiding the steering gear wiring harness.
- Secure the subframe to the Engine and Gearbox Jack - VAS6931- with the accompanying strap.



Installing

Install in reverse order of removal while noting the following:

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Note

- ◆ *Coat the seal on the steering gear with lubricant such as soft soap before installing the steering gear.*
- ◆ *After placing the steering gear onto the universal joint, make sure that the seal -item 13- ⇒ [Item 13 \(page 474\)](#) on the steering gear contacts the assembly plate without kinks and seals the opening to the footwell correctly. Water leak and/or noises may be the result.*
- ◆ *Make sure sealing surfaces are clean.*
- Re-energize the high-voltage system. Refer to ⇒ Motor; Rep. Gr. 93; Re-Energizing the High-Voltage System.
- Overview table for when an axle alignment is needed. Refer to ⇒ [f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to ⇒ [-2.1 Subframe](#), page 21
- ◆ Refer to ⇒ [-4.1 Lower Control Arm and Ball Joint](#), page 106
- ◆ Refer to ⇒ [-2.1 Steering Column](#), page 461
- ◆ Refer to ⇒ [-3.1 Steering Gear](#), page 473
- ◆ Refer to ⇒ Transmission; Rep. Gr. 34; Assembly Mounts; Overview - Assembly Mounts.
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411

2.6 Subframe, Servicing

⇒ [S2.6.1 ervicing, Aluminum Subframe](#), page 66

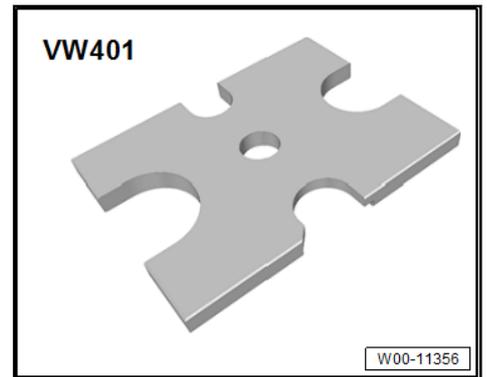
⇒ [S2.6.2 ervicing, Vehicles with Steel Subframe](#), page 79

2.6.1 Subframe, Servicing, Aluminum Subframe

Special tools and workshop equipment required

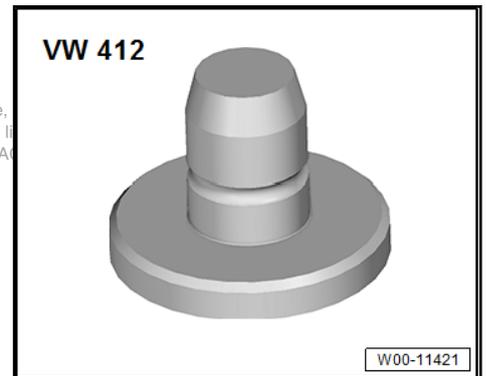
- ◆ Safety Gloves

- ◆ Protective headgear with visor
- ◆ Press Plate -VW401-

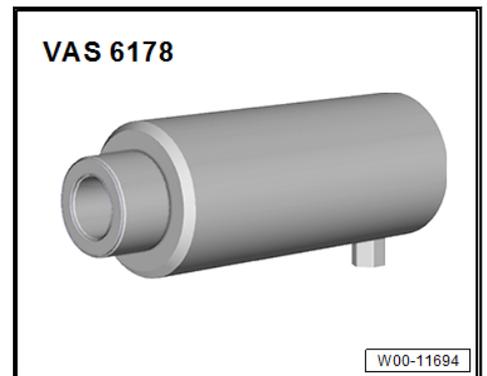


- ◆ Press Piece - Multiple Use -VW412-

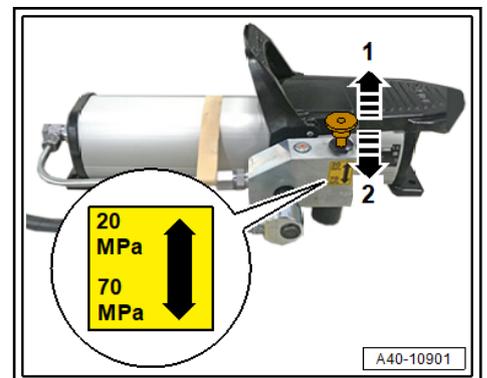
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- ◆ Hydraulic Press -VAS6178-

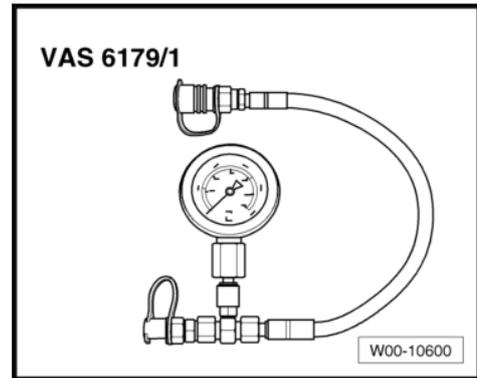


- ◆ Pneumatic/Hydraulic Foot Pump -VAS6179-

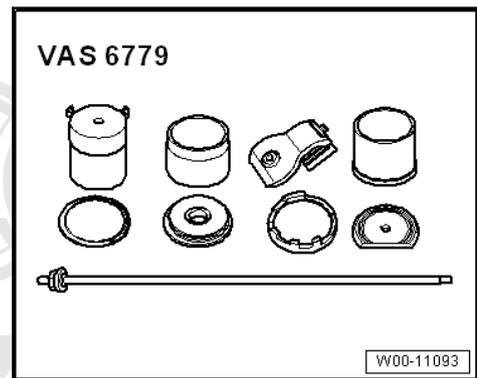




- ◆ Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1-

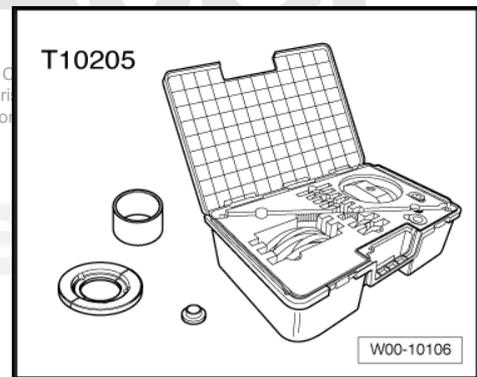


- ◆ Hydraulic Press - Bushing Tool Kit -VAS6779- with Support Ring - Assembly Device Kit -VAS6779/11- or Rubber Bushing Assembly Device Kit -VAS6779A-



- ◆ Bearing Installer - Wheel Hub/Bearing Kit - Pressure Head -T10205/13- from the Bearing Installer - Wheel Hub/Bearing Kit -T10205A-

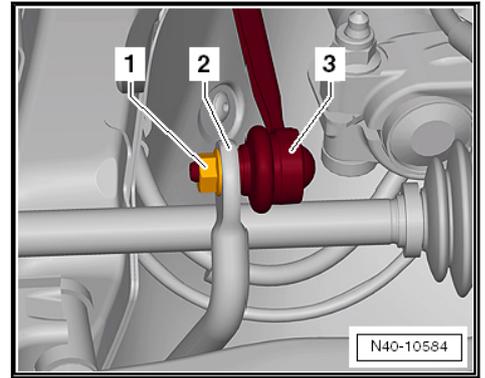
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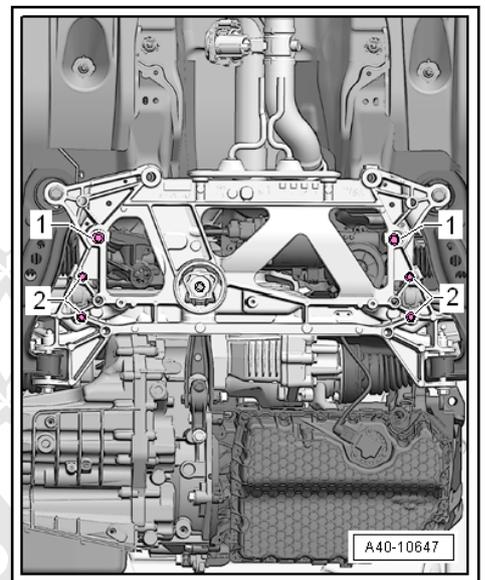
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Replacing the Bonded Rubber Bushing for the Pendulum Support.

- Remove the pendulum support. Refer to ⇒ Engine Mechanical; Rep. Gr. 10; Assembly Mounts; Pendulum Support, Removing and Installing.
- Remove the left and right nuts -1- from the coupling rod -3- to do so counterhold with a four-point socket on the threaded pin.



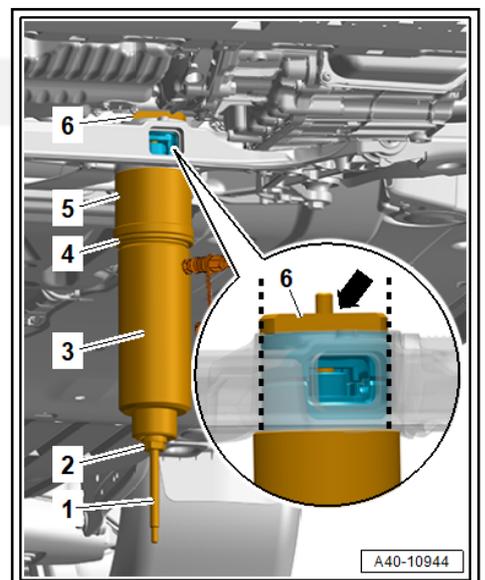
- Remove the left and right coupling rod from the stabilizer bar -2-.
- Remove the bolts -2- for the stabilizer bar.



- Leave the stabilizer bar in the installation position on the vehicle.

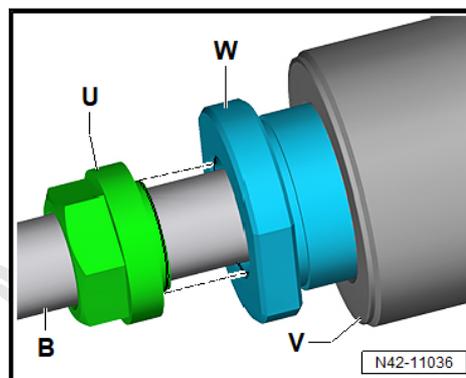
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Bonded Rubber Bushing, Pressing Out



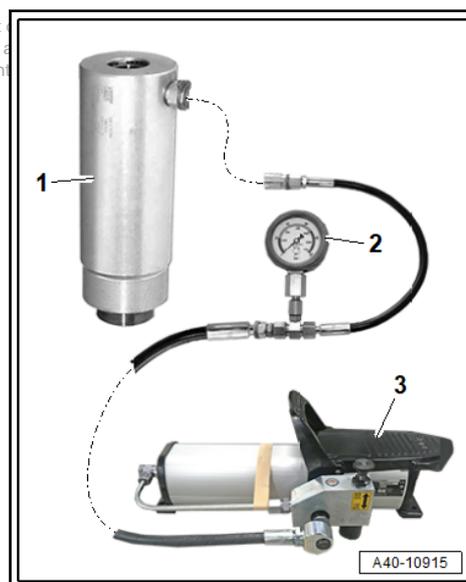


- Position the special tool as shown:
- 1 - Spindle -VAS6779/2-
- 2 - Hexagon Nut -VAS6779/3-
- 3 - Hydraulic Press -VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-
- 4 - Rubber Bushing Assembly Device Kit - Thrust Piece - VAS6779/5-
- 5 - Rubber Bushing Assembly Device Kit - Tube -VAS6779/4-
- 6 - Position the Support Ring - Assembly Device Kit - VAS6779/11- -1- with the flat side -arrow- in the direction of travel on the bonded rubber bushing.
- Position the tool exactly flush in alignment of the bonded rubber bushing, to prevent tilting.
- Pay attention that the Hexagon Nut -VAS6779/3- is seated correctly.



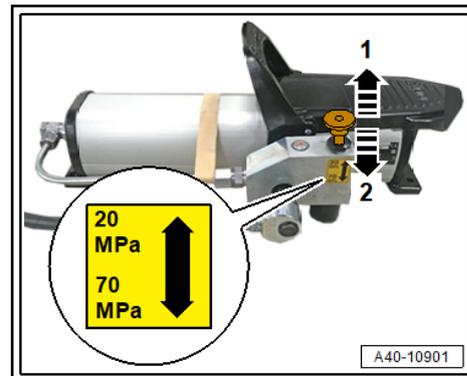
- The guide from the Hexagon Nut -VAS6779/3- -U- must be seated in the Bearing Installer - Wheel Hub/Bearing Kit -Thrust Piece -T10205/13- -W-
- The Hexagon Nut -VAS6779/3- -U- must be installed flush on the Bearing Installer - Wheel Hub/Bearing Kit -Thrust Piece -T10205/13- -W-.
- Connect the special tools as shown.

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- 1 - Hydraulic Press -VAS6178-

- 2 - Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1-
 - 3 - Pneumatic/Hydraulic Foot Pump -VAS6179-
- Pull the control knob on the pressure relief valve for the Pneumatic/Hydraulic Foot Pump -VAS6179- to level -1-.



- The control knob must be in the position -1-. The setting is a maximum pressure of 200 bar (2,900.76 psi). In position -2- (700 bar (10,152.66 psi)) the nominal load of the spindle is exceeded.



Caution

Risk of destroying components due to the pressure setting being too high.

- *Never set the pressure greater than the specified (position 1 = 20 MPa).*



DANGER!

Risk of personal injury and property damage caused by the spindle breaking or the assembly tool deforming. Uncontrolled flying broken pieces possible.

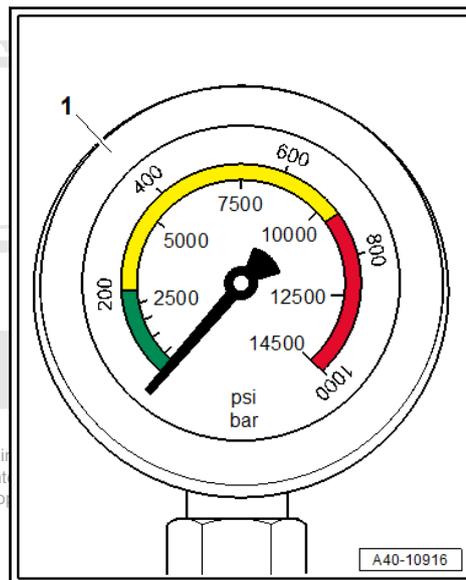
- *Wear safety gloves.*
- *Wear protective headgear with a visor.*
- *Pay attention when operating the foot pump, to not push the switch button in the lower position.*

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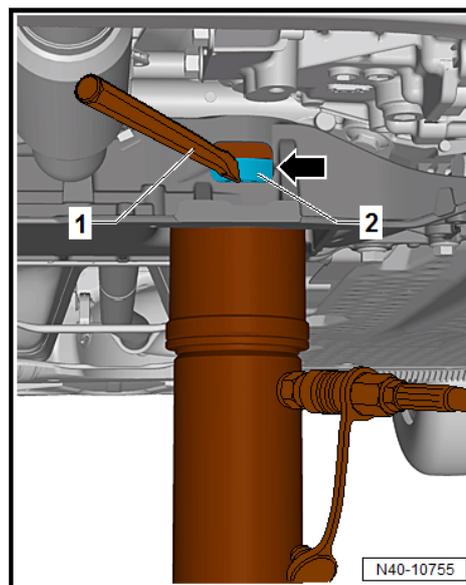
- Carefully operate the Pneumatic/Hydraulic Foot Pump - VAS6179- while monitoring the pressure indicator on the Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1- -1-.



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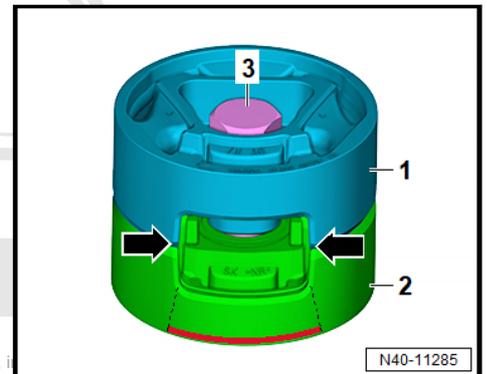
- Make sure that the indicator stays in the green display area. Do not exceed the maximum permitted pressure of 200 bar (2,900.76 psi).
- Press out both bonded rubber bushings until the upper bonded rubber bushing -2- is visible in the pendulum support opening -arrow- in the subframe.



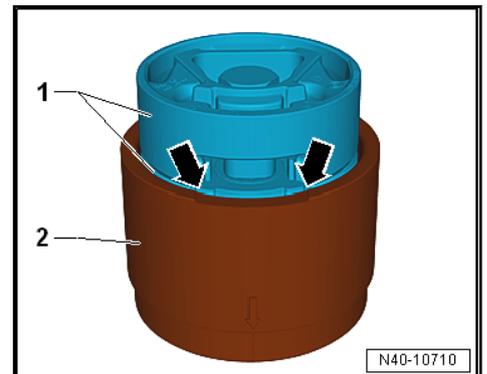
- Perform a visual inspection of the upper bonded rubber bushing outer race -2-.
- If the upper bonded rubber bushing outer race -2- is deformed, it must be destroyed through the opening for the pendulum support -arrow- in the subframe.
- Using a chisel or similar tool -1-, make a break in the upper bonded rubber bushing outer race -2-.
- This work sequence is necessary to prevent tilting of the bonded rubber bushing outer race in the area of the pendulum support opening in the subframe.
- Completely press out both bonded rubber bushings at the same time.

If the procedure does not work with the pressure specified, the repair setup must be checked. Submit feedback if necessary.

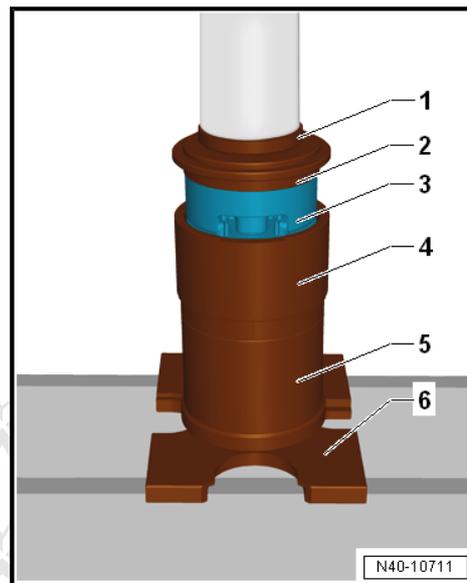
Preparing Bonded Rubber Bushings before Pressing In



- Place the bonded rubber bushings -1 and 2- on top of each other, so the openings -arrows- lay exactly over each other.
- Tighten the bonded rubber bushings with the original bolts -3- hand tight.
- Apply the red marking in phases as shown on the illustration. Dimension of the phase approximately 1 mm.
- Place the bonded rubber bushing -1- with the bolt head facing up in the larger diameter of the Hydraulic Press - Bushing Tool Kit - Funnel -VAS6779/6- -2-.

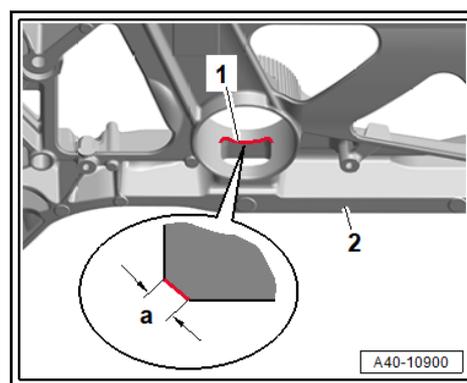


- Align the bonded rubber bushing in the Hydraulic Press - Bushing Tool Kit Funnel -VAS6779/6-.
- The bonded rubber bushing opening -arrows- must lay exactly in the recess on the Hydraulic Press - Bushing Tool Kit - Funnel -VAS6779/6-.
- Position the special tool as shown:

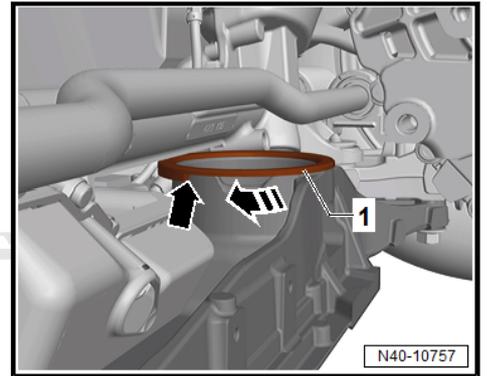


- 1 - Press Piece - Multiple Use -VW412-
- 2 - Rubber Bushing Assembly Device Kit -Thrust Piece - VAS6779/5-, the side with the letter "A" points upward
- 3 - Bonded Rubber Bushing
- 4 - Rubber Bushing Assembly Device Kit - Funnel - VAS6779/6-
- 5 - Rubber Bushing Assembly Device Kit - Tube -VAS6779/4-
- 6 - Press Plate -VW401-

- Press the bonded rubber bushing in the Rubber Bushing Assembly Device Kit - Funnel -VAS6779/6- -4- all the way on the Rubber Bushing Assembly Device Kit - Thrust Piece -VAS6779/5- -2-.
- Deburr the edge -1- at the top in the opening for the pendulum support in the subframe -2- as shown with a file to the dimension -a-.

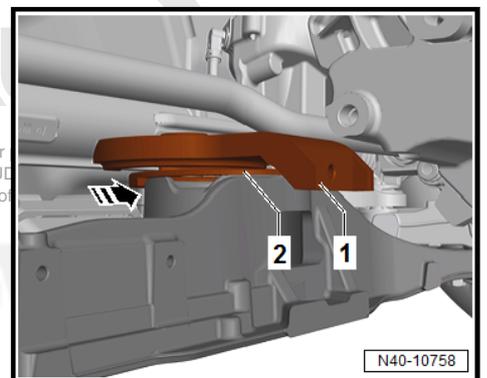


- Dimension -a- = 1 mm.
- Turn the Support Ring -VAS6779/11- -1- in the direction of -arrow- so that the tab -left arrow- points to the rear.

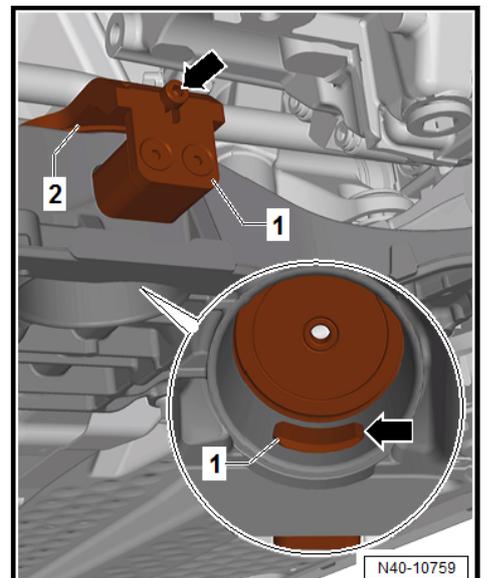


- Position the Counterholder -VAS6779/7- -1- from the left onto the Support Ring -VAS6779/11- -2- in the direction of -arrow-.

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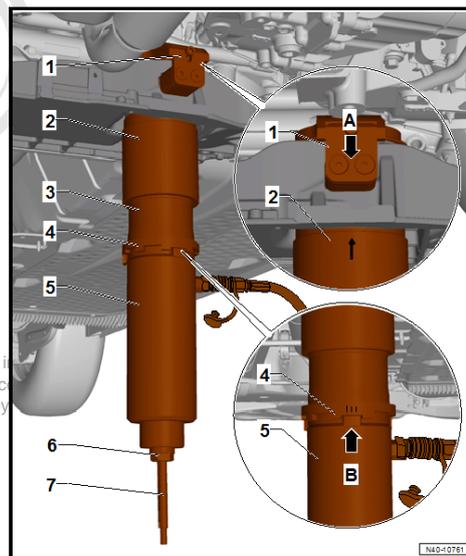
- Position the Insert -VAS6779/7-1A- -1- in the opening -lower arrow- for the pendulum support in the subframe at the same time push the insert -1- all the way upward and tighten using the bolt -upper arrow-.



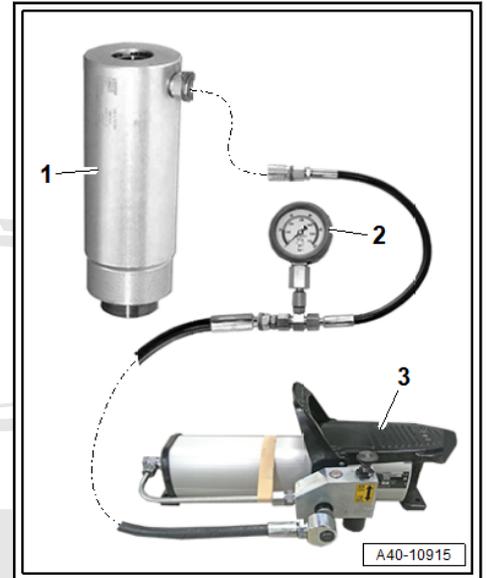
- Make sure that the Insert -VAS6779/7-1A- is seated correctly in the pendulum support opening in the subframe.

Bonded Rubber Bushing, Pressing In

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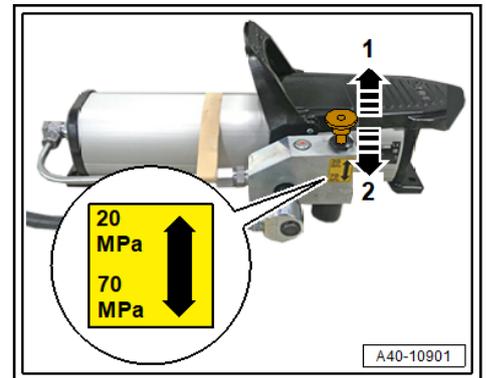


- Remove the pendulum support from the bonded rubber bushing.
- Install the Hydraulic Press - Bushing Tool Kit - Threaded Rod - VAS6779/2- -7- in the Rubber Bushing Assembly Device Kit - Counterhold - VAS6779/7- -1-.
- Position the special tool as shown:
 - 1 - Rubber Bushing Assembly Device Kit - Counterhold - VAS6779/7-
 - 2 - Hydraulic Press - Bushing Tool Kit - Funnel - VAS6779/6-, -arrow marking- on the funnel must be opposite of both bolts in the center -arrow A-.
 - 3 - Rubber Bushing Assembly Device Kit - Thrust Piece - VAS6779/9-
 - 4 - Incremental Ring - VAS6779/8-, the marking -III- on the incremental ring must point toward the cam -arrow B- on the Thrust Piece - VAS6779/9-.
 - 5 - Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 - T10205/13-
 - 6 - Hexagon Nut - VAS6779/3-
 - 7 - Spindle - VAS6779/2-
- Connect the special tools as shown.



- 1 - Hydraulic Press -VAS6178-
 - 2 - Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1-
 - 3 - Pneumatic/Hydraulic Foot Pump -VAS6179-
- Pull the control knob on the pressure relief valve for the Pneumatic/Hydraulic Foot Pump -VAS6179- to level -1-.

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- The control knob must be in the position -1-. The setting is a maximum pressure of 200 bar (2,900.76 psi). In position -2- (700 bar (10,152.66 psi)) the nominal load of the spindle is exceeded.



Caution

Risk of destroying components due to the pressure setting being too high.

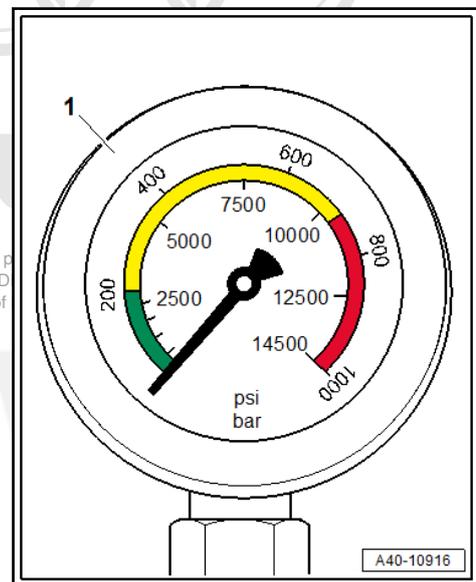
- *Never set the injection pressure greater than the specified (position 1 = 20 MPa).*

**DANGER!**

Risk of personal injury and property damage caused by the spindle breaking or the assembly tool deforming. Uncontrolled flying broken pieces possible.

- *Wear safety gloves.*
- *Wear protective headgear with a visor.*
- *Pay attention when operating the foot pump, to not push the switch button in the lower position.*

- Carefully operate the Pneumatic/Hydraulic Foot Pump - VAS6179- while monitoring the pressure indicator on the Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1- -1-.



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- Make sure that the indicator stays in the green display area. Do not exceed the maximum permitted pressure of 200 bar (2,900.76 psi).
- Press in both bonded rubber bushings at the same time.
- To prevent damage to the bonded rubber bushing outer race, while pushing in, pay attention that it is not tilted at the beginning.
- If necessary, release the tension and press in using the Pneumatic/Hydraulic Foot Pump -VAS6179-.

**Caution**

Risk of destroying components due to the pressure setting being too high.

- *Never select the foot pump mode with the higher pressure.*

- If the pressing in does not work with the pressure specified, the repair setup must be checked.
- Remove special tool from the subframe and check seating of the pressed in bonded rubber bushing.

Further installation is performed in reverse order of the removal.

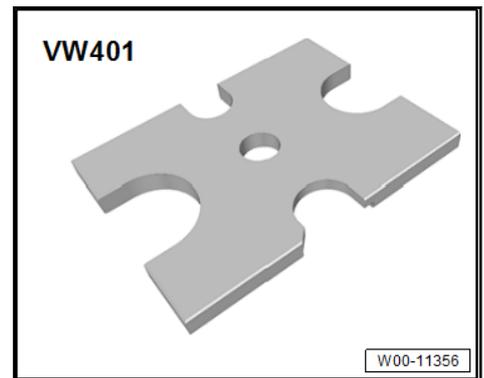
Tightening Specifications

- ◆ Refer to ⇒ [-2.1 Subframe](#), page 21
- ◆ Refer to ⇒ Motor; Rep. Gr. 10; Assembly Mounts; Overview - Assembly Mounts.

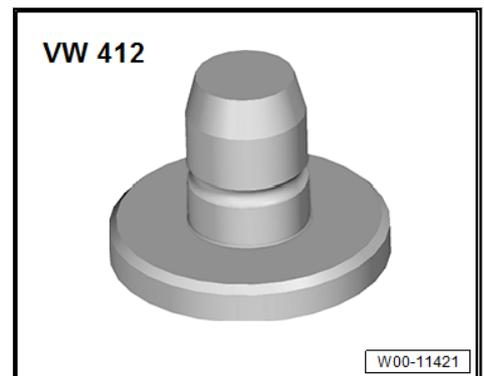
2.6.2 Subframe, Servicing, Vehicles with Steel Subframe

Special tools and workshop equipment required

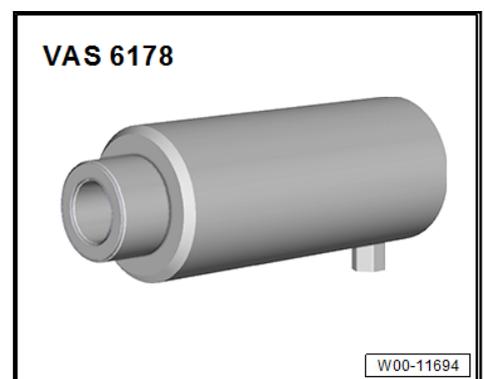
- ◆ Safety Gloves
- ◆ Protective headgear with visor
- ◆ Press Plate -VW401-



- ◆ Press Piece - Multiple Use -VW412-



- ◆ Hydraulic Press -VAS6178-

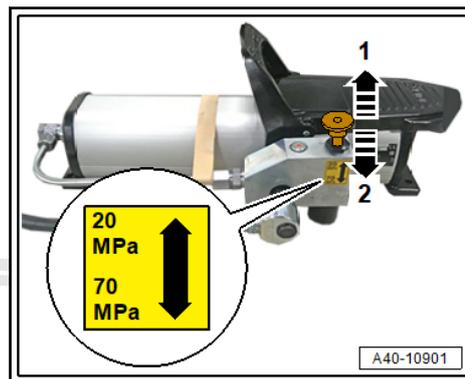


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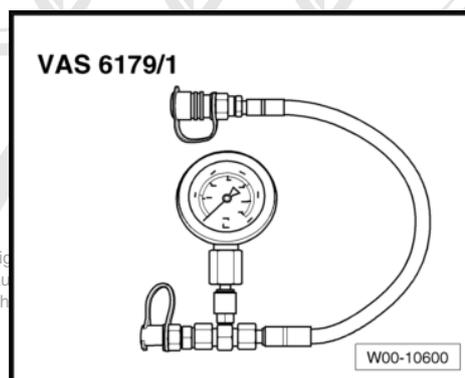
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◆ Pneumatic/Hydraulic Foot Pump -VAS6179-



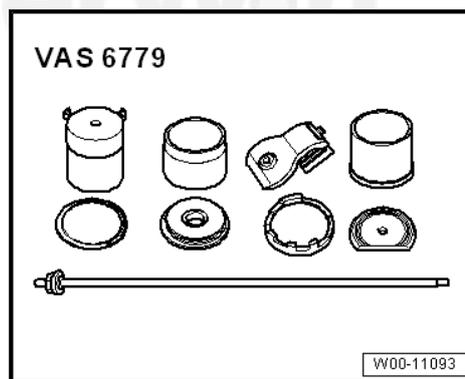
◆ Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1-



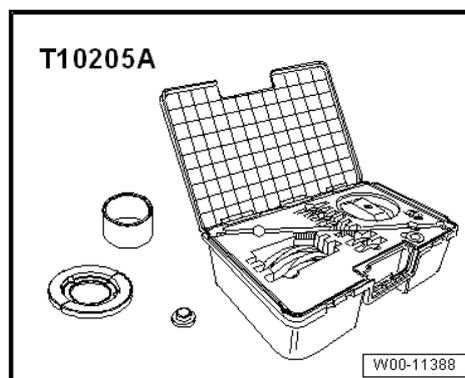
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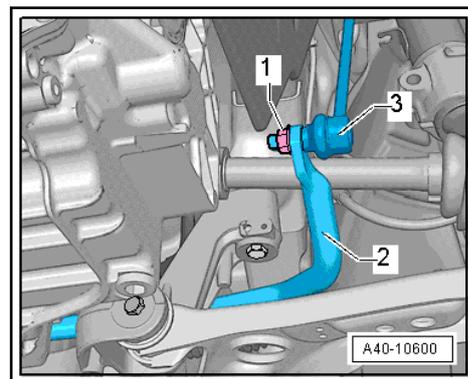
◆ Rubber Bushing Assembly Device Kit -VAS6779A-



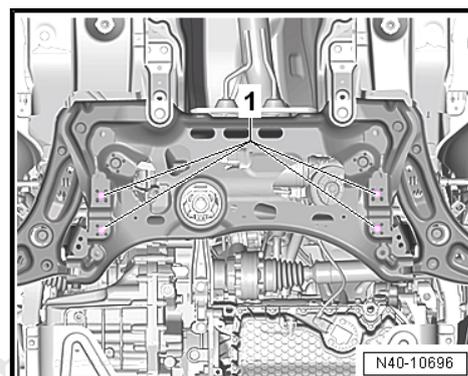
◆ Bearing Installer - Wheel Hub/Bearing Kit - 4 -T10205/4-
 from Bearing Installer - Wheel Hub/Bearing Kit -T10205A-



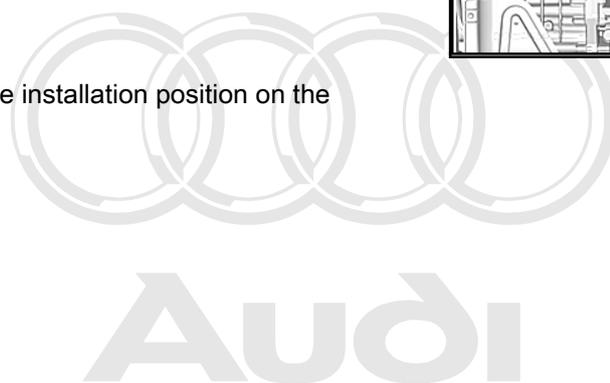
Replacing the Bonded Rubber Bushing for the Pendulum Support.



- Remove the pendulum support. Refer to ⇒ Engine Mechanical; Rep. Gr. 10; Assembly Mounts; Pendulum Support, Removing and Installing.
- Remove the left and right nuts -1- from the coupling rod -3-. Refer to ⇒ [R2.8 od, Removing and Installing](#), page 91 .
- Remove the left and right coupling rod -3- from the stabilizer bar -2-.
- Remove the bolts -1- to remove the stabilizer bar from subframe.



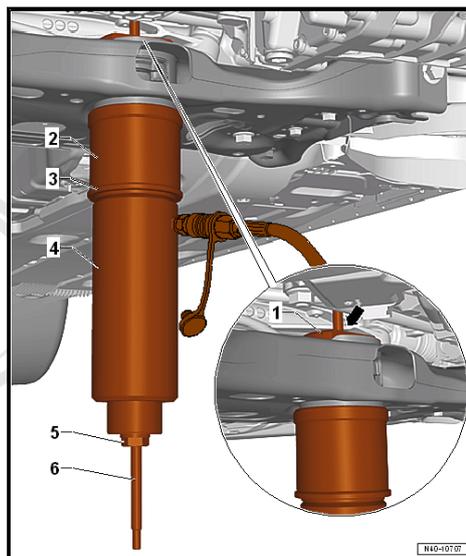
- Leave the stabilizer bar in the installation position on the vehicle.



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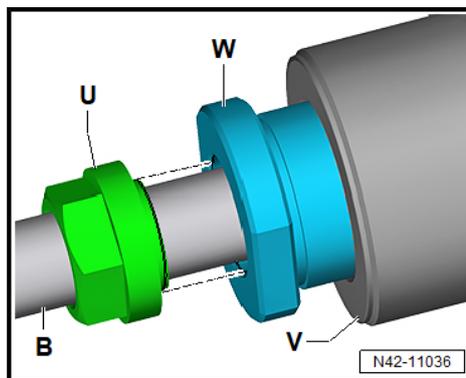
Bonded Rubber Bushing, Pressing Out



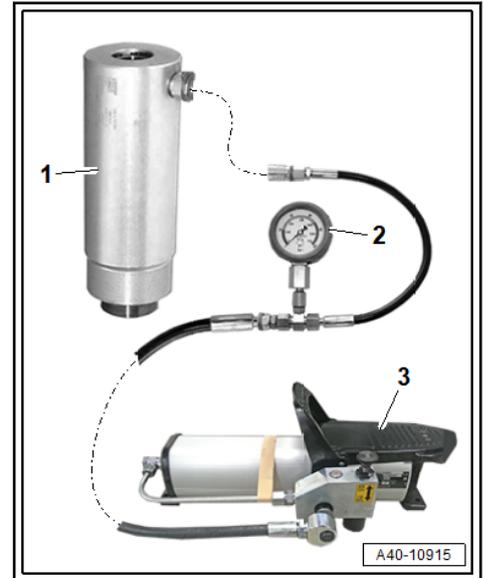
– Position the Hydraulic Press - Bushing Tool Kit - Thrust Piece -VAS6779/1- -1- with the flat side -arrow- in the direction of travel on the bonded rubber bushing.

- 1- Rubber Bushing Assembly Device Kit - Thrust Piece - VAS6779/1-
- 2- Rubber Bushing Assembly Device Kit - Tube -VAS6779/4-
- 3- Rubber Bushing Assembly Device Kit - Thrust Piece - VAS6779/5-
- 4- Hydraulic Press -VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-
- 5- Hexagon Nut -VAS6779/3-
- 6- Spindle -VAS6779/2-

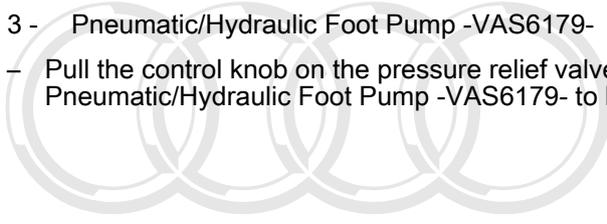
- Position the tool exactly flush in alignment of the bonded rubber bushing, to prevent tilting.
- Pay attention that the Hexagon Nut -VAS6779/3- is seated correctly.



- The guide from the Hexagon Nut -VAS6779/3- -U- must be seated in the Bearing Installer - Wheel Hub/Bearing Kit -Thrust Piece -T10205/13- -W-
- The Hexagon Nut -VAS6779/3- -U- must be installed flush on the Bearing Installer - Wheel Hub/Bearing Kit -Thrust Piece -T10205/13- -W-.
- Connect the special tools as shown.

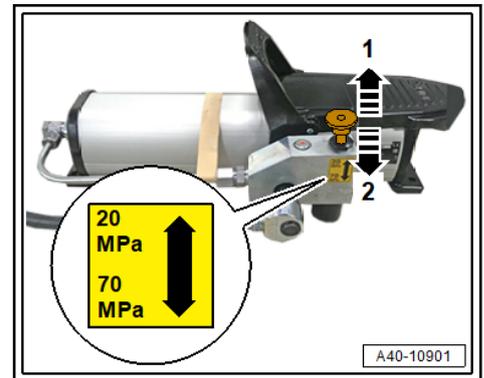


- 1 - Hydraulic Press -VAS6178-
 - 2 - Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1-
 - 3 - Pneumatic/Hydraulic Foot Pump -VAS6179-
- Pull the control knob on the pressure relief valve for the Pneumatic/Hydraulic Foot Pump -VAS6179- to level -1-.



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- The control knob must be in the position -1-. The setting is a maximum pressure of 200 bar (2,900.76 psi). In position -2- (700 bar (10,152.66 psi)) the nominal load of the spindle is exceeded.



Caution

Risk of destroying components due to the pressure setting being too high.

- *Never set the pressure greater than the specified (position 1 = 20 MPa).*

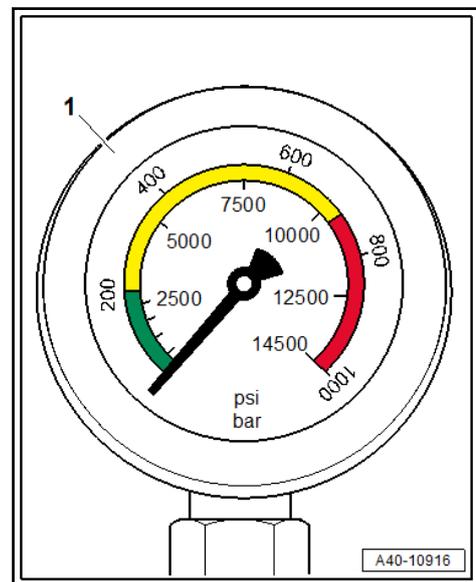
**DANGER!**

Risk of personal injury and property damage caused by the spindle breaking or the assembly tool deforming. Uncontrolled flying broken pieces possible.

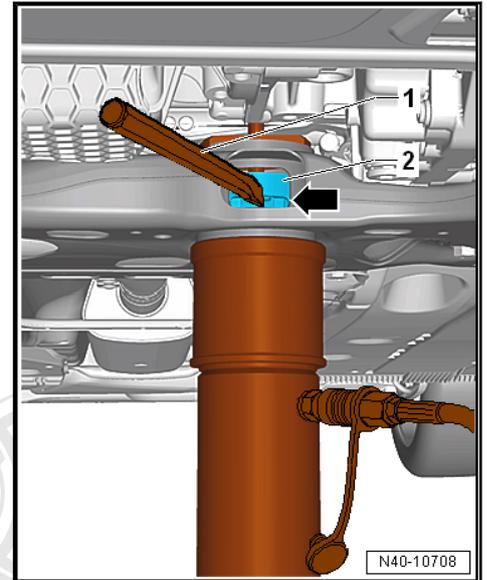
- ***Wear safety gloves.***
- ***Wear protective headgear with a visor.***
- ***Pay attention when operating the foot pump, to not push the switch button in the lower position.***

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- Carefully operate the Pneumatic/Hydraulic Foot Pump - VAS6179- while monitoring the pressure indicator on the Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1- -1-.

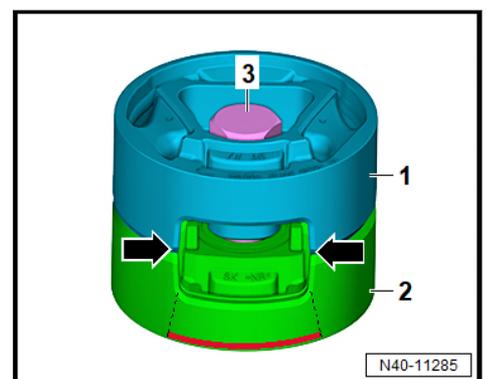


- Make sure that the indicator stays in the green display area. Do not exceed the maximum permitted pressure of 200 bar (2,900.76 psi).
- Press out both bonded rubber bushings until the upper bonded rubber bushing -2- is visible in the pendulum support opening -arrow- in the subframe.

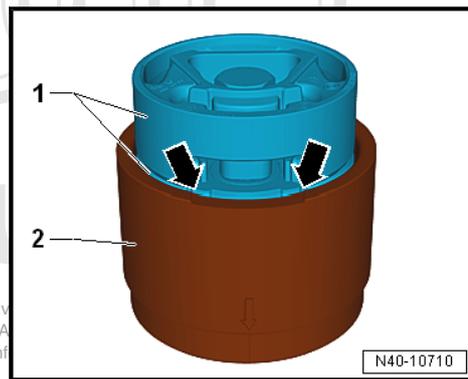


- Perform a visual inspection of the upper bonded rubber bushing outer race -2-.
- If the upper bonded rubber bushing outer race -2- is deformed, it must be destroyed through the opening for the pendulum support -arrow- in the subframe.
- Using a chisel or similar tool -1-, make a break in the upper bonded rubber bushing outer race -2-.
- This work sequence is necessary to prevent tilting of the bonded rubber bushing outer race in the area of the pendulum support opening in the subframe.
- Completely press out both bonded rubber bushings at the same time.

Preparing Bonded Rubber Bushings Before Pressing in

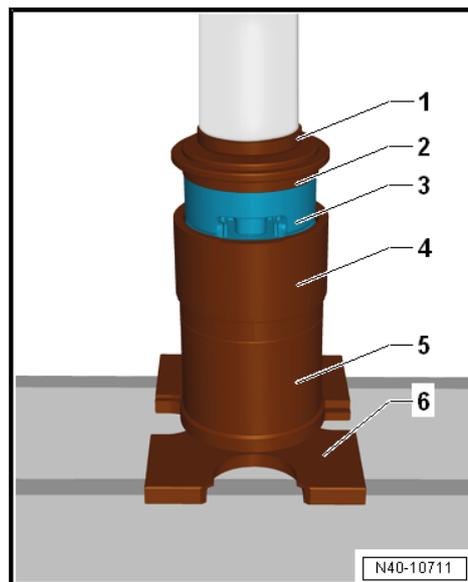


- Place the bonded rubber bushings -1 and 2- on top of each other, so the openings -arrows- lay exactly over each other.
- Tighten both bonded rubber bushings with the original bolts -3- hand tight.
- Apply the red marking in phases as shown on the illustration. Dimension of the phase approximately 1 mm.
- Place the bonded rubber bushing -1- with the bolt head facing up in the larger diameter of the Hydraulic Press - Bushing Tool Kit - Funnel -VAS6779/6- -2-.



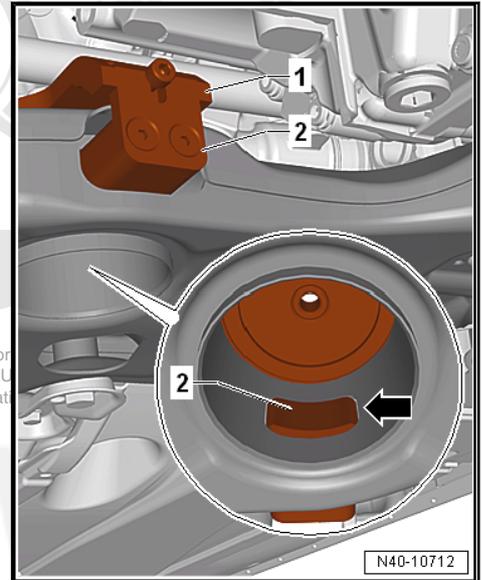
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- Align the bonded rubber bushing in the Hydraulic Press - Bushing Tool Kit Funnel -VAS6779/6-.
- The bonded rubber bushing opening -arrows- must lay exactly in the recess on the Hydraulic Press - Bushing Tool Kit - Funnel -VAS6779/6-.
- Press the bonded rubber bushing -3- all the way in the Hydraulic Press - Bushing Tool Kit - Funnel -VAS6779/6- as shown in the illustration.



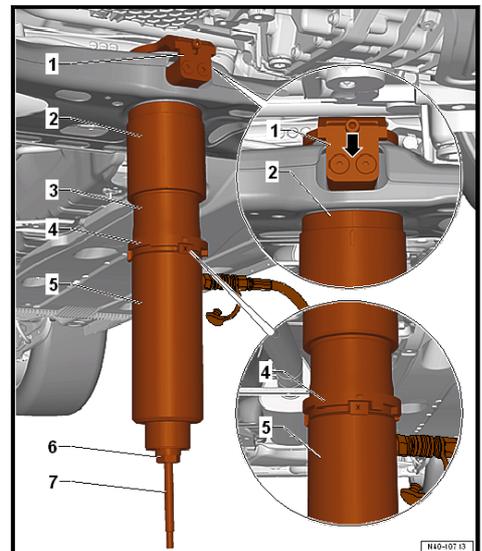
- 1 - Press Piece - Multiple Use -VW412-
- 2 - Rubber Bushing Assembly Device Kit -Thrust Piece - VAS6779/5-, the side with the letter "A" points upward
- 3 - Bonded Rubber Bushing
- 4 - Rubber Bushing Assembly Device Kit - Funnel - VAS6779/6-
- 5 - Rubber Bushing Assembly Device Kit - Tube -VAS6779/4-
- 6 - Press Plate -VW401-
- Remove the bolt from the bonded rubber bushing.
- Insert the Hydraulic Press - Bushing Tool Kit Counter Hold -VAS6779/7- -1- in the subframe.

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- Insert the Hydraulic Press - Bushing Tool Kit Insert - VAS6779/7-1A- -2- in the pendulum support opening in the subframe. At the same time push the hydraulic press bushing tool all the way up and use the bolt to attach it to the Counter Hold -VAS6779/7-.
- Make sure that the Insert -VAS6779/7-1A- -2- is seated correctly in the subframe opening.

Bonded Rubber Bushing, Pressing In

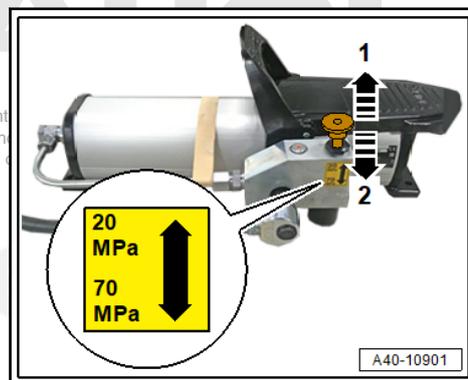


- Install the Spindel -VAS6779/2- -7- in the Rubber Bushing Assembly Device Kit - Counterhold -VAS6779/7- -item 1-.
 - Install the Hydraulic Press - Bushing Tool Kit -VAS6779- on the subframe as shown.
- 1 - Rubber Bushing Assembly Device Kit - Counterhold - VAS6779/7-
 - 2 - Hydraulic Press - Bushing Tool Kit - Funnel -VAS6779/6-, -arrow marking- on the Funnel must be opposite of both bolts in the center -arrow-.
 - 3 - Rubber Bushing Assembly Device Kit - Thrust Piece - VAS6779/9-

- 4 - Hydraulic Press - Bushing Tool Kit -Incremental Ring - VAS6779/8-, the marking -I- on the Incremental Ring must align with the marking -X- on the Hydraulic Press - Bushing Tool Kit Thrust Piece -VAS6779/9-
 - 5 - Hydraulic Press -VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-
 - 6 - Rubber Bushing Assembly Device Kit - Hexagon Nut - VAS6779/3-
 - 7 - Rubber Bushing Assembly Device Kit - Threaded Rod -VAS6779/2-
- Connect the special tools as shown.



- 1 - Hydraulic Press -VAS6178-
 - 2 - Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1-
 - 3 - Pneumatic/Hydraulic Foot Pump -VAS6179-
- Pull the control knob on the pressure relief valve for the Pneumatic/Hydraulic Foot Pump -VAS6179- to level -1-.



- The control knob must be in the position -1-. The setting is a maximum pressure of 200 bar (2,900.76 psi). In position -2- (700 bar (10,152.66 psi)) the nominal load of the spindle is exceeded.



Caution

Risk of destroying components due to the pressure setting being too high.

- *Never set the injection pressure greater than the specified (position 1 = 20 MPa).*



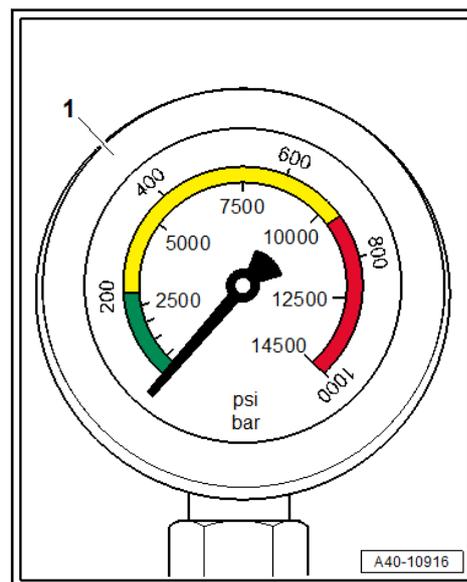
DANGER!

Risk of personal injury and property damage caused by the spindle breaking or the assembly tool deforming. Uncontrolled flying broken pieces possible.

- *Wear safety gloves.*
- *Wear protective headgear with a visor.*
- *Pay attention when operating the foot pump, to not push the switch button in the lower position.*

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- Carefully operate the Pneumatic/Hydraulic Foot Pump - VAS6179- while monitoring the pressure indicator on the Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1- -1-.



- Make sure that the indicator stays in the green display area. Do not exceed the maximum permitted pressure of 200 bar (2,900.76 psi).
- Press in both bonded rubber bushings at the same time.
- To prevent damage to the bonded rubber bushing outer race, while pushing in, pay attention that it is not tilted at the beginning.
- If necessary, release the tension and press in using the Pneumatic/Hydraulic Foot Pump -VAS6179-.



Caution

Risk of destroying components due to the pressure setting being too high.

- *Never select the foot pump mode with the higher pressure.*

- If the pressing in does not work with the pressure specified, the repair setup must be checked.
- Remove special tool from the subframe and check seating of the pressed in bonded rubber bushing.

Further installation is performed in reverse order of the removal.

Tightening Specifications:

- ◆ Refer to ⇒ [-2.1 Subframe”, page 21](#)
- ◆ Refer to ⇒ Engine Mechanical; Rep. Gr. 10; Assembly Mounts; Overview - Assembly Mounts.
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.

2.7 Stabilizer Bar, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-



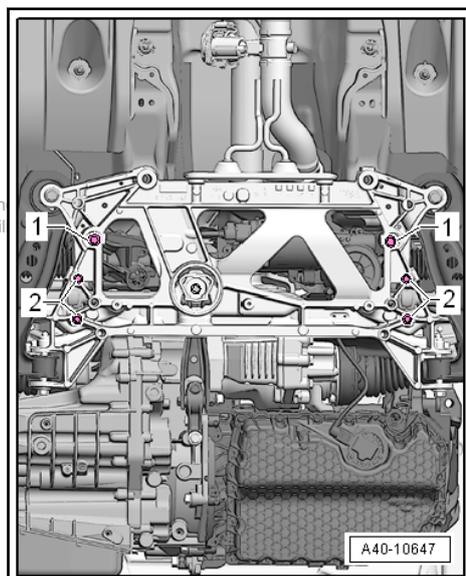
Removing



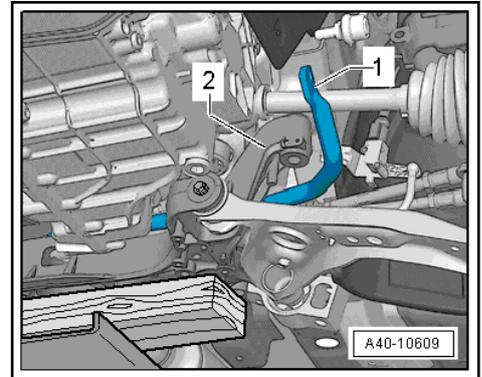
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- Lower the subframe. Refer to [⇒ L2.3 lowering”, page 27](#) .
- Remove the bolts -2- to remove the stabilizer bar from subframe.
- Lift the stabilizer bar from the subframe.



- Remove the stabilizer bar -1- forward from the subframe over the bracket -2-.

Installing

Install in reverse order of removal while noting the following:

- Install the subframe. Refer to [⇒ L2.3 lowering”, page 27](#) .
- Overview table for when an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating”, page 413](#) .

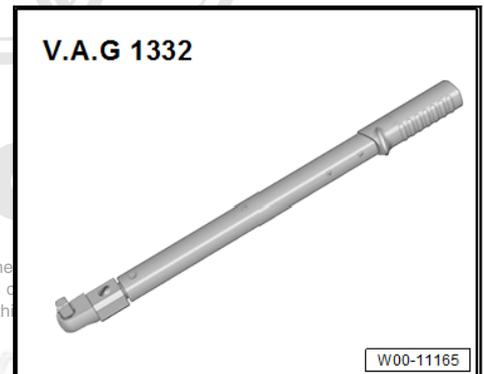
Tightening Specifications

- ◆ Refer to [⇒ -2.1 Subframe”, page 21](#)

2.8 Coupling Rod, Removing and Installing

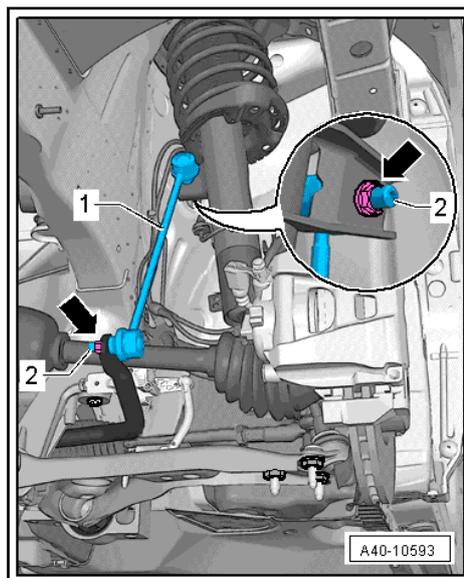
Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-



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Removing



- Remove the wheel. Refer to [⇒ a1 nd Tires”, page 411](#).
- Remove the nuts -arrows- from the coupling rod -1- by counterholding with a multi-point socket on the threaded pin -2- if necessary.
- Remove the coupling rod -1- from the stabilizer bar and pull out the suspension strut.

Installing

Install in reverse order of removal while noting the following:

- Tighten the nuts -arrows- for securing the coupling rod on the suspension strut or tighten the stabilizer bar. Counterhold with a multi-point socket on the threaded pins -2- to do this.



Note

The counterhold tool must not be tilted.

Tightening Specifications

- ◆ Refer to [⇒ -2.1 Subframe”, page 21](#)
- ◆ Refer to [⇒ a1 nd Tires”, page 411](#)

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3 Suspension Strut and Upper Control Arm

⇒ [-3.1 Suspension Strut and Upper Control Arm”, page 93](#)

⇒ [S3.2 strut, Removing and Installing”, page 95](#)

⇒ [S3.3 strut, Servicing”, page 101](#)

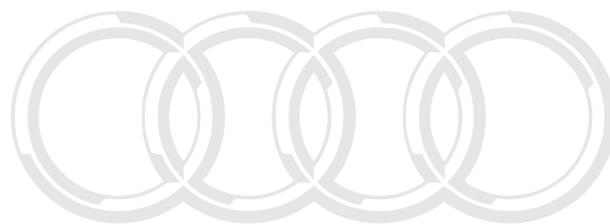
⇒ [S3.4 strut, Lowering”, page 103](#)

3.1 Overview - Suspension Strut and Upper Control Arm

If the components of the front axle (axle components and/or wheel rim) are replaced if damaged, the tightening specifications on the following threaded connections must be checked, when these threaded connections are not replaced during the repair procedure.

- ◆ Test torque 100 Nm for suspension strut clamping screw -item 5- ⇒ [Item 5 \(page 94\)](#) and nut -item 7- ⇒ [Item 7 \(page 94\)](#) .

Until the testing torque is reached in the tightening direction turning of the connection is not permitted.



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1 - Cap

- Shock absorber component

2 - Spring Support

- Note the installation position

3 - Shock Absorber with Lower Spring Plate

- Different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Removing and Installing. Refer to ⇒ [S3.3 trut, Servicing](#), page 101 .
- If the shock absorber is replaced due to a bent piston rod, the tie rod end on this side of the vehicle must be replaced with it.
- Because of different shock absorber valve systems, only install new shock absorbers from the same manufacturer on both axles, if possible.

4 - Electric Connection

- Installed on the suspension strut with electronically controlled damping (Audi magnetic ride)

5 - Bolt

- 70 Nm + 180°
- Replace after removing

6 - Wheel Bearing Housing

- Different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).

7 - Nut

- Replace after removing

8 - Protective Cover

- Different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).

9 - Coil Spring

- Different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Removing and Installing. Refer to ⇒ [S3.3 trut, Servicing](#), page 101 .
- Surface of spring coil may not be damaged.

10 - Deep-Groove Ball Bearing

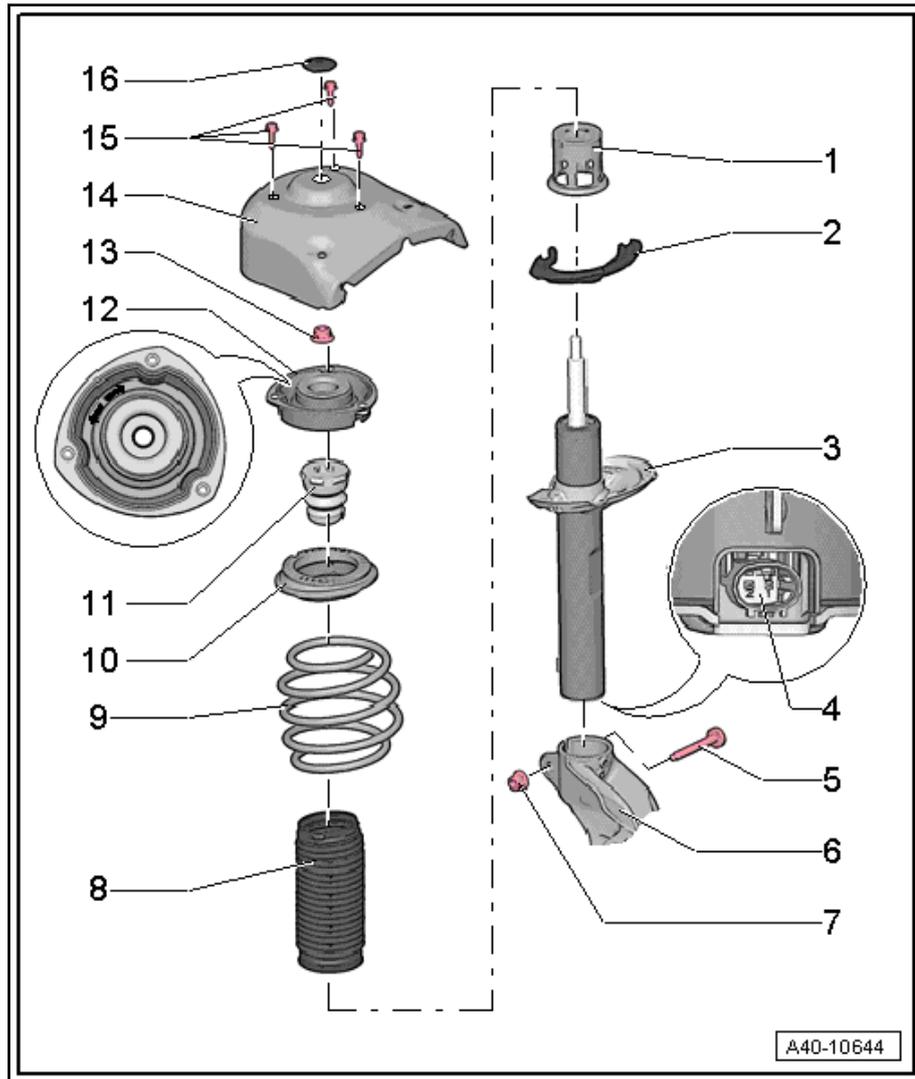
11 - Stop Buffer

- Different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).

12 - Strut Mount

- Note the installation position, one of the two marks -arrows- on the spring plate must point in the direction of travel. Refer to ⇒ [page 100](#) .

13 - Nut



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- 60 Nm
- Always replace if removed

14 - Suspension Strut Tower

15 - Bolt

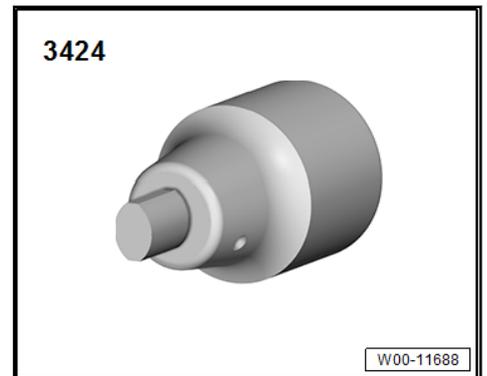
- 15 Nm +90°
- Always replace if removed

16 - Cover

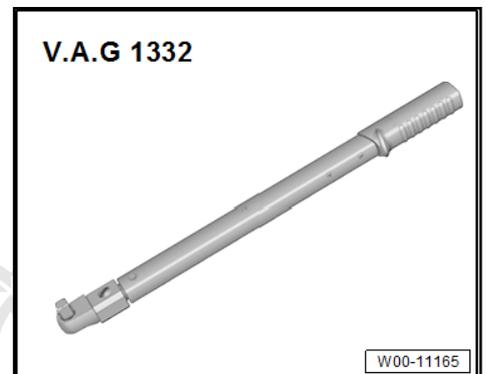
3.2 Suspension Strut, Removing and Installing

Special tools and workshop equipment required

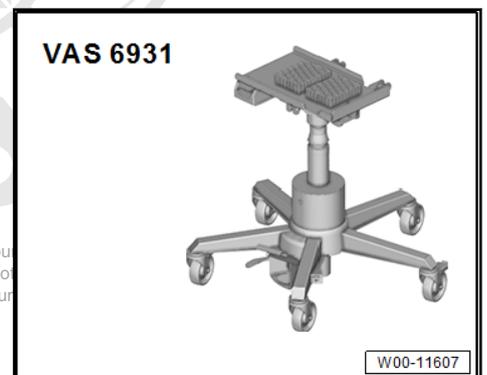
- ◆ Spreader Tool -3424-



- ◆ Torque Wrench, 40-200Nm -VAG1332A-

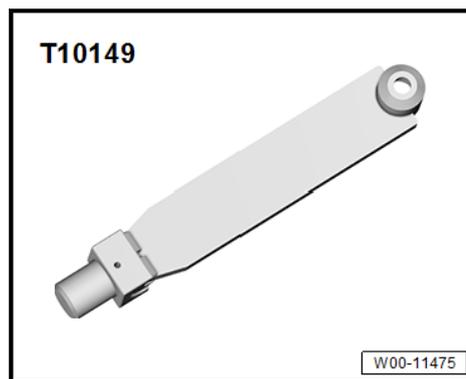


- ◆ Engine and Gearbox Jack -VAS6931-

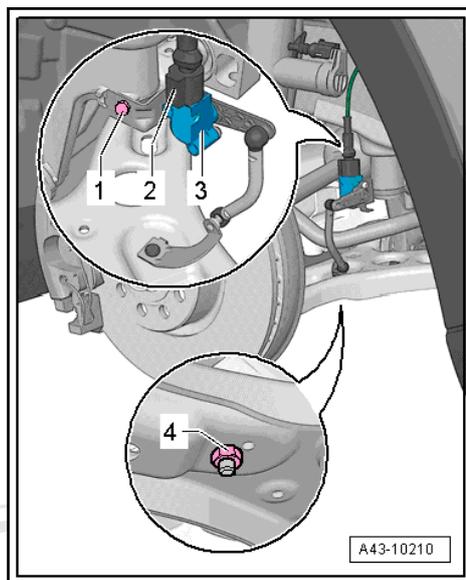


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◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-



Removing



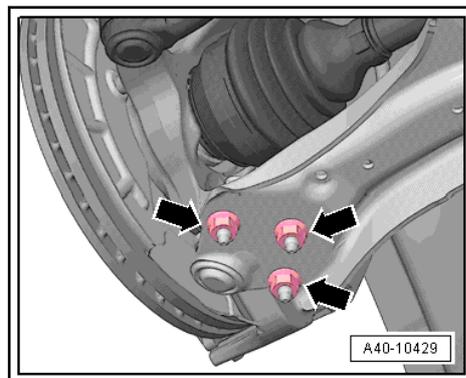
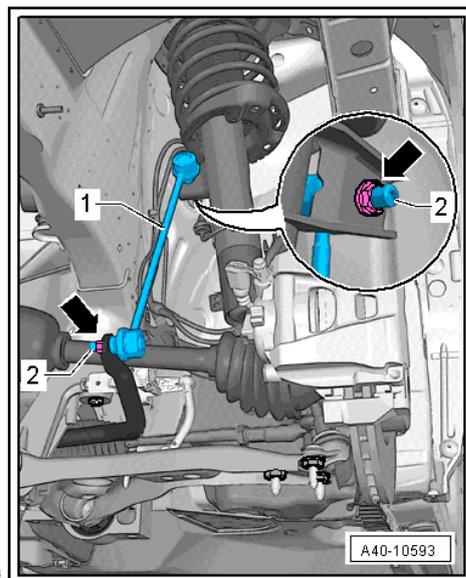
- Loosen drive axle bolt on the wheel hub. Refer to [⇒ A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .
- Remove the wheel. Refer to [⇒ a1 nd Tires](#), page 411 .
- If installed disconnect the vehicle inclination sensor coupling rod from the control arm, to do this remove the nuts -4-.
- Remove the coupling rod -1- nut -arrow- from the suspension strut. Refer to [⇒ R2.8 od, Removing and Installing](#), page 91 .

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- Remove the nuts -arrows-



- Disconnect the ball joint from control arm.
- Remove the wheel bearing housing with the ball joint from the control arm.

Applies to the Right Side of the Vehicle

- Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50; Bulkhead; Overview - Plenum Chamber Cover.
- Remove the plenum chamber bulkhead cover. Refer to ⇒ Body Exterior; Rep. Gr. 50; Bulkhead; Overview - Bulkhead.
- Remove the right drive axle. Refer to ⇒ [A6.5 xle, Removing and Installing](#), page 154 .

Applies to the Left Side of the Vehicle

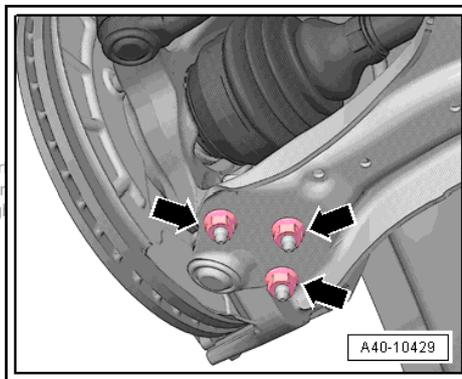
- On sport suspensions, lower the suspension strut. If the vehicle does not have a sport suspension, the suspension strut must not be lowered. Refer to ⇒ [S3.4 strut, Lowering](#), page 103 .
- Pull the wheel hub off the drive axle outer joint.
- Secure the drive axle to the body using a wire.

i Note

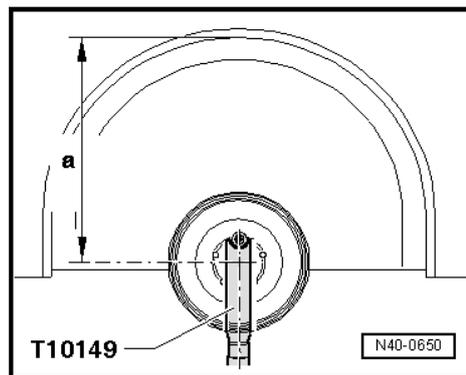
The drive axle must not hang down, otherwise the inner joint will be damaged by over bending.

Continuation for Both Sides

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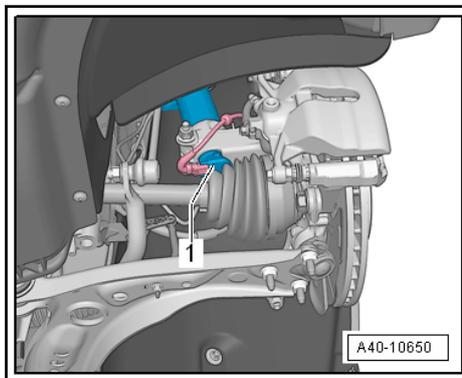


- Re-bolt the ball joint to control arm, to do this install the nuts -arrows- hand tight.
- Secure the Engine and Gearbox Jack -VAS6931- using the Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149- to the wheel hub with a wheel bolt.



Applies to Vehicles with Electronic Damping (Audi Magnetic Ride):

- Disconnect the connector -1- and free up the wire on the suspension strut.

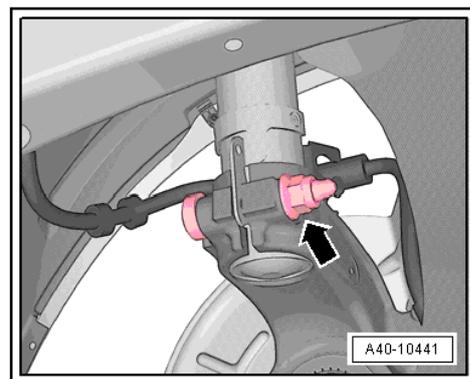


 Note

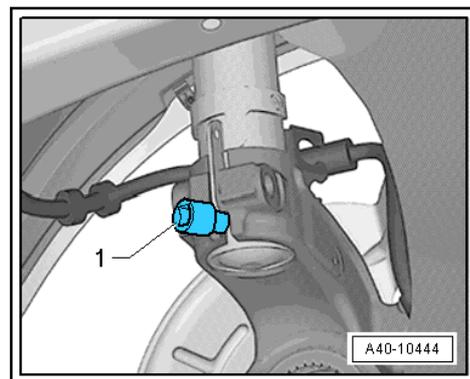
Remove the connector with both hands. Use one hand to open the lock (retainer) and use the other hand to press it off. Do not use tools.

All Vehicles:

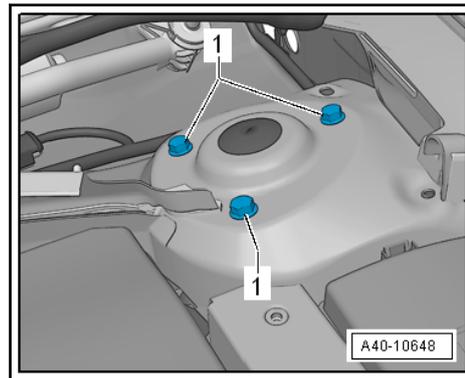
- Disconnect the threaded connection for the wheel bearing housing/suspension strut -arrow-.



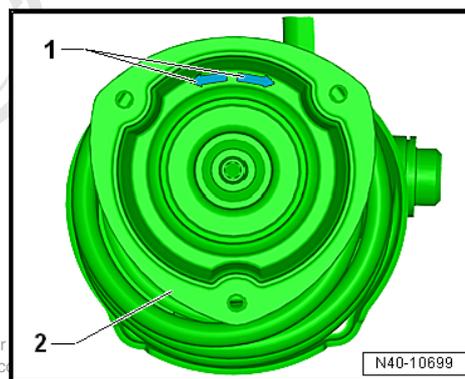
- Insert the Spreader Tool -3424- 1 into wheel bearing housing slot.



- Turn the ratchet 90° and remove it from the Spreader Tool -3424-.
- Press the brake rotor toward the suspension strut by hand, otherwise the shock absorber tube may become tilted in the hole of wheel bearing housing.
- Pull the wheel bearing housing downward from the shock absorber tube and lower using the Engine and Gearbox Jack -VAS6931- until the shock absorber tube hangs freely.
- Tie up the wheel bearing housing with a wire on the bracket/subframe.
- Remove the Engine and Gearbox Jack -VAS6931- from under the wheel bearing housing.
- If the suspension strut was not lowered, remove the bolts -1- for the spring plate and remove the suspension strut.



Installing



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Install in reverse order of removal while noting the following:

- One of the two arrows -1- on the spring plate -2- must point in the direction of travel.
- Insert the wheel hub in the drive axle outer joint.
- Insert the wheel bearing housing with the ball joint into the control arm.

If the coupling rod of a level control system sensor is loosened for a vehicle with Audi magnetic ride or level control system sensor, or if a level control system sensor is removed and installed or replaced, then re-adapt control position:

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:
 - ◆ Chassis
 - ◆ Wheel Damping Electronics
 - ◆ 01 - OBD-capable systems.
 - ◆ 14 - Electronic Damping Control Module -J250
 - ◆ 14 - Electronic Damping Control Module, functions
 - ◆ 14 - Control Position, readapting
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

- Overview table for when an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating](#), page 413 .

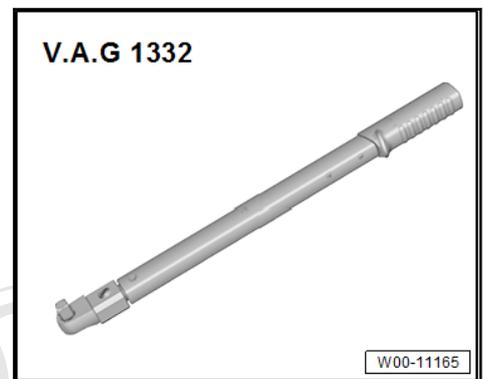
Tightening Specifications

- ◆ Refer to [⇒ -3.1 Suspension Strut and Upper Control Arm](#), page 93
- ◆ Refer to [⇒ -4.1 Lower Control Arm and Ball Joint](#), page 106
- ◆ Refer to [⇒ -2.1 Subframe](#), page 21
- ◆ Refer to [⇒ -2.1 Front Level Control System Sensor](#), page 402
- ◆ Refer to [⇒ -6.2 Drive Axle](#), page 137
- ◆ Refer to [⇒ A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- ◆ Refer to [⇒ a1 nd Tires](#), page 411

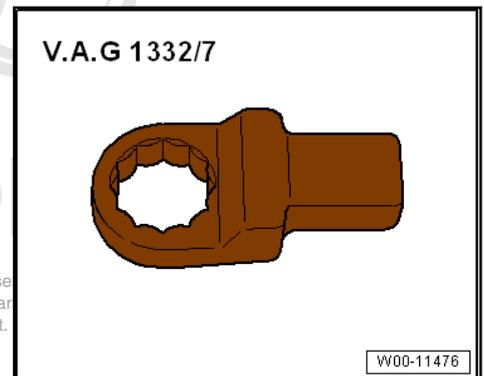
3.3 Suspension Strut, Servicing

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-



- ◆ Torque Wrench 1332 Insert - Ring Wrench - 21mm - VAG1332/7-

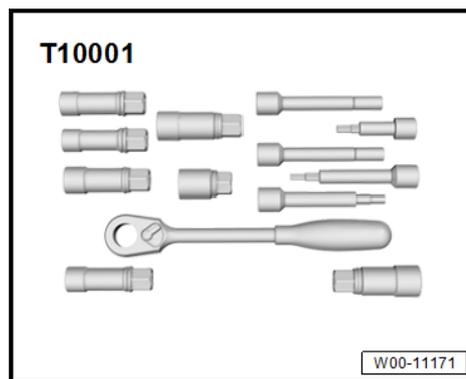


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- ◆ Spring Compressor Kit -VAG1752-



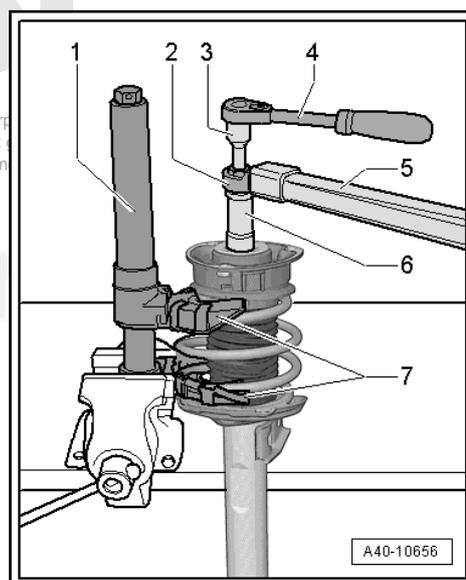
◆ Shock Absorber Set -T10001-



Procedure

- Suspension strut is removed. Refer to ⇒ [S3.2 strut, Removing and Installing](#), page 95 .
- Pretension the coil spring using the Spring Compressor Kit - Spring Tensioner -VAG1752/1- until the upper deep-groove ball bearing is free.
- Remove the hex nut from the piston rod.
- Remove the individual components of the suspension strut and coil spring with the Spring Compressor Kit - Spring Tensioner -VAG1752/1-.

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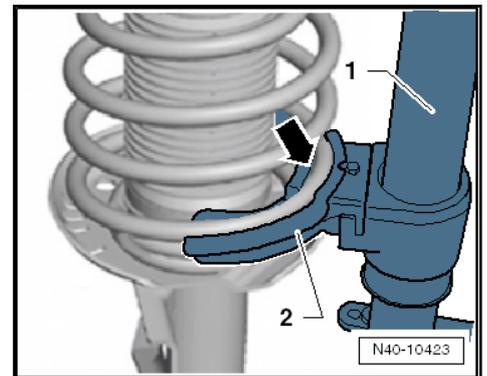
- 1 - Spring Compressor Kit - Spring Tensioner -VAG1752/1-
- 2 - Torque Wrench 1332 Insert - Ring Wrench - 21mm - VAG1332/7-
- 3 - Shock Absorber Set - Extension SW7 -T10001/8-
- 4 - Commercially Available Ratchet
- 5 - Torque Wrench, 40-200Nm -VAG1332A-
- 6 - Shock Absorber Set - Socket -T10001/5-
- 7 - Spring Compressor Kit - Spring Retainer w/Inserts - VAG1752/4-



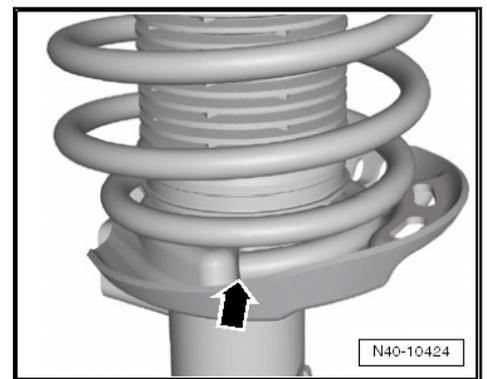
WARNING

First pretension the spring enough so that tension is relieved on upper spring plate.

- Make sure the coil spring fits correctly inside the Spring Compressor Kit - Spring Retainer with Inserts -VAG1752/4- -arrow-.



Coil Spring, Installing



- Place coil spring with Spring Compressor Kit - Spring Tensioner -VAG1752/1- on lower spring support.
- The end of the spring coil must rest against the stop -arrow-.
- Tighten the new nut on the piston rod. Refer to ⇒ [-3.1 Suspension Strut and Upper Control Arm](#), page 93 .
- Relieve the tension on the Spring Compressor Kit - Spring Tensioner -VAG1752/1- and remove it from the coil spring.
- Install the suspension strut. Refer to ⇒ [S3.2 strut, Removing and Installing](#), page 95 .

3.4 Suspension Strut, Lowering

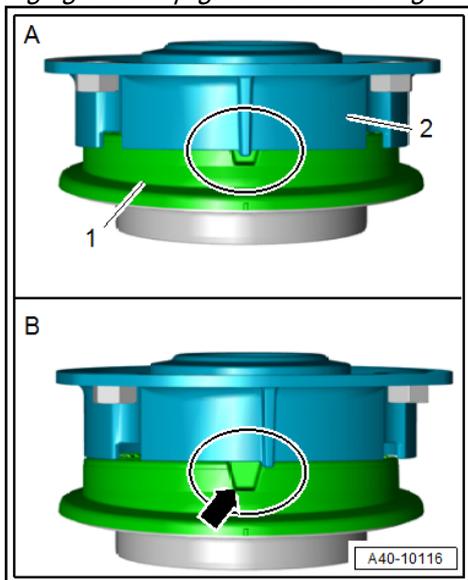
The suspension strut must be lowered on the following sport suspensions, if the wheel bearing unit/wheel bearing housing is removed from the drive axle.

- ◆ Sport suspension S3 and sport suspension S3 Audi magnetic ride 2UC and G06/G07/G26/G27/G46/G47/G97
- ◆ S-line sport suspension 2UG and G34/G35/G36/G48/G49/G50.
- ◆ Sport suspension RS3 and Sport suspension RS3 with Audi magnetic ride = 2UC and G08/G09

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i Note

There is a risk of damaging the deep-groove ball bearing -1-.

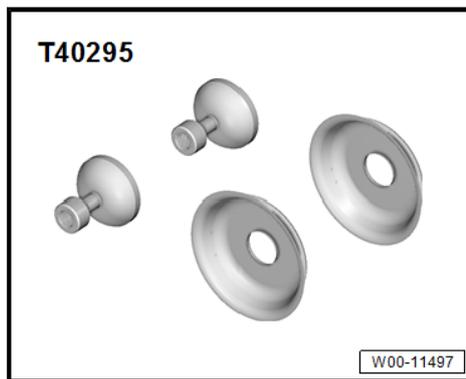


- ◆ *If the suspension strut is not lowered on the above-mentioned sport suspensions when removing the wheel bearing unit/wheel bearing housing from the drive axle and the suspension strut is pulled outward, the deep-groove ball bearing will slide out of the suspension strut mount -2- locking mechanism -arrow-.*
- ◆ *When installing, the deep-groove ball bearing cannot get back into the strut mount locking mechanism, from which noises may occur and the deep-groove ball bearing will be damaged due to contamination.*

Special tools and workshop equipment required

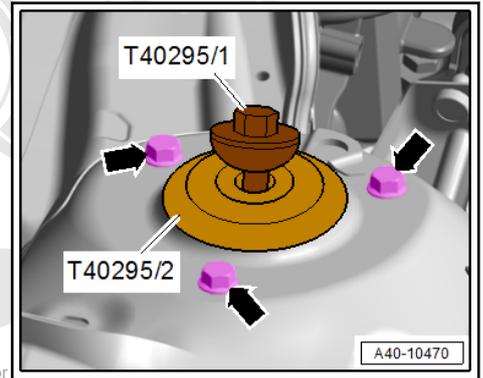
- ◆ High Pressure Pump Shaft Holder -T40295-

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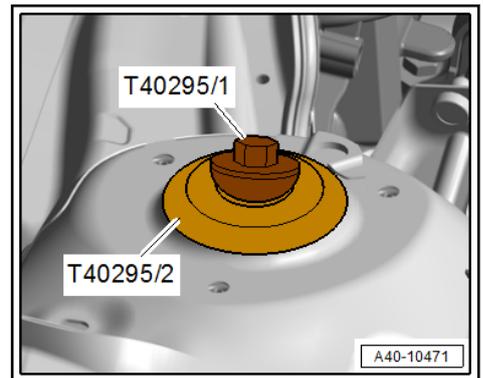
Procedure

- Remove the plenum chamber cover. Refer to => Body Exterior; Rep. Gr. 50; Bulkhead; Plenum Chamber Cover, Removing and Installing.
- Remove the plenum chamber bulkhead cover. Refer to => Body Exterior; Rep. Gr. 50; Bulkhead; Overview - Bulkhead.
- Remove the cover from the suspension strut tower.



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- Place the suspension strut tower protection -T40295/2- on the suspension strut tower.
- Attach the assembly aid -T40295/1- to the piston rod and tighten to 20 Nm.
- Loosen and remove the bolts -arrows- from the strut mount and counterhold the suspension strut while doing so.
- Lower the assembly aid -T40295/1- on the suspension strut tower protection -T40295/2-.



Assembling

Assemble in the reverse order of removal. Note the following:

- Install the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50; Bulkhead; Plenum Chamber Cover, Removing and Installing.

Tightening Specifications

- ◆ Refer to ⇒ [-3.1 Suspension Strut and Upper Control Arm](#), page 93



4 Lower Control Arm and Ball Joint

⇒ [4.1 Lower Control Arm and Ball Joint", page 106](#)

⇒ [C4.2 ontrol Arm, Removing and Installing", page 109](#)

⇒ [C4.3 ontrol Arm Bonded Rubber Bushing, Replacing", page 113](#)

⇒ [J4.4 oint, Removing and Installing", page 120](#)

4.1 Overview - Lower Control Arm and Ball Joint

If the components of the front axle (axle components and/or wheel rim) are replaced if damaged, the tightening specifications on the following threaded connections must be checked, when these threaded connections are not replaced during the repair procedure.

- ◆ Testing torque 80 Nm for nut -item 2- ⇒ [Item 2 \(page 107\)](#) and ball joint -item 3- ⇒ [Item 3 \(page 107\)](#) .

Until the testing torque is reached in the tightening direction turning of the connection is not permitted.



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1 - Wheel Bearing Housing

- ❑ Different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- ❑ Removing and Installing. Refer to ⇒ [B5.2 earing Housing, Removing and Installing](#), page 126 .

2 - Nut

- ❑ 60 Nm
- ❑ Replace after removing

3 - Ball Joint

- ❑ Checking. Refer to ⇒ Maintenance; Booklet 821; Maintenance; Components of the Front and Rear Axle: Play, Fasteners, Ball Joint Boots and Checking for Damage.
- ❑ Removing and Installing. Refer to ⇒ [J4.4 oint, Removing and Installing](#), page 120 .

4 - Nut

- ❑ 40 Nm + 45°
- ❑ Always replace if removed

5 - Lower Control Arm

- ❑ Different versions with one point and 3 point retainer.
- ❑ Removing and Installing. Refer to ⇒ [C4.2 ontrol Arm, Removing and Installing](#), page 109 .
- ❑ If the control arm is bent and must be replaced, then the ball joint on this side of the vehicle must also be replaced
- ❑ Equipment versions with air duct. Refer to ⇒ [Fig. "Air Duct - Installation Position"](#), page 108 .

6 - Front Bonded Rubber Bushing

- ❑ Replacing. Refer to ⇒ [L4.3.1 ower Control Arm Bonded Rubber Bushing, Replacing](#), page 113 .

7 - Bolt

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- ❑ 70 Nm + 180°
- ❑ Always replace if removed
- ❑ Tighten in the curb weight position. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

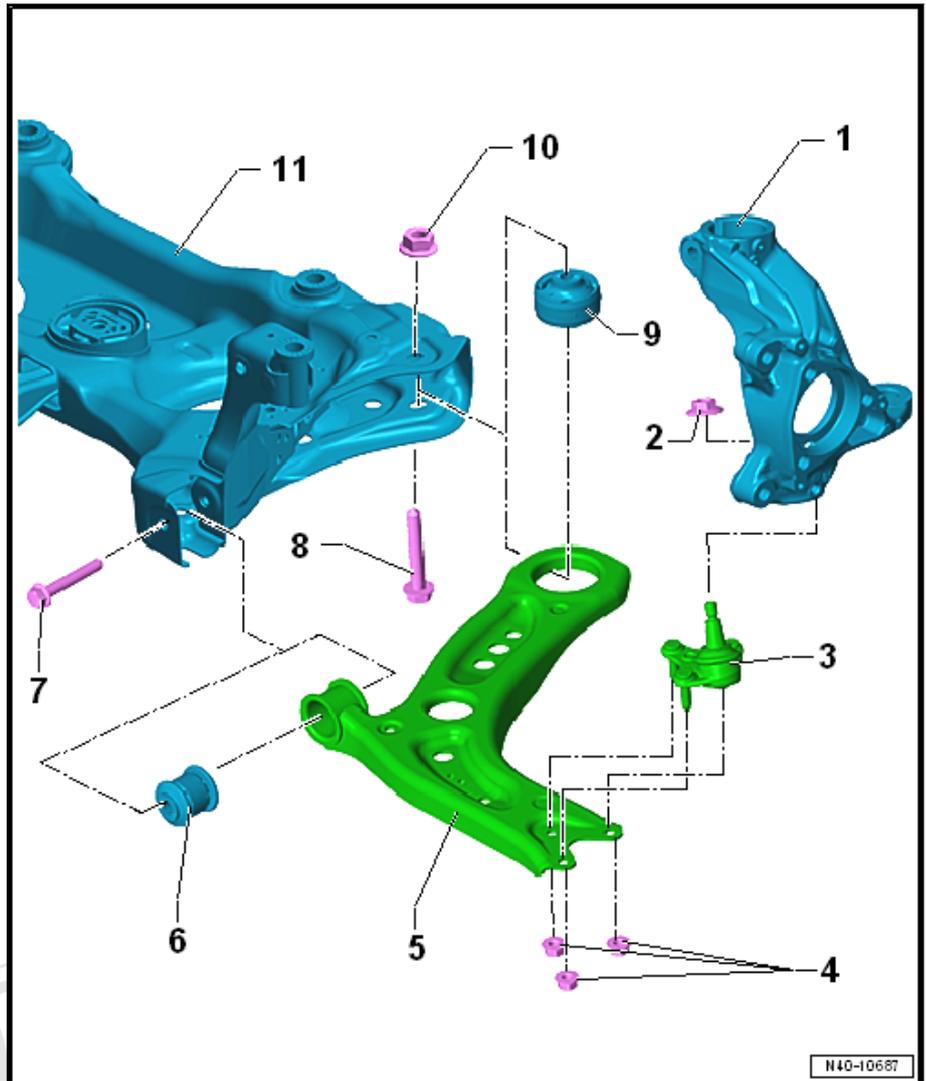
8 - Bolt

- ❑ 70 Nm + 180°
- ❑ Always replace if removed

9 - Rear Bonded Rubber Bushing

- ❑ Different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- ❑ Replacing. Refer to ⇒ [C4.3.2 ontrol Arm Rear Bonded Rubber Bushing, Replacing](#), page 116 .
- ❑ Version 1:

- ◆ Note the installation position. Refer to ⇒ [page 108](#) .





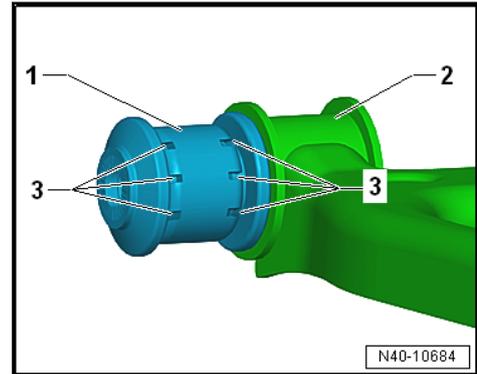
- ◆ grease after pressing in ⇒ [page 119](#) .
- Version 2: no specified installation position

10 - Nut

- Always replace if removed
- Only metal sheet subframe

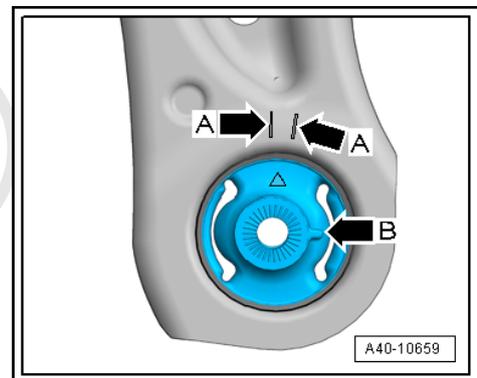
11 - Subframe

Installation Position for the Front Bonded Rubber Bushing -1-



- The grooves -3- must point toward the control arm -2-.

Installation Position of the Rear Bonded Rubber Bushing Version 1:



- The stamped arrow points between the markings -A arrows- in the control arm.
- The cam -arrow B- must point to the center of the vehicle.

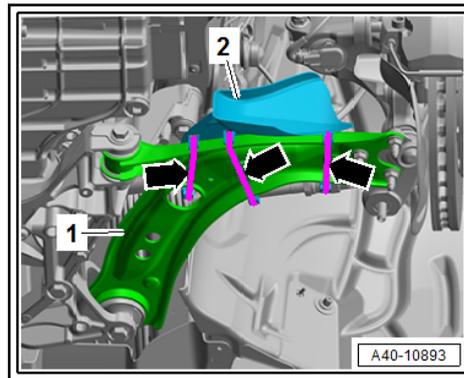


Note

A mixed installation of version 1 and 2 rear bonded rubber bushings is not permitted.

Air Duct - Installation Position

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- Secure the air duct -2- as shown on the control arm -1- in the installation position and secure with cable ties -arrows-.

4.2 Lower Control Arm, Removing and Installing

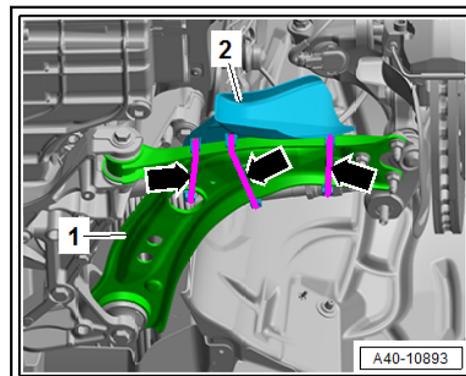
Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-

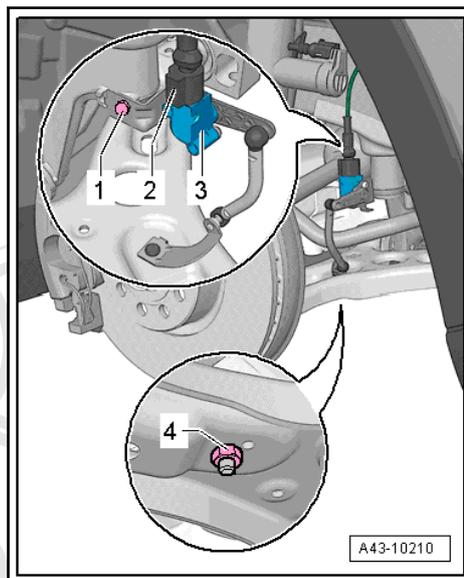


Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#)”, page 11 .
- Remove the wheel. Refer to ⇒ [and Tires](#)”, page 411 .
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- Loosen the wheel housing liner from the underbody trim panel and move it slightly to the side.
- Equipped on some models: cut the cable tie -arrows- and remove the air duct -2- from the control arm -1-.

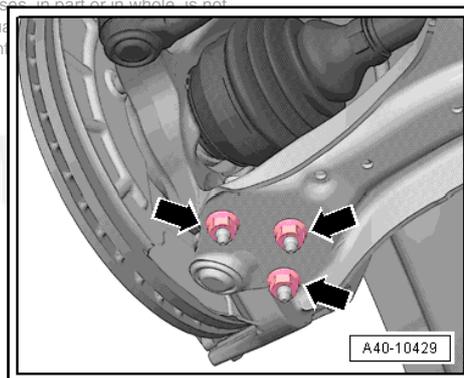


- If installed, remove the nut -4- and free up the coupling rod from the Level Control System Sensor -3-.



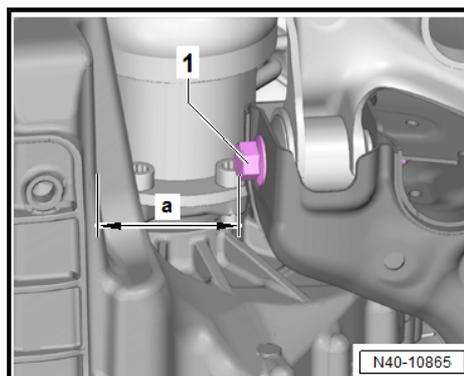
- Remove the nuts -arrows-.

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- Remove the control arm from the ball joint and then turn the wheel bearing housing toward the outside to take the load off the control arm.
- Make sure the ball joint rubber boot is not damaged during assembly work. If necessary protect the ball joint rubber boot against damage.

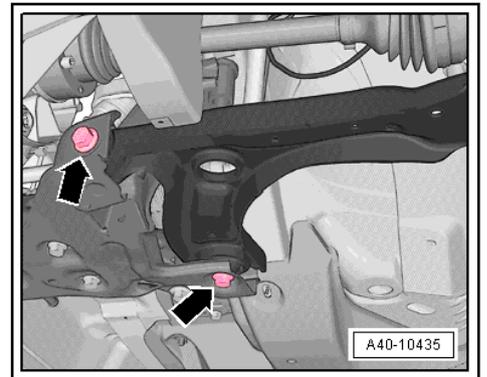
**Left Control Arm for Vehicles with Dual-Clutch Transmission
 0D9 / 0DL / 0GC / 0DD / 0DE / 0DW**



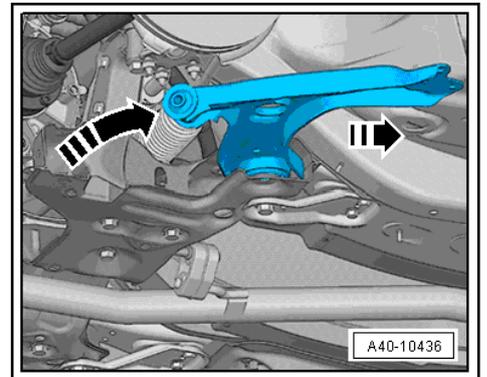
The distance -a- to the transmission is not enough, remove the bolt -1-. For this reason proceed as follows:

- Lower the subframe a maximum of 100 mm. Refer to [⇒ L2.3 lowering", page 27](#).

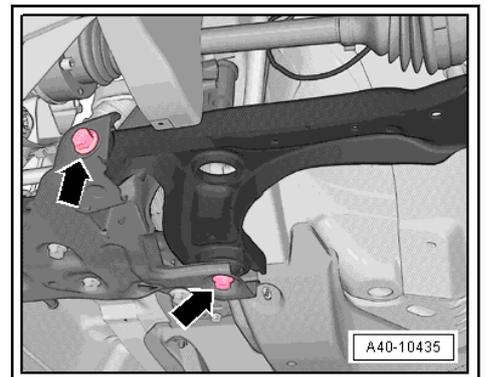
Continuation for All Vehicles



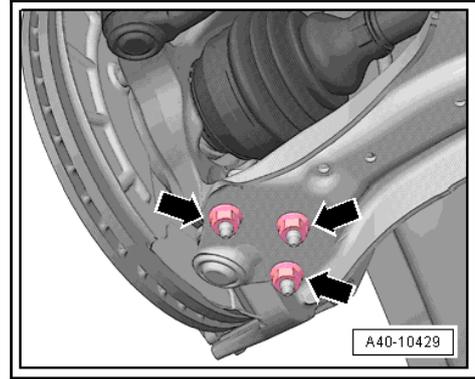
- Remove the bolts -arrows-.
- Tilt the control arm toward the rear and then remove it from the subframe in the direction of -arrow-.



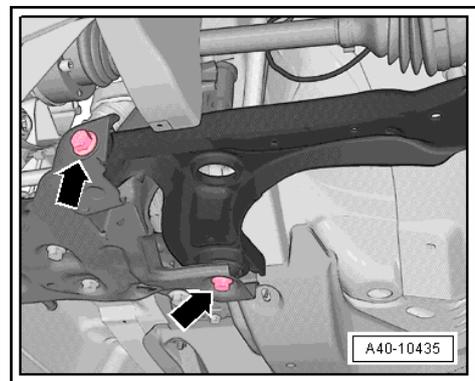
Installing



- Install the rear control arm into the subframe and swivel it forward.
- Insert the bolts -arrows- and tighten hand-tight.
- Install the subframe. Refer to [⇒ w2.4 ithout Steering Gear, Removing and Installing", page 40](#).
- Bolt the control arm tightly to ball joint -arrows-.



- Lift the wheel bearing in the curb weight position and tighten the bolts -arrows-. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .



Further installation is performed in reverse order of the removal.

- Air duct installation position. Refer to ⇒ [Fig. "Air Duct - Installation Position"](#), page 108 .

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select `Diagnostic` operating mode and `Start diagnostics`.
- Select the `Select individual test` tab and select the following tree structure consecutively:
 - ◆ `Chassis`
 - ◆ `Wheel Damping Electronics`
 - ◆ `01 - OBD-capable systems`.
 - ◆ `14 - Electronic Damping Control Module -J250`
 - ◆ `14 - Electronic Damping Control Module, functions`
 - ◆ `14 - Control Position, readapting`
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.
- Air duct installation position. Refer to ⇒ [Fig. "Air Duct - Installation Position"](#), page 108 .

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- Overview table for when an axle alignment is needed. Refer to ⇒ [f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to ⇒ [-4.1 Lower Control Arm and Ball Joint](#), page 106
- ◆ Refer to ⇒ [-2.1 Front Level Control System Sensor](#), page 402
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411

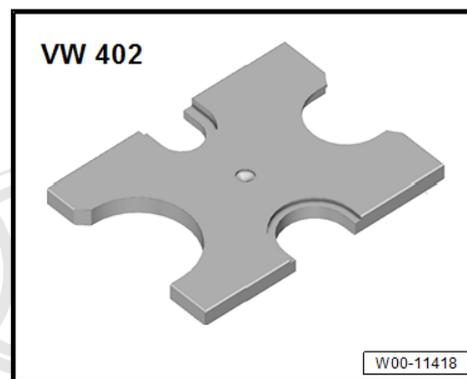
4.3 Lower Control Arm Bonded Rubber Bushing, Replacing

⇒ [L4.3.1 ower Control Arm Bonded Rubber Bushing, Replacing](#), page 113

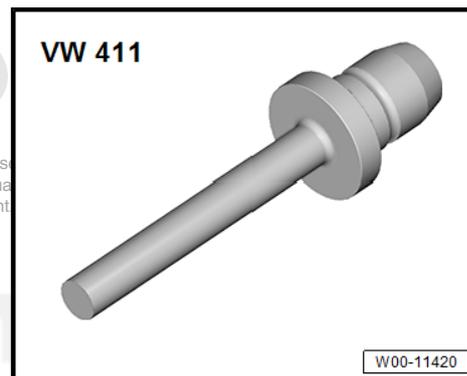
⇒ [C4.3.2 ontrol Arm Rear Bonded Rubber Bushing, Replacing](#), page 116

4.3.1 Front Lower Control Arm Bonded Rubber Bushing, Replacing

- ◆ Press Plate -VW402-



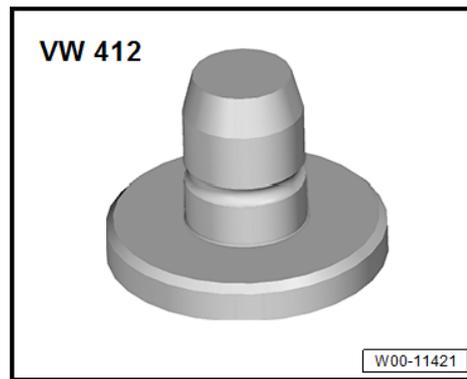
- ◆ Press Piece - Rod -VW411-



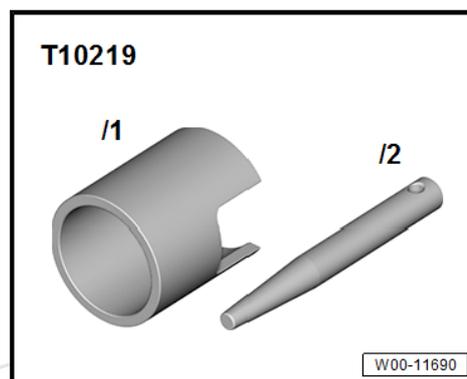
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◆ Press Piece - Multiple Use -VW412-

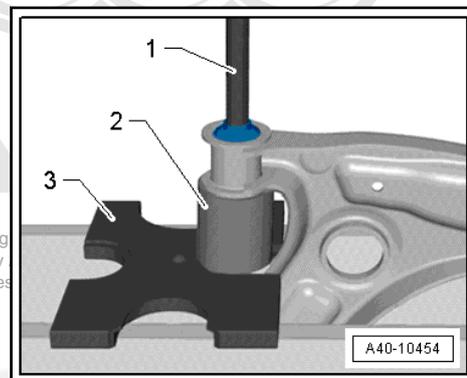


◆ Wishbone Rubber Mount Assembly Tool - Drift -T10219/2-



◆ Installation Lubricant -G 294 421 A1-. Refer to the ⇒ Electronic Parts Catalog (ETKA).

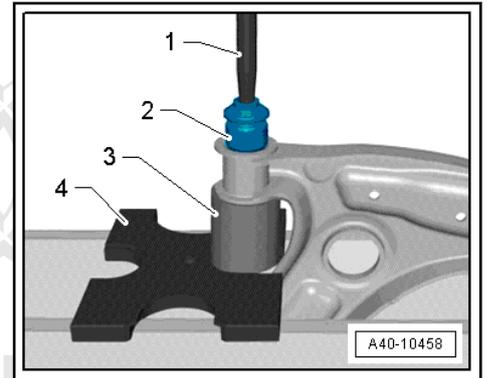
Bonded Rubber Bushing, Pressing Out



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- Control arm is removed. Refer to ⇒ [C4.2 Control Arm, Removing and Installing](#), page 109 .
- Press out the bonded rubber bushings as shown.
- 1 - Press Piece - Rod -VW411-
- 2 - Wishbone Rubber Mount Assembly Tool Pipe -T10219/1- (The opening in the pipe is down and faces the control arm)
- 3 - Press Plate -VW402-

Bonded Rubber Bushing, Pressing In



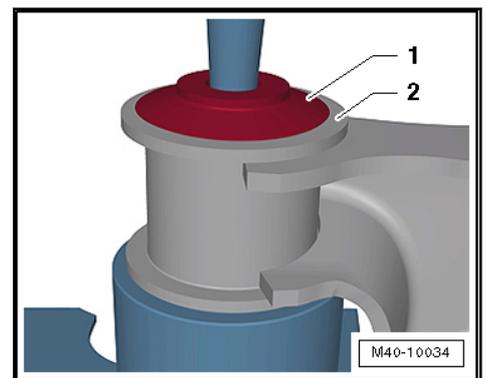
- Note the installation position. Refer to ⇒ [Fig. "Installation Position for the Front Bonded Rubber Bushing -1-"](#), page 108 .

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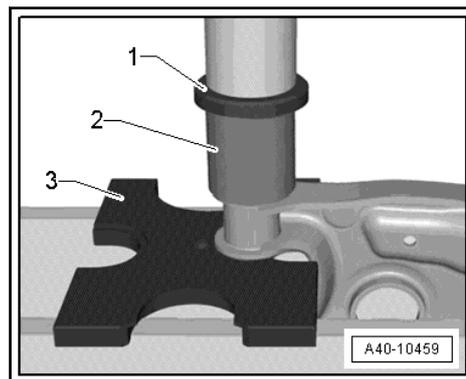
Note

The bonded rubber bushing will be crooked for a short time at the beginning of the installation. Later it will straighten out. It will not be necessary to guide it.

- Apply Installation Lubricant -G 294 421 A1- onto the outside of the bonded rubber bushing.
 - Place the bonded rubber bushing on at an angle (in direction of control arm), when doing this the lip must slip into hole.
- 1 - Wishbone Rubber Mount Assembly Tool - Drift -T10219/2-
 - 2 - Bonded Rubber Bushing
 - 3 - Wishbone Rubber Mount Assembly Tool -Tube - T10219/1-
 - 4 - Press Plate -VW402-
- Install the bonded rubber bushing until the core -1- and the control arm hole -2- are at the same height.

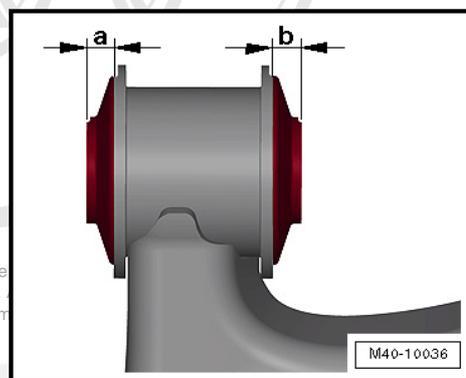


- Press the bearing back slightly in the control arm.



- 1 - Press Piece - Multiple Use -VW412-
- 2 - Wishbone Rubber Mount Assembly Tool -Tube - T10219/1-
- 3 - Press Plate -VW402-

Dimensions -a and b- must be identical.

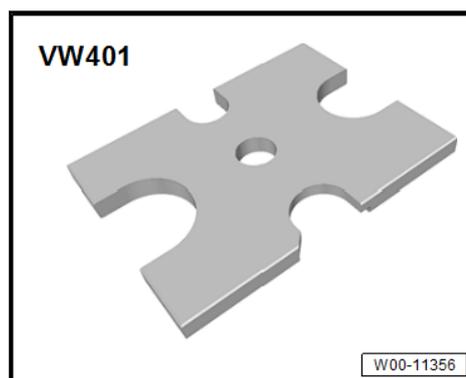


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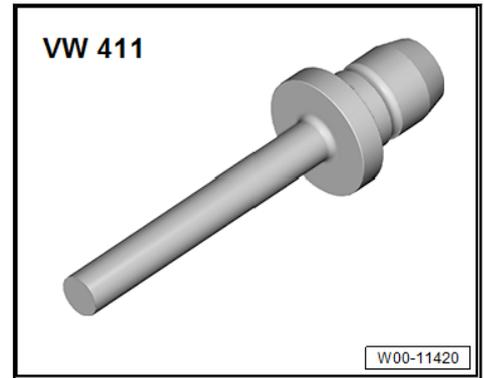
4.3.2 Lower Control Arm Rear Bonded Rubber Bushing, Replacing

Special tools and workshop equipment required

- ◆ Press Plate -VW401-



◆ Press Piece - Rod -VW411-



◆ Press Piece - Multiple Use -VW412-

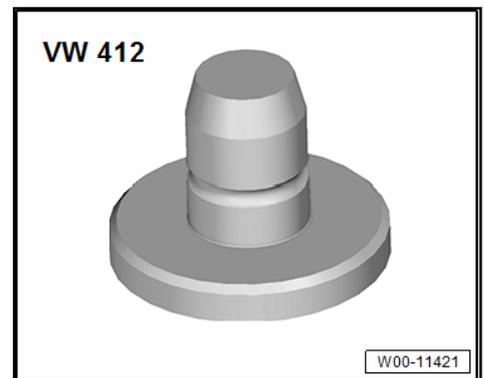


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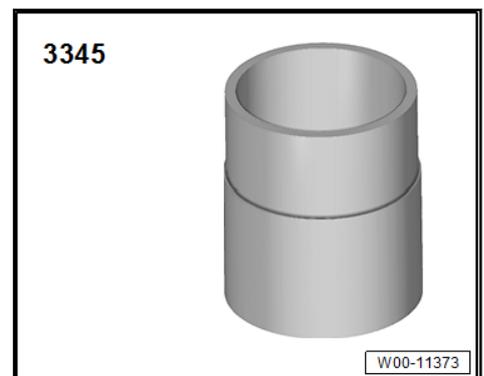
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◆ Sleeve -VW459/2- from the Bearing Installer - Ball Joint/
Bushing/Bearing -VW459-

erWin



◆ Bearing Installer - Wheel Bearing -3345-

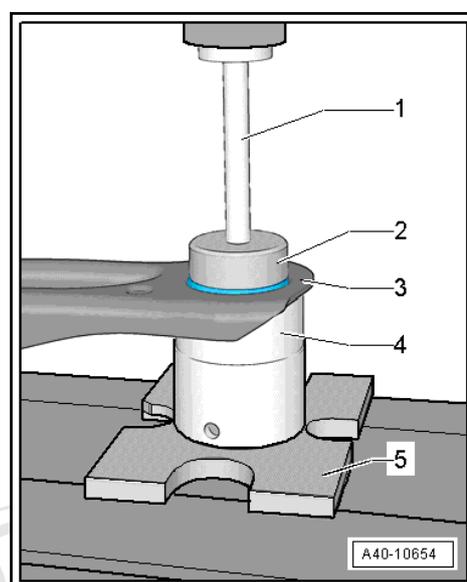


◆ Bearing Installer - Multiple Use -3348-



◆ Grease -G 052 150 A2-. Refer to the ⇒ Electronic Parts Catalog (ETKA).

Bonded Rubber Bushing, Pressing Out



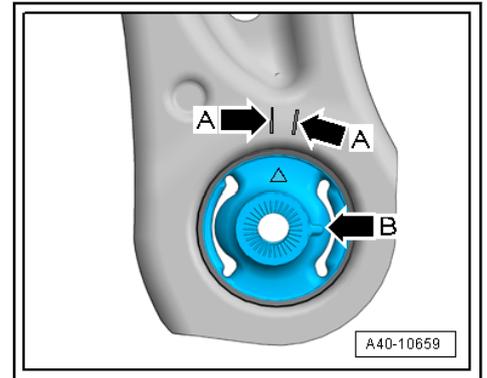
- Control arm is removed. Refer to ⇒ [C4.2 Control Arm, Removing and Installing](#), page 109 .

– Press out the bonded rubber bushings as shown.

- 1 - Press Piece - Rod -VW411-
- 2 - Bearing Installer - Multiple Use -3348-
- 3 - Control Arm
- 4 - Bearing Installer - Wheel Bearing -3345-
- 5 - Press Plate -VW401-

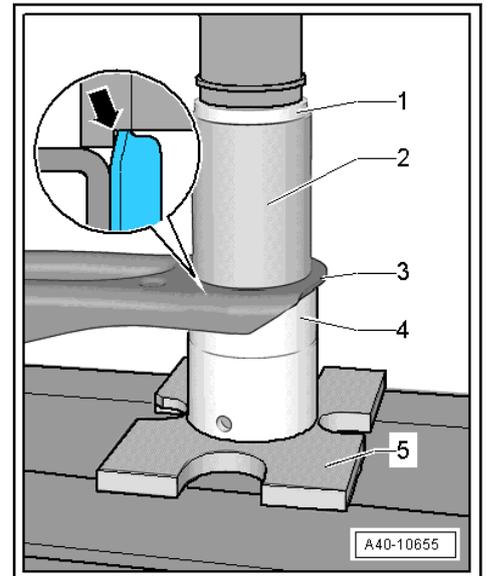
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Bonded Rubber Bushing, Pressing In



Observe Installation Position of Bonded Rubber Bushing.

- The stamped arrow points between the markings -A arrows- in the control arm.
 - The cam-arrow B must point to the center of the vehicle.
- Install the bonded rubber bushing as shown.

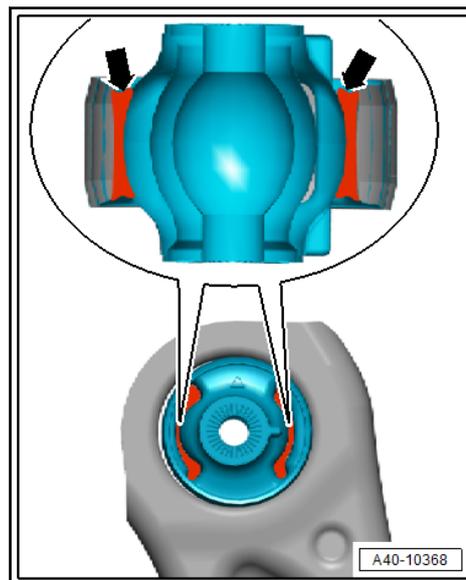


- 1 - Press Piece - Multiple Use -VW412-
- 2 - Sleeve -VW459/2-, the inner offset in the sleeve -arrow- points downward
- 3 - Control Arm
- 4 - Bearing Installer - Wheel Bearing -3345-
- 5 - Press Plate -VW401-

Note

Install the bonded rubber bushing far enough until the Bearing Installer - Wheel Bearing -3345- contacts the control arm.

- Evenly grease the “kidneys” -arrows- of the bonded rubber bushing from above with 0.1 g (0 oz) Grease -G 052 150 A2- using a paint brush.



i Note

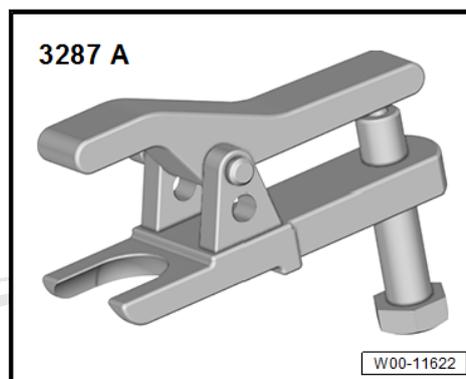
Greasing the bonded rubber bushing prevents noise generation in the run-in phase.

- Install the control arm. Refer to ⇒ [C4.2 Control Arm, Removing and Installing](#), page 109 .

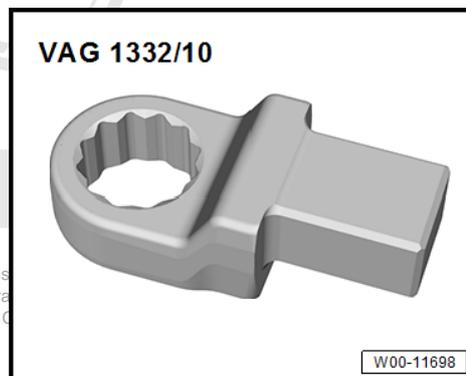
4.4 Ball Joint, Removing and Installing

Special tools and workshop equipment required

- ◆ Puller - Ball Joint -3287A-

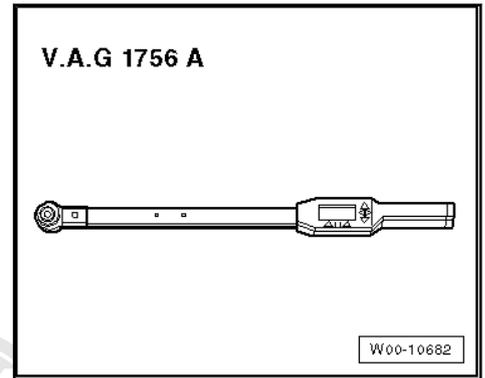


- ◆ Torque Wrench 1332 Insert - Ring Wrench - 18mm - VAG1332/10-



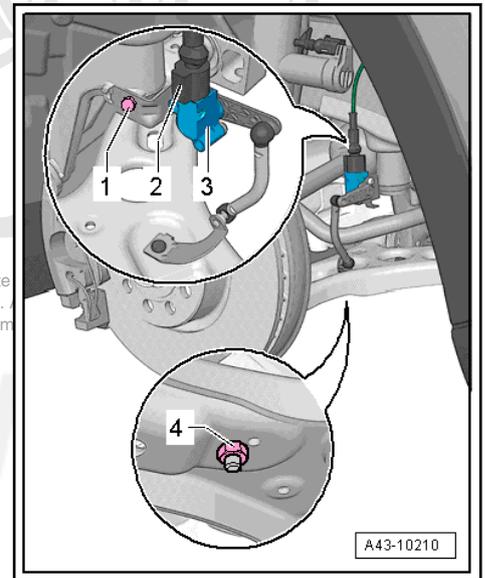
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◆ Digital Torque Wrench -VAG1756A-

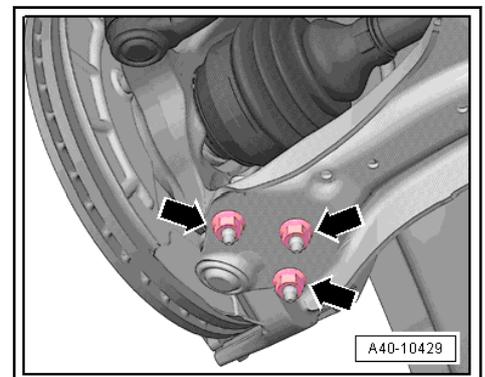


Removing

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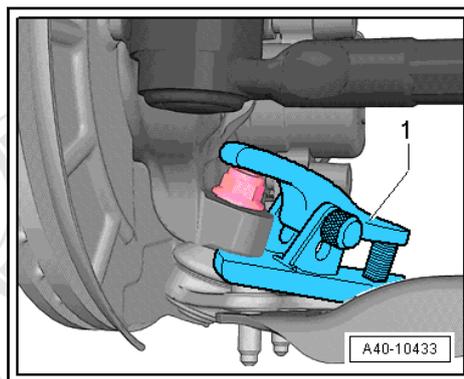


- Loosen drive axle bolt on the wheel hub. Refer to [⇒ A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .
- Remove the wheel. Refer to [⇒ a1 nd Tires](#), page 411 .
- If installed, remove the nut -4- and free up the coupling rod from the Level Control System Sensor -3-.
- Remove the nuts -arrows- from the ball joint.



- Disengage the control arm from the ball joint.
- Pivot the suspension strut outward, while doing so guide the drive axle out of the wheel hub.

- Loosen the nuts on the ball joint, but do not remove.



- Attach the Puller - Ball Joint -3287A- -1- as shown and press out the ball joint.



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Place the Engine and Gearbox Jack -VAS6931- underneath (danger of accident if parts fall off when ejecting ball joint).



WARNING

When pressing off, the ball joint loosens itself from the wheel bearing housing abruptly - risk of accident!

- Remove the nut from the ball joint and remove the ball joint.

Installing

Install in reverse order of removal while noting the following:

- Guide the drive axle into the wheel hub splines.
- Tighten the drive axle. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 for the procedure for tightening the twelve-point bolt.

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:
 - ◆ Chassis
 - ◆ Wheel Damping Electronics
 - ◆ 01 - OBD-capable systems.
 - ◆ 14 - Electronic Damping Control Module -J250
 - ◆ 14 - Electronic Damping Control Module, functions
 - ◆ 14 - Control Position, readapting
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .

- ◆ Evaluate the need for a basic setting of the headlamps.
Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp;
Headlamp Adjusting.
- Overview table for when an axle alignment is needed. Refer
to ⇒ [f2.2 or Axle Alignment, Evaluating](#), [page 413](#) .

Tightening Specifications

- ◆ Refer to ⇒ [-4.1 Lower Control Arm and Ball Joint](#), [page 106](#)
- ◆ Refer to ⇒ [-2.1 Front Level Control System Sensor](#), [page 402](#)
- ◆ Refer to ⇒ [a1 nd Tires](#), [page 411](#)



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5 Wheel Bearing

⇒ [-5.1 Wheel Bearing", page 124](#)

⇒ [B5.2 earing Housing, Removing and Installing", page 126](#)

⇒ [B5.3 earing Unit, Removing and Installing", page 131](#)

5.1 Overview - Wheel Bearing



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1 - Brake Shield

- ❑ Removing and Installing. Refer to ⇒ Brake System; Rep. Gr. 46; Front Brakes; Overview - Front Brakes.

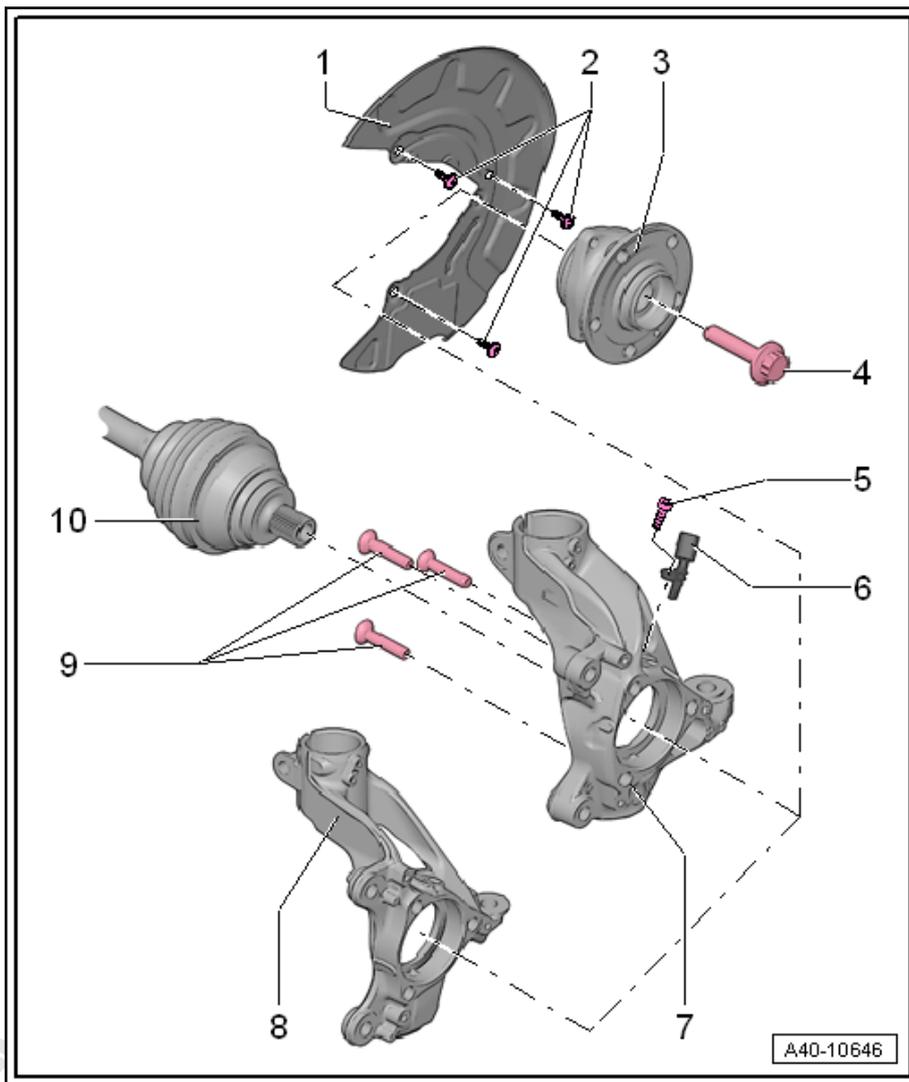
2 - Bolts

- ❑ Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46; Front Brakes; Overview - Front Brakes.

3 - Wheel Bearing Unit

- ❑ Removing and Installing. Refer to ⇒ [B5.3earing Unit, Removing and Installing](#), page 131 .
- ❑ Lateral run-out in the installed position of a maximum 0.02 mm is permitted
- ❑ Measure the lateral run-out with the Dial Indicator - 0-10mm -VAS6079- and Dial Indicator Bracket - VAS6079/1-
- ❑ Cannot be serviced

Caution
When lifting and setting down/storing, avoid contaminating with dirt and damaging the seal. Refer to ⇒ [page 133](#) .



4 - Bolt

- ❑ Always replace if removed
- ❑ Before installing, clean the threads in the CV joint with a thread tap.
- ❑ Loosening and tightening. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .
- ❑ -WHT.002.795- / 200 Nm + 180° additional turn
- ❑ -WHT.005.437- / black = 200 Nm +180° additional turn
- ❑ -WHT.005.437.A- / silver = 200 Nm + 90° additional turn

5 - Bolt

- ❑ Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 45; Sensors; Overview - Front Axle Speed Sensor.

6 - Speed Sensor

- ❑ Right Front ABS Wheel Speed Sensor -G45-/Left Front ABS Wheel Speed Sensor -G47-
- ❑ Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 45; Sensors; Right and Left Front ABS Wheel Speed Sensor Right Front ABS Wheel Speed Sensor -G45-/Left Front ABS Wheel Speed Sensor -G47-, Removing and Installing.

7 - Wheel Bearing Housing

- ❑ Different versions depending on the model. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- ❑ Removing and Installing. Refer to ⇒ [B5.2earing Housing, Removing and Installing](#), page 126 .



8 - Wheel Bearing Housing

- Different versions depending on the model. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Removing and Installing. Refer to ⇒ [B5.2 earing Housing, Removing and Installing", page 126](#) .

9 - Bolt

- 70 Nm +90°
- Always replace if removed

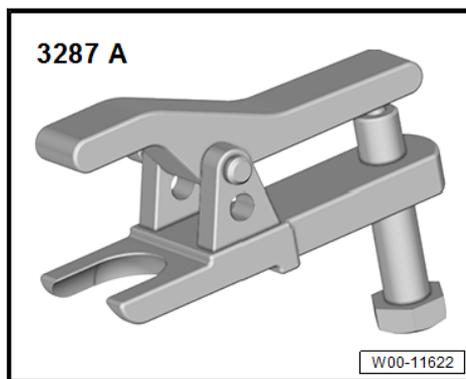
10 - Drive Axle

- Do not let the drive axle hang down during assembly work, since the inner joint could be damaged if it is bent too far.
- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).

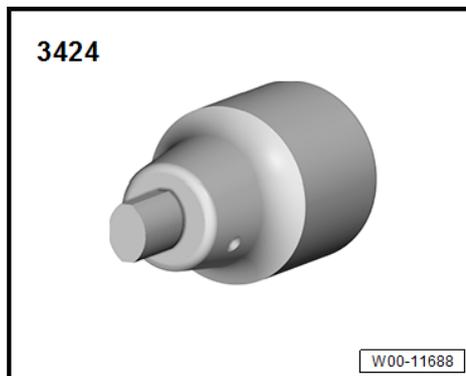
5.2 Wheel Bearing Housing, Removing and Installing

Special tools and workshop equipment required

- ◆ Puller - Ball Joint -3287A-



- ◆ Spreader Tool -3424-

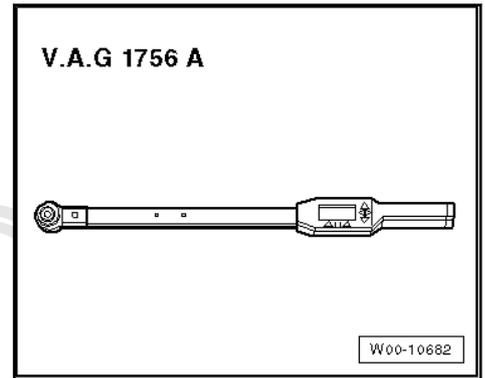


- ◆ Torque Wrench, 40-200Nm -VAG 1332A-

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◆ Digital Torque Wrench -VAG1756A-



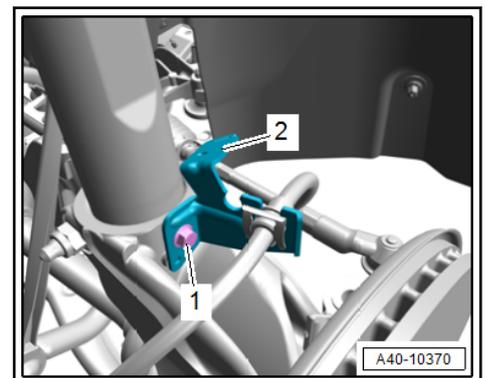
◆ Engine and Gearbox Jack -VAS6931-



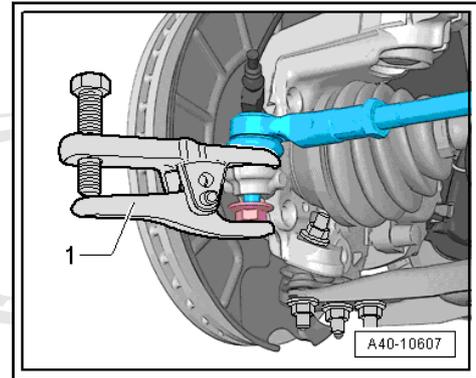
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Removing

- Loosen the drive axle threaded connection on the wheel side. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening", page 151](#) .
- Remove the brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46; Front Brakes; Brake Rotor, Removing and Installing.
- Remove the ABS speed sensor. Refer to ⇒ Brake System; Rep. Gr. 45; Sensors; Overview - Front Axle Speed Sensor.
- Remove the bolt -1-, remove the bracket -2- with the brake hose from the wheel bearing housing and tie up to the side.

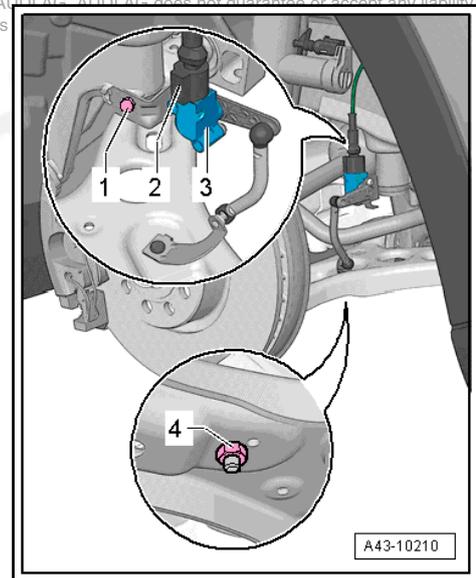


- Remove and free up the brake line bracket and wires from the wheel bearing housing.
- Position the Engine and Gearbox Jack -VAS6931- with the mounting plate under the wheel bearing housing.
- Loosen the nut from the tie rod end, but do not remove it yet.

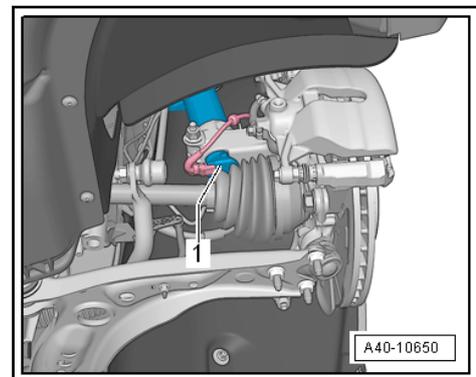


- Press off tie rod end from wheel bearing housing with Puller - Ball Joint -3287A- -1- and then remove the nut.
- If installed, remove the nut -4- and free up the coupling rod from the Level Control System Sensor -3-.

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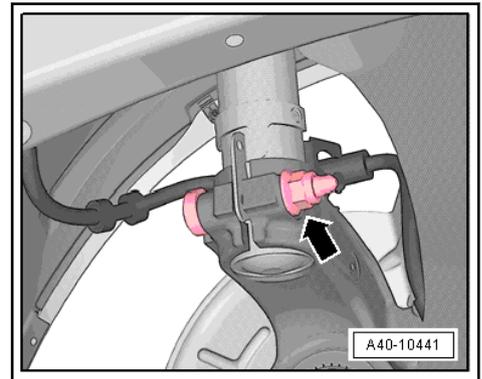
- On vehicles with electronic damping (Audi magnetic ride), disconnect the connector -1- and free up the wire on the suspension strut.



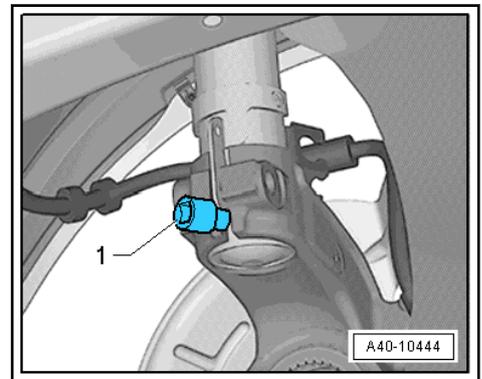
Note

Remove the connector with both hands. Use one hand to open the lock (retainer) and use the other hand to press it off. Do not use tools.

- Disconnect the threaded connection for the wheel bearing housing/suspension strut -arrow-.



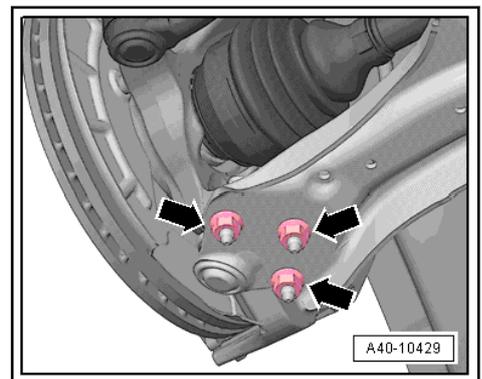
- Insert the Spreader Tool -3424- -1- into wheel bearing housing slot.



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- Turn the ratchet 90° and remove it from the Spreader Tool -3424- -1-.

- Remove the nuts -arrows-.



- Guide control arm out of wheel bearing housing with ball joint.
- Remove the wheel bearing housing downward from the shock absorber tube.

Applies to Vehicles with Sport Suspension

- On sport suspensions, lower the suspension strut. If the vehicle does not have a sport suspension, the suspension strut must not be lowered. Refer to [⇒ S3.4 strut, Lowering](#), page [103](#) .

Applies to All

- Pull the wheel hub off the drive axle outer joint.



Note

- ◆ *The drive axle must not hang down, otherwise the inner joint will be damaged by over bending.*
- ◆ *Secure the drive axle to the body using a wire.*
- Remove the wheel bearing housing with the ball joint.

Installing

Install in reverse order of removal while noting the following:

- Tighten the threaded connection between the drive axle and wheel hub. Refer to [⇒ A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:
 - ◆ **Chassis**
 - ◆ **Wheel Damping Electronics**
 - ◆ **01 - OBD-capable systems**.
 - ◆ **14 - Electronic Damping Control Module -J250**
 - ◆ **14 - Electronic Damping Control Module, functions**
 - ◆ **14 - Control Position, readapting**
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to [⇒ A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.
- Overview table for when an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to [⇒ -5.1 Wheel Bearing](#), page 124
- ◆ Refer to [⇒ -4.1 Lower Control Arm and Ball Joint](#), page 106
- ◆ Refer to [⇒ -3.1 Suspension Strut and Upper Control Arm](#), page 93
- ◆ Refer to [⇒ -2.1 Front Level Control System Sensor](#), page 402
- ◆ Refer to ⇒ Brake System; Rep. Gr. 45; Sensors; Overview - Front Axle Speed Sensor.
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; Front Brakes; Overview - Front Brakes.
- ◆ Refer to [⇒ a1 nd Tires](#), page 411

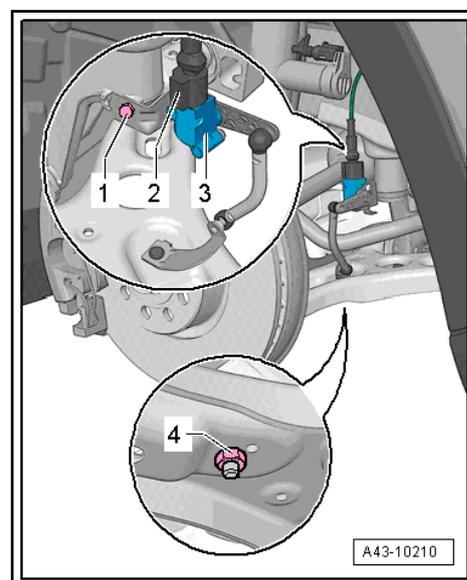
5.3 Wheel Bearing Unit, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-

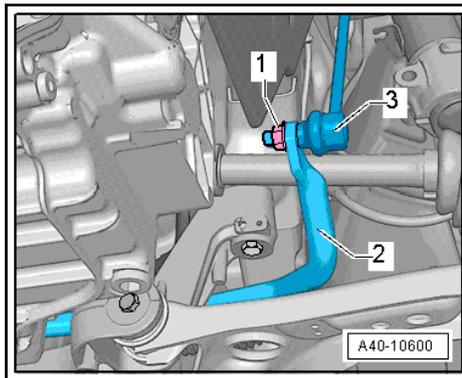


Removing

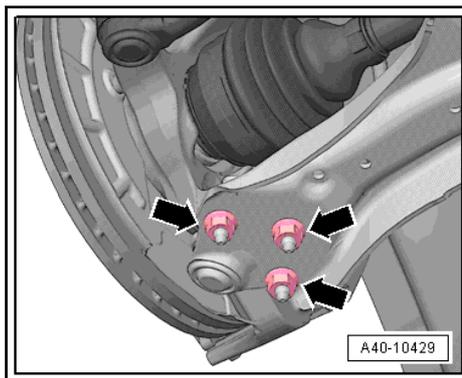


- Loosen the drive axle threaded connection on the wheel side. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .
- If installed, remove the nut -4- and free up the coupling rod from the Level Control System Sensor -3-.
- Remove the brake rotor. Refer to ⇒ [Brake System, Rep. Gr 46, Front Brakes, Brake Rotor, Removing and Installing](#).
- Remove the nut -1-, remove the coupling rod -3- from the stabilizer bar -2- and pivot it to the side.

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- Remove the nuts -arrows-.



- Remove the control arm from the ball joint.

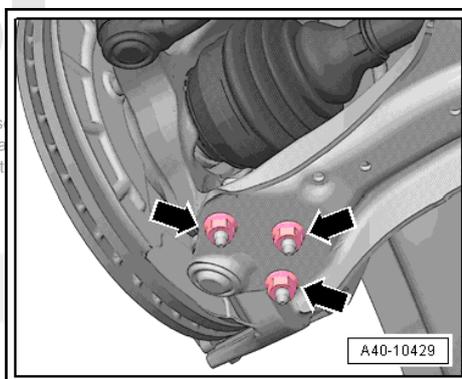
Applies to Vehicles with Sport Suspension

- On sport suspensions, lower the suspension strut. If the vehicle does not have a sport suspension, the suspension strut must not be lowered. Refer to => [S3.4 trut, Lowering](#), page [103](#).

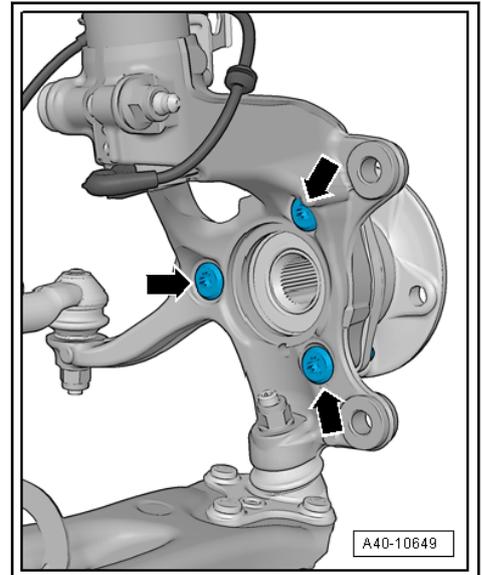
Applies to All

- Remove the drive axle outer joint from the wheel hub.
- Secure the drive axle to the body using a wire.
- Connect the ball joint in the control arm.

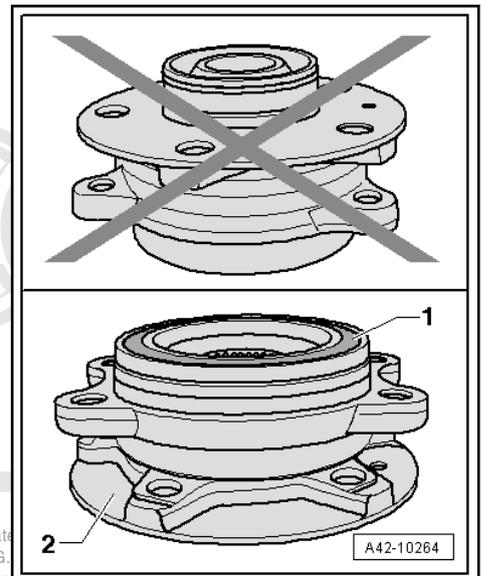
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- Install the nuts -arrows-.
- Remove the bolts -arrows-.



- Remove the wheel bearing unit from wheel bearing housing.



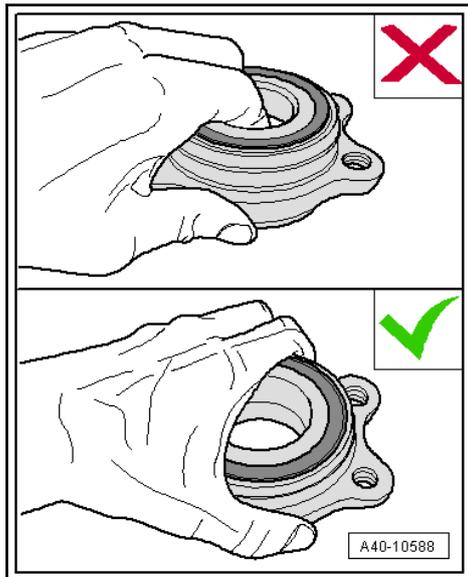
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Caution

- *When setting down/storing avoid contaminating with dirt and damaging the seal.*

- The wheel bearing -1- must always face up in order to remove the wheel bearing unit.
- Always set the wheel bearing unit down on the wheel hub -2-.
- Never reach inside when lifting the wheel bearing.



- Hold the wheel bearing only on the outside.

Installing

Install in reverse order of removal. Note the following:

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed or a level control system sensor was removed and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:
 - ◆ **Chassis**
 - ◆ **Wheel Damping Electronics**
 - ◆ **01 - OBD-capable systems**
 - ◆ **14 - Electronic Damping Control Module -J250**
 - ◆ **14 - Electronic Damping Control Module, functions**
 - ◆ **14 - Control Position, readapting**
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ **A4.1 ssistance Systems Front Camera, Calibrating**, page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.
- Overview table for when an axle alignment is needed. Refer to ⇒ **f2.2 or Axle Alignment, Evaluating**, page 413 .

Tightening Specifications

- ◆ Refer to ⇒ **-2.1 Subframe**, page 21
- ◆ Refer to ⇒ **-5.1 Wheel Bearing**, page 124
- ◆ Refer to ⇒ **-3.1 Suspension Strut and Upper Control Arm**, page 93
- ◆ Refer to ⇒ **-4.1 Lower Control Arm and Ball Joint**, page 106

- ◆ Refer to ⇒ [-2.1 Front Level Control System Sensor](#)", page [402](#)
- ◆ Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#)", page [151](#)
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; Front Brakes; Overview - Front Brakes.
- ◆ Refer to ⇒ [a1 nd Tires](#)", page [411](#)



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6 Drive Axle

⇒ -6.1 Drive Axle", page 136

⇒ -6.2 Drive Axle", page 137

⇒ A6.3 xle Threaded Connection, Loosening and Tightening", page 151

⇒ A6.4 xle Heat Shield, Removing and Installing", page 153

⇒ A6.5 xle, Removing and Installing", page 154

⇒ A6.6 xle, Disassembling and Assembling", page 181

⇒ C6.7 V Joint, Checking", page 225

⇒ C6.8 V Joint, Checking", page 227

6.1

Overview - Drive Axle

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I - Refer to ⇒ -6.2.1 Drive Axle, Inner CV joint 108 mm Diameter - Bolted", page 137

II - Refer to ⇒ -6.2.2 Drive Axle with Inner CV joint 100 mm Diameter - Bolted", page 139

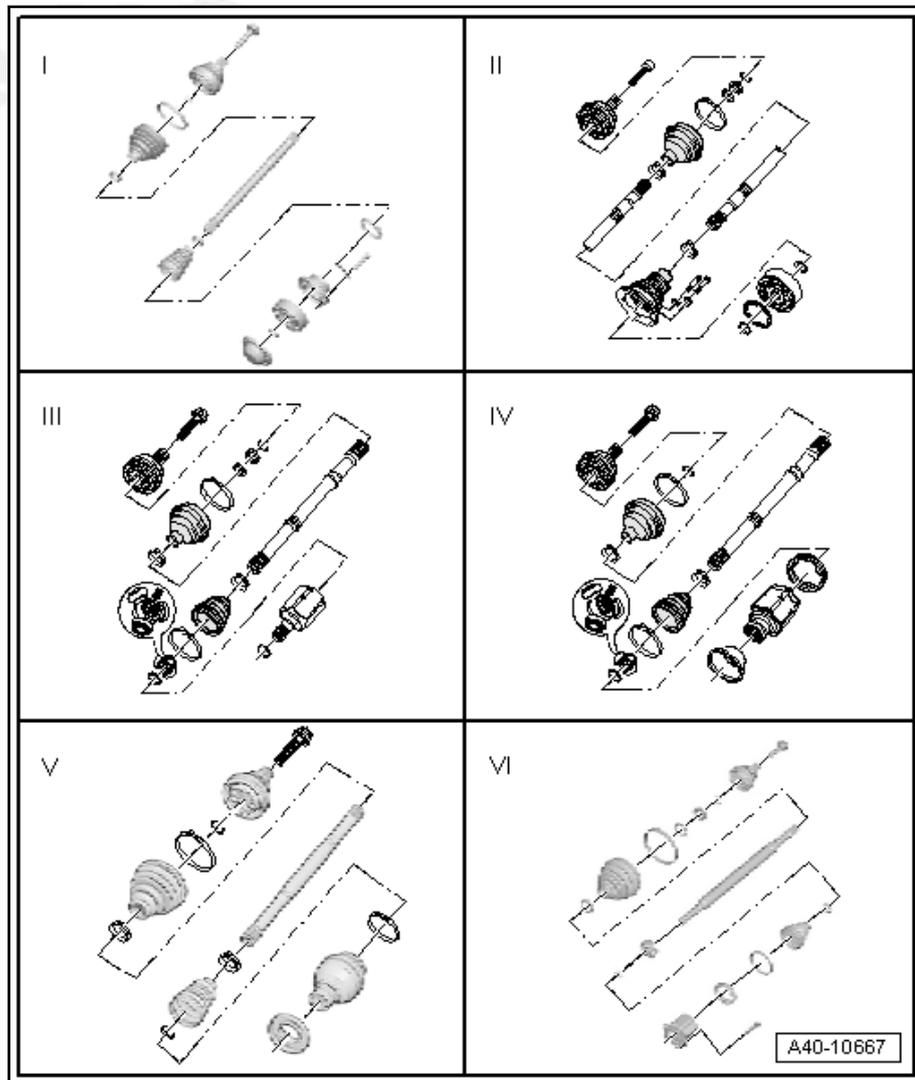
III - Refer to ⇒ -6.2.3 Input shaft with Inner CV Joint, Inserted in Transmission", page 141

III - Refer to ⇒ -6.2.4 Drive Axle with Triple Roller Joint AAR2600i / AAR3300i, Mounted In Transmission", page 143

IV - Refer to ⇒ -6.2.5 Drive Axle with Triple Roller Joint AAR2600i / AAR3300i, Mounted on Transmission Stub Shaft", page 145

V - Refer to ⇒ -6.2.6 Drive Axle with CV Joint, Mounted on Transmission Stub Shaft", page 147

VI - Refer to ⇒ -6.2.7 Drive Axle with Triple Roller Joint AAR 2600i, Bolted", page 149



6.2 Overview - Drive Axle

⇒ [-6.2.1 Drive Axle, Inner CV joint 108 mm Diameter - Bolted](#), page 137

⇒ [-6.2.2 Drive Axle with Inner CV joint 100 mm Diameter - Bolted](#), page 139

⇒ [-6.2.3 Input shaft with Inner CV Joint, Inserted in Transmission](#), page 141

⇒ [-6.2.4 Drive Axle with Triple Roller Joint AAR2600i / AAR3300i, Mounted In Transmission](#), page 143

⇒ [-6.2.5 Drive Axle with Triple Roller Joint AAR2600i / AAR3300i, Mounted on Transmission Stub Shaft](#), page 145

⇒ [-6.2.6 Drive Axle with CV Joint, Mounted on Transmission Stub Shaft](#), page 147

⇒ [-6.2.7 Drive Axle with Triple Roller Joint AAR 2600i, Bolted](#), page 149

6.2.1 Overview - Drive Axle, Inner CV joint 108 mm Diameter - Bolted

Filling Joints with Grease

Grease	Outer Joint Diameter	Inner Joint Diameter
Refer to the ⇒ Electronic Parts Catalog (ET-KA).	98 mm	108 mm
Total quantity	120 g (4.2 oz)	140 g (4.9 oz)
in joint	80 g (2.8 oz)	60 g (2.1 oz)
in CV boot	40 g (1.4 oz)	80 g (2.8 oz)

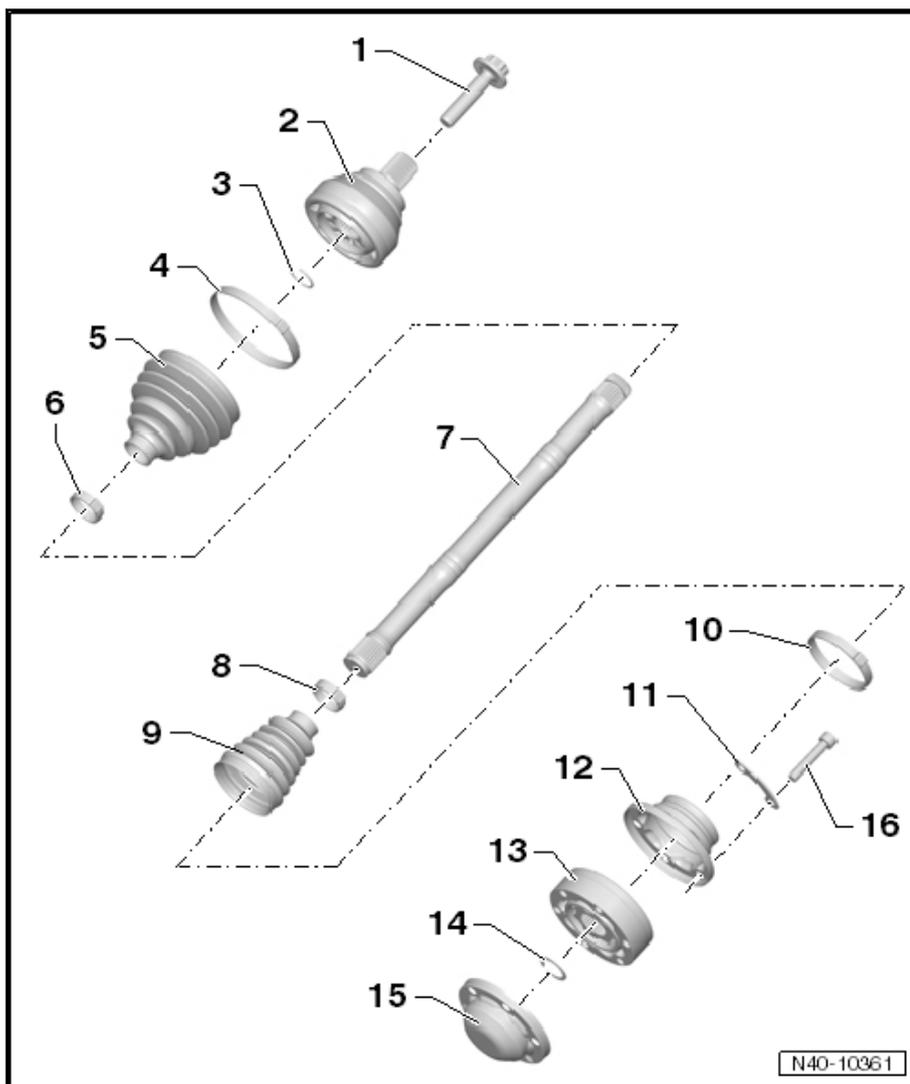
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1 - Bolt

- Always replace if removed
- Loosening and tightening. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- Before installing, clean the threads in the CV joint with a thread tap.
- WHT.002.795- / 200 Nm + 180° additional turn
- WHT.005.437- / black = 200 Nm + 180° additional turn
- WHT.005.437.A- / silver = 200 Nm + 90° additional turn

2 - Outer CV Joint

- Check using the Vehicle Diagnostic Tester Refer to ⇒ [C6.7 V Joint, Checking](#), page 225 .
- Removing. Refer to ⇒ [Fig. "Removing the Outer CV Joint"](#), page 183 .
- Installing. Refer to ⇒ [page 184](#) .
- When installing the joint on the profile shaft, the splines on the profile shaft must be lightly coated with grease used in the joint.



3 - Circlip

- Always replace if removed
- Insert in shaft groove

4 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tension the CV Boots Stainless Steel Clamps."](#), page 187 .

5 - Outer CV Joint CV Boot

- Check for tears and scuffing

6 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tension the CV Boots Stainless Steel Clamps."](#), page 187 .

7 - Profile Shaft

8 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tension the CV Boots Stainless Steel Clamps."](#), page 187 .

9 - Inner CV Joint CV Boot

- Check for tears and scuffing

10 - Clamp



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- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "“Tension the CV Boots Stainless Steel Clamps.””, page 187](#) .

11 - Backing Plate

12 - Cap

- Always replace if removed
- Drive off CV joint using a drift
- Apply sealant between the joint and cover. Refer to ⇒ [Fig. "“Coat the Sealing Surface on the Cover with Sealant and then Install It.””, page 186](#) .
- The adhesive surface must be free of oil and grease

13 - Inner CV Joint

- Only replace completely
- Check using the Vehicle Diagnostic Tester Refer to ⇒ [C6.8 V Joint, Checking”, page 227](#) .
- Removing. Refer to ⇒ [page 184](#) .
- Installing. Refer to ⇒ [page 185](#) .
- When installing the joint on the profile shaft, the splines on the profile shaft must be lightly coated with grease used in the joint.

14 - Circlip

- Always replace if removed
- Remove and install using Circlip Pliers -VW161A-. Refer to ⇒ [Fig. "“Circlip, Removing and Installing””, page 184](#) .

15 - Cap

- Always replace if removed
- Drive off CV joint using a drift
- Apply sealant between the joint and cover. Refer to ⇒ [Fig. "“Coat the Sealing Surface on the Cover with Sealant and then Install It.””, page 186](#) .

16 - Bolt

- Pre-tightening specification: diagonal sequence to 10 Nm.
- M8 tightening specification: diagonal sequence to 40 Nm.
- M10 tightening specification: diagonal sequence to 70 Nm.
- Always replace if removed

6.2.2 Overview - Drive Axle with Inner CV joint 100 mm Diameter - Bolted

Filling Joints with Grease

Grease	Outer Joint Diameter	Inner Joint Diameter
Refer to the ⇒ Electronic Parts Catalog (ETKA) .	90 mm	100 mm
Total quantity	120 g (4.2 oz)	110 g (3.9 oz)
in joint	80 g (2.8 oz)	50 g (1.8 oz)
in CV boot	40 g (1.4 oz)	60 g (2.1 oz)

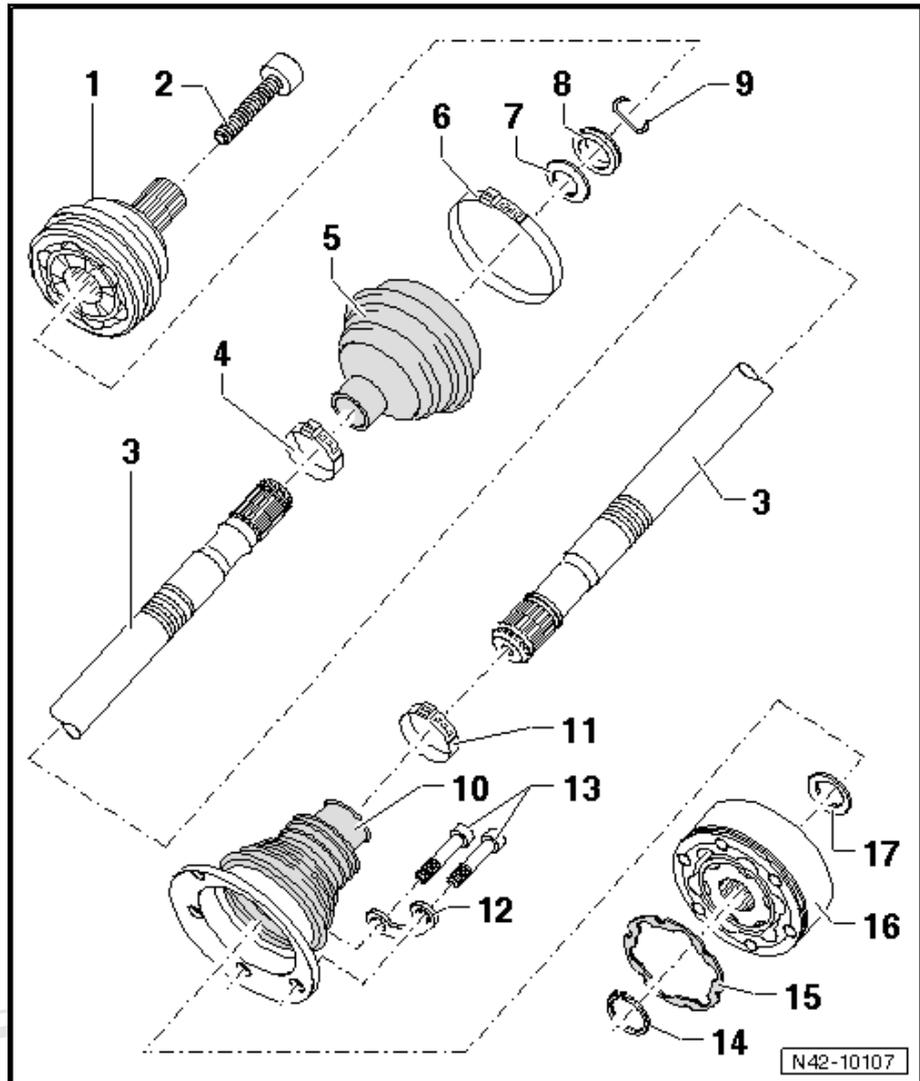
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1 - Outer CV Joint

- Only replace completely
- Check using the Vehicle Diagnostic Tester. Refer to ⇒ [C6.7 V Joint, Checking](#), page 225 .
- Removing. Refer to ⇒ [Fig. "Removing the Outer CV Joint"](#), page 189 .
- Installing. Refer to ⇒ [page 191](#) .
- When installing the joint on the profile shaft, the splines on the profile shaft must be lightly coated with grease used in the joint.

2 - Bolt

- Always replace if removed
- Loosening and tightening. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- Before installing, clean the threads in the CV joint with a thread tap.
- WHT.005.437- / black = 200 Nm +180° additional turn
- WHT.005.437.A- / silver = 200 Nm + 90° additional turn



3 - Profile Shaft

4 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tightening the Tensioning Clamp on the Larger Diameter"](#), page 224 .

5 - Outer CV Joint CV Boot

- Check for tears and scuffing

6 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tightening the Tensioning Clamp on the Larger Diameter"](#), page 224 .

7 - Plate Spring

- Installation position. Refer to ⇒ [Fig. "CV Joint, Assembling"](#), page 190 .

8 - Spacer Ring (Plastic)

- Installation position. Refer to ⇒ [Fig. "CV Joint, Assembling"](#), page 190 .

9 - Circlip

- Always replace if removed
- Insert in shaft groove

10 - Inner CV Joint CV Boot

- Check for tears and scuffing
- Drive off CV joint using a drift

- Before mounting on CV joint, coat the sealing surface using sealant

11 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tightening the Tensioning Clamp on the Larger Diameter"](#), page 224 .

12 - Backing Plate

13 - Internal Multi-Point Bolt

- Pre-tightening specification: diagonal sequence to 10 Nm.
- M8 tightening specification: 40 Nm and diagonally
- M10 tightening specification: 70 Nm and diagonally
- Always replace if removed

14 - Circlip

- Always replace if removed
- Remove and install using Circlip Pliers -VW161A-. Refer to ⇒ [Fig. "Circlip, Removing and Installing"](#), page 190 .

15 - Seal

- The adhesive surface on CV joint must not have any grease or oil on it.

16 - Inner CV Joint

- Only replace completely
- Check using the Vehicle Diagnostic Tester. Refer to ⇒ [C6.8.V Joint Checking](#), page 227 .
- Removing. Refer to ⇒ [Fig. " ", page 192](#)
- Installing. Refer to ⇒ [Fig. " ", page 192](#) .
- When installing the joint on the profile shaft, the splines on the profile shaft must be lightly coated with grease used in the joint.

17 - Plate Spring

- Installation position. Refer to ⇒ [Fig. "Installation Position of the Plate Spring on Inner Joint"](#), page 191 .

6.2.3 Overview - Input shaft with Inner CV Joint, Inserted in Transmission

Grease Quantity and Type

- ◆ Grease joint again when replacing CV boot.
- ◆ Pay attention to the grease type for the outer and inner joint. Refer to the ⇒ Electronic Parts Catalog (ETKA).

Joint	Diameter in mm	Quantity of Grease		
		Total quantity g	in joint g	in the boot g
Outer joint	100	140	70	70
Inner joint	98	140	70	70

1 - Bolt

- WHT.005.437- / black = 200 Nm +180° additional turn
- WHT.005.437.A- / silver = 200 Nm + 90° additional turn
- Replace after removing
- Loosening and tightening. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- Clean the threads in the CV joint with a thread tap before installing.

2 - Outer CV Joint

- Only replace completely
- Removing. Refer to ⇒ [A6.6.3 xle with Inner CV Joint, Installed in Transmission, Servicing](#), page 194 .
- Installing. Refer to ⇒ [Fig. "Outer CV Joint, Installing"](#), page 196 .
- Check using the Vehicle Diagnostic Tester. Refer to ⇒ [C6.7 V Joint, Checking](#), page 225 .

3 - Circlip

- Replace after removing
- Insert in shaft groove

4 - Clamp

- Replace after removing
- Tensioning. Refer to ⇒ [Fig. "Tightening the Tensioning Clamp on the Larger Diameter"](#), page 224 .

5 - Outer CV Joint CV Boot

- Check for tears and scuffing

6 - Clamp

- Replace after removing
- Tensioning. Refer to ⇒ [Fig. "Tension the Clamp on the Small Diameter"](#), page 224 .

7 - Drive Axle

8 - Clamp

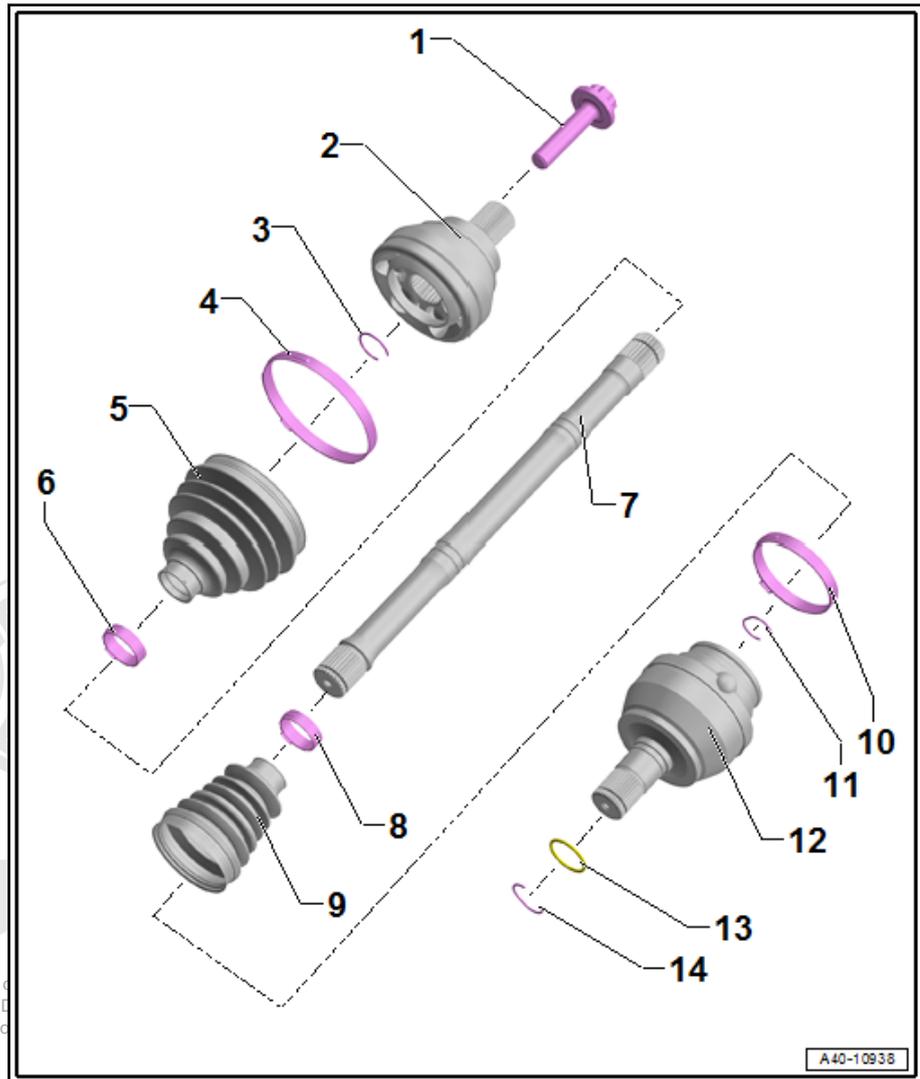
- Replace after removing
- Tensioning. Refer to ⇒ [Fig. "Tension the Clamp on the Small Diameter"](#), page 224 .

9 - Inner CV Joint CV Boot

- Without vent hole
- Check for tears and scuffing
- Drive off CV joint using a drift
- Coat the sealing surface with -D 454 300 A2- before installing it on the CV joint

10 - Clamp

- Replace after removing



- Tensioning. Refer to ⇒ [Fig. "Tightening the Tensioning Clamp on the Larger Diameter"](#), page 224 .

11 - Circlip

- Replace after removing
- Insert in shaft groove

12 - Inner CV Joint

- Only replace completely
- Removing. Refer to ⇒ [Fig. "Inner CV Joint, Removing"](#), page 196 .
- Installing. Refer to ⇒ [page 196](#) .

13 - O-Ring

- Replace after removing
- Insert in shaft groove

14 - Circlip

- Replace after removing
- Insert in shaft groove

6.2.4 Overview - Drive Axle with Triple Roller Joint AAR2600i / AAR3300i, Mounted In Transmission

Filling the Joints with Grease

Grease	Outer Joint	Inner Joint/Triple Roller Joint
Refer to the ⇒ Electronic Parts Catalog (ET-KA).		
Total quantity	120 g (4.2 oz)	140 g (4.9 oz)
in joint	80 g (2.8 oz)	70 g (2.5 oz)
in CV boot	40 g (1.4 oz)	70 g (2.5 oz)

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1 - Outer CV Joint

- Only replace completely
- Removing. Refer to [page 199](#).
- Installing: drive onto shaft with a plastic mallet until compressed circlip rebounds.
- Check using the Vehicle Diagnostic Tester Refer to [C6.7 V Joint, Checking](#), page 225.

2 - Bolt

- WHT.005.437- / black = 200 Nm + 180° additional turn
- WHT.005.437.A- / silver = 200 Nm + 90° additional turn
- Always replace if removed
- Loosening and tightening. Refer to [A6.3.xle Threaded Connection, Loosening and Tightening](#), page 151
- Before installing, clean the threads in the CV joint with a thread tap.

3 - Circlip

- Always replace if removed
- Insert in shaft groove

4 - Thrust Ring

- Not installed on all versions
- Installation position. Refer to [Fig. "Outer CV Joint, Installing"](#), page 199.

5 - Plate Spring

- Not installed on all versions
- Installation position. Refer to [Fig. "Outer CV Joint, Installing"](#), page 199.

6 - Clamp

- Always replace if removed
- Tensioning. Refer to [Fig. "Tightening Clamp on the Outer Joint"](#), page 202.

7 - CV Joint CV Boot

- Check for tears and scuffing

8 - Clamp

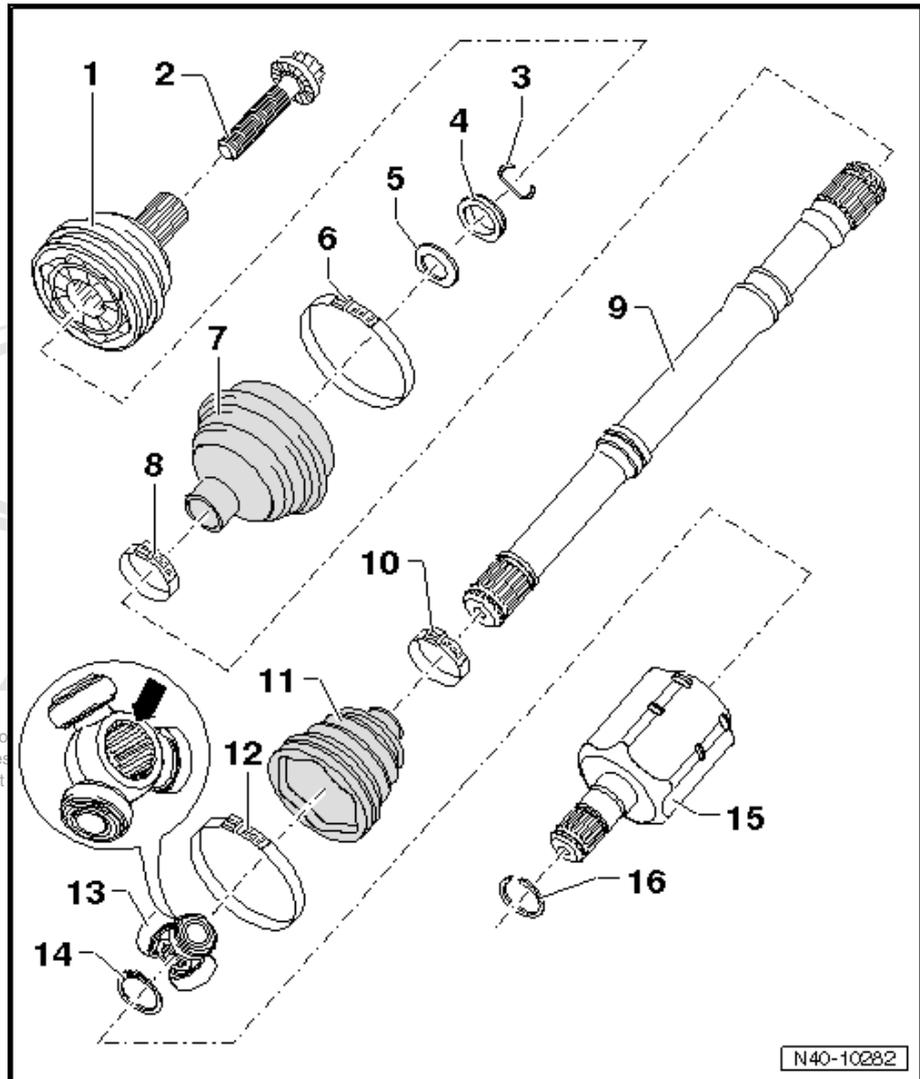
- Always replace if removed
- Tensioning. Refer to [Fig. "Tightening Clamp on the Outer Joint"](#), page 202.

9 - Drive Axle

10 - Clamp

- Always replace if removed
- Tensioning. Refer to [Fig. "Tightening Clamp on the Outer Joint"](#), page 202.

11 - CV Boot for Triple Roller Joint



- Check for tears and scuffing

12 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "“Tightening Clamp on the Outer Joint”", page 202](#) .

13 - Triple Roller Star with Rollers

The chamfer -arrow- faces the drive axle splines.

14 - Circlip

- Always replace if removed
- Insert in shaft groove

15 - Joint

16 - Circlip

- Always replace if removed

6.2.5 Overview - Drive Axle with Triple Roller Joint AAR2600i / AAR3300i, Mounted on Transmission Stub Shaft

Filling Joints with Grease

Grease	Outer Joint	Inner Joint/Triple Roller Joint
Refer to the ⇒ Electronic Parts Catalog (ET-KA).		
Total quantity	120 g (4.2 oz)	140 g (4.9 oz)
in joint	80 g (2.8 oz)	70 g (2.5 oz)
in CV boot	40 g (1.4 oz)	70 g (2.5 oz)

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1 - Outer CV Joint

- Only replace completely
- Removing. Refer to ⇒ [page 206](#) .
- Installing: drive onto shaft with a plastic mallet until compressed circlip rebounds.
- Check using the Vehicle Diagnostic Tester Refer to ⇒ [C6.7 V Joint, Checking](#), [page 225](#) .

2 - Bolt

- WHT.005.437- / black = 200 Nm + 180° additional turn
- WHT.005.437.A- / silver = 200 Nm + 90° additional turn
- Always replace if removed
- Loosening and tightening. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), [page 151](#)
- Before installing, clean the threads in the CV joint with a thread tap.

3 - Circlip

- Always replace if removed
- Insert in shaft groove

4 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tightening Clamp on the Outer Joint"](#), [page 209](#) .

5 - CV Joint CV Boot

- Check for tears and scuffing

6 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tightening Clamp on the Outer Joint"](#), [page 209](#) .

7 - Drive Axle

8 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tightening Clamp on the Outer Joint"](#), [page 209](#) .

9 - CV Boot for Triple Roller Joint

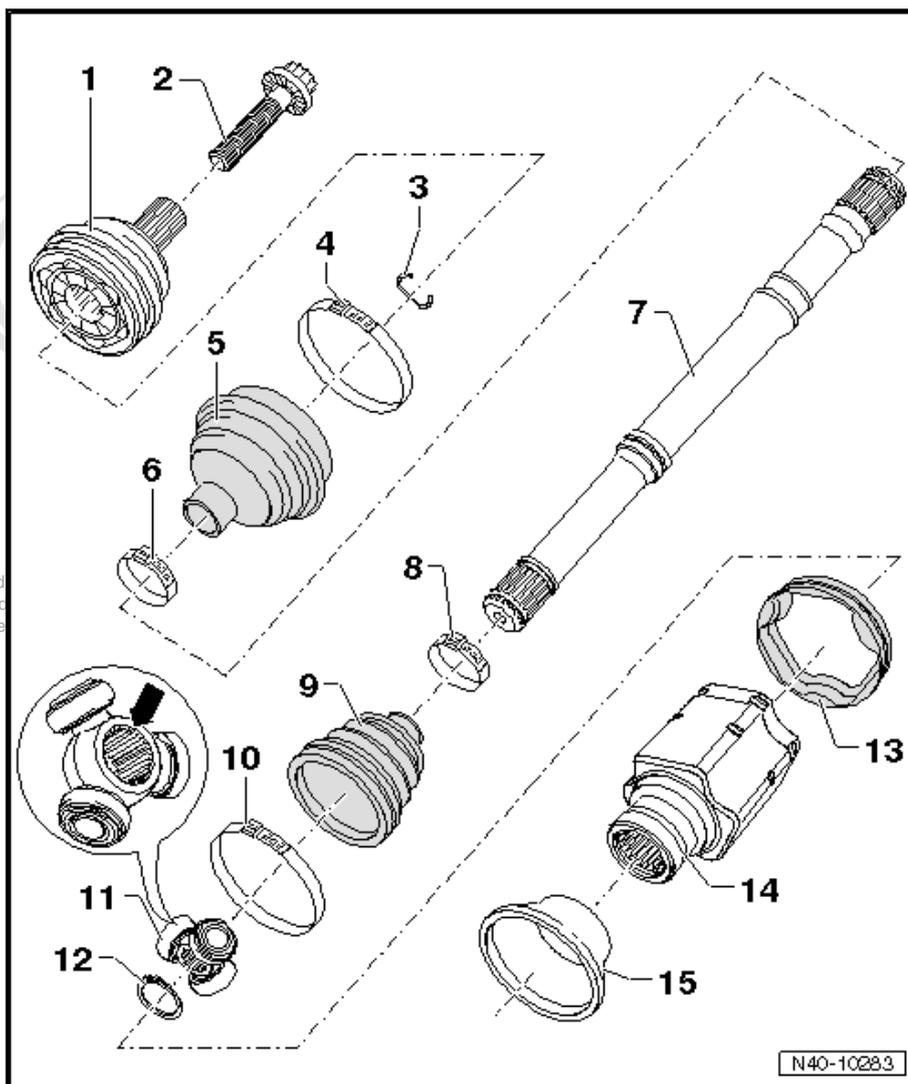
- Check for tears and scuffing

10 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tightening Clamp on the Outer Joint"](#), [page 209](#) .

11 - Triple Roller Star with Rollers

The chamfer -arrow- faces the drive axle splines.



12 - Circlip

- Always replace if removed
- Insert in shaft groove

13 - Adapter

14 - Joint

15 - Cap

- Removing. Refer to ⇒ [Fig. ““Removing the Cap from the Triple Roller Joint””, page 210](#) .
- Installing. Refer to ⇒ [Fig. ““Mounting the Cap Onto the Triple Roller Joint””, page 210](#) .

6.2.6 Overview - Drive Axle with CV Joint, Mounted on Transmission Stub Shaft



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- Tensioning. Refer to ⇒ [Fig. ““Tension the CV Boots Stainless Steel Clamps.””, page 215](#) .

12 - CV Joint

- Only replace completely
- Removing. Refer to ⇒ [Fig. ““Outer CV Joint, Removing””, page 212](#) .
- Divide the grease between the ball races.
- Installing: Using a plastic hammer, drive onto the shaft as far as the stop

13 - Protective Cap

- Removing. Refer to ⇒ [Fig. ““Removing the Protective Cap from the CV Joint””, page 216](#) .
- Installing. Refer to ⇒ [Fig. ““Mounting the Protective Cap onto the CV Joint””, page 216](#) .

6.2.7 Overview - Drive Axle with Triple Roller Joint AAR 2600i, Bolted

Filling Joints with Grease

Total Quantity of Grease. Refer to the ⇒ Electronic Parts Catalog (ETKA).	Outer Joint
	120 g (4.2 oz)
in joint	80 g (2.8 oz)
in CV boot	40 g (1.4 oz)
Total quantity of grease. Refer to the ⇒ Electronic Parts Catalog (ETKA).	Triple roller joint
	140 g (4.9 oz)
in joint	70 g (2.5 oz)
in CV boot	70 g (2.5 oz)

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Note

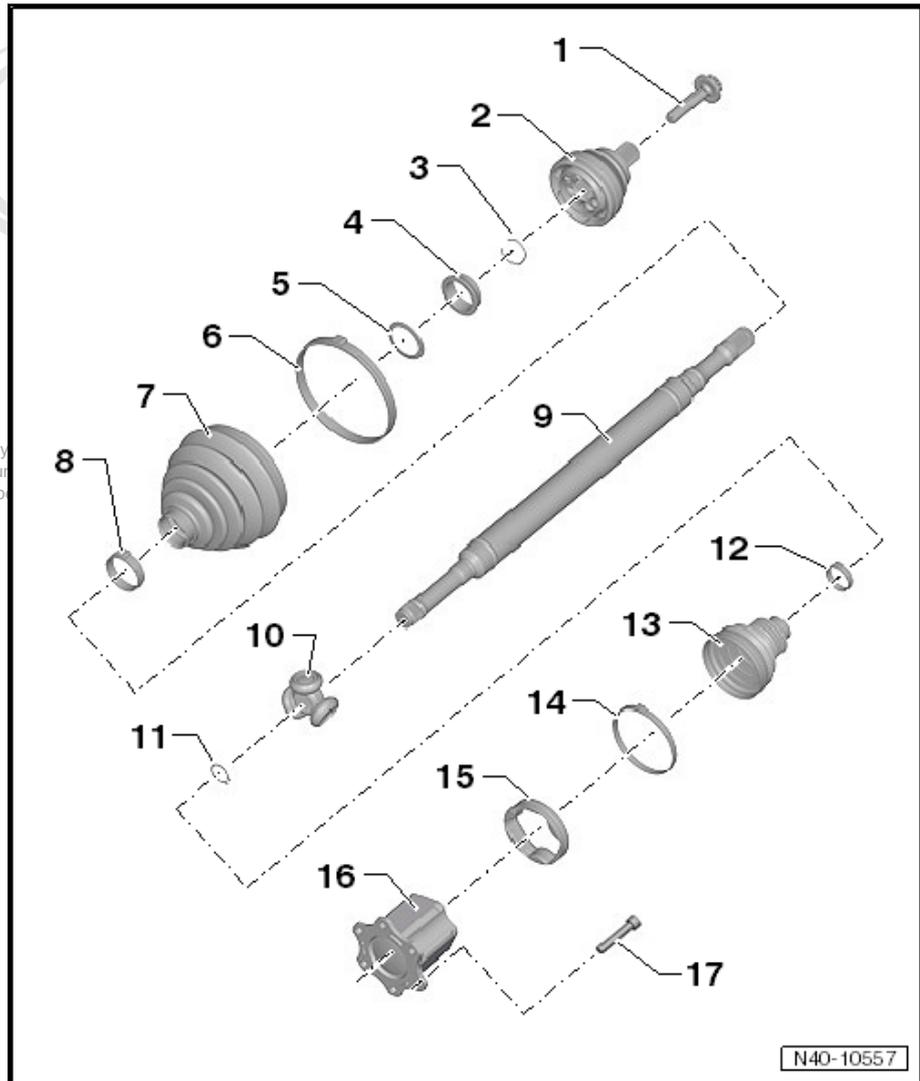
Grease joint again when replacing CV boot.

1 - Bolt

- WHT.005.437- / black = 200 Nm +180° additional turn
- WHT.005.437.A- / silver = 200 Nm + 90° additional turn
- Always replace if removed
- Loosening and tightening. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- Before installing, clean the threads in the CV joint with a thread tap.

2 - Outer CV Joint

- Only replace completely
- Removing. Refer to ⇒ [Fig. "Removing the Outer CV Joint"](#), page 219 .
- Installing. Refer to ⇒ [page 220](#) .
- Check using the Vehicle Diagnostic Tester Refer to ⇒ [C6.7 V Joint, Checking](#), page 225 .
- When installing the joint on the profile shaft, the splines on the profile shaft must be lightly coated with grease used in the joint.



3 - Circlip

- Always replace if removed
- Insert in shaft groove

4 - Spacer Ring (Plastic)

- Installation position. Refer to ⇒ [Fig. "Location of Spacer Ring and Plate Spring"](#), page 219 .

5 - Spring Plate

- Installation position. Refer to ⇒ [Fig. "Location of Spacer Ring and Plate Spring"](#), page 219 .

6 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tension the CV Boots Stainless Steel Clamps."](#), page 220 .

7 - CV Joint CV Boot

- Check for tears and scuffing

8 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tension the CV Boots Stainless Steel Clamps."](#), page 220 .

9 - Profile Shaft

10 - Triple Roller Star with Rollers

- The chamfer -arrow- faces the splines on the drive axle.

- When installing triple roller star on axle shaft, splines on axle shaft must be lightly coated with grease used in joint.

11 - Circlip

- Always replace if removed
- Insert in shaft groove

12 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "“Tension the CV Boots Stainless Steel Clamps.””, page 220](#) .

13 - CV Boot for Triple Roller Joint

- Check for tears and scuffing

14 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "“Tension the CV Boots Stainless Steel Clamps.””, page 220](#) .

15 - Adapter

16 - Bolted Joint

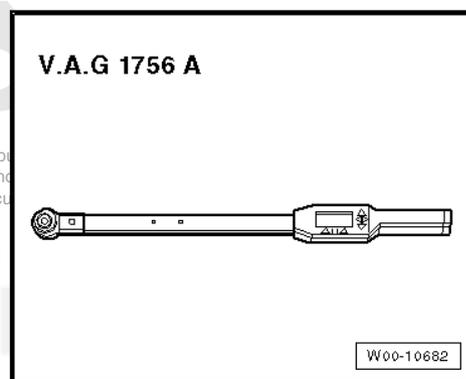
17 - Bolt

- Pre-tightening specification: diagonal sequence to 10 Nm.
- M8 tightening specification: diagonal sequence to 40 Nm.
- M10 tightening specification: diagonal sequence to 70 Nm.
- Always replace if removed

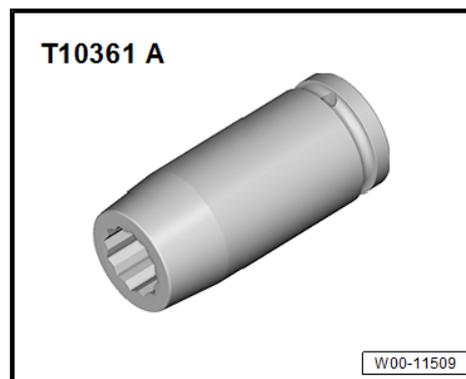
6.3 Drive Axle Threaded Connection, Loosening and Tightening

Special tools and workshop equipment required

- ◆ Digital Torque Wrench -VAG1756A-



- ◆ Socket AF 24 mm -T10361A-



Do not load the wheel bearing if the wheel-side drive axle threaded connection is loose.

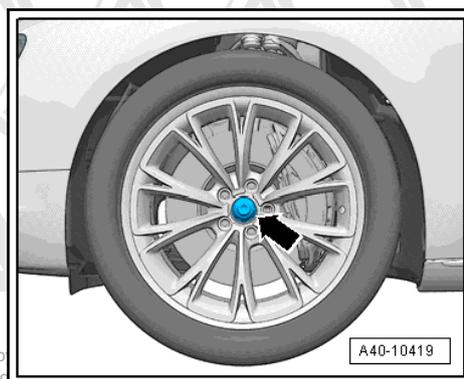
If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings. Note the following when doing so:

- ◆ Procedure for loosening the twelve-point bolt.

Vehicles without a drive axle must not be moved, otherwise the wheel bearing will be damaged. If the vehicle must be moved, be sure to note the following:

- Install an outer joint in place of the drive axle.
- Tighten the outer joint to 200 Nm.

Twelve-Point Bolt, Loosening



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- With vehicle still resting on wheels, loosen the twelve-point bolt -arrow- with Socket AF 24 mm -T10361A- maximum 90°, otherwise, the wheel bearing will be damaged.
- Lift the vehicle just enough so that the wheels are hanging free.
- Apply the brakes (a second technician required).
- Remove the twelve-point bolt -arrow-.

Note

Before installing, clean the threads in the CV joint with a thread tap.

Twelve-Point Bolt, Installing

- Replace the twelve-point bolt.

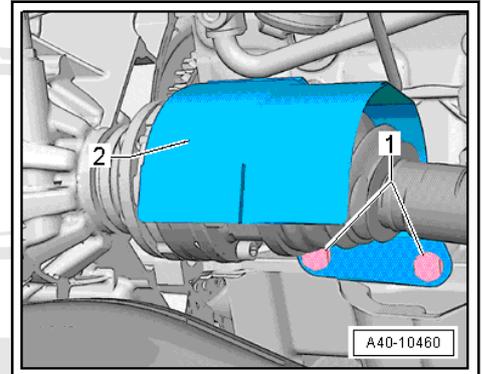
Note

Wheels must not yet touch the ground when tightening the drive axle or the wheel bearing can be damaged.

- Apply the brakes (a second technician required).
- Tighten the twelve-point bolt to 200 Nm.
- Set the vehicle on its wheels.
- 12-point bolt -WHT.005.437- / black 180° additional turn.
- 12-point bolt -WHT.005.437.A- / silver 90° additional turn.

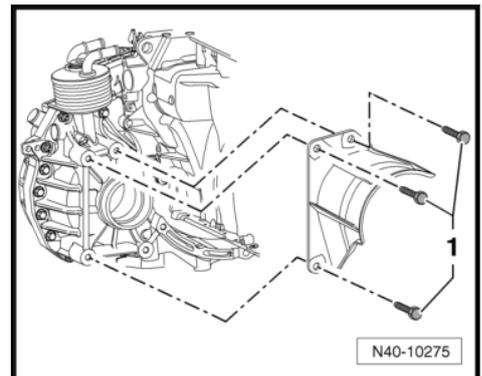
6.4 Drive Axle Heat Shield, Removing and Installing

FWD:



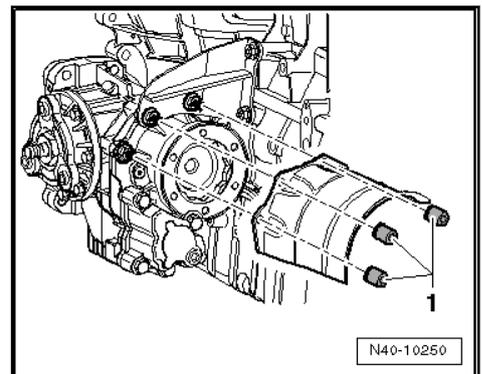
Component	Tightening Specification
Bolts -1-	25 Nm

Automatic Transmission - FWD



Component	Tightening Specification
Bolts -1-	40 Nm

AWD:



Component	Tightening Specification
Nuts -1-	20 Nm ◆ Tighten all nuts to 10 Nm

6.5 Drive Axle, Removing and Installing

⇒ [D6.5.1 rive Axle, Removing and Installing](#)", page 154

⇒ [D6.5.2 rive Axle, Bolted Inner Joint, Removing and Installing](#)", page 158

⇒ [A6.5.3 xle with Triple Roller Joint AAR3300i, Mounted in Transmission, Removing and Installing](#)", page 161

⇒ [A6.5.4 xle with Triple Roller Joint AAR3300i, Mounted on Transmission Stub Shaft, Removing and Installing](#)", page 165

⇒ [D6.5.5 rive Axle with CV Joint, Removing and Installing, Connected to Inner Splines](#)", page 170

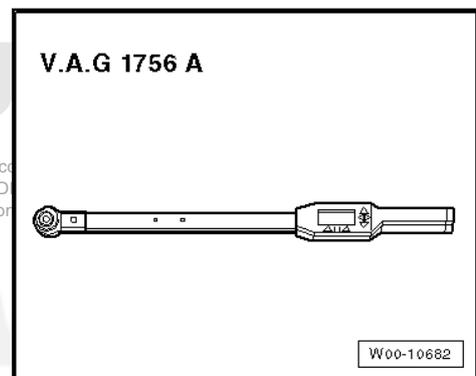
⇒ [D6.5.6 rive Axle with CV Joint, Removing and Installing, Connected to Inner Splines](#)", page 175

6.5.1 Left Drive Axle, Removing and Installing

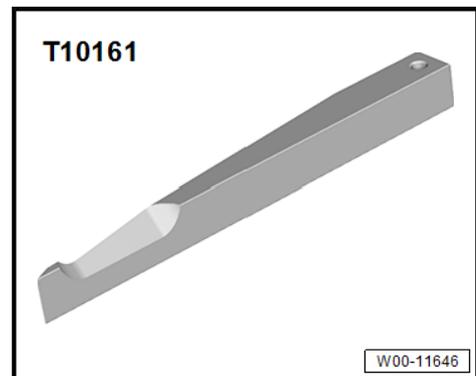
Special tools and workshop equipment required

- ◆ Digital Torque Wrench -VAG1756A-

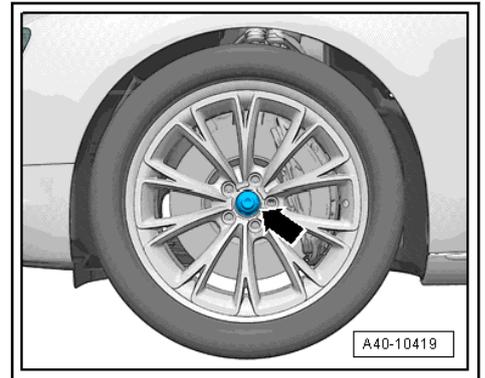
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- ◆ Drive Axle Wedge Tool -T10161- for drive axle attached in the transmission



Removing



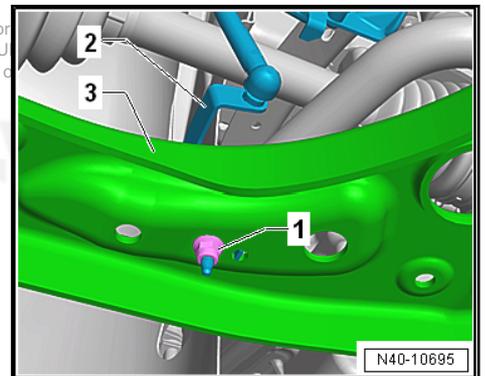
- Loosen the drive axle threaded connection on the wheel side -arrow-. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .

Note

- ◆ *Do not load the wheel bearing if the wheel-side drive axle threaded connection is loose. There is a risk of damaging the wheel bearing due to the vehicle's weight.*
- ◆ *Install an outer joint in place of the drive axle. Tighten the outer joint to 120 Nm.*
- Remove the wheel. Refer to ⇒ [a1 nd Tires](#), page 411 .
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.

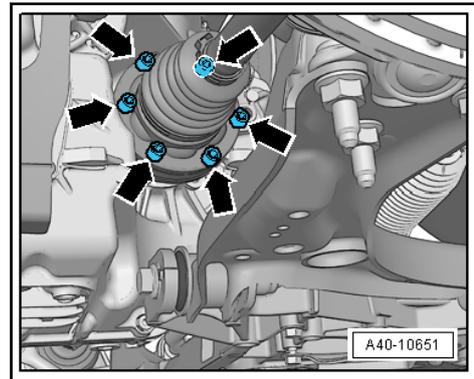
Vehicle with Level Control System Sensor

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- Remove the nut -1- and free up the bracket -2- for the coupling rod of the level control system sensor on the control arm -3-.

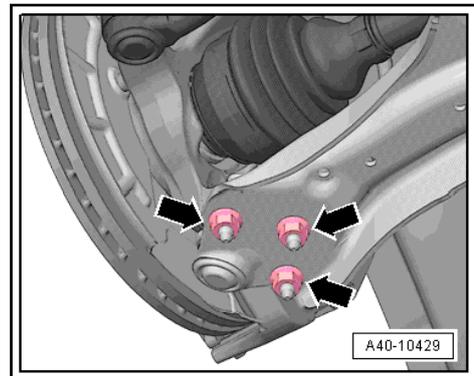
Vehicles with Drive Axle Bolted on the Transmission Flange Shaft



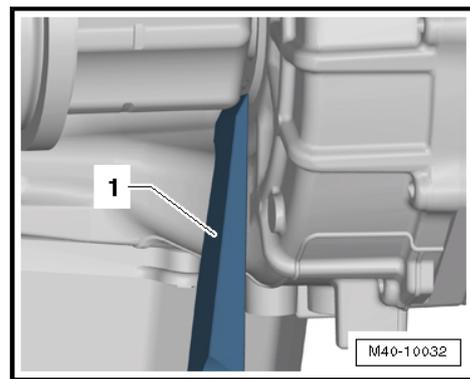
- Remove the drive axle from the flange shaft/transmission -arrows- and tilt upwards.
- Push the wheel bearing housing to the left.
- On sport suspensions, lower the suspension strut. If the vehicle does not have a sport suspension, the suspension strut must not be lowered. Refer to ⇒ [S3.4 strut, Lowering](#), page [103](#).
- Pull the drive axle out of the wheel hub.
- Remove the drive axle.

Vehicle with Drive Axle Inserted in the Transmission

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- Lower the suspension strut on vehicles with sport suspension. Refer to ⇒ [S3.4 strut, Lowering](#), page [103](#). If the vehicle does not have sport suspension, the suspension strut must not be lowered.
- Remove the nuts -arrows-.
- Remove the control arm from the ball joint.
- Make sure the ball joint rubber boot is not damaged during assembly work. If necessary protect the ball joint rubber boot against damage.
- Insert the Drive Axle Wedge Tool -T10161- between the transmission housing and the inner joint.



- Using a rubber hammer, hit the inner joint on the drive axle wedge tool and remove it from the transmission.
- Pull the drive axle out of the wheel hub.
- Remove the drive axle.

Installing

Install in reverse order of removal while noting the following:

- If equipped, replace the O-ring for the attached drive axle after removal.
- Replace the circlip for the attached drive axle after removal.
- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Applies to drive axle inserted in the transmission
- Equipment version inserted on the CV joint: replace the O-ring from the joint pin.
- Install, a circlip into the groove on the joint pin.
- Engage the outer and inner splines of joint and transmission.
- Grab the drive axle by hand and push it all the way into the joint.
- Push the joint with a forceful pulling motion in the transmission, the sliding part inside the joint can be used for this. (Do not pull the drive axle too far out of the joint.)

Note

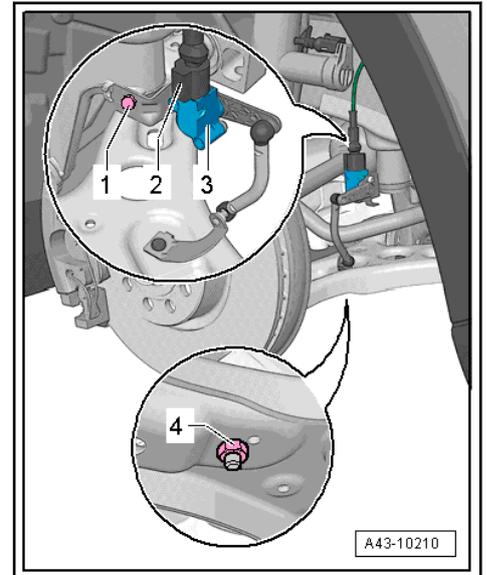
Risk of destroying components if too much force is used. Do not use a hammer or other striking tools.

- Make sure the drive axle fits securely inside the transmission. The joint pulls against the resistance of the circlip.

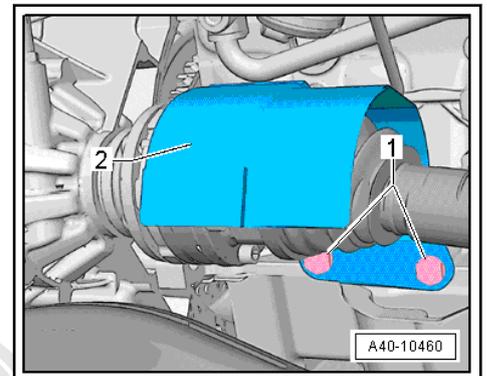
Applies to All

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

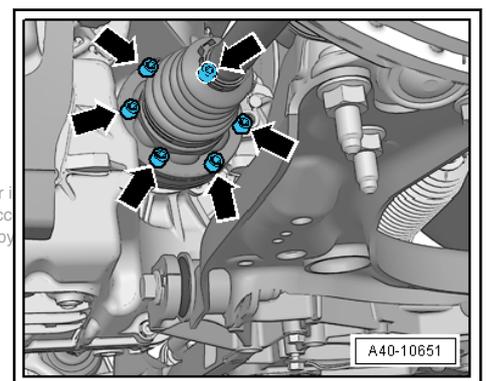
- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:



- If installed, remove the bolts -1- and the heat shield -2-.



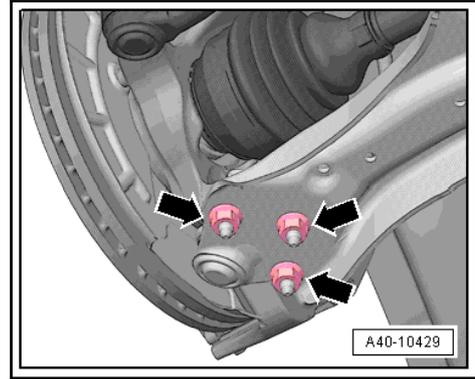
- Remove the coupling rod. Refer to ⇒ [R2.8 od, Removing and Installing](#), page 91 .
- Remove the drive axle from the transmission flange -arrows-.



- Remove the nuts -arrows- from the ball joint.

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erWin



- Disengage the control arm from the ball joint.

Applies to Vehicles with Sport Suspension

- On sport suspensions, lower the suspension strut. If the vehicle does not have a sport suspension, the suspension strut must not be lowered. Refer to ⇒ [S3.4 strut, Lowering](#), page 103.
- Pivot the suspension strut outward, while doing so push the drive axle out of the wheel bearing unit.
- Remove the drive axle.

Installing

Install in reverse order of removal while noting the following:

- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).

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On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select `Diagnostic` operating mode and `Start diagnostics`.
- Select the `Select individual test` tab and select the following tree structure consecutively:
 - ◆ `Chassis`
 - ◆ `Wheel Damping Electronics`
 - ◆ `01 - OBD-capable systems`
 - ◆ `14 - Electronic Damping Control Module -J250`
 - ◆ `14 - Electronic Damping Control Module, functions`
 - ◆ `14 - Control Position, readapting`
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449.
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

Tightening Specifications

- ◆ Refer to ⇒ [-6.2.2 Drive Axle with Inner CV joint 100 mm Diameter - Bolted](#), page 139
- ◆ Refer to ⇒ [-6.2.1 Drive Axle, Inner CV joint 108 mm Diameter - Bolted](#), page 137

- ◆ Refer to ⇒ [-6.2.7 Drive Axle with Triple Roller Joint AAR 2600i, Bolted](#), page 149
- ◆ Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- ◆ Refer to ⇒ [-2.1 Front Level Control System Sensor](#), page 402
- ◆ Refer to ⇒ [-2.1 Subframe](#), page 21
- ◆ Refer to ⇒ [-3.1 Suspension Strut and Upper Control Arm](#), page 93
- ◆ Refer to ⇒ [-4.1 Lower Control Arm and Ball Joint](#), page 106
- ◆ Refer to ⇒ [A6.4 xle Heat Shield, Removing and Installing](#), page 153
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411

6.5.3 Drive Axle with Triple Roller Joint AAR3300i, Mounted in Transmission, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-

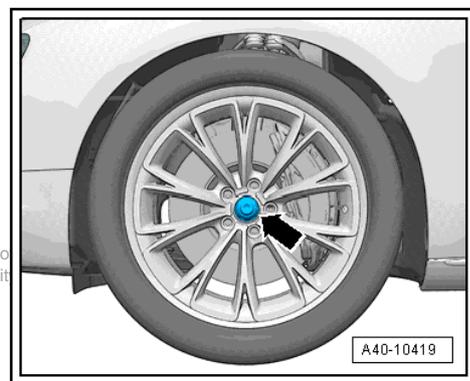


- ◆ Chain Tensioner Lever
Removing



Audi

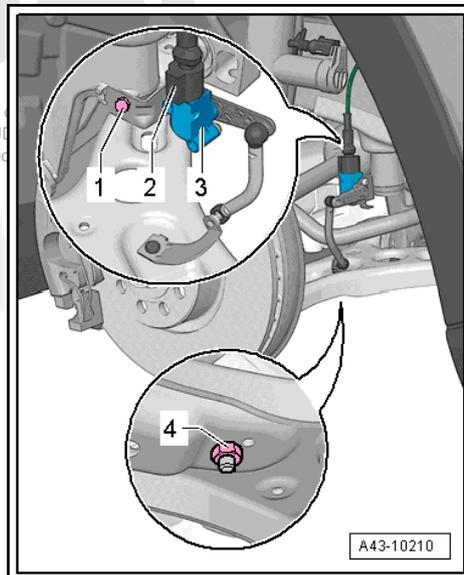
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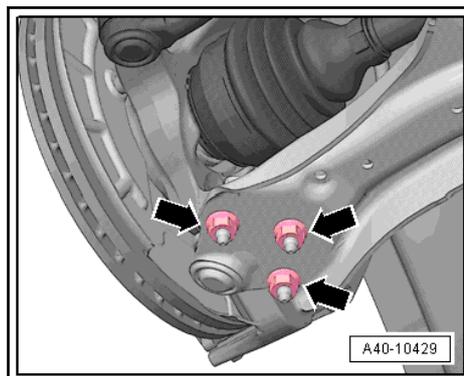
- Loosen the drive axle threaded connection on the wheel side -arrow-. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .
- Remove the wheel. Refer to ⇒ [a1 nd Tires](#), page 411 .
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.

- Remove the coupling rod. Refer to ⇒ [R2.8 od, Removing and Installing](#), page 91 .
- If installed, disconnect the vehicle level control system sensor coupling rod from the control arm by removing the nut -4-.

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- Remove the nuts -arrows- from the ball joint.

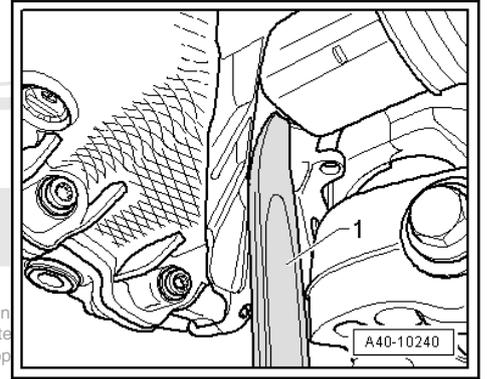


- Disengage the control arm from the ball joint.
- Pivot the suspension strut outward, while doing so push the drive axle out of the wheel hub.
- Secure the drive axle to the body.

i Note

Do not let the drive axle hang down. The inner joint could be damaged if it is bent too far.

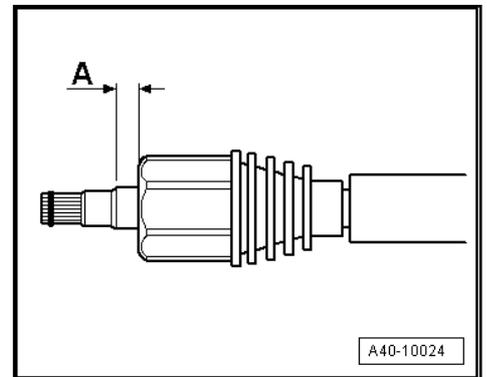
- A second technician is required for the following steps.
- Place the extractor lever -1- between the transmission housing and triple roller joint.



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- Carefully press off the drive axle from the joint pin while a second technician secures the drive axle from falling.
- Remove the drive axle.

Installing



Install in reverse order of removal while noting the following:

- Replace the drive axle circlip each time it is removed.
- If installed: replace the drive axle O-ring.
- On transmissions without sealing transmission internal teeth. Refer to ⇒ Transmission; Rep. Gr. 39; Seals; Component Location Overview - Seals.
- Grease all around the joint pins in area -A- with approximately 0.5 g (0 oz) grease. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- The drive axle must first be installed on the transmission side.
- Bring outer and inner splines of the transmission and joint pin into engagement.
- Grab the drive axle by hand and push it all the way into the joint.
- Now slide joint into transmission with a »tug« until the circlip engages.

**Note**

- ◆ *If it is difficult to install the drive axle even though the splines are positioned correctly, then it is permitted to slide it in the slip joint. At the same time pay attention that the drive axle is not pulled too far out of the joint.*
- ◆ *Never use a hammer or striking tool!*
- Make sure the joint is seated securely, to do this pull the joint against the resistance of the securing ring.

**Caution**

When checking, only pull on the joint piece and not on the drive axle.

- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:
 - ◆ **Chassis**
 - ◆ **Wheel Damping Electronics**
 - ◆ **01 - OBD-capable systems**
 - ◆ **14 - Electronic Damping Control Module -J250**
 - ◆ **14 - Electronic Damping Control Module, functions**
 - ◆ **14 - Control Position, readapting**
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

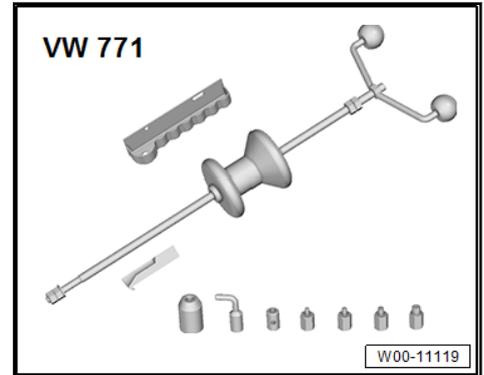
Tightening Specifications

- ◆ Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- ◆ Refer to ⇒ [-2.1 Front Level Control System Sensor](#), page 402
- ◆ Refer to ⇒ [-2.1 Subframe](#), page 21
- ◆ Refer to ⇒ [-4.1 Lower Control Arm and Ball Joint](#), page 106
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411

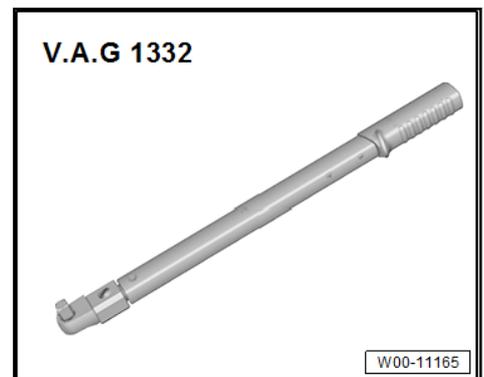
6.5.4 Drive Axle with Triple Roller Joint AAR3300i, Mounted on Transmission Stub Shaft, Removing and Installing

Special tools and workshop equipment required

- ◆ Slide Hammer Set -VW771-



- ◆ Torque Wrench, 40-200Nm -VAG1332A-

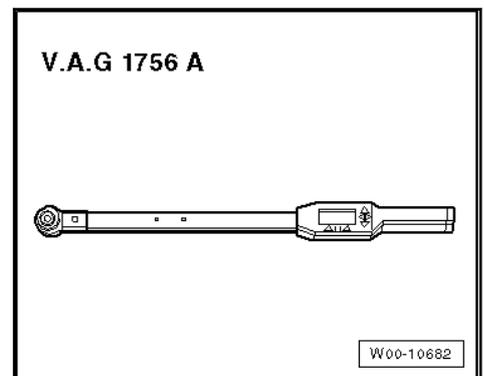


- ◆ Digital Torque Wrench -VAG1756A-



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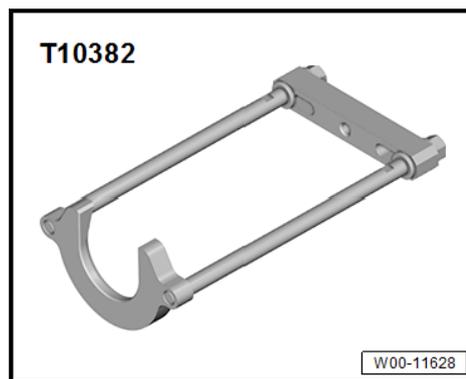
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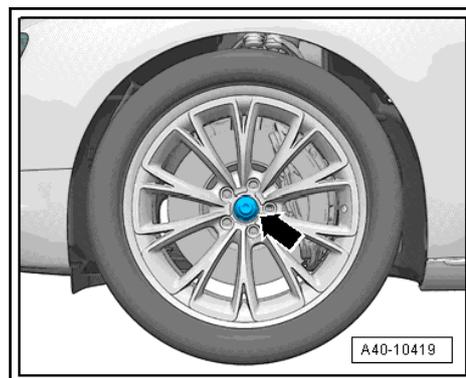
- ◆ Tensioning Strap -T10038-



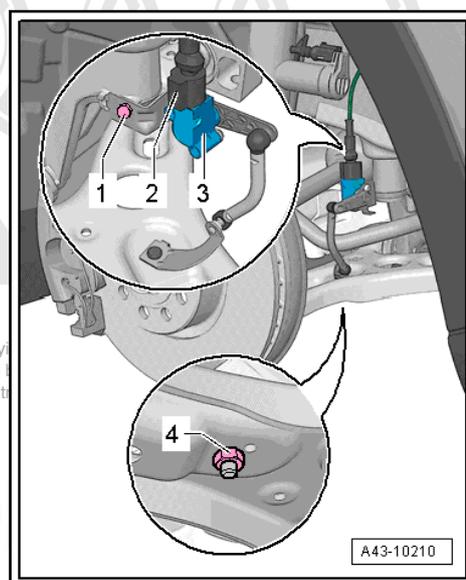
◆ Puller - Drive Axle -T10382-



Removing



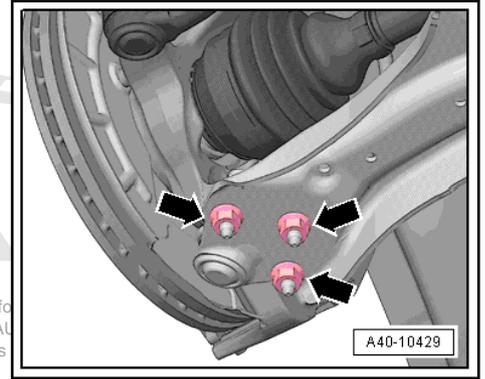
- Loosen the drive axle threaded connection on the wheel side -arrow-. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .
- Remove the wheel. Refer to ⇒ [a1 nd Tires](#), page 411 .
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- If installed, disconnect the vehicle level control system sensor coupling rod from the control arm by removing the nut -4-.



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not ability

- Remove the nuts -arrows-.

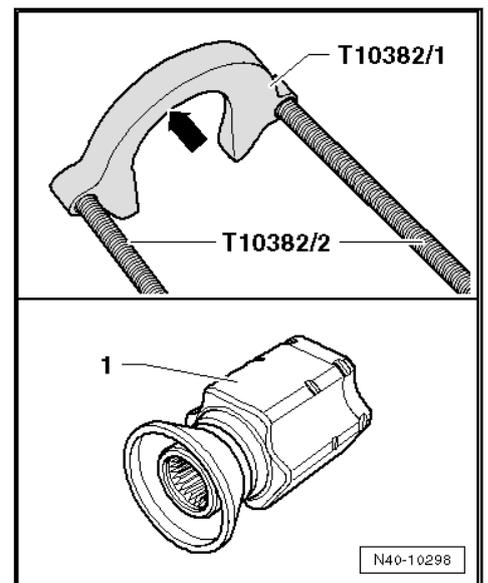


- Remove the wheel bearing housing with the ball joint from the control arm.
- Slide outer joint out of wheel hub by hand.
- Secure the drive axle to keep it from falling down.

 **Note**

Do not let the drive axle hang down. The inner joint could be damaged if it is bent too far.

- Install the Puller - Driveshaft -T10382-.



For the CV joint -1-, the surface -arrow- of the Puller - Drive-shaft - Removing Plate -T10382/1- must face the Puller - Drive-shaft - Spindles -T10382/2-.

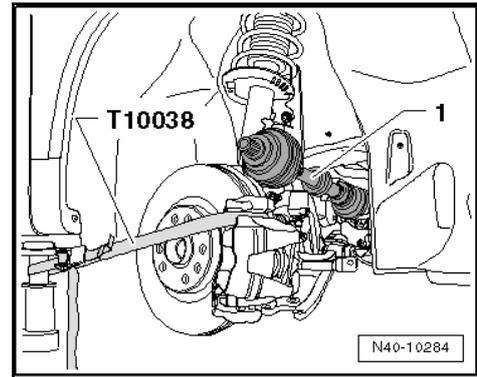
- Attach the Puller - Drive Axle -T10382- to the Slide Hammer Set -VW771-.

 **Note**

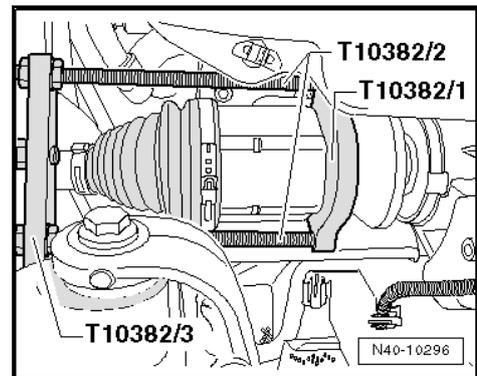
In order to remove the drive axle from the transmission using the Puller - Driveshaft -T10382-, the suspension strut and all its components must be pulled to the back.

- Pull the suspension strut and its components using the Tensioning Strap -T10038- as far as possible to the back, for

example on the workshop hoist arm, until the Puller - Drive-shaft -T10382- can be installed parallel to the drive axle.



- Install the Puller - Driveshaft -T10382- and remove the drive axle.



- Remove the drive axle from the vehicle.

Installing

Install in reverse order of removal while noting the following:

- Remove any paint residue and/or corrosion in threads/splines of the outer joint.

Only for the Right Side of the Vehicle and AWD

- Tap on the front side of the stub shaft using a plastic mallet.



Caution

- ◆ *This ensures that the stub shaft circlip engages in the differential bevel gear correctly.*
- ◆ *This also prevents leaks.*

Continuation for Both Sides

- Install the new circlip into the stub shaft groove on the transmission.
- Grease all around the area of the transmission pin splines with approximately 2 g (0.1 oz) grease. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Bring the outer and inner splines from the transmission and the CV joint into the engagement.
- Grab the drive axle by hand and push it all the way into the joint.

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- Now push the ball joint with one »jerk« onto the transmission stub shaft.
- Slide the joint piece with the drive axle onto the transmission pins until the circlip engages.

 **Note**

Never use a hammer or striking tool!

- Make sure the joint is seated correctly, to do this pull the joint against the resistance of the circlip.



Caution

When checking, only pull on the joint piece and not on the drive axle.

- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub.
Refer to the ⇒ [Electronic Parts Catalog \(ETKA\)](#)

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:
 - ◆ **Chassis**
 - ◆ **Wheel Damping Electronics**
 - ◆ **01 - OBD-capable systems**.
 - ◆ **14 - Electronic Damping Control Module -J250**
 - ◆ **14 - Electronic Damping Control Module, functions**
 - ◆ **14 - Control Position, readapting**
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

Tightening Specifications

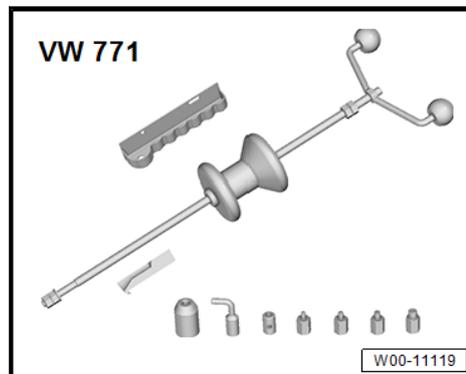
- ◆ Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- ◆ Refer to ⇒ [-2.1 Front Level Control System Sensor](#), page 402
- ◆ Refer to ⇒ [-2.1 Subframe](#), page 21
- ◆ Refer to ⇒ [-4.1 Lower Control Arm and Ball Joint](#), page 106
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411



6.5.5 Left Drive Axle with CV Joint, Removing and Installing, Connected to Inner Splines

Special tools and workshop equipment required

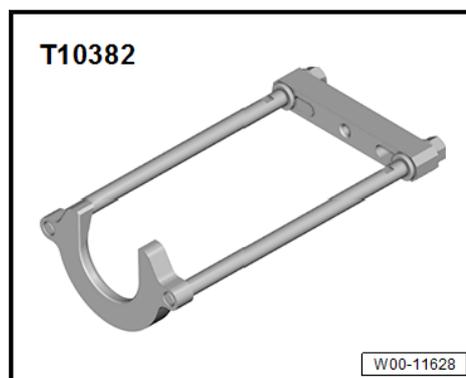
- ◆ Slide Hammer Set -VW771-



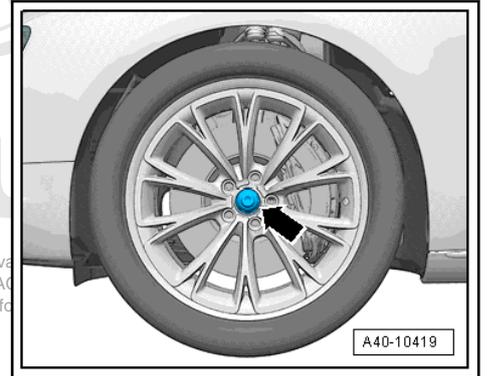
- ◆ Torque Wrench, 40-200Nm -VAG1332A-



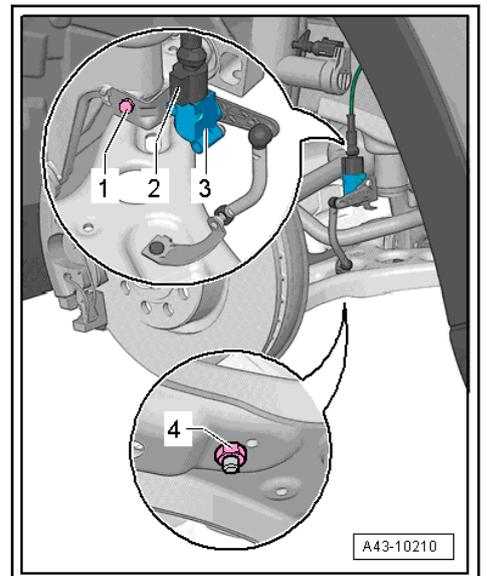
- ◆ Puller - Driveshaft -T10382-



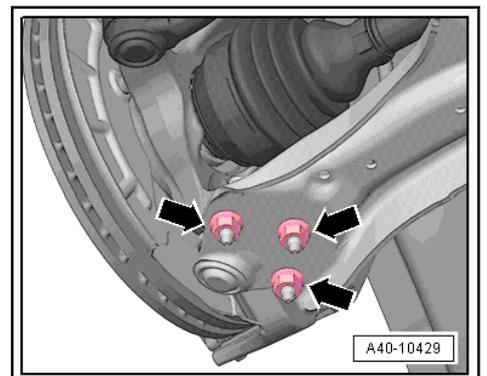
Removing



- Loosen the drive axle threaded connection on the wheel side -arrow-. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .
- Remove the wheel. Refer to ⇒ [a1 nd Tires](#), page 411 .
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- If installed, disconnect the vehicle level control system sensor coupling rod from the control arm by removing the nut -4-.



- Remove the nuts -arrows-.



- Disengage the control arm from the ball joint.



- Pivot the suspension strut outward, while doing so push the drive axle out of the wheel bearing unit.
- Slide outer joint out of wheel hub by hand.
- Secure the drive axle to keep it from falling down.

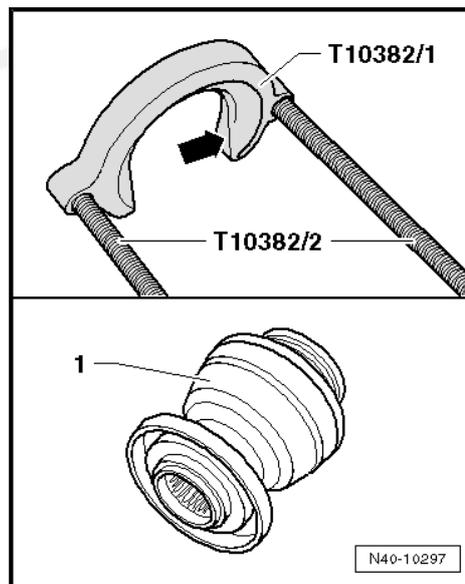


Note

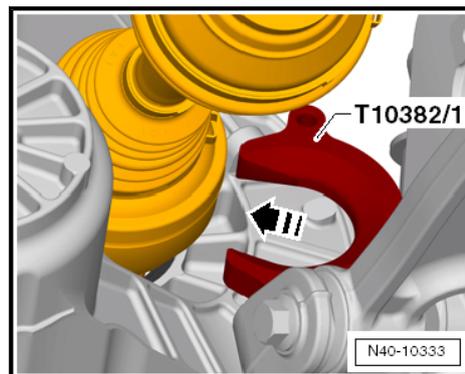
In order to remove the drive axle from the transmission using the Puller - Driveshaft -T10382-, the suspension strut and all its components must be pulled to the back. Be careful not to damage any parts, for example, brake hose, ABS line.

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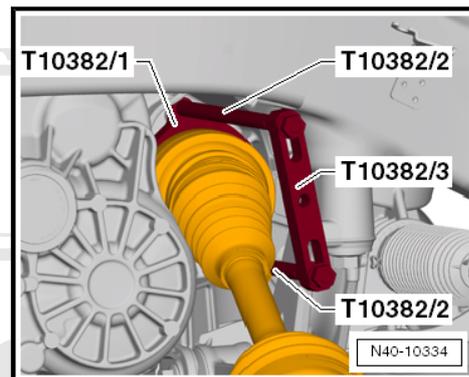
- Install the Puller - Driveshaft -T10382-.



- For the CV joint -1-, the opening -arrow- in the Puller - Drive Axle - Removing Plate -T10382/1- must face the Puller - Drive Axle - Spindles -T10382/2-.
- Insert the Puller - Driveshaft - Removing Plate -T10382/1- behind the CV joint -1-.



- The opening in direction of -arrow- in the Puller - Driveshaft - Removing Plate -T10382/1- must face the CV joint -1-.
- Install the Puller - Driveshaft - Spindles -T10382/2- and Puller - Driveshaft - Traverse -T10382/3- on the Puller - Drive-shaft - Removing Plate -T10382/1-.



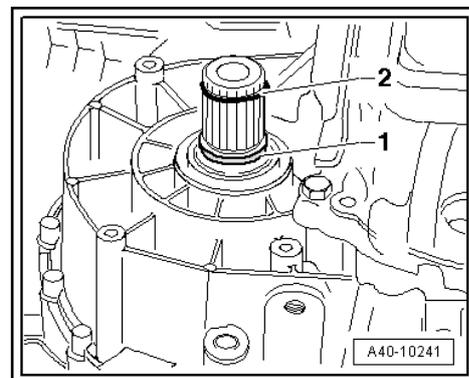
- Install the Slide Hammer Set -VW771- on the Puller - Drive-shaft - Traverse -T10382/3-.
- Remove the drive axle by hitting the Slide Hammer Set -VW771- several times.
- Remove the drive axle from the vehicle.

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Installing

Install in reverse order of removal while noting the following:

- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Remove any paint residue and/or corrosion in threads/splines of the outer joint.
- Replace the shaft seal on the transmission. Refer to ⇒ Transmission; Rep. Gr. 39; Seals; Component Location Overview - Seals.
- Install a new seal -1- and locking ring -2- into the groove on the stub shaft on the transmission.



- Grease all around the area of the transmission pin splines with approximately 2 g (0.1 oz) grease. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Bring the outer and inner splines of the transmission and CV joint into the engagement.
- Grab the drive axle by hand and push it into the CV joint all the way.
- Now push the CV joint with one »jerk« onto the transmission stub shaft.

**Note**

- ◆ *If it is difficult to install the drive axle even though the splines are positioned correctly, then it is permitted to slide it in the slip joint.*
- ◆ *Never use a hammer or striking tool!*
- Make sure the CV joint is seated securely, to do this pull the CV joint against the resistance of the securing ring.

**Caution**

When checking, only pull on the CV joint piece and not on the drive axle.

- Install the outer joint as far as possible into the wheel hub splines.

**Note**

Make sure the ball joint boot is not damaged or twisted.

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:
 - ◆ Chassis
 - ◆ Wheel Damping Electronics
 - ◆ 01 - OBD-capable systems.
 - ◆ 14 - Electronic Damping Control Module -J250
 - ◆ 14 - Electronic Damping Control Module, functions
 - ◆ 14 - Control Position, readapting
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp, Headlamp Adjusting.

Tightening Specifications

- ◆ Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- ◆ Refer to ⇒ [-2.1 Front Level Control System Sensor](#), page 402
- ◆ Refer to ⇒ [-2.1 Subframe](#), page 21
- ◆ Refer to ⇒ [-4.1 Lower Control Arm and Ball Joint](#), page 106

**Audi****erWin**

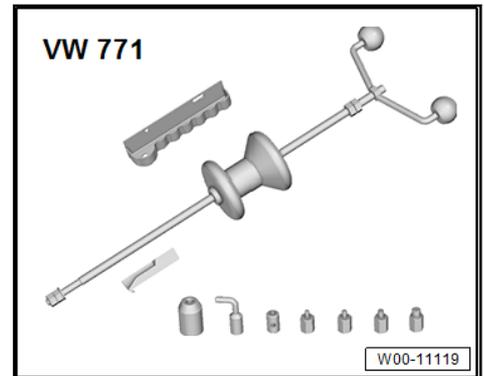
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- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to ⇒ ["a1 nd Tires", page 411](#)

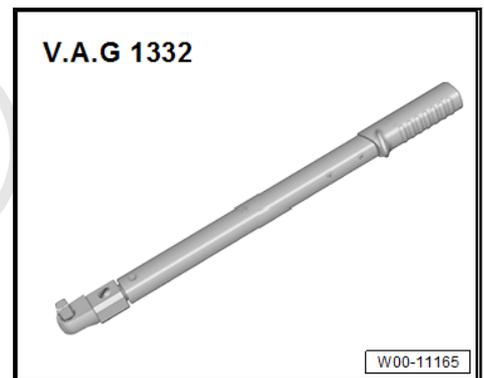
6.5.6 Right Drive Axle with CV Joint, Removing and Installing, Connected to Inner Splines

Special tools and workshop equipment required

- ◆ Slide Hammer Set -VW771-

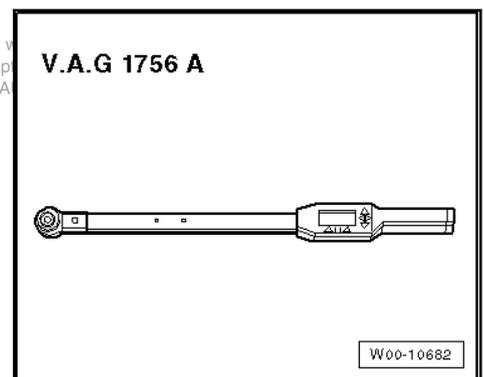


- ◆ Torque Wrench, 40-200Nm -VAG1332A-



- ◆ Digital Torque Wrench -VAG1756A-

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◆ Tensioning Strap -T10038-

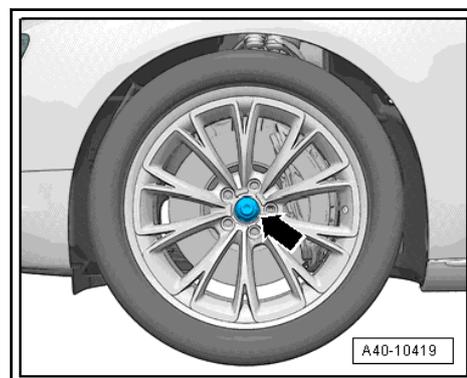


◆ Puller - Driveshaft -T10382-

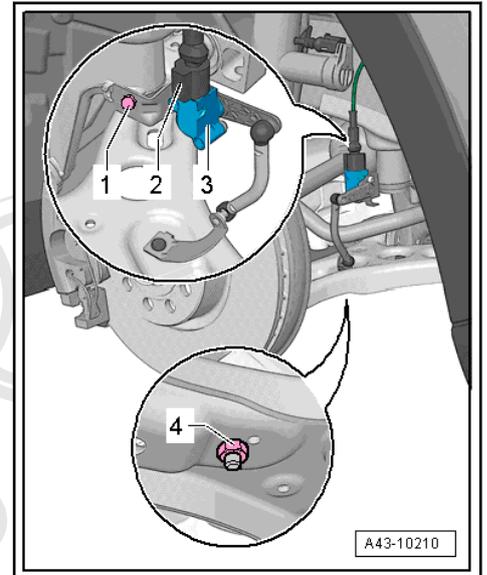
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Removing

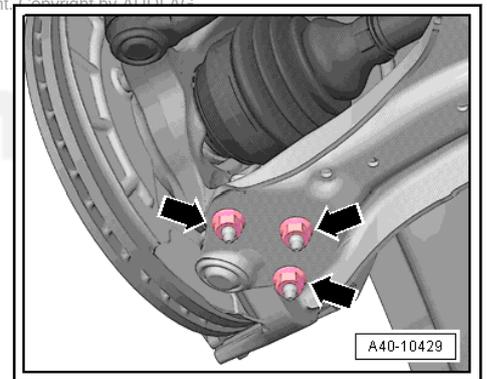


- Loosen the drive axle threaded connection on the wheel side -arrow-. Refer to [⇒ A6.3 xle Threaded Connection, Loosening and Tightening”, page 151](#) .
- Remove the wheel. Refer to [⇒ a1 nd Tires”, page 411](#) .
- Remove the noise insulation. Refer to [⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation](#).
- If installed, disconnect the vehicle level control system sensor coupling rod from the control arm by removing the nut -4-.



- Remove the nuts -arrows- from the ball joint.

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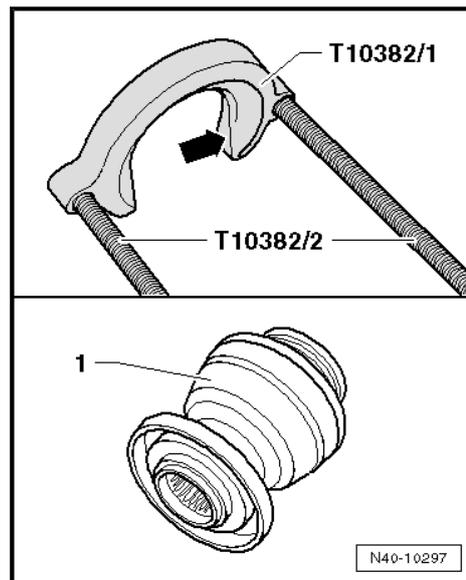


- Disengage the control arm from the ball joint.
- Pivot the suspension strut outward, while doing so push the drive axle out of the wheel bearing unit.
- Slide outer joint out of wheel hub by hand.
- Secure the drive axle to keep it from falling down.

 **Note**

In order to remove the drive axle from the transmission using the Puller - Driveshaft -T10382-, the suspension strut and all its components must be pulled to the back. Be careful not to damage any parts, for example, brake hose, ABS line.

- Install the Puller - Driveshaft -T10382-.



- For the CV joint -1-, the opening -arrow- in the Puller - Drive Axle - Removing Plate -T10382/1- must face the Puller - Drive Axle - Spindles -T10382/2-.
- Attach the Puller - Drive Axle -T10382- to the Slide Hammer Set -VW771-.

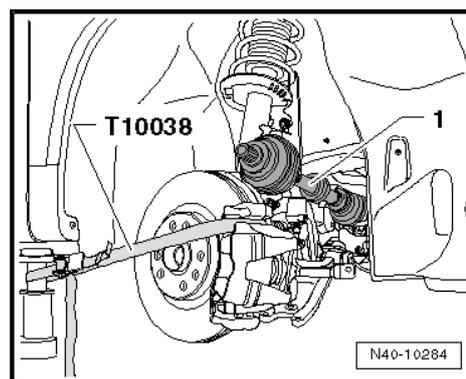


Note

In order to remove the drive axle from the transmission using the Puller - Driveshaft -T10382-, the suspension strut and all its components must be pulled to the back.

- Pull the suspension strut and its components using the Tensioning Strap -T10038- as far as possible to the back, for example on the workshop hoist arm, until the Puller - Drive shaft -T10382- can be installed parallel to the drive axle.

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- Install the Puller - Driveshaft -T10382- and remove the drive axle with a few hits on the Slide Hammer Set -VW771-.

- ◆ [Chassis](#)
- ◆ [Wheel Damping Electronics](#)
- ◆ [01 - OBD-capable systems](#)
- ◆ [14 - Electronic Damping Control Module -J250](#)
- ◆ [14 - Electronic Damping Control Module, functions](#)
- ◆ [14 - Control Position, readapting](#)
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

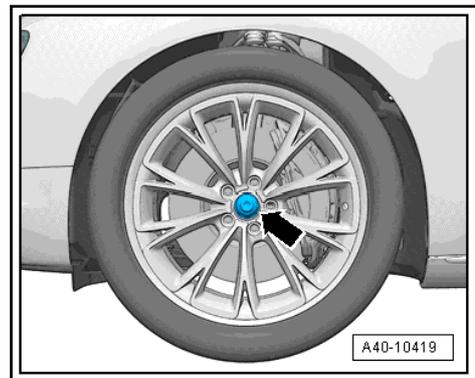
Tightening Specifications

- ◆ Refer to ⇒ [-6.2 Drive Axle](#), page 137
- ◆ Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- ◆ Refer to ⇒ [-4.1 Lower Control Arm and Ball Joint](#), page 106
- ◆ Refer to ⇒ [-2.1 Front Level Control System Sensor](#), page 402
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; [Noise Insulation](#); Overview - Noise Insulation.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411

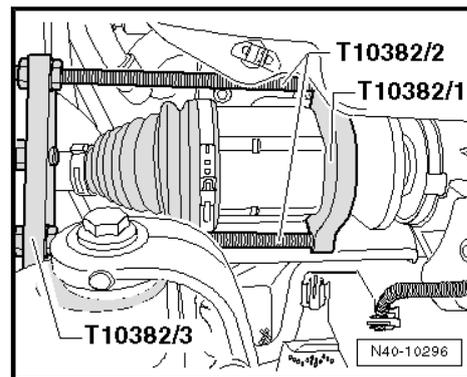
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6.5.2 Right Drive Axle, Bolted Inner Joint, Removing and Installing

Removing



- Loosen the drive axle threaded connection on the wheel side -arrow-. Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151 .
- Remove the wheel. Refer to ⇒ [a1 nd Tires](#), page 411 .
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- If installed, disconnect the vehicle level control system sensor coupling rod from the control arm by removing the nut -4-.



- Remove the drive axle from the vehicle.

Installing

Install in reverse order of removal while noting the following:

- Remove any paint residue and/or corrosion in threads/splines of the outer joint.

AWD Vehicles

- Tap on the front side of the stub shaft using a plastic mallet.

 **Caution**

- ◆ *This ensures that the stub shaft circlip engages in the differential bevel gear correctly.*
- ◆ *This also prevents leaks.*

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Continuation for All Vehicles

- Replace the shaft seal on the transmission. Refer to ⇒ Transmission; Rep. Gr. 39; Seals; Component Location Overview - Seals.
- Install the new circlip into the stub shaft groove on the transmission.
- Lightly lubricate the stub shaft splines with Universal Grease. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Bring the outer and inner splines of the transmission and CV joint into the engagement.
- Grab the drive axle by hand and push it into the CV joint all the way.
- Now push the CV joint with one »jerk« onto the transmission stub shaft.

 **Note**

Never use a hammer or striking tool!

- Make sure the CV joint is seated securely, to do this pull the CV joint against the resistance of the securing ring.



Caution

When checking, only pull on the CV joint piece and not on the drive axle.

- Remove the Tensioning Strap -T10038-.
- Install the outer joint as far as possible into the wheel hub splines.
- Attach the ball joint to the control arm -arrows-.



Note

Make sure the ball joint boot is not damaged or twisted.

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:

- ◆ **Chassis**
- ◆ **Wheel Damping Electronics**
- ◆ **01 - OBD-capable systems**.
- ◆ **14 - Electronic Damping Control Module -J250**
- ◆ **14 - Electronic Damping Control Module, functions**
- ◆ **14 - Control Position, readapting**
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

Tightening Specifications

- ◆ Refer to ⇒ [A6.3 xle Threaded Connection, Loosening and Tightening](#), page 151
- ◆ Refer to ⇒ [-2.1 Front Level Control System Sensor](#), page 402
- ◆ Refer to ⇒ [-2.1 Subframe](#), page 21
- ◆ Refer to ⇒ [-4.1 Lower Control Arm and Ball Joint](#), page 106
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411



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6.6 Drive Axle, Disassembling and Assembling

⇒ [m6.6.1 m Inner Drive Axle with CV Joint, Servicing”, page 181](#)

⇒ [m6.6.2 m Inner CV Joint, Servicing”, page 187](#)

⇒ [A6.6.3 xle with Inner CV Joint, Installed in Transmission, Servicing”, page 194](#)

⇒ [A6.6.4 xle with Triple Roller Joint AAR3300i, Installed in Transmission, Servicing”, page 196](#)

⇒ [A6.6.5 xle with Triple Roller Joint AAR2600i / AAR3300i, Servicing, Mounted on Transmission Stub Shaft”, page 203](#)

⇒ [A6.6.6 xle with CV Joint Attached with Inner Splines, Servicing”, page 211](#)

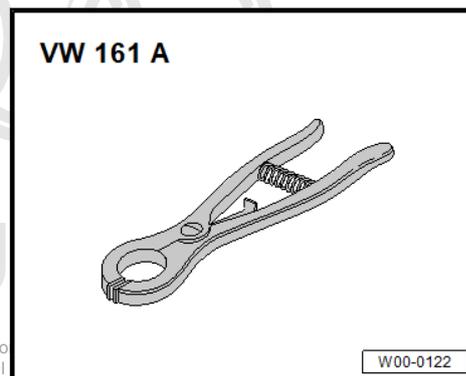
⇒ [A6.6.7 xle with Triple Roller Joint AAR 2600i, Servicing, Bolted”, page 217](#)

⇒ [A6.6.8 xle, Disassembling and Assembling, Tensioning Lock Washer”, page 223](#)

6.6.1 108 mm Inner Drive Axle with CV Joint, Servicing

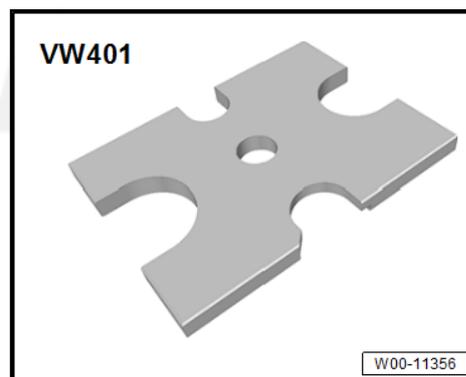
Special tools and workshop equipment required

- ◆ Circlip Pliers -VW161A-



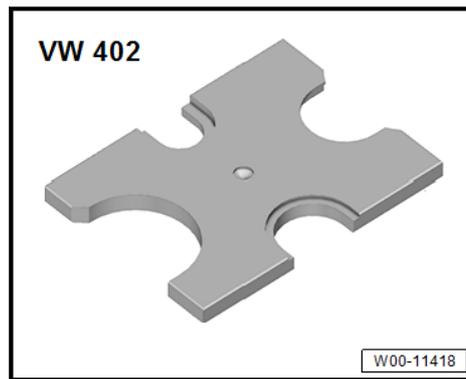
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- ◆ Press Plate -VW401-

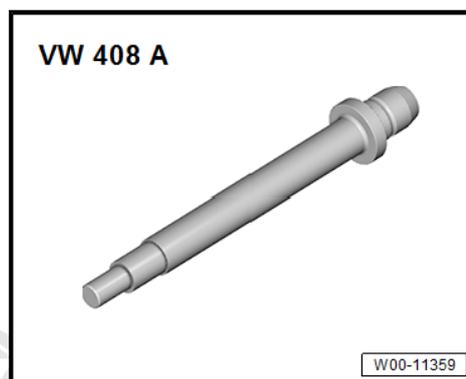




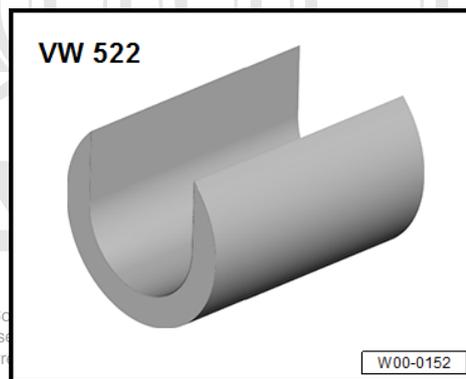
◆ Press Plate -VW402-



◆ Press Piece - Rod -VW408A-



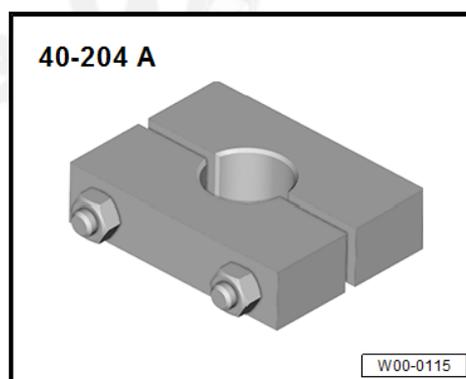
◆ CV Joint Press Sleeve -VW522-



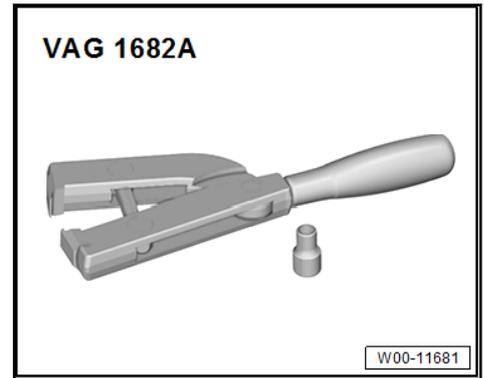
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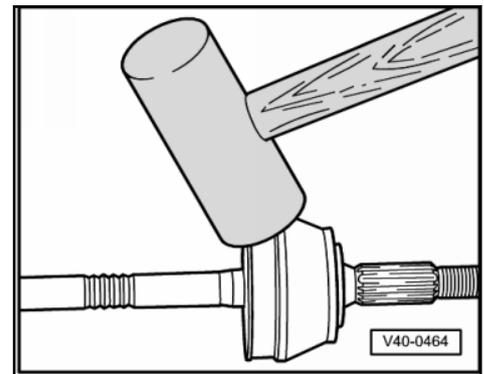
◆ Press Block -40-204A-



◆ Clamping Pliers -VAG1682A-

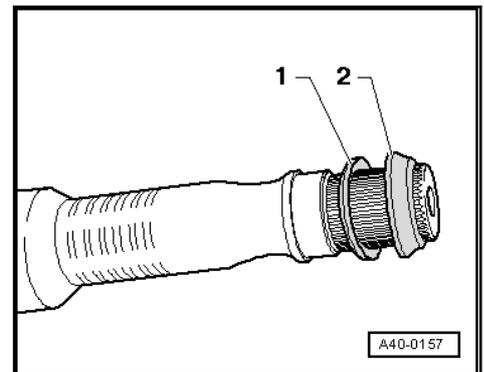


Removing the Outer CV Joint



- Remove the CV joint from the drive axle by hitting it with an alloy hammer.

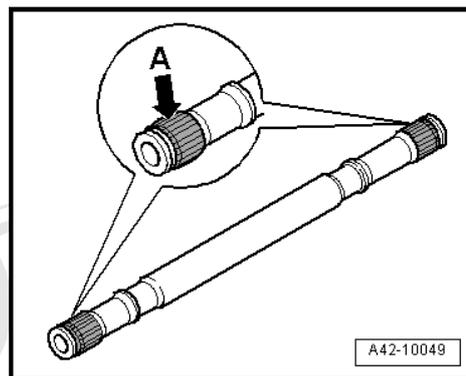
if Installed, Installation Position of Spacer Ring and Plate Spring on Outer Joint.



- 1 - Plate Spring
- 2 - Spacer Ring (Plastic)

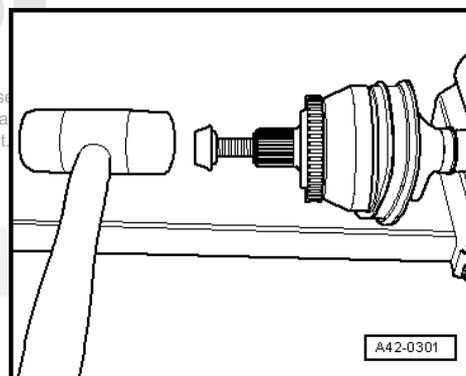
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Outer CV Joint with Bolt, Installing



- Before installing the joint piece, the splines -arrow A- must be lightly coated with the grease used in the joint.
- Install the old bolt in the joint as illustrated.

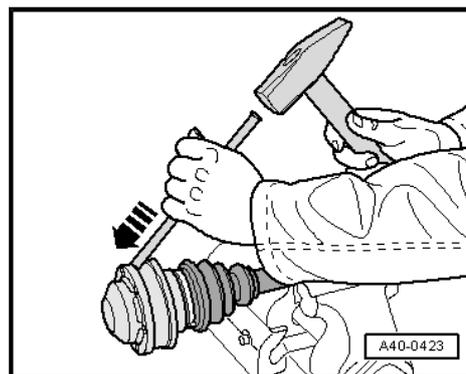
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- Drive the joint onto the shaft with plastic hammer until circlip engages.

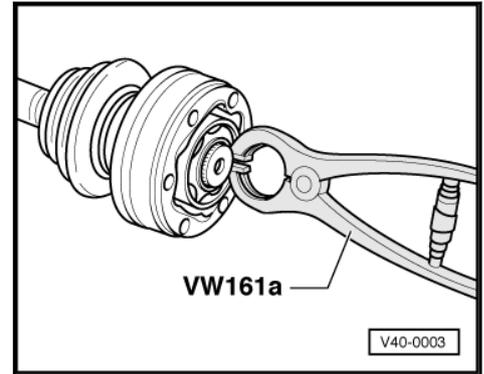
Removing the Inner CV Joint

Removing the Cover

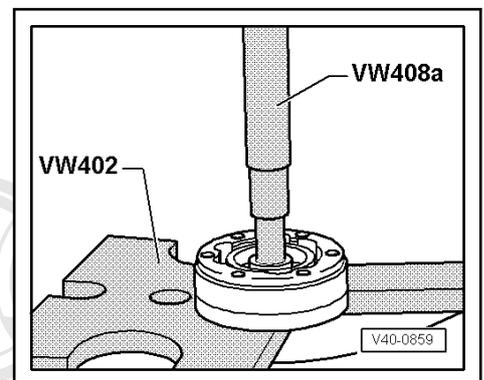


- Drive the cover down using a copper or brass drift.

Circlip, Removing and Installing

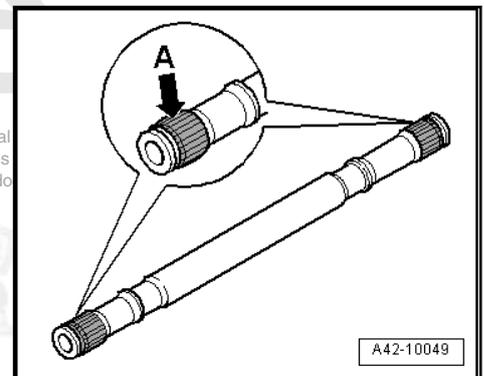


- Drive out CV joint boot with a drift.
- Support the ball hub when pressing off.

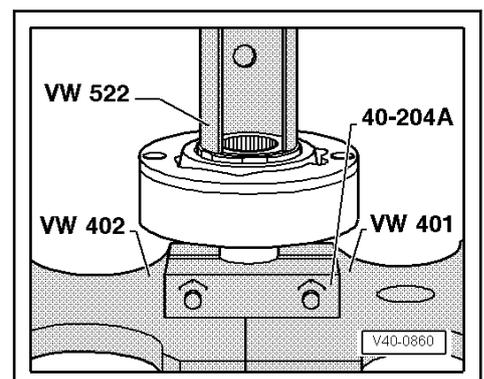


Inner CV Joint, Pressing On

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- Before installing the joint piece, the splines -arrow A- must be lightly coated with the grease used in the joint.
- Press on joint until it stops.

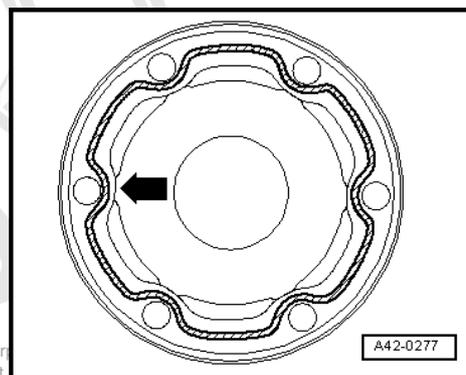


- Install the circlip.

 **Note**

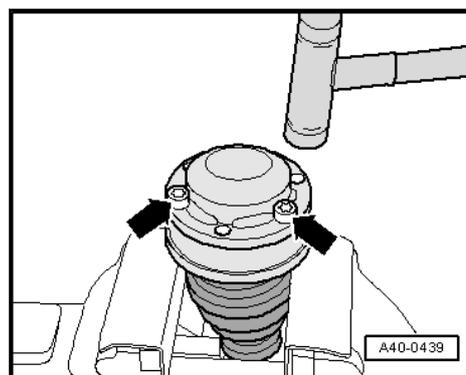
Chamfer on inner diameter of ball hub (splines) must face the contact shoulder on the drive axle.

Coat the Sealing Surface on the Cover with Sealant and then Install It.



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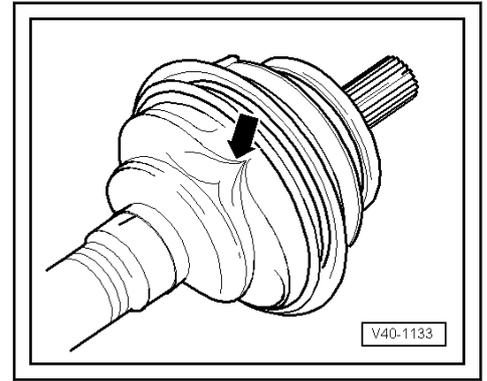
- Apply sealant -hatched area- to the clean cover surface.
- ◆ Sealant bead: apply a continuous bead with a 2 to 3 mm diameter in area of inner holes -arrow-.
- Align the new cover with screws -arrows- to the screw holes.



It must be aligned exactly because it cannot be aligned after installing.

- Drive cover on with a plastic mallet.
- Wipe away any sealant leaking out.

CV Boot, Venting

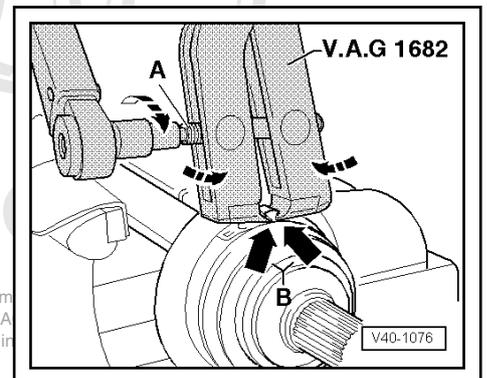


The CV boot is frequently pressed in when placed on the joint housing. This creates a vacuum in the CV boot, which pulls a fold inward when the car is driven -arrow-.

Therefore, note the following:

- Before tensioning the clamping sleeves, balance the pressure by raising the CV boot.

Tension the CV Boots Stainless Steel Clamps.



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- Attach the Clamping Pliers -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tighten the clamp by turning the spindle -A- using a torque wrench (do not tilt the pliers).
- ◆ Tightening specification: 20 Nm

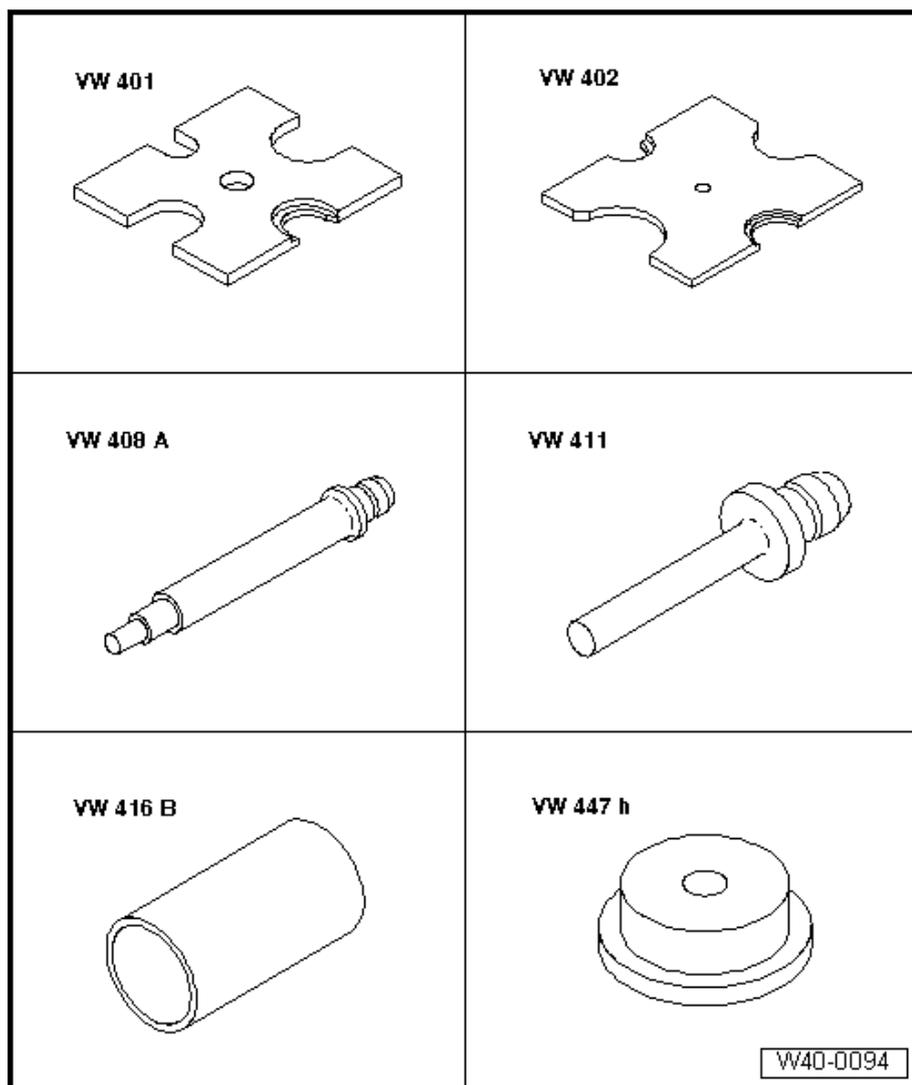
Note

- ◆ *Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.*
- ◆ *If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.*

6.6.2 100 mm Inner CV Joint, Servicing



Special tools and workshop equipment required

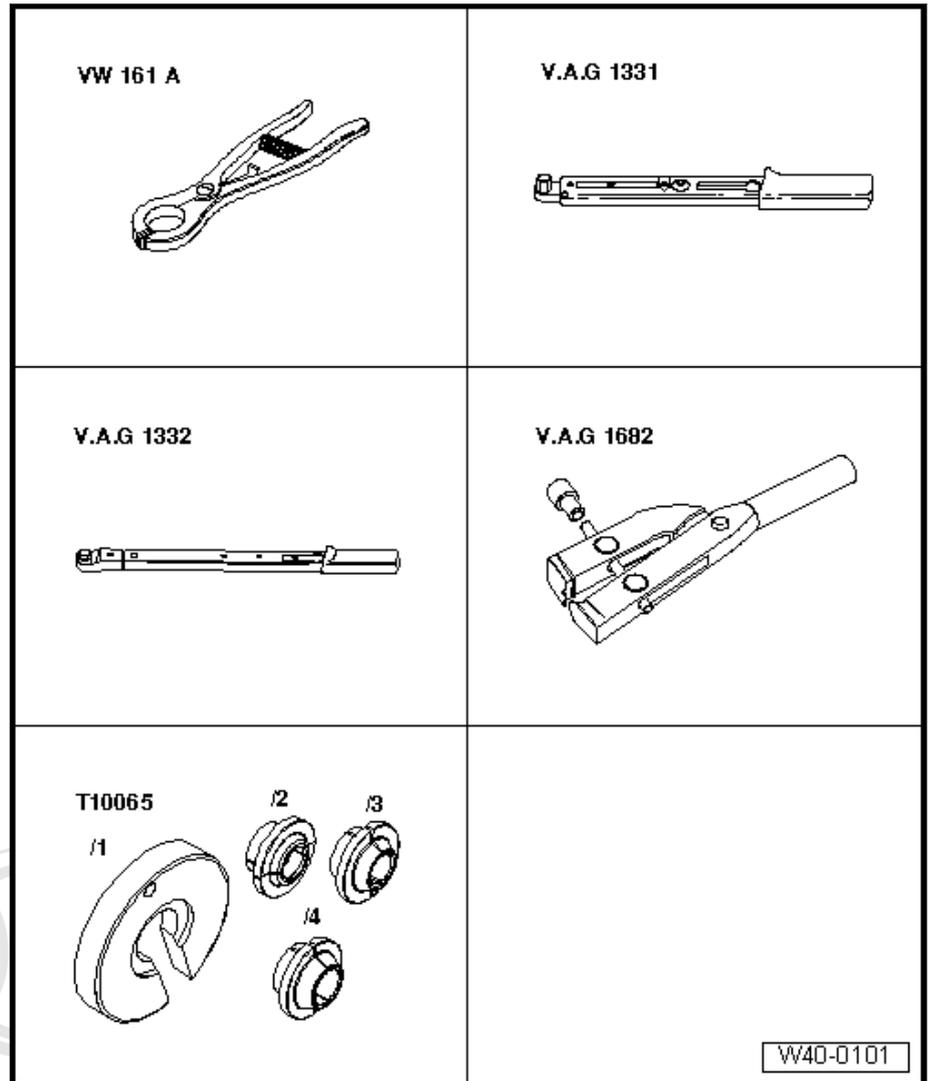


- ◆ Press Plate -VW401-
- ◆ Press Plate -VW402-
- ◆ Press Piece - Rod -VW408A-
- ◆ Press Piece - Rod -VW411-
- ◆ Press Piece - 37mm -VW416B-
- ◆ Press Piece - Multiple Use -VW447H-



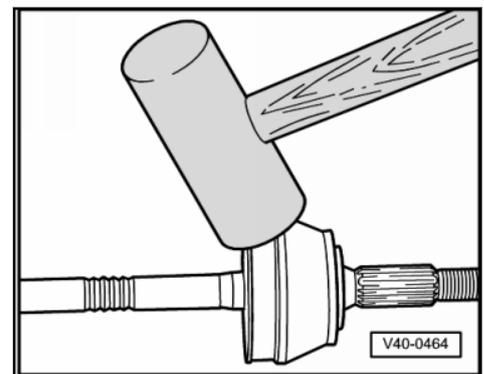
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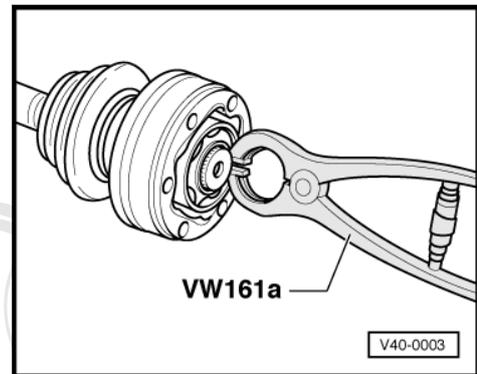
- ◆ Circlip Pliers -VW161A-
- ◆ Torque Wrench, 6-50Nm -VAG1331A-
- ◆ Torque Wrench, 40-200Nm -VAG1332A-
- ◆ Clamping Pliers -VAG1682A-
- ◆ Tripod Joint Tool -T10065-

Removing the Outer CV Joint



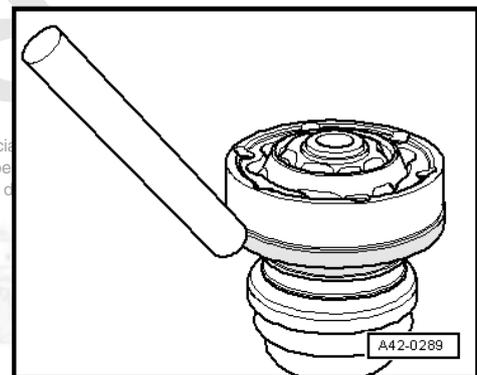
- Remove the CV joint from the drive axle by hitting it with an alloy hammer.

Circlip, Removing and Installing

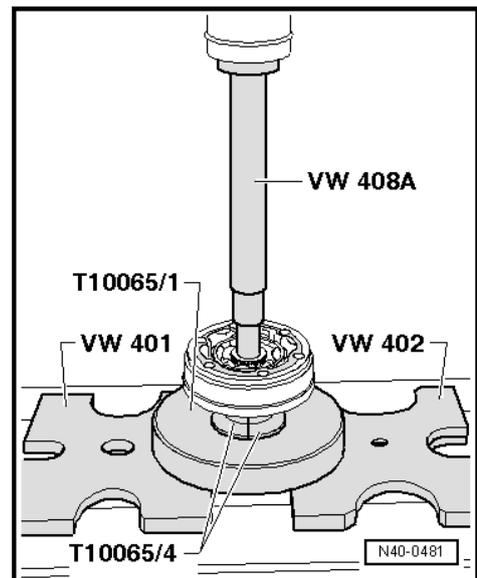


Drive Protective Joint Boot Cap Down using a Brass or Copper Drift

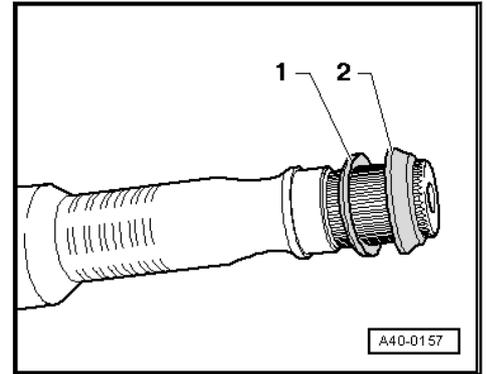
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Inner CV Joint, Removing



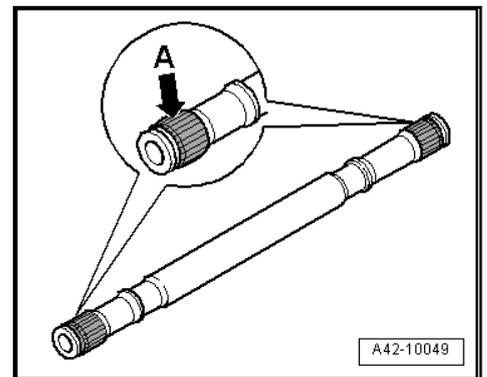
CV Joint, Assembling



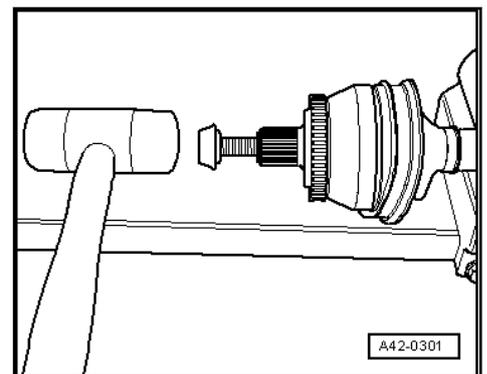
Installed location of spring washer and thrust washer on outer joint

- 1 - Plate Spring
- 2 - Spacer Ring (Plastic)

Outer CV Joint with Bolt, Installing



- Before installing the joint piece, the splines -arrow A- must be lightly coated with the grease used in the joint.
- Install the old bolt in the joint as illustrated.

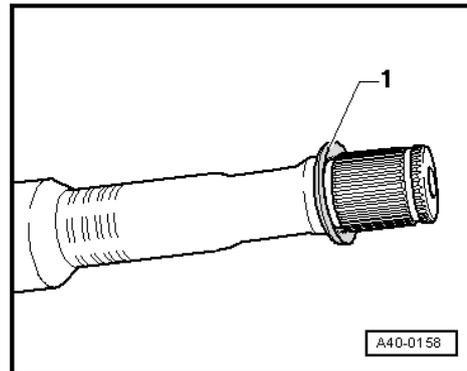


- Drive the joint onto the shaft with plastic hammer until circlip engages.

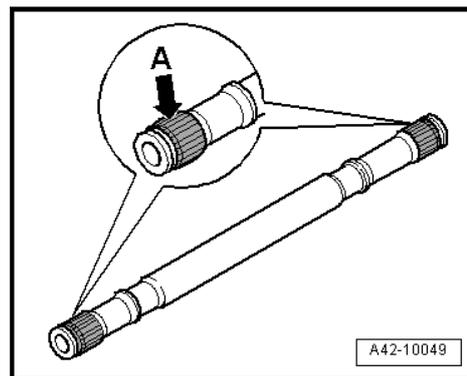
Installation Position of the Plate Spring on Inner Joint

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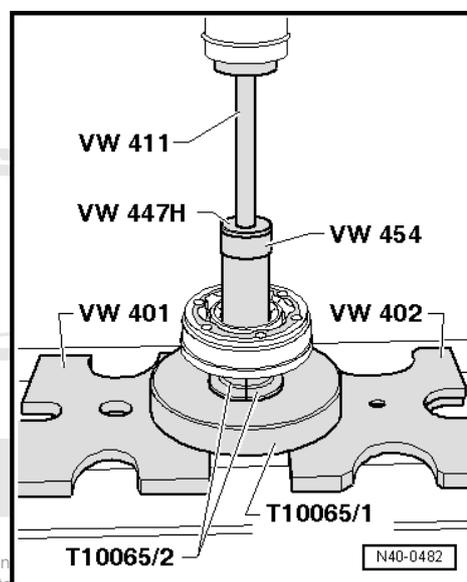




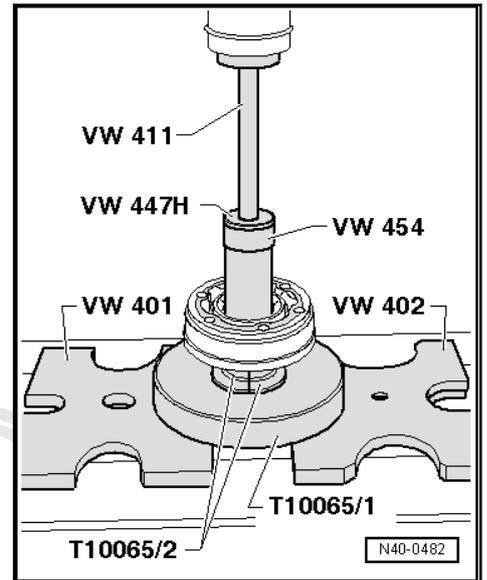
Inner CV Joint, Pressing On



- Before installing the joint piece, the splines -arrow A- must be lightly coated with the grease used in the joint.
- Install the tools as shown.



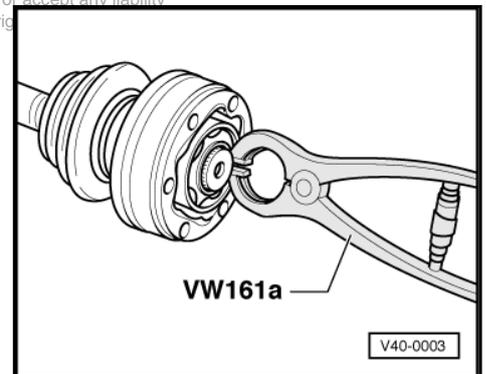
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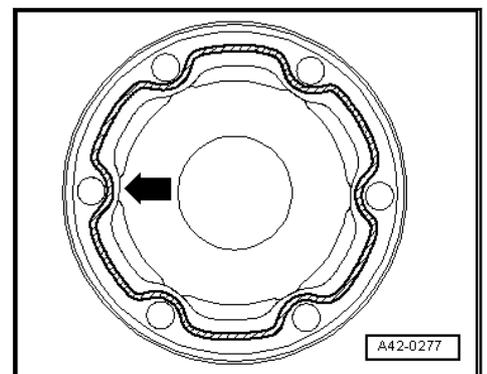
i Note

Chamfer on inner diameter of ball hub (splines) must face the contact shoulder on the drive axle.

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

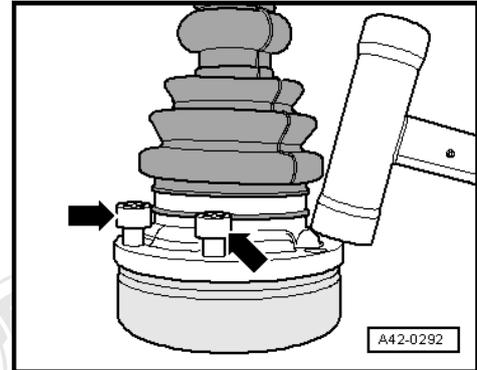


- Apply the sealant -crosshatched area- to the clean surface on the inside of the CV boot cap. Sealant bead: 2 to 3 mm diameter, continuous. Go over the area around the inner holes -arrow-.



- Use sealant. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Slide the CV boot onto drive axle.

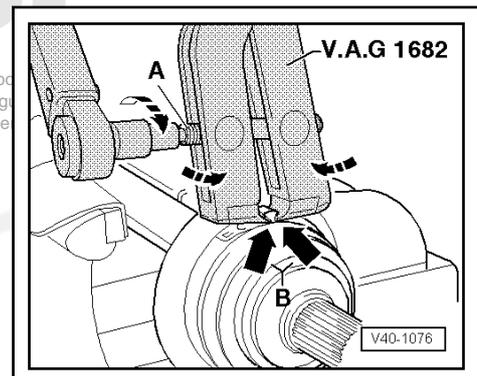
- The drive axle, CV boot and cap contact surfaces must be free of grease.
- Make sure that the sealant bead is not damaged.
- Using screws -arrows-, align the protective boot and cap with the bolt holes.



- It must be aligned exactly because it cannot be aligned after installing.
- Drive off the CV boot with cap using plastic hammer.
- Clear away leaking sealing immediately.

Tension the CV Boots Stainless Steel Clamps.

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- Attach the Clamping Pliers -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tighten the clamp by turning the spindle -A- using a torque wrench (do not tilt the pliers).
- ◆ Tightening specification: 20 Nm

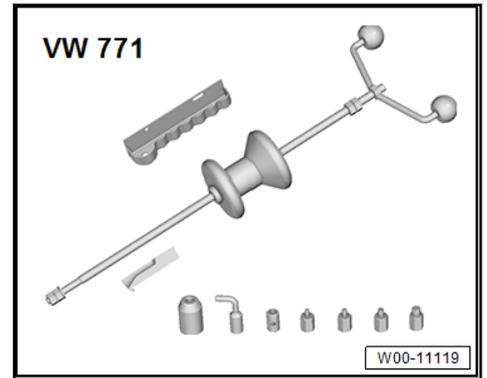


Note

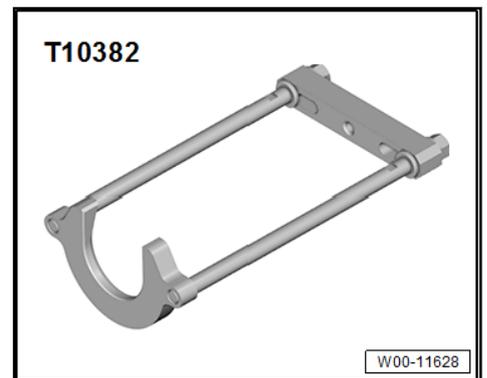
- ◆ *Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.*
- ◆ *If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.*

6.6.3 Drive Axle with Inner CV Joint, Installed in Transmission, Servicing

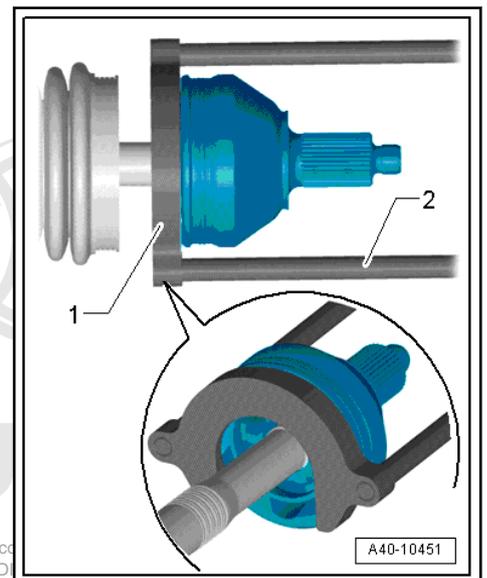
◆ Slide Hammer Set -VW771-



◆ Puller - Drive Axle -T10382-



Remove the Outer CV Joint



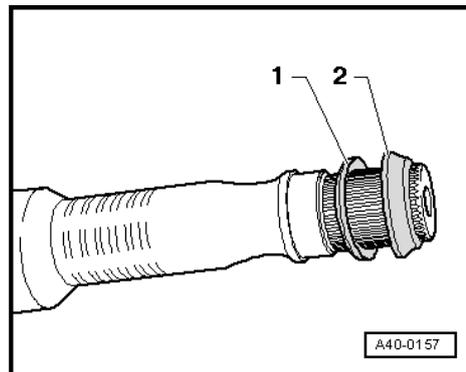
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- Clamp the drive axle in a vise with protective covers.
- Fold back the protective joint boot.
- Align the Puller - Driveshaft -T10382- so that the flat side of the Puller - Driveshaft - Removing Plate -T10382/1- faces the Puller - Driveshaft - Spindles -T10382/2-.
- Attach the Puller - Drive Axle -T10382- to the Slide Hammer Set -VW771-.
- Remove the CV joint from the drive axle using the puller and slide hammer set.

1 - Puller - Drive Axle - Removing Plate -T10382/1-

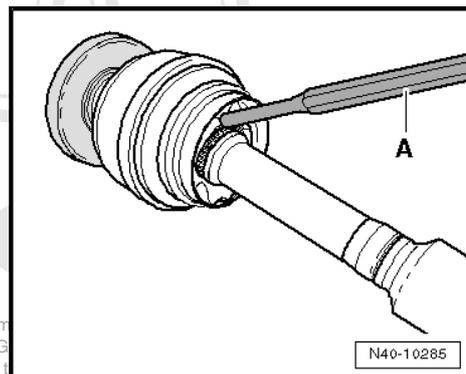
2 - Puller - Drive Axle - Spindles -T10382/2-

Outer CV Joint, Installing



- Pay attention to the installation position for versions with plate spring -1- and thrust ring -2-.
- Install the new circlips.
- Slide the new CV boot onto the drive axle if necessary.
- CV joint onto the shaft with a plastic hammer until the circlip engages.

Inner CV Joint, Removing



- Clamp the drive axle in a vise with jaw protectors.
- Fold back the boot.
- Push the CV joint off of the drive axle using a drift -A-.
- The drift must be precisely positioned on the CV joint ball hub.

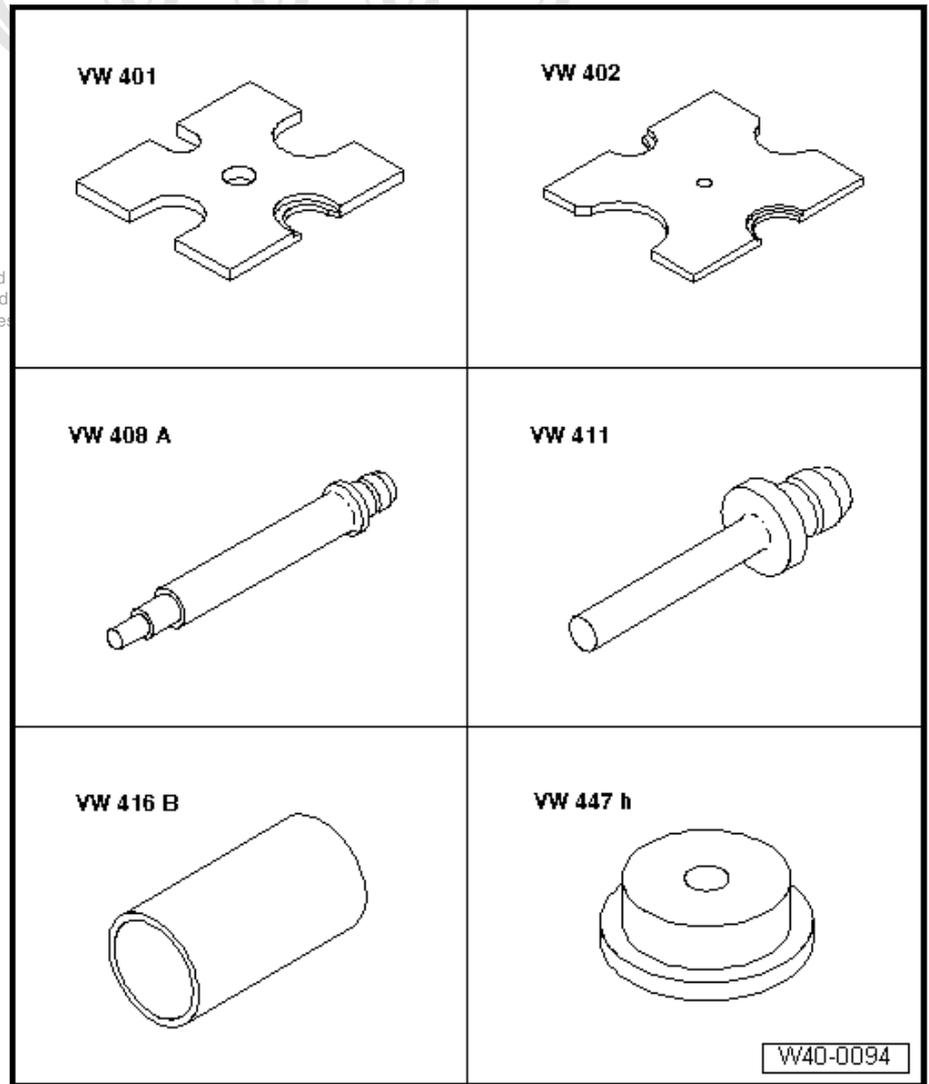
Installing Inner CV Joint

- Use a plastic mallet to install it on the shaft until the circlip engages.

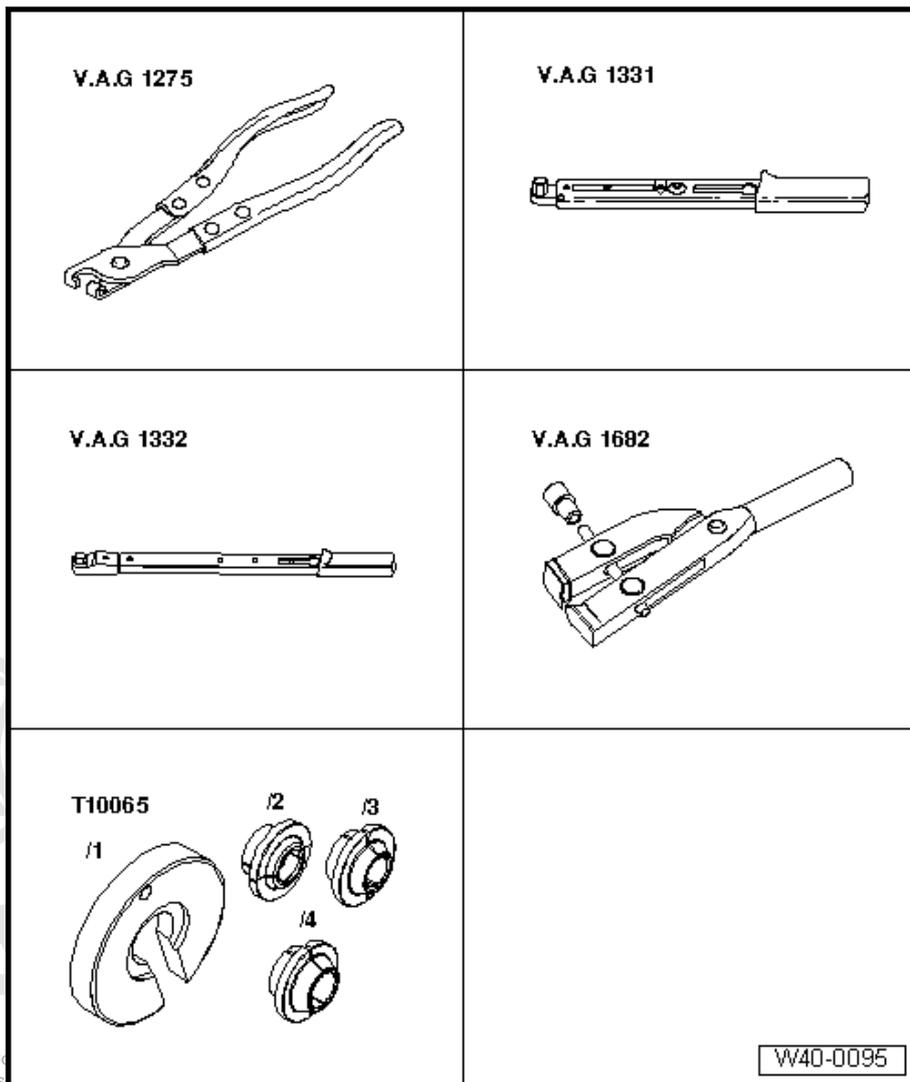
6.6.4 Drive Axle with Triple Roller Joint AAR3300i, Installed in Transmission, Servicing

Special tools and workshop equipment required

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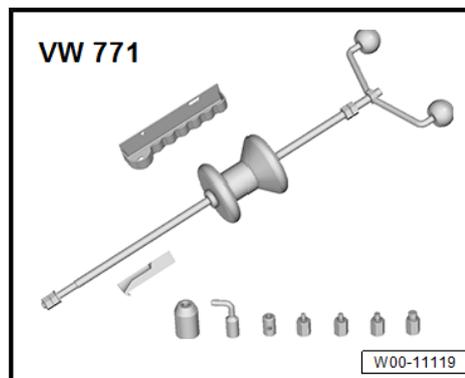


- ◆ Press Plate -VW401-
- ◆ Press Plate -VW402-
- ◆ Press Piece - Rod -VW408A-
- ◆ Press Piece - Rod -VW411-
- ◆ Press Piece - 37mm -VW416B-
- ◆ Press Piece - Multiple Use -VW447H-



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- ◆ Hose Clip Pliers -VAG1275A-
- ◆ Torque Wrench, 6-50Nm -VAG1331A-
- ◆ Torque Wrench, 40-200Nm -VAG1332A-
- ◆ Clamping Pliers -VAG1682A-
- ◆ Tripod Joint Tool -T10065-
- ◆ Slide Hammer Set -VW771-



◆ Puller - Drive Axle -T10382-

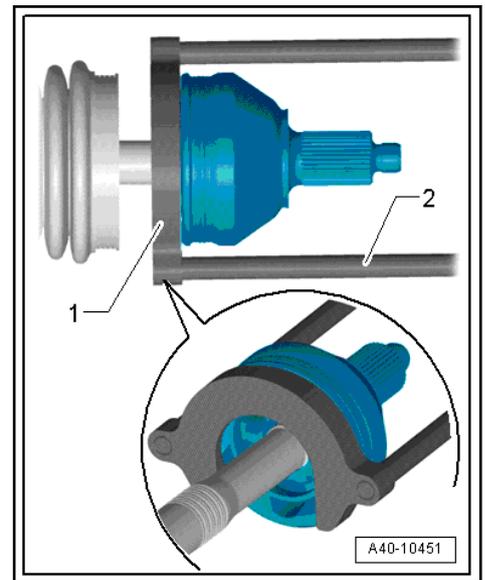
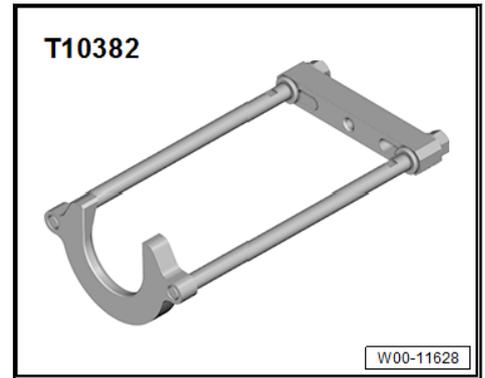
Outer CV Joint, Removing



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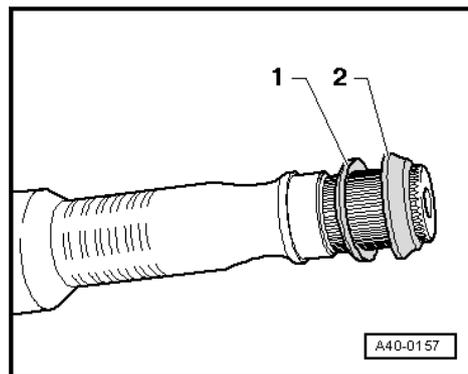


- Clamp the drive axle in a vise with jaw protectors.
- Fold back the boot.
- Align the Puller - Driveshaft -T10382- so that the flat side of the Puller - Driveshaft - Removing Plate -T10382/1- faces the Puller - Driveshaft - Spindles -T10382/2-.
- Attach the Puller - Drive Axle -T10382- to the Slide Hammer Set -VW771-.
- Remove the CV joint from the drive axle using the Puller - Driveshaft -T10382- and Slide Hammer Set -VW771-.

1 - Puller - Drive Axle - Removing Plate -T10382/1-

2 - Puller - Drive Axle - Spindles -T10382/2-

Outer CV Joint, Installing



If installed, installation position of the plate springs and spacer ring on outer joint

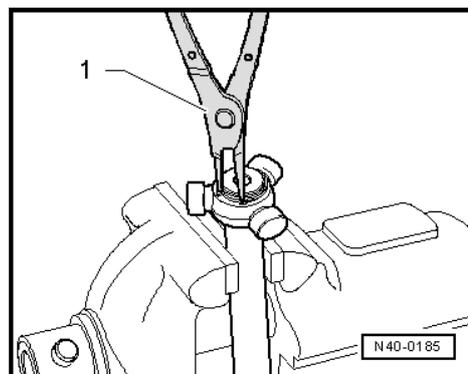
1 - Plate Spring

2 - Spacer Ring (Plastic)

- Install the new circlips.
- Slide the new CV boot onto the drive axle if necessary.
- Use a plastic mallet to install it on the shaft until the circlip engages.

Disassembling

- Open both clamps at the inner joint and slide back the CV boot.
- Remove the joint from the drive axle.
- Remove the circlip.



1 - Pliers (Commercially Available)

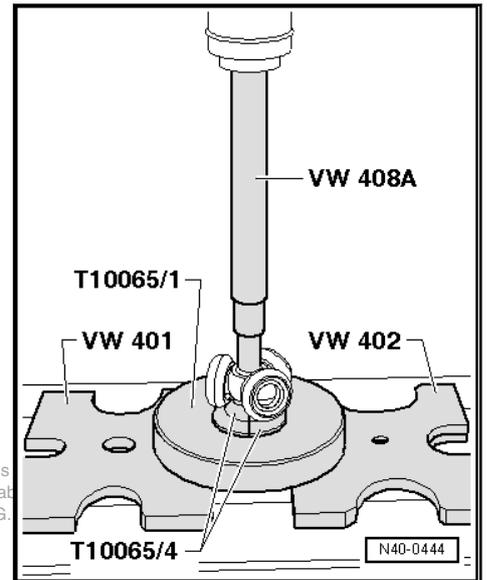
- Insert the drive axle into the press.
- Press the triple roller star off the drive axle.

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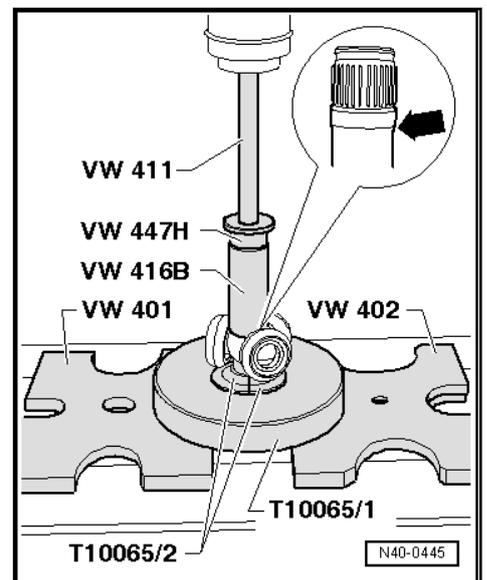


- Pull off CV boot from shaft.
- Clean the shaft, joint and groove for the seal.

Assembling

- Slide the small clamp for the CV boot onto the shaft.
- Slide the CV boot onto the shaft.
- Slide the joint piece onto the shaft.

Triple Roller Star, Conical Drive Axle, Installing:



The chamfer on triple roller star faces toward shaft, this is used as an assembly aid.

- Install the triple roller star all the way onto the shaft.
- Make sure the pressure does not increase above 3.0 t.
- If necessary, coat the splines on the drive axle and triple roller star with Lubricant -G 052 142 A2-.
- Insert the circlip while making sure it is seated correctly.

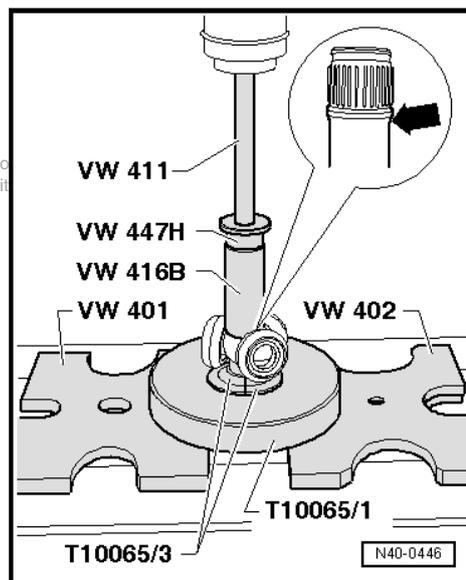


- Press half of the drive axle grease from the repair set into the triple roller joint.
- Slide the joint piece over rollers and secure.
- Press the other half of the drive axle grease from the repair set into the rear side of the triple roller joint.
- Install the CV boot.

Triple Roller Star, Cylinder Drive Axle Version, Installing:

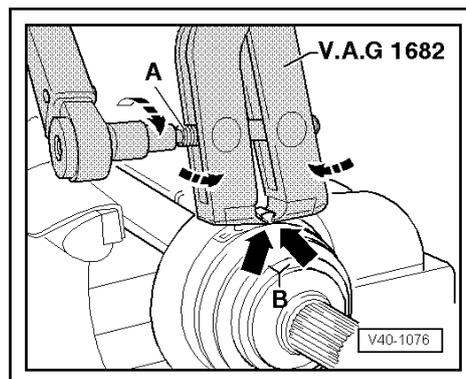


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- Install the triple roller star all the way onto the shaft.
- Make sure the pressure does not increase above 3.0 t.
- If necessary, coat the splines on the drive axle and triple roller star with Lubricant -G 052 142 A2-.
- Insert the circlip while making sure it is seated correctly.
- Press half of the drive axle grease from the repair set into the triple roller joint.
- Slide the joint piece over rollers and secure.
- Press the other half of the drive axle grease from the repair kit into the rear side of the triple roller joint.
- Install the CV boot.
- Slide the CV boot onto the joint and mount the clamp.

Tightening Clamp on the Outer Joint

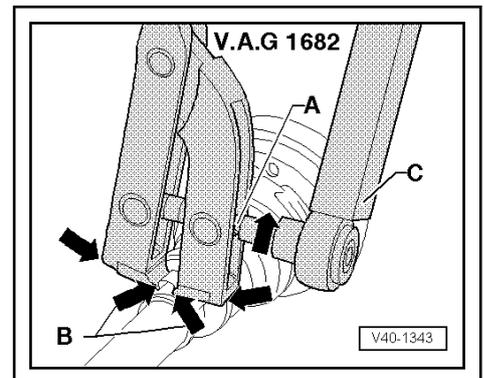


- Attach the Clamping Pliers -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tighten the clamp by turning the spindle -A- using a torque wrench (do not tilt the pliers).
- ◆ Tightening specification: 25 Nm.

 Note

- ◆ *A stainless steel clamp must be used due to hardness of CV boot material (compared to rubber). This clamp can only be tensioned using Clamping Pliers -VAG1682A-.*
- ◆ *Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.*
- ◆ *If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.*

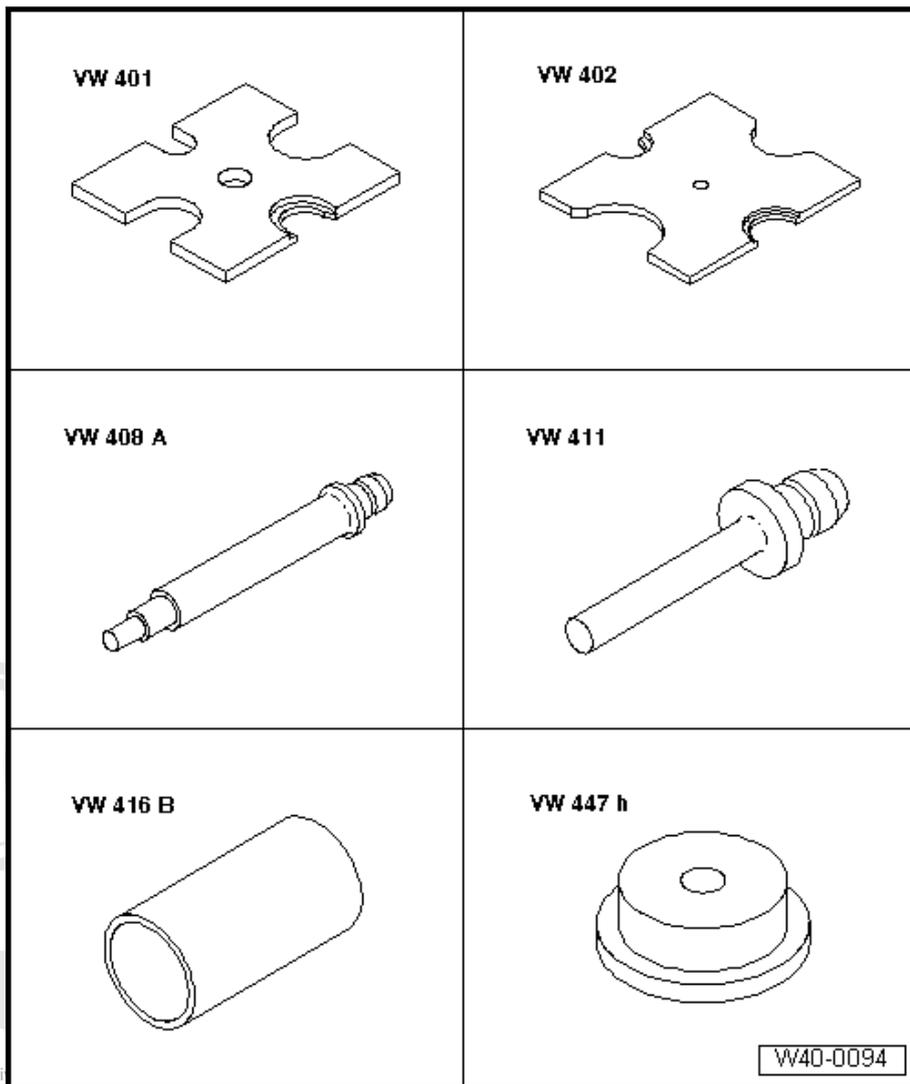
Tension the Clamp on the Small Diameter



6.6.5 Drive Axle with Triple Roller Joint AAR2600i / AAR3300i, Servicing, Mounted on Transmission Stub Shaft



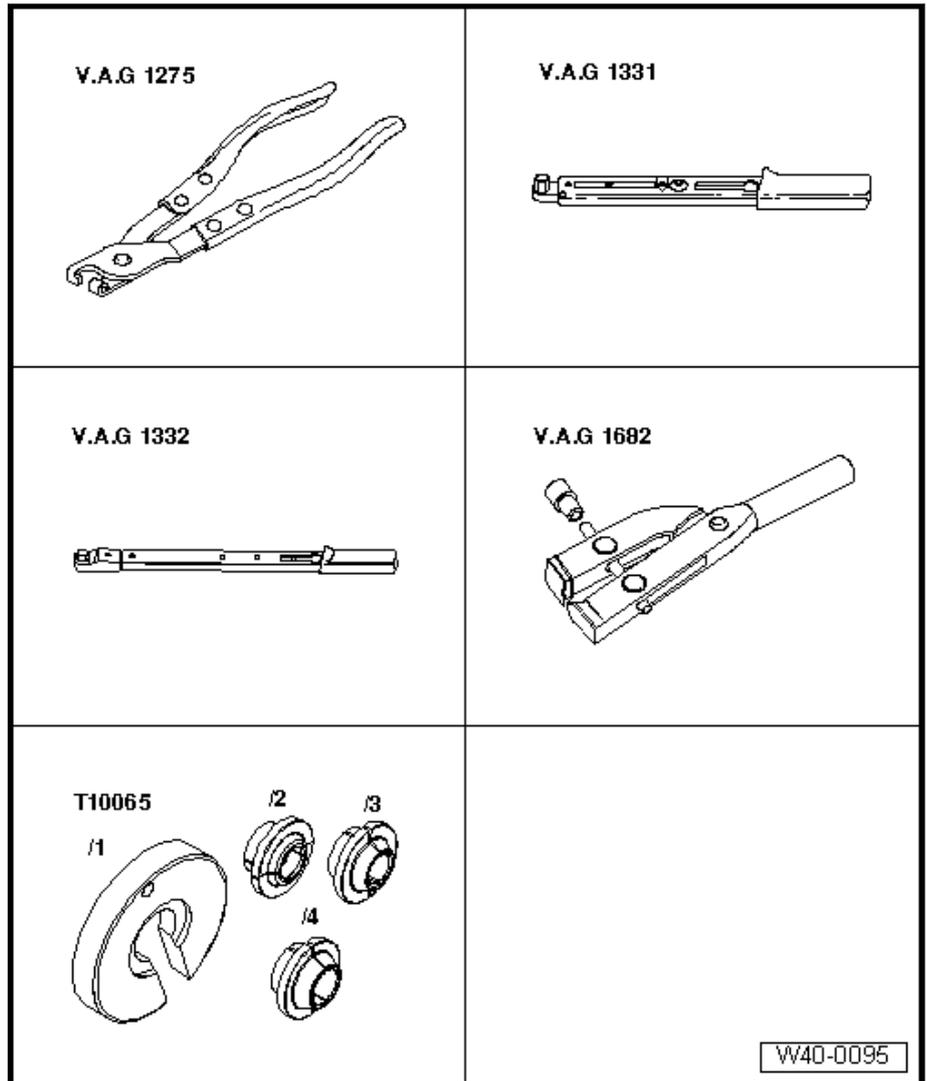
Special tools and workshop equipment required



W40-0094

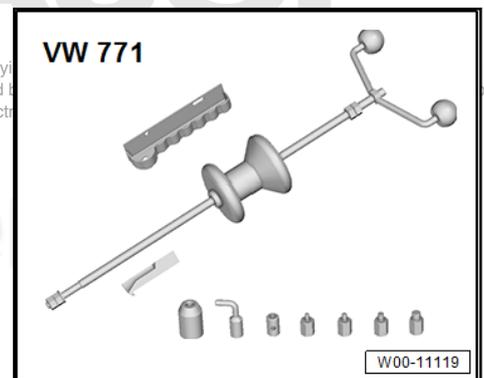
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- ◆ Press Plate -VW401-
- ◆ Press Plate -VW402-
- ◆ Press Piece - Rod -VW408A-
- ◆ Press Piece - Rod -VW411-
- ◆ Press Piece - 37mm -VW416B-
- ◆ Press Piece - Multiple Use -VW447H-



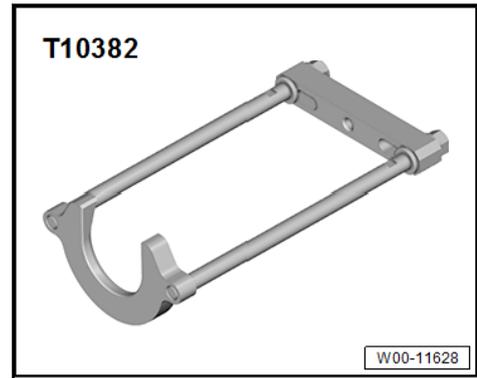
- ◆ Hose Clip Pliers -VAG1275A-
- ◆ Torque Wrench, 6-50Nm -VAG1331A-
- ◆ Torque Wrench, 40-200Nm -VAG1332A-
- ◆ Clamping Pliers -VAG1682A-
- ◆ Tripod Joint Tool -T10065-
- ◆ Slide Hammer Set -VW771-

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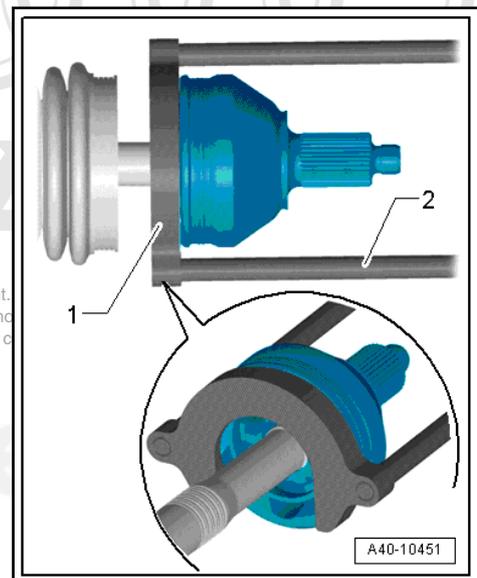
◆ Puller - Drive Axle -T10382-



◆ Three-Arm Puller -VAS251205- (previously Kukko 45-2)



Outer CV Joint, Removing



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- Clamp the drive axle in a vise with jaw protectors.
- Fold back the boot.
- Align the Puller - Driveshaft -T10382- so that the flat side of the Puller - Driveshaft - Removing Plate -T10382/1- faces the Puller - Driveshaft - Spindles -T10382/2-.
- Attach the Puller - Drive Axle -T10382- to the Slide Hammer Set -VW771-.
- Remove the CV joint from the drive axle using the Puller - Driveshaft -T10382- and Slide Hammer Set -VW771-.

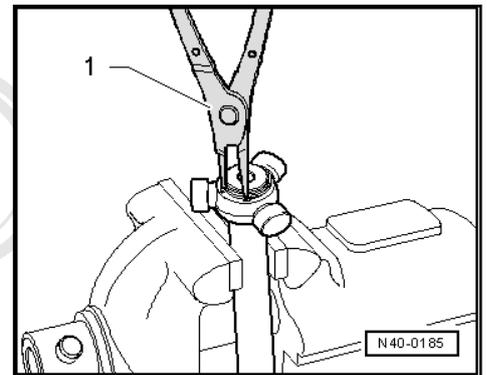
1 - Puller - Drive Axle - Removing Plate -T10382/1-

2 - Puller - Drive Axle - Spindles -T10382/2-

Outer CV Joint, Installing

- Install the new circlips.
- Slide the new CV boot onto the drive axle if necessary.
- Use a plastic mallet to install it on the shaft until the circlip engages.

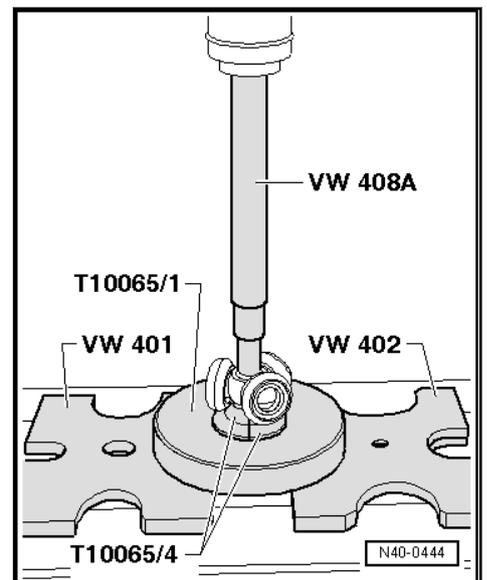
Disassembling



- Open the clamp on the inner joint and slide protective boot back from adapter.
- Remove the joint from the drive axle.
- Remove the circlip.

1 - Pliers (Commercially Available)

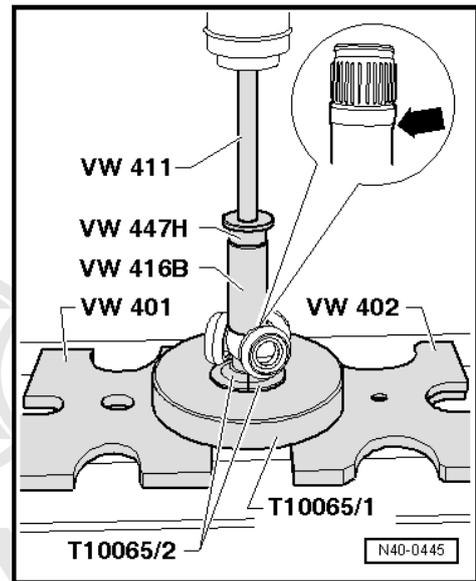
- Insert the drive axle into the press.
- Press the triple roller star off the drive axle.



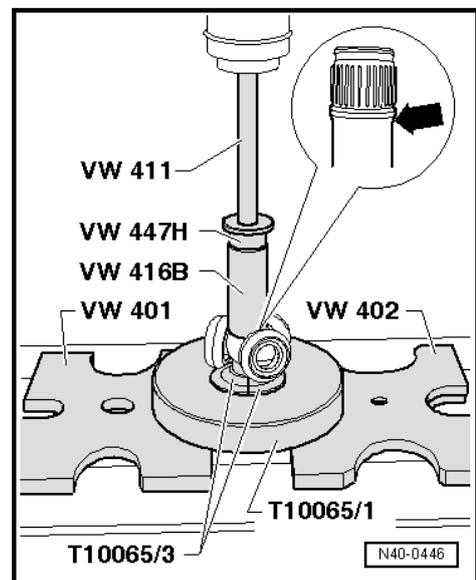
- Pull off CV boot from shaft.
- Clean the shaft, joint and groove for the seal.

Assembling

- Slide the small clamp for the CV boot onto the shaft.
- Slide the CV boot onto the shaft.
- Slide the joint piece onto the shaft.

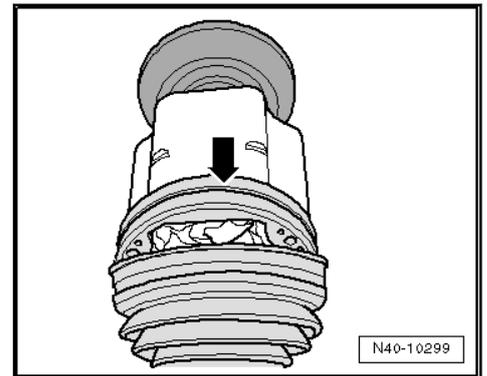
Triple Roller Star, Conical Drive Axle, Installing:

- The chamfer on triple roller star faces toward shaft, this is used as an assembly aid.
- Install the triple roller star all the way onto the shaft.
- Make sure the pressure does not increase above 3.0 t.
- If necessary, coat the splines on the drive axle and triple roller star with Lubricant -G 052 142 A2-.
- Insert the circlip while making sure it is seated correctly.
- Press half of the drive axle grease from the repair set into the triple roller joint.
- Slide the joint piece over rollers and secure.
- Press the other half of the drive axle grease from the repair kit into the rear side of the triple roller joint.
- Install the CV boot.

Triple Roller Star, Cylinder Drive Axle Version, Installing:

- Install the triple roller star all the way onto the shaft.

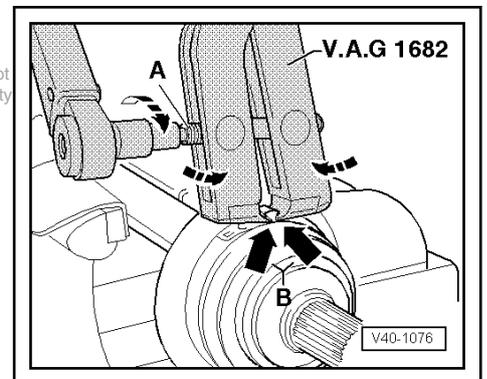
- Make sure the pressure does not increase above 3.0 t.
- If necessary, coat the splines on the drive axle and triple roller star with Lubricant -G 052 142 A2-.
- Insert the circlip while making sure it is seated correctly.
- Press half of the drive axle grease from the repair set into the triple roller joint.
- Slide the joint piece over rollers and secure.
- Press the other half of the drive axle grease from the repair kit into the rear side of the triple roller joint.
- Slide the CV boot onto the adapter and ensure the boot engages correctly in the groove on the adapter -arrow-.



- Mount and tension the clamp until a proper seal is guaranteed.

Tightening Clamp on the Outer Joint

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- Attach the Clamping Pliers -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tension the clamp by turning spindle with a torque wrench (without tilting the pliers).
- ◆ Tightening specification: 25 Nm.

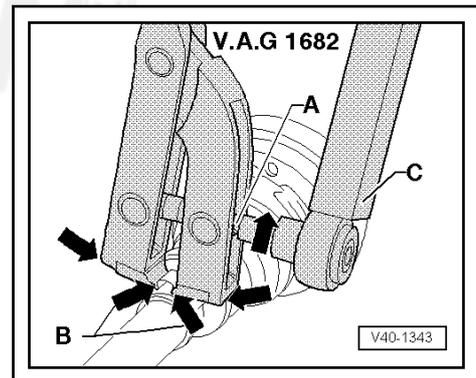


Note

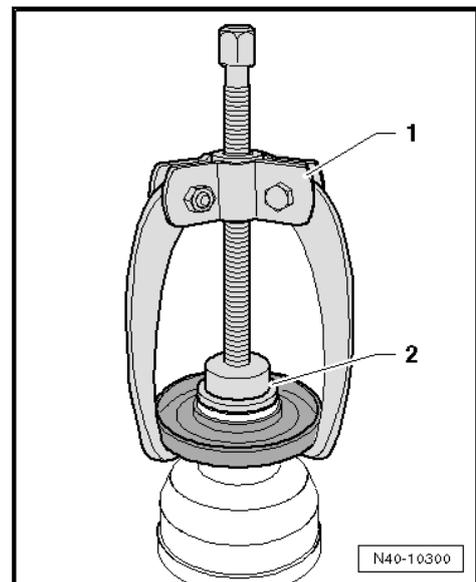
- ◆ A stainless steel clamp must be used due to hardness of CV boot material (compared to rubber). This clamp can only be tensioned using Clamping Pliers -VAG1682A-.
- ◆ Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.
- ◆ If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.

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Tension the Clamp on the Small Diameter



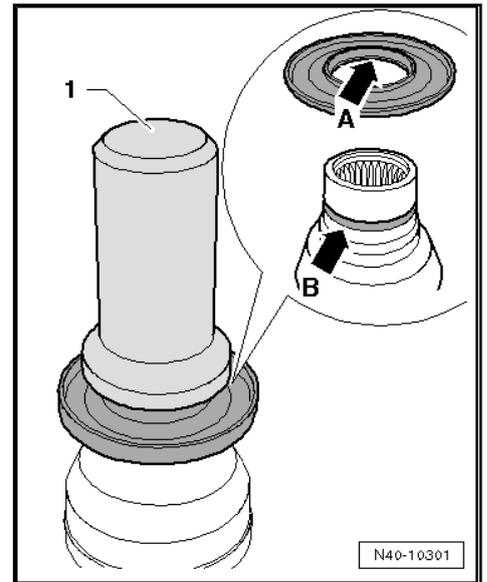
Removing the Cap from the Triple Roller Joint



1 - Three-Arm Puller -VAS251205-

2 - Press Piece - Multiple Use -VW447H-

Mounting the Cap Onto the Triple Roller Joint



1 - Seal Installer - Bevel Box -T10243-

- Mount the cap far enough onto the joint until the ridge -arrow A- fits into the groove -arrow B-.

6.6.6 Drive Axle with CV Joint Attached with Inner Splines, Servicing

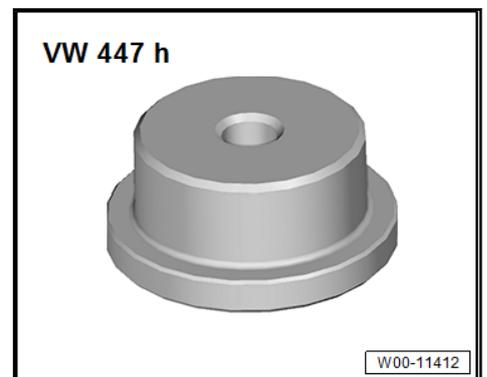
Special tools and workshop equipment required

- ◆ Press Piece - Multiple Use -VW447H-

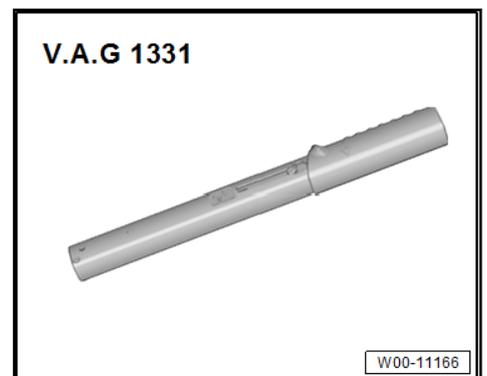


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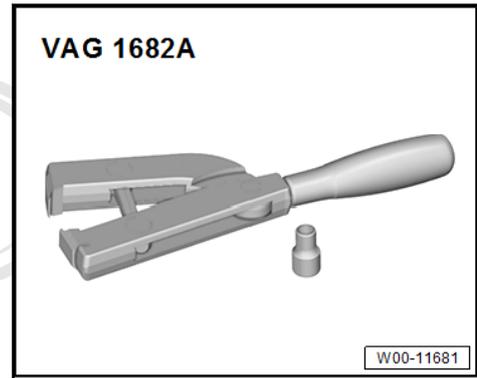
- ◆ Torque Wrench, 6-50Nm -VAG1331A-



◆ Clamping Pliers -VAG1682A-



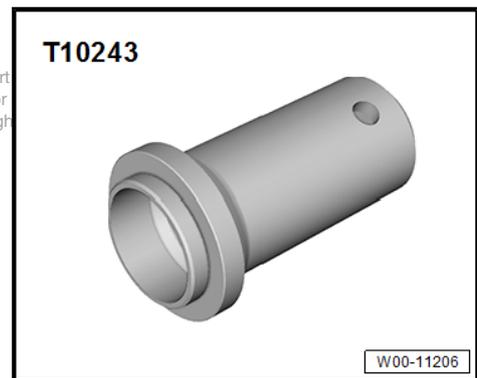
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◆ Seal Installer - Bevel Box -T10243-

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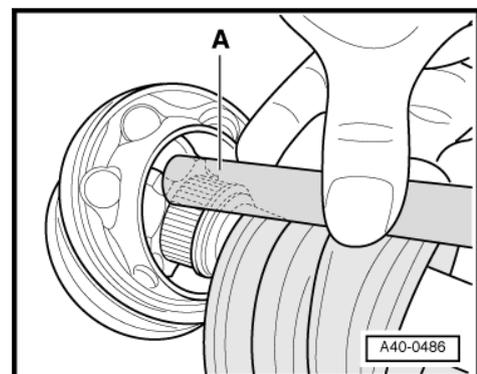


◆ Three-Arm Puller -VAS251205- (previously Kukko 45-2)



◆ Copper or brass drift, commercially available

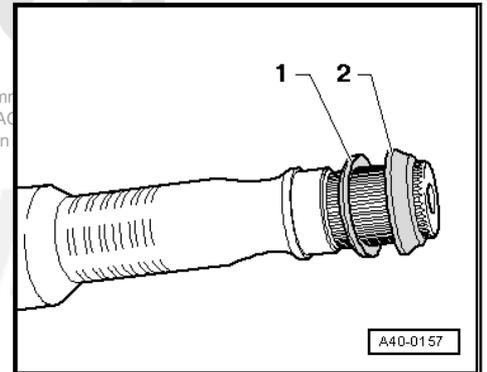
Outer CV Joint, Removing



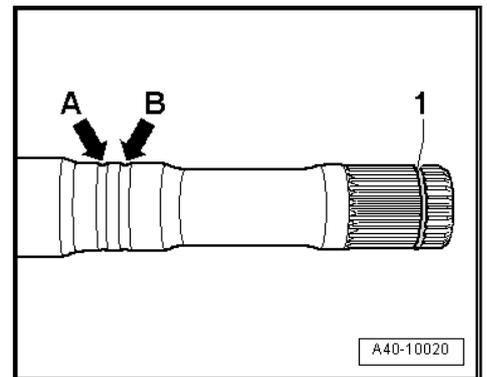
- Clamp the drive axle in a vise with jaw protectors.
- Open both clamps and remove the CV boot from the outer joint.

- Strike a copper or brass drift -A- on CV joint inner race with a hammer.
- Remove joint and CV boot.
- If installed, remove the spring washer -1- and spacer ring -2-.

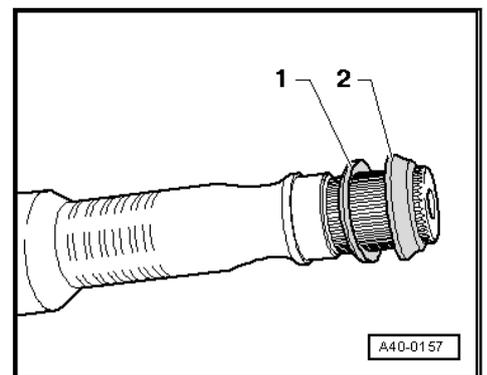
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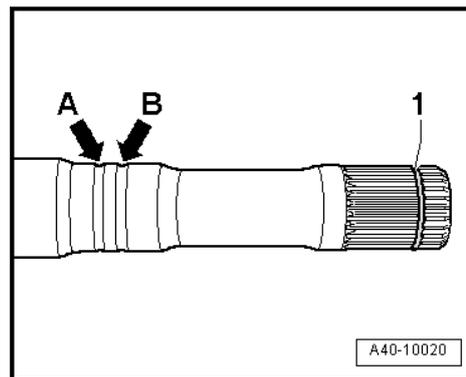
Installing the Outer Joint



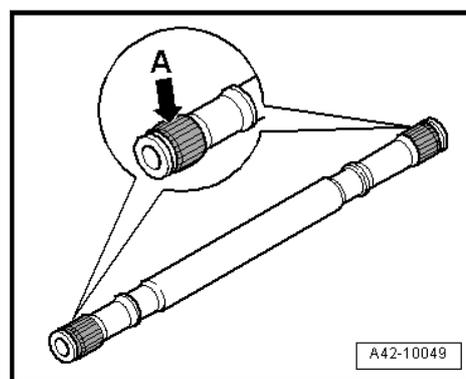
- The CV boot and the drive axle must be free of grease.
- Always replace the circlip -1-.
- If equipped, install the spring washer -1- and spacer ring -2- as shown.



- Slide on the small clamp with the CV boot and position the CV boot on the drive axle.
- Position the CV boot in the outer groove -arrow B-.



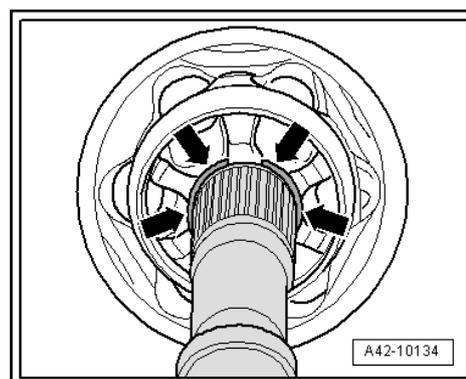
- Inner groove -arrow A- must remain visible “identification groove” (for correct installation of joint protective boot).
- Add approximately 70 % of the tube of grease to the inner joint.
- Before installing the joint piece, the splines -arrow A- must be lightly coated with the grease used in the joint.



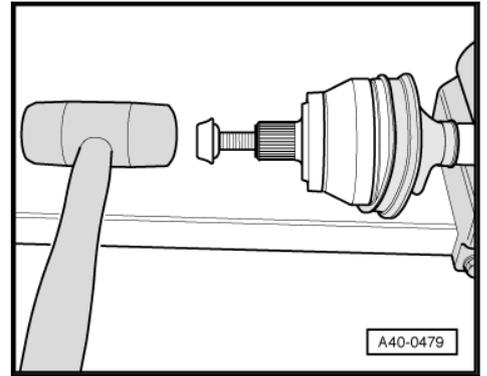
- Slide on the CV joint up to the circlip.



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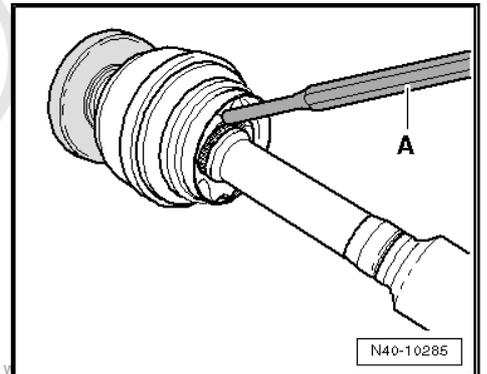


- Align sealing ring at center with opening upward -see arrows-.
- Install the old drive axle screw into joint as shown.



- Drive the joint onto drive axle with plastic hammer until circlip engages.
- Add the rest of the grease into the joint on the boot side.
- Slide the CV boot onto the joint.
- Bleed the CV boot.
- Make sure the CV boot is seated on the joint correctly.
- Protective joint boot must fit in the groove and on joint contour.
- Tension the clamps on the outer joint. Refer to ⇒ [Fig. "Tension the CV Boots Stainless Steel Clamps."](#), page 215 .

Removing the Inner CV Joint

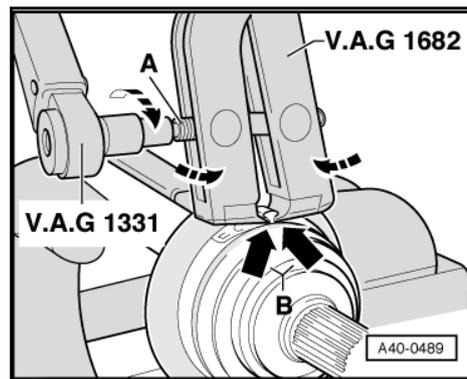


- Clamp the drive axle in a vise with jaw protectors.
- Fold back the boot.
- Drive out the CV joint from the drive axle using a drift -A-.
- The drift must be installed exactly on the CV joint ball hub.

Installing the Inner CV Joint

- Use a plastic mallet to install it on the shaft until the circlip engages.

Tension the CV Boots Stainless Steel Clamps.



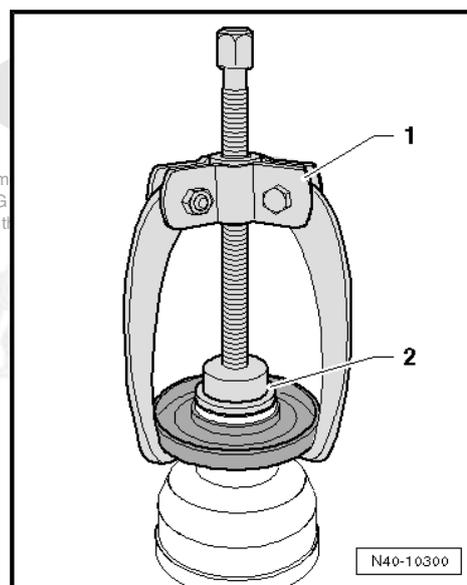
- Attach the Clamping Pliers -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tighten the clamp by turning the spindle -A- using a torque wrench (do not tilt the pliers).
- ◆ Tightening specification: 25 Nm.

i Note

- ◆ A stainless steel clamp must be used due to hardness of CV boot material (compared to rubber). This clamp can only be tensioned using Clamping Pliers -VAG1682A-.
- ◆ Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.
- ◆ If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.

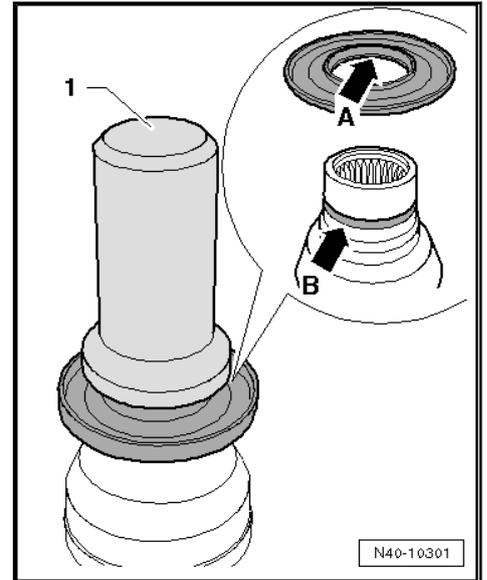
Removing the Protective Cap from the CV Joint

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- 1 - Three-Arm Puller -VAS251205-
- 2 - Press Piece - Multiple Use -VW447H-

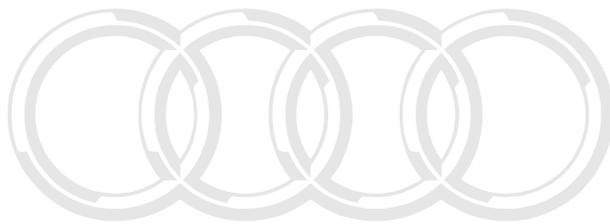
Mounting the Protective Cap onto the CV Joint



1 - Seal Installer - Bevel Box -T10243-

- Mount the cap far enough onto the joint until the ridge
-arrow A- fits into the groove -arrow B-.

6.6.7 Drive Axle with Triple Roller Joint AAR 2600i, Servicing, Bolted



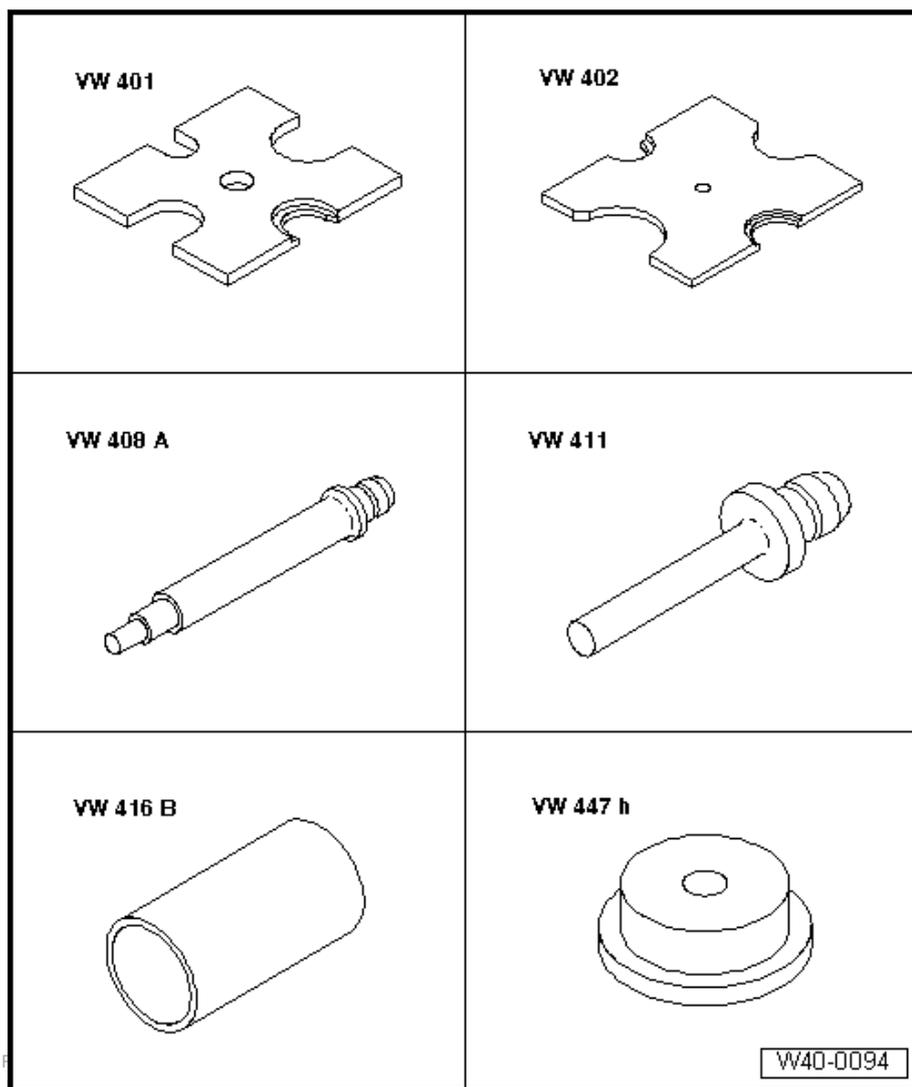
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Special tools and workshop equipment required

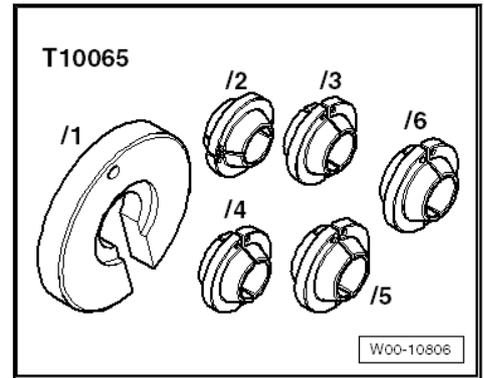


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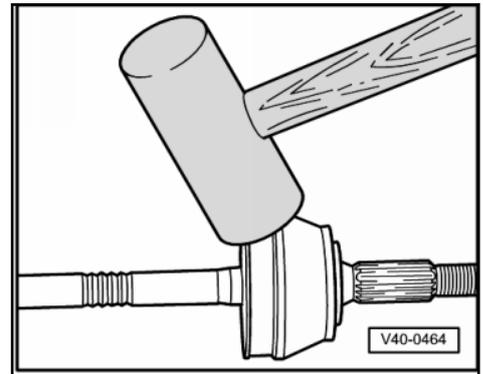
- ◆ Press Plate -VW401-
- ◆ Press Plate -VW402-
- ◆ Press Piece - Rod -VW408A-
- ◆ Press Piece - Rod -VW411-
- ◆ Press Piece - 37mm -VW416B-
- ◆ Press Piece - Multiple Use -VW447H-



◆ Tripod Joint Tool -T10065-

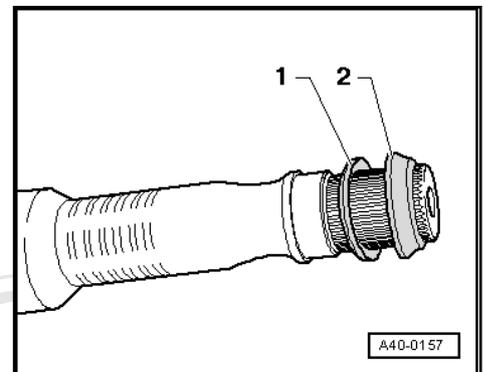


Removing the Outer CV Joint

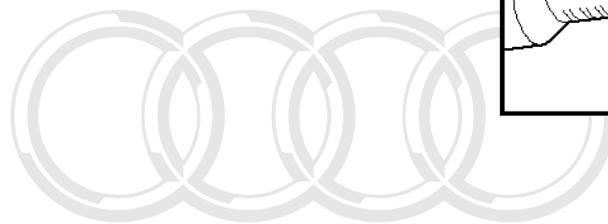


- Remove the CV joint from the drive axle by hitting it with an alloy hammer.

Location of Spacer Ring and Plate Spring



- 1 - Plate Spring
- 2 - Spacer Ring (Plastic)

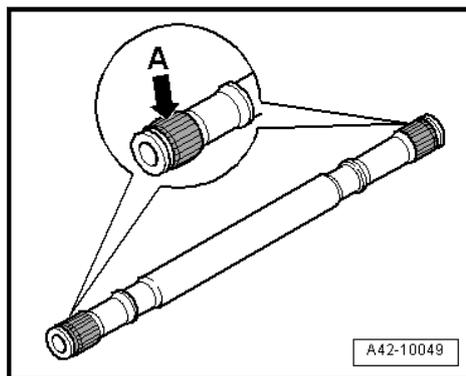


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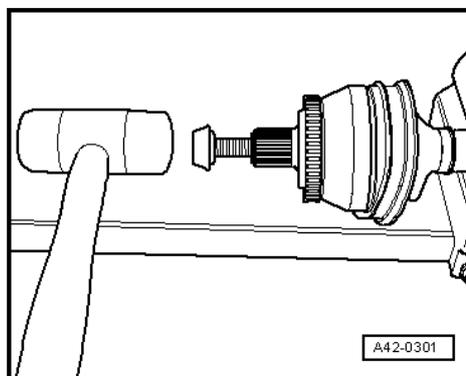
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Outer CV Joint, Installing

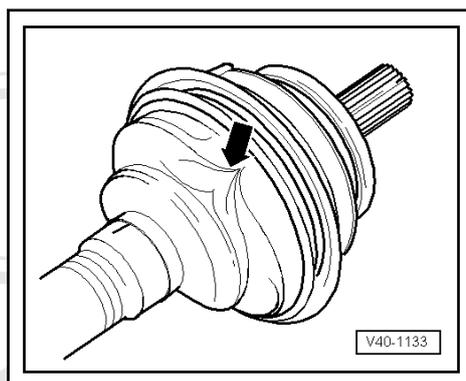


- Before installing CV joint or triple roller star, splines -arrow A- must be lightly coated with grease used in joint.
- Install the old bolt in the joint as illustrated.



- Drive the joint onto the shaft with plastic hammer until circlip engages.

Rubber CV Boot, Ventilation



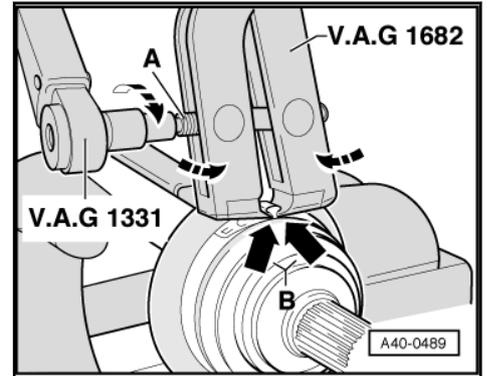
The CV boot is frequently pressed in when placed on the joint housing. This creates a vacuum in the CV boot, which pulls a fold inward when the car is driven -arrow-

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Therefore, note the following:

- Before tensioning the clamping sleeves, balance the pressure by raising the CV boot.

Tension the CV Boots Stainless Steel Clamps.

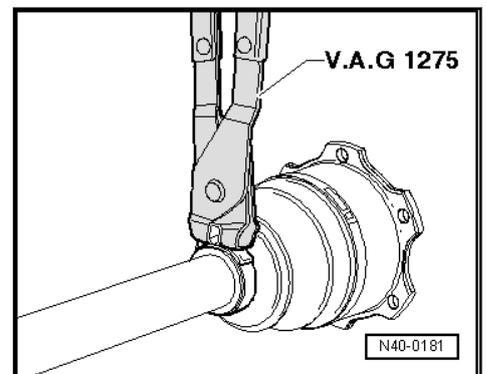


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- Attach the Clamping Pliers -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
 - Tighten the clamp by turning the spindle -A- using a torque wrench (do not tilt the pliers).
 - ◆ Tightening specification: 20 Nm

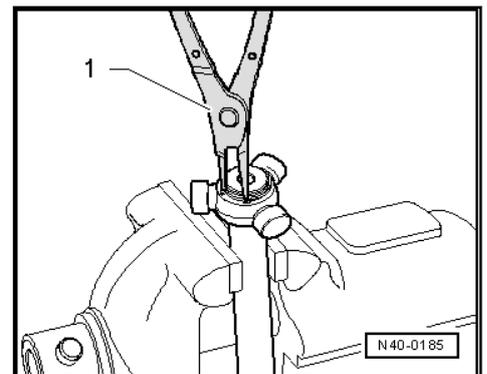
 Note

- ◆ Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.
- ◆ If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.

Small Clamps for Rubber CV Boots, Tensioning

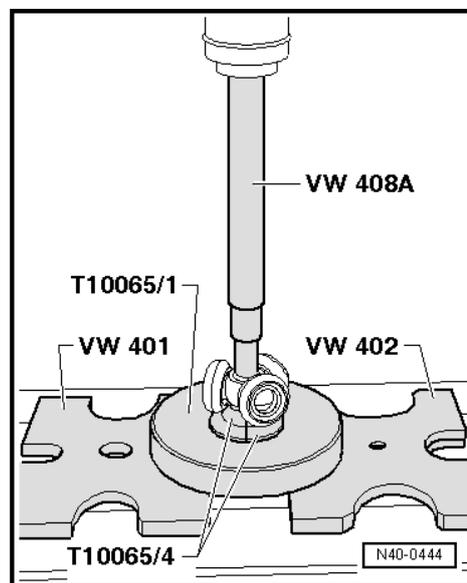


Triple Roller Joint, Disassembling



- Open clamp at shaft and slide back CV boot.

- Remove the joint from the drive axle.
- Remove the circlip.
- 1 - Clamp (commercially available) or Circlip Pliers -VW161A-
- Insert the drive axle into the press.
- Press the triple roller star off of the drive axle.



- Pull off CV boot from shaft.
- Clean the shaft, joint and groove for the seal.

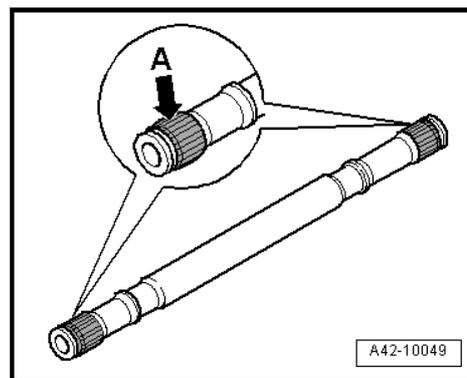
Assembling

- Slide the small clamp for the CV boot onto the shaft.
- Slide the CV boot onto the shaft.
- Slide the joint piece onto the shaft.

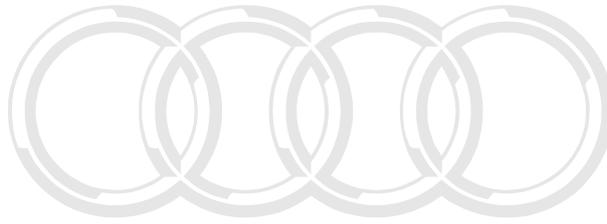
Triple Roller Star, Conical Drive Axle, Installing:

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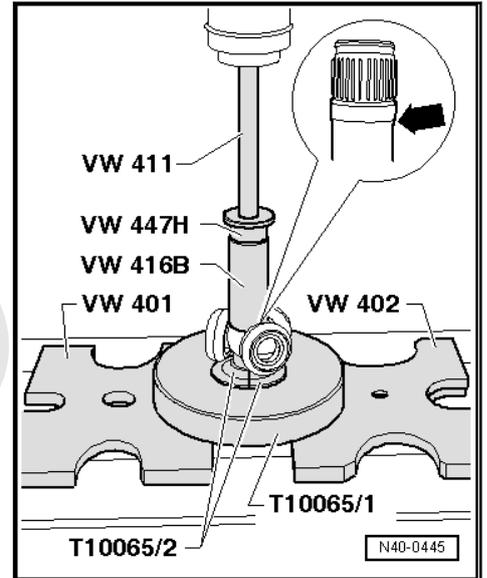
- ◆ The chamfer on triple roller star faces toward shaft, this is used as an assembly aid.
- Before installing CV joint or triple roller star, splines -arrow A- must be lightly coated with grease used in joint.



- Install the triple roller star all the way onto the shaft.



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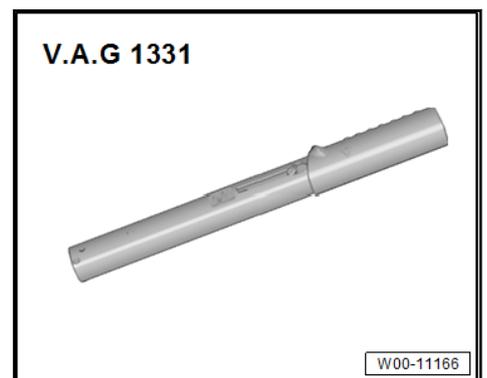


- Make sure that pressure does not increase above 3.0 t!
- If necessary, coat the splines of the drive axle and triple roller star with Polycarbamide Grease G 052 142 A2.
- Insert the circlip while making sure it is seated correctly.
- Slide the joint piece over rollers and secure.
- Press 70 g (2.5 oz) drive axle grease from repair kit into triple roller joint.
- Press 70 g (2.5 oz) drive axle grease from repair kit into protective joint boot.
- Install the CV boot.
- Install the clamp.

6.6.8 Drive Axle, Disassembling and Assembling, Tensioning Lock Washer

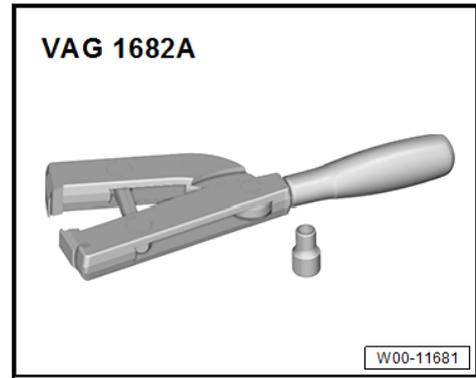
Special tools and workshop equipment required

- ◆ Torque Wrench, 6-50Nm -VAG1331A-

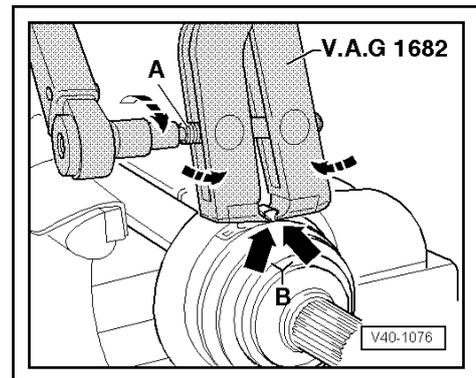




◆ Clamping Pliers -VAG1682A-

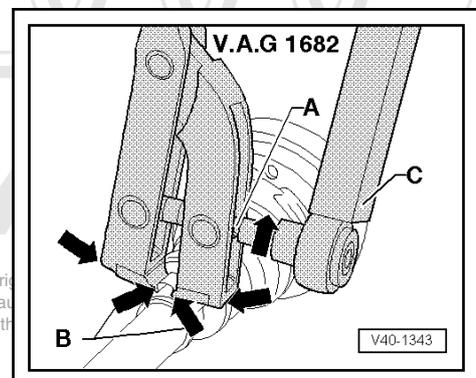


Tightening the Tensioning Clamp on the Larger Diameter



- Attach the Clamping Pliers -VAG1682A- as shown. At the same time, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tighten the clamp by turning the spindle -A- using a torque wrench (do not tilt the pliers).
- Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.
- If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.
- Tightening specification: 25 Nm.

Tension the Clamp on the Small Diameter

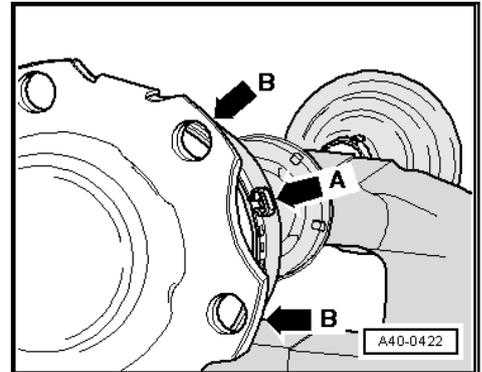


- Attach the Clamping Pliers -VAG1682A- as shown. At the same time, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tighten the clamp by turning the spindle -A- using a torque wrench -C- (without tilting the pliers).

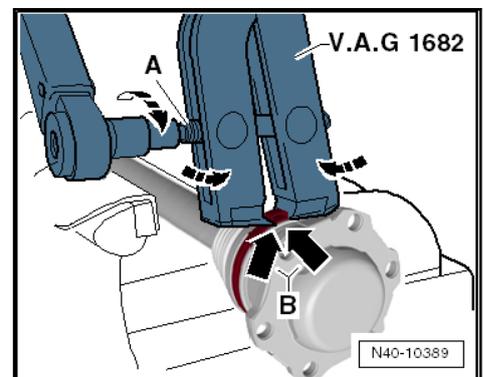
- Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.
- If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.
- Tightening specification: 25 Nm.

Mount and Tighten the Clamp on the Triple Roller Joint

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- For easier installation of the internal multi-point bolts more easily when installing the drive axle, it is necessary that the clamping tab on the clamp -arrow A- is between the flanges on the joint -B arrows-.
- Attach the Clamping Pliers -VAG1682A- as shown. At the same time, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.

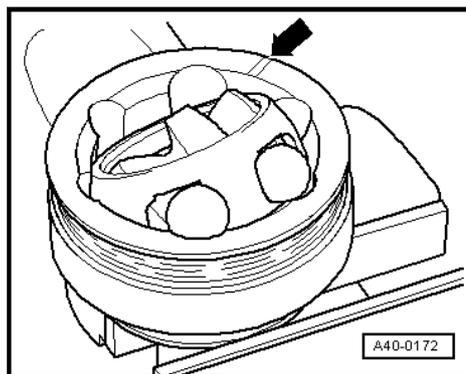


- Tighten the clamp by turning the spindle -A- using a torque wrench (do not tilt the pliers).
- Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.
- If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.
- Tightening specification: 25 Nm.

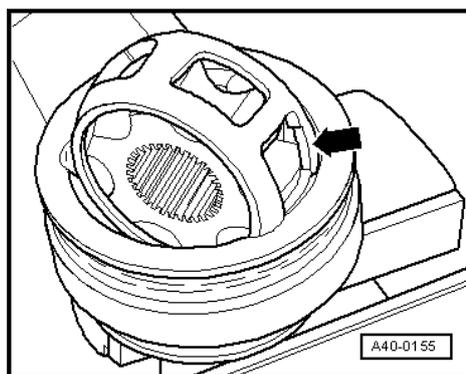
6.7 Outer CV Joint, Checking

It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.

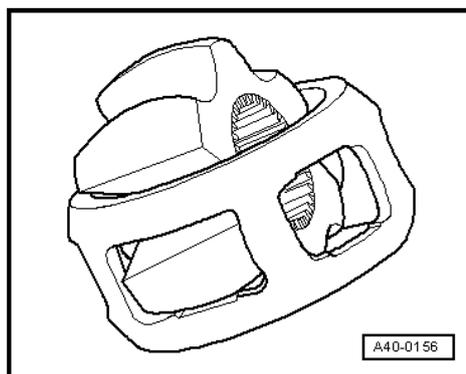
Removing



- Before disassembling, mark the ball hub position in relation to the ball cage and housing with an electric engraver or sharpening stone -arrow-.
- Tilt the ball hub and the ball cage and remove the balls one after another.
- Turn the cage until two cage windows -arrow- rest on joint housing.



- Lift out cage with hub.
- Swing a hub segment in a cage window.



- **Fold hub out from cage**
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 Note

- ◆ *The balls for each joint belong to one tolerance group. Check the axle stub, hub, cage and balls for small depressions (pitting build-up) and chafing.*
- ◆ *Excessive backlash in the joint is noticeable by a thump during load alternations. The joint should be replaced in these cases.*
- ◆ *Flattening and running marks on the balls are no reason to replace a joint.*

Installing

Install in reverse order of removal while noting the following:

- Insert cage with hub into joint body.

 Note

Cage must be inserted on the correct side.

- Press in the opposite facing balls one after the other, and the old ball hub position to the ball cage and to the joint housing must be replicated.
- Install the new circlip in the shaft.

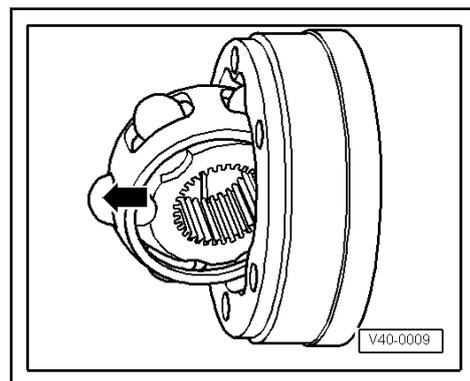
6.8 Inner CV Joint, Checking

It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.

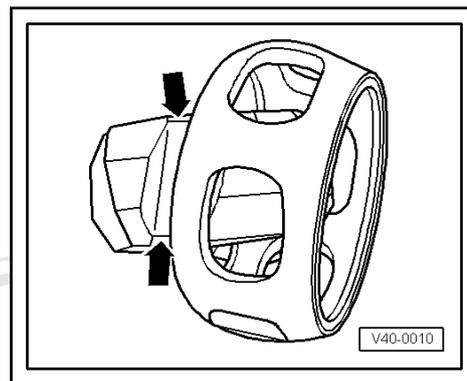
 Note

Ball hub and joint piece are paired. Before removing, mark in relation to each other using a waterproof felt-tip pen.

Removing



- Tilt the ball hub and ball cage.
- Remove the joint in the direction of the arrow.
- Remove the balls from the cage.
- Flip out ball hub from ball cage via the ball race -arrows-.



- Check the joint, ball hub, ball cage and balls for small broken off depressions (pitting) and chafing.

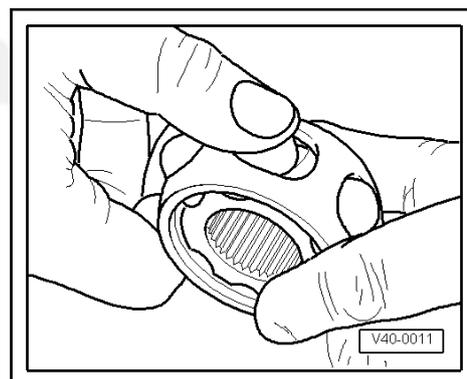


Note

Excessive backlash in joint will be noticed as a knock during load changes. Joint must be replaced in such cases. Flattening and running marks on the balls are no reason to replace the joint.

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Installing

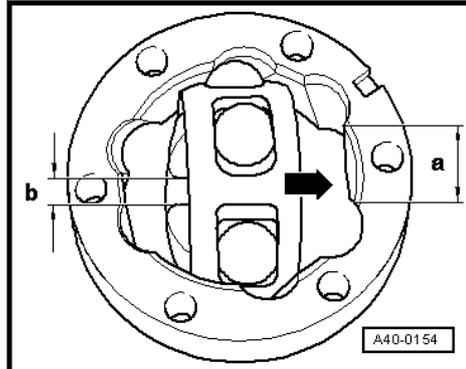


Install in reverse order of removal while noting the following:

- Insert the ball hub into the ball cage via two chamfers. The installation position is arbitrary. Press balls into cage.
- Insert hub with cage and balls upright into joint piece.

 Note

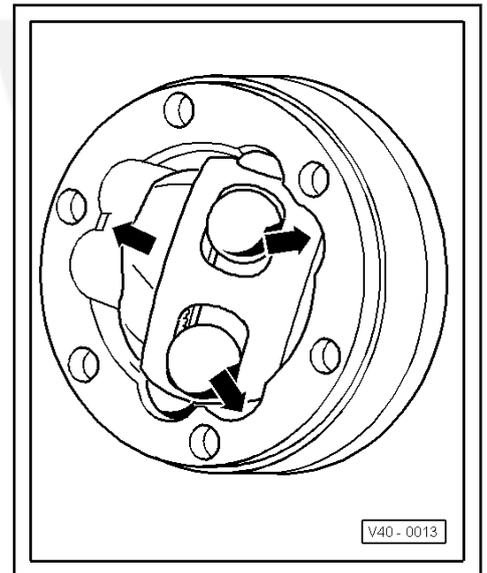
When inserting, make sure that in each case the wide gap -a- at joint piece contacts narrow gap -b- at hub after swinging in.



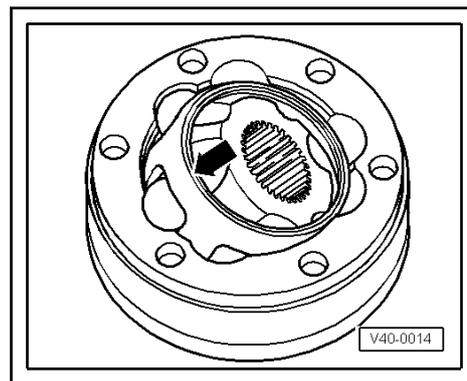
- ◆ Chamfer on inner diameter of ball hub (splines) must face the large diameter of the joint.
- ◆ Use the felt-tip pen markings made during removal to help with assembly.

- Swing in ball hub, to do so swing out hub far enough from cage -arrows- so that the balls have the distance of the running paths.

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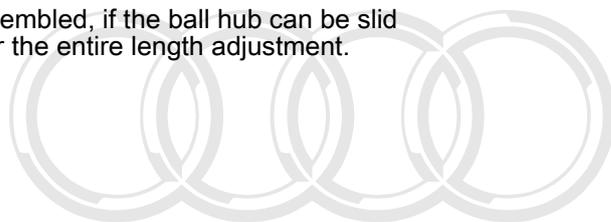


- Swing in hub with balls by pressing forcefully onto cage -arrow-.



CV joint, checking for function:

The CV joint is properly assembled, if the ball hub can be slid back and forth by hand over the entire length adjustment.



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42 – Rear Suspension

1 Rear axle

⇒ [-1.1 Rear Axle”, page 231](#)

⇒ [A1.2 xle, Removing and Installing”, page 233](#)

1.1 Overview - Rear Axle

⇒ [A1.1.1 xle Overview, Torsion Beam Axle - Vehicles with FWD”, page 231](#)

⇒ [A1.1.2 xle Overview, Multi-Link Suspension - Vehicles with FWD”, page 231](#)

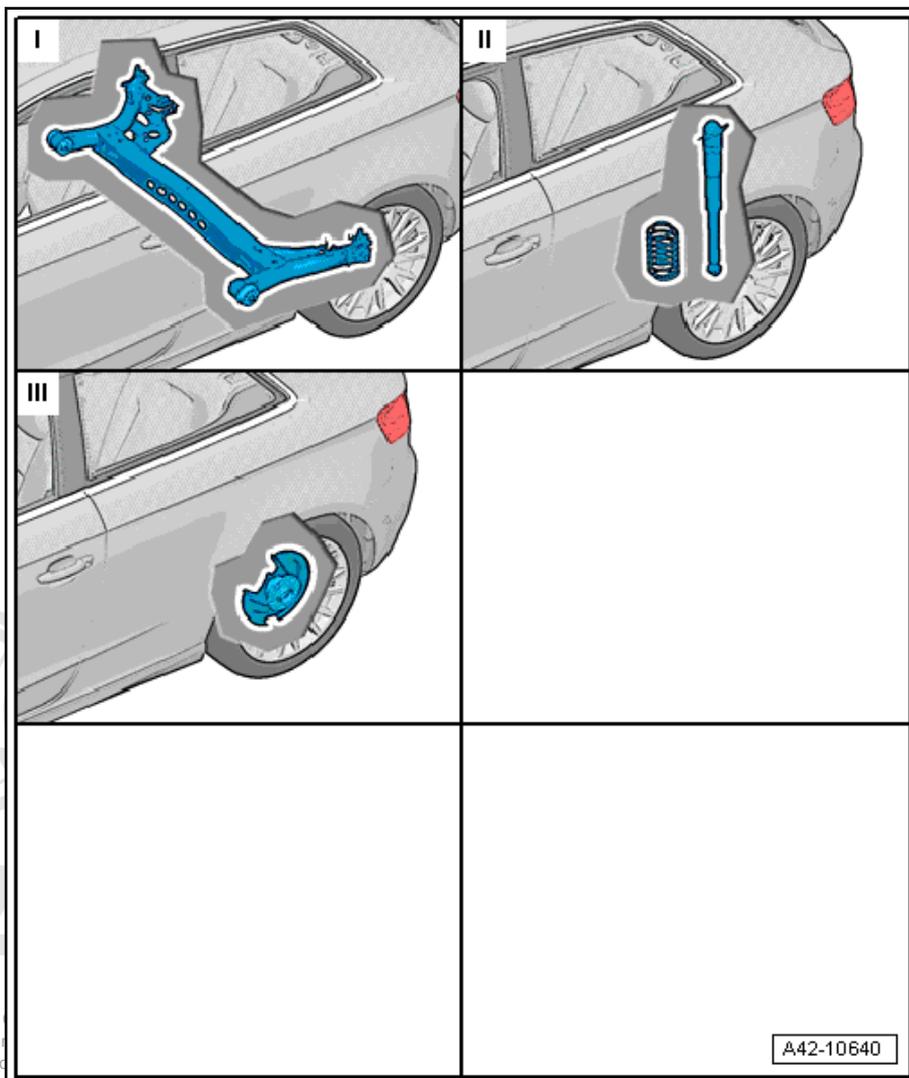
⇒ [A1.1.3 xle Overview, Multi-Link Suspension - Vehicles with AWD”, page 232](#)

1.1.1 Rear Axle Overview, Torsion Beam Axle - Vehicles with FWD

I - Refer to ⇒ [B2 eam”, page 254](#)

II - Refer to ⇒ [S6 trut, Shock Absorber, Spring”, page 312](#)

III - Refer to ⇒ [B7 earing and Trailing Arm”, page 329](#)



1.1.2 Rear Axle Overview, Multi-Link Suspension - Vehicles with FWD



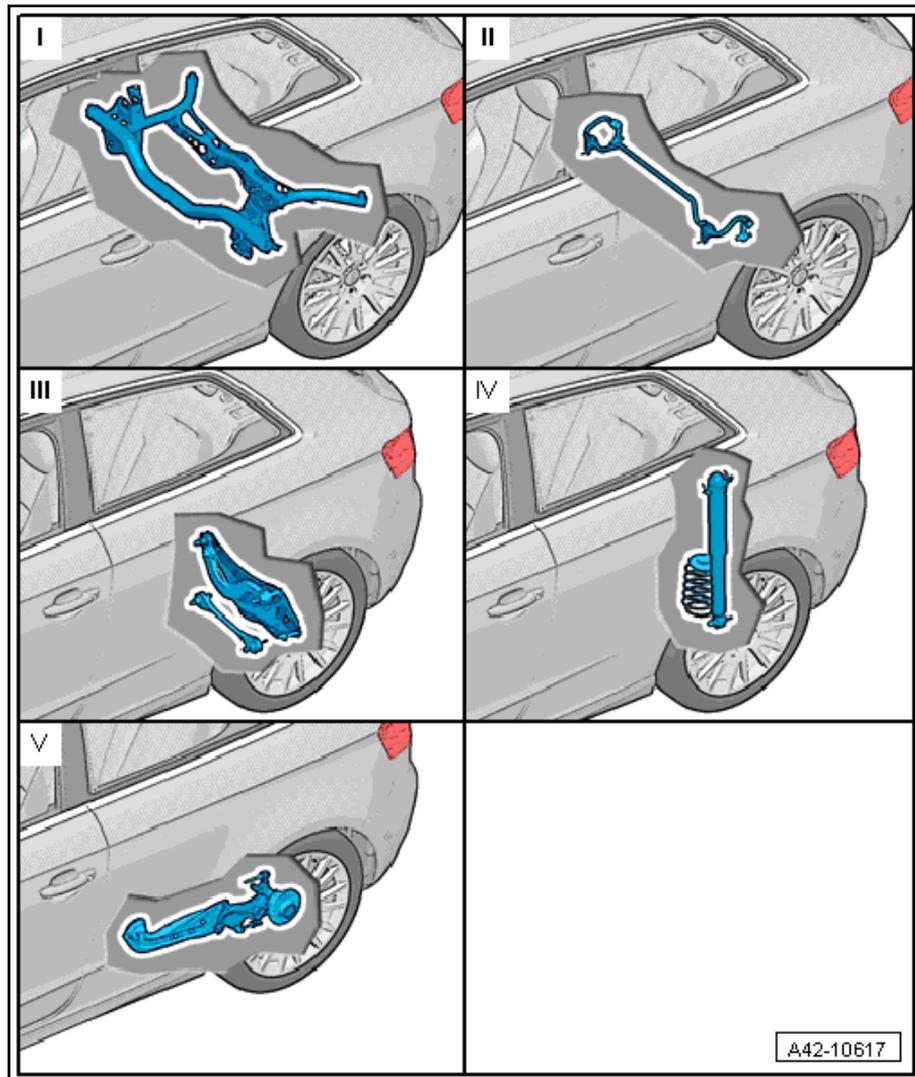
I - Refer to ⇒ [3](#), page 267

II - Refer to ⇒ [B4 ar](#)", page 293

III - Refer to ⇒ [A5 rm, Tie Rod](#)", page 302

IV - Refer to ⇒ [S6 trut, Shock Absorber, Spring](#)", page 312

V - Refer to ⇒ [B7 earing and Trailing Arm](#)", page 329



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1.1.3 Rear Axle Overview, Multi-Link Suspension - Vehicles with AWD



I - Refer to ⇒ [3](#), page 267

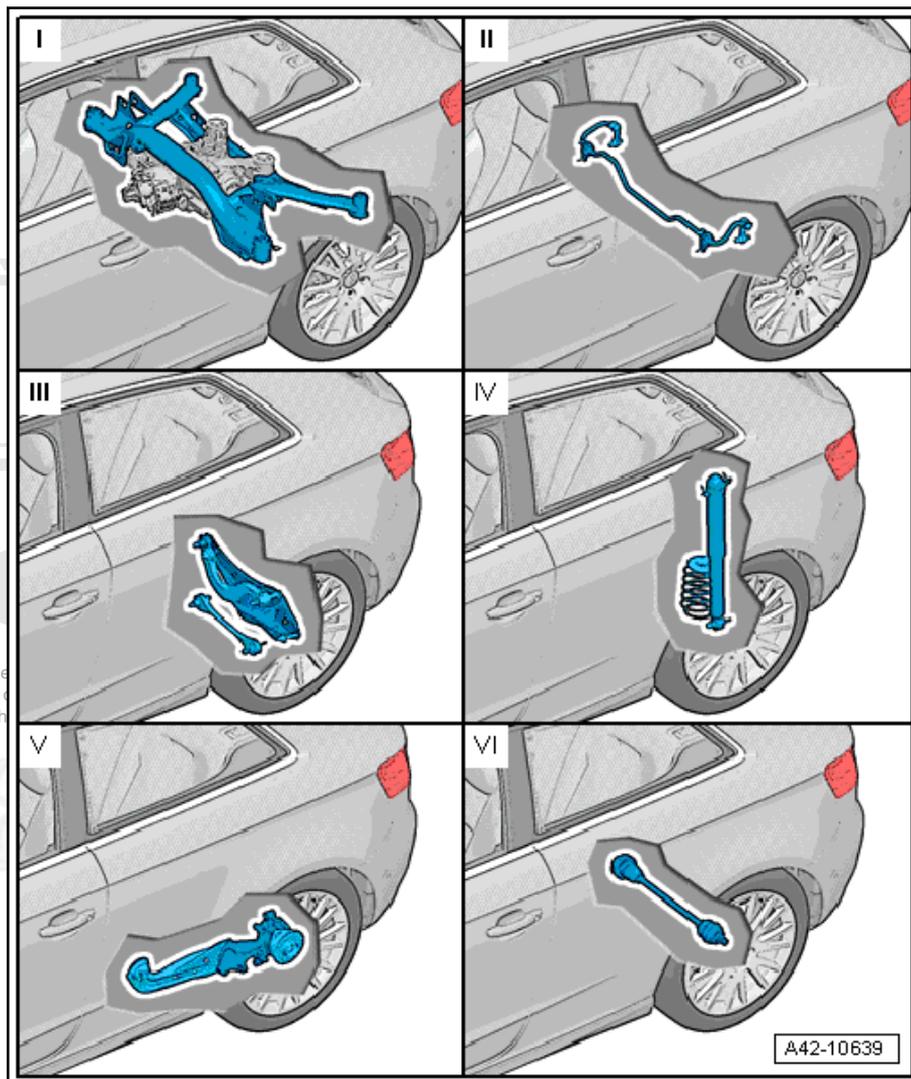
II - Refer to ⇒ [B4 ar](#)", page 293

III - Refer to ⇒ [A5 rm, Tie Rod](#)", page 302

IV - Refer to ⇒ [S6 trut, Shock Absorber, Spring](#)", page 312

V - Refer to ⇒ [B7earing and Trailing Arm](#)", page 329

VI - Refer to ⇒ [A8 xle](#)", page 373



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1.2 Rear Axle, Removing and Installing

⇒ [A1.2.1 xle, Removing and Installing, Torsion Beam Axle Vehicles with FWD](#)", page 233

⇒ [A1.2.2 xle, Removing and Installing, Multi-Link Suspension Vehicles with FWD](#)", page 238

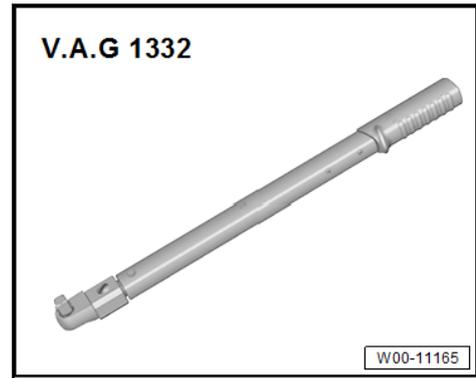
⇒ [A1.2.3 xle, Removing and Installing, Multi-Link Suspension Vehicles with High-Voltage System](#)", page 242

⇒ [A1.2.4 xle, Removing and Installing, Multi-Link Suspension Vehicles with AWD](#)", page 248

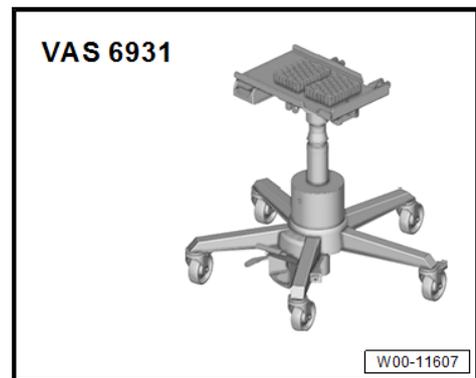
1.2.1 Rear Axle, Removing and Installing, Torsion Beam Axle Vehicles with FWD

Special tools and workshop equipment required

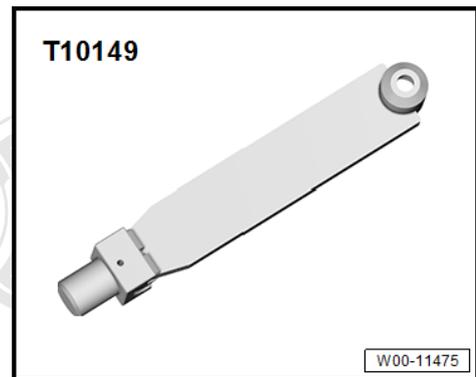
- ◆ Torque Wrench, 40-200Nm -VAG1332A-



- ◆ Engine and Gearbox Jack -VAS6931-



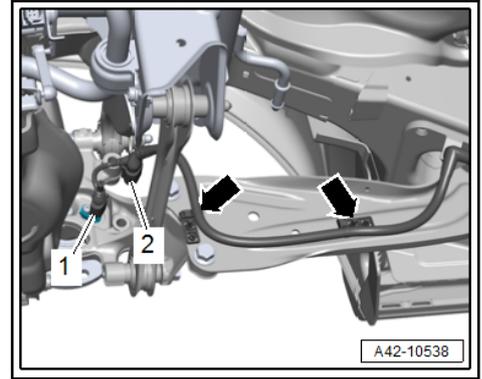
- ◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-



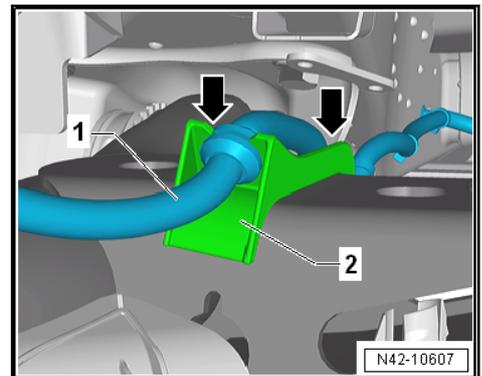
Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ [B3.16earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Release the parking brake.
- Remove the rear wheels. Refer to ⇒ [a1 nd Tires](#), page 411 .
- If equipped, remove the underbody trim panels in the area of the axle beam. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- Disconnect the left and right connector -1- for the ABS speed sensor and free up the wire.

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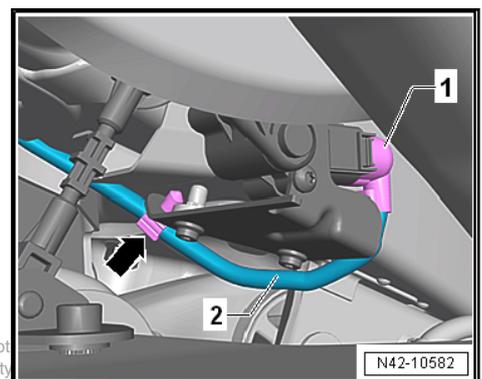
- Disconnect the left and right connector -2- for the electromechanical parking brake motor and free up the wire.
- Remove and free up the wiring harness on the brackets -arrows-.
- Unclip and free up the wire -1- from the bracket -2- on the axle beam on both sides -arrows-.



- Remove the left and right brake caliper and secure to the body with a wire. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

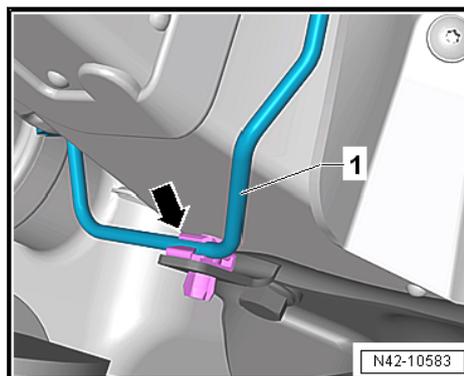
Vehicles with Level Control System Sensor

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- Release and disconnect the connector -1- from the Left Rear Level Control System Sensor -G76-.
- Unclip the wire -2- from the clip -arrow-.

Continuation for All Vehicles

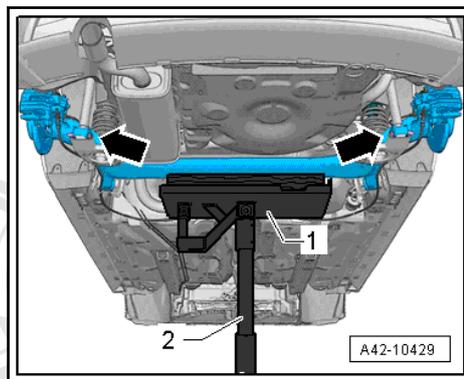


- Unclip the brake line -1- on the right mounting bracket from the clip -arrow-.

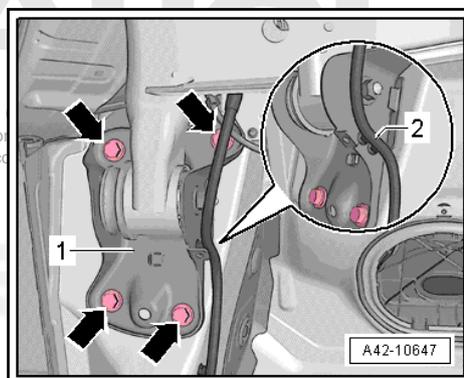
Note

This will destroy the clip, so it will have to be replaced.

- Remove the springs. Refer to ⇒ [R6.4.1 moving and Installing, Torsion Beam Axle](#), page 323 .
- Place the Engine and Gearbox Jack -VAS6931- -2- with mounting plate -1- under the axle beam and secure using a tensioning strap.



- Unclip and free up the wiring harness -2- on the mounting bracket -1- and on the axle beam.



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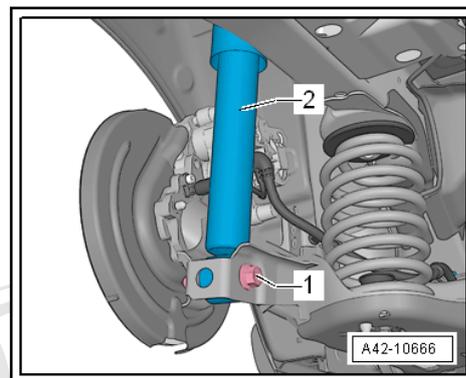


Caution

There is a risk of damaging the axle beam threaded connection threads on the body.

- ◆ *The axle beam bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*

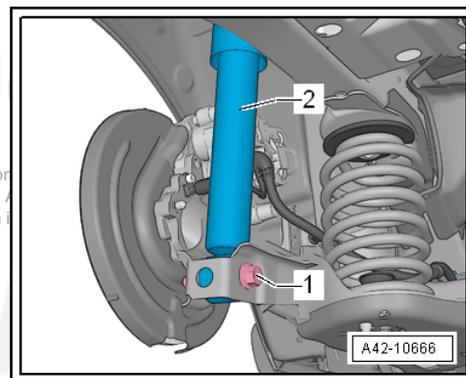
- Mark the position of the bolts -arrows- on the mounting bracket -1- on the right and left vehicle side.
- Remove the bolts -arrows- for the right and left axle beam.
- Remove the bolt -1- right and left on the shock absorber -2-.



- Lower the rear axle with the Engine and Gearbox Jack -VAS6931-.

Installing

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Install in reverse order of removal. Note the following:

- Tighten the threaded connection -1- shock absorber on the axle beam in curb weight position. Refer to [⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Perform an axle alignment. Refer to [⇒ A2 lignment](#)”, page 412 .

Tightening Specifications

- ◆ Refer to [⇒ -2.1 Axle Beam](#)”, page 254
- ◆ Refer to [⇒ -6.1.1 Shock Absorber and Spring, Torsion Beam Axle](#)”, page 312

- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- ◆ Refer to ⇒ ["a1 nd Tires", page 411](#)

1.2.2 Rear Axle, Removing and Installing, Multi-Link Suspension Vehicles with FWD

Special tools and workshop equipment required

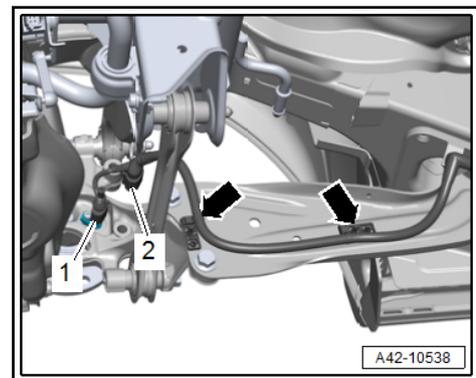
- ◆ Torque Wrench, 40-200Nm -VAG1332A-

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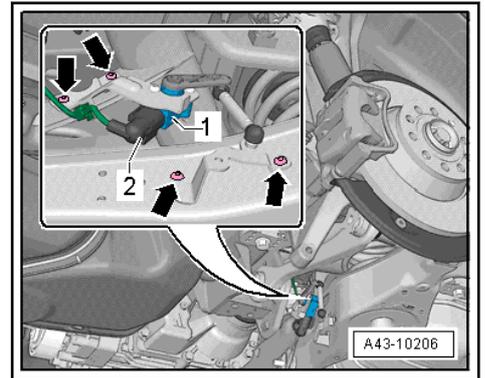


Removing the Subframe and its Attachments

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ ["B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11](#) .
- Secure the subframe. Refer to ⇒ ["S3.2 ecurring", page 271](#) .
- Disconnect and free up the right and left connector -1- from the ABS speed sensor.



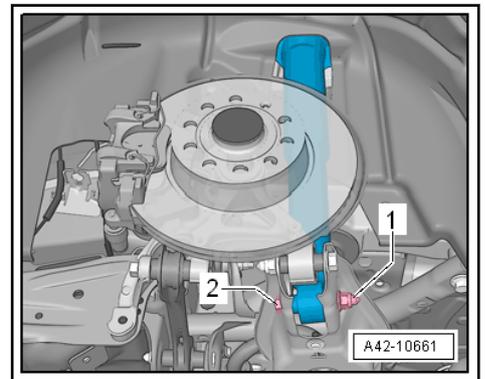
- Disconnect the right and left electromechanical parking brake connector -2- from the brake caliper.
- Remove and free up the wiring harness from the retainers -arrows-.
- If equipped, disconnect the connector -2- for the Left and Right Rear Level Control System Sensor -1-.



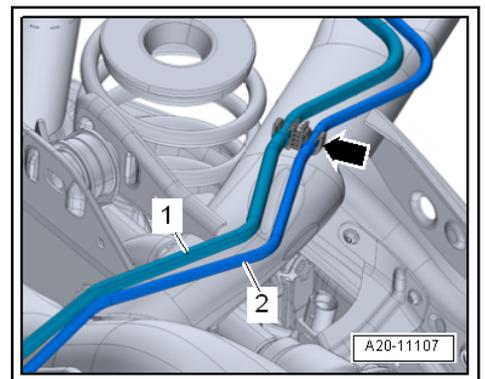
- To prevent damage to the left and right rear level control system sensor, remove the bolts -arrows- on the linkage for the left and right rear level control system sensor -1-.
- Free up the Left And Right Rear Level Control System Sensor wire from the subframe.
- Remove the left and right nut -1- and remove the bolt -2-.

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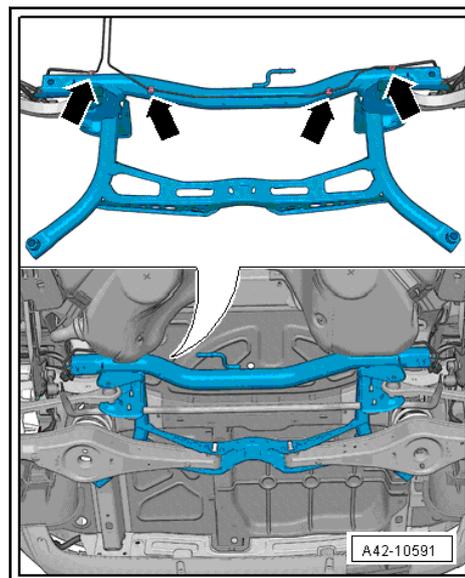
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- Unclip the breather lines -1 and 2-.



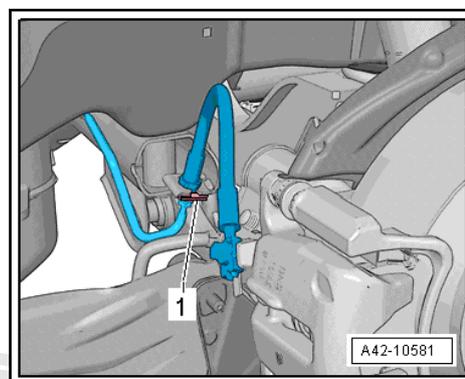
- Unclip the brake line from both sides -arrows-.



i Note

- ◆ *The clips will get damaged while doing this and will have to be replaced.*
- ◆ *For better illustration, the subframe is shown from above and is removed.*

- Remove the clamps -1- on both sides of the vehicle.



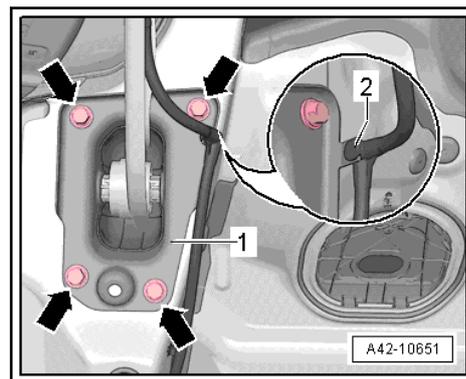
- Free up the brake lines from the bracket.

i Note

Do not disconnect the brake line.

- Remove the left and right brake caliper and with the brake lines attached secure to the body. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- If equipped, remove the underbody trim panels. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panels; Overview - Underbody Trim Panels.
- Unclip and free up the wire -2- on the mounting bracket -1-.

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- Mark the mounting bracket -1- installation position on the body.
- Remove the bolts -arrows-.



WARNING

Before -LOOSENING- the subframe bolts, secure the vehicle from tipping over (for example load luggage compartment with approximately 50 kg (110.23 lbs)).

- Lower the subframe with attachments.



Note

When lowering, ensure the brake lines and wires have sufficient clearance.

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Subframe with Attachments, Installing

Install in reverse order of removal. Note the following:

- Remove the Locating Pins -T10096-. Refer to [⇒ S3.2 ecur-ing](#), page 271 .

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select `Diagnostic` operating mode and `Start diagnostics`.
- Select the `Select individual test` tab and select the following tree structure consecutively:
 - ◆ `Chassis`
 - ◆ `Wheel Damping Electronics`
 - ◆ `01 - OBD-capable systems`.
 - ◆ `14 - Electronic Damping Control Module -J250`
 - ◆ `14 - Electronic Damping Control Module, functions`
 - ◆ `14 - Control Position, readapting`
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to [⇒ A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .

- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.
- ◆ Vehicles with adaptive cruise control, calibrate the adaptive cruise control. Refer to ⇒ [C3.1 Cruise Control \(ACC\), Adjusting](#), page 431 .
- Overview table for when an axle alignment is needed. Refer to ⇒ [f2.2 or Axle Alignment, Evaluating](#), page 413 .

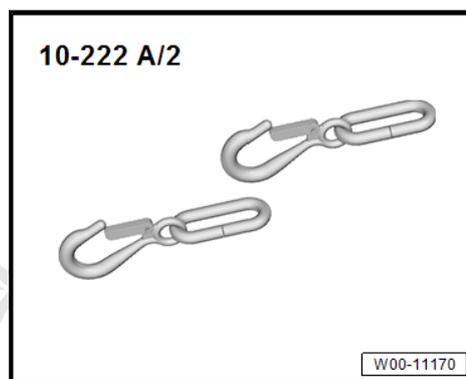
Tightening Specifications

- ◆ Refer to ⇒ [-3.1.1 Subframe, Multi-Link Suspension without Bonded Rubber Bushing FWD Vehicles, Vehicles with High-Voltage System](#), page 267
- ◆ Refer to ⇒ [-7.2 Trailing Arm](#), page 334
- ◆ Refer to ⇒ [-6.1.2 Shock Absorber and Spring, Multi-Link Suspension](#), page 313
- ◆ Refer to ⇒ [-2.2.1 Left Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Vehicles with Multi-Link Suspension](#), page 404
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411

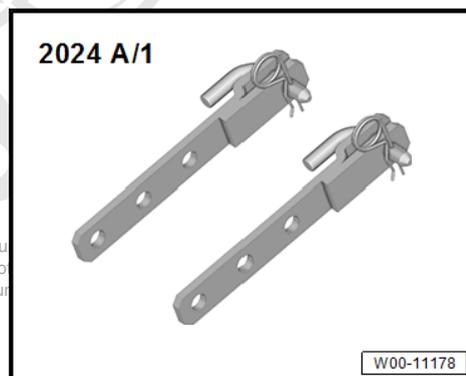
1.2.3 Rear Axle, Removing and Installing, Multi-Link Suspension Vehicles with High-Voltage System

Special tools and workshop equipment required

- ◆ Engine Support Set - Additional Hooks -10-222B/2-

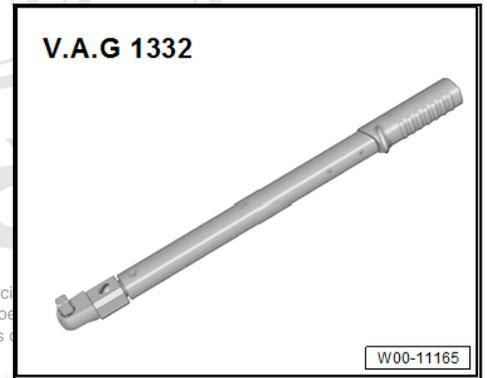


- ◆ Engine Sling - Engine Bracket -2024A/1-



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◆ Torque Wrench, 40-200Nm -VAG1332A-



◆ Tensioning Strap -T10038-



Removing the Subframe and its Attachments

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

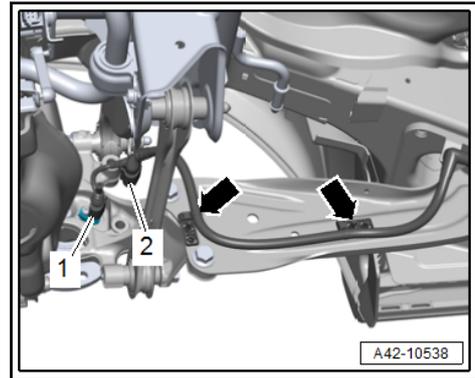


WARNING

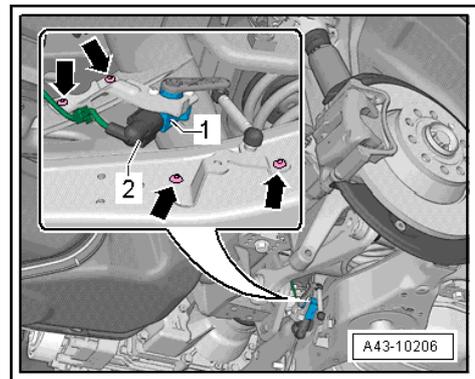
Risk of accident due to the weight of the fuel tank.

- ◆ *The fuel tank must be empty to remove the subframe with the fuel tank.*

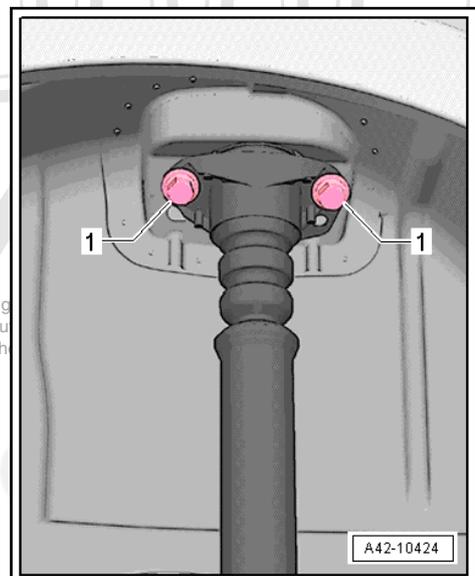
- Empty the fuel tank. Refer to ⇒ Fuel Supply System; Rep. Gr. 20; Fuel Tank; Fuel Tank, Emptying.
- Remove the rear underbody trim panel for the high-voltage battery pack. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Underbody Trim Panels, Removing and Installing.
- Secure the subframe. Refer to ⇒ [S3.2 ecurring](#), page 271 .
- Remove the left and right rear wheel housing liners. Refer to ⇒ Body Exterior; Rep. Gr. 66; Wheel Housing Liner; Rear Wheel Housing Liner, Removing and Installing.
- Disconnect and free up the right and left connector -1- from the ABS speed sensor.



- Disconnect the right and left electromechanical parking brake connector -2- from the brake caliper.
- Remove and free up the wiring harness from the retainers -arrows-.
- If equipped, disconnect the connector -2- for the Left and Right Rear Level Control System Sensor -1-.



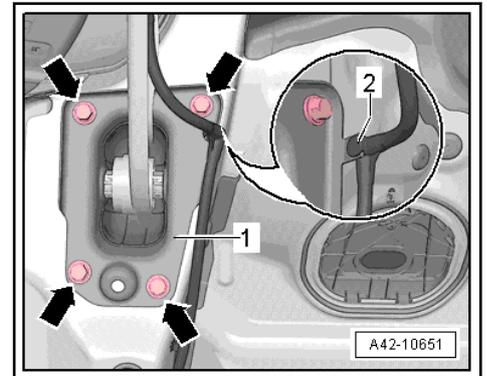
- To prevent damage to the left and right rear level control system sensor, remove the bolts -arrows- on the linkage for the left and right rear level control system sensor -1-.
- Free up the Left And Right Rear Level Control System Sensor wire from the subframe.
- Remove the left and right bolts -1- from the shock absorber.



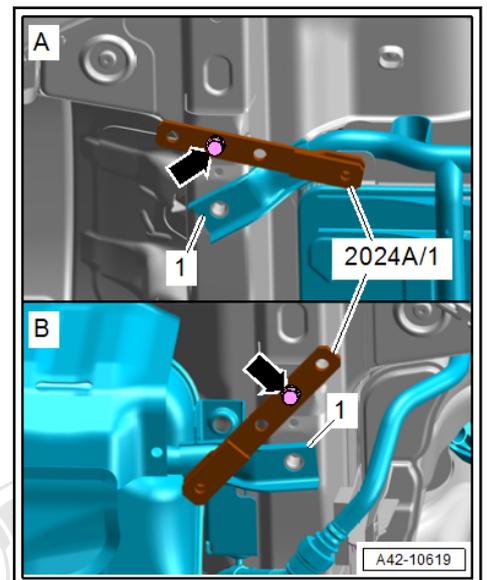
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- Remove the right and left brake caliper. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- Remove the rear muffler heat shield. Refer to ⇒ Body Exterior; Rep. Gr. 66; Molding/Trim/Extensions/Trim Panels; Underbody Heat Shield, Removing and Installing.
- Unclip and free up the wire -2- on the mounting bracket -1-.



- Mark the mounting bracket -1- installation position on the body.
- Remove the bolts -arrows-.
- Secure the fuel tank on the rear frame -1- to do this secure the extension Engine Sling - Engine Bracket -2024A/1- to 20 Nm -arrows- as shown in the illustration.

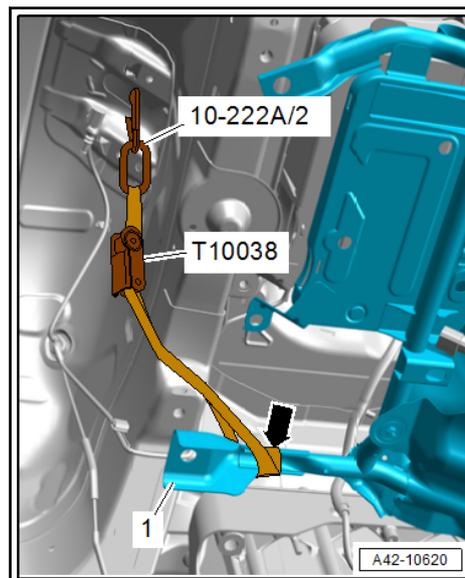


- A - Left Side of Vehicle
- B - Right Side of Vehicle

 **Note**

The installed position is shown in the illustration with the sub-frame removed.

- Secure the fuel tank on the front frame -1- by looping the Tensioning Strap -T10038- multiple times around the frame -arrow- and engage with the Engine Support Bridge - Additional Hooks (2 pc.) -10-222A/2- as shown in the illustration.

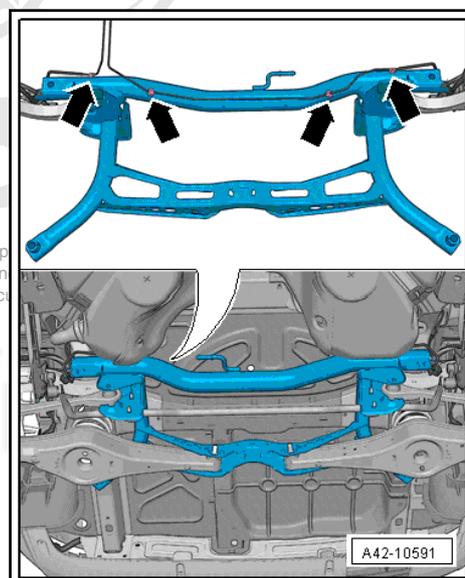


- Slightly tension the Tensioning Strap -T10038-.

i Note

The installed position is shown in the illustration with the subframe removed.

- Lower the subframe with its attachments a maximum of 50 mm.
- Unclip the brake line from both sides -arrows-.

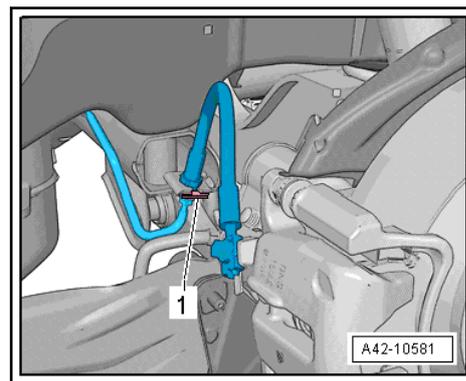


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i Note

- ◆ *The clips will get damaged while doing this and will have to be replaced.*
- ◆ *For better illustration, the subframe is shown from above and is removed.*

- Remove the clamps -1- on both sides of the vehicle.



- Free up the brake lines from the bracket.

 **Note**

Do not disconnect the brake line.

- Continue to lower the subframe with attachments.

 **Note**

When lowering, ensure the brake lines and fuel lines have sufficient clearance.

Subframe with Attachments, Installing

Install in reverse order of removal. Note the following:
- Remove the Locating Pins T10096. Refer to [S3.2 securing", page 271](#).

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed or a level control system sensor was removed and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:
 - ◆ **Chassis**
 - ◆ **Wheel Damping Electronics**
 - ◆ **01 - OBD-capable systems**
 - ◆ **14 - Electronic Damping Control Module -J250**
 - ◆ **14 - Electronic Damping Control Module, functions**
 - ◆ **14 - Control Position, readapting**
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating", page 449](#).
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.
- ◆ Vehicles with adaptive cruise control, calibrate the adaptive cruise control. Refer to ⇒ [C3.1 Cruise Control \(ACC\), Adjusting", page 431](#).

- Overview table for when an axle alignment is needed. Refer to ⇒ [f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to ⇒ [-3.1.1 Subframe, Multi-Link Suspension without Bonded Rubber Bushing FWD Vehicles, Vehicles with High-Voltage System](#), page 267
- ◆ Refer to ⇒ [-7.2 Trailing Arm](#), page 334
- ◆ Refer to ⇒ [-6.1.2 Shock Absorber and Spring, Multi-Link Suspension](#), page 313
- ◆ Refer to ⇒ [-2.2.1 Left Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Vehicles with Multi-Link Suspension](#), page 404
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411

1.2.4 Rear Axle, Removing and Installing, Multi-Link Suspension Vehicles with AWD

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-



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Removing the Subframe and its Attachments

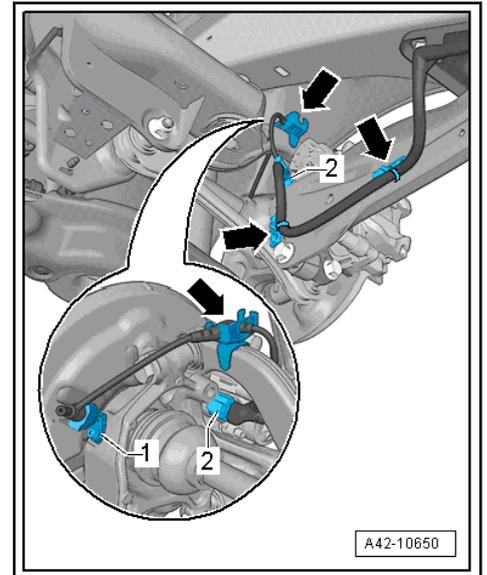
- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ [B3.16earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .



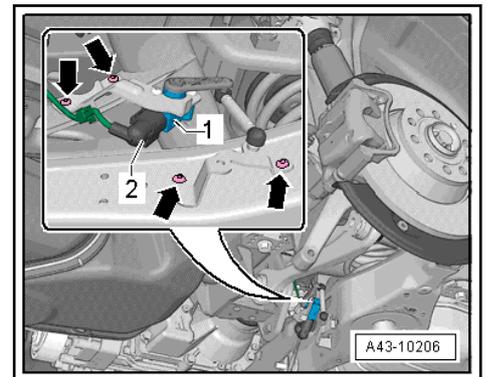
Note

The vehicle must be resting on its wheels during any subsequent work where the drive axle collar bolt must be loosened. Loosen the connection between the drive axle and wheel hub. Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and Tightening](#), page 378 .

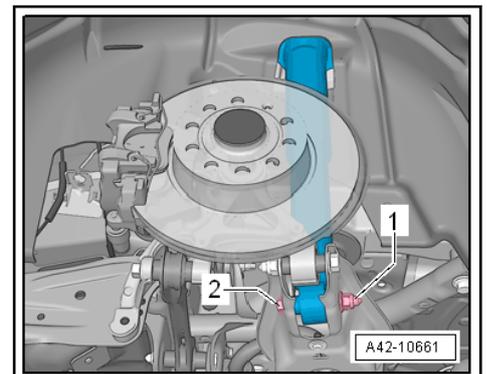
- Secure the subframe. Refer to ⇒ [S3.2 securing](#), page 271 .
- Disconnect and free up the right and left connector -1- from the ABS speed sensor.



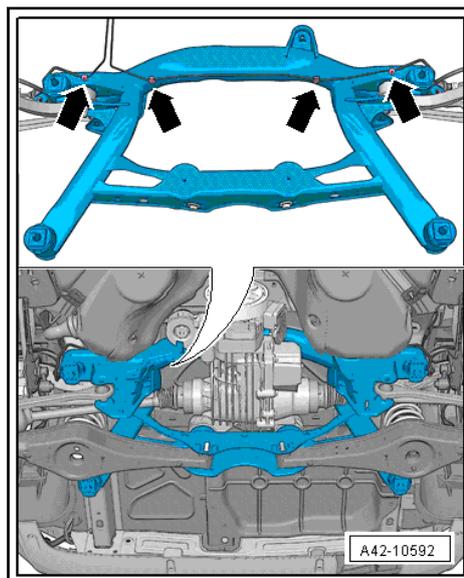
- Disconnect the right and left electromechanical parking brake connector -2- from the brake caliper.
- Remove and free up the wiring harness from the retainers -arrows-.
- If equipped, disconnect the connector -2- for the Left and Right Rear Level Control System Sensor -1-.



- To prevent damaging the Left and Right Rear Level Control System Sensor, remove the bolts -lower arrows- on the linkage for the Left and Right Rear Level Control System Sensor -1-.
- Free up the Left And Right Rear Level Control System Sensor wire from the subframe.
- Remove the nut -1- and the bolt -2-.



- Unclip the brake line from both sides -arrows-.

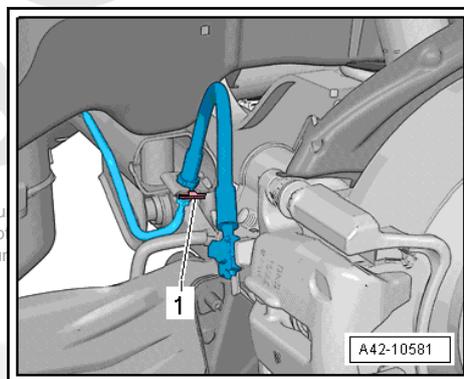


- Unclip the EVAP canister breather line on the right side from the clips.

 **Note**

The clips will get damaged while doing this and will have to be replaced.

- Remove the clamps -1- on both sides of the vehicle.

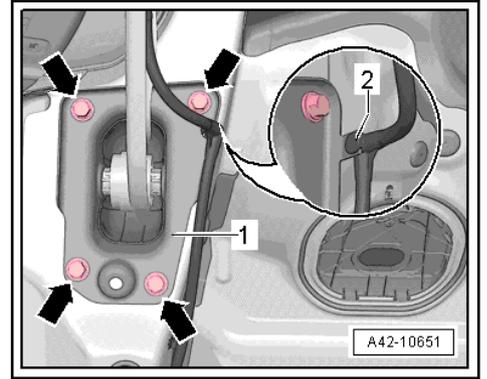


- Free up the brake lines from the bracket.

 **Note**

Do not disconnect the brake line.

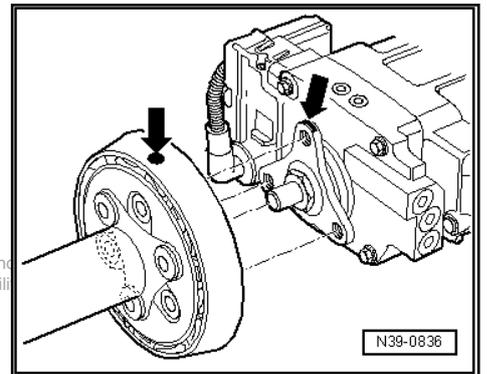
- Remove the left and right brake caliper and with the brake lines attached secure to the body. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- If equipped, remove the underbody trim panels. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- Unclip and free up the wire -2- on the mounting bracket -1-.



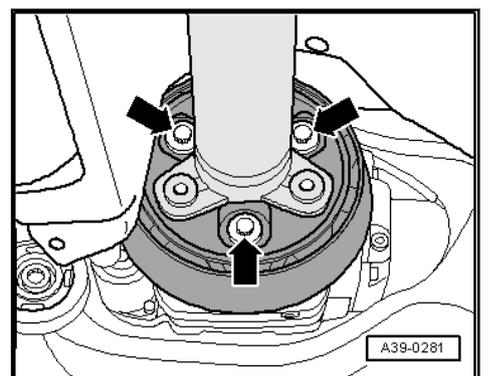
- Mark the mounting bracket -1- installation position on the body.
- Remove the bolts -arrows-.
- Check for a factory-applied marking (colored dot) on the joint washer and AWD clutch flange -arrows-. If there is not one, mark the location of the joint washer and the AWD clutch flange to each other -arrows-.

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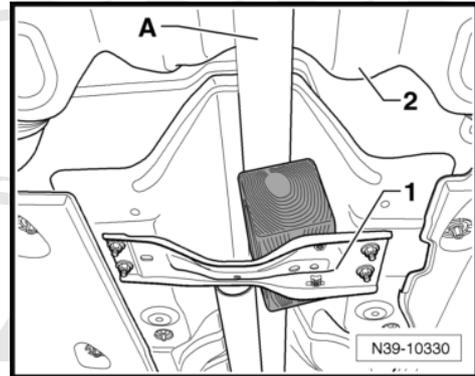
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- Remove the rear driveshaft tube with the flexible disc and vibration damper from the rear final drive -arrows-. Refer to ⇒ Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.

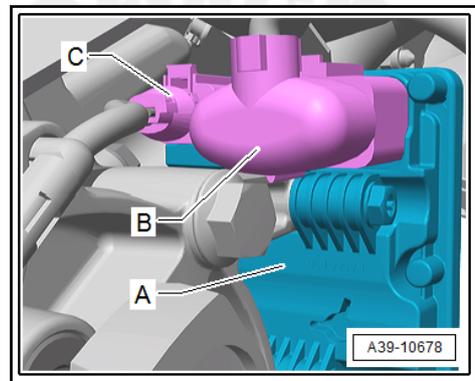


- Support the driveshaft -A- on the tunnel brace -1- with a wooden block and if necessary re-install the tunnel brace.



- Move the rear driveshaft tube as far as possible in direction of transmission.
- Disconnect the connector -B- on the All Wheel Drive Control Module -J492- -A-.

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Note

Ignore -item C-.

- Carefully lower subframe with components.



Note

Make sure there is enough clearance for brake lines, wires and the driveshaft centering pin when lowering.

Subframe with Attachments, Installing

Install in reverse order of removal. Note the following:

- Remove the Locating Pins -T10096-. Refer to [⇒ S3.2 securing", page 271](#) .

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:

◆ **Chassis**

- ◆ Wheel Damping Electronics
- ◆ 01 - OBD-capable systems.
- ◆ 14 - Electronic Damping Control Module -J250
- ◆ 14 - Electronic Damping Control Module, functions
- ◆ 14 - Control Position, readapting
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.
- ◆ Vehicles with adaptive cruise control, calibrate the adaptive cruise control. Refer to ⇒ [C3.1ruise Control \(ACC\), Adjusting](#), page 431 .
- Overview table for when an axle alignment is needed. Refer to ⇒ [f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to ⇒ [-3.1.3 Subframe, Multi-Link Suspension, AWD vehicles](#), page 270
- ◆ Refer to ⇒ [-7.2 Trailing Arm](#), page 334
- ◆ Refer to ⇒ [-6.1.2 Shock Absorber and Spring, Multi-Link Suspension](#), page 313
- ◆ Refer to ⇒ [-2.2.1 Left Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Vehicles with Multi-Link Suspension](#), page 404
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; **Rear Brakes; Overview - Rear Brakes.**
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411

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2 Axle Beam

⇒ -2.1 Axle Beam", page 254

⇒ B2.2 eam Bonded Rubber Bushing, Replacing", page 254

2.1 Overview - Axle Beam



Caution

There is a risk of damaging the axle beam threaded connection threads on the body.

- ◆ *The axle beam bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*

1 - Cover

2 - Bolt

- 50 Nm +45°
- Always replace if removed

3 - Bolt

- 70 Nm +360°
- Always replace if removed
- Tighten in the curb weight position. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11](#) .

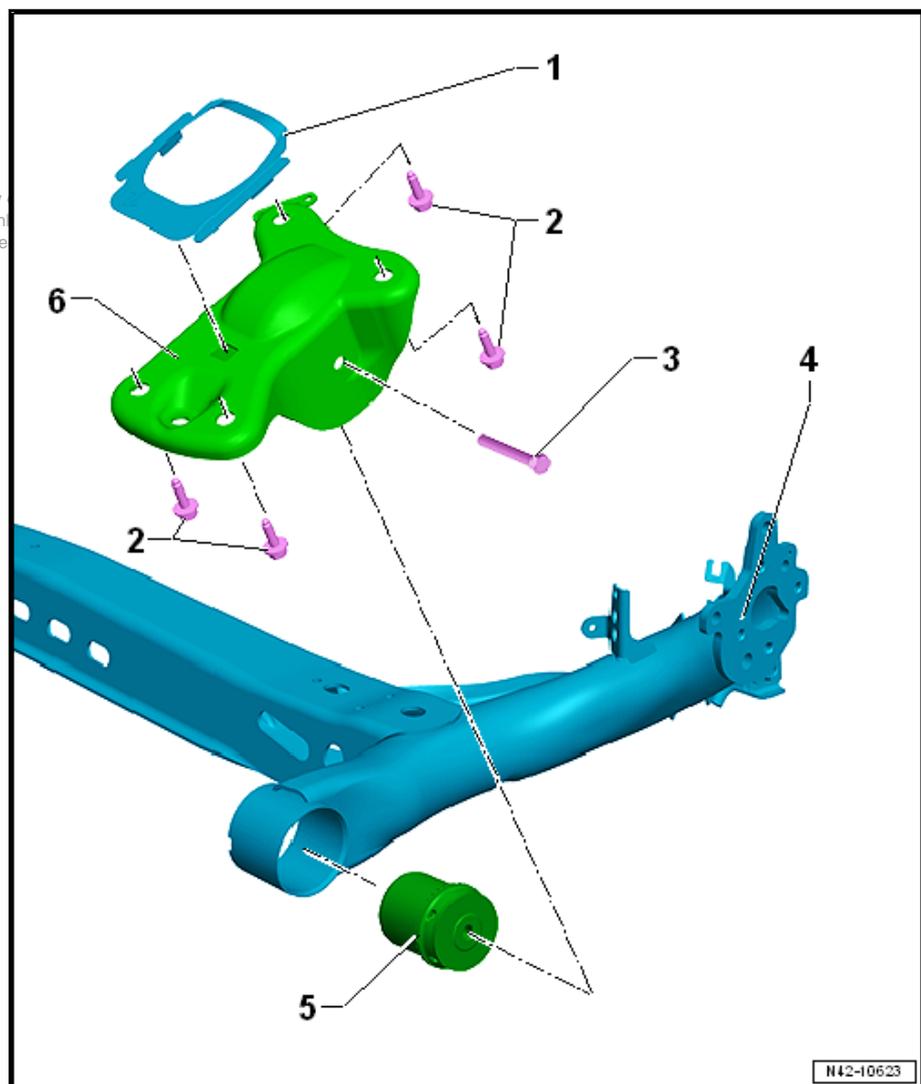
4 - Axle Beam

- Removing and Installing. Refer to ⇒ [A1.2.1 xle, Removing and Installing, Torsion Beam Axle Vehicles with FWD", page 233](#) .

5 - Bonded Rubber Bushing

- Note the installation position
- Replacing. Refer to ⇒ [B2.2 eam Bonded Rubber Bushing, Replacing", page 254](#) .

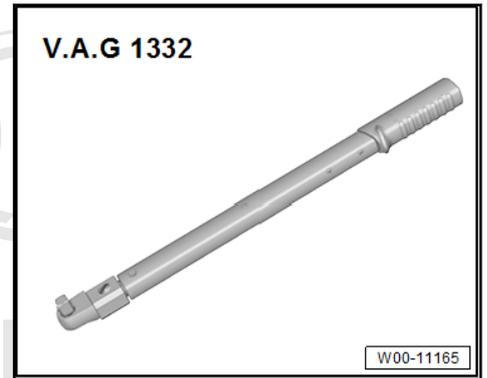
6 - Mounting Bracket



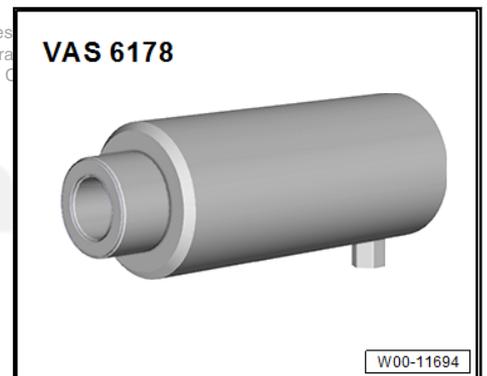
2.2 Axle Beam Bonded Rubber Bushing, Replacing

Special tools and workshop equipment required

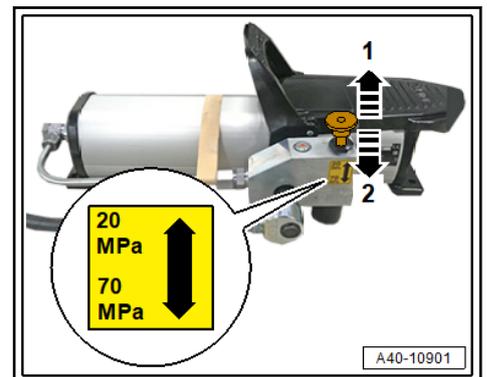
- ◆ Torque Wrench, 40-200Nm -VAG1332A-



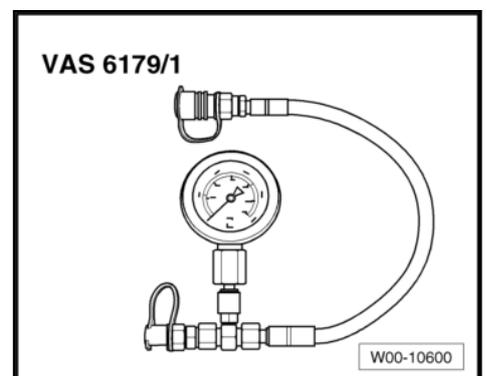
- ◆ Hydraulic Press -VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 - T10205/13-



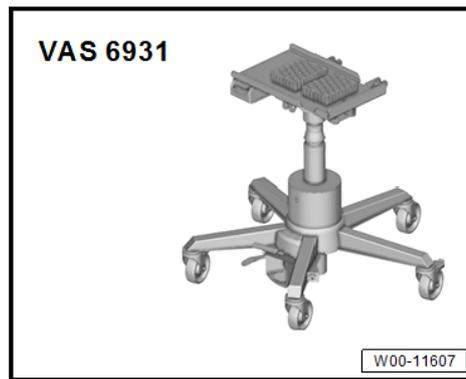
- ◆ Pneumatic/Hydraulic Foot Pump -VAS6179-



- ◆ Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1-



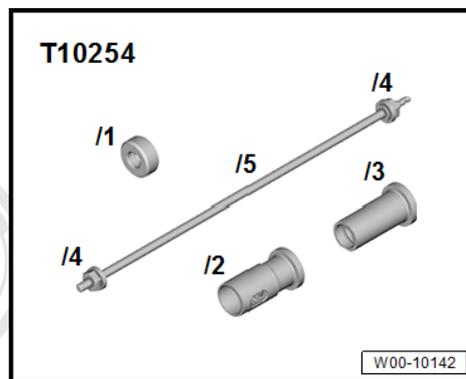
◆ Engine and Gearbox Jack -VAS6931-



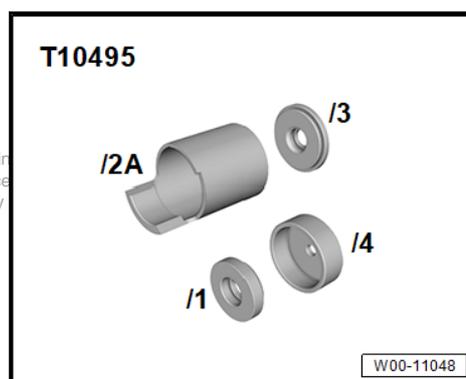
◆ Tensioning Strap -T10038-



◆ Hydraulic Press - Ball Joint Assembly Tools -T10254-

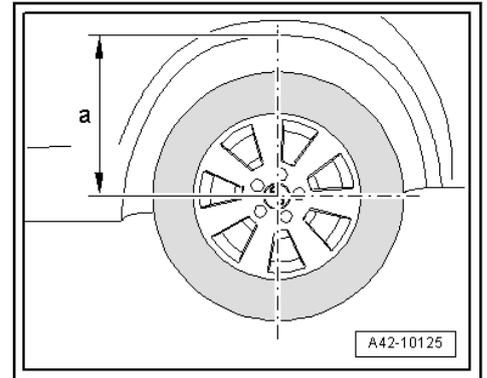


◆ Pneumatic/Hydraulic Foot Pump - Press Kit -T10495-



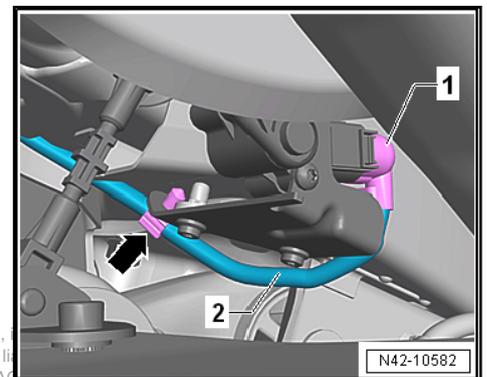
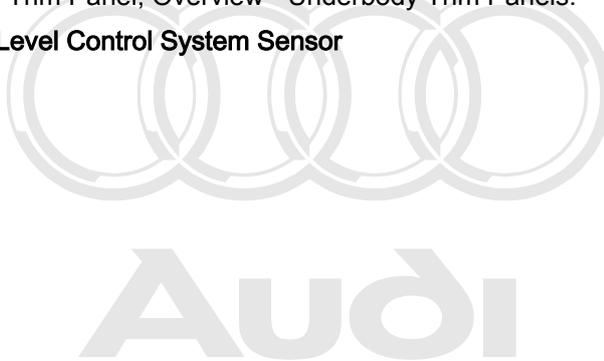
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Removing



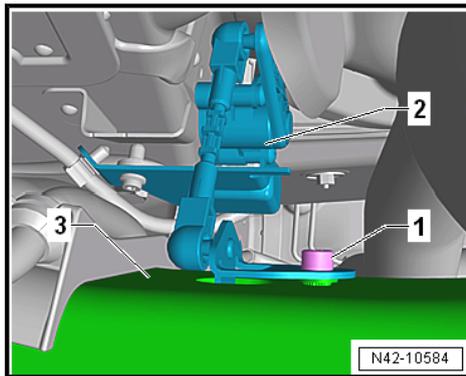
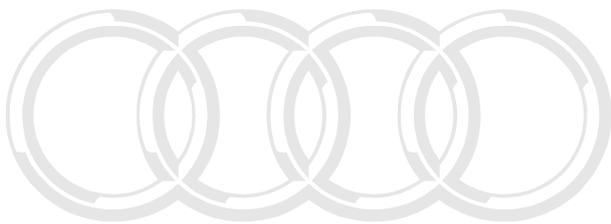
- Release the parking brake.
- Before starting work, determine the measurement -a-, for example with tape measure, from center of wheel to lower edge of wheelhouse.
- Measurement must be performed in curb weight position (unloaded condition). Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Note the measurement. This will be needed when tightening the bolts/nuts.
- Raise the vehicle to the installation height.
- Remove the rear wheels. Refer to ⇒ [a1 nd Tires](#), page 411 .
- If equipped, remove the underbody trim panels in the area of the axle beam. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.

Vehicles with Level Control System Sensor



- Release and disconnect the connector -1- from the Left Rear Level Control System Sensor -G76-.
- Unclip the wire -2- from the clip -arrow-.
- Remove the bolt -1-.

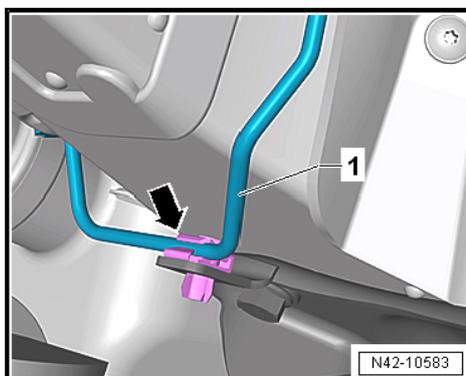
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- Remove the lever from the Left Rear Level Control System Sensor -G76- -2- from the axle beam -3-.

Continuation for All Vehicles

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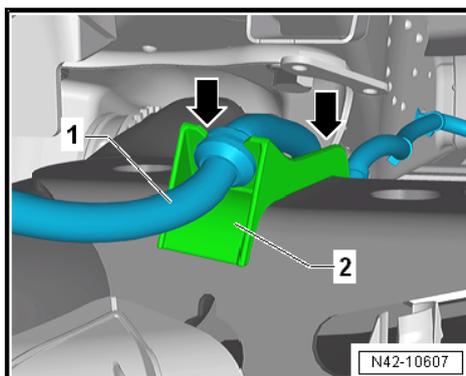
- Unclip the brake lines -1- from the right mounting bracket -arrow-.



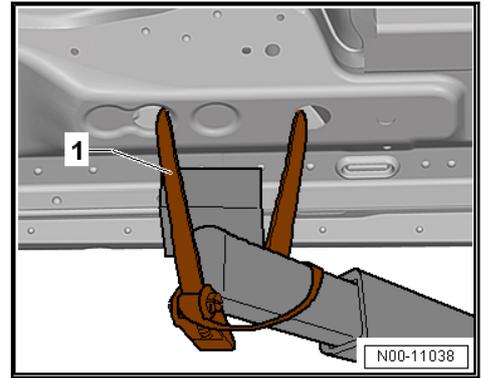
Note

This will destroy the clip, so it will have to be replaced.

- Unclip the wire -1- from the bracket -2- on both sides of the axle beam -arrows-.



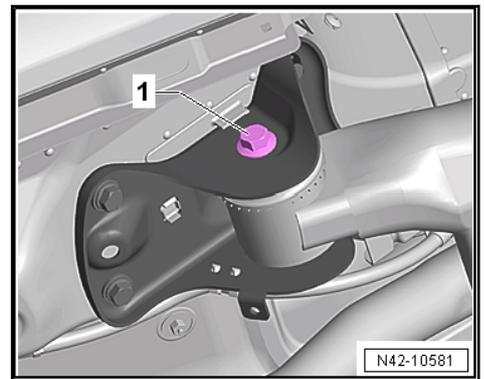
- Secure both sides of the vehicle on the hoist arms using tensioning straps Tensioning Strap -T10038- -1-.



WARNING

The vehicle could slide off the hoist if it is not secured.

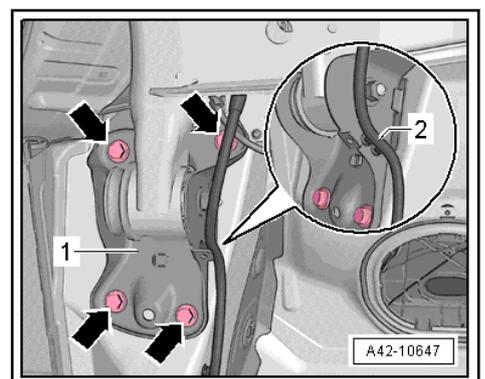
- Loosen the right and left bolt -1-.



- Place the Engine and Gearbox Jack -VAS6931- with the mounting plate and a suitable support underneath.
- Unclip the wire -2- from the mounting bracket -1-.

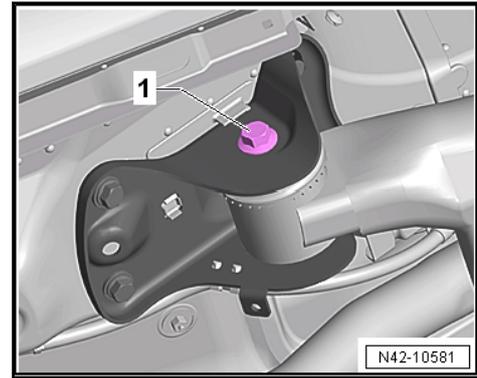


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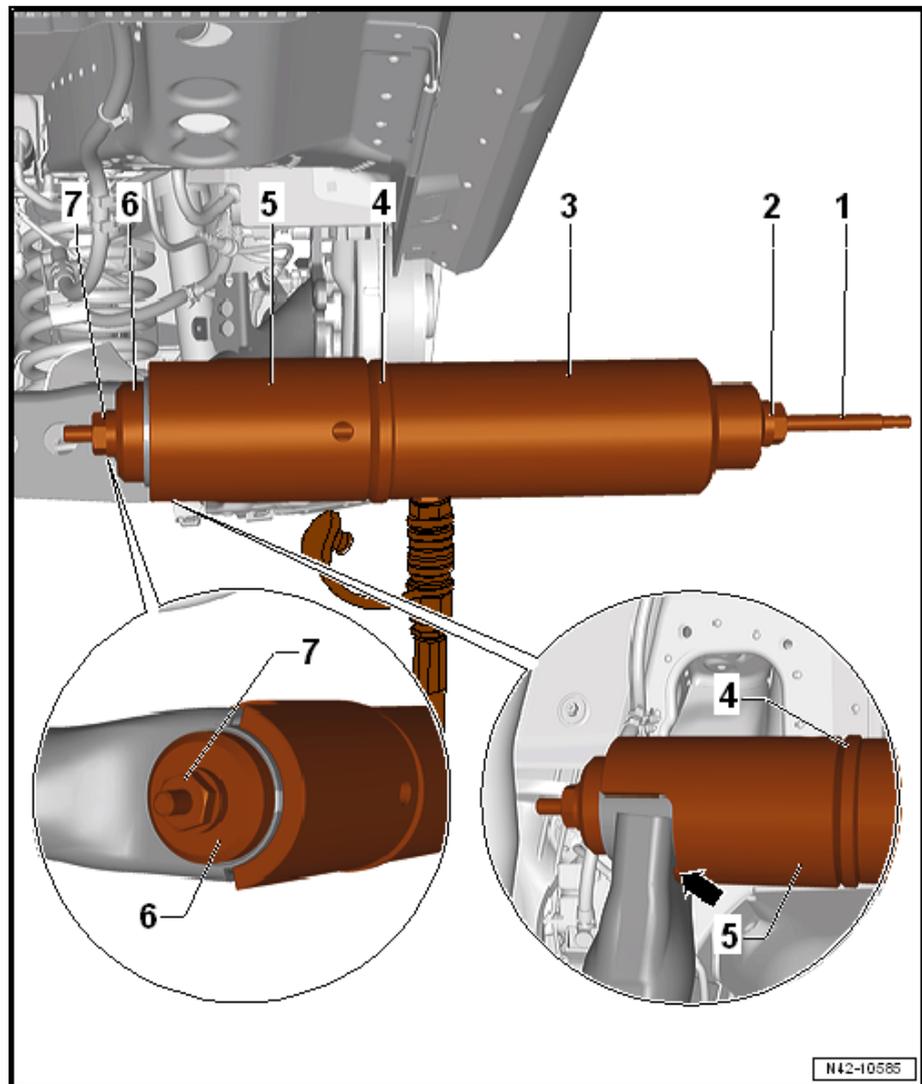


- Mark the position of the bolts -arrows- on the mounting bracket -1- on the right and left vehicle side.
- Remove the bolts -arrows- for the right and left axle beam.
- Carefully lower the rear axle using the Engine and Gearbox Jack -VAS6931- until it is possible to remove the bolt -1-.

erwan



– Remove the bolt -1-.



– Mount the special tools as illustrated.

1 - Hydraulic Press - Ball Joint Assembly Tools - Spindle
-T10254/5-

2 - Hydraulic Press - Ball Joint Assembly Tools - Nut -T10254/4-

3 - Hydraulic Press -VAS6178- with Bearing Installer - Wheel
Hub/Bearing Kit - Pressure Head -T10205/13-

4 - Pneumatic/Hydraulic Foot Pump - Press Kit - Press Plate
 -T10495/3-

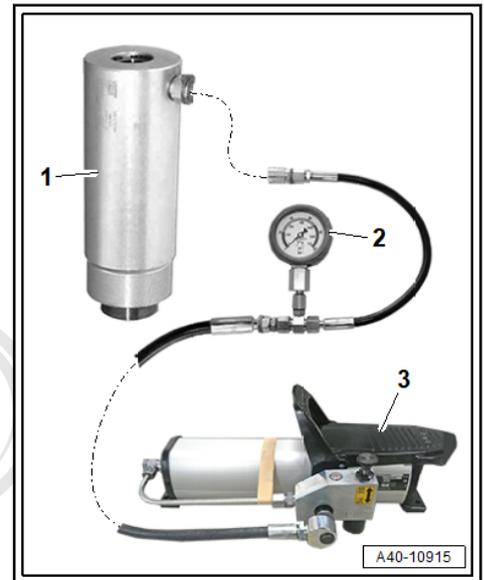
5 - Pneumatic/Hydraulic Foot Pump - Press Kit - Tube -
 T10495/2-

◆ Pay attention to the tube contacts the axle beam, -arrow-.

6 - Pneumatic/Hydraulic Foot Pump - Press Kit - Thrust Piece
 -T10495/1-

7 - Hydraulic Press - Ball Joint Assembly Tools - Nut -T10254/4-

– Connect the special tools as shown.



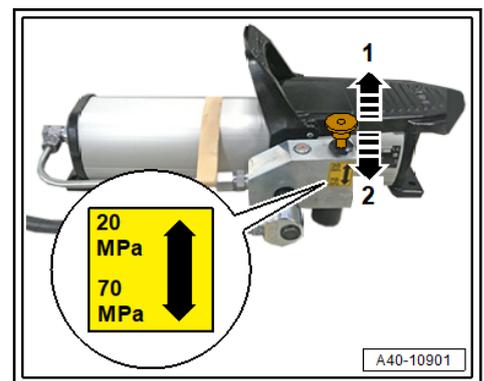
1 - Hydraulic Press -VAS6178-

2 - Pneumatic/Hydraulic Foot Pump - Pressure Gauge -
 VAS6179/1-

3 - Pneumatic/Hydraulic Foot Pump -VAS6179-

– Pull the control knob on the pressure relief valve for the
 Pneumatic/Hydraulic Foot Pump -VAS6179- to level -1-.

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• The control knob must be in the position -1-. The setting is a maximum pressure of 200 bar (2,900.76 psi). In position -2- (700 bar (10,152.66 psi)) the nominal load of the spindle is exceeded.



Caution

Risk of destroying components due to the pressure setting being too high.

- *Never set the pressure greater than the specified (position 1 = 20 MPa).*

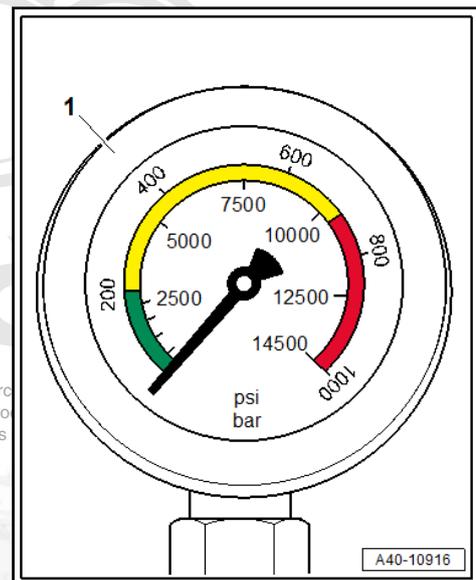


DANGER!

Risk of personal injury and property damage caused by the spindle breaking or the assembly tool deforming. Uncontrolled flying broken pieces possible.

- *Wear safety gloves.*
- *Wear protective headgear with a visor.*
- *Pay attention when operating the foot pump, to not push the switch button in the lower position.*

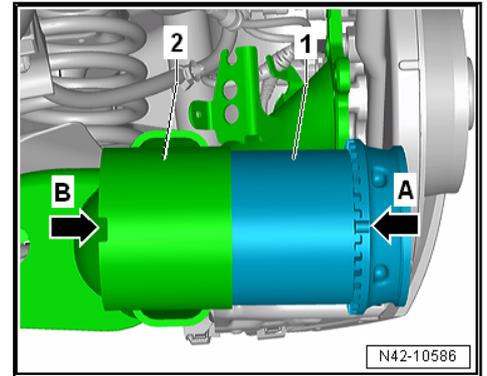
- Carefully operate the Pneumatic/Hydraulic Foot Pump - VAS6179- while monitoring the pressure indicator on the Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1- -1-.



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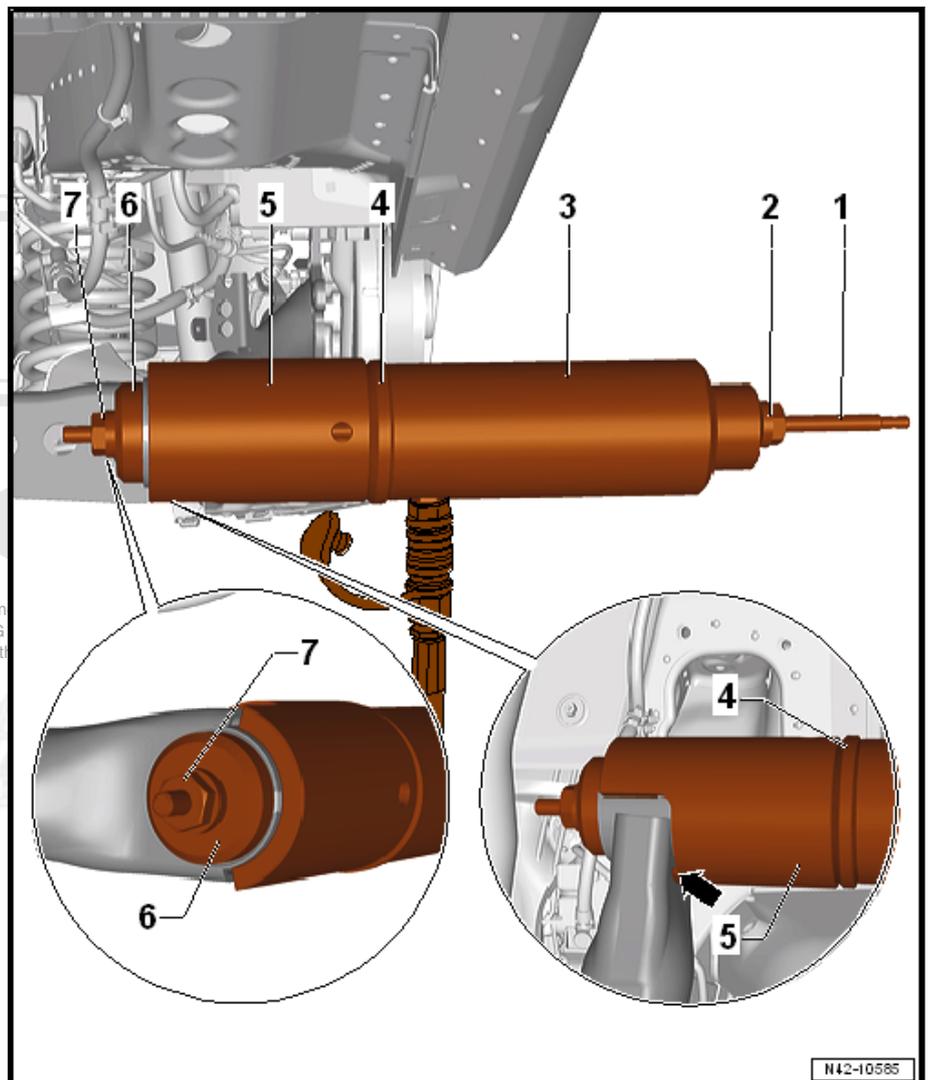
- Make sure that the indicator stays in the green display area. Do not exceed the maximum permitted pressure of 200 bar (2,900.76 psi).
- Activate the pump and remove the bonded rubber bushing.

Installing



- Pay attention to the installed location of the bonded rubber bushing -1- on the axle beam -2-.

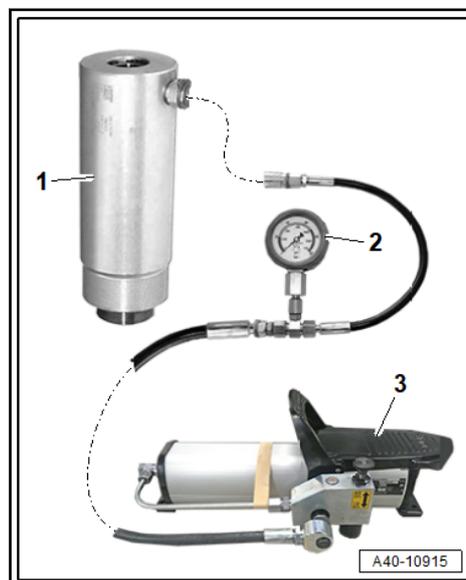
The tab -arrow A- of the bonded rubber bushing -1- must point to the notch -arrow B- in the axle bearing -2-.



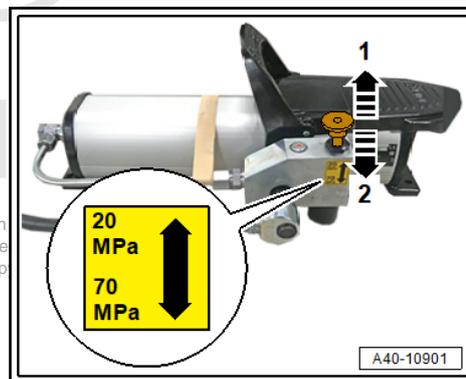
- Mount the special tools as illustrated.



- 1 - Hydraulic Press - Ball Joint Assembly Tools - Spindle -T10254/5-
 - 2 - Hydraulic Press - Ball Joint Assembly Tools - Nut -T10254/4-
 - 3 - Hydraulic Press -VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit - Pressure Head -T10205/13-
 - 4 - Pneumatic/Hydraulic Foot Pump - Press Kit - Thrust Piece -T10495/1-
 - 5 - Bonded Rubber Bushing
 - 6 - Pneumatic/Hydraulic Foot Pump - Press Kit - Press Plate -T10495/3-
 - 7 - Hydraulic Press - Ball Joint Assembly Tools - Nut -T10254/4-
- Before installing the bonded rubber bushing, make sure that the mark on the bonded rubber bushing aligns with the mark on the axle beam.
 - Connect the special tools as shown.



- 1 - Hydraulic Press -VAS6178-
 - 2 - Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1-
 - 3 - Pneumatic/Hydraulic Foot Pump -VAS6179-
- Pull the control knob on the pressure relief valve for the Pneumatic/Hydraulic Foot Pump -VAS6179- to level -1-.



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- The control knob must be in the position -1-. The setting is a maximum pressure of 200 bar (2,900.76 psi). In position -2-

(700 bar (10,152.66 psi)) the nominal load of the spindle is exceeded.



Caution

Risk of destroying components due to the pressure setting being too high.

- *Never set the injection pressure greater than the specified (position 1 = 20 MPa).*

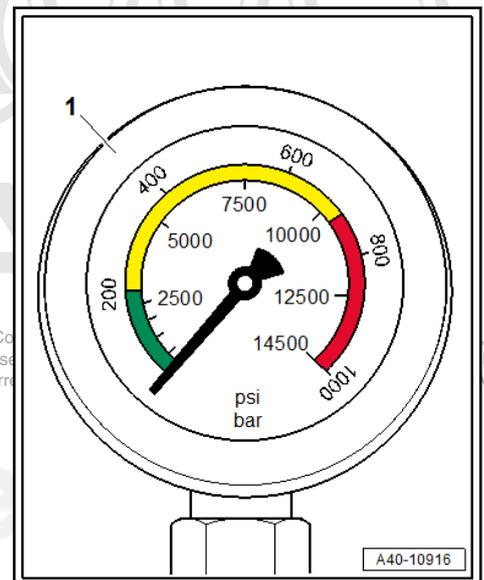


DANGER!

Risk of personal injury and property damage caused by the spindle breaking or the assembly tool deforming. Uncontrolled flying broken pieces possible.

- *Wear safety gloves.*
- *Wear protective headgear with a visor.*
- *Pay attention when operating the foot pump, to not push the switch button in the lower position.*

- Carefully operate the Pneumatic/Hydraulic Foot Pump - VAS6179- while monitoring the pressure indicator on the Pneumatic/Hydraulic Foot Pump - Pressure Gauge - VAS6179/1- -1-.



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is not liability G.

- Make sure that the indicator stays in the green display area. Do not exceed the maximum permitted pressure of 200 bar (2,900.76 psi).
- Press in the bonded rubber mount to the stop.
- Check the installed position of the bonded rubber bushing.

**Caution**

Risk of destroying components due to the pressure setting being too high.

- *Never select the foot pump mode with the higher pressure.*

- If the pressing in does not work with the pressure specified, the repair setup must be checked.

Install in reverse order of removal. Note the following:

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:
 - ◆ **Chassis**
 - ◆ **Wheel Damping Electronics**
 - ◆ **01 - OBD-capable systems**
 - ◆ **14 - Electronic Damping Control Module -J250**
 - ◆ **14 - Electronic Damping Control Module, functions**
 - ◆ **14 - Control Position, readapting**
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.
- Perform an axle alignment. Refer to ⇒ [A2 lignment](#), page 412 .

Tightening Specifications

- ◆ Refer to ⇒ [-2.1 Axle Beam](#), page 254
- ◆ Refer to ⇒ [-2.2.2 Left Rear Level Control System SensorG76, Vehicles with Torsion Beam Axle](#), page 405
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411

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3 Subframe

⇒ [-3.1 Subframe", page 267](#)

⇒ [S3.2 ecurring", page 271](#)

⇒ [S3.3 erVICing", page 280](#)

3.1 Overview - Subframe

⇒ [-3.1.1 Subframe, Multi-Link Suspension without Bonded Rubber Bushing FWD Vehicles, Vehicles with High-Voltage System", page 267](#)

⇒ [-3.1.2 Subframe, Multi-Link Suspension with Bonded Rubber Bushing FWD Vehicles", page 269](#)

⇒ [-3.1.3 Subframe, Multi-Link Suspension, AWD vehicles", page 270](#)

3.1.1 Overview - Subframe, Multi-Link Suspension without Bonded Rubber Bushing FWD Vehicles, Vehicles with High-Voltage System



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- ◆ *The subframe bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*

1 - Bolt

- 70 Nm + 180°
- Always replace if removed

2 - Bolt

- 50 Nm +45°
- Always replace if removed

3 - Bolt

- 70 Nm + 180°
- Always replace if removed

4 - Subframe

- There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.
- Subframe with Attachments, Removing and Installing

◆ Refer to ⇒ [A1.2.2 xle, Removing and Installing, Multi-Link Suspension Vehicles with FWD](#), page 238

◆ Refer to ⇒ [A1.2.3 xle, Removing and Installing, Multi-Link Suspension Vehicles with High-Voltage System](#), page 242

5 - Bolt

- 70 Nm + 180°
- Always replace if removed

6 - Subframe Bracket

- Only for Audi A3 Cabrio

7 - Bolt

- Tightening specification and sequence. Refer to ⇒ [Fig. "Subframe Bracket for Audi A3 cabrio - Tightening Specification and Sequence"](#), page 269 .

8 - Bolt

- Tightening specification and sequence. Refer to ⇒ [Fig. "Subframe Bracket for Audi A3 cabrio - Tightening Specification and Sequence"](#), page 269 .

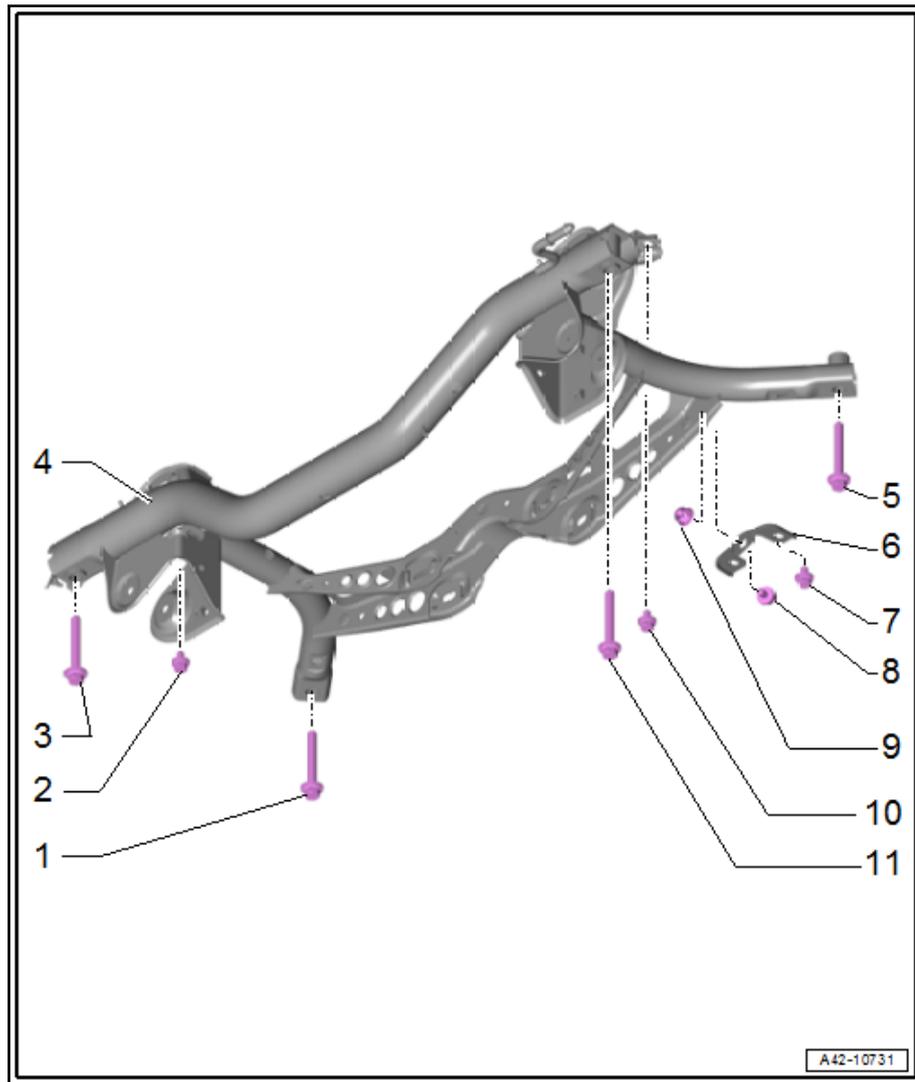
9 - Nut

10 - Bolt

- 50 Nm +45°
- Always replace if removed

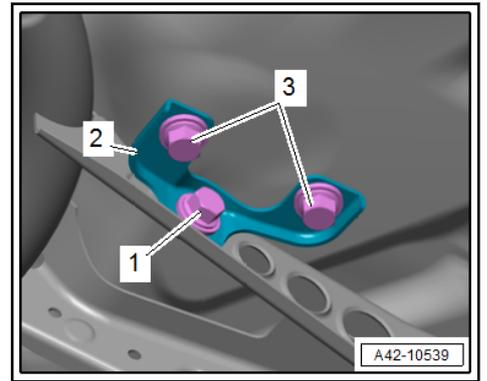
11 - Bolt

- 70 Nm + 180°
- Always replace if removed



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Subframe Bracket for Audi A3 cabrio - Tightening Specification and Sequence



– Tighten the bolts in steps as follows:

Step	Bolts	Tightening Specification/Additional Turn
1.	-1 and 3-	Install by hand until the bolt heads touch
2.	-1 and 3-	Tighten to 5 Nm and immediately loosen 90° turn
3.	-1 and 3-	Tighten to 20 Nm

3.1.2 Overview - Subframe, Multi-Link Suspension with Bonded Rubber Bushing FWD Vehicles



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- ◆ *The subframe bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*

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1 - Subframe

- ❑ Subframe with Attachments, Removing and Installing. Refer to [⇒ A1.2.2 xle, Removing and Installing, Multi-Link Suspension Vehicles with FWD](#), page 238.

2 - Rear Bonded Rubber Bushing

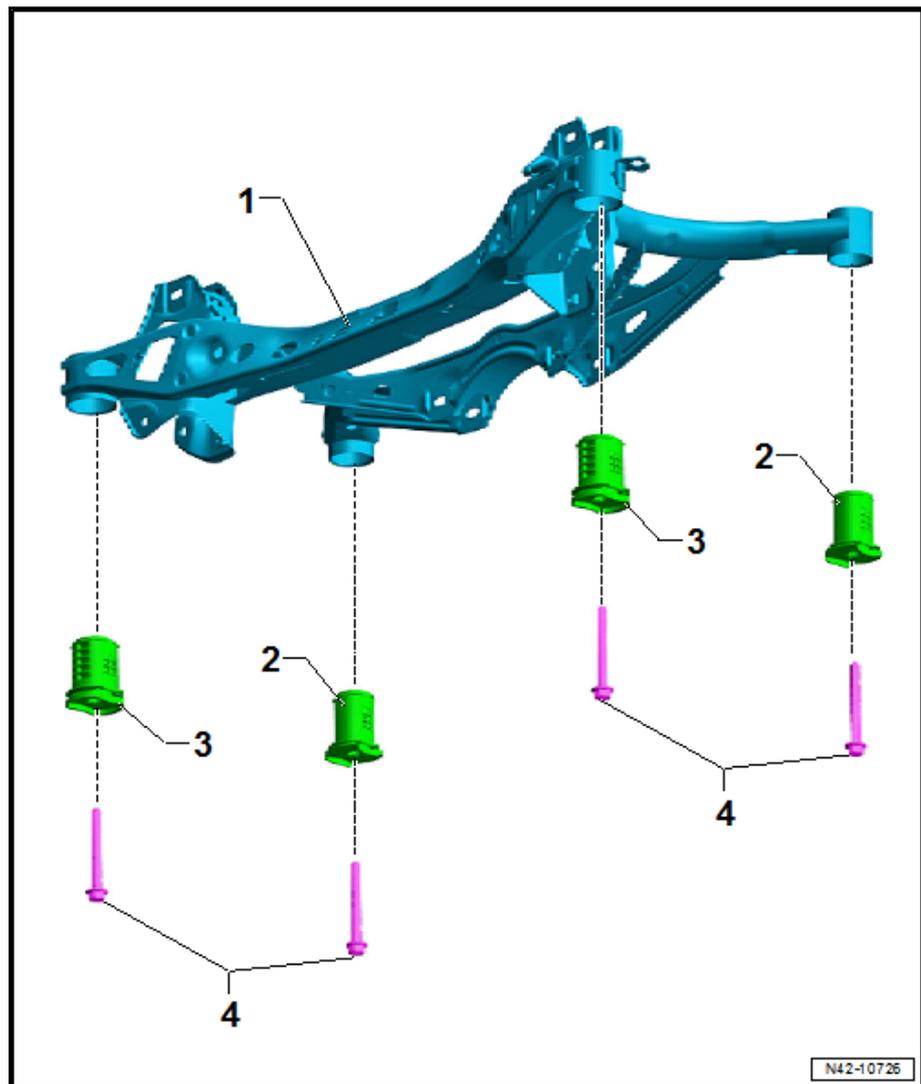
- ❑ Replacing. Refer to [⇒ F3.3.1 Front Bonded Rubber Bushing, Replacing \(Multi-Link Suspension\)](#), page 280.

3 - Front Bonded Rubber Bushing

- ❑ Replacing. Refer to [⇒ F3.3.1 Front Bonded Rubber Bushing, Replacing \(Multi-Link Suspension\)](#), page 280.

4 - Bolts

- ❑ 70 Nm + 180°
- ❑ Replace after removing



3.1.3 Overview - Subframe, Multi-Link Suspension, AWD vehicles



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- ◆ *The subframe bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*

1 - Crossbrace

- Only for Audi Quattro cabriolet

2 - Bolt

- 40 Nm

3 - Pop Rivet Nut

4 - Bolt

- 40 Nm

5 - Pop Rivet Nut

6 - Subframe

- Subframe with Attachments, Removing and Installing. Refer to ⇒ [A1.2.4 xle, Removing and Installing, Multi-Link Suspension Vehicles with AWD](#), page 248 .

7 - Rear Bonded Rubber Bushing

- On A3 cabriolet non-replicable aluminum bearing
- Replacing. Refer to ⇒ [F3.3.1 Front Bonded Rubber Bushing, Replacing \(Multi-Link Suspension\)](#), page 280 .

8 - Bolt

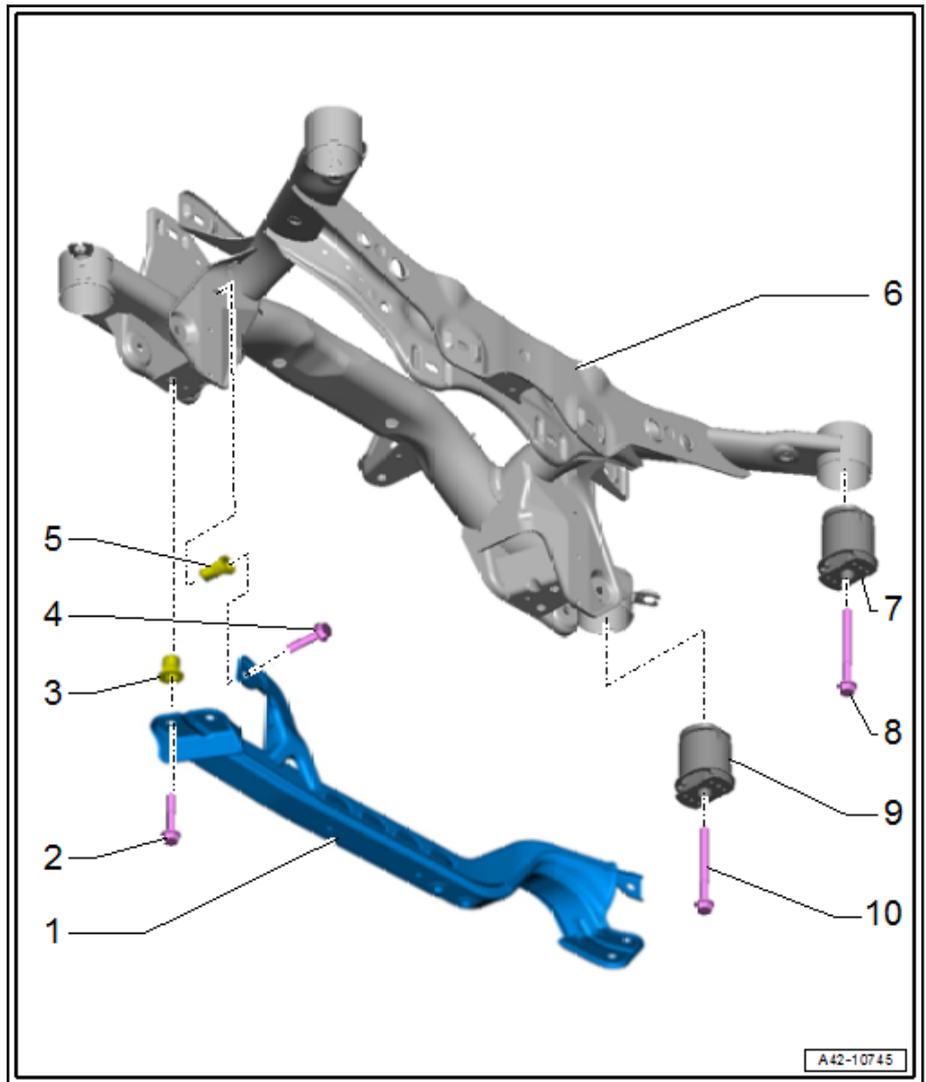
- 70 Nm + 180°
- Always replace if removed

9 - Front Bonded Rubber Bushing

- On A3 cabriolet nonreplicable aluminum bearing
- Replacing. Refer to ⇒ [F3.3.1 Front Bonded Rubber Bushing, Replacing \(Multi-Link Suspension\)](#), page 280 .

10 - Bolt

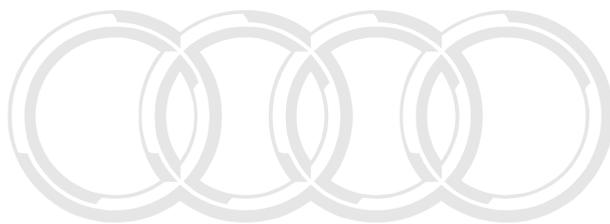
- 70 Nm + 180°
- Always replace if removed



3.2 Subframe, Securing

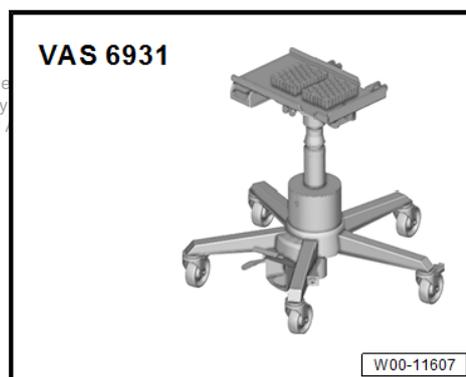
Special tools and workshop equipment required

◆ Torque Wrench, 40-200Nm -VAG1332A-

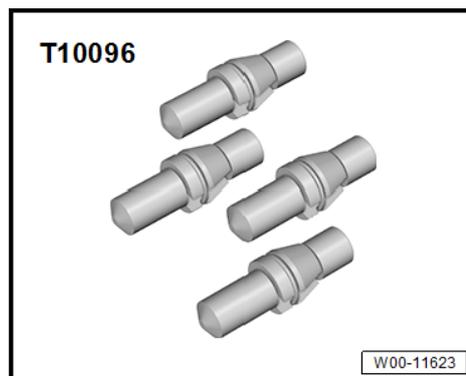


◆ Engine and Gearbox Jack -VAS6931-

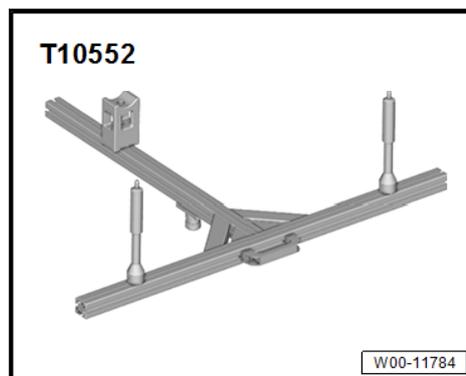
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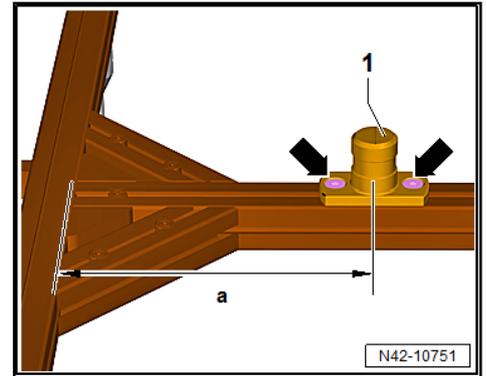
◆ Locating Pins -T10096-



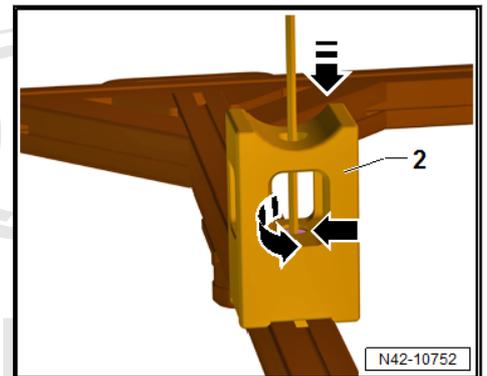
◆ Rear Axle Support -T10552-



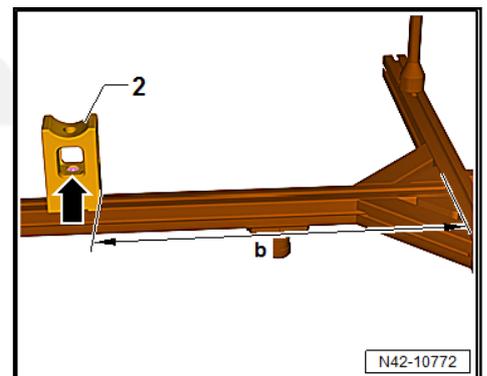
Tool Preparation



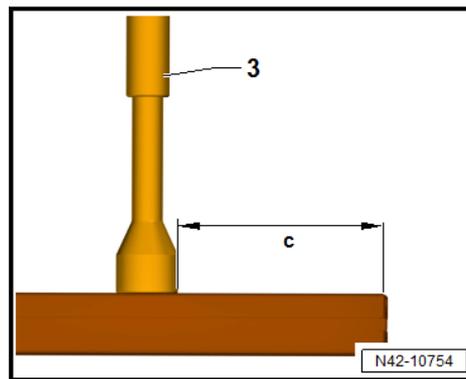
- Loosen the bolts -arrows-.
- Adjust the dimension -a-.
- Dimension -a- = 250 mm.
- Tighten the bolts to 10 Nm again.
- Loosen the bolt -arrow-.



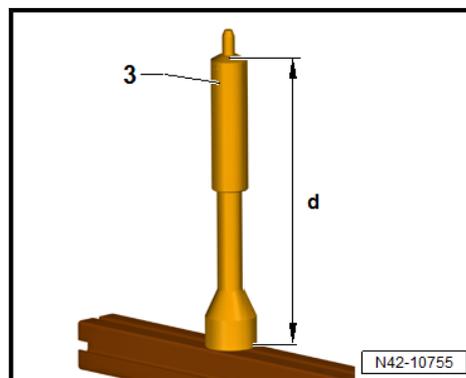
- Turn the Rear Axle Support - Support -T10552/2- -2- so that the profile is perpendicular to the direction of travel.
- Adjust the dimension -b-.



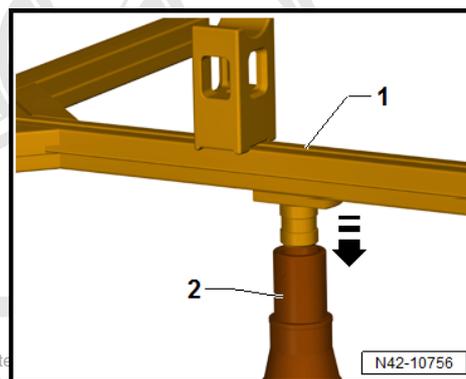
- FWD vehicles -b- = 270 mm.
- AWD vehicles -b- = 410 mm.
- Tighten the bolt -arrow- again to 10 Nm.
- Loosen the left and right lower Support Bolts -T10552/1- -3-.



- Adjust the dimension -c-.
- Dimension -c- = 47 mm.
- Turn the left and right threaded sleeves on the Support Bolts -T10552/1- -3- until the dimension -d- is reached.

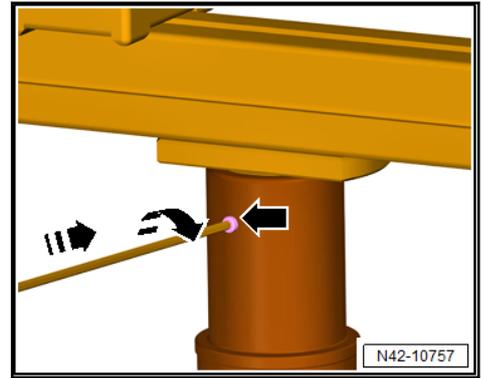


- FWD vehicles -d- = 230 mm.
- AWD vehicles -d- = 215 mm.
- Place the Rear Axle Support -T10552- -1- on the Engine and Gearbox Jack -VAS6931- -2-.



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- Tighten the bolt -right arrow-.

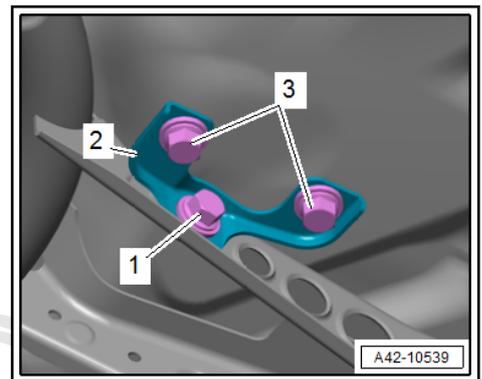


- ◆ Tighten the M6 bolt to 5 Nm.
- ◆ Tighten the M8 bolt to 10 Nm.

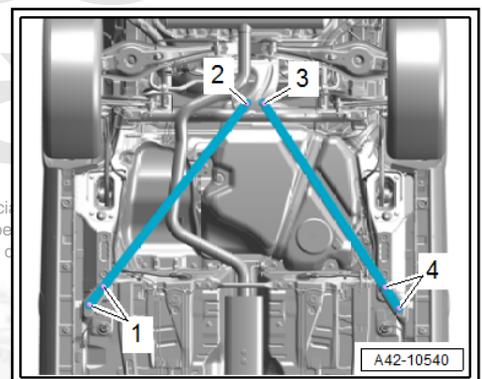
Procedure

- Remove the muffler. Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview - Muffler.
- Remove the springs. Refer to ⇒ [R6.4 removing and Installing", page 323](#) .

Audi A3 Cabriolet:

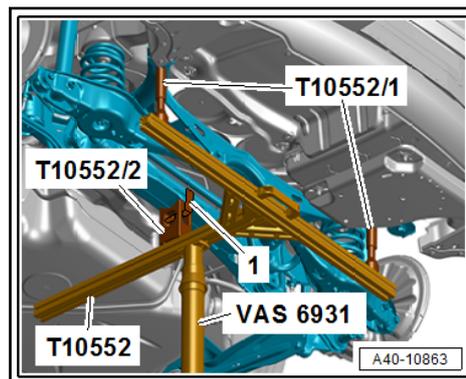


- Loosen the bolts -3- for the subframe bracket -2- and remove bolt -1- to do this conterhold the nut.
- Remove the bolts -1 through 4- and the diagonal brace.



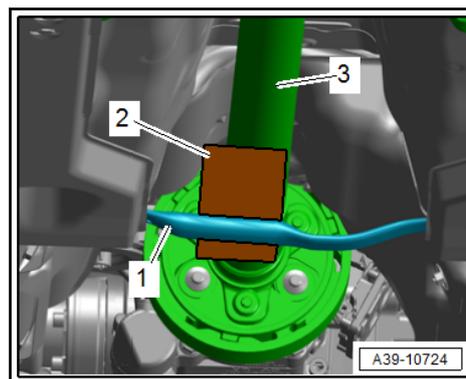
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FWD Vehicles:



- Bring the prepared Rear Axle Support - T10552- with the Engine and Gearbox Jack - VAS6931- to rest on the cross-brace.
- The Mounting Pins -T10552/1- engage in the holes on the back of the subframe.
- Secure the subframe with the rear axle support tensioning strap.

AWD Vehicles:



- Remove the rear driveshaft tube with the flexible disc and vibration damper from the rear final drive. Refer to ⇒ Rear Final Drive; Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing .
- Support the driveshaft -3- at the tunnel brace -1- using a wooden block -2-.
- Slide the rear driveshaft tube as far as possible in the direction of the transmission.
- Position the Rear Axle Support -T10552- -1- with the Engine and Gearbox Jack -VAS6931- -5- under the subframe and lift.

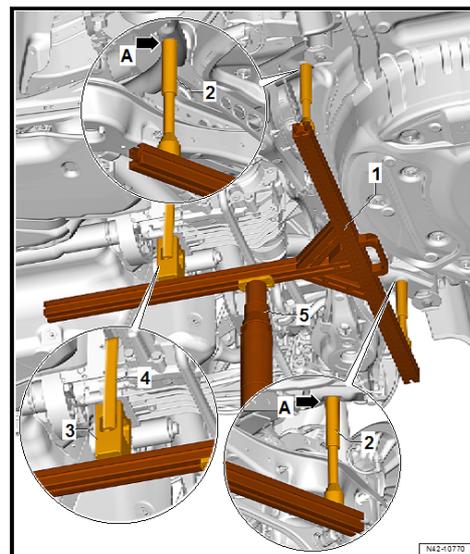
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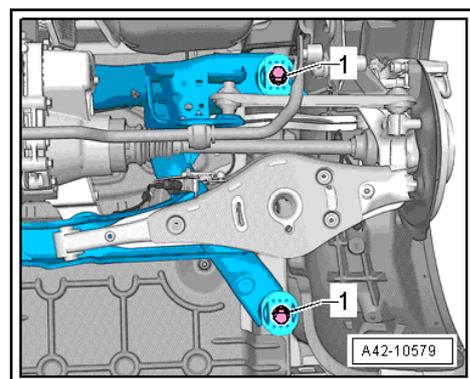
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- Insert the Rear Axle Support - Locating Bores -T10552/1- -2- in the holes on the subframe -A arrows-.
- Secure the Rear Axle Support - Support -T10552/2- -3- on the subframe using the tensioning strap -4-.

Subframe Version 1:



- To secure the subframe, the Locating Pins -T10096- must be installed on the left and right side at the positions -1- one after the other.

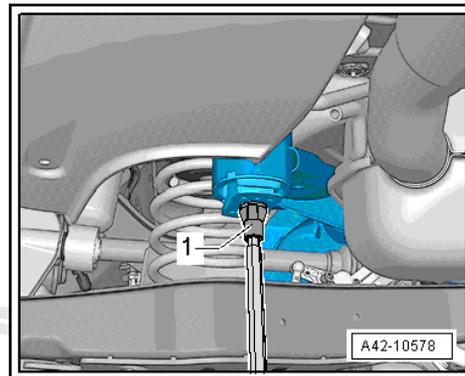


Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- ◆ *The subframe bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*

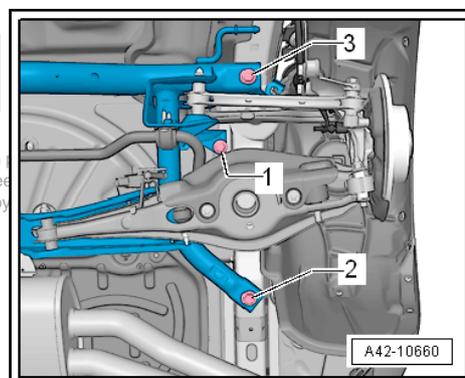
- Remove a bolt from -1- for the subframe.
- Install the locating pin -1- from the Locating Pins -T10096- and tighten to a maximum 20 Nm.



- Repeat procedure for the second front bolt and the rear subframe bolts.
- ◆ The subframe position is now secured.

Subframe Version 2:

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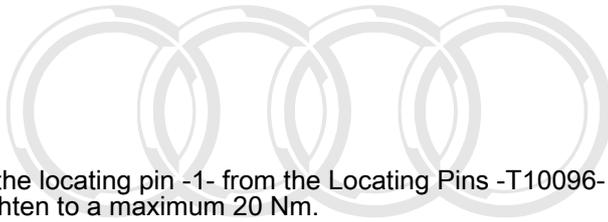


Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- ◆ *The subframe bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*

- Remove the left and right bolts -1-.
- To secure the subframe, the Locating Pins -T10096- must be installed on the left and right sides at the positions -2 and 3- one after the other.
- Remove a bolt from -arrow- for the subframe.

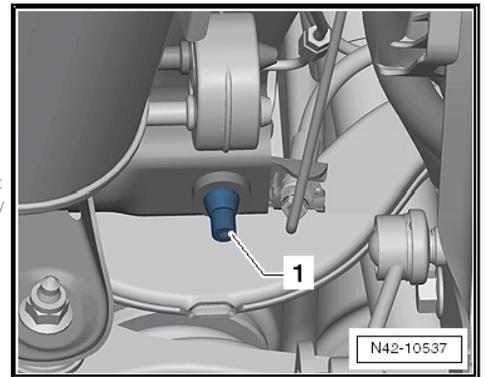
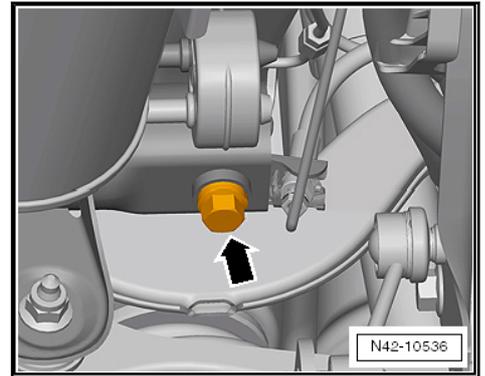


- Install the locating pin -1- from the Locating Pins -T10096- and tighten to a maximum 20 Nm.

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- Repeat procedure for the second front bolt and the rear subframe bolts.
- ◆ The subframe position is now secured.

Remove the Locating Pins -T10096-

Removal is performed in the reverse order. Note the following:

- Only remove one locating pin diagonally and install a new locating pin in this location and tighten.



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- ◆ *The subframe bolts on the body must not be loosened or tightened with an impact wrench.*
- ◆ *Always install all bolts by hand for the first few turns.*



WARNING

Risk of accident!

- ◆ *If the vehicle will be driving on the streets, all bolts and nuts must be tightened properly according to the guidelines.*

- Install the springs. Refer to [⇒ R6.4 removing and Installing](#), page 323 .

- Install the driveshaft. Refer to ⇒ Rear Final Drive; Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.
- A road test must be performed after completing repairs. If the steering wheel is crooked, the wheels must be aligned. Refer to ⇒ [A2 alignment](#), page 412 .

Tightening Specifications

- ◆ Refer to ⇒ [-3.1 Subframe](#), page 267
- ◆ Diagonal braces. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- ◆ Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.

3.3 Subframe, Servicing

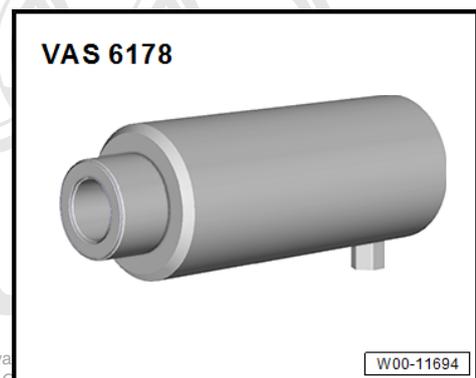
⇒ [F3.3.1 front Bonded Rubber Bushing, Replacing \(Multi-Link Suspension\)](#), page 280

⇒ [R3.3.2 rear Bonded Rubber Bushing, Replacing \(Multi-Link Suspension\)](#), page 286

3.3.1 Subframe Front Bonded Rubber Bushing, Replacing (Multi-Link Suspension)

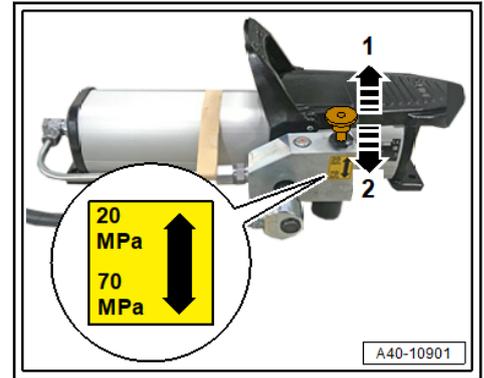
Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-
- ◆ Hydraulic Press -VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-

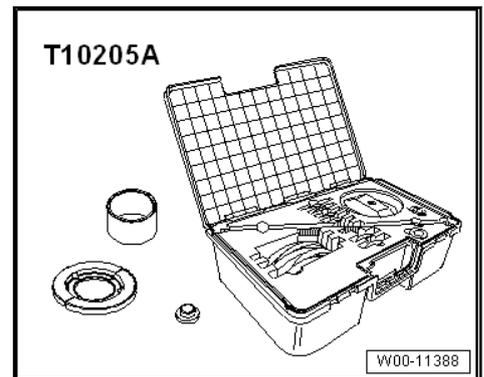


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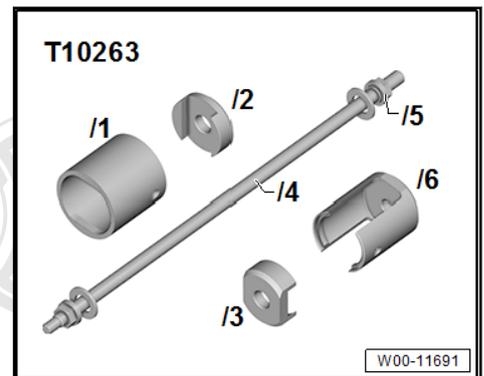
◆ Pneumatic/Hydraulic Foot Pump -VAS6179-



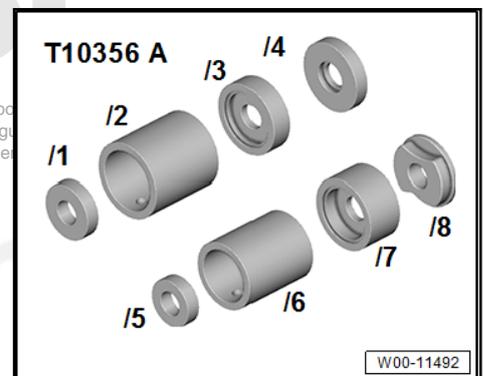
◆ Bearing Installer - Wheel Hub/Bearing Kit - 1 -T10205/1-
 from the Bearing Installer - Wheel Hub/Bearing Kit -
 T10205A-



◆ Hydraulic Press - Rear Subframe Bushing Tool Kit -T10263-



◆ Assembly Tool -T10356A-



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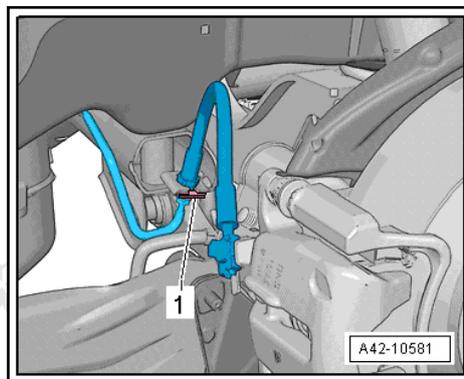
◆ Assembly paste. Refer to the ⇒ Electronic Parts Catalog (ETKA).

i Note

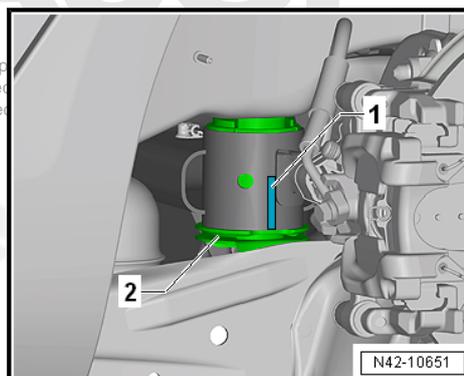
- ◆ *If a bonded rubber bushing is faulty, then the bonded rubber bushing on the opposite side must also be replaced. Refer to the ⇒ [Electronic Parts Catalog \(ETKA\)](#) for allocation.*
- ◆ *Check the other bushings before replacing a faulty bonded rubber bushing.*
- ◆ *If there are any tears or other visible damages, replace the bonded rubber bushing.*
- ◆ *To replace the bonded rubber bushing, the subframe must be lowered either at the front or at the rear. It is not necessary to remove the subframe.*
- ◆ *Lower the subframe alternating between the front and rear. This can avoid having to perform an axle alignment.*
- ◆ *Identify the installation position to the subframe before removing the bonded rubber bushing.*

Removing

- Before starting the procedures, determine the curb weight position. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Remove the wheels. Refer to ⇒ [a1 nd Tires](#), page 411 .
- Remove the clamps -1- on both sides of the vehicle.



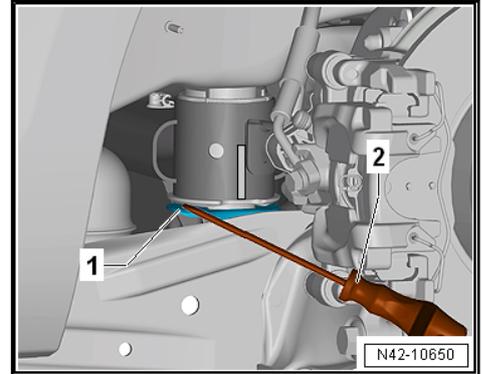
- Free up the brake line from the bracket and disconnect the brake line.
- Secure the subframe. Refer to ⇒ [S3.2 ecuring](#), page 271 .
- Mark the installation location of the bonded rubber bushing on the subframe with a felt-tip pen -1-.



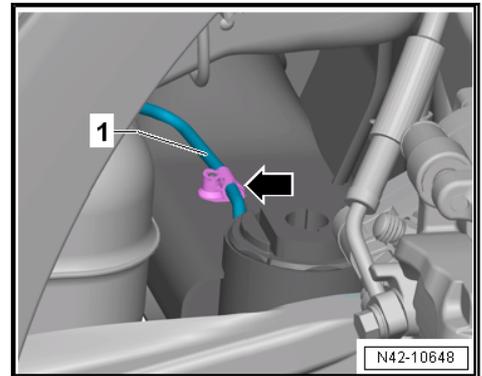
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is not liability

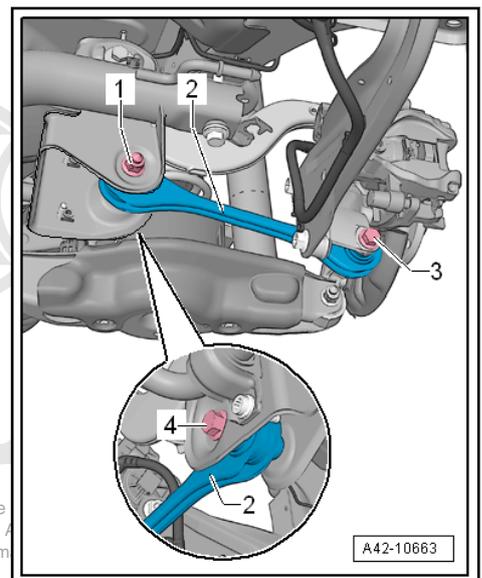
- Apply the mark -1- on the subframe in the middle of the recess on the bonded rubber mounting -2-.
- Pry out the anti-twist mechanism -1- in the area of the retaining tabs for example with a screwdriver -2- from the bonded rubber bushing.



- Free up the brake line -1- on the left side -arrow- the clip will be destroyed at the same time.

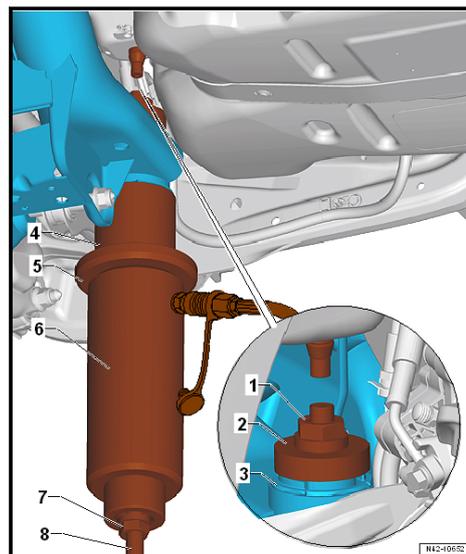


- Slightly lower the subframe with the Engine and Gearbox Jack -VAS6931- approximately 100 mm.
- Remove the bolt -3- and press the tie rod toward the rear.



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- Position the special tool as shown.



1 - Hydraulic Press - Rear Subframe Bushing Tool Kit - Nut -T10263/5-

2 - Subframe Bushing Assembly Tool Kit - Press Piece - T10356/1-

3 - Subframe

4 - Subframe Bushing Assembly Tool Kit-Pipe -T10356/2-, side with shoulder points to subframe

5 - Bearing Installer - Wheel Hub/Bearing Kit - 1 -T10205/1-

6 - Hydraulic Press -VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-

7 - Hydraulic Press - Rear Subframe Bushing Tool Kit - Nut -T10263/5-

8 - Hydraulic Press - Rear Subframe Bushing Tool Kit-Spindle -T10263/4-

- Pretension the special tools.
- Press out the bonded rubber bushing.

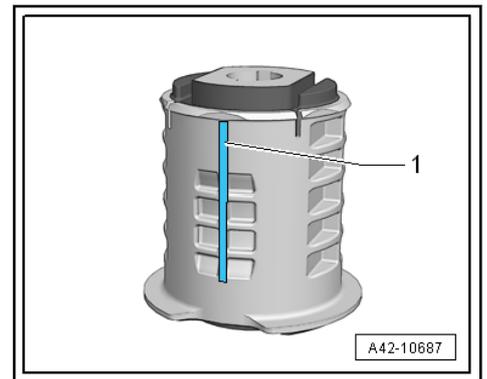
TIP:

When removing the bonded rubber bushing, the outer race collar on the bushing is sheared off. There is a loud crack when this happens.

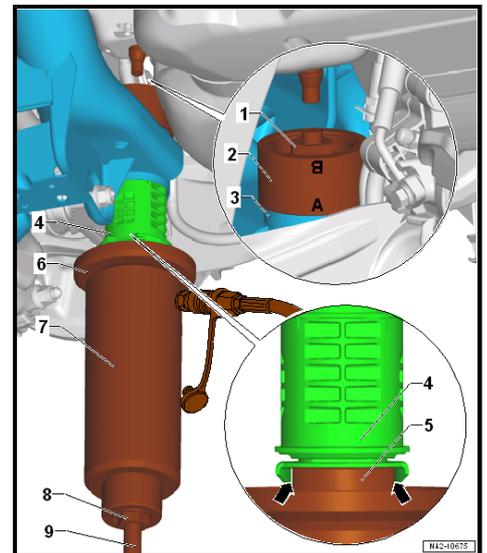
- After removing the bonded rubber bushing, it must be removed from the Tube -T10356/2- by tapping lightly with a hammer.

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Installing



- A mark -1- must be applied to the new bonded rubber bushing to help mount it.
- Apply mounting paste to the outer edge of the bonded rubber bushing.
- Attach the special tool with the bonded rubber bushing.



1 - Hydraulic Press - Rear Subframe Bushing Tool Kit - Nut -T10263/5-

2 - Subframe Bushing Assembly Tool Kit-Thrust piece - T10356/7-, the mark »A« points to the subframe

3 - Subframe

4 - Align the bonded rubber bushing with the markings made previously -arrows- (the markings need to align).

5 - Assembly Tool - Bushing -T10356/8-, the flattened sides need to fit into the cover of the bonded rubber bushing -arrows-.

6 - Bearing Installer - Wheel Hub/Bearing Kit - 1 -T10205/1-

7 - Hydraulic Press -VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-

8 - Hydraulic Press - Rear Subframe Bushing Tool Kit - Nut -T10263/5-

9 - Hydraulic Press - Rear Subframe Bushing Tool Kit-Spindle -T10263/4-

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- Check the position of the bonded rubber bushing and, if necessary, align and pre-tighten special tools with bonded rubber bushing.
- Make sure that the hose from the Hydraulic Press -VAS6178- to the Pneumatic/Hydraulic Foot Pump -VAS6179- runs between the trailing arm and the fuel tank when installed.
- So that the outer race is not damaged, make sure that the bonded rubber bushing is not bent when installing
- Operate the pump to press in the bonded rubber bushing until the collar is positioned on the subframe »without play«.

Install in reverse order of removal. Note the following:

- Tighten the threaded connections in the curb weight position. Refer to [⇒ B3.16earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Evaluate if an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to [⇒ -3.1.3 Subframe, Multi-Link Suspension, AWD vehicles](#), page 270
- ◆ Refer to [⇒ a1 nd Tires](#), page 411

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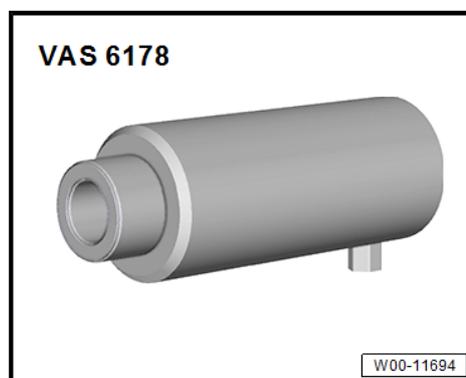
3.3.2 Subframe Rear Bonded Rubber Bushing, Replacing (Multi-Link Suspension)

Special tools and workshop equipment required

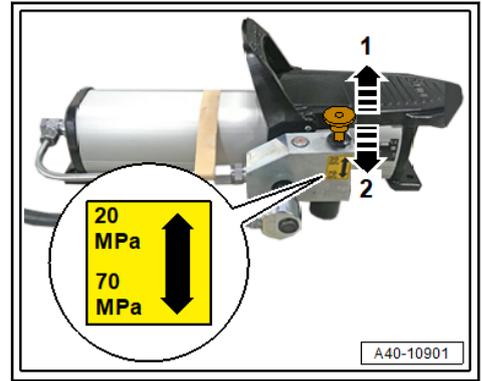
- ◆ Torque Wrench, 40-200Nm -VAG1332A-



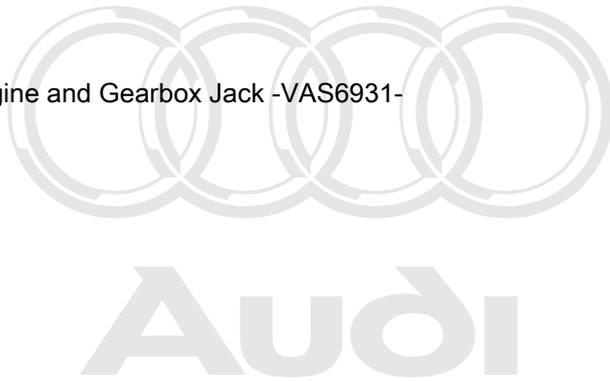
- ◆ Hydraulic Press -VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-



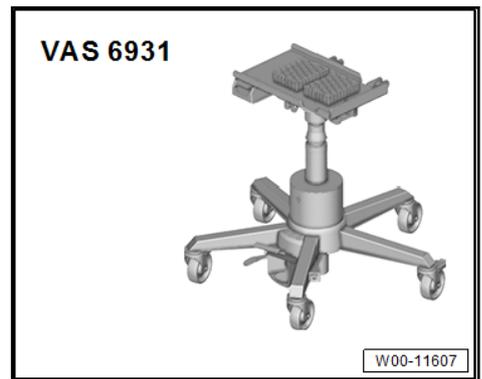
◆ Pneumatic/Hydraulic Foot Pump -VAS6179-



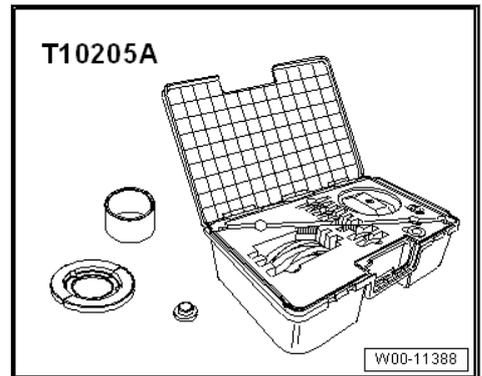
◆ Engine and Gearbox Jack -VAS6931-



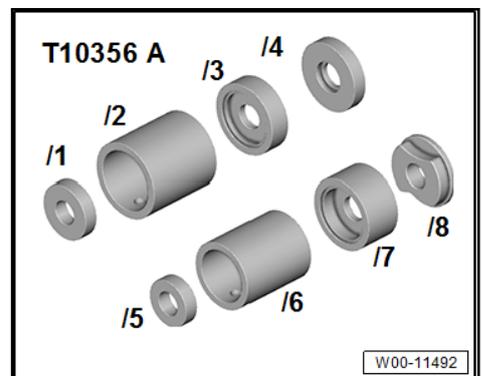
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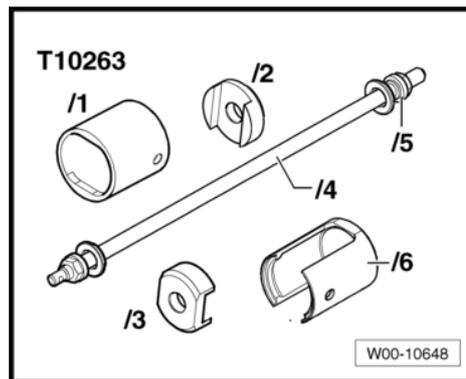
◆ Bearing Installer - Wheel Hub/Bearing Kit - 1 -T10205/1-
 from the Bearing Installer - Wheel Hub/Bearing Kit -
 T10205A-



◆ Assembly Tool -T10356A-



◆ Hydraulic Press - Rear Subframe Bushing Tool Kit -T10263-



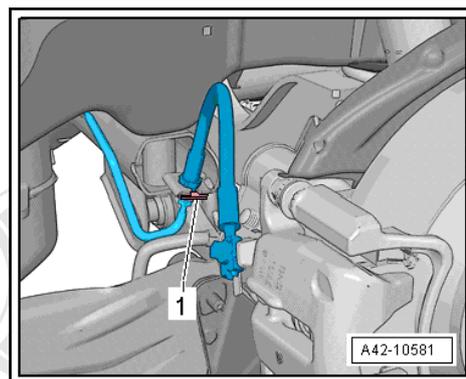
- ◆ Refer to ⇒ Electronic Parts Catalog (ETKA) for the assembly paste.

i Note

- ◆ If a bonded rubber bushing is faulty, then the bonded rubber bushing on the opposite side must also be replaced. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.
- ◆ Check the other bushings before replacing a faulty bonded rubber bushing.
- ◆ If there are any tears or other visible damages, replace the bonded rubber bushing.
- ◆ Identify the installation position to the subframe before removing the bonded rubber bushing.

Removing

- Remove the wheels. Refer to ⇒ ["a1 nd Tires"](#), page 411 .
- Secure the subframe. Refer to ⇒ ["S3.2 ecuring"](#), page 271 .
- Remove the clamps -1- on both sides of the vehicle.



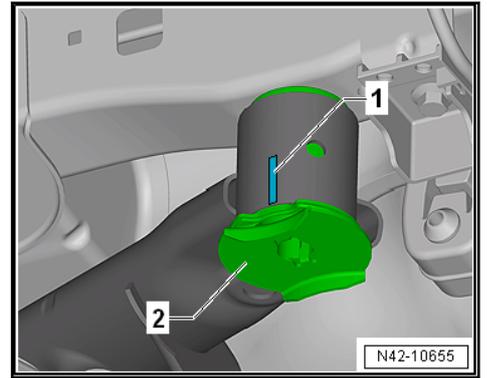
- Free up the brake lines from the bracket.

i Note

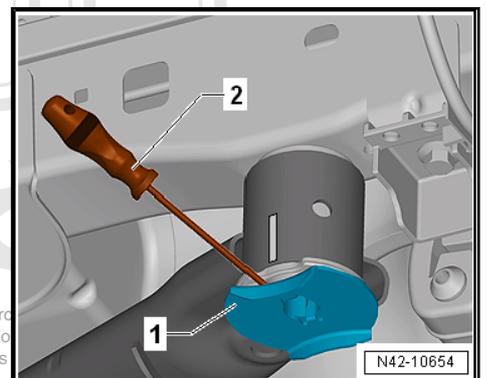
Do not disconnect the brake line.

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- Mark the installation location of the bonded rubber bushing -2- on the subframe with a felt-tip pen -1-.

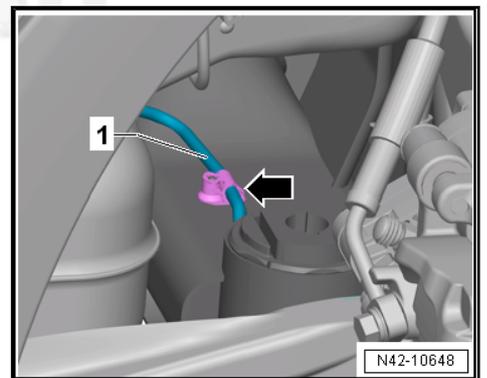


- Pry out the anti-twist mechanism -1- in the area of the retaining tabs for example with a screwdriver -2- from the bonded rubber bushing.

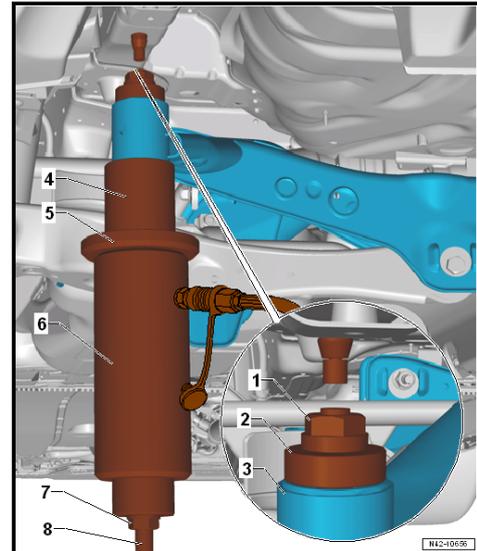


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- Free up the brake line -1- on the left side -arrow-; this will destroy the clip.



- Slightly lower the subframe with the Engine and Gearbox Jack -VAS6931- approximately 100 mm.
- Position the special tool as shown.



- 1 - Hydraulic Press - Rear Subframe Bushing Tool Kit - Nut -T10263/5-
 - 2 - Thrust Piece -T10356/5-
 - 3 - Subframe
 - 4 - Subframe Bushing Assembly Tool Kit-Pipe -T10356/6-, side with shoulder points to subframe
 - 5 - Bearing Installer - Wheel Hub/Bearing Kit - 1 -T10205/1-
 - 6 - Hydraulic Press -VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-
 - 7 - Hydraulic Press - Rear Subframe Bushing Tool Kit - Nut -T10263/5-
 - 8 - Hydraulic Press - Rear Subframe Bushing Tool Kit-Spindle -T10263/4-
- Pretension the special tools.
 - Press out the bonded rubber bushing.



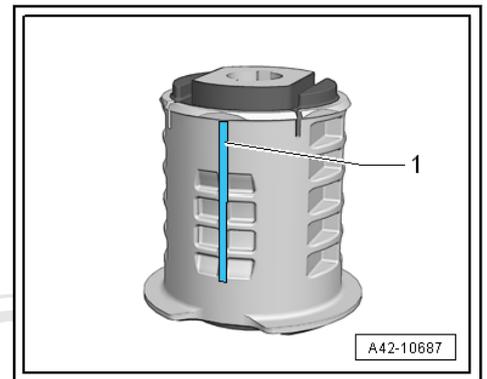
Note

- ◆ *When removing the bonded rubber bushing, the outer race collar on the bushing is sheared off. There is a loud crack when this happens.*
- ◆ *After removing the bonded rubber bushing, it must be removed from the Tube -T10356/2- by tapping lightly with a hammer.*

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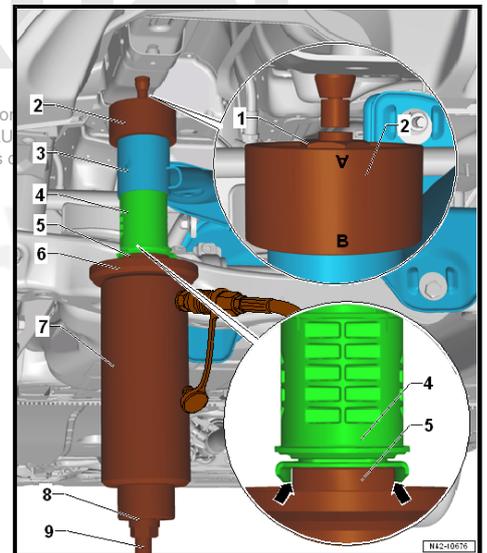
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Installing



- Apply a mark -1- on the new bonded rubber bushing for help with installation.
- Apply mounting paste to the outer edge of the bonded rubber bushing.
- Attach the special tool with the bonded rubber bushing.

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1 - Hydraulic Press - Rear Subframe Bushing Tool Kit - Nut
 -T10263/5-

2 - Assembly Tool - Bushing -T10356/7- the mark-
 ing »B« points to the subframe

3 - Subframe

4 - Align the bonded rubber bushing with the markings made
 previously -arrows- (the markings need to align).

5 - Assembly Tool - Bushing -T10356/8-, the flattened sides
 need to fit into the cover of the bonded rubber bushing -arrows-.

6 - Bearing Installer - Wheel Hub/Bearing Kit - 1 -T10205/1-

7 - Hydraulic Press -VAS6178- with Bearing Installer - Wheel
 Hub/Bearing Kit- Adapter 13 -T10205/13-

8 - Hydraulic Press - Rear Subframe Bushing Tool Kit - Nut
 -T10263/5-

9 - Hydraulic Press - Rear Subframe Bushing Tool Kit-Spindle
 -T10263/4-



- Check the position of the bonded rubber bushing and, if necessary, align and pre-tighten special tools with bonded rubber bushing.
- Operate the pump to press in the bonded rubber bushing until the collar is positioned on the subframe »without play«. While pulling in, make sure the bonded rubber bushing does not tilt, otherwise the outer ring could be damaged.

Install in reverse order of removal. Note the following:

- Evaluate if an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to [⇒ -3.1 Subframe](#), page 267
- ◆ Refer to [⇒ a1 nd Tires](#), page 411



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4 Stabilizer Bar

⇒ [4.1 Stabilizer Bar](#), page 293

⇒ [B4.2 ar, Removing and Installing](#), page 294

⇒ [R4.3 od, Removing and Installing](#), page 299

4.1 Overview - Stabilizer Bar

1 - Stabilizer Bar

- With rubber bushings
- Removing and Installing. Refer to ⇒ [B4.2.1 ar, Removing and Installing, Multi-Link Suspension Vehicles with FWD](#), page 294 .

2 - Coupling Rod

- Removing and Installing. Refer to ⇒ [R4.3 od, Removing and Installing](#), page 299 .

3 - Lower Transverse Link

4 - Nut

- 20 Nm +180°
- Always replace if removed

5 - Bolt

- Always replace if removed

6 - Bolt

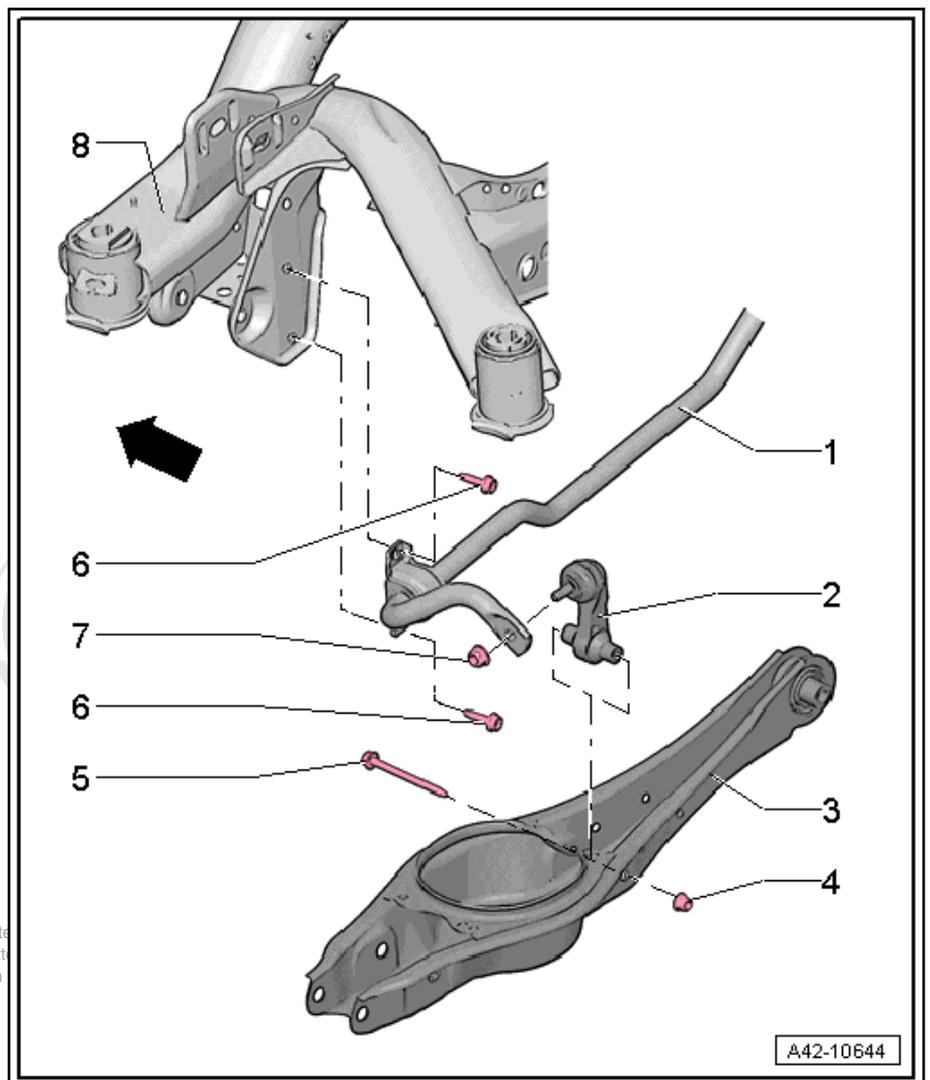
- 20 Nm +90°
- Always replace if removed
- Install evenly

7 - Nut

- 55 Nm
- Counterhold at connecting link socket head when tightening

8 - Subframe

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with





4.2 Stabilizer Bar, Removing and Installing

⇒ [B4.2.1 ar, Removing and Installing, Multi-Link Suspension Vehicles with FWD](#), page 294

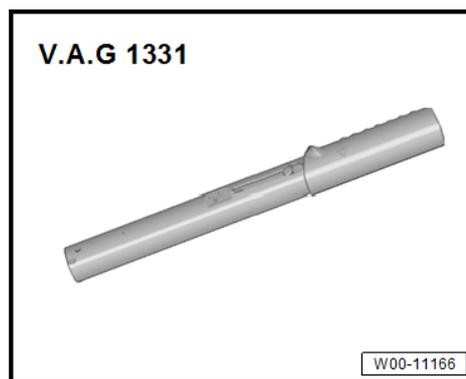
⇒ [B4.2.2 ar, Removing and Installing, Multi-Link Suspension Vehicles with AWD](#), page 295

4.2.1 Stabilizer Bar, Removing and Installing, Multi-Link Suspension Vehicles with FWD

Special tools and workshop equipment required

- ◆ Torque Wrench, 6-50Nm -VAG1331A-

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- ◆ Torque Wrench 1331 Insert - Ring Wrench - 16mm - VAG1331/12-

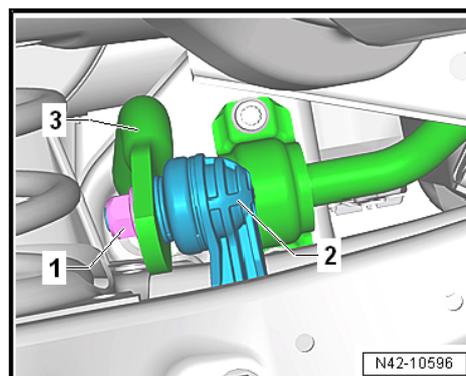


Note

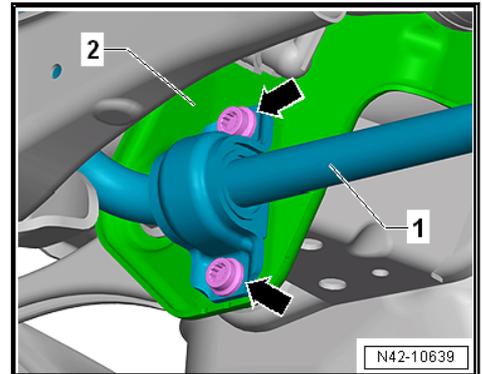
- ◆ *When loosening or tightening the nut to secure the coupling rod to the stabilizer bar, counterhold on the respective coupling rod stud to prevent it from rotating.*
- ◆ *The counterhold tool must not be tilted.*
- ◆ *The following work steps are described for the left side of the vehicle. These work steps also apply At the same time for right side of vehicle.*

Removing

- All A3 except cabriolet: remove the center muffler with the rear muffler or the rear muffler and move to the side. Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview - Muffler.
- Remove the nut -1- from the coupling rod -2-.

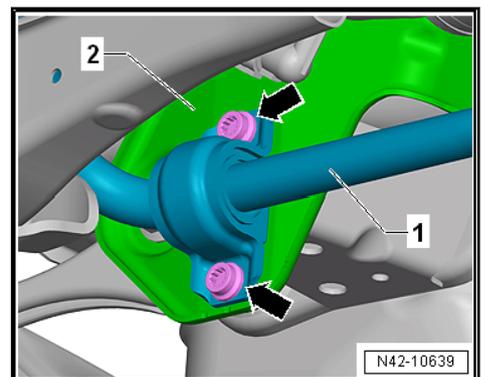


- Remove the coupling rod -2- from the stabilizer bar -3-.
- A3 cabriolet: remove the right spring. Refer to ⇒ [R6.4.2 removing and Installing, Multi-Link Suspension”, page 325](#) .



- Remove the bolts -arrows- for the stabilizer bar -1-
- Remove the stabilizer bar to the right from the subframe -2-.

Installing



Install in reverse order of removal while noting the following:

- Evenly tighten the bolts -arrows- for the stabilizer bar -1- to the subframe -2-.

Tightening Specifications

- ◆ Refer to ⇒ [-4.1 Stabilizer Bar”, page 293](#)
- ◆ Refer to ⇒ [-7.1 Wheel Bearing”, page 329](#)
- ◆ Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.

4.2.2 Stabilizer Bar, Removing and Installing, Multi-Link Suspension Vehicles with AWD

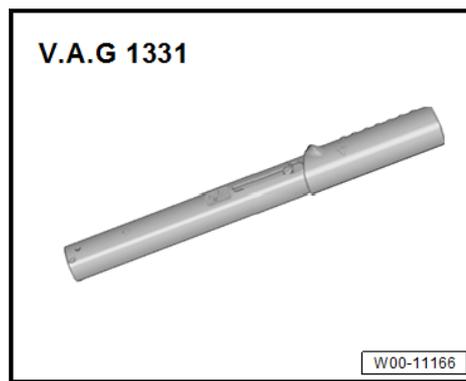
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Special tools and workshop equipment required

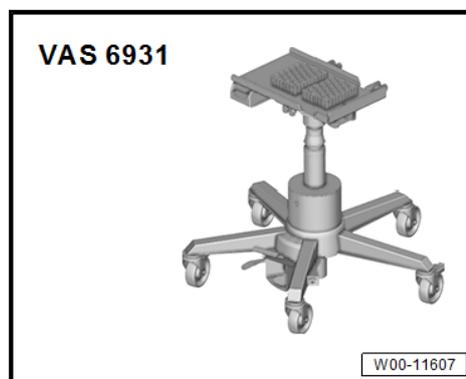




- ◆ Torque Wrench, 6-50Nm -VAG1331A-



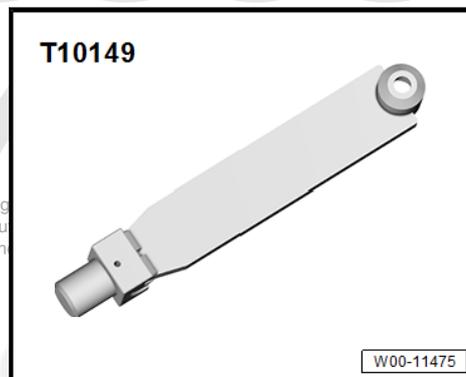
- ◆ Torque Wrench 1331 Insert - Ring Wrench - 16mm - VAG1331/12-, not illustrated
- ◆ Engine and Gearbox Jack -VAS6931-



- ◆ Tensioning Strap -T10038-



- ◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-



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 Note

- ◆ When loosening or tightening the nuts to secure the coupling rod to the stabilizer bar, counterhold on the respective coupling rod stud to prevent it from rotating.
- ◆ The counterhold tool must not be tilted.

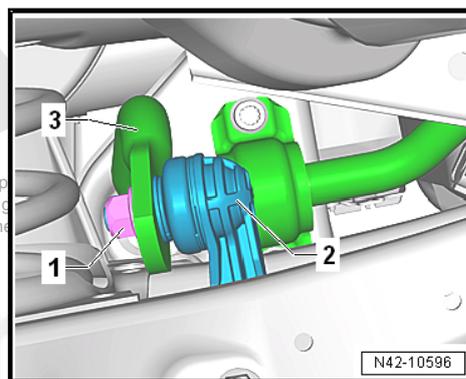
 Note

The following work steps are described for the left side of the vehicle. These work steps also apply At the same time for right side of vehicle.

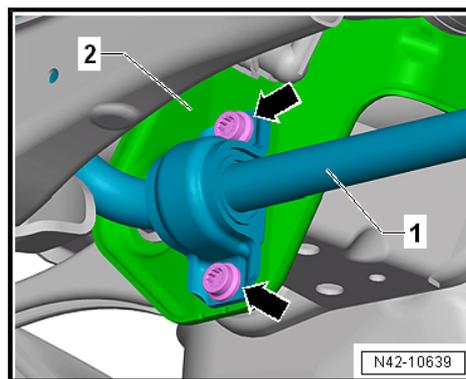
Removing

- Remove the rear muffler. Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview - Muffler.
- Remove the nut -1- from the coupling rod -2-.

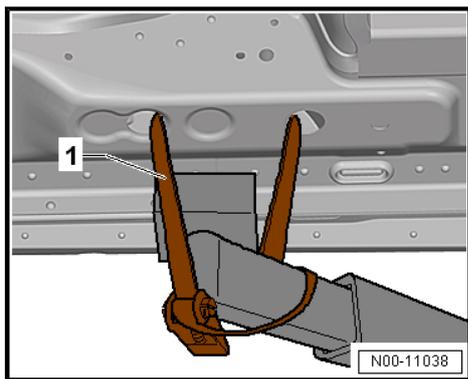
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- Remove the coupling rod -2- from the stabilizer bar -3-.
- Remove the bolts -arrows- for the stabilizer bar -1-.



- Remove the stabilizer bar to the right from the subframe -2-.
- If the upper bolt for the stabilizer bar clamp cannot be removed, perform the following steps:



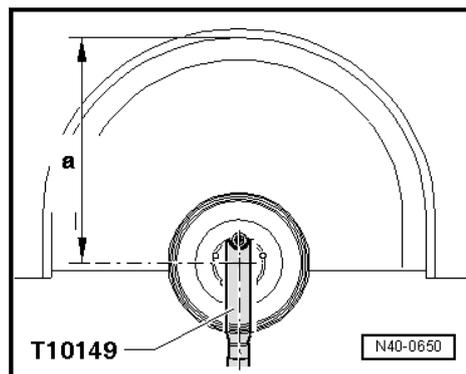
- Secure both sides of the vehicle on the hoist arms using tensioning straps Tensioning Strap -T10038- -1-.



WARNING

The vehicle could slide off the hoist if it is not secured.

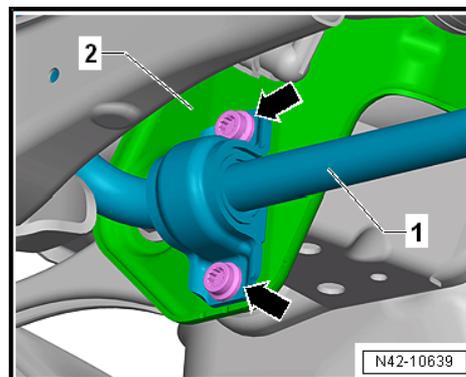
- Remove the wheels. Refer to ["axle and Tires", page 411](#).
- Install the Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149- with wheel bolt on wheel hub.



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- Lift the wheel hub using the Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149- and Engine and Gearbox Jack -VAS6931- far enough until the bolts on the right stabilizer bar clamp are accessible.
- Remove the stabilizer bar.

Installing



Install in reverse order of removal while noting the following:

- Tighten the bolts -arrows- for stabilizer clamp uniformly.

 Note

Ignore -items 1 and 2-

Tightening Specifications

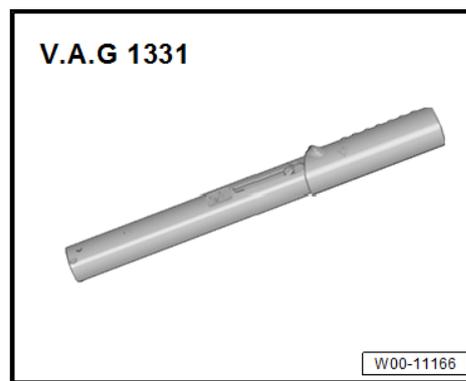
- ◆ Refer to ⇒ [-4.1 Stabilizer Bar](#)”, page 293
- ◆ Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.
- ◆ Refer to ⇒ [a1 nd Tires](#)”, page 411

4.3 Coupling Rod, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench, 6-50Nm -VAG1331A-

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- ◆ Torque Wrench 1331 Insert - Ring Wrench - 16mm - VAG1331/12-, not illustrated

 Note

- ◆ *When loosening or tightening the nuts to secure the coupling rod to the stabilizer bar, counterhold on the respective coupling rod stud to prevent it from rotating.*
- ◆ *The counterhold tool must not be tilted.*

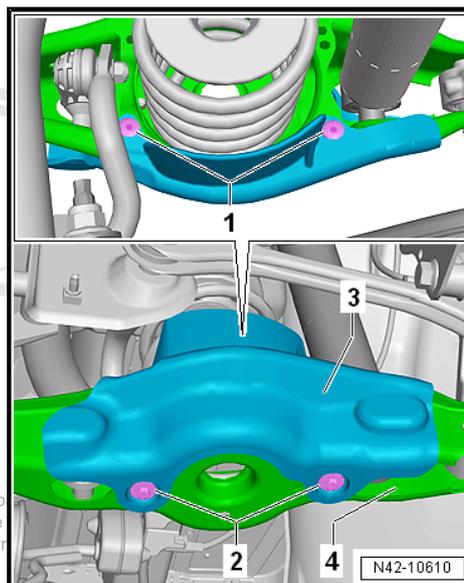
Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#)”, page 11 .
- Remove the wheel. Refer to ⇒ [a1 nd Tires](#)”, page 411 .

Vehicles with Stone Chip Protection

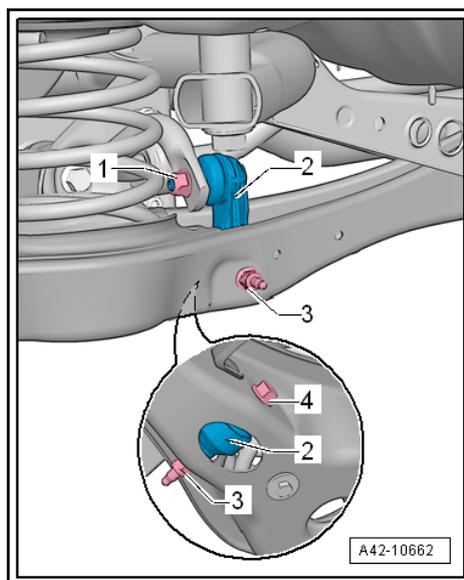


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- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

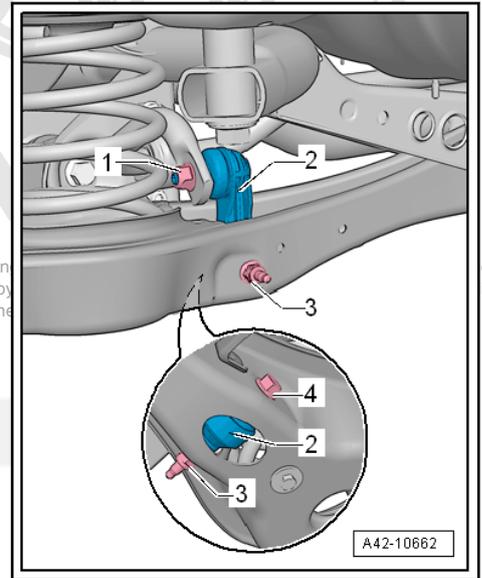
Continuation for All



- Remove the nuts -1 and 3- and the bolt -4-.
- Remove the coupling rod -2- from the stabilizer bar and control arm.

Installing

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Install in reverse order of removal while noting the following:

- Insert the coupling rod -2-, install the nuts -1 and 3- and tighten in curb weight position. Refer to [⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- When tightening the nut -1-, counterhold at the inner multi-point fitting of the bolt.

Tightening Specifications

- ◆ Refer to [⇒ -4.1 Stabilizer Bar](#), page 293
- ◆ Refer to [⇒ a1 nd Tires](#), page 411



5 Control Arm, Tie Rod

⇒ [-5.1 Transverse Link", page 302](#)

⇒ [-5.2 Tie Rod", page 304](#)

⇒ [T5.3 ransverse Link, Removing and Installing", page 305](#)

⇒ [T5.4 ransverse Link, Removing and Installing", page 307](#)

⇒ [R5.5 od, Removing and Installing", page 310](#)

5.1 Overview - Transverse Link



Note

The transverse link for a vehicle with FWD is shown in the illustration.



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erWin

1 - Eccentric Screw

- Perform a vehicle alignment after loosening. Refer to ⇒ [A2 alignment](#), page 412 .
- Do not turn more than 90° right or left (that is smallest to largest possible adjustment)

2 - Subframe

3 - Eccentric Washer

- Inner hole with tab

4 - Nut

- 95 Nm without Insert Tool - 18mm -T10179-
- 80 Nm with Insert Tool - 18mm -T10179-
- Always replace if removed
- Always tighten the threaded connections in curb weight position. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

5 - Eccentric Screw

- Perform a vehicle alignment after loosening. Refer to ⇒ [A2 alignment](#), page 412 .
- Do not turn more than 90° right or left (that is smallest to largest possible adjustment)

6 - Eccentric Washer

- Inner hole with tab

7 - Nut

- 95 Nm
- Always replace if removed
- Always tighten the threaded connections in curb weight position. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

8 - Upper Transverse Link

- Removing and Installing. Refer to ⇒ [T5.3 ransverse Link, Removing and Installing](#), page 305 .

9 - Nut

- Always replace if removed

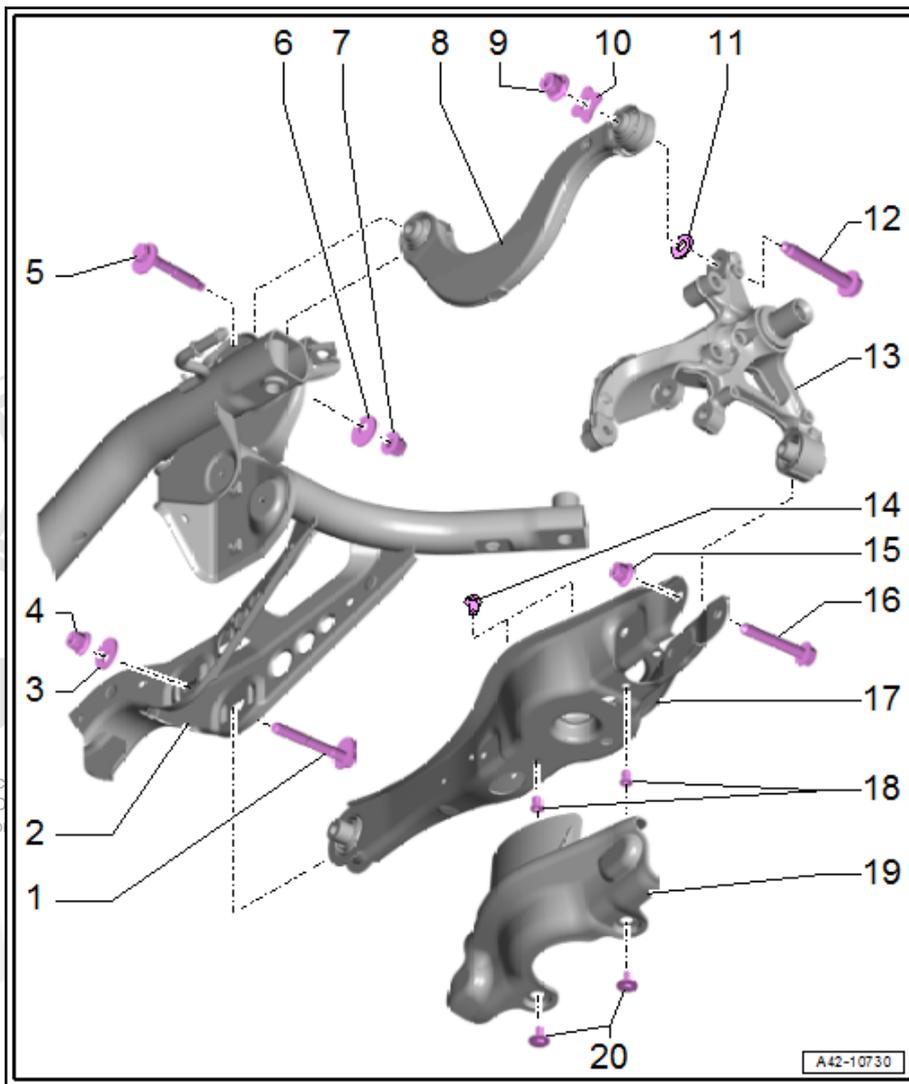
10 - Washer

11 - Washer

- For AWD vehicles only

12 - Bolt

- 130 Nm + 180°
- Always replace if removed



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- Always tighten the threaded connections in curb weight position. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

13 - Wheel Bearing Housing

- There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.

14 - Expanding Rivet

- Quantity: 2

15 - Nut

- Always replace if removed

16 - Bolt

- 70 Nm + 180°
- Always replace if removed
- Always tighten the threaded connections in curb weight position. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

17 - Lower Transverse Link

- Removing and Installing. Refer to ⇒ [T5.4 ransverse Link, Removing and Installing](#), page 307 .

18 - Pop Rivet Nuts

19 - Stone Chip Protection

- There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.

20 - Bolts

- 8 Nm

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5.2 Overview - Tie Rod



Note

The tie rod for a vehicle with AWD is shown in the illustration.

1 - Subframe

2 - Bolt

- ❑ Always replace if removed

3 - Wheel Bearing Housing

- ❑ Different versions, FWD and AWD In the illustration a wheel bearing housing is shown for an AWD vehicle.

4 - Tie Rod

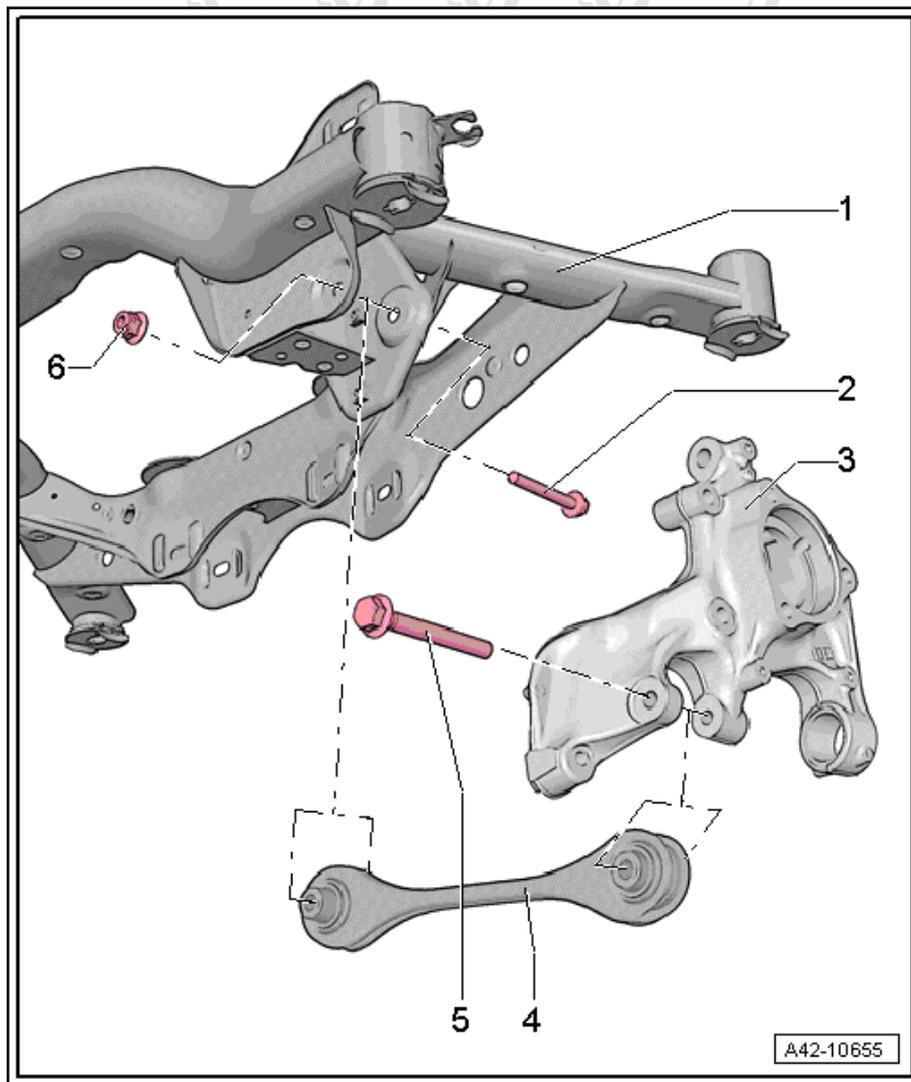
- ❑ Removing and Installing. Refer to [R5.5 od, Removing and Installing](#), page 310 .

5 - Bolt

- ❑ 70 Nm + 180°
- ❑ Always replace if removed
- ❑ Always tighten the threaded connections in curb weight position. Refer to [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

6 - Nut

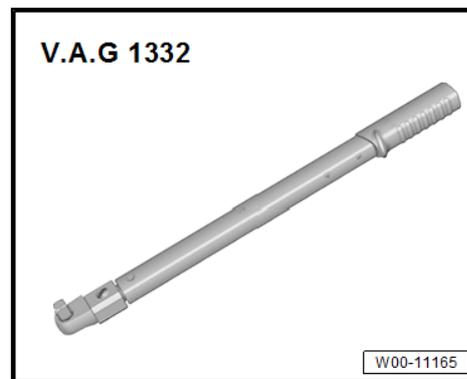
- ❑ 70 Nm + 180°
- ❑ Always replace if removed



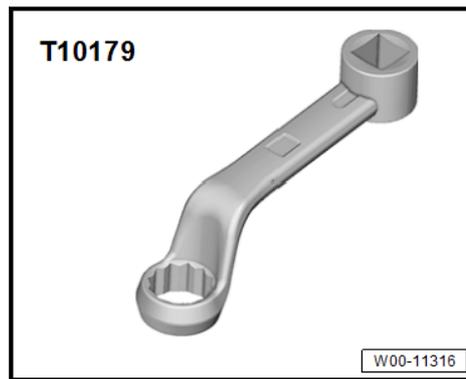
5.3 Upper Transverse Link, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-

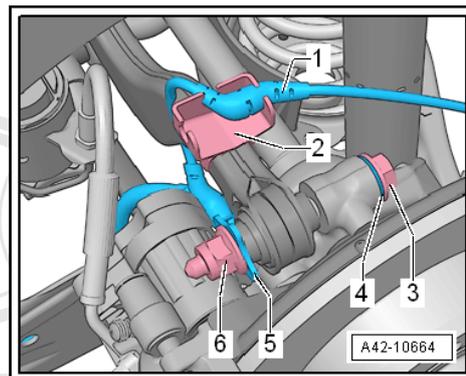


◆ Insert Tool - 18mm -T10179-



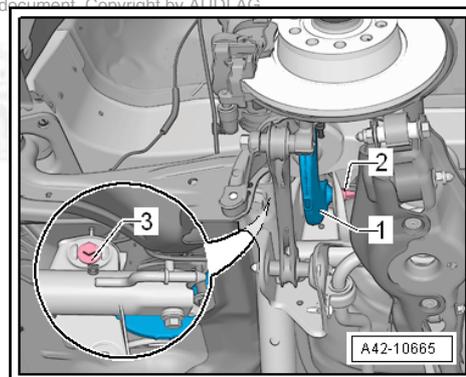
Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Remove the wheel. Refer to ⇒ [a1 nd Tires](#), page 411 .
- AWD vehicles: disengage the wire -1- from the bracket -2- and free it up.



- Remove the nut -6- and the washer -5-.
- Remove the bolt -3- and if equipped, the washer -4-.
- Mark the position of eccentric screw -3- to the subframe using, for example, a felt-tip marker.

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- Remove the nut -2- and the eccentric screw -3-.
- Remove the upper transverse link -1-.

Installing

Install in reverse order of removal while noting the following:

- The transverse link threaded connection may only be fastened if the dimension between the wheel hub center and the lower edge of the wheel housing that was measured before assembly is reached. Refer to [⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Pay attention to the mark made to the subframe for the eccentric bolt -3-.
- Overview table for when an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to [⇒ -5.1 Transverse Link](#), page 302
- ◆ Refer to [⇒ a1 nd Tires](#), page 411

5.4 Lower Transverse Link, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-



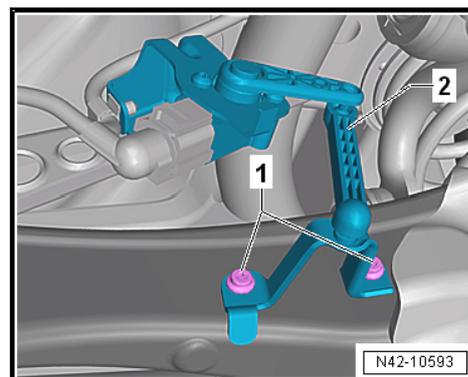
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Removing

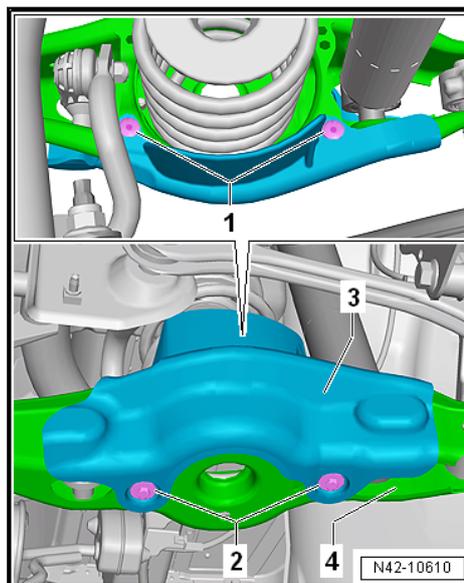
- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to [⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Remove the wheel. Refer to [⇒ a1 nd Tires](#), page 411 .

Vehicles with Level Control System Sensor



- Remove the left and right bolts -1- from the linkage -2- for the rear level control system sensor.

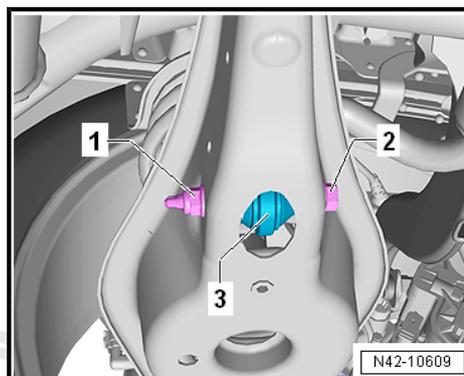
Vehicles with Stone Chip Protection



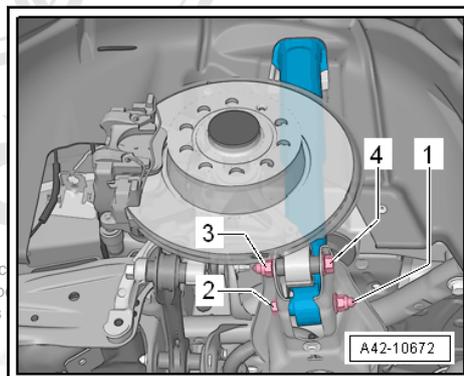
- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

Continuation for All Vehicles

- Remove the coil spring. Refer to ⇒ [R6.4 emoving and Instal-ling](#)”, page 323 .
- Remove the nut -1- and then the bolt -2- for the coupling rod -3-.

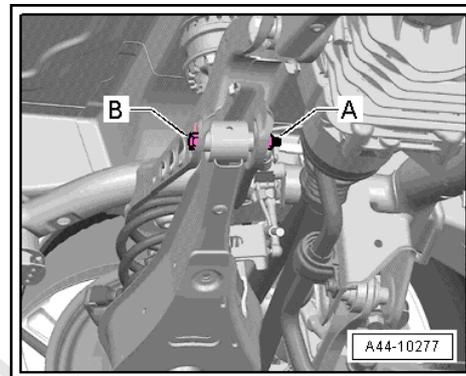


- Remove the nut -1- and then the bolt -2- for the shock ab- sorber threaded connection.



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- Remove the nut -3- and then the bolt -4- for the wheel bearing housing threaded connection.
- Disengage the rear exhaust system and lower it. Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview - Muffler.



- Mark the position of eccentric screw -B- to the subframe using, for example, a felt-tip marker.
- Remove the nut -A- and the eccentric screw -B-.
- Remove the lower transverse link.

Installing

Install in reverse order of removal while noting the following:

- Note the applied marking of the eccentric screw -B- to the subframe.
- The transverse link threaded connection may only be fastened if the dimension between the wheel hub center and the lower edge of the wheel housing that was measured before assembly is reached. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

If on vehicles with electronic damping (Audi magnetic ride) the coupling rod of a sensor for the level control system is loosened, then the sensor for the level control system is removed and installed or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:
 - ◆ **Chassis**
 - ◆ **Wheel Damping Electronics**
 - ◆ **01 - OBD-capable systems**
 - ◆ **14 - Electronic Damping Control Module -J250**
 - ◆ **14 - Electronic Damping Control Module, functions**
 - ◆ **14 - Control Position, readapting**
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.



- Overview table for when an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating](#), page 413 .

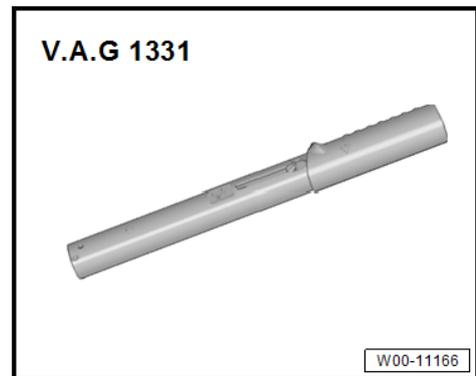
Tightening Specifications

- ◆ Refer to [⇒ -5.1 Transverse Link](#), page 302
- ◆ Refer to [⇒ -2.2.1 Left Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Vehicles with Multi-Link Suspension](#), page 404
- ◆ Refer to [⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler](#).
- ◆ Refer to [⇒ a1 nd Tires](#), page 411

5.5 Tie Rod, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench, 6-50Nm -VAG1331A-

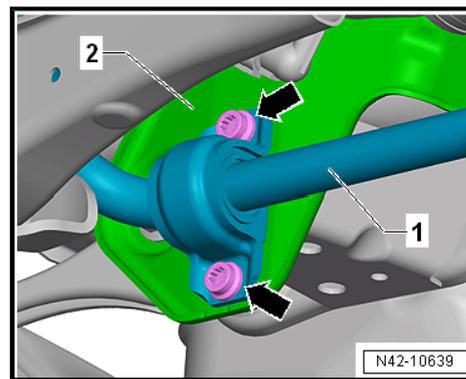


- ◆ Torque Wrench, 40-200Nm -VAG1332A-



Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to [⇒ B3.16earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Remove the wheel. Refer to [⇒ a1 nd Tires](#), page 411 .
- Remove the bolts -arrows- for the stabilizer bar -1-

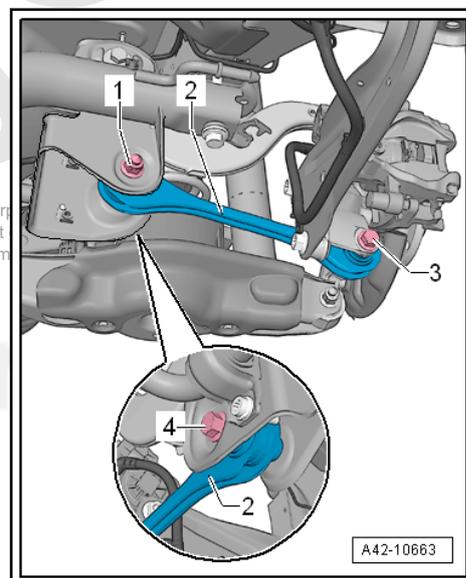


 **Note**

Ignore -item 2-.

- Loosen the nut -1- and the bolt -3- several turns.

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- Remove the nut -1- and then remove the bolt -4- to the rear.
- Remove the bolt -3-.
- Remove the tie rod -2-.

Installing

Install in reverse order of removal while noting the following:

- The tie rod may only be fastened when the dimension measured before assembly between the center of the wheel hub and the wheel housing lower edge is achieved. Refer to [⇒ B3.16earing in Curb Weight Position, Lifting Vehicles with Coil Spring”, page 11](#) .
- Overview table for when an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating”, page 413](#) .

Tightening Specifications

- ◆ Refer to [⇒ -5.2 Tie Rod”, page 304](#)
- ◆ Refer to [⇒ -4.1 Stabilizer Bar”, page 293](#)
- ◆ Refer to [⇒ a1 nd Tires”, page 411](#)



6 Suspension Strut, Shock Absorber, Spring

⇒ [-6.1 Suspension Strut, Shock Absorber, Spring", page 312](#)

⇒ [A6.2 bsorber, Removing and Installing", page 314](#)

⇒ [A6.3 bsorber, Servicing", page 318](#)

⇒ [R6.4 emoving and Installing", page 323](#)

6.1 Overview - Suspension Strut, Shock Absorber, Spring

⇒ [-6.1.1 Shock Absorber and Spring, Torsion Beam Axle", page 312](#)

⇒ [-6.1.2 Shock Absorber and Spring, Multi-Link Suspension", page 313](#)

6.1.1 Overview - Shock Absorber and Spring, Torsion Beam Axle

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1 - Bolt

- 50 Nm +45°
- Always replace if removed

2 - Shock Absorber

- Removing and Installing. Refer to ⇒ [A6.2 bsorber, Removing and Installing](#), page 314 .

- Always vent and drain malfunctioning shock absorbers before disposal. Refer to ⇒ [G5.2 as-Filled Shock Absorbers, Venting and Draining](#), page 18 .

3 - Axle Beam

4 - Stone Chip Protection

5 - Bolt

- 70 Nm + 180°
- Always replace if removed
- Always tighten threaded connection in curb weight position. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

6 - Lower Spring Support

- Spring end rotated up to stop
- Insert the pin into the hole in the spring mount on the axle beam when installing.

7 - Locking Ring

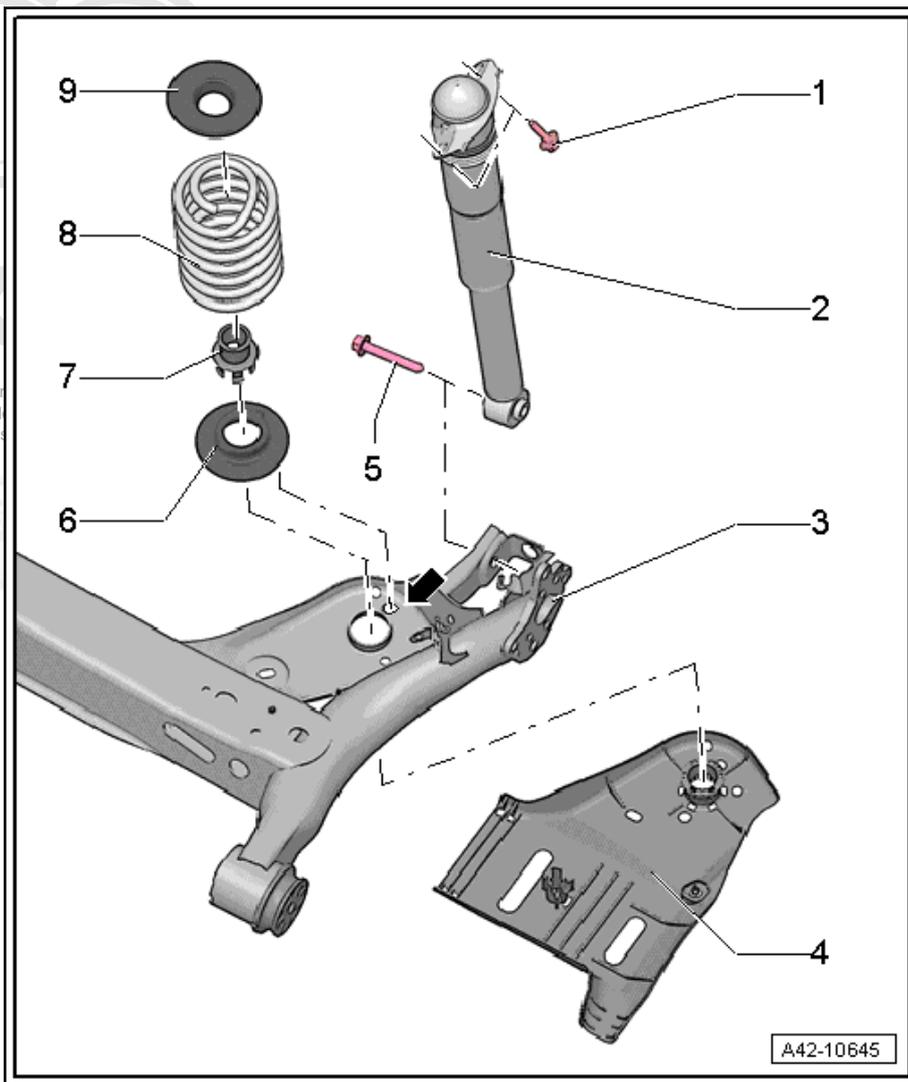
- Press in the clamping ring until flush after installing the stone chip protection.

8 - Coil Spring

- Removing and Installing. Refer to ⇒ [R6.4.1 emoving and Installing, Torsion Beam Axle](#), page 323 .
- The coil spring must be installed so that the lower identification is in the spring plate

9 - Upper Spring Support

- Place on body "tab".



6.1.2 Overview - Shock Absorber and Spring, Multi-Link Suspension

1 - Bolt

- 50 Nm +45°
- Always replace if removed

2 - Shock Absorber

- Removing and Installing. Refer to ⇒ [A6.2 bsorber, Removing and Installing](#), page 314 .
- Always vent and drain malfunctioning shock absorbers before disposal. Refer to ⇒ [G5.2 as-Filled Shock Absorbers, Venting and Draining](#), page 18 .

3 - Bolt

- Always replace if removed

4 - Lower Transverse Link

5 - Clip

- Serves as an assembly aid

6 - Coil Spring

- Removing and Installing. Refer to ⇒ [R6.4.2 emoving and Installing, Multi-Link Suspension](#), page 325 .
- The coil spring must be installed so that the lower identification is in the spring plate

7 - Upper Spring Support

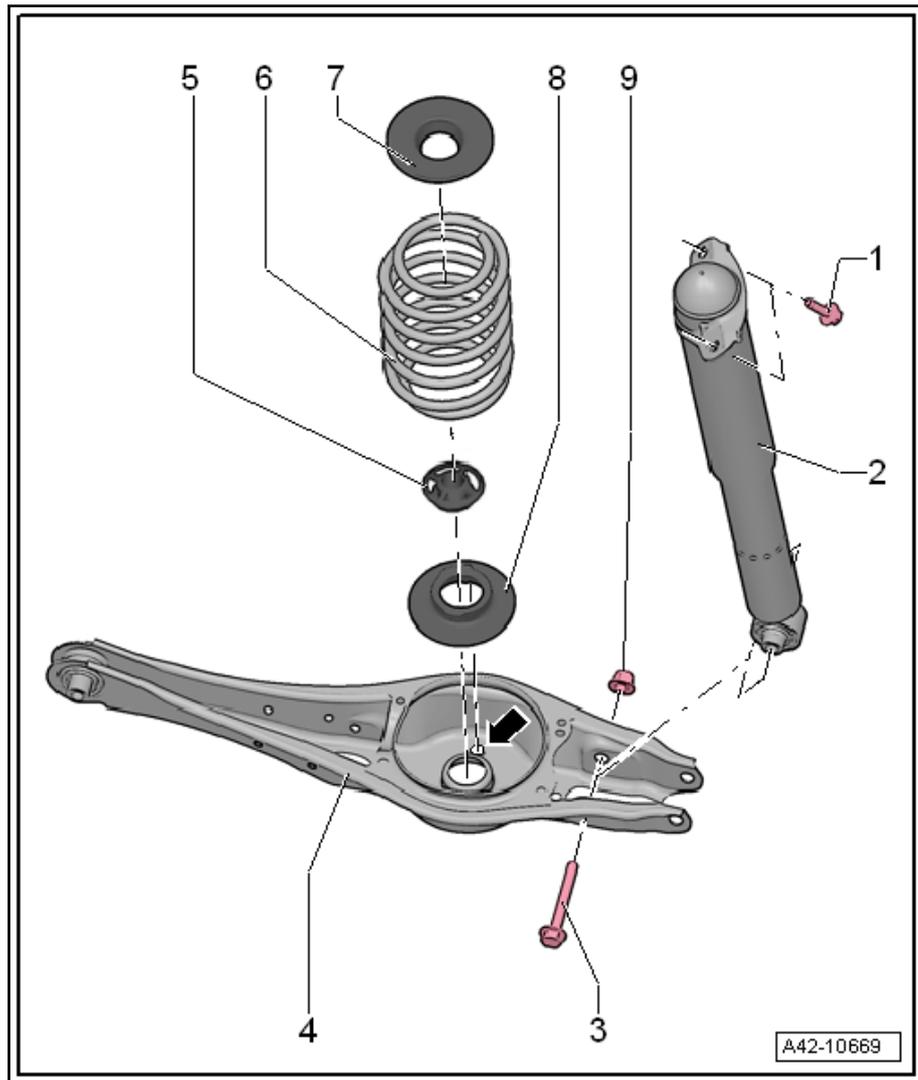
- Place on body "tab".

8 - Lower Spring Support

- Spring end rotated up to stop
- Insert the pin into the hole in the spring mount on the transverse link when installing -arrow-.

9 - Nut

- 70 Nm +180°
- Always replace if removed
- Always tighten threaded connection in curb weight position. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

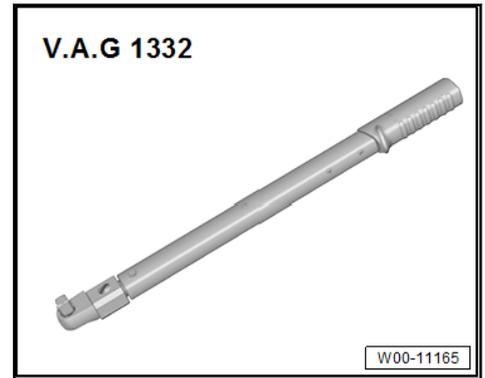


6.2 Shock Absorber, Removing and Installing

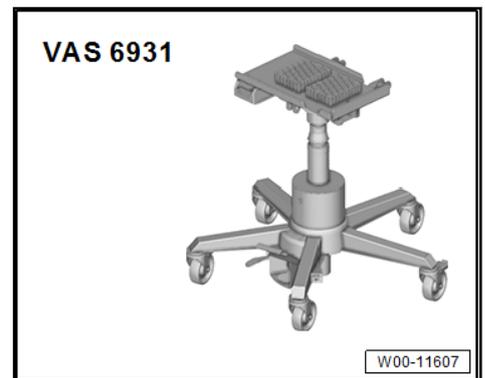
Special tools and workshop equipment required

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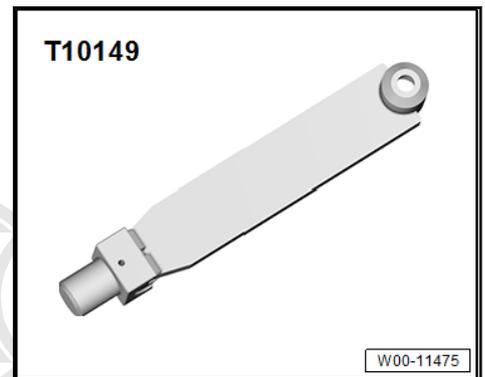
- ◆ Torque Wrench, 40-200Nm -VAG1332A-



- ◆ Engine and Gearbox Jack -VAS6931-



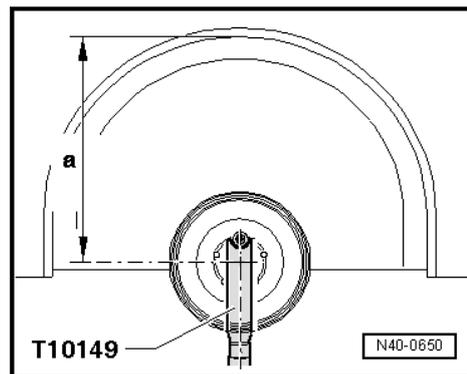
- ◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-



Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to [⇒ B3.16earing in Curb Weight Position, Lifting Vehicles with Coil Spring”, page 11](#) .
- Remove the wheel. Refer to [⇒ a1 nd Tires”, page 411](#)
- Secure the Engine and Gearbox Jack -VAS6931- using the Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149- to the wheel hub with a wheel bolt.

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WARNING

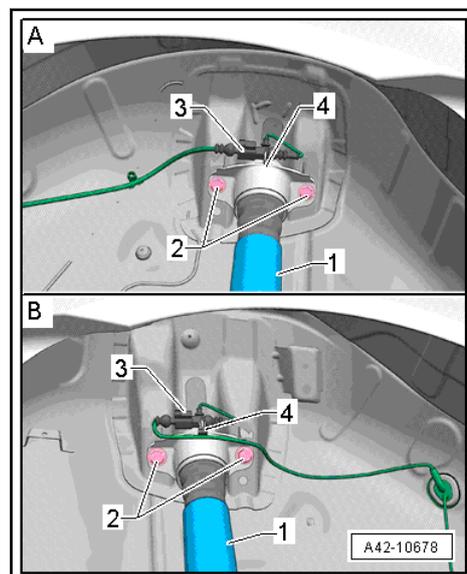
- ◆ Do not lift or lower the vehicle when the Engine and Gearbox Jack -VAS6931- is below the vehicle. The vehicle could slip off the hoist.
- ◆ Do not leave the Engine and Gearbox Jack -VAS6931- under the vehicle any longer than necessary.

Applies to North American Vehicles with Fuel Tank Pressure Sensor - G400

- Remove the EVAP canister. Refer to ⇒ Fuel Supply - Gasoline Engines; Rep. Gr. 20; EVAP System; EVAP Canister, Removing and Installing.

Applies to vehicles with electronic damping (Audi magnetic ride):

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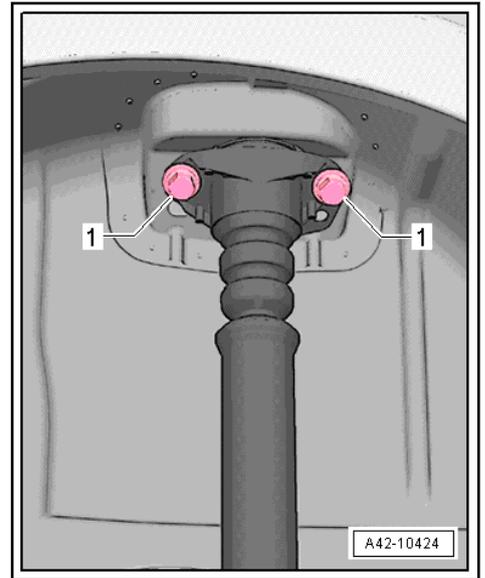


- Remove the wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66; Wheel Housing Liner.
- Disconnect the connector -3-.
- ◆ -A- left shock absorber
- ◆ -B- right shock absorber
- Remove the connector housing from the bracket -4-.
- Remove the bolts -2-.

Applies to Vehicles with Standard Shock Absorbers:

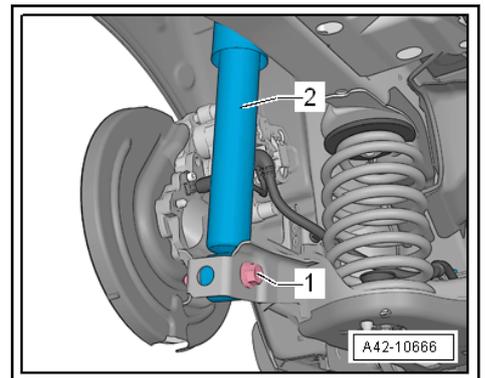


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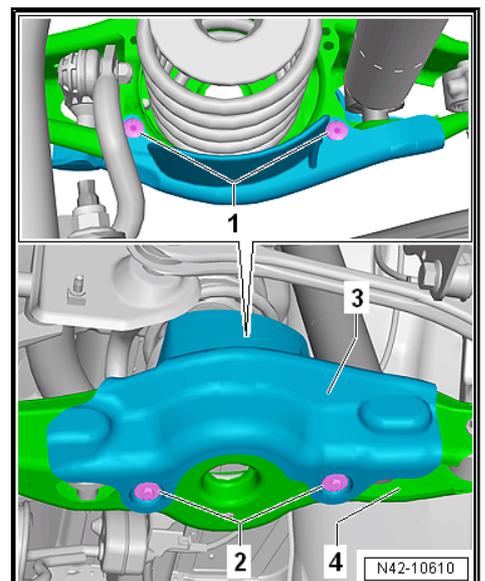
- Remove the bolts -1-.

Applies to Vehicles with Torsion Beam Axle



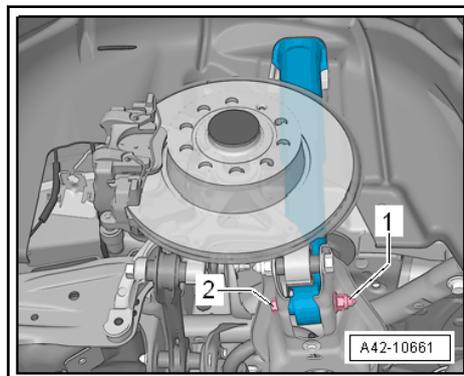
- Remove the bolt -1- and shock absorber -2-.

Applies to Vehicles with Multi-Link Suspension and Stone Chip Protection





- If equipped, remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.
- Remove the nut -1- and the bolt -2-.



- Remove the shock absorber.

Installing

Install in reverse order of removal. Note the following:

- The shock absorber threaded connection with the lower transverse link may only be carried out of dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .

Tightening Specifications

- ◆ Refer to ⇒ [-6.1.1 Shock Absorber and Spring, Torsion Beam Axle](#), page 312
- ◆ Refer to ⇒ [-6.1.2 Shock Absorber and Spring, Multi-Link Suspension](#), page 313
- ◆ Refer to ⇒ [and Tires](#), page 411

6.3 Shock Absorber, Servicing

⇒ [A6.3.1 bsorber, Servicing, Conventional](#), page 318

⇒ [A6.3.2 bsorber, Servicing, Controlled](#), page 320

6.3.1 Shock Absorber, Servicing, Conventional



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1 - Shock Absorber

- Removing and Installing. Refer to [⇒ A6.2 bsorber, Removing and Installing](#), page 314 .
- Always vent and drain malfunctioning shock absorbers before disposal. Refer to [⇒ 5](#), page 16 .
- Shock Absorber, Checking. Refer to [⇒ Information](#), page 4 .

2 - Protective Pipe

- Shared component with -item 3-

3 - Stop Buffer

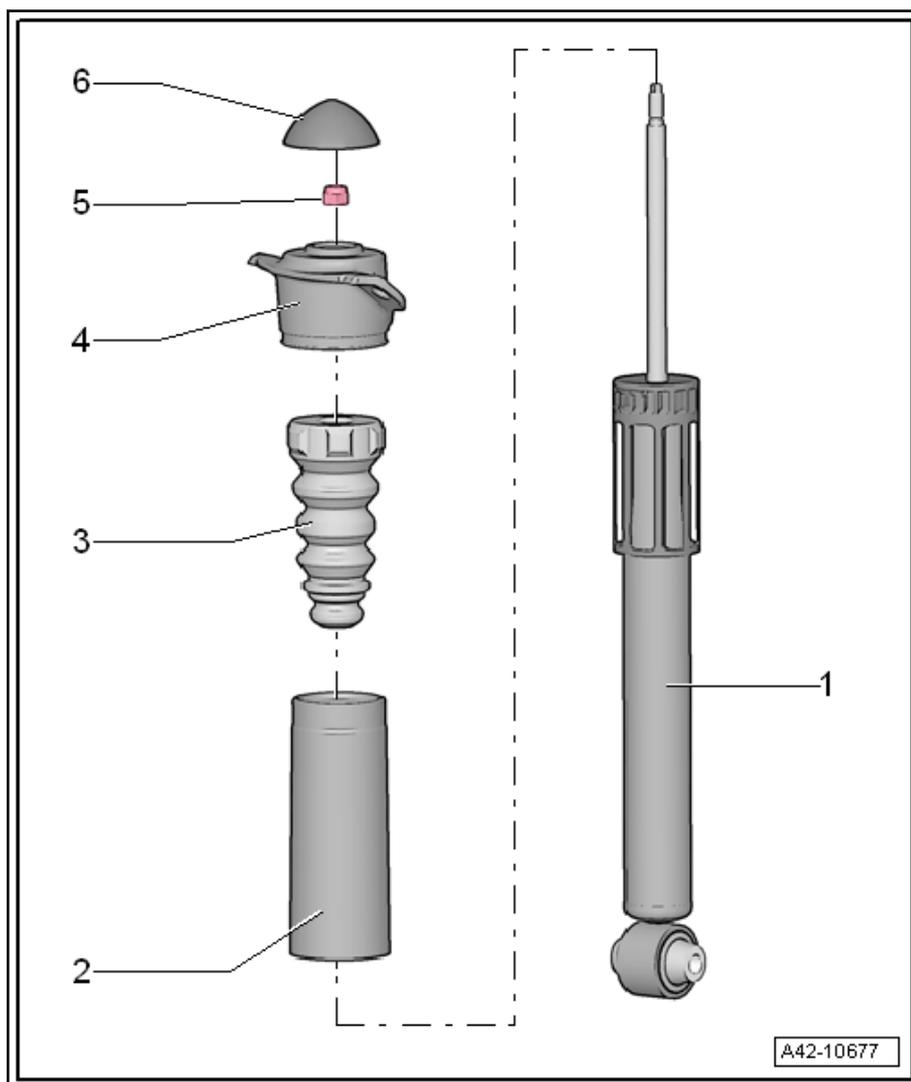
- Shared component with -item 2-

4 - Shock Absorber Mount

5 - Nut

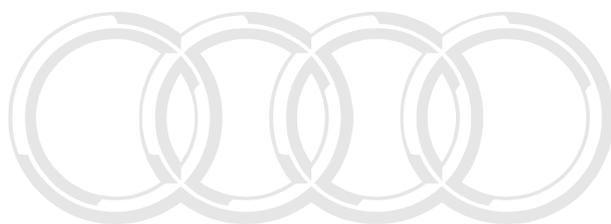
- 25 Nm
- Always replace if removed

6 - Cover



Special tools and workshop equipment required

- ◆ Torque Wrench, 6-50Nm -VAG1331A-



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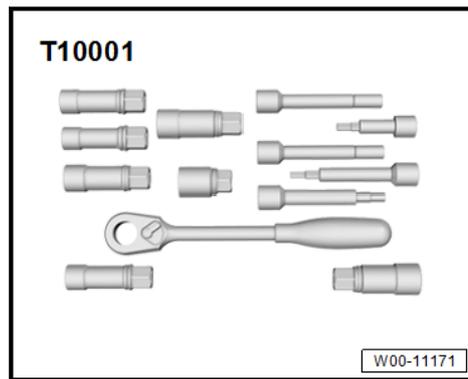
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erWin



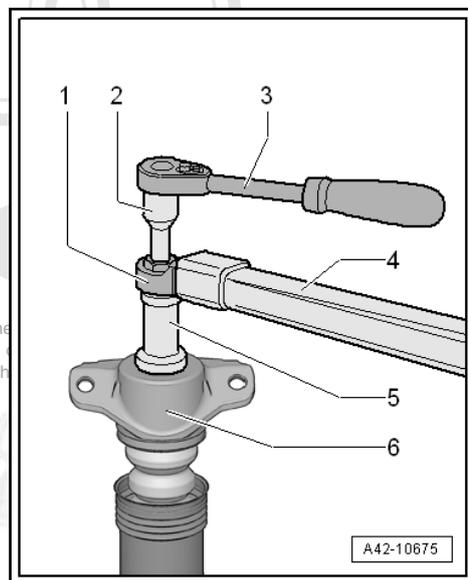
◆ Shock Absorber Set -T10001-



◆ Commercially available ring socket wrench, such as »Hazel 6630c-21«

Shock Absorber Mount Threaded Connection, Loosening and Tightening

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- 1 - Commercially available ring socket wrench, such as »Hazel 6630c-21«
- 2 - Extension with Counter Holder 2 -T10001/10-
- 3 - Commercially Available Ratchet
- 4 - Torque Wrench, 6-50Nm -VAG1331A-
- 5 - Shock Absorber Set - Socket -T10001/1-
- 6 - Shock Absorber Mount

Install in reverse order of removal. Note the following:

Tightening specification: refer to -item 5- ⇒ [Item 5 \(page 319\)](#) .

6.3.2 Shock Absorber, Servicing, Controlled

1 - Shock Absorber

- Allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Removing and Installing. Refer to ⇒ [A6.2 bsorber, Removing and Installing](#), page 314 .
- Always vent and drain malfunctioning shock absorbers before disposal. Refer to ⇒ [5](#), page 16 .
- Shock Absorber, Checking. Refer to ⇒ [Information](#), page 4 .

2 - Protective Pipe

- Shared component with -item 3-

3 - Stop Buffer

- Shared component with -item 2-

4 - Shock Absorber Mount

5 - Not Installed

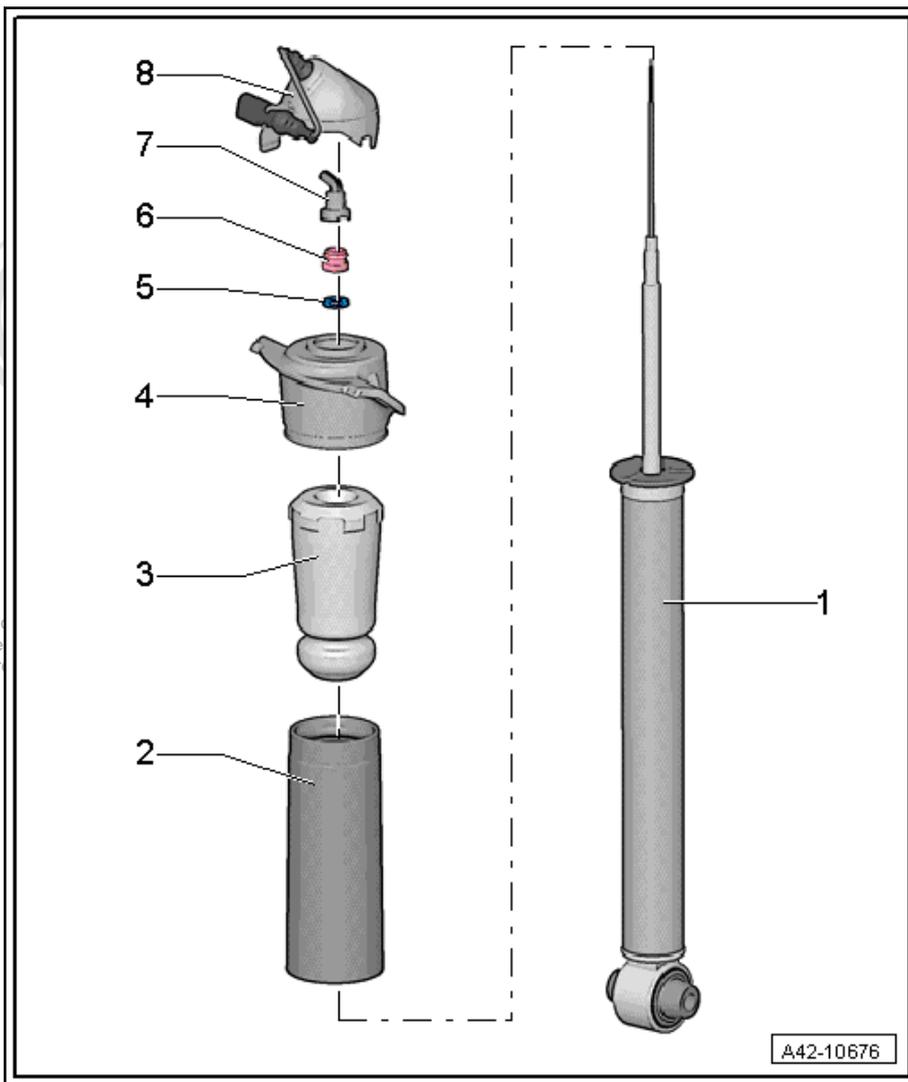
6 - Nut

- 25 Nm
- Always replace if removed

7 - Cable Guide

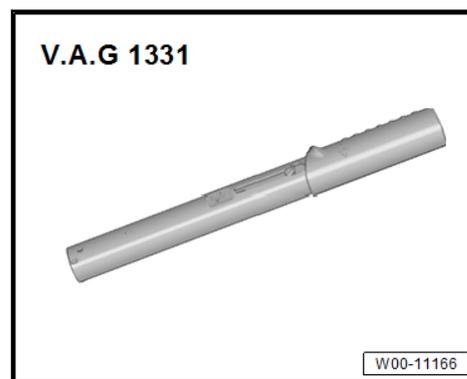
8 - Cover

- With connector mount



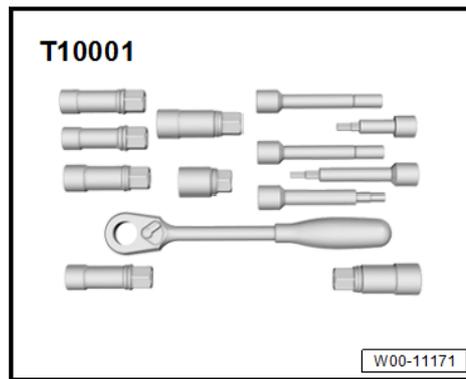
Special tools and workshop equipment required

- ◆ Torque Wrench, 6-50Nm -VAG1331A-





◆ Shock Absorber Set -T10001-

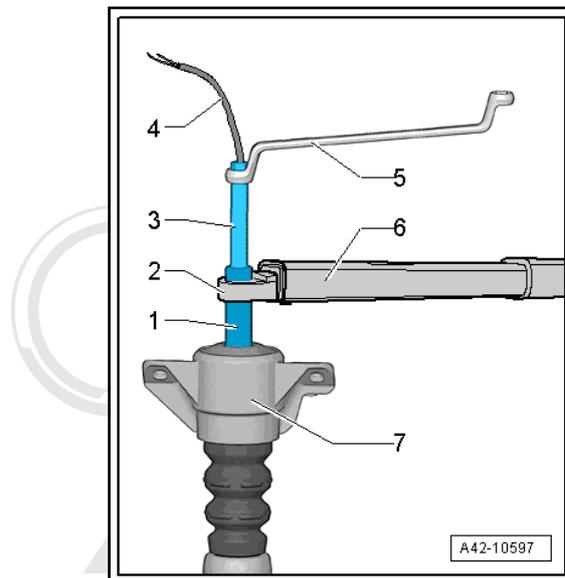


- ◆ Counterhold Tool 8 mm counterhold -T40279-
- ◆ Commercially available ring socket wrench, such as »Hazet 6630c-21«

Procedure

- Shock absorber is removed.
- Free up the wire on the cover -item 8- ⇒ [Item 8 \(page 321\)](#) .
- Unlock the contacts and remove the connector housing from the wire. Refer to ⇒ Electrical Equipment General Information; Rep. Gr. 97; Unlocking and Disassembling from Connector Housings.
- Remove the cable guide -item 7- ⇒ [Item 7 \(page 321\)](#) from the nut -item 6- ⇒ [Item 6 \(page 321\)](#) .

Shock Absorber Mount Threaded Connection, Loosening and Tightening



- 1 - Shock Absorber Set - Socket -T10001/1-
- 2 - Commercially available ring socket wrench, such as »Hazet 6630c-21«
- 3 - Counterhold Tool 8 mm counterhold -T40279-
- 4 - Cable
- 5 - Commercially Available Wrench
- 6 - Torque Wrench, 6-50Nm -VAG1331A-

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7 - Shock Absorber Mount

Install in reverse order of removal. Note the following:

Tightening specification: refer to -item 6- ➔ [Item 6 \(page 321\)](#) .

6.4 Spring, Removing and Installing

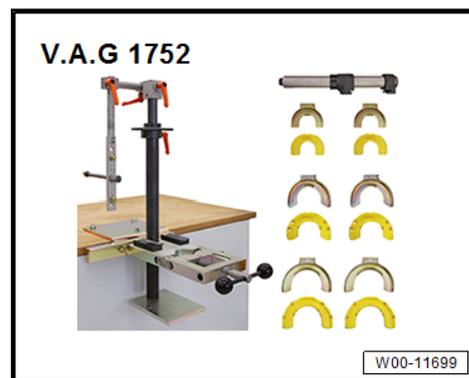
➔ [R6.4.1 removing and Installing, Torsion Beam Axle", page 323](#)

➔ [R6.4.2 removing and Installing, Multi-Link Suspension", page 325](#)

6.4.1 Spring, Removing and Installing, Torsion Beam Axle

Special tools and workshop equipment required

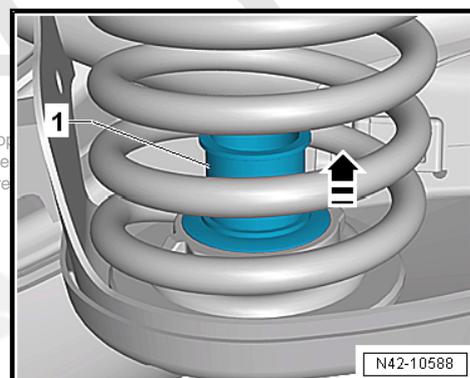
- ◆ Spring Compressor Kit -VAG1752-



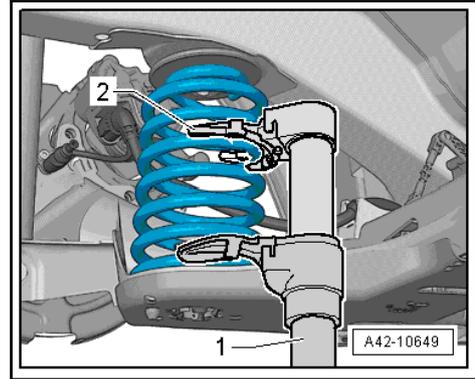
- ◆ Spring Compressor Kit - Adapter Blocks -VAG1752/9-



Removing



- Remove the wheel. Refer to ➔ [and Tires", page 411](#) .
- Remove the clip -1- in the direction of -arrow- until stop.
- Install the spring tensioner -1-.

**Note**

On vehicles with heavy duty suspension a spring coil must be tensioned more than on a standard suspension. Refer to [⇒ C2.5 Control Number \(PR Number\) Explanations](#), page 415.

That is only possible when the upper spring compressor spring bracket is removed. Then both spring brackets are placed on the spring and then the upper spring bracket is reinstalled on the spring compressor.

**WARNING**

Make sure the coil spring is seated correctly in the Spring Compressor Kit - Spring Retainer with Inserts -VAG1752/3A-2- (risk of accident).

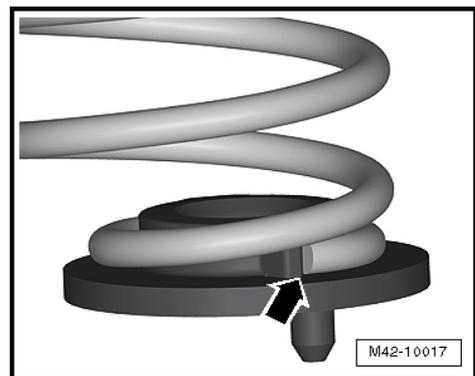
- Tension the coil spring and remove it.

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**Note**

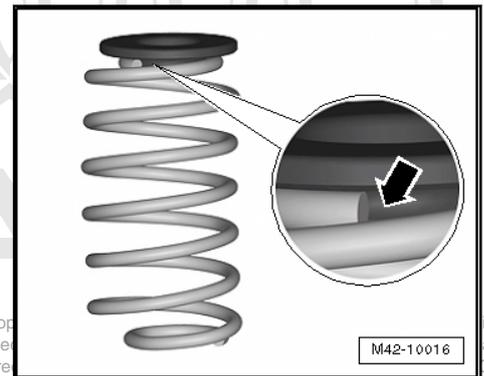
Use a wrench or a reversible ratchet to tighten the spring compressor.

- 1 - Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A-
- 2 - Spring Compressor Kit - Adapter Blocks -VAG1752/9-
- 3 - Spring Compressor Kit - Spring Tensioner -VAG1752/1-

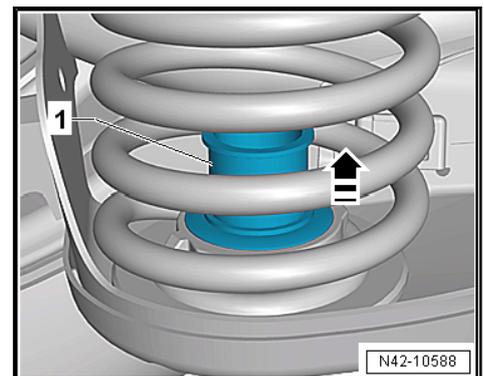
Installing

Install in reverse order of removal while noting the following:

- Make sure the spring support is not damaged.
- If necessary, replace the spring support.
- Install the spring support on the lower coil spring.
- The spring start -arrow- must touch the stop of lower spring support.
- Install the spring and the spring support.
- The lower spring support has a pin.
- Insert this pin into the lower spring mount hole on the axle beam.
- Insert the top of the spring support into the upper spring end.



- The bead on the spring support -arrow- must fit into the coil spring correctly.
- Release the tension on the spring, guiding upper spring support onto tab of body.
- Remove the Spring Compressor.
- Press in the clip -1- in the reverse in direction of -arrow- until stop.



- Overview table for when an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to [⇒ a1 and Tires](#), page 411

6.4.2 Spring, Removing and Installing, Multi-Link Suspension

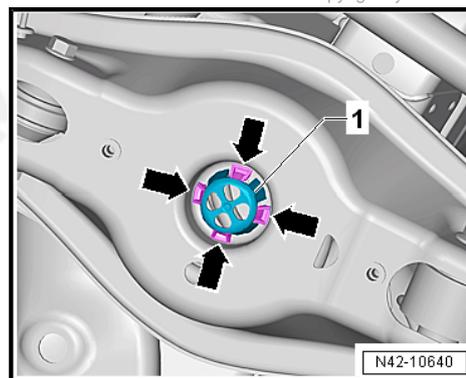
Special tools and workshop equipment required

◆ Spring Compressor Kit -VAG1752-

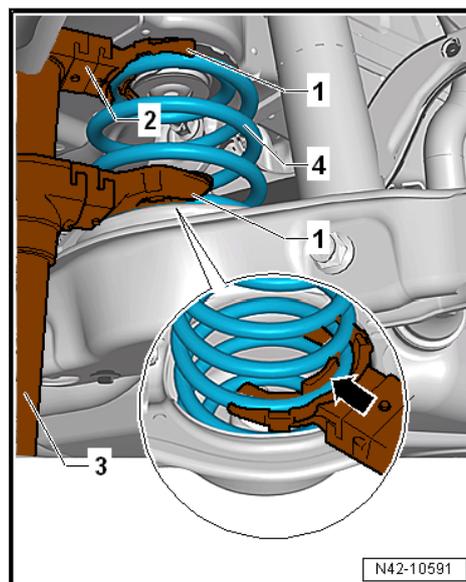


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Removing



- Remove the wheel. Refer to [⇒ a1 nd Tires”, page 411](#) .
- Press the tabs -arrows- on the assembly aid -1- inward.
- Remove the assembly aid -1- upward.
- Insert the spring tensioner -3-.



- 1 - Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A-
- 2 - Spring Compressor Kit - Adapter Blocks -VAG1752/9-
- 3 - Spring Compressor Kit - Spring Tensioner -VAG1752/1-
- 4 - Spring



WARNING

Make sure the coil spring is seated correctly in the Spring Compressor Kit - Spring Retainer with Inserts -VAG1752/3A-1- (risk of accident).

- Compress the coil spring until it can be removed.



Note

Use a wrench or a reversible ratchet to tighten the spring compressor.

- Remove the spring.

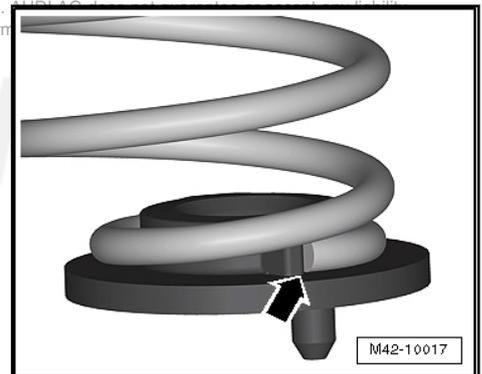


WARNING

Make sure the coil spring is seated correctly in the Spring Compressor Kit - Spring Retainer with Inserts -VAG1752/3A-arrow- (danger of accident).

Installing

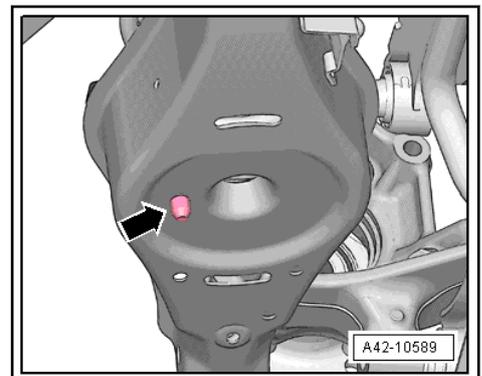
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Install in reverse order of removal while noting the following:

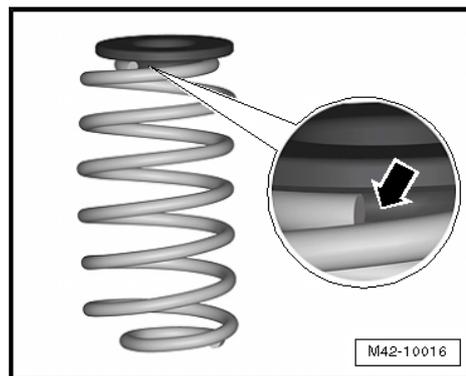
The spring start -arrow- must touch the stop of lower spring support.

- Insert the spring together with the spring support.
- The lower spring support has a pin.

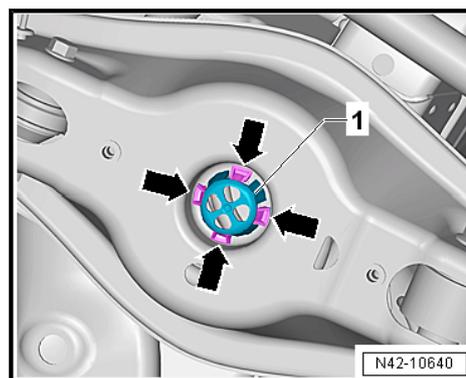


- Insert this pin into hole of lower control arm -arrow-.

- Insert the top of the spring support into the upper spring end.



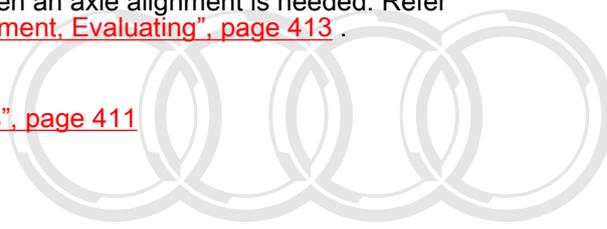
- The bead on the spring support -arrow- must fit into the coil spring correctly.
- Release the tension on the spring, guiding upper spring support onto tab of body.
- Remove the spring compressor.
- Insert the assembly aid -1- and press downward until the tabs -arrows- engage.



- Overview table for when an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to [⇒ a1 nd Tires](#), page 411



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7 Wheel Bearing and Trailing Arm

⇒ [-7.1 Wheel Bearing", page 329](#)

⇒ [-7.2 Trailing Arm", page 334](#)

⇒ [B7.3 earing Housing, Removing and Installing", page 336](#)

⇒ [B7.4 earing Unit, Removing and Installing", page 348](#)

⇒ [B7.5 earing Housing Bonded Rubber Bushing, Replacing", page 359](#)

⇒ [A7.6 rm with Mounting Bracket, Removing and Installing", page 365](#)

⇒ [A7.7 rm, Servicing", page 369](#)

7.1 Overview - Wheel Bearing

⇒ [-7.1.1 Wheel Bearing Unit, Torsion Beam Axle Vehicles with FWD", page 329](#)

⇒ [-7.1.2 Wheel Bearing Housing and Wheel Bearing Unit, Multi-Link Suspension Vehicles with FWD", page 330](#)

⇒ [-7.1.3 Wheel Bearing Housing and Wheel Bearing Unit, Multi-Link Suspension Vehicles with AWD", page 332](#)

7.1.1 Overview - Wheel Bearing Unit, Torsion Beam Axle Vehicles with FWD



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1 - Dust Cap

- ❑ Always replace if removed

2 - Bolt

- ❑ 200 Nm + 180° additional turn
- ❑ Always replace if removed
- ❑ Loosening and tightening. Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and Tightening](#), page 378
- ❑ Before installing, clean the threads in the axle stub with a thread tap.

3 - Wheel Bearing Unit

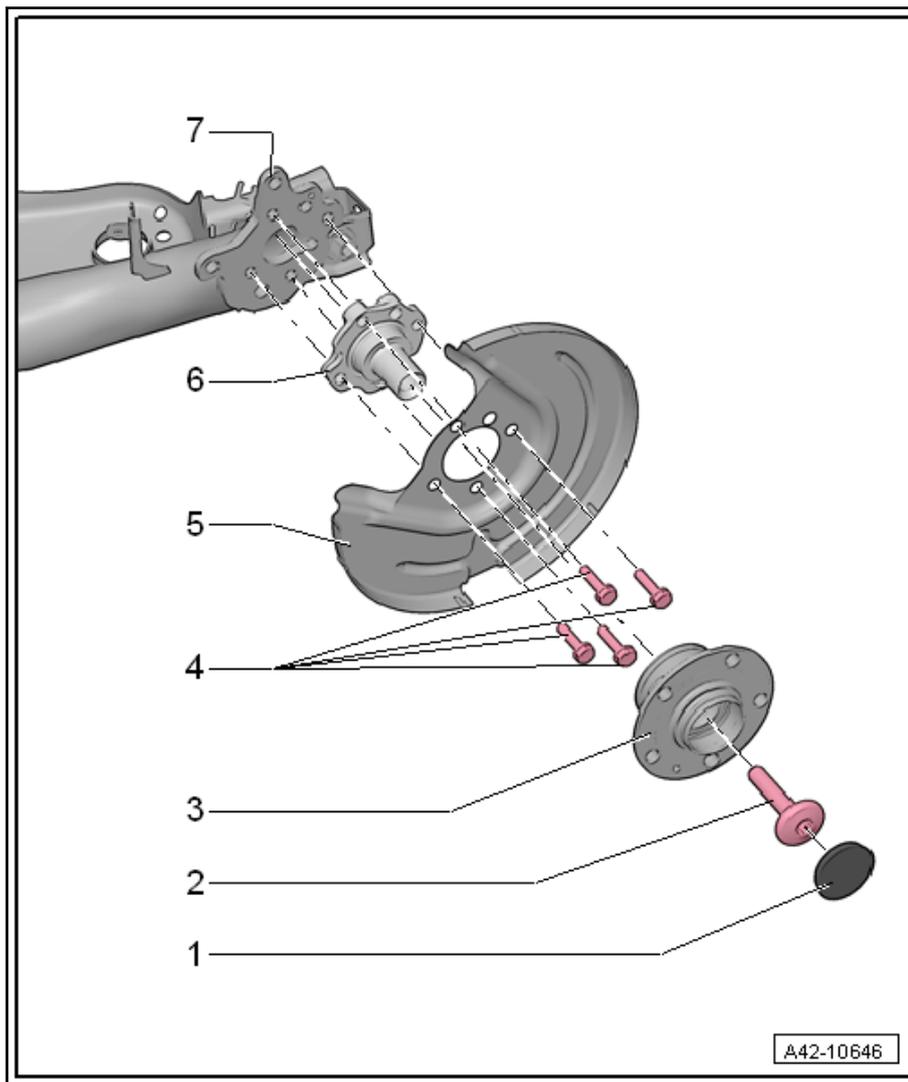
- ❑ Removing and Installing. Refer to ⇒ [B7.4.1 Bearing Unit, Removing and Installing, Torsion Beam Axle Vehicles with FWD](#), page 348.
- ❑ The wheel bearing and wheel hub are installed together in a housing.
- ❑ The wheel bearing unit is maintenance free and has zero play. Adjusting as well as repair work is not possible!

4 - Bolt

- ❑ 30 Nm +90°
- ❑ Always replace if removed

5 - Brake Shield

- ❑ Removing and Installing. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

6 - Axle Stub**7 - Axle Beam**

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7.1.2 Overview - Wheel Bearing Housing and Wheel Bearing Unit, Multi-Link Suspension Vehicles with FWD

1 - Bolt

- Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 45; Component Location Overview; Component Location Overview - ABS/ESP.

2 - Right Rear ABS Wheel Speed Sensor -G44-/Left Rear ABS Wheel Speed Sensor -G46-

- Removing and Installing. Refer to ⇒ Brake System; Rep. Gr. 45; Component Location Overview; Component Location Overview - ABS/ESP.

3 - Wheel Bearing Housing

- Removing and Installing. Refer to ⇒ [B7.3.1 earing Housing, Removing and Installing, Multi-Link Suspension Vehicles with FWD](#), page 336 .

4 - Bonded Rubber Bushing

- Replacing. Refer to ⇒ [B7.5 earing Housing Bonded Rubber Bushing, Replacing](#), page 359 .

5 - Bolt

- Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

6 - Brake Rotor

- Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Rotor, Removing and Installing.

7 - Bolt

- Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

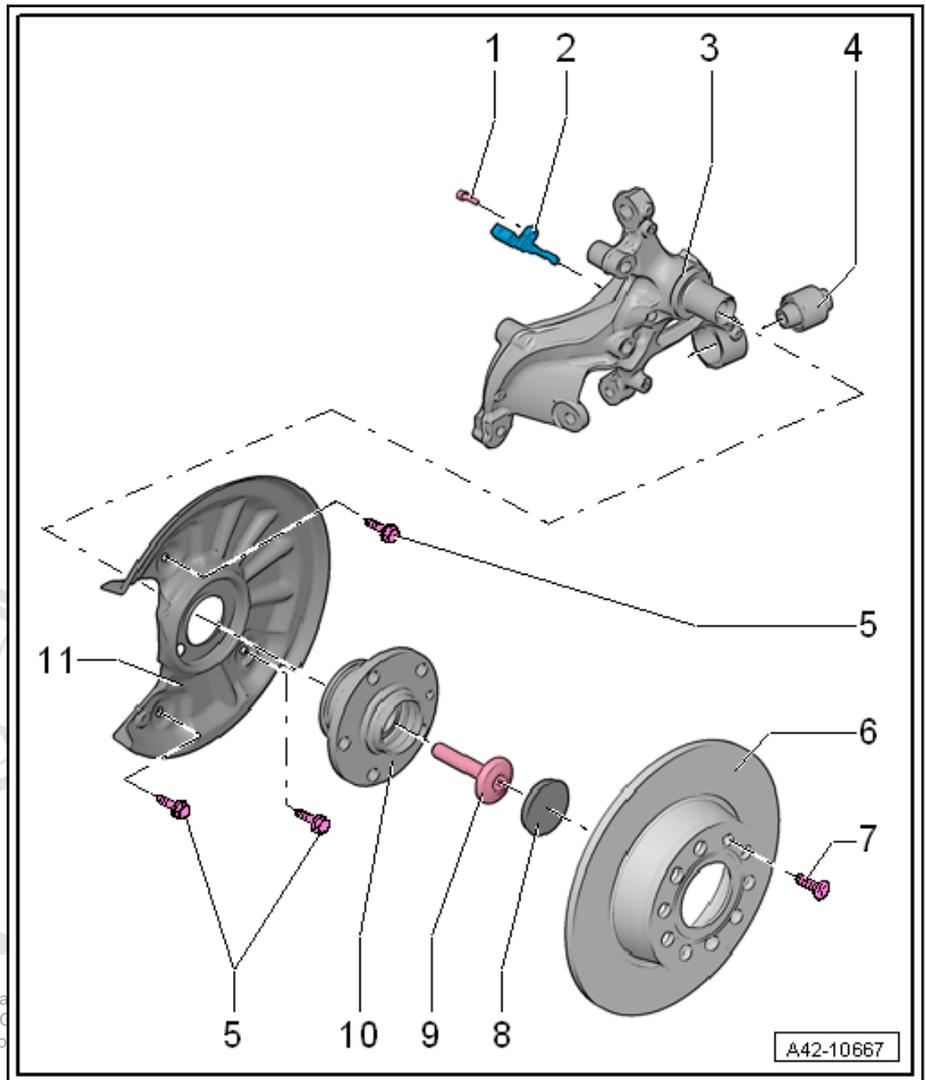
8 - Dust Cap

- Always replace if removed
- Removing and Installing. Refer to ⇒ [B7.4.1 earing Unit, Removing and Installing, Torsion Beam Axle Vehicles with FWD](#), page 348 .
- A perfect seal is only achieved using a new dust cap.

9 - Bolt

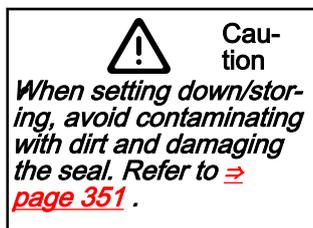
- 200 Nm + 180° additional turn
- Always replace if removed
- Loosening and tightening. Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and Tightening](#), page 378
- Before installing, clean the threads in the wheel bearing housing with a tap.

10 - Wheel Bearing Unit





- Removing and Installing. Refer to ⇒ [B7.4.2 bearing Unit, Removing and Installing, Multi-Link Suspension Vehicles with FWD](#), page 353 .
- The wheel bearing and wheel hub are installed together in a housing.
- The wheel bearing unit is maintenance free and has zero play. Adjusting as well as repair work is not possible!



11 - Brake Shield

- Removing and Installing. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

7.1.3 Overview - Wheel Bearing Housing and Wheel Bearing Unit, Multi-Link Suspension Vehicles with AWD



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1 - Bolt

- 80 Nm + 90°
- Always replace if removed

2 - Drive Axle

3 - Wheel Bearing Housing

- Removing and Installing. Refer to ⇒ [B7.3.2 earing Housing, Removing and Installing, Multi-Link Suspension Vehicles with AWD](#), page 341 .

4 - Right Rear ABS Wheel Speed Sensor -G44-/Left Rear ABS Wheel Speed Sensor -G46-

- Removing and Installing. Refer to ⇒ Brake System; Rep. Gr. 45; Component Location Overview; Component Location Overview - ABS/ESP.

5 - Bolt

- Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 45; Component Location Overview; Component Location Overview - ABS/ESP.

6 - Bonded Rubber Bushing

- Replacing. Refer to ⇒ [B7.5 earing Housing Bonded Rubber Bushing, Replacing](#), page 359

7 - Bolt

- Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

8 - Brake Rotor

- Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Rotor, Removing and Installing.

9 - Bolt

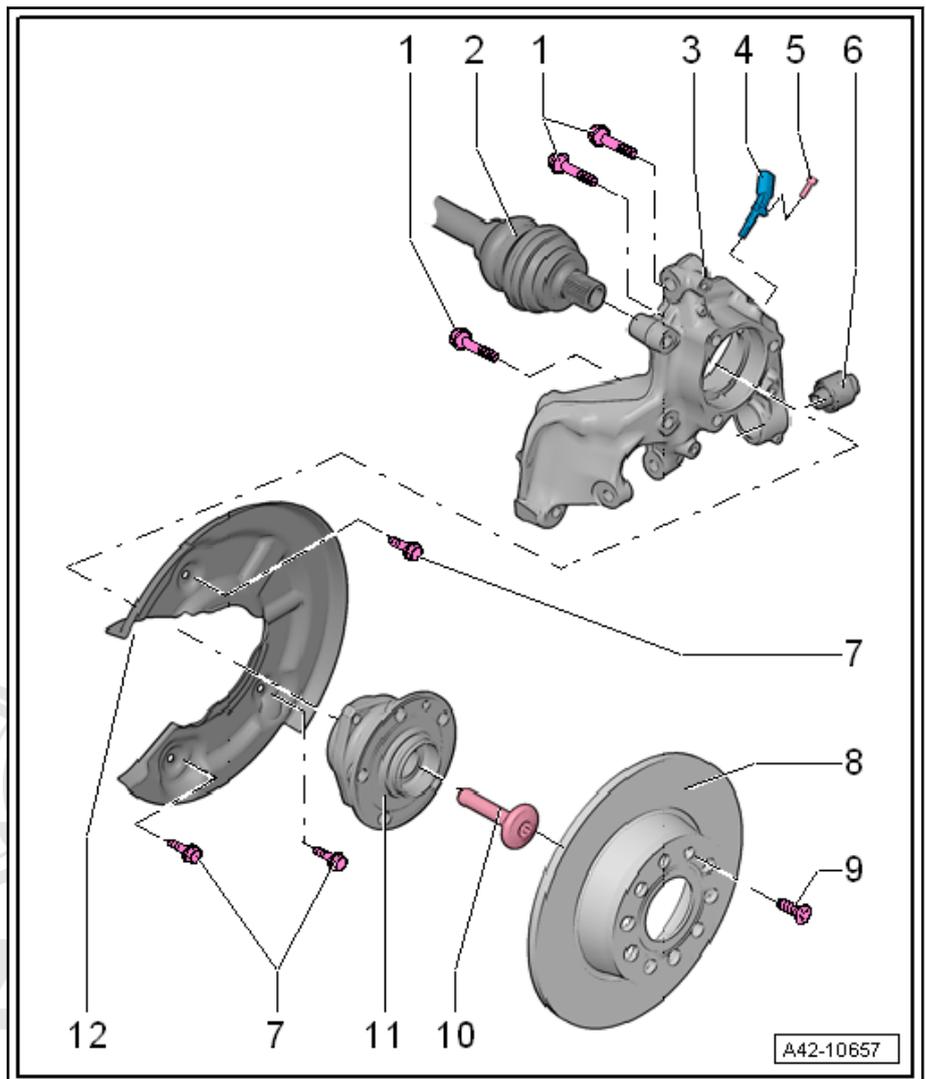
- Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

10 - Bolt

- WHT.005.437- / black = 200 Nm +180° additional turn
- WHT.005.437.A- / silver = 200 Nm + 90° additional turn
- Always replace if removed
- Loosening and tightening. Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and Tightening](#), page 378
- Before installing, clean the threads in the CV joint with a thread tap.

11 - Wheel Bearing Unit

- Removing and Installing. Refer to ⇒ [B7.4.3 earing Unit, Removing and Installing, Multi-Link Suspension Vehicles with AWD](#), page 357 .
- The wheel bearing and wheel hub are installed together in a housing.



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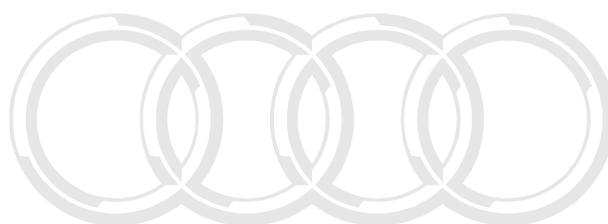
- The wheel bearing unit is maintenance free and has zero play. Adjusting as well as repair work is not possible!



12 - Brake Shield

- Removing and Installing. Refer to => Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

7.2 Overview - Trailing Arm



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1 - Cover

2 - Mounting Bracket

3 - Bolt

- 50 Nm +45°
- Always replace if removed

4 - Bolt

- 90 Nm + 90°
- Always replace if removed

5 - Bolt

- 70 Nm +90°
- Always replace if removed

6 - Bolt

- 70 Nm +90°
- Always replace if removed

7 - Bolt

- Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 45; Component Location Overview; Component Location Overview - ABS/ESP.

8 - Right Rear ABS Wheel Speed Sensor -G44-/Left Rear ABS Wheel Speed Sensor -G46-

- Removing and Installing. Refer to ⇒ Brake System; Rep. Gr. 45; Component Location Overview; Component Location Overview - ABS/ESP.

9 - Wheel Bearing Housing

- For FWD vehicles

10 - Wheel Bearing Housing

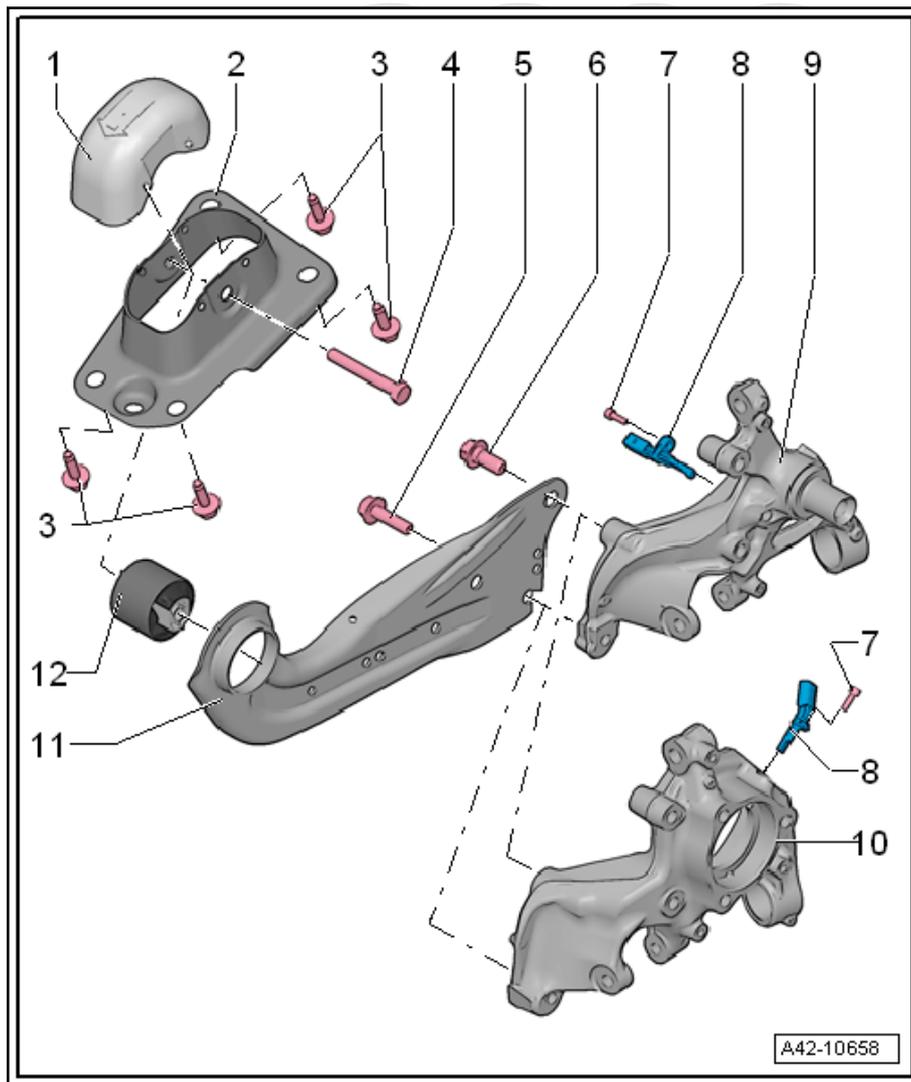
- For AWD vehicles

11 - Trailing Arm

- Removing and Installing. Refer to ⇒ [A7.6 rm with Mounting Bracket, Removing and Installing](#), page 365 .

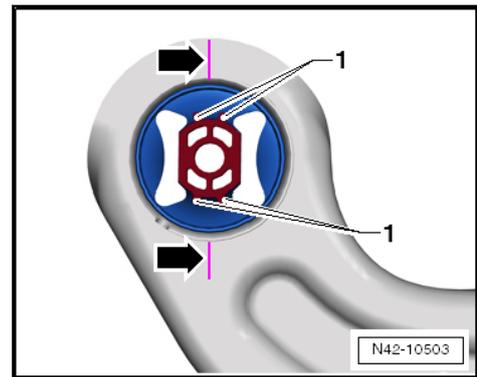
12 - Bonded Rubber Bushing

- Note the installation position. Refer to ⇒ [page 336](#) .
- Replacing. Refer to ⇒ [A7.7 rm, Servicing](#), page 369 .



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Bonded Rubber Bushing Installation Position:



Position the bonded rubber bushing on the trailing arm so that the marked line -arrows- is between the raised sections -1-.



Note

Make absolutely sure that the bonded rubber bushing is in the correct installation position in relation to the trailing arm socket.

7.3 Wheel Bearing Housing, Removing and Installing

⇒ [B7.3.1 earing Housing, Removing and Installing, Multi-Link Suspension Vehicles with FWD", page 336](#)

⇒ [B7.3.2 earing Housing, Removing and Installing, Multi-Link Suspension Vehicles with AWD", page 341](#)

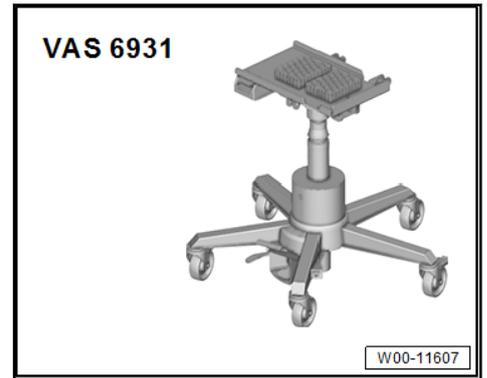
7.3.1 Wheel Bearing Housing, Removing and Installing, Multi-Link Suspension Vehicles with FWD

Special tools and workshop equipment required

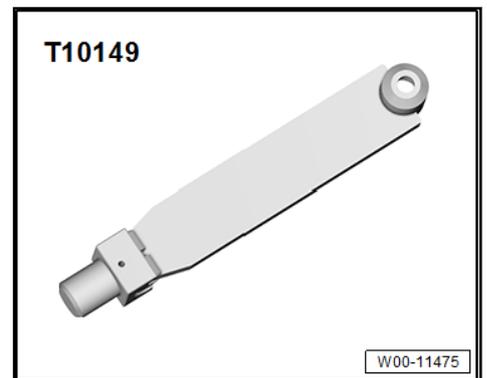
- ◆ Torque Wrench, 40-200Nm -VAG1332A-



◆ Engine and Gearbox Jack -VAS6931-



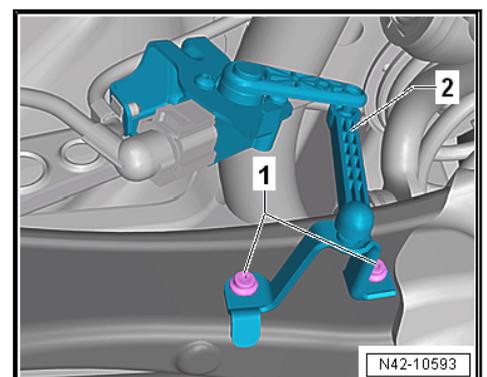
◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-



Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Remove the wheel. Refer to ⇒ [and Tires](#), page 411 .
- Remove the brake caliper. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Caliper, Removing and Installing.
- If the wheel bearing housing is being replaced and the old wheel bearing unit reinstalled, the wheel bearing unit must be removed.
- **If necessary, remove the wheel bearing unit.** Refer to ⇒ [B7.4.2 earing Unit, Removing and Installing, Multi-Link Suspension Vehicles with FWD](#), page 353 .
- Remove the brake shield, if necessary. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

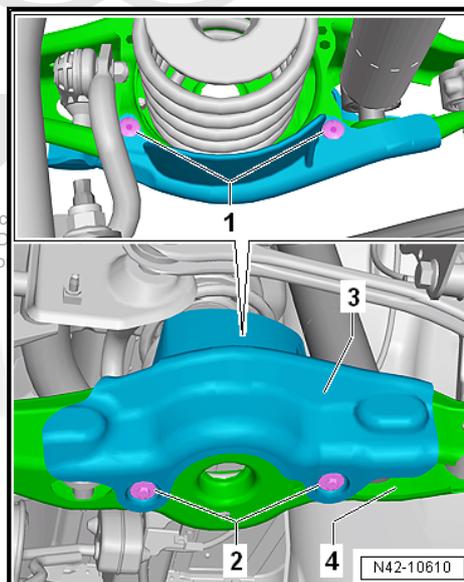
Vehicles with Level Control System Sensor



- Remove the left and right bolts -1- from the linkage -2- for the rear level control system sensor.

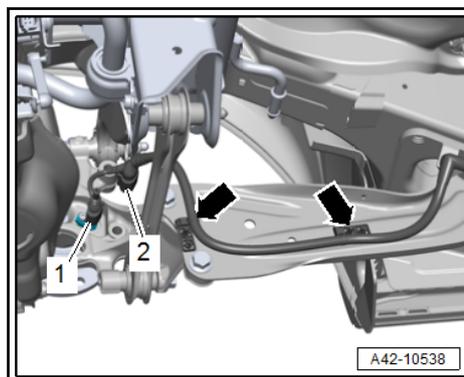
Vehicles with Stone Chip Protection

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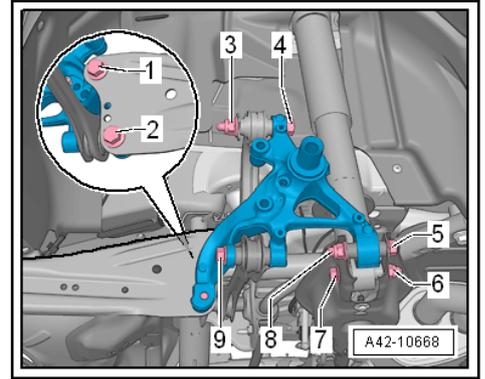


- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

Continuation for All Vehicles

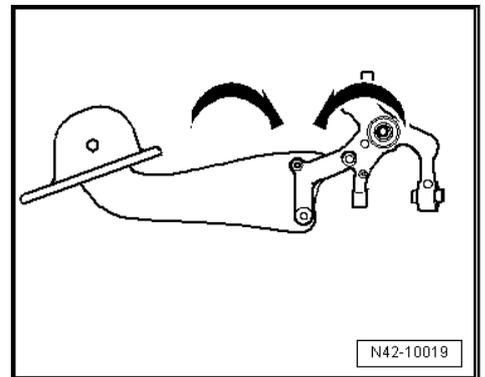


- Remove the coil spring. Refer to [⇒ R6.4 moving and Installing”, page 323](#) .
- Disconnect and free up the right and left connector -1- from the ABS speed sensor.
- Disconnect the right and left electromechanical parking brake connector -2- from the brake caliper.
- Remove and free up the wiring harness from the retainers -arrows-.
- Remove the bolts -1 and 2-.



- Remove the nuts -3, 6 and 8- and then the bolts -4, 5, 7 and 9-.
- Remove the wheel bearing housing.

Installing



Install in reverse order of removal while noting the following:

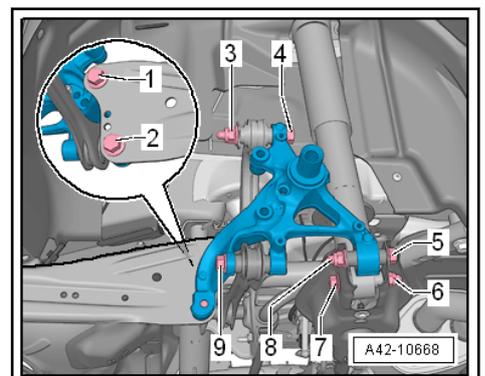
Threaded connection of trailing link/wheel bearing housing must only be tightened when all other components (spring and shock absorber always) of the respective wheel suspension have been already assembled. To tighten, suspension must be unloaded. Only now do the trailing arm and wheel bearing housing move into the position required -arrows-.

Always Perform the Following Steps in the Sequence Given!

Audi

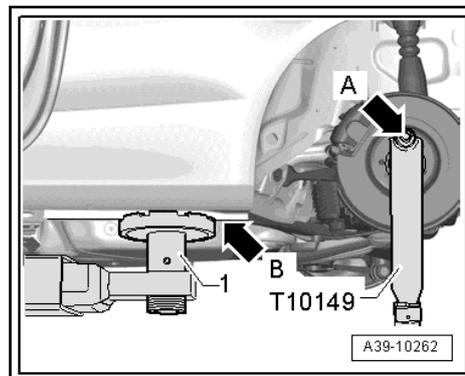
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erWin

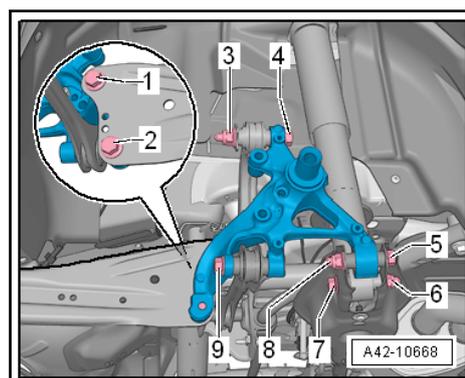


- Install the wheel bearing housing.
- Insert the bolts -4, 5 and 7- and hand-tighten the nuts -3, 6 and 8-.
- Tighten the bolt -9- by hand.
- Tighten the bolts -1 and 2- by hand.

The bolts on the wheel bearing housing may be installed only when dimension "a" has been reached. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#)", page 11 .

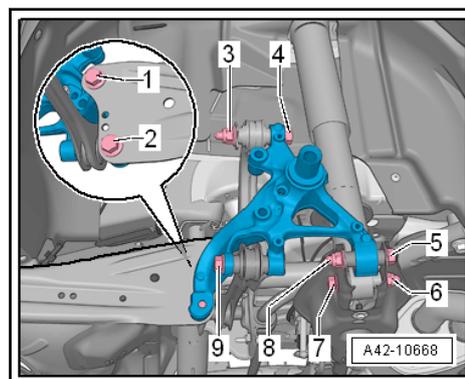


- Install the Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149- with the wheel bolt on the wheel hub -arrow-.
- Lift the wheel bearing housing using the Engine and Gearbox Jack -VAS6931- until the dimension -a- is reached. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#)", page 11 .
- Tighten the bolts and nuts -3 through 9-.



- Remove the Engine and Gearbox Jack -VAS6931- with the Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149- from the wheel hub.
- Install the coil spring. Refer to ⇒ [R6.4 emoving and Instal-ling](#)", page 323 .
- Tighten the bolts -1 and 2-.

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Install in reverse order of removal, note the following:

If on vehicles with electronic damping (Audi magnetic ride) the coupling rod of a sensor for the level control system is loosened, then the sensor for the level control system is removed and installed or replaced:

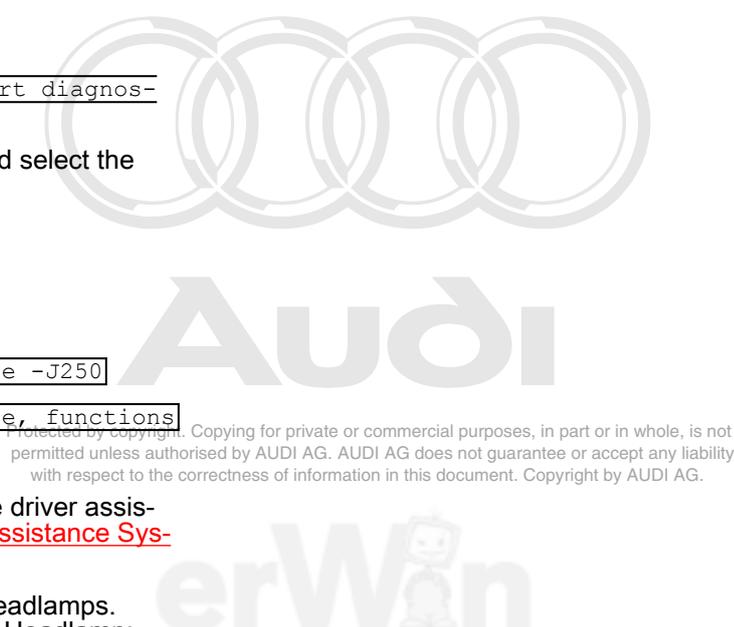
- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:
 - ◆ **Chassis**
 - ◆ **Wheel Damping Electronics**
 - ◆ **01 - OBD-capable systems**
 - ◆ **14 - Electronic Damping Control Module -J250**
 - ◆ **14 - Electronic Damping Control Module, functions**
 - ◆ **14 - Control Position, readapting**
 - ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
 - ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.
- Overview table for when an axle alignment is needed. Refer to ⇒ [f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to ⇒ [-7.1.2 Wheel Bearing Housing and Wheel Bearing Unit, Multi-Link Suspension Vehicles with FWD](#), page 330
- ◆ Refer to ⇒ [-6.1.2 Shock Absorber and Spring, Multi-Link Suspension](#), page 313
- ◆ Refer to ⇒ [-7.2 Trailing Arm](#), page 334
- ◆ Refer to ⇒ [-5.2 Tie Rod](#), page 304
- ◆ Refer to ⇒ [-2.2.1 Left Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Vehicles with Multi-Link Suspension](#), page 404
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- ◆ Refer to ⇒ [a1 nd Tires](#), page 411

7.3.2 Wheel Bearing Housing, Removing and Installing, Multi-Link Suspension Vehicles with AWD

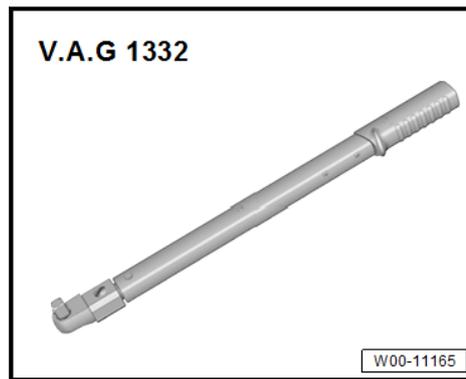
Special tools and workshop equipment required



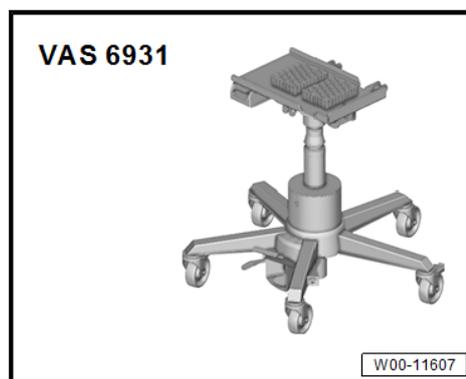
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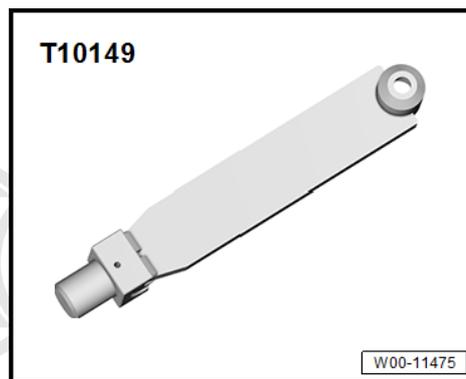
- ◆ Torque Wrench, 40-200Nm -VAG1332A-



- ◆ Engine and Gearbox Jack -VAS6931-



- ◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-

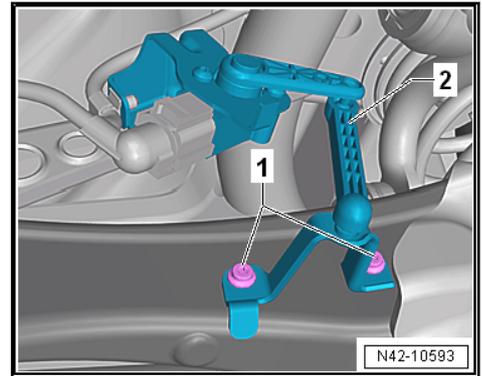


Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to [⇒ B3.16earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Loosen the outer drive axle threaded connection. Refer to [⇒ A8.3 xle Threaded Connection, Loosening and Tightening](#), page 378 .
- Remove the wheel. Refer to [⇒ a1 nd Tires](#), page 411 .

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Vehicles with Level Control System Sensor

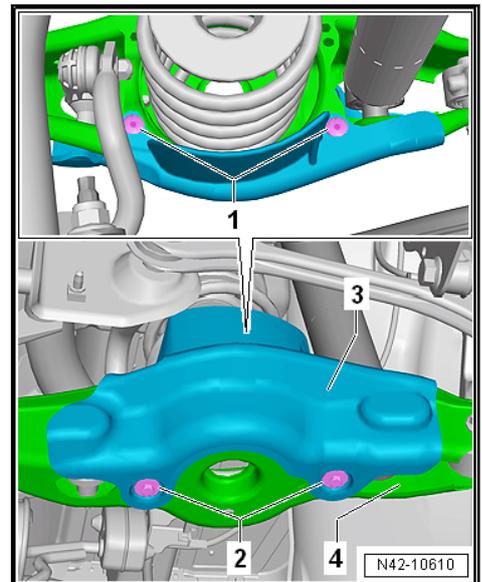


- Remove the left and right bolts -1- from the linkage -2- for the rear level control system sensor.

 **Note**

The installation position illustrated is for a FWD vehicle.

Vehicles with Stone Chip Protection

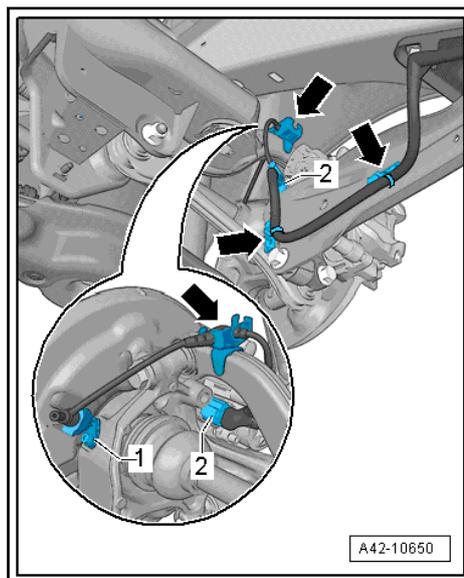


- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

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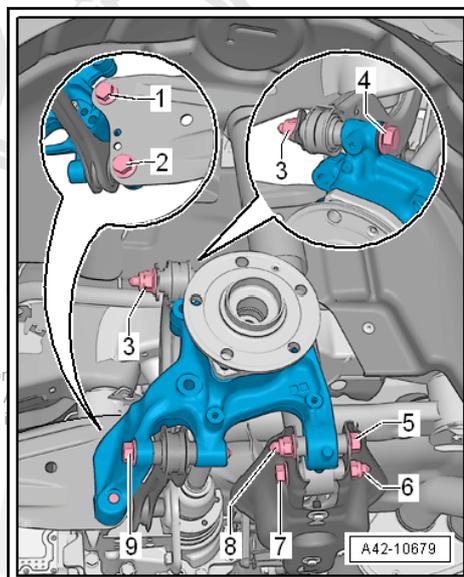


Continuation for All Vehicles



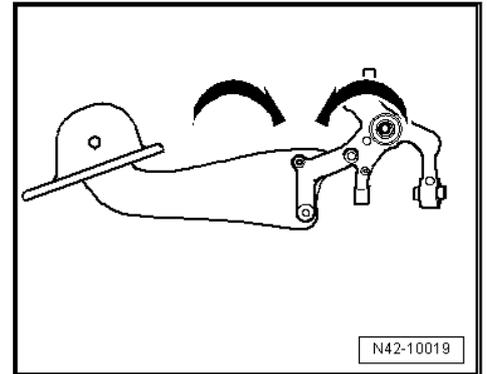
- Remove the coil spring. Refer to ⇒ [R6.4 removing and Installing](#), page 323 .
- Disconnect and free up the connector -1- from the ABS speed sensor.
- Disconnect the connector -2- on the electromechanical parking brake motor from the brake caliper and free it up.
- Remove the brake shield. Refer to ⇒ Rep. Gr. 46.
- Remove the bolts -1 and 2-.

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- Remove the nuts -3, 6 and 8- and bolts -4, 5, 7 and 9-.
- Remove the wheel bearing housing.

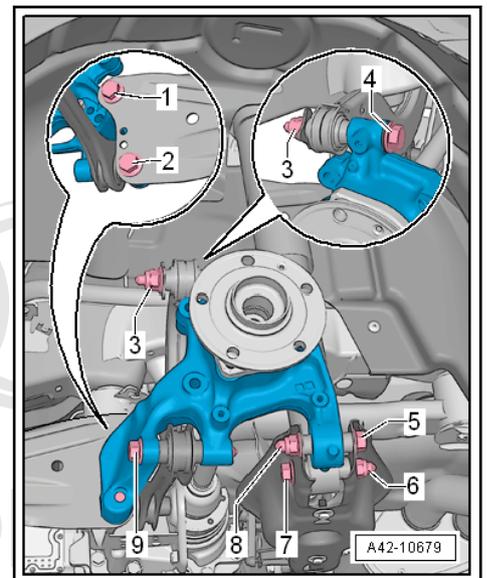
Installing



Install in reverse order of removal while noting the following:

Threaded connection of trailing link/wheel bearing housing must only be tightened when all other components (spring and shock absorber always) of the respective wheel suspension have been already assembled. To tighten, suspension must be unloaded. Only now do the trailing arm and wheel bearing housing move into the position required -arrows-.

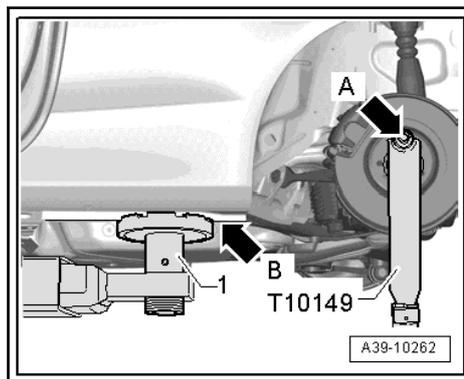
Always Perform the Following Steps in the Sequence Given!



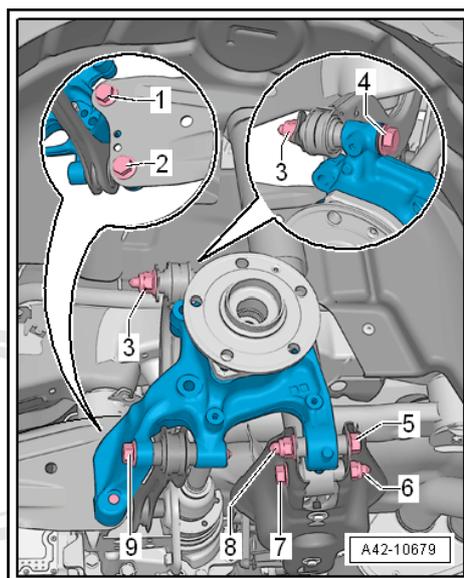
- Install the wheel bearing housing.
- Insert the bolts -4, 5 and 7- and hand-tighten the nuts -3, 6 and 8-.
- Tighten the bolt -9- by hand.
- Tighten the bolts -1 and 2- by hand.

The Bolts on the Wheel Bearing Housing may be Installed Only when Dimension "a" has been Reached. Refer to ⇒ [B3.16 ear-](#)

**ing in Curb Weight Position, Lifting Vehicles with Coil Spring”,
 page 11 .**

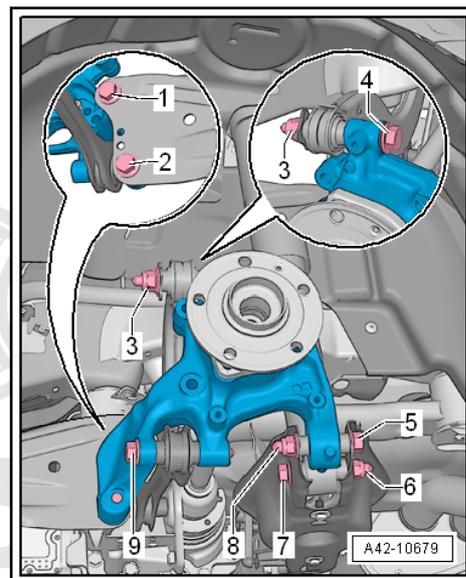


- Install the Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149- with the wheel bolt on the wheel hub -arrow-.
- Lift the wheel bearing housing using the Engine and Gearbox Jack -VAS6931- until the dimension -a- is reached. Refer to => [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring”, page 11 .](#)
- Tighten the bolts and nuts -3 through 9-.



- Remove the Engine and Gearbox Jack -VAS6931- with the Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149- from the wheel hub.
- Install the coil spring. Refer to => [R6.4 emoving and Instal-
 ling”, page 323 .](#)
- Tighten the bolts -1 and 2-.

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Install in reverse order of removal, note the following:

If on vehicles with electronic damping (Audi magnetic ride) the coupling rod of a sensor for the level control system is loosened, then the sensor for the level control system is removed and installed or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select **Diagnostic** operating mode and **Start diagnostics**.
- Select the **Select individual test** tab and select the following tree structure consecutively:
 - ◆ **Chassis**
 - ◆ **Wheel Damping Electronics**
 - ◆ **01 - OBD-capable systems**
 - ◆ **14 - Electronic Damping Control Module -J250**
 - ◆ **14 - Electronic Damping Control Module, functions**
 - ◆ **14 - Control Position, readapting**
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.
- Overview table for when an axle alignment is needed. Refer to ⇒ [f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

- ◆ Refer to ⇒ [-7.1.3 Wheel Bearing Housing and Wheel Bearing Unit, Multi-Link Suspension Vehicles with AWD](#), page 332
- ◆ Refer to ⇒ [-6.1.2 Shock Absorber and Spring, Multi-Link Suspension](#), page 313
- ◆ Refer to ⇒ [-7.2 Trailing Arm](#), page 334
- ◆ Refer to ⇒ [-5.2 Tie Rod](#), page 304

- ◆ Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and Tightening](#)", page 378
- ◆ Refer to ⇒ [-2.2.1 Left Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Vehicles with Multi-Link Suspension](#)", page 404
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- ◆ Refer to ⇒ [a1 nd Tires](#)", page 411

7.4 Wheel Bearing Unit, Removing and Installing

⇒ [B7.4.1 earing Unit, Removing and Installing, Torsion Beam Axle Vehicles with FWD](#)", page 348

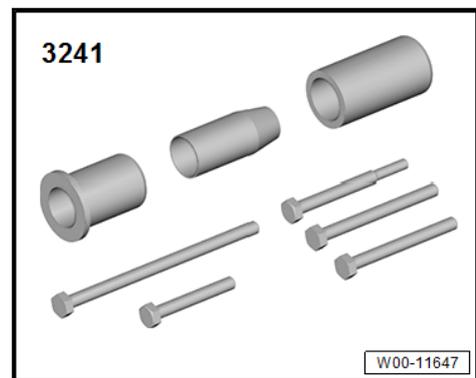
⇒ [B7.4.2 earing Unit, Removing and Installing, Multi-Link Suspension Vehicles with FWD](#)", page 353

⇒ [B7.4.3 earing Unit, Removing and Installing, Multi-Link Suspension Vehicles with AWD](#)", page 357

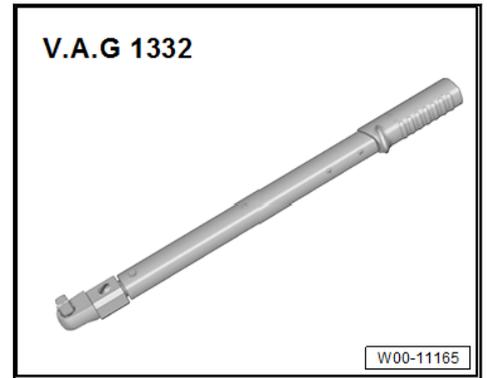
7.4.1 Wheel Bearing Unit, Removing and Installing, Torsion Beam Axle Vehicles with FWD

Special tools and workshop equipment required

- ◆ Puller - Grease Cap -VW637/2-
- ◆ Camshaft Installer Kit - Sleeve -3241/4- from the Seal Installer - Camshaft Installer Kit -3241-



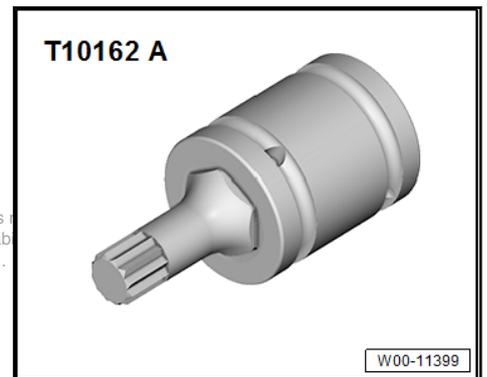
- ◆ Torque Wrench, 40-200Nm -VAG1332A-



- ◆ Torque Wrench -VAG1410-



- ◆ Socket - Xzn 18mm -T10162A-

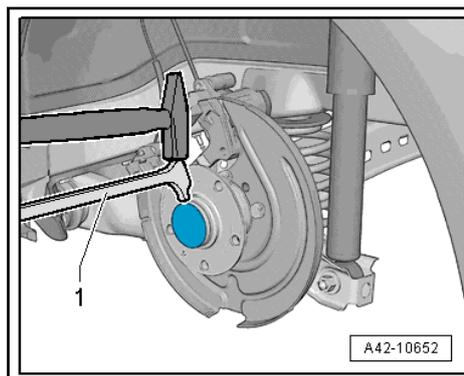


WARNING

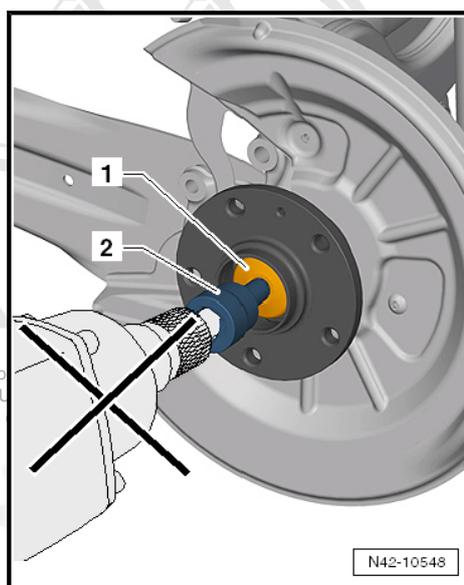
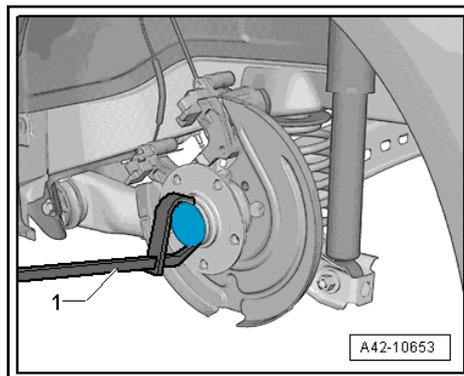
There is a risk of breaking the Socket - Xzn 18mm with the tool number Socket - Xzn 18 -T10162- without the "A" index.

- ◆ *Socket - Xzn 18mm -T10162A- must be used exclusively.*

Removing



- Remove the brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Rotor, Removing and Installing.
- Loosen the dust cap from the seat by tapping lightly on the claw of the Puller - Grease Cap -VW637/2- -1-.
- Press the dust cap off using the Puller - Grease Cap - VW637/2- -1-.



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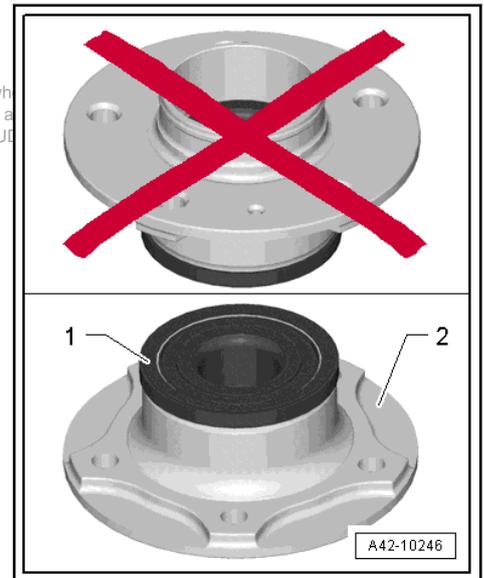


Caution

Never use an impact wrench when loosening the bolt -1- using the Socket - Xzn 18mm -T10162A-.

- Remove the bolt using the Socket - Xzn 18mm -T10162A-
-2-.
- Remove the wheel bearing unit from the axle stub.

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Caution

- ***When setting down/storing avoid contaminating with dirt and damaging the seal.***

The wheel bearing -1- must always face upward.

- Always set the wheel bearing unit down on the wheel hub
-2-.

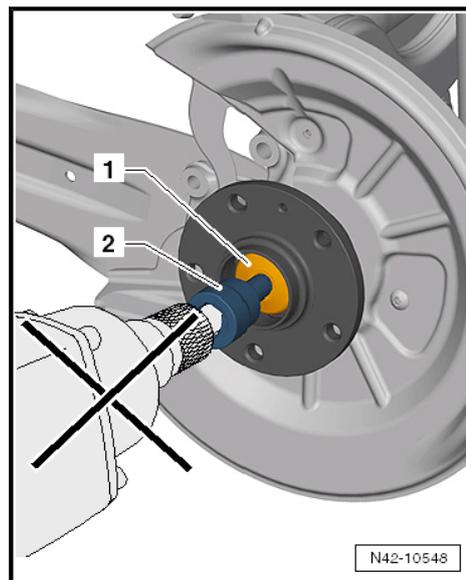
Installing

Install in reverse order of removal while noting the following:

- Carefully slide the wheel hub/wheel bearing unit onto the axle stub.

Make Sure that Wheel Hubs/Wheel Bearing Unit Does Not Tilt!

- Tighten using a new internal multi-point bolt -1-.



Caution

Never use an impact wrench when tightening the bolt -1- using the Socket -Xzn 18mm -T10162A-.



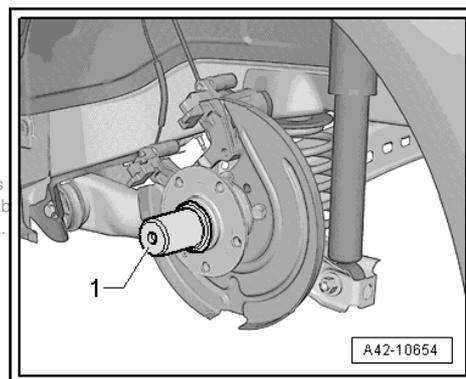
Note

- ◆ *First tighten the bolt to the given tightening specification using the torque wrench.*
- ◆ *Use a rigid wrench to apply additional torque angle.*
- Install the new dust cap with the Sleeve -3241/4- -1-

Audi

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Note

- ◆ *Always replace dust caps.*
- ◆ *Damaged dust caps allow moisture to enter. Therefore, always use the tool shown.*

Tightening Specifications

- ◆ Refer to ➤ [-7.1.1 Wheel Bearing Unit, Torsion Beam Axle Vehicles with FWD-](#), page 329

- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- ◆ Refer to ⇒ ["a1 nd Tires", page 411](#)

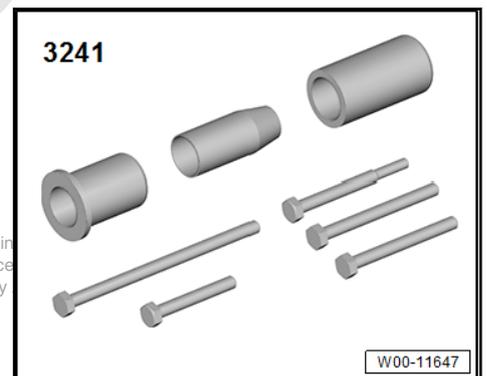
7.4.2 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension Vehicles with FWD

Special tools and workshop equipment required

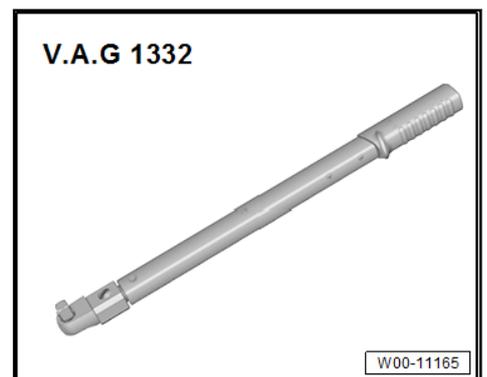
- ◆ Puller - Grease Cap -VW637/2-



- ◆ Camshaft Installer Kit - Sleeve -3241/4- from the Seal Installer - Camshaft Installer Kit -3241-



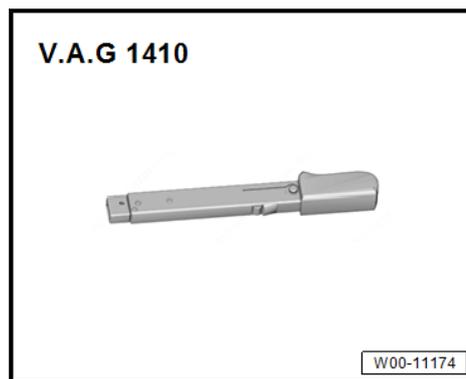
- ◆ Torque Wrench, 40-200Nm -VAG1332A-



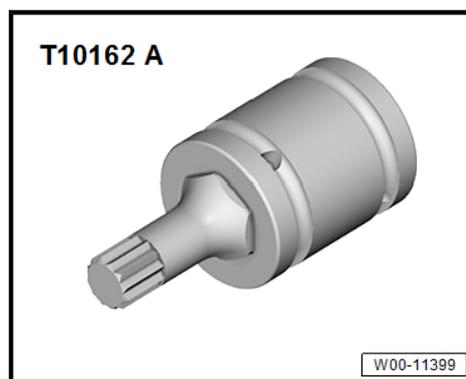
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◆ Torque Wrench -VAG1410-



◆ Socket - Xzn 18mm -T10162A-

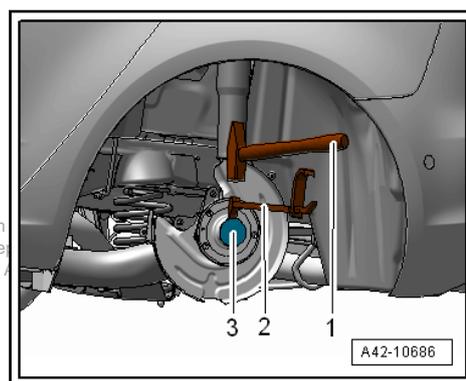


 **WARNING**

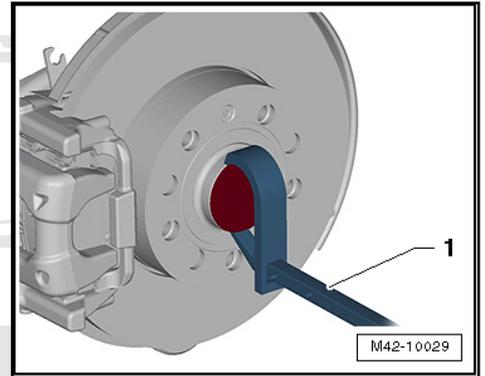
There is a risk of breaking the Socket - Xzn 18mm with the tool number Socket - Xzn 18 -T10162- without the "A" index.

◆ *Socket - Xzn 18mm -T10162A- must be used exclusively.*

Removing

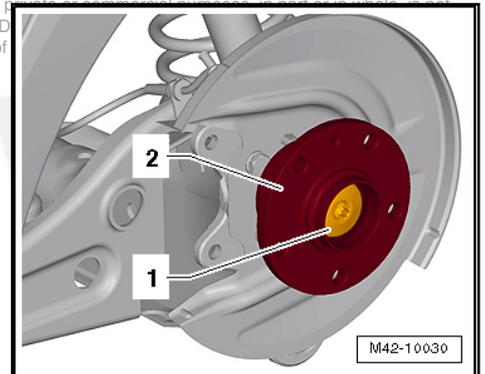


- Remove the brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Rotor, Removing and Installing.
- Loosen the dust cap -3- from the seat by tapping lightly on the claw of the Puller - Grease Cap -VW637/2- -2- with the hammer -1-.
- Press the dust cap off using the Puller - Grease Cap - VW637/2- -1-.



- Remove the bolt -1- with the Socket - Xzn 18mm -T10162A-.

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Caution

Never use an impact wrench when loosening the bolt -1- using the Socket - Xzn 18mm -T10162A-.

- Remove the wheel bearing unit -2- from the axle stub.



Caution

- ***When setting down/storing avoid contaminating with dirt and damaging the seal.***

The wheel bearing -1- must always face upward.



- Always set the wheel bearing unit down on the wheel hub -2-.

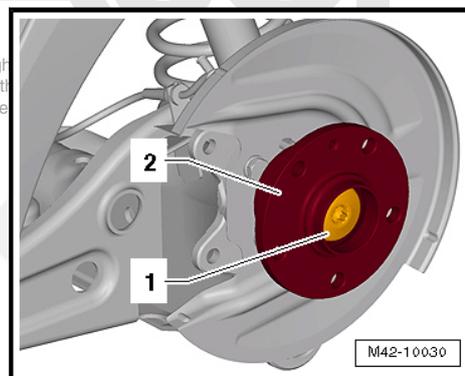
Installing

Install in reverse order of removal while noting the following:

- Carefully slide the wheel hub/wheel bearing unit onto the axle stub.

Make Sure that Wheel Hubs/Wheel Bearing Unit Does Not Tilt!

- Tighten using a new internal multi-point bolt -1-.



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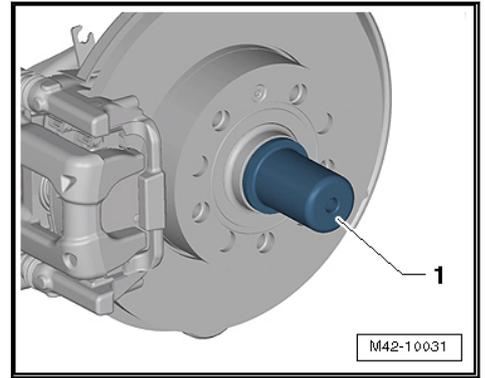
Caution

Never use an impact wrench when tightening the bolt -1- using the Socket - Xzn 18mm -T10162A-.



Note

- ◆ *First tighten the bolt to the given tightening specification using the torque wrench.*
- ◆ *Use a rigid wrench to apply additional torque angle.*
- Install the new dust cap with the Sleeve -3241/4- -1-



 **Note**

- ◆ Always replace dust caps.
- ◆ Damaged dust caps allow moisture to enter. Therefore, always use the tool shown.

Tightening Specifications

- ◆ Refer to ⇒ [-7.1.2 Wheel Bearing Housing and Wheel Bearing Unit, Multi-Link Suspension Vehicles with FWD](#), page 330
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

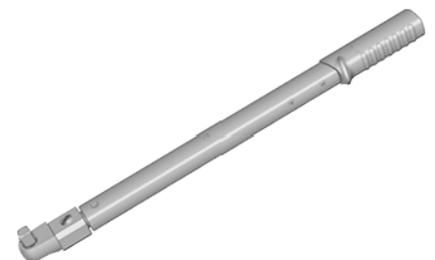
7.4.3 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension Vehicles with AWD

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-

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V.A.G 1332



W00-11165

- ◆ Torque Wrench -VAG1410-

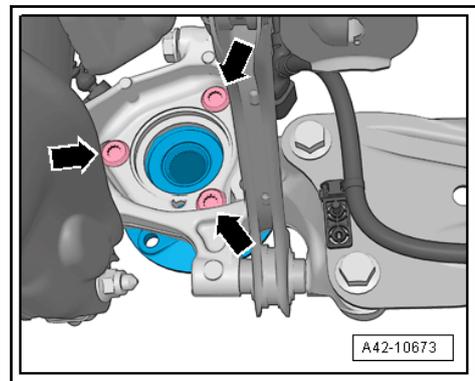
V.A.G 1410



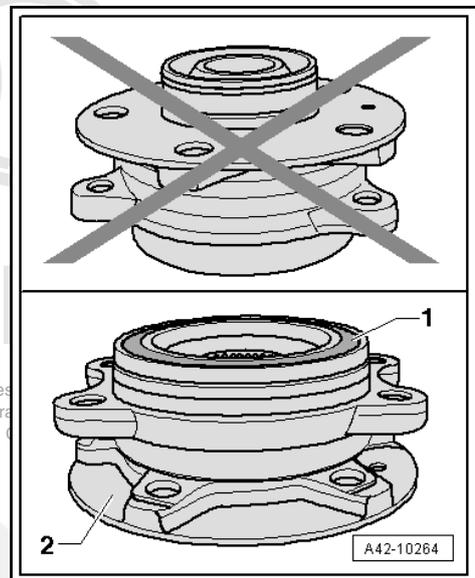
W00-11174

Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ [B3.16earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Loosen the outer drive axle threaded connection. Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and Tightening](#), page 378 .
- Remove the brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Rotor, Removing and Installing.
- Remove the coil spring. Refer to ⇒ [R6.4 emoving and Installing](#), page 323 .
- Remove the drive axle. Refer to ⇒ [A8.4 xle, Removing and Installing](#), page 380 .
- Remove the bolts -arrows-.



- Remove the wheel bearing unit from wheel bearing housing.



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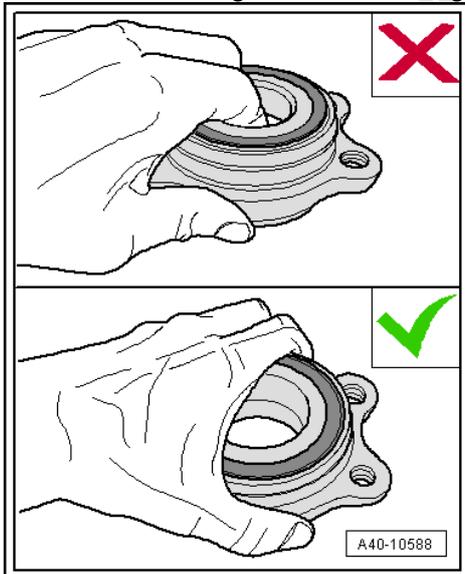


Caution

- *When setting down/storing avoid contaminating with dirt and damaging the seal.*

- The wheel bearing -1- must always face upward.

- Always set the wheel bearing unit down on the wheel hub
-2-.
- Never reach inside when lifting the wheel bearing.



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- Hold the wheel bearing only on the outside.

The same procedure also applies to the wheel bearing without
a wheel hub.

Installing

Install in reverse order of removal while noting the following:

- Bolting at wheel bearing housing may only occur when the
dimension between wheel hub center and lower edge of
wheel housing, measured before assembly, is achieved. Re-
fer to ⇒ [B3.16earing in Curb Weight Position, Lifting Vehi-
cles with Coil Spring](#), page 11 .
- Overview table for when an axle alignment is needed. Refer
to ⇒ [f2.2 or Axle Alignment, Evaluating](#), page 413 .

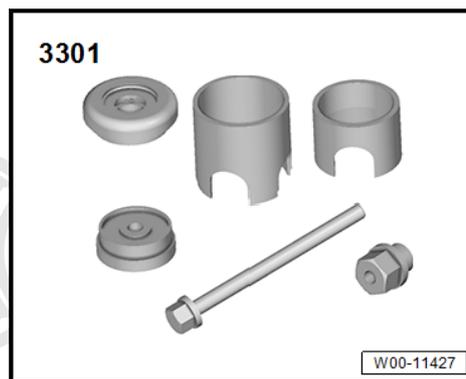
Tightening Specifications

- ◆ Refer to ⇒ [-7.1.3 Wheel Bearing Housing and Wheel Bear-
ing Unit, Multi-Link Suspension Vehicles with AWD](#), page
332
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Over-
view - Rear Brakes.
- ◆ Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and
Tightening](#), page 378

7.5 Wheel Bearing Housing Bonded Rub- ber Bushing, Replacing

Special tools and workshop equipment required

◆ Subframe Bushing Tool Kit -3301-

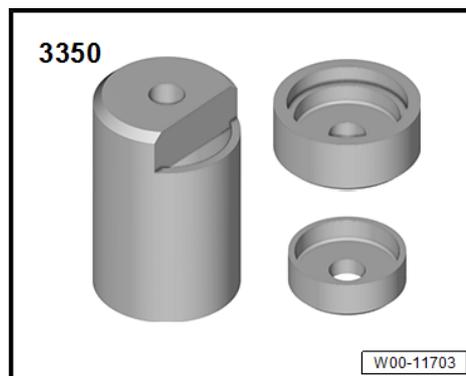


◆ Bearing Installer - Control Arm -3346-

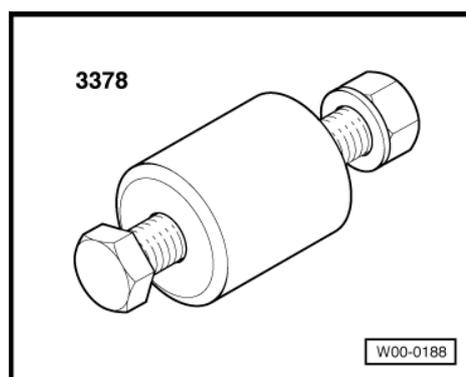
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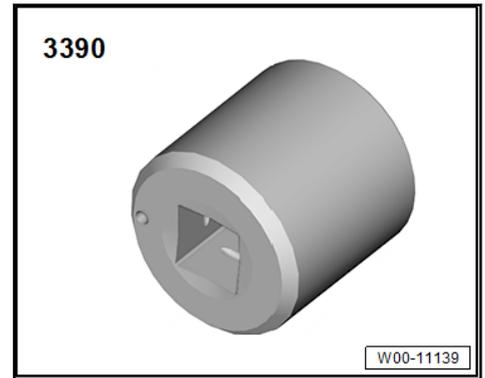
◆ Bearing Installer - Carrier Bearing -3350-



◆ Fitting Sleeve -3378-



◆ Torque Adapter -3390-



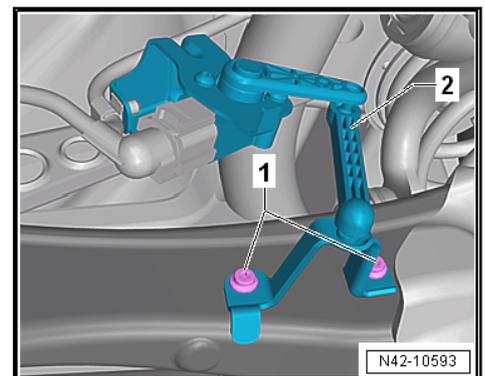
◆ Torque Wrench, 40-200Nm -VAG1332A-



Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Remove the wheel. Refer to ⇒ [a1 nd Tires](#), page 411 .
- Remove the coil spring. Refer to ⇒ [R6.4 emoving and Instal-ling](#), page 323 .

Vehicles with Level Control System Sensor

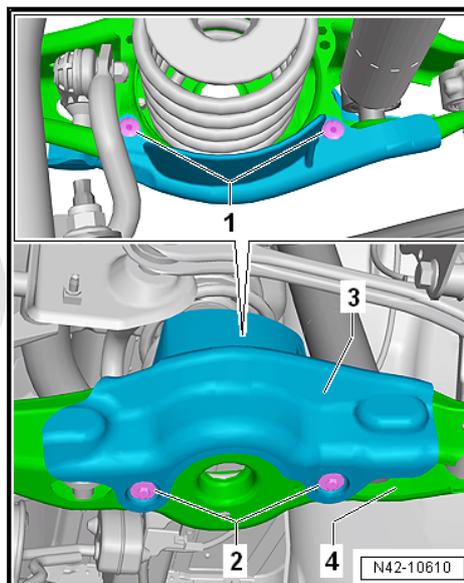
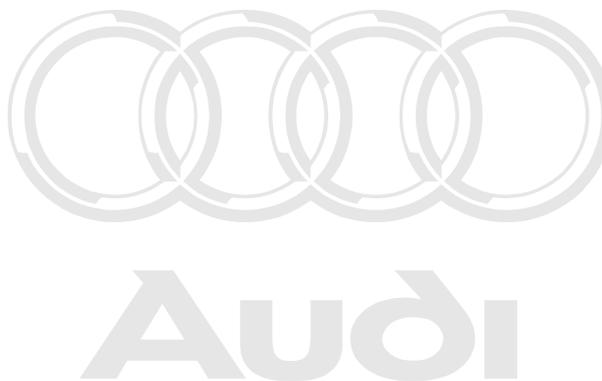


- Remove the left and right bolts -1- from the linkage -2- for the rear level control system sensor.

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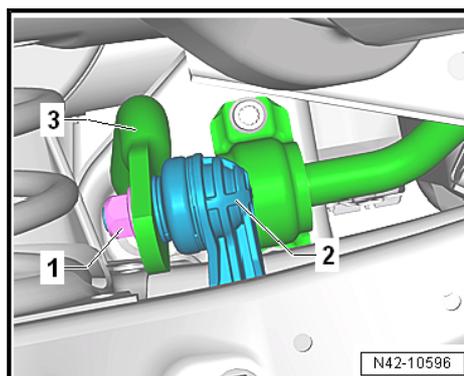


Vehicles with Stone Chip Protection

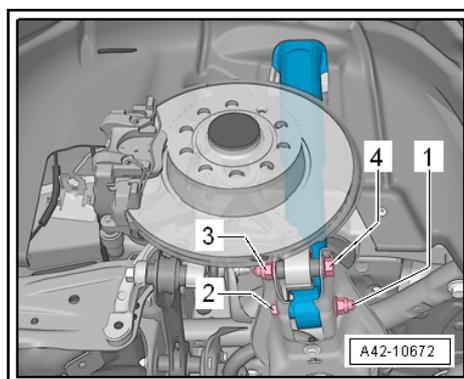


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- Remove the expanding rivets -1-
 - Remove the bolts -2- and the stone chip protection -3-.

Continuation for All Vehicles

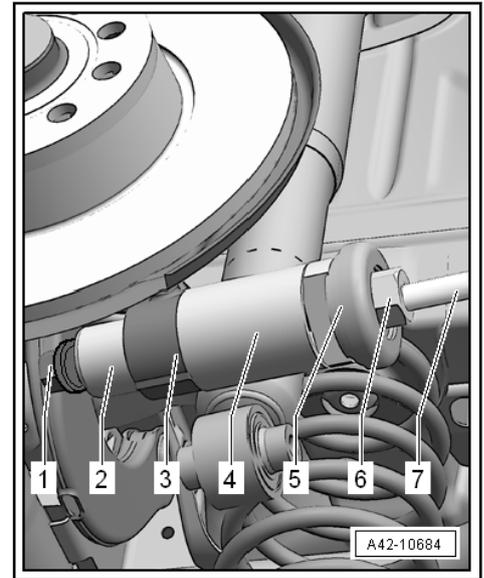


- Remove the nut -1- from the coupling rod -2-.
- Remove the coupling rod -2- from the stabilizer bar -3-.
- Remove the nut -1- and then the bolt -2- for the shock absorber threaded connection.



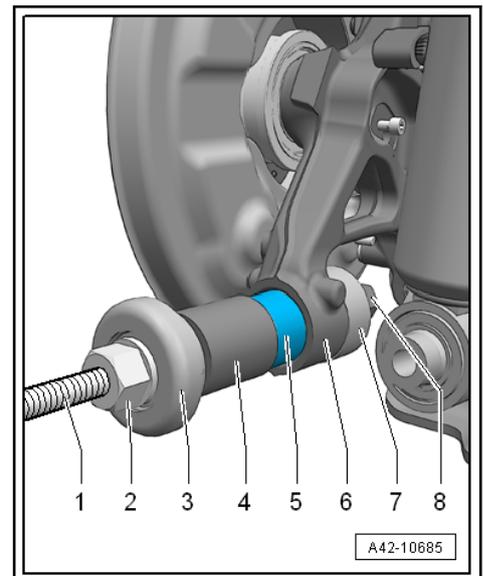
- Remove the nut -3- and then the bolt -4- for the wheel bearing housing threaded connection.

Pressing Out the Bonded Rubber Bushing



- 1 - Bearing Installer - Control Arm - Nut -3346/3-
 - 2 - Torque Adapter -3390-
 - 3 - Wheel Bearing Housing
 - 4 - Bearing Installer - Carrier Bearing -3350-
 - 5 - Thrust Piece from the Subframe Bushing Tool Kit -3301-
 - 6 - Bearing Installer - Control Arm - Nut -3346/3-
 - 7 - Bearing Installer - Control Arm - Spindle -3346/2-
- Remove the bonded rubber bushing by turning the Bearing Installer - Control Arm - Nut -3346/3- -6-. If necessary, counterhold on the Bearing Installer - Component -3346/2- -7-.

Bonded Rubber Bushing, Installing
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- 1 - Bearing Installer - Component -3346/2-
- 2 - Control Arm Bearing Installer - Nut -3346/3-
- 3 - Thrust Piece from the Subframe Bushing Tool Kit -3301-



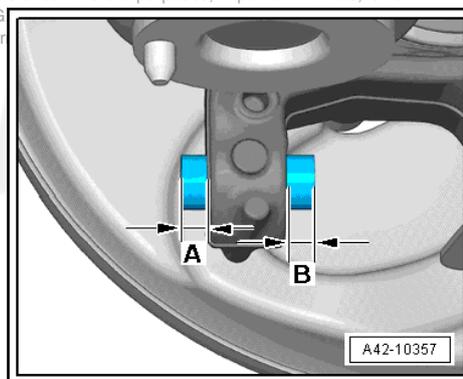
- 4 - Fitting Sleeve -3378-
- 5 - Bonded Rubber Bushing
- 6 - Wheel Bearing Housing
- 7 - Bearing Installer - Control Arm -3346-
- 8 - Bearing Installer - Control Arm - Nut -3346/3-
- Install the bonded rubber bushing by turning the Bearing Installer - Control Arm - Nut -3346/3- -2-. If necessary, counterhold on the Bearing Installer - Component -3346/2- -1-.



Note

- ◆ *Do not use lubricant!*
- ◆ *Insert the bearing with care so it is not tilted.*
- Check the installed position after installing the bonded rubber bushing.

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- Dimensions -A and B- must be identical.
- Install the bonded rubber bushing again if dimensions -A and B- are different.

Installing

Install in reverse order of removal while noting the following:

Bolting at wheel bearing housing may only occur when the dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#)”, page 11 .

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:
 - ◆ Chassis
 - ◆ Wheel Damping Electronics
 - ◆ 01 - OBD-capable systems.
 - ◆ 14 - Electronic Damping Control Module -J250

- ◆ [14 - Electronic Damping Control Module, functions](#)
- ◆ [14 - Control Position, readapting](#)
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to [⇒ A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to [⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting](#).
- Overview table for when an axle alignment is needed. Refer to [⇒ f2.2 or Axle Alignment, Evaluating](#), page 413 .

Tightening Specifications

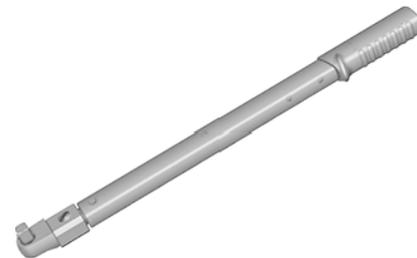
- ◆ Refer to [⇒ -7.1 Wheel Bearing](#), page 329
- ◆ Refer to [⇒ -6.1.2 Shock Absorber and Spring, Multi-Link Suspension](#), page 313
- ◆ Refer to [⇒ -4.1 Stabilizer Bar](#), page 293
- ◆ Refer to [⇒ -2.2.1 Left Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Vehicles with Multi-Link Suspension](#), page 404
- ◆ Refer to [⇒ a1 nd Tires](#), page 411

7.6 Trailing Arm with Mounting Bracket, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-

V.A.G 1332

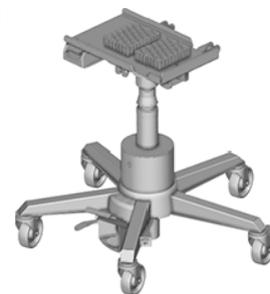


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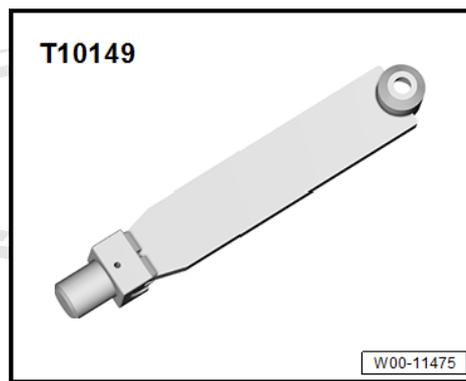
- ◆ Engine and Gearbox Jack -VAS6931-

VAS 6931



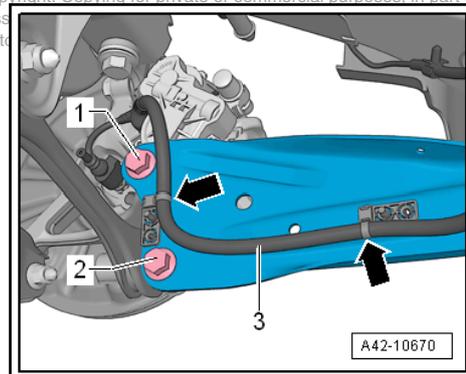
W00-11607

◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-

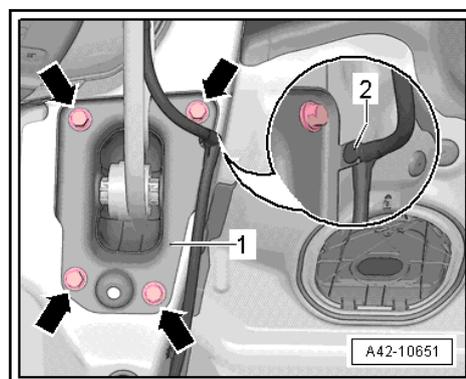


Removing

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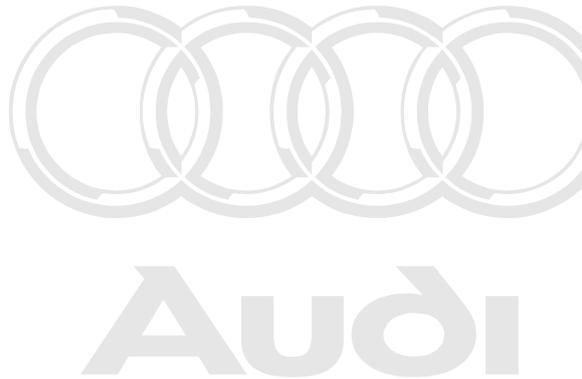
- Remove the wheel. Refer to ⇒ ["Tires", page 411](#) .
- Remove the coil spring. Refer to ⇒ ["Removing and Installing", page 323](#) .
- Remove the brackets -arrows- by pressing out the rivet inner pins.
- Free up the wiring harness -3-.
- Remove the bolts -1 and 2- from the trailing arm.
- Remove the applicable underbody trim panel. Refer to ⇒ [Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels](#).
- Remove the wire -2- from the mounting bracket -1-.



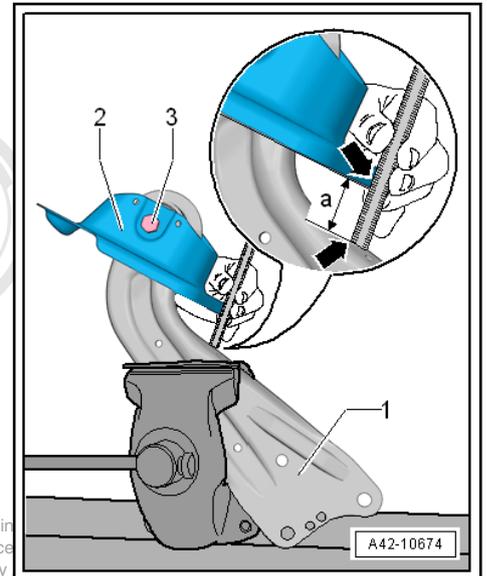
- Mark the mounting bracket -1- installation position on the body.
- Remove the bolts -arrows-.
- Remove the trailing arm with mounting bracket.

- If the mounting bracket is separated from the trailing arm for the following steps, the installation position of the mounting bracket to the trailing arm must then be adjusted.
- Clamp the trailing arm in the vise with protective covers.

Mounting Bracket Installation Position to Trailing Arm, Adjusting



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Dimension -a- is 37 mm.

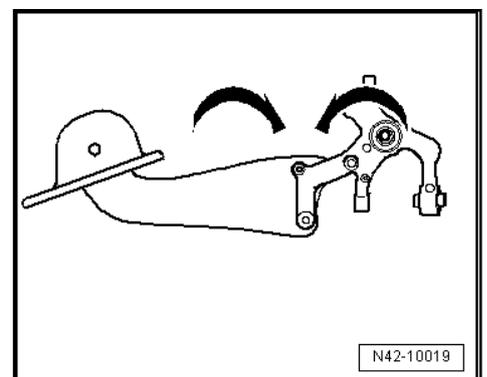
- 1 - Trailing Arm
- 2 - Mounting Bracket

- Place a steel ruler on the mounting bracket as shown and adjust to the dimension given above. Make sure that the steel ruler is resting completely on the mounting bracket and is positioned at the inner edge of the trailing arm.
- When dimension -a- has been adjusted, tighten the bolt -3-.

Installing

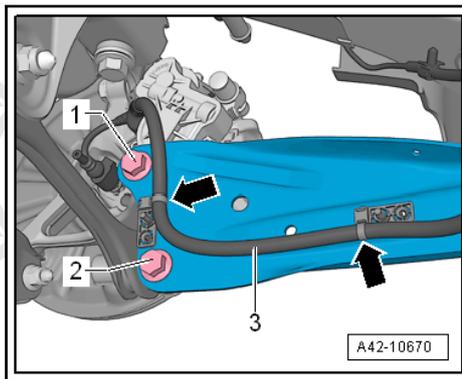
Install in reverse order of removal while noting the following:

Position: Trailing Arm/Wheel Bearing Housing Threaded Connection



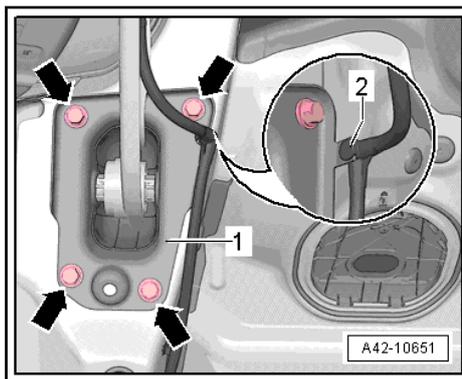
The trailing arm/wheel bearing housing threaded connection must only be tightened when all other components (especially the spring and strut) of the respective wheel suspension have already been assembled. To tighten, suspension must be unloaded. Only now do the trailing arm and wheel bearing housing move into the position required -arrows-.

Always Perform the Following Steps in the Sequence Given!

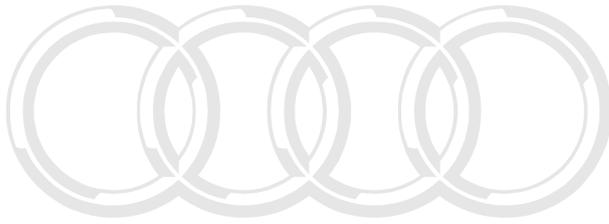


- Install the trailing arm and mounting bracket with bolts -1 and 2- on the wheel bearing housing but do not tighten yet.
- Raise the suspension using Engine and Gearbox Jack -VAS6931- and Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149- until the mounting bracket contacts the body.
- Tighten the bolts -arrows- onto the old impression or the marking applied previously.

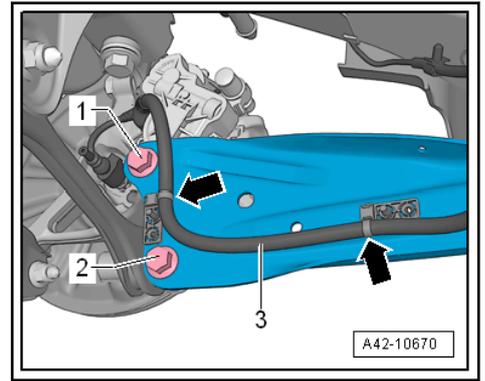
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- Secure the line -2- to the mounting bracket -1-.
- Lower the suspension again using the Engine and Gearbox Jack -VAS6931- and remove the Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149- from the wheel hub.
- Install the coil spring. Refer to ⇒ [R6.4 emoving and Instal-ling”, page 323](#) .
- Tighten the bolts -arrows- for trailing arm to tightening specification, while observing the required position of components. Refer to ⇒ [Fig. “Position: Trailing Arm/Wheel Bearing Housing Threaded Connection”, page 367](#) .



Audi



- Install the bracket by pressing in the rivet inner pins
-arrows-

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After installation, the Axle Alignment must be Checked on Alignment Stand. Refer to ⇒ [f2.2 or Axle Alignment, Evaluating](#), page 413 .

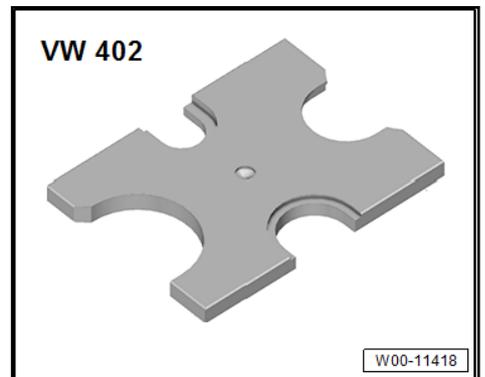
Tightening Specifications

- ◆ Refer to ⇒ [-7.2 Trailing Arm](#)", page 334
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- ◆ Refer to ⇒ [a1 nd Tires](#)", page 411

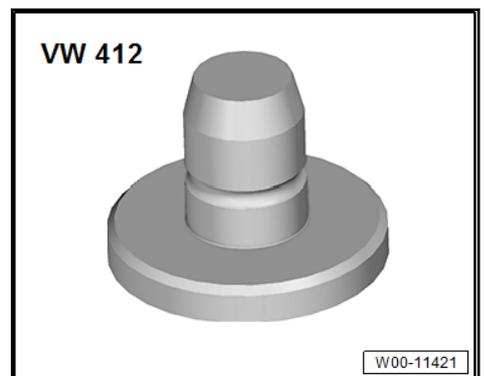
7.7 Trailing Arm, Servicing

Special tools and workshop equipment required

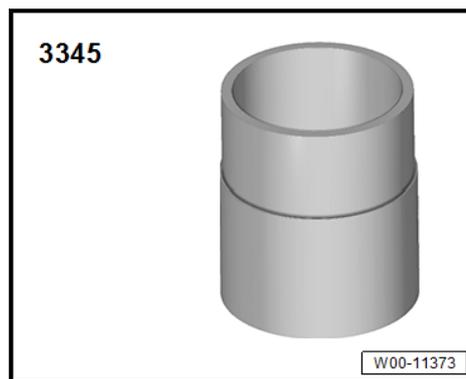
- ◆ Press Plate -VW402-



- ◆ Press Piece - Multiple Use -VW412-



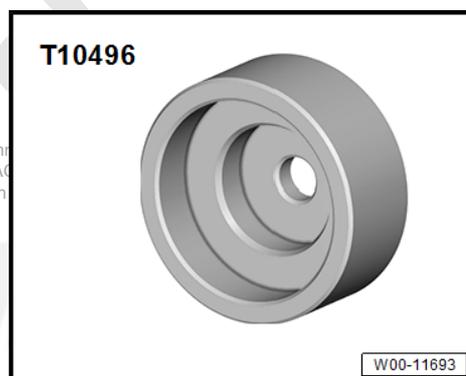
◆ Bearing Installer - Wheel Bearing -3345-



◆ Bearing Installer - Control Arm -3346-

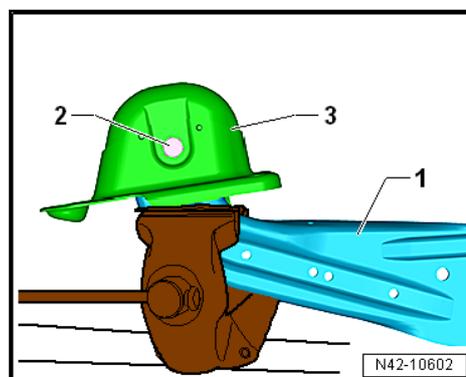


◆ Press Piece - Trailing Arm Bushing -T10496-



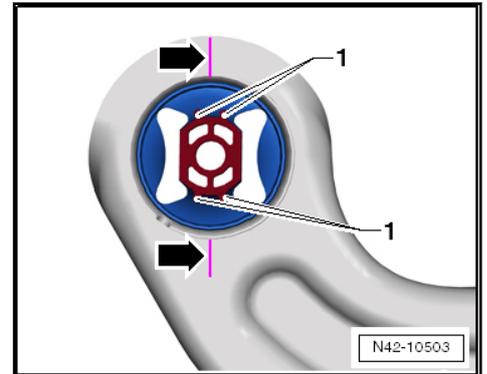
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Procedure



- Remove the trailing arm with the mounting bracket. Refer to [⇒ A7.6 rm with Mounting Bracket, Removing and Installing”, page 365](#) .
- Clamp the trailing arm -1- in the vise with protective covers.

- Remove the bolt -2- and remove the mounting bracket -3- from the trailing arm.
- Mark the installation position of the bonded rubber bushing on the trailing arm.

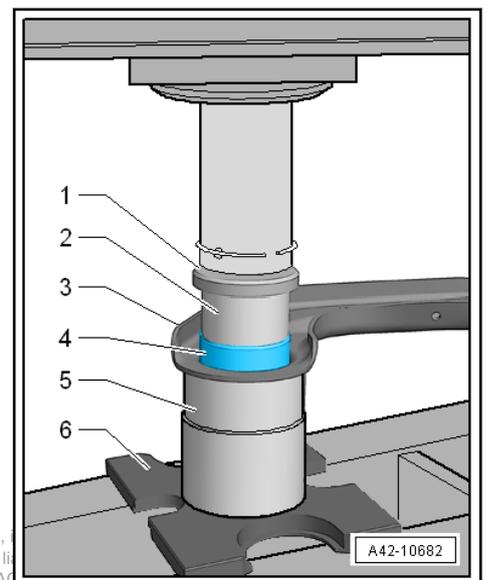


- To do so, make a mark over and under the bushing on the trailing arm -arrows- between the raised areas -1- as illustrated.

Bonded Rubber Bushing, Pressing Out

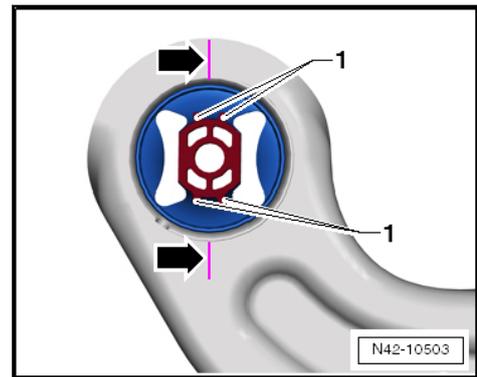


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- Mount the tools as shown.
- 1 - Press Piece - Multiple Use -VW412-
- 2 - Pipe -3346/1- from the Bearing Installer - Control Arm -3346-
- 3 - Trailing Arm
- 4 - Bonded Rubber Bushing
- 5 - Bearing Installer - Wheel Bearing -3345-
- 6 - Press Plate -VW401-
- Press out the bonded rubber bushing.

Bonded Rubber Bushing, Pressing In



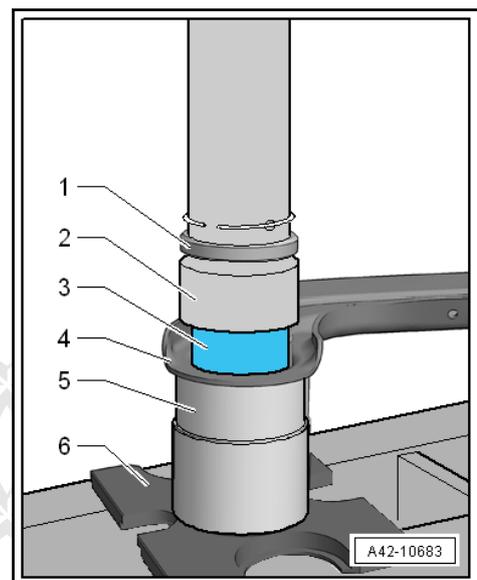
- Position the bonded rubber bushing on the trailing arm so that the marked line -arrows- is between the raised sections -1-.



Note

Make absolutely sure that the bonded rubber bushing is in the correct installation position in relation to the trailing arm socket.

- Mount the tools as shown.



- 1 - Press Piece - Multiple Use -VW412-
- 2 - Press Piece - Trailing Arm Bushing -T10496-
- 3 - Bonded Rubber Bushing
- 4 - Trailing Arm
- 5 - Bearing Installer - Wheel Bearing -3345-
- 6 - Press Plate -VW402-

- Install the bonded rubber bushing.
- Attach the trailing arm to the mounting bracket. Refer to [page 367](#).
- Install the trailing arm with the mounting bracket. Refer to [⇒ A7.6 rm with Mounting Bracket, Removing and Installing”, page 365](#).

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8 Drive Axle

⇒ [-8.1 Drive Axle](#)", page 373

⇒ [-8.2 Drive Axle](#)", page 374

⇒ [A8.3 xle Threaded Connection, Loosening and Tightening](#)", page 378

⇒ [A8.4 xle, Removing and Installing](#)", page 380

⇒ [A8.5 xle, Disassembling and Assembling](#)", page 383

⇒ [C8.6 V Joint, Checking](#)", page 394

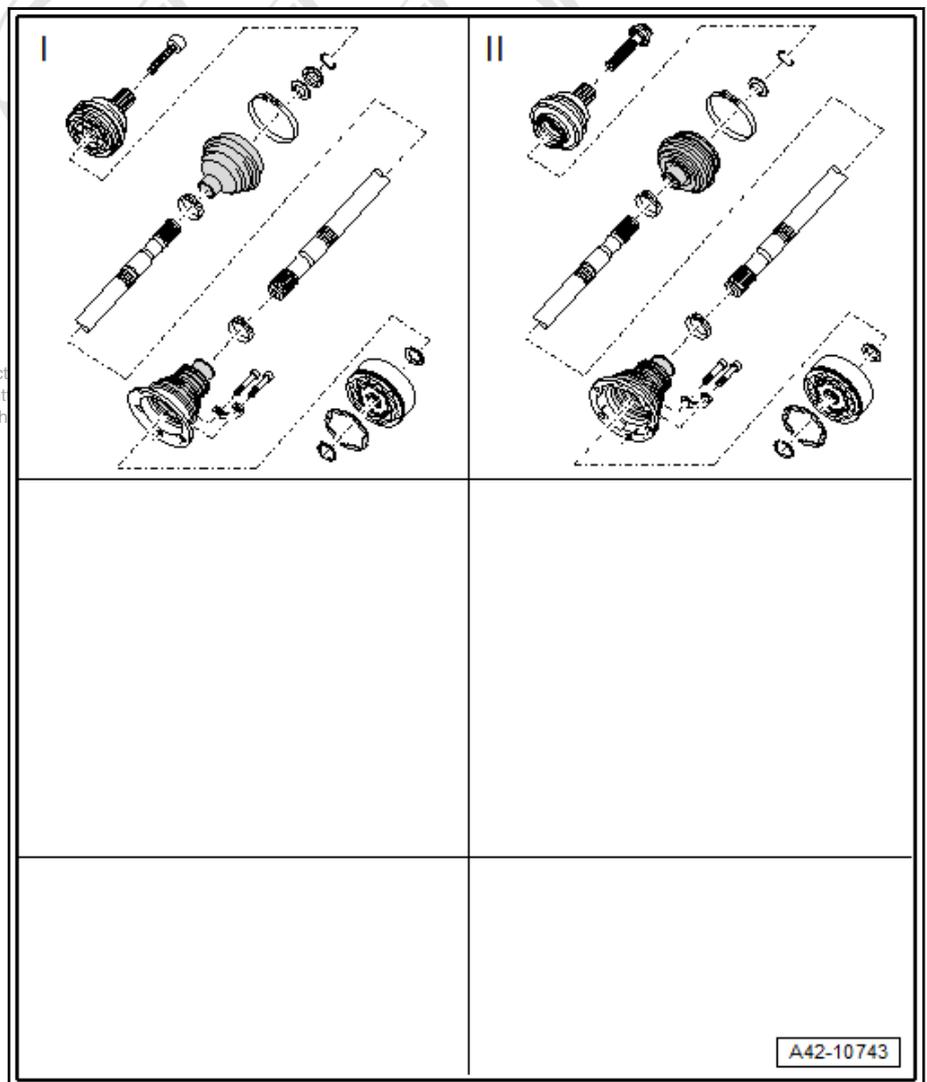
⇒ [C8.7 V Joint, Checking](#)", page 396

8.1 Overview - Drive Axle

I - Refer to ⇒ [-8.2.1 Drive Axle with 90 mm Diameter Outer CV Joint](#)", page 374

II - Refer to ⇒ [-8.2.2 Drive Axle with 82 mm Diameter Outer CV Joint](#)", page 376

Protect
permit
with





8.2 Overview - Drive Axle

⇒ [-8.2.1 Drive Axle with 90 mm Diameter Outer CV Joint", page 374](#)

⇒ [-8.2.2 Drive Axle with 82 mm Diameter Outer CV Joint", page 376](#)

8.2.1 Overview - Drive Axle with 90 mm Diameter Outer CV Joint

Filling Joints with Grease

Grease	Outer Joint Diameter	Inner Joint Diameter
Refer to the ⇒ Electronic Parts Catalog (ET-KA).	90 mm	100 mm
Total quantity	45 g (1.6 oz)	110 g (3.9 oz)
in joint	25 g (0.9 oz)	50 g (1.8 oz)
in CV boot	20 g (0.7 oz)	60 g (2.1 oz)



Note

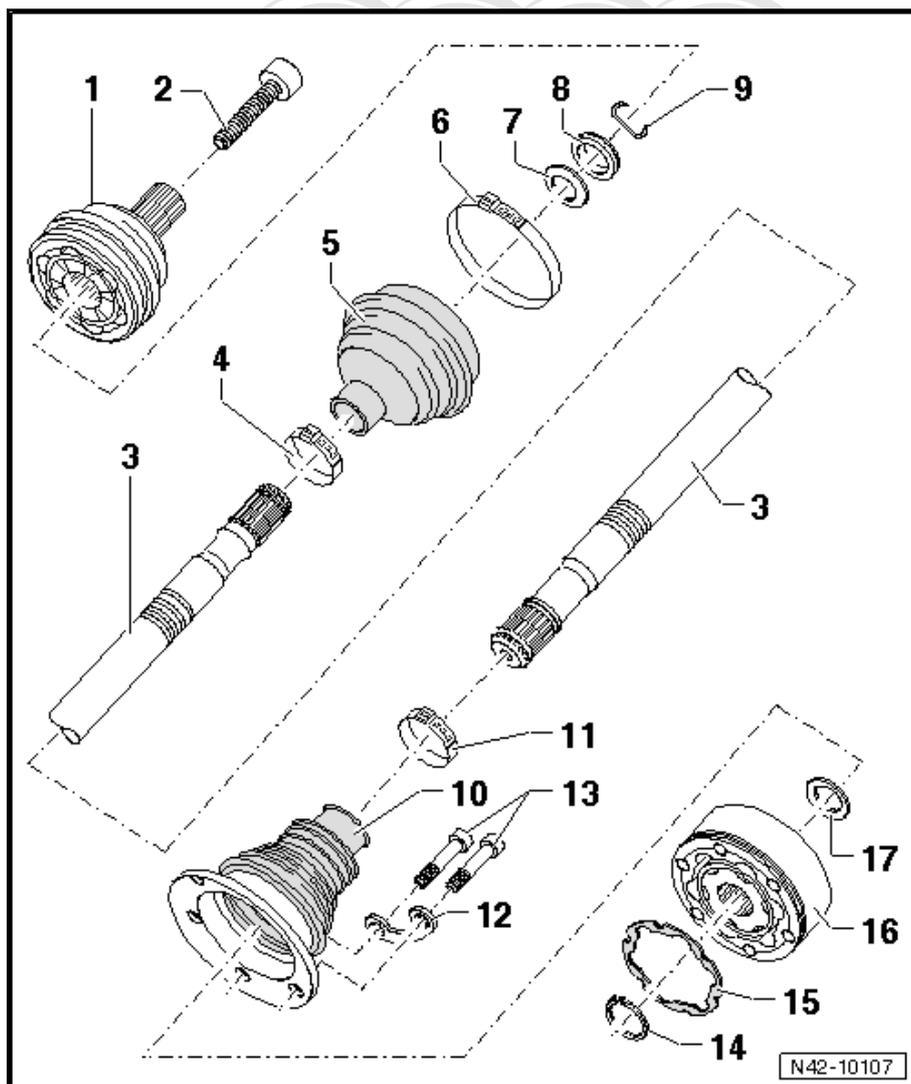
Grease joint again when replacing CV boot.

1 - Outer CV Joint

- Only replace completely
- Check using the Vehicle Diagnostic Tester. Refer to ⇒ [C8.6 V Joint, Checking](#), page 394 .
- Removing. Refer to ⇒ [Fig. "CV Joint, Disassembling"](#), page 384 .
- Lubricating. Refer to ⇒ [page 374](#) .
- Installing. Refer to ⇒ [page 386](#) .
- When installing the joint on the profile shaft, the splines on the profile shaft must be lightly coated with grease used in the joint.

2 - Bolt

- WHT.005.437- / black = 200 Nm +180° additional turn
- WHT.005.437.A- / silver = 200 Nm + 90° additional turn
- Always replace if removed
- Loosening and tightening. Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and Tightening](#), page 378
- Before installing, clean the threads in the CV joint with a thread tap.



3 - Drive Axle

- Allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).

4 - Clamp

- Always replace
- Tensioning. Refer to ⇒ [Fig. "Stainless Steel Clamps for Hytrel Protective Joint Boots, Tensioning"](#), page 388 or Refer to ⇒ [Fig. "Clamps for Rubber Protective Joint Boots, Tensioning"](#), page 389 .

5 - Outer CV Joint CV Boot

- Without vent hole
- Check for tears and scuffing

6 - Clamp

- Always replace
- Tensioning. Refer to ⇒ [Fig. "Stainless Steel Clamps for Hytrel Protective Joint Boots, Tensioning"](#), page 388 or Refer to ⇒ [Fig. "Clamps for Rubber Protective Joint Boots, Tensioning"](#), page 389 .

7 - Plate Spring

- Installation position. Refer to ⇒ [Fig. "..."](#), page 386 .

8 - Spacer Ring (Plastic)

- Installation position. Refer to ⇒ [Fig. "..."](#), page 386 .

9 - Circlip



- Always replace
- Insert in shaft groove

10 - Inner CV Joint CV Boot

- Without vent hole
- Check for tears and scuffing
- Drive off CV joint using a drift
- Coat the sealing surface with D 454 300 A2 before installing it on the CV joint

11 - Clamp

- Always replace
- Tensioning. Refer to ⇒ [Fig. "Stainless Steel Clamps for Hytrel Protective Joint Boots, Tensioning", page 388](#) or Refer to ⇒ [Fig. "Clamps for Rubber Protective Joint Boots, Tensioning", page 389](#) .

12 - Backing Plate

13 - Internal Multi-Point Bolt

- Pre-tightening specification: diagonal sequence to 10 Nm.
- M8 tightening specification: diagonal sequence to 20 Nm
- M8 tightening specification: diagonal sequence with 180° additional turn
- Always replace if removed

14 - Circlip

- Always replace
- Remove and install using Circlip Pliers -VW161A-. Refer to ⇒ [Fig. "Circlip, Removing and Installing", page 385](#) .

15 - Seal

- The adhesive surface on CV joint must not have any grease or oil on it.

16 - Inner CV Joint

- Only replace completely
- Check using the Vehicle Diagnostic Tester. Refer to ⇒ [C8.7 V Joint, Checking", page 396](#) .
- Removing. Refer to ⇒ [Fig. "Inner CV Joint, Removing", page 385](#) .
- Lubricating. Refer to ⇒ [page 374](#) .
- Installing. Refer to ⇒ [page 387](#) .
- When installing the joint on the profile shaft, the splines on the profile shaft must be lightly coated with grease used in the joint.

17 - Plate Spring

- Installation position. Refer to ⇒ [Fig. "Installation Position of the Plate Spring on Inner Joint", page 386](#) .

8.2.2 Overview - Drive Axle with 82 mm Diameter Outer CV Joint

Lubricating Grease. Refer to the ⇒ Electronic Parts Catalog (ET-KA).	Outer Joint Diameter	Inner Joint Diameter
	82 mm	100 mm
Total quantity	45 g (1.6 oz)	110 g (3.9 oz)

1 - Outer CV Joint

- Only replace completely
- Removing. Refer to ⇒ [Fig. ".....", page 392](#).
- Installing: Using a plastic hammer, drive onto the shaft as far as the stop
- Divide the grease evenly in the joint
- Check using the Vehicle Diagnostic Tester. Refer to ⇒ [C8.6 V Joint, Checking", page 394](#).

2 - Bolt

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- WHT.005.437 / black = 200 Nm + 180° additional turn
- WHT.005.437.A- / silver = 200 Nm + 90° additional turn
- Always replace if removed
- Loosening and tightening. Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and Tightening", page 378](#)
- Before installing, clean the threads in the CV joint with a thread tap.

3 - Drive Axle

- Allocation. Refer to the ⇒ [Electronic Parts Catalog \(ETKA\)](#).

4 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tension the Clamp on the Small Diameter", page 394](#).

5 - CV Boot

- Check for tears and scuffing
- Material: Hytrel polyelastomer

6 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tightening Clamp on the Outer Joint", page 393](#).

7 - Plate Spring

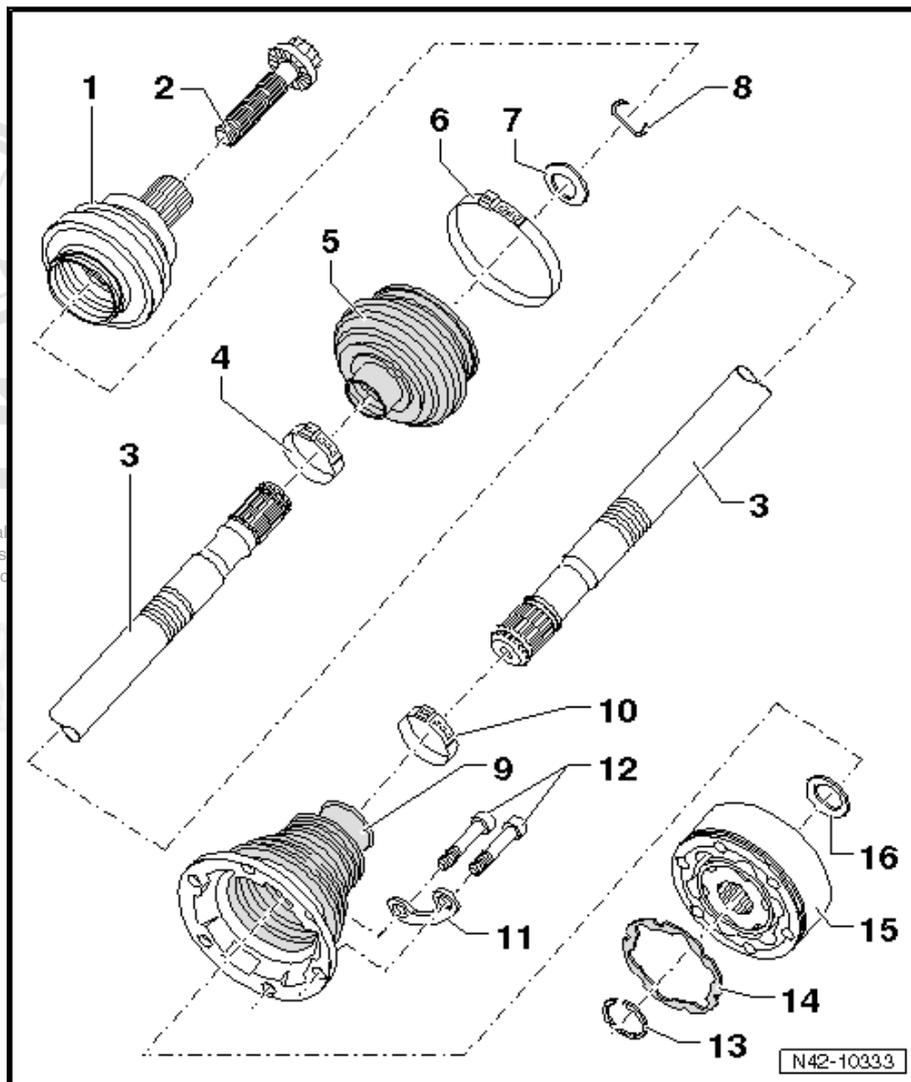
- With inner spline
- Installation position. Refer to ⇒ [Fig. "Assembling", page 392](#).

8 - Circlip

- Always replace if removed
- Insert in shaft groove

9 - CV Joint CV Boot

- Material: Hytrel polyelastomer
- Without vent hole





- Check for tears and scuffing
- Drive off CV joint using a drift
- Coat the sealing surface with -D 454 300 A2- before installing it on the CV joint

10 - Clamp

- Always replace if removed
- Tensioning. Refer to ⇒ [Fig. "Tension the Clamp on the Small Diameter", page 394](#) .

11 - Backing Plate

12 - Internal Multi-Point Bolt

- Pre-tightening specification: diagonal sequence to 10 Nm.
- M8 tightening specification: diagonal sequence to 20 Nm.
- M8 tightening specification: diagonal sequence with 180° additional turn
- Always replace if removed

13 - Circlip

- Always replace if removed
- Remove and install using Circlip Pliers -VW161A-

14 - Seal

- Always replace if removed
- The adhesive surface on CV joint must not have any grease or oil on it.

15 - Inner CV Joint

- Only replace completely
- Divide the grease evenly in the joint
- Removing. Refer to ⇒ [Fig. "Inner CV Joint, Removing", page 392](#) .
- Installing. Refer to ⇒ [Fig. "Inner CV Joint, Pressing On", page 393](#) .
- Check using the Vehicle Diagnostic Tester. Refer to ⇒ [C8.7 V-Joint, Checking", page 396](#) .

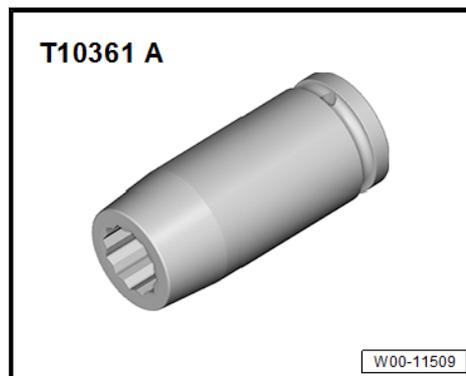
16 - Plate Spring

- With inner spline
- Installation position. Refer to ⇒ [Fig. "Assembling", page 392](#) .

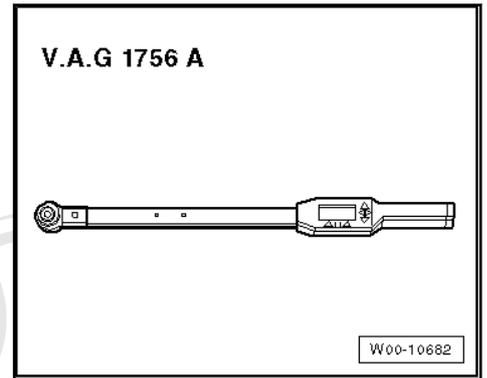
8.3 Drive Axle Threaded Connection, Loosening and Tightening

Special tools and workshop equipment required

- ◆ Socket AF 24 mm -T10361A-



◆ Digital Torque Wrench -VAG1756A-



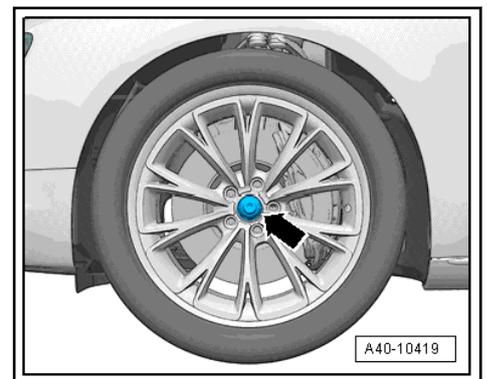
- Do not load the wheel bearing if the wheel-side drive axle threaded connection is loose.

If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings. Therefore observe the following:

◆ Procedure for loosening the twelve-point bolt.

- Vehicles without a drive axle must not be moved, otherwise the wheel bearing will be damaged. If the vehicle does have to be moved, always note the following points:
 - Install an outer joint in place of the drive axle.
 - Tighten the outer joint to 200 Nm.

Twelve-Point Bolt, Loosening



- With the vehicle still resting on its wheels, loosen the twelve-point bolt with Socket AF 24 mm -T10361A- maximum 90°; otherwise, the wheel bearing will be damaged.
- Lift the vehicle just enough so that the wheels are hanging free.
- Apply the brakes (a second technician required).
- Remove the twelve-point bolt -arrow-.

Twelve-Point Bolt, Installing

- Clean the threads in the CV joint using a thread tap.
- Replace the twelve-point bolt.

 **Note**

Wheels must not yet touch the ground when tightening the drive axle or the wheel bearing can be damaged.



- Apply the brakes (a second technician is required).
- Tighten the twelve-point bolt to 200 Nm.
- Set the vehicle on its wheels.
- 12-point bolt -WHT.005.437- / black 180° additional turn.
- 12-point bolt -WHT.005.437.A- / silver 90° additional turn.

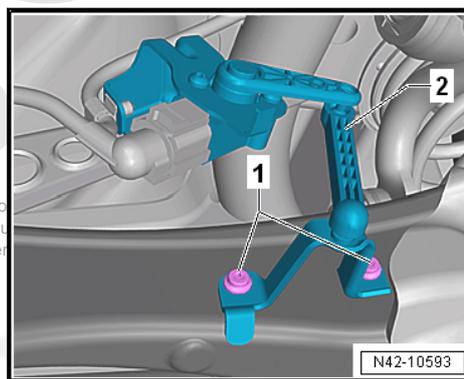
8.4 Drive Axle, Removing and Installing

Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring](#), page 11 .
- Loosen the drive axle threaded connection. Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and Tightening](#), page 378 .
- Remove the wheel. Refer to ⇒ [a1 nd Tires](#), page 411 .
- Remove the coil spring. Refer to ⇒ [R6.4 emoving and Instal-ling](#), page 323 .
- Remove the stabilizer bar. Refer to ⇒ [B4.2.2 ar, Removing and Installing, Multi-Link Suspension Vehicles with AWD](#), page 295 .

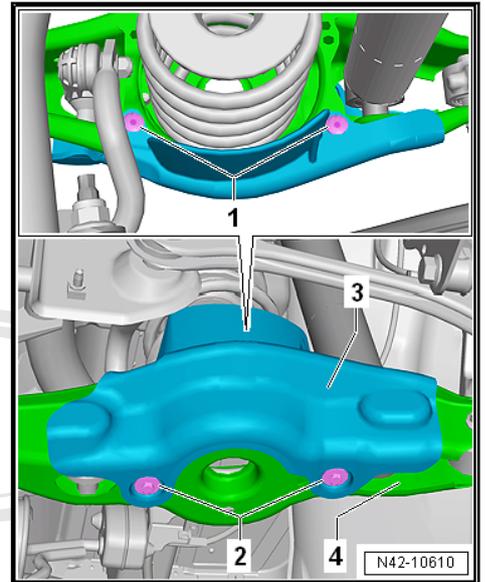
Vehicles with Vehicle Inclination Sensor -G384-

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- Remove the left and right bolts -1- from the linkage -2- for the rear level control system sensor.

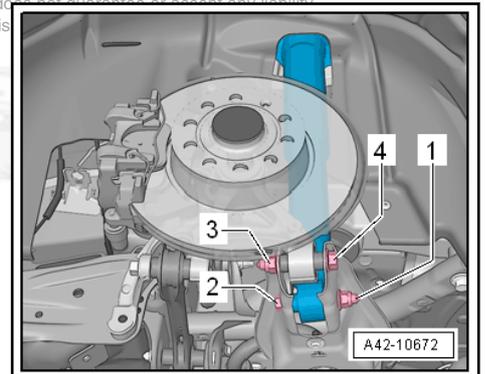
Vehicles with Stone Chip Protection



- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

Continuation for All Vehicles

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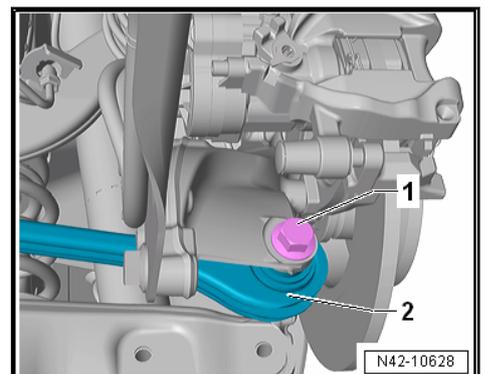


- Remove the nut -3- and the bolt -4-.

Note

Ignore -items 1 and 2-.

- Remove the bolt -1- for the tie rod -2-.





- Loosen the drive axle on the transmission side.
- Tilt the wheel bearing housing outward and detach the drive axle from the transmission flange.
- Remove the hub from the drive axle outer joint.

Installing

Install in reverse order of removal while noting the following:

- Bolting at wheel bearing housing may only occur when the dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved. Refer to ⇒ [B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring”, page 11](#) .
- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select `Diagnostic` operating mode and `Start diagnostics`.
- Select the `Select individual test` tab and select the following tree structure consecutively:

- ◆ `Chassis`
- ◆ `Wheel Damping Electronics`
- ◆ `01 - OBD-capable systems`.
- ◆ `14 - Electronic Damping Control Module -J250`
- ◆ `14 - Electronic Damping Control Module, functions`
- ◆ `14 - Control Position, readapting`

- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating”, page 449](#) .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

Tightening Specifications

- ◆ Refer to ⇒ [-5.1 Transverse Link”, page 302](#)
- ◆ Refer to ⇒ [-5.2 Tie Rod”, page 304](#)
- ◆ Refer to ⇒ [-6.1.2 Shock Absorber and Spring, Multi-Link Suspension”, page 313](#)
- ◆ Refer to ⇒ [R2.4.2 ear Level Control System SensorG76/Right Rear Level Control System SensorG77, Removing and Installing, Vehicles with Multi-Link Suspension”, page 409](#)
- ◆ Refer to ⇒ [A8.3 xle Threaded Connection, Loosening and Tightening”, page 378](#)
- ◆ Drive axle threaded connection to the rear final drive. Refer to ⇒ [a8.5.1 xle with 90 mm Outer CV Joint, Servicing”, page 383](#) .
- ◆ Drive axle threaded connection to the rear final drive. Refer to ⇒ [A8.5.2 xle with 82 mm Outer CV Joint, Servicing”, page 389](#) .

◆ Refer to [⇒ a1 nd Tires", page 411](#)

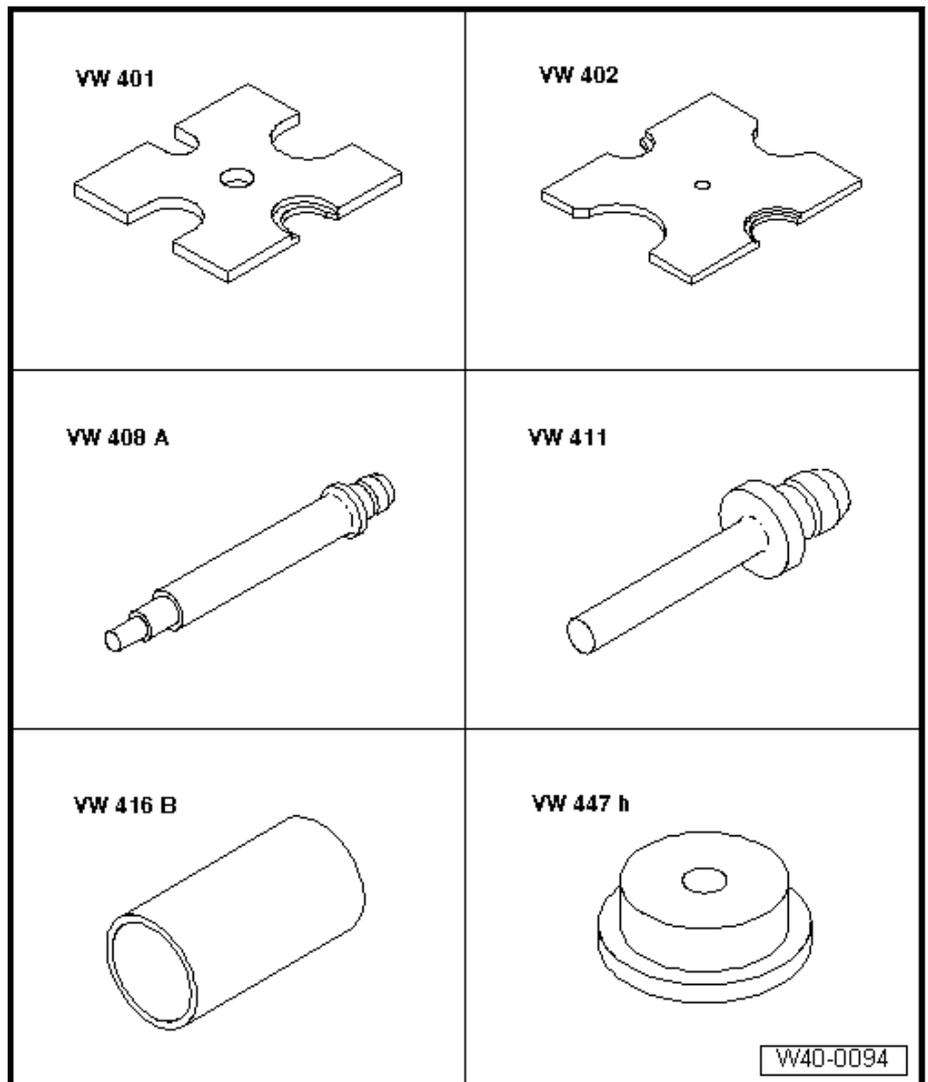
8.5 Drive Axle, Disassembling and Assembling

⇒ [a8.5.1 xle with 90 mm Outer CV Joint, Servicing", page 383](#)

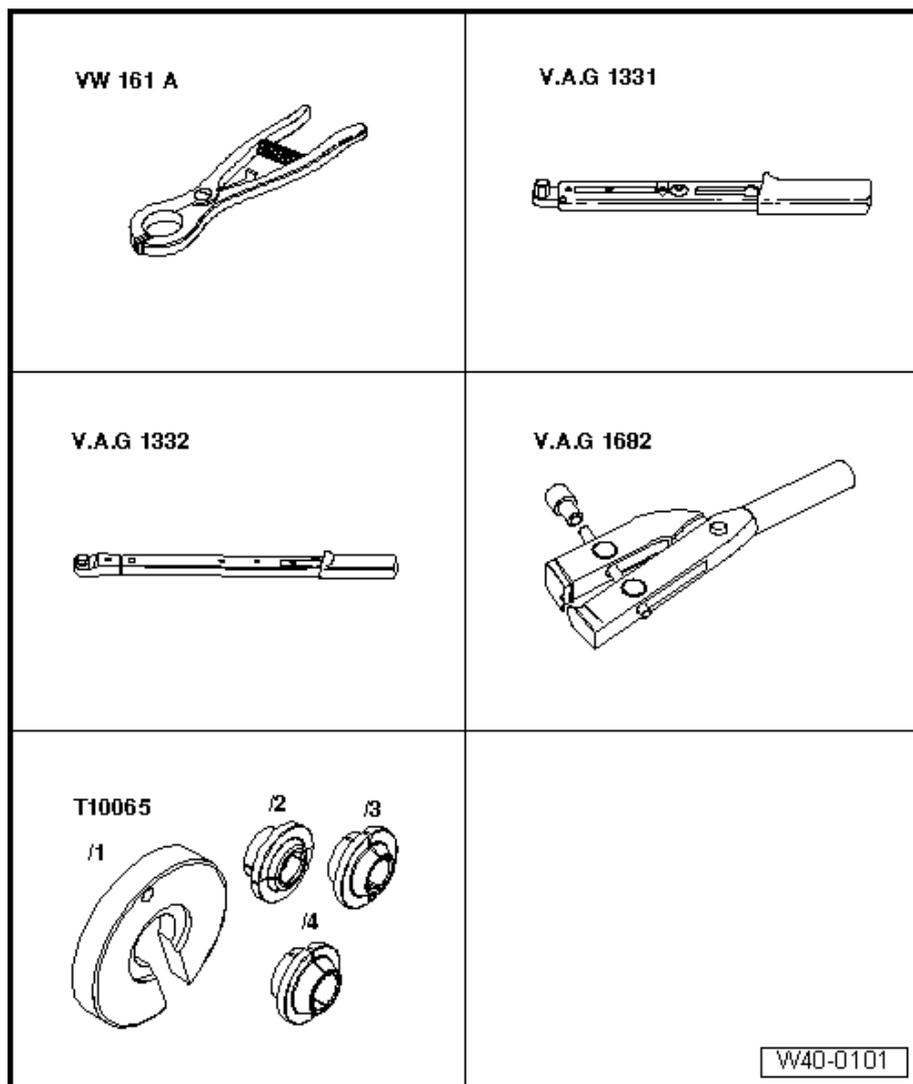
⇒ [A8.5.2 xle with 82 mm Outer CV Joint, Servicing", page 389](#)

8.5.1 Drive axle with 90 mm Outer CV Joint, Servicing

Special tools and workshop equipment required

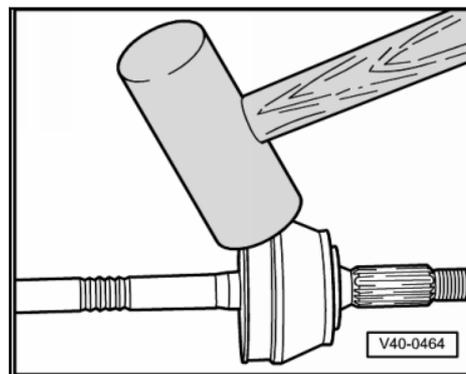


- ◆ Press Plate -VW401-
- ◆ Press Plate -VW402-
- ◆ Press Piece - Rod -VW408A-
- ◆ Press Piece - Rod -VW411-
- ◆ Press Piece - 37mm -VW416B-
- ◆ Press Piece - Multiple Use -VW447H-



- ◆ Circlip Pliers -VW161A-
- ◆ Torque Wrench, 6-50Nm -VAG1331A-
- ◆ Torque Wrench, 40-200Nm -VAG1332A-
- ◆ Clamping Pliers -VAG1682A-
- ◆ Tripod Joint Tool -T10065-

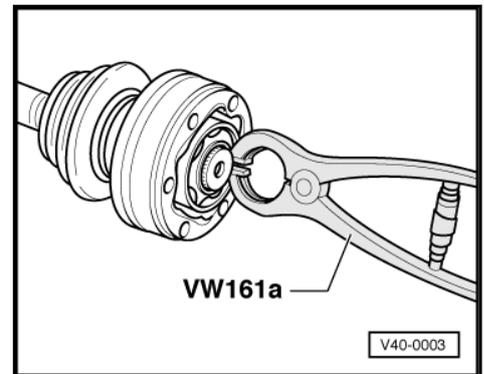
CV Joint, Disassembling



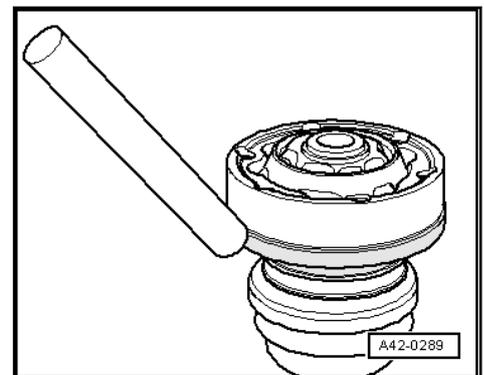
Removing the outer CV joint

- Remove the CV joint from the drive axle by hitting it with an alloy hammer.

Circlip, Removing and Installing



Drive Protective Joint Boot Cap Down Using a Brass or Copper Drift



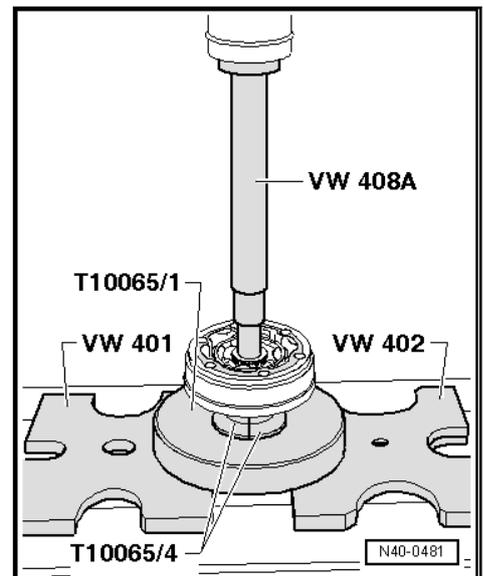
Inner CV Joint, Removing



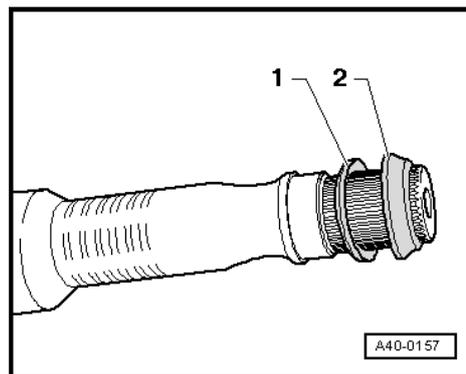
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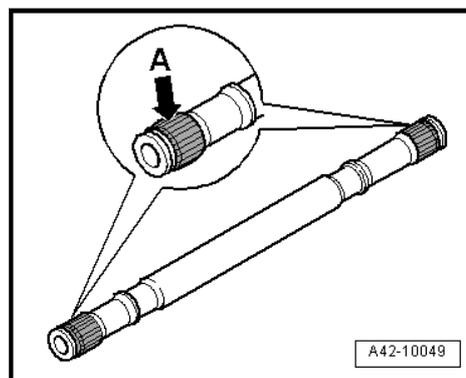
CV Joint, Assembling



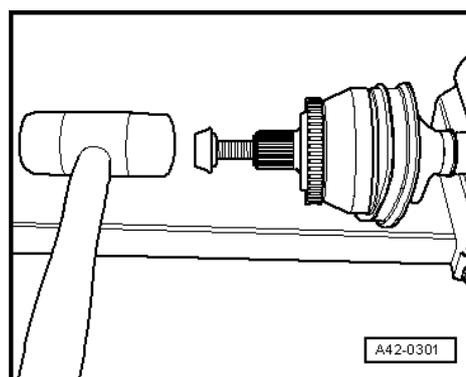
Installed location of spring washer and thrust washer on outer joint

- 1 - Plate Spring
- 2 - Spacer Ring (Plastic)

Outer CV Joint with Bolt, Installing



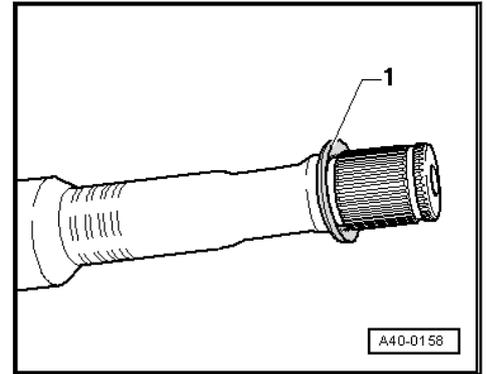
- Before installing the joint piece, the splines -arrow A- must be lightly coated with the grease used in the joint.
- Install the old bolt in the joint as illustrated.



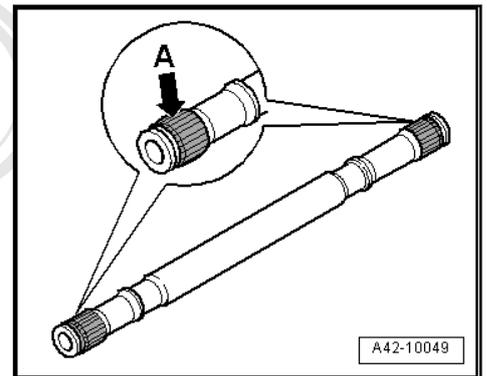
- Drive the joint onto the shaft with plastic hammer until circlip engages.

Installation Position of the Plate Spring on Inner Joint

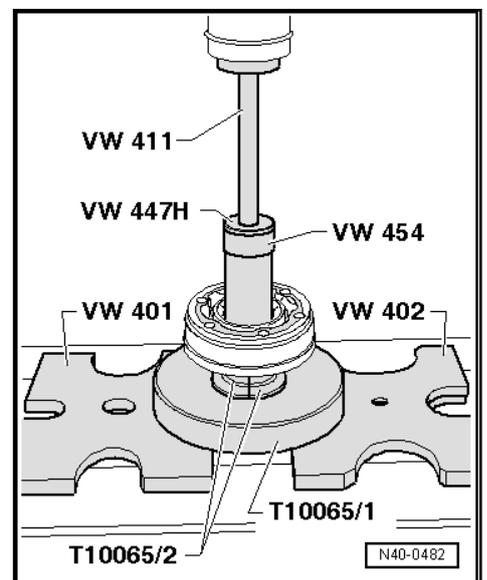
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Inner CV Joint, Pressing On



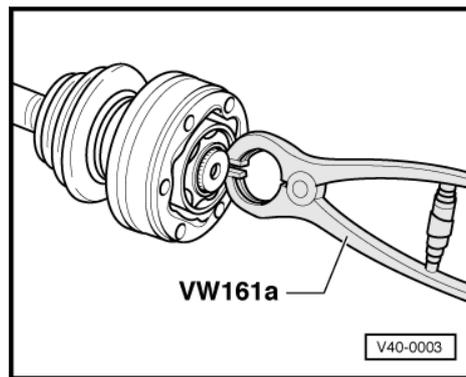
- Before installing the joint piece, the splines arrow A must be lightly coated with the grease used in the joint.
- Install the tools as shown.



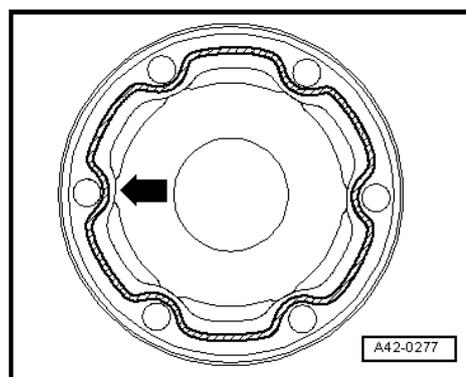
Note

Chamfer on inner diameter of ball hub (splines) must face the contact shoulder on the drive axle.

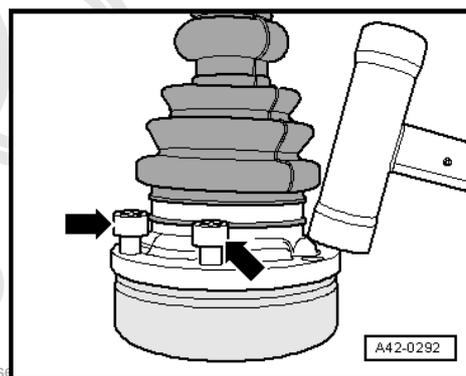
- Install the circlip.



- Apply the sealant -crosshatched area- to the clean surface on the inside of the CV boot cap. Sealant bead: 2 to 3 mm diameter, continuous. Go over the area around the inner holes -arrow-.

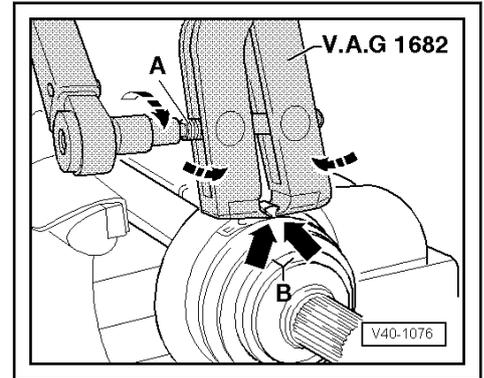


- Use sealant. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Slide the CV boot onto drive axle.
- The drive axle, CV boot and cap contact surfaces must be free of grease.
- Make sure that the sealant bead is not damaged.
- Using screws -arrows-, align the protective boot and cap with the bolt holes.



- It must be aligned exactly because it cannot be aligned after installing.
- Drive off the CV boot with cap using plastic hammer.
- Clear away leaking sealing immediately.

Stainless Steel Clamps for Hyrel Protective Joint Boots, Tensioning

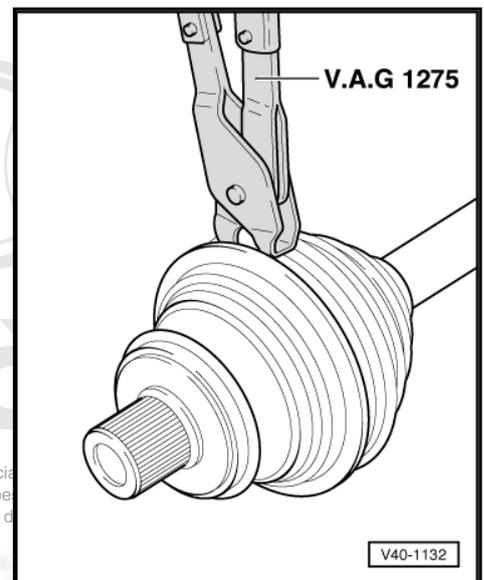


- Attach the Clamping Pliers -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tighten the clamp by turning the spindle -A- using a torque wrench (do not tilt the pliers).
- ◆ Tightening specification: 20 Nm

 **Note**

- ◆ *Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.*
- ◆ *If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.*

Clamps for Rubber Protective Joint Boots, Tensioning

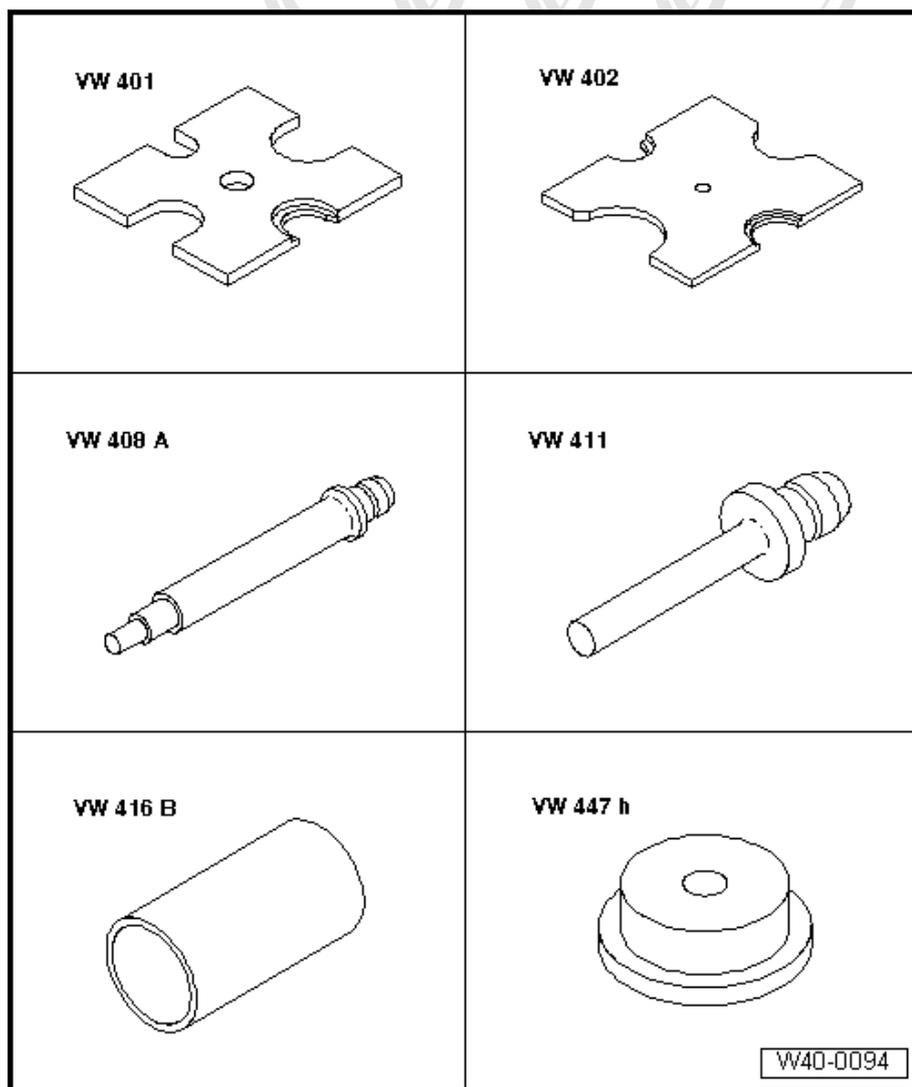


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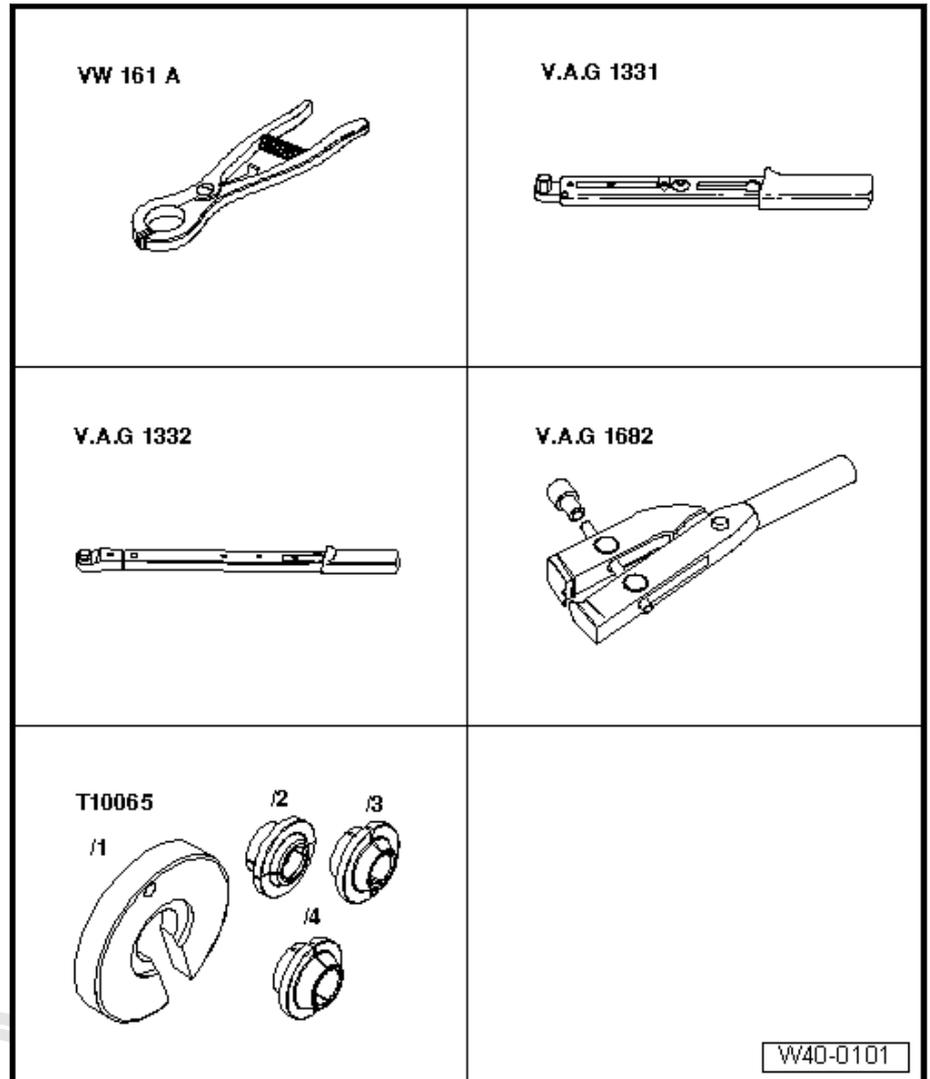
8.5.2 Drive Axle with 82 mm Outer CV Joint, Servicing



Special tools and workshop equipment required



- ◆ Press Plate -VW401-
- ◆ Press Plate -VW402-
- ◆ Press Piece - Rod -VW408A-
- ◆ Press Piece - Rod -VW411-
- ◆ Press Piece - 37mm -VW416B-
- ◆ Press Piece - Multiple Use -VW447H-

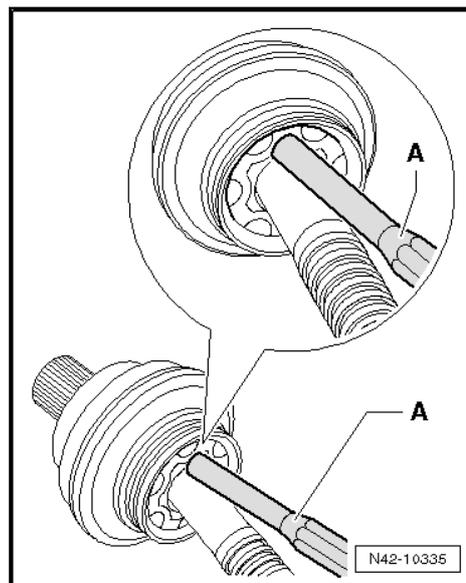


- ◆ Circlip Pliers -VW161A-
- ◆ Torque Wrench, 6-50Nm -VAG1331A-
- ◆ Torque Wrench, 40-200Nm -VAG1332A-
- ◆ Clamping Pliers -VAG1682A-
- ◆ Tripod Joint Tool -T10065-

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CV Joint, Disassembling



Outer CV joint, pressing off

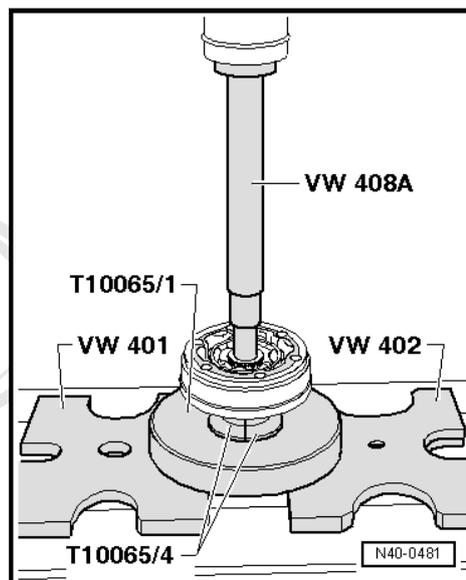
- Clamp the drive axle in a vise with jaw protectors.
- Fold back the boot.
- Push the CV joint off of the drive axle using a drift -A-.

The drift must be installed exactly on the CV joint ball hub.

Driving Joint On

- Use a plastic mallet to install it on the shaft until the circlip engages.

Inner CV Joint, Removing



- Press off the CV boot from joint using drift.
- Remove the circlip.
- Remove both clamps, and push the CV boot toward outer joint.

Assembling

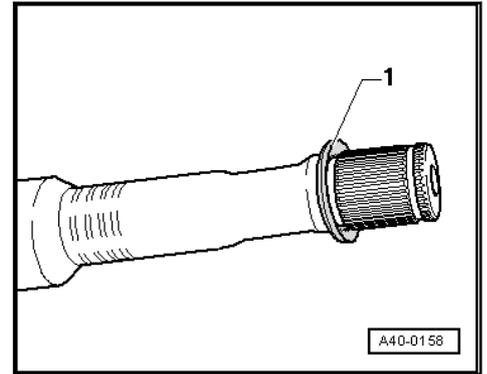
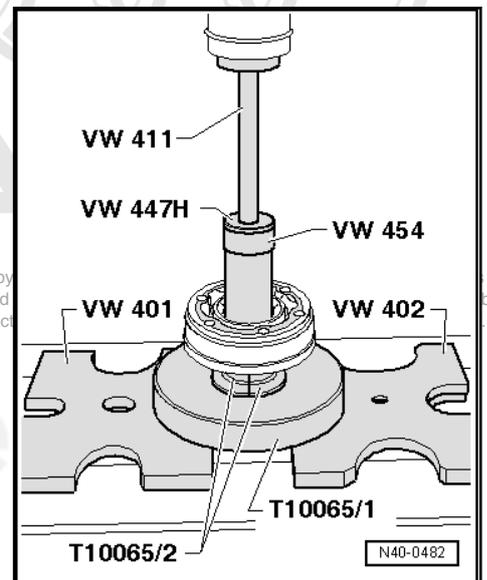


Plate spring installation position on the inner and outer joint

1 - Plate Spring

- Press on joint until it stops.
- Install the circlip.

Inner CV Joint, Pressing On



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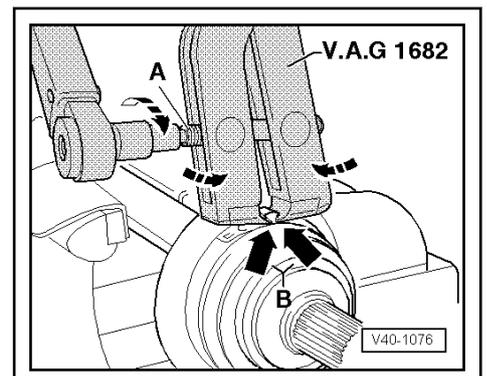
not plicity



Note

Chamfer on inner diameter of ball hub (splines) must face the contact shoulder on the drive axle.

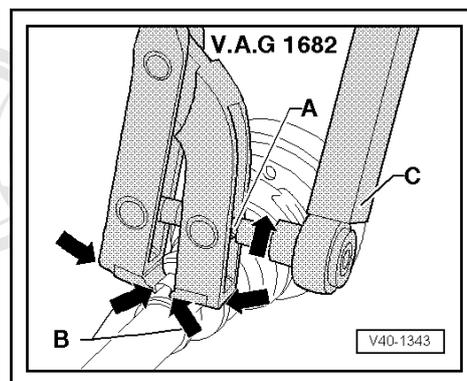
Tightening Clamp on the Outer Joint



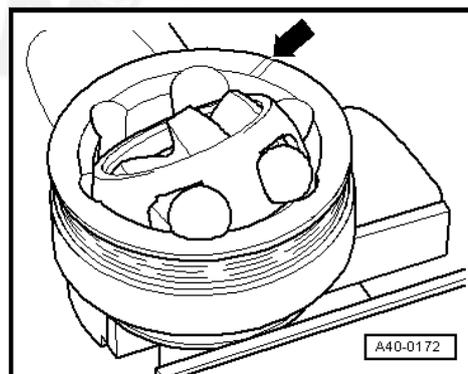
- Attach the Clamping Pliers -VAG1682A- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tighten the clamp by turning the spindle -A- using a torque wrench (do not tilt the pliers).
- ◆ Tightening specification: 25 Nm.

**Note**

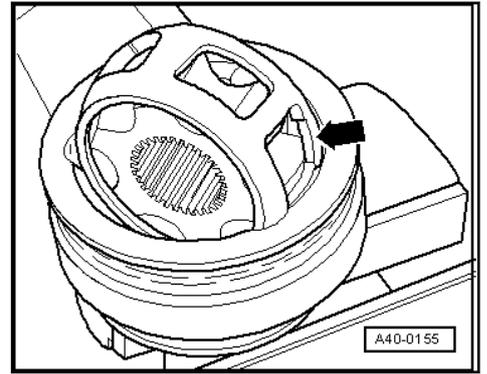
- ◆ A stainless steel clamp must be used due to hardness of CV boot material (compared to rubber). This clamp can only be tensioned using Clamping Pliers -VAG1682A-.
- ◆ Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS₂ grease, if necessary.
- ◆ If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.

Tension the Clamp on the Small Diameter**8.6 Outer CV Joint, Checking**

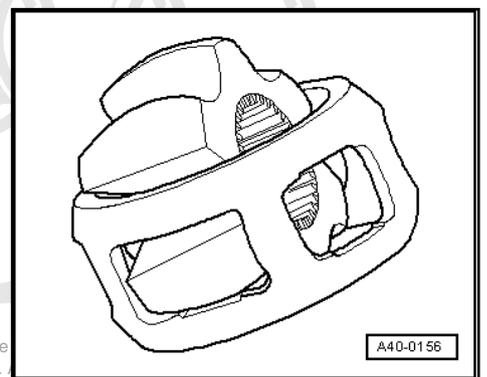
- It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.

Removing

- Before disassembling, mark the ball hub position in relation to the ball cage and housing with an electric engraver or sharpening stone -arrow-.
- Tilt the ball hub and the ball cage and remove the balls one after another.
- Turn the cage until two cage windows -arrow- rest on joint housing.



- Lift out cage with hub.
- Swing a hub segment in a cage window.



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- Fold hub out from cage.

 **Note**

- ◆ *The six balls for each joint belong to a tolerance group. Check the axle stub, hub, cage and balls for small depressions (pitting build-up) and chafing.*
- ◆ *Excessive backlash in the joint is noticeable by a thump during load alternations. The joint should be replaced in these cases.*
- ◆ *Flattening and running marks on the balls are no reason to replace a joint.*

Installing

Install in reverse order of removal while noting the following:

- Press the quantity of grease specified in the table into the joint body. Refer to [⇒ page 374](#).
- Insert cage with hub into joint body.

 **Note**

Cage must be inserted on the correct side.

- Press in the opposite facing balls one after the other, and the old ball hub position to the ball cage and to the joint housing must be replicated.
- Install the new circlip in the shaft.



- Distribute the remaining grease in the joint boot.

8.7 Inner CV Joint, Checking

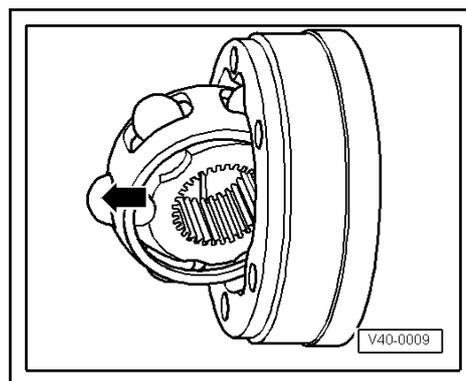
- It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.



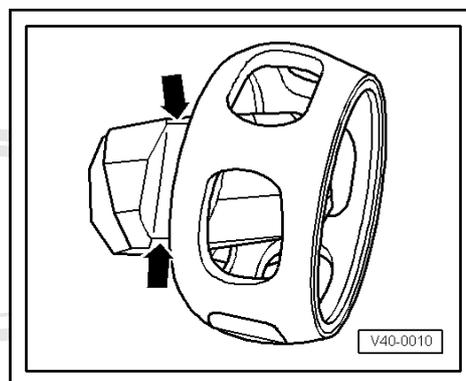
Note

Ball hub and joint piece are paired. Before removing, mark in relation to each other using a waterproof felt-tip pen.

Removing



- Tilt the ball hub and ball cage.
- Remove the joint in the direction of the arrow.
- Remove the balls from the cage.
- Flip out ball hub from ball cage via the ball race -arrows-.



- Check the joint, ball hub, ball cage and balls for small broken off depressions (pitting) and chafing.

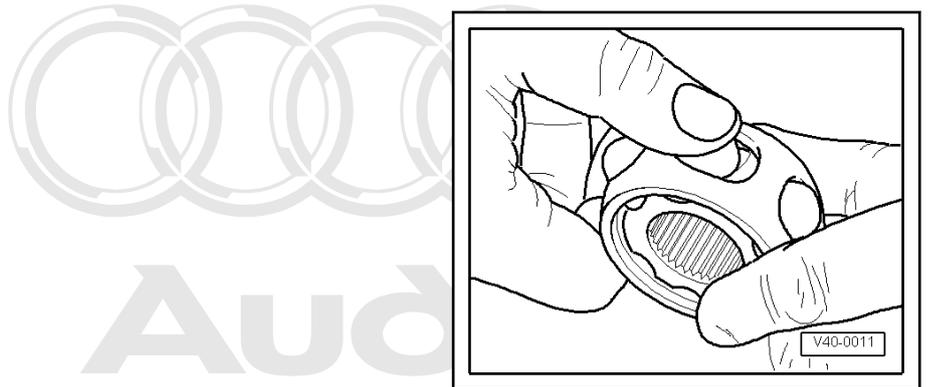


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Excessive backlash in joint will be noticed as a knock during load changes. Joint must be replaced in such cases. Flattening and running marks on the balls are no reason to replace the joint.

Installing

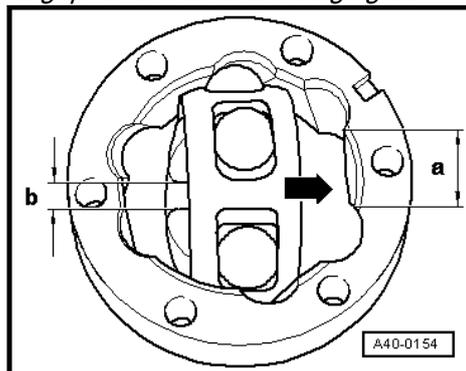


Install in reverse order of removal while noting the following:

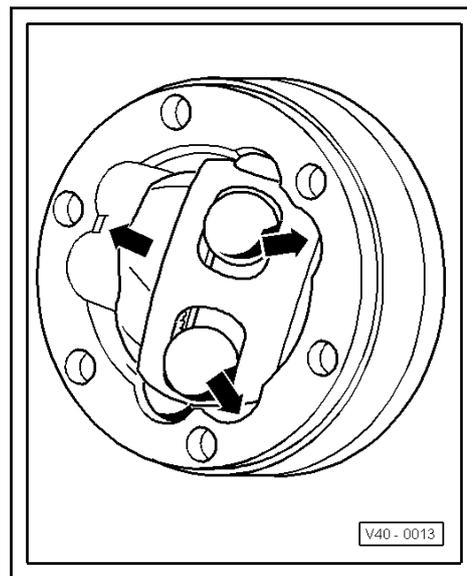
- Insert the ball hub into the ball cage via two chamfers. The installation position is arbitrary. Press balls into cage.
- Insert hub with cage and balls upright into joint piece.

Note

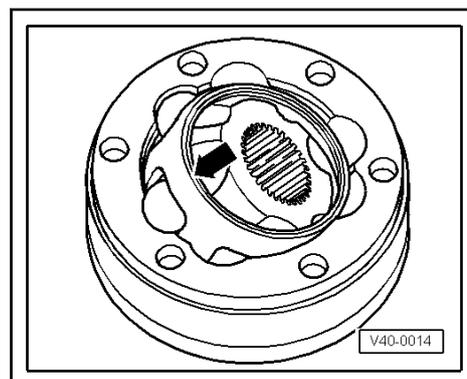
When inserting, make sure that in each case the wide gap -a- at joint piece contacts narrow gap -b- at hub after swinging in.



- ◆ Chamfer on inner diameter of ball hub (splines) must face the large diameter of the joint.
- ◆ Use the felt-tip pen markings made during removal to help with assembly.
- Swing in ball hub, to do so swing out hub far enough from cage -arrows- so that the balls have the distance of the running paths.



- Swing in hub with balls by pressing forcefully onto cage -arrow-.



CV joint, checking for function:

The CV joint is properly assembled, if the ball hub can be slid back and forth by hand over the entire length adjustment.



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43 – Self-Leveling Suspension

1 Electronic Damping

⇒ [-1.1 Electronic Damping”, page 399](#)

⇒ [D1.2 Damping Control Module J250, Removing and Installing”, page 401](#)

1.1 Overview - Electronic Damping



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1 - Electronic Damping Control Module -J250-

- ❑ Removing and Installing. Refer to ⇒ [D1.2 Damping Control Module J250, Removing and Installing](#), page 401 .
- ❑ Component location: the Electronic Damping Control Module -J250- is installed under the right front seat.
- ❑ If the Electronic Damping Control Module -J250- is being replaced, the "Replace control module" function must be performed using the ⇒ Vehicle diagnostic tester.
- ❑ If the control position was reprogrammed and if the vehicle has lane assist, then it will then be necessary to calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 Assistance Systems Front Camera, Calibrating](#), page 449 .

2 - Shock Absorber with Right Rear Damping Adjustment Valve -N339-

- ❑ Shock absorber, removing and installing. Refer to ⇒ [A6.2 Shock Absorber, Removing and Installing](#), page 314 .
- ❑ Shock absorber, servicing. Refer to ⇒ [A6.3 Shock Absorber, Servicing](#), page 318 .

3 - Shock Absorber with Left Rear Damping Adjustment Valve -N338-

- ❑ Shock absorber, removing and installing. Refer to ⇒ [A6.2 Shock Absorber, Removing and Installing](#), page 314 .
- ❑ Shock absorber, servicing. Refer to ⇒ [A6.3 Shock Absorber, Servicing](#), page 318 .

4 - Left Rear Level Control System Sensor -G76-/Right Rear Level Control System Sensor -G77-

- ❑ Removing and Installing. Refer to ⇒ [L2.4 Left Rear Level Control System Sensor G76/Right Rear Level Control System Sensor G77, Removing and Installing](#), page 408 .

5 - Shock Absorber with Left Front Damping Adjustment Valve -N336-

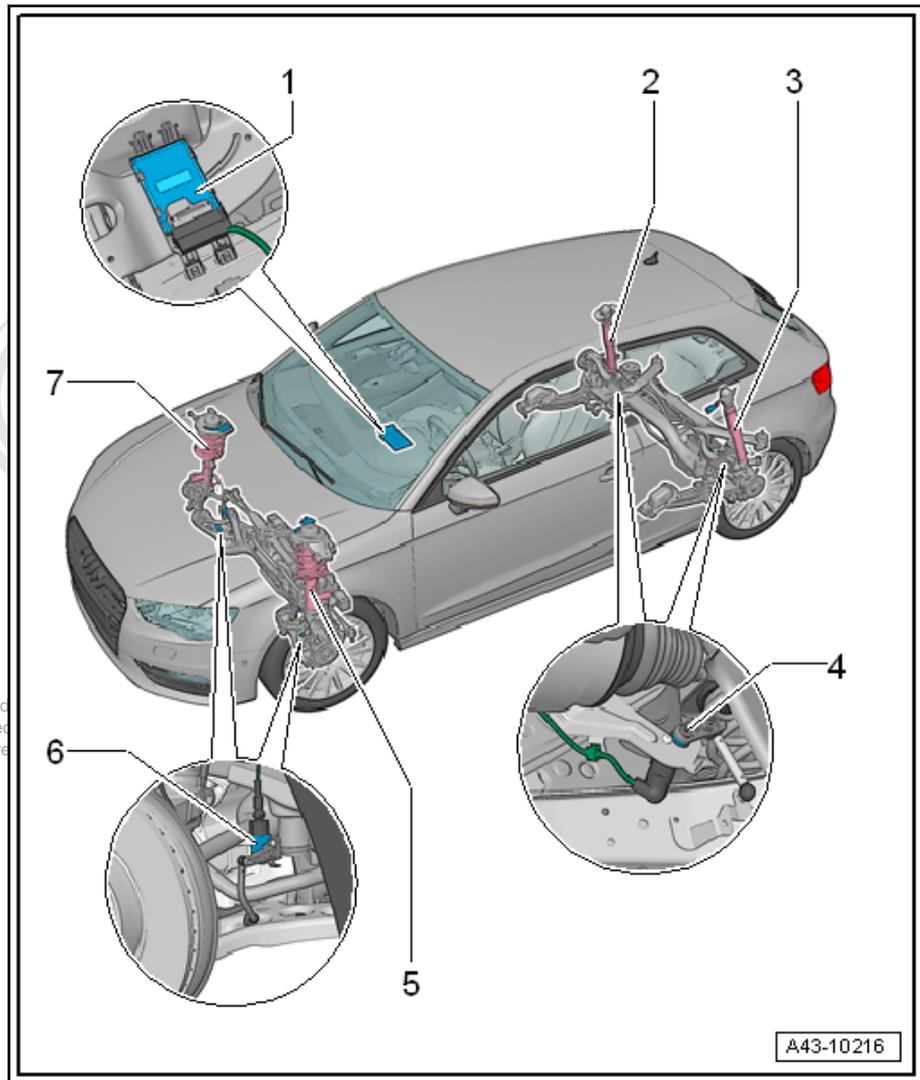
- ❑ Suspension strut, removing and installing. Refer to ⇒ [S3.2 Strut, Removing and Installing](#), page 95 .
- ❑ Service the suspension strut. Refer to ⇒ [S3.3 Strut, Servicing](#), page 101 .

6 - Left Front Level Control System Sensor -G78-

- ❑ Removing and Installing. Refer to ⇒ [F2.3 Front Level Control System Sensor G78/Right Front Level Control System Sensor G289, Removing and Installing](#), page 406 .

7 - Shock Absorber with Right Front Damping Adjustment Valve -N337-

- ❑ Suspension strut, removing and installing. Refer to ⇒ [S3.2 Strut, Removing and Installing](#), page 95 .
- ❑ Service the suspension strut. Refer to ⇒ [S3.3 Strut, Servicing](#), page 101 .

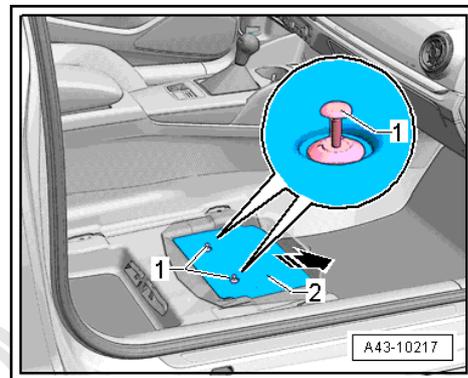


1.2 Electronic Damping Control Module - J250-, Removing and Installing

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester

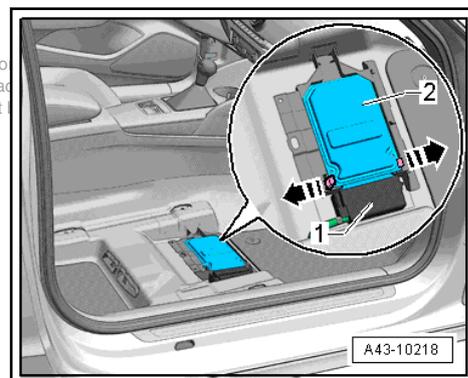
Removing



The Electronic Damping Control Module -J250- is installed under the right front seat.

- Move the right front seat all the way back and up.
- Remove the expanding rivets -1- and then remove the cover -2- in direction of -arrow- from its mount.
- Unclip and remove the Electronic Damping Control Module -J250- -2- from the bracket in direction of -arrows-.

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- Disconnect the connector -1-.

Installing

Install in reverse order of removal while noting the following:

- If the Electronic Damping Control Module -J250- was replaced, the "Replace control module" function must be performed using the ⇒ Vehicle diagnostic tester.
- If the control position was reprogrammed and if the vehicle has lane assist, then it will then be necessary to calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating", page 449](#) .



2 Level Control System Sensor

⇒ [-2.1 Front Level Control System Sensor”, page 402](#)

⇒ [-2.2 Rear Level Control System Sensor”, page 404](#)

⇒ [F2.3 Front Level Control System SensorG78/Right Front Level Control System SensorG289, Removing and Installing”, page 406](#)

⇒ [L2.4 Left Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Removing and Installing”, page 408](#)

2.1 Overview - Front Level Control System Sensor



Note

A replacement Left Front Level Control System Sensor -G78-/Right Front Level Control System Sensor -G289- only comes complete with the coupling rod and the upper and lower retaining plate.



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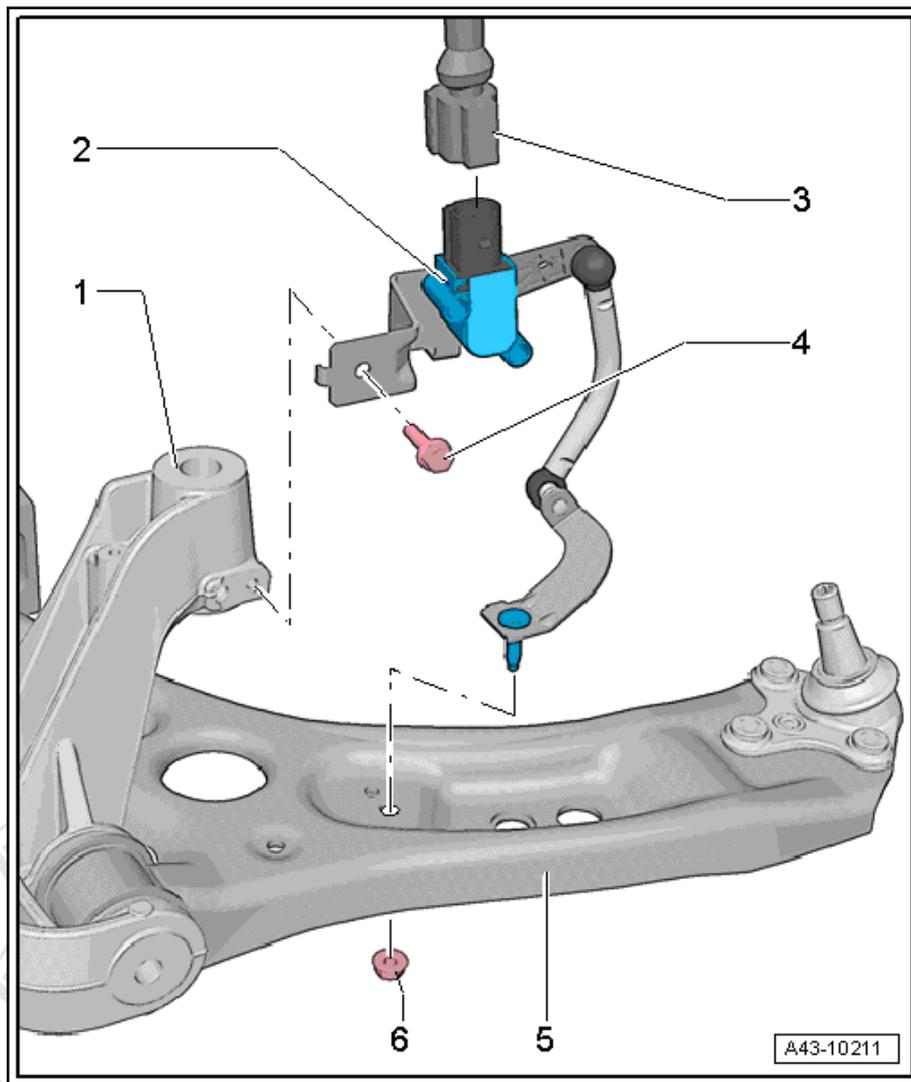
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1 - Subframe

2 - Left Front Level Control System Sensor -G78- and Right Front Level Control System Sensor -G289-

- ❑ Complete with attachments
- ❑ The lever must face toward outside of vehicle
- ❑ Removing and Installing. Refer to ⇒ [F2.3 Front Level Control System Sensor G78/Right Front Level Control System Sensor G289, Removing and Installing](#), page 406 .
- ❑ If the Left Front Level Control System Sensor -G78- or the Right Front Level Control System Sensor -G289- is removed or reinstalled / replaced of the coupling rod of a level control system sensor is loosened:
- ◆ “Re-adapt control position”. Refer to ⇒ Vehicle diagnostic tester.
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 Assistance Systems Front Camera, Calibrating](#), page 449 .



- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

3 - Connector

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4 - Bolt

- ❑ 8 Nm

5 - Control Arm

6 - Nut

- ❑ 8 Nm
- ❑ Always replace if removed



2.2 Overview - Rear Level Control System Sensor

⇒ [-2.2.1 Left Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Vehicles with Multi-Link Suspension", page 404](#)

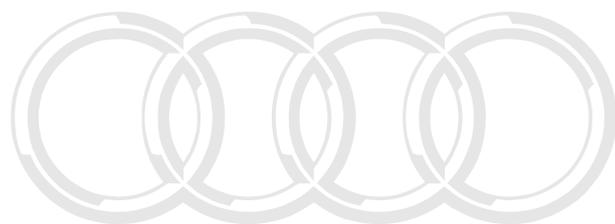
⇒ [-2.2.2 Left Rear Level Control System SensorG76, Vehicles with Torsion Beam Axle", page 405](#)

2.2.1 Overview - Left Rear Level Control System Sensor -G76-/Right Rear Level Control System Sensor -G77-, Vehicles with Multi-Link Suspension



Note

The level control system sensor is only available as a replacement part together with the coupling rod and upper and lower retaining plates.



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1 - Lower Control Arm

2 - Subframe

3 - Pop Rivet Nuts

4 - Bolts

- 5 Nm

5 - Rear Level Control System Sensor

- Complete with attachments
- The lever must face toward outside of vehicle
- Removing and Installing. Refer to ⇒ [L2.4 Left Rear Level Control System Sensor G76/Right Rear Level Control System Sensor G77, Removing and Installing](#), page 408 .

- If the Left Rear Level Control System Sensor -G76- or the Right Rear Level Control System Sensor -G77- is removed or reinstalled / replaced of the coupling rod of a level control system sensor is loosened:

- ◆ “Re-adapt control position”. Refer to ⇒ Vehicle diagnostic tester.

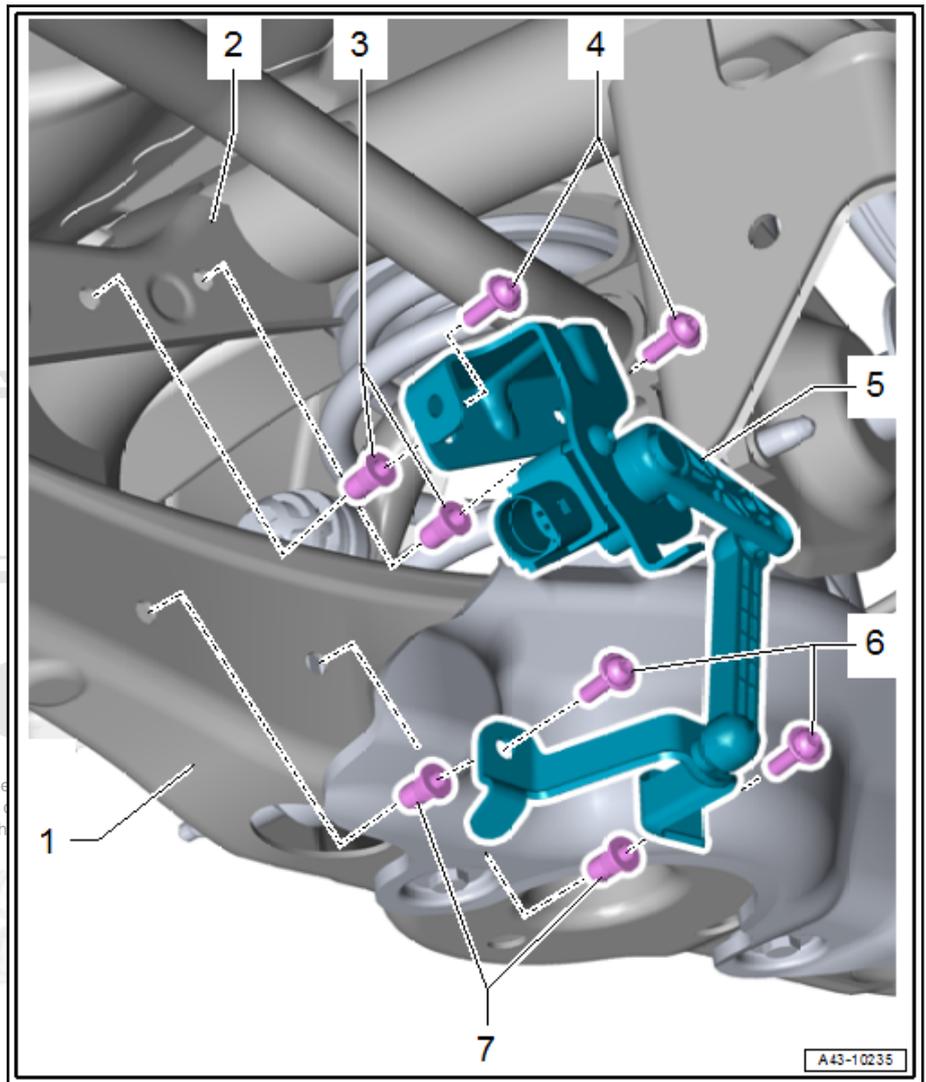
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 Assistance Systems Front Camera, Calibrating](#), page 449 .

- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

6 - Bolts

- 5 Nm

7 - Pop Rivet Nuts



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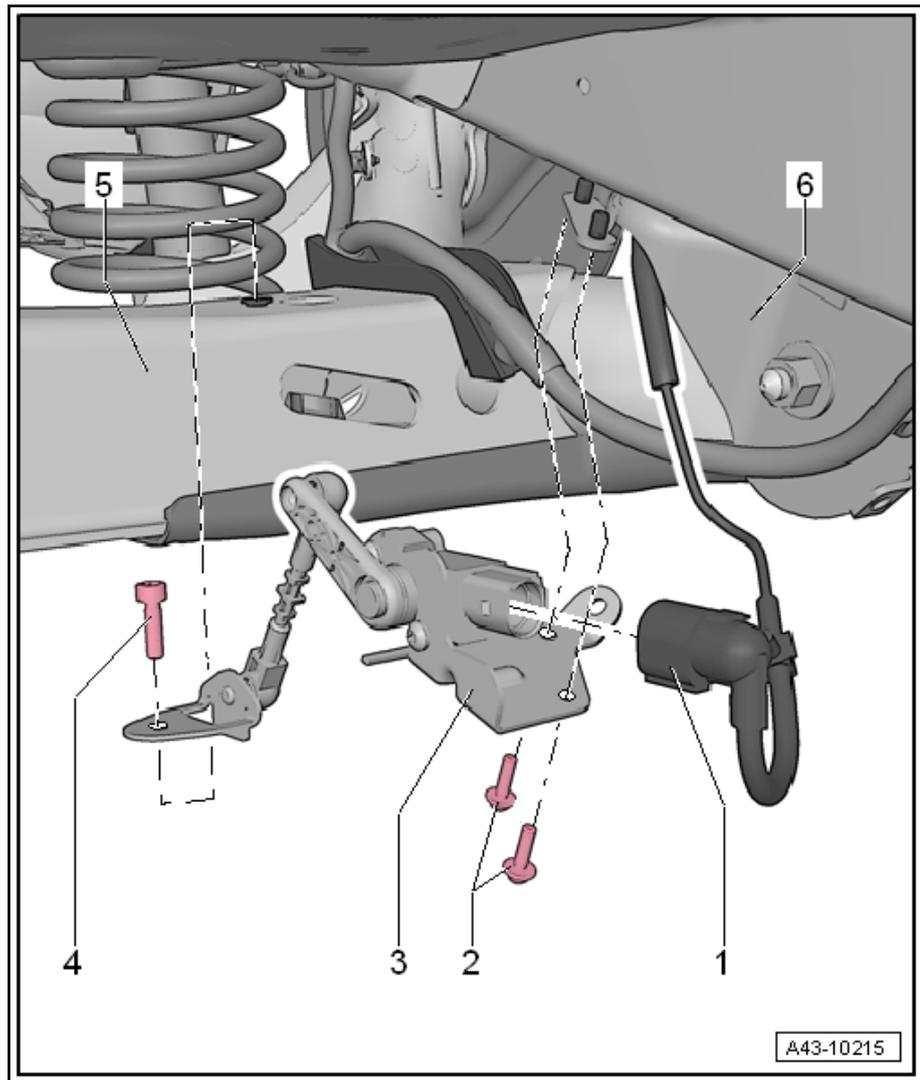
2.2.2 Overview - Left Rear Level Control System Sensor -G76-, Vehicles with Torsion Beam Axle

1 - Connector**2 - Bolt**

- 5 Nm

3 - Left Rear Level Control System Sensor -G76-

- Removing and Installing. Refer to ⇒ [L2.4.1 Left Rear Level Control System Sensor G76, Removing and Installing, Vehicles with Torsion Beam Axle](#), page 408 .
- If the Left Rear Level Control System Sensor -G76- is removed and installed / replaced or the coupling rod from the level control system sensor is loosened.
- ◆ “Re-adapt control position”. Refer to ⇒ Vehicle diagnostic tester.
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 Assistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

**4 - Bolt**

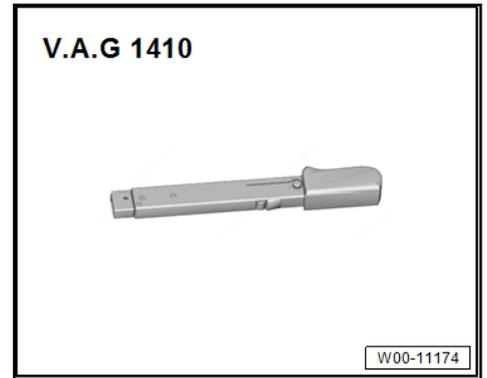
- 8 Nm

5 - Axle Beam**6 - Mounting Bracket**

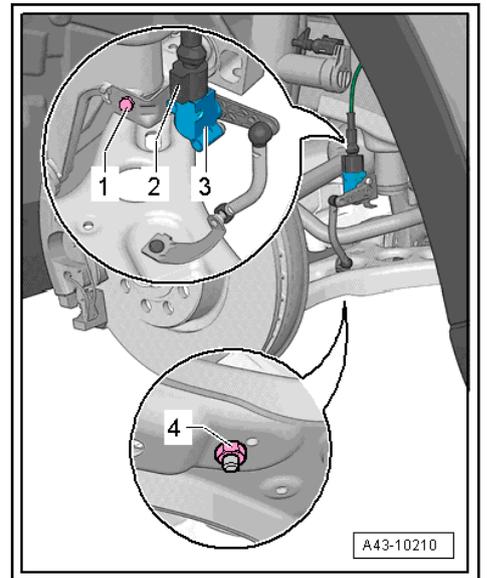
2.3 Left Front Level Control System Sensor -G78-/Right Front Level Control System Sensor -G289-, Removing and Installing

Special tools and workshop equipment required

◆ Torque Wrench 1410 -VAG1410-



Removing



- Disconnect the connector -1-.
- Remove the nut -2- and bolt -1-.
- Remove the level control system sensor -3-.

Installing

Install in reverse order of removal. Note the following:

 **Note**

- ◆ *The level control system sensor lever must point toward vehicle exterior.*
- ◆ *The thread on the vehicle level sensor must be installed into the front hole in the control arm. The tab on the vehicle level sensor bracket must lock into the rear hole to ensure a correct installation position.*

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed of a level control system sensor was removed and reinstalled or replaced.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.

– Select the **Select individual test** tab and select the following tree structure consecutively:

- ◆ **Chassis**
- ◆ **Wheel Damping Electronics**
- ◆ **01 - OBD-capable systems**
- ◆ **14 - Electronic Damping Control Module -J250**
- ◆ **14 - Electronic Damping Control Module, functions**
- ◆ **14 - Control Position, readapting**
- ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
- ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

Tightening Specifications

- ◆ Refer to ⇒ [-2.1 Front Level Control System Sensor](#), page 402

2.4 Left Rear Level Control System Sensor -G76-/Right Rear Level Control System Sensor -G77-, Removing and Installing

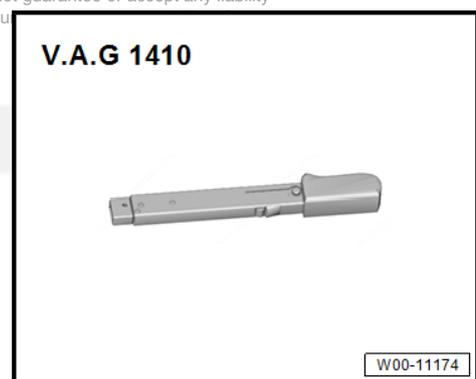
⇒ [L2.4.1 Left Rear Level Control System Sensor G76, Removing and Installing, Vehicles with Torsion Beam Axle](#), page 408

⇒ [R2.4.2 Rear Level Control System Sensor G76/Right Rear Level Control System Sensor G77, Removing and Installing, Vehicles with Multi-Link Suspension](#), page 409

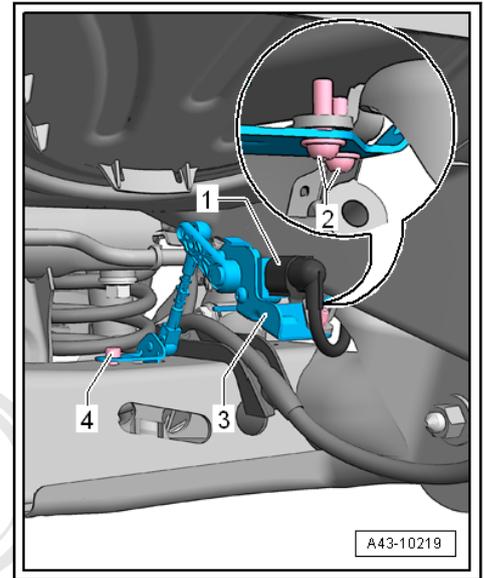
2.4.1 Left Rear Level Control System Sensor -G76-, Removing and Installing, Vehicles with Torsion Beam Axle

Special tools and workshop equipment required

- ◆ Torque Wrench 1410 -VAG1410-



Removing



- Disconnect the connector -1-.
- Remove the bolts -4 and 2-.
- Remove the Left Rear Level Control System Sensor -G76-
-3-.

Installing

Install in reverse order of removal. Note the following:

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The level control system sensor lever must point opposite the direction of travel.

- Evaluate the need for a basic setting of the headlamps.
Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp;
Headlamp Adjusting.

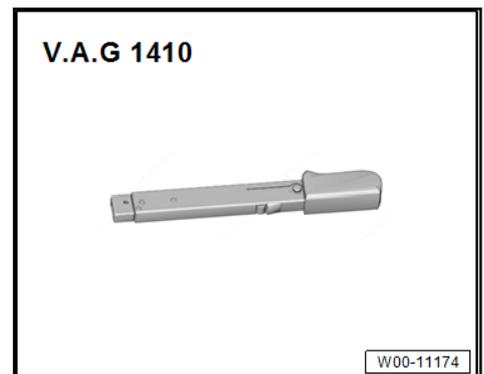
Tightening Specifications

- ◆ Refer to ⇒ [-2.2.2 Left Rear Level Control System Sensor G76, Vehicles with Torsion Beam Axle](#), page 405

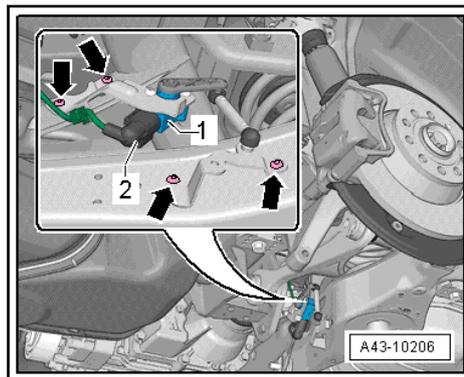
2.4.2 Left Rear Level Control System Sensor -G76-/Right Rear Level Control System Sensor -G77-, Removing and Installing, Vehicles with Multi-Link Suspension

Special tools and workshop equipment required

- ◆ Torque Wrench 1410 -VAG1410-



Removing



- Disconnect the connector -2-.
- Remove the bolts -arrows-.
- Remove the Left Rear Level Control System Sensor -G76-/ Right Rear Level Control System Sensor -G77- -1-.

Installing

Install in reverse order of removal. Note the following:

The level control system sensor lever must point toward vehicle exterior.

On vehicles with level control system sensor if the coupling rod from the level control system sensor was removed a level control system sensor was remove and reinstalled or replaced:

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:
 - ◆ Chassis
 - ◆ Wheel Damping Electronics
 - ◆ 01 - OBD-capable systems.
 - ◆ 14 - Electronic Damping Control Module -J250
 - ◆ 14 - Electronic Damping Control Module, functions
 - ◆ 14 - Control Position, readapting
 - ◆ On vehicles with lane assistance calibrate the driver assistance systems front camera. Refer to ⇒ [A4.1 ssistance Systems Front Camera, Calibrating](#), page 449 .
 - ◆ Evaluate the need for a basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamp; Headlamp Adjusting.

Tightening Specifications

- ◆ Refer to ⇒ [-2.2.1 Left Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Vehicles with Multi-Link Suspension](#), page 404

44 – Wheels, Tires, Wheel Alignment

1 Wheels and Tires

This information can be found in the Wheel and Tire repair manual. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44; Wheels, Tires and Tire Pressure Monitoring System, Assembling.



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2 Axle Alignment

⇒ [A2.1 Alignment Information", page 412](#)

⇒ [f2.2 or Axle Alignment, Evaluating", page 413](#)

⇒ [R2.3 Requirements", page 414](#)

⇒ [W2.4 Work for Calibrating Driver Assistance Systems", page 415](#)

⇒ [C2.5 Control Number \(PR Number\) Explanations", page 415](#)

⇒ [P2.6 Repairs", page 416](#)

⇒ [R2.7 Run-Out Compensation", page 417](#)

⇒ [S2.8 Steering Angle, Checking", page 418](#)

⇒ [A2.9 Alignment Procedure", page 418](#)

⇒ [A2.10 Alignment Specified Values", page 419](#)

⇒ [A2.11 Axle Camber, Adjusting", page 423](#)

⇒ [A2.12 Axle Camber, Adjusting", page 425](#)

⇒ [A2.13 Axle Toe, Adjusting", page 427](#)

⇒ [A2.14 Axle Toe, Adjusting", page 428](#)

2.1 Axle Alignment Information

Wheel alignment must only be performed using VW/Audi-approved alignment equipment.

The wheel alignment computer has all the information for the vehicle alignment.

Refer to ⇒ Audi Service Net; Systems; Vehicle Alignment Software; Vehicle Alignment; Beissbarth.

Refer to ⇒ Audi Service Net; Systems; Vehicle alignment software; Vehicle alignment; Hunter.

Refer to ⇒ Audi Service Net; Systems; Vehicle Alignment Software; Vehicle Alignment; Corghi.

Refer to ⇒ Audi Service Net; Systems; Vehicle Alignment Software; Vehicle Alignment; John Bean.

Each time wheels are aligned, both front and rear wheels must be aligned.

Otherwise, the correct driving handling of the vehicle cannot be ensured.

Otherwise the center position of steering rack cannot be guaranteed!



Note

- ◆ *Do not carry out axle alignment until the vehicle has been driven 1000 to 2000 km in order to allow the coil springs to settle.*
- ◆ *The individual specifications should be followed as precisely as possible when making adjustments.*
- ◆ *Vehicle instability can also be caused by the wheels having a residual imbalance and/or radial run-out which is too great.*

 **WARNING**

If the vehicle has ESP or ABS, calibrate the Steering Angle Sensor -G85- using the Vehicle Diagnostic Tester after doing any adjusting on the suspension.

 **WARNING**

If vehicle will be driving on the streets, all screws and nuts must be tightened properly!

 **WARNING**

There is a risk of injury if the engine starts automatically in vehicles with a Start/Stop System.

- ◆ *For vehicles with an activated Start/Stop System (recognizable from a notification in the instrument cluster), the engine can be started automatically if needed.*
- ◆ *Make sure the Start/Stop system is deactivated when working on the vehicle (turn off ignition and turn the ignition back on if needed).*

2.2 Need for Axle Alignment, Evaluating

An axle alignment is necessary when:

- ◆ Vehicle shows handling problems.
- ◆ Involved in an accident.
- ◆ Axle components were removed.
- ◆ Tire wear patterns are uneven.
- 1) - If the subframe was not secured using the Locating Pins -T10486/1- or Assembly Tool, Sub-frame Alignment Assembly Tool, Sub-frame Alignment -T10486A-, vehicle alignment is required.

After REMOVING and REINSTALLING components.

Front Axle	Wheel Alignment Check Required		Rear Axle	Wheel Alignment Check Required	
	Yes	No		Yes	No
Suspension Strut		X	Shock Absorber		X
Control Arm/Bonded Rubber Bushing		X	Coil Spring		X
Ball Joint		X	Wheel Bearing Housing		X
Wheel Bearing Housing	X		Subframe		X ¹⁾
Tie Rod End/Tie Rod	X		Lower Transverse Link	X	
Steering Gear	X		Upper Transverse Link	X	
Subframe		X ¹⁾	Tie Rod		X
Stabilizer Bar		X ¹⁾	Trailing Arm	X	
			Stabilizer Bar		X



Front Axle	Wheel Alignment Check Required		Rear Axle	Wheel Alignment Check Required	
	Yes	No		Yes	No
			Axle Beam (Torsion Beam Axle)	X	

- 1) Even if the subframe was secured with the locating pins, an axle alignment may be necessary. Perform a road test. If the steering wheel is crooked, the wheels must be aligned.

After REPLACING Components

Front Axle	Wheel Alignment Check Required		Rear Axle	Wheel Alignment Check Required	
	Yes	No		Yes	No
Suspension Strut		X	Shock Absorber		X
Control Arm/Bonded Rubber Bushing		X	Coil Spring		X
Ball Joint		X	Wheel Bearing Housing	X	
Wheel Bearing Housing	X		Subframe	X	
Tie Rod End/Tie Rod	X		Lower Transverse Link	X	
Steering Gear	X		Upper Transverse Link	X	
Subframe	X		Tie Rod	X	
Stabilizer Bar		X ¹⁾	Trailing Arm	X	
			Stabilizer Bar		X
			Axle Beam (Torsion Beam Axle)	X	

- 1) Even if the subframe was secured with the locating pins, an axle alignment may be necessary. Perform a road test. If the steering wheel is crooked, the wheels must be aligned.

2.3 Test Requirements

- Check the suspension, steering and steering linkage for excessive play and damage, repair if necessary.
- Tread depth difference may be no more than 2 mm on an axle.
- Tires inflated to prescribed pressure
- Drive the vehicle onto the alignment rack without tension. Move the vehicle back and forth if necessary to relieve any tension on the axle components.
- Vehicle accurately aligned, suspension bounced and rocked several times
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.
- The steering wheel must be "evened out" into the center position before beginning the axle measurement and adjustment. Use Steering Wheel Scales -VAS6458- for this.
- Vehicle is in curb weight position. Refer to ²⁾

2) Curb weight means: the weight of the vehicle ready for the road (completely filled fuel tank and windshield washer fluid reservoir, spare tire, vehicle tool kit, vehicle jack)

- Perform wheel run-out compensation: permissible axial run-out of the wheel rims can exceed the specified toe setting tolerance. If compensation for wheel run-out is not performed, it will not be possible to obtain a correct toe-in adjustment.
- The measurement sensor must be properly adjusted and attached to the vehicle; observe device manufacturer's operating instructions.
- If necessary, contact the manufacturer for instruction on the proper use of the equipment.
- Vehicle alignment platforms and the alignment equipment/alignment computers can deviate from their original calibration over time therefore they should be calibrated at least once a year during maintenance.
- Handle highly sensitive units with care.

2.4 Preparation Work for Calibrating Driver Assistance Systems

Perform the following steps using "quick access" if one or more driver assistance systems on the vehicle will be calibrated (without a previous axle alignment):

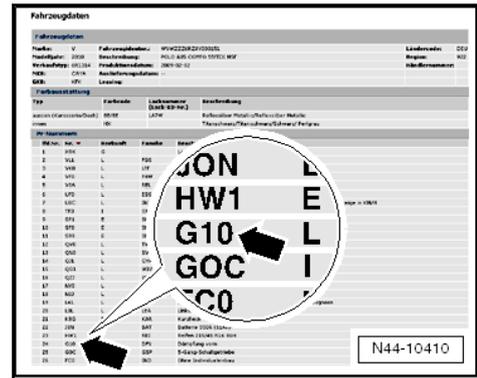
- Before driving the vehicle onto the alignment stand, make sure there is enough space between the vehicle and the calibration device. The distance between the calibration device and the vehicle must be $120 \text{ cm} \pm 2.5 \text{ cm}$.
- If there is not sufficient space, drive vehicle backward on alignment stand in order to be able to use the corresponding space.
- Check the DTC memory and correct any malfunctions before beginning the calibration.
- Vehicle accurately aligned, suspension bounced and rocked several times
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.
- Connect the battery charger. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Charging.
- Position the wheels so that they are straight.
- Connect the ⇒ Vehicle diagnostic tester to the vehicle and guide the diagnostic cable through the open window.
- The vehicle exterior lamps are off.
- All the vehicle doors are closed.
- Using the screen, turn on the calibration on the wheel alignment computer.

2.5 Production Control Number (PR Number) Explanations

The vehicle data label has documented which front/rear axle or tire pressure monitoring system is installed using the corresponding PR numbers.

There is a vehicle data label in the spare wheel well and the maintenance schedule.

Information regarding each suspension installed can be found in ELSA in ⇒ Vehicle-Specific Information under "Vehicle Data".



In this example, the sport suspension G10 is installed in the vehicle (see the magnified area).

Standard suspension = 2UA and
 G01/G02/G03/G04/G05/G14/G15/G16/G21/G22/G23/G24/G41/
 G42/G43/G44/G51

Sport suspension = 2UC and
 G01/G02/G03/G04/G21/G22/G23/G24/G41/G42/G43/G44/G45/
 G62/G63/G64

Heavy duty suspension = 2UF and
 G01/G02/G03/G04/G21/G22/G23/G24/G25

Sport suspension with Audi magnetic ride = 2UC and
 G05/G07/G25/G45

Sport suspension S3 and sport suspension S3 Audi magnetic
 ride = 2UC and G06/G07/G26/G27/G46/G47

S-line sport suspension = 2UG and
 G34/G35/G36/G47/G48/G49/G50

Sport suspension RS3 = 2UC and G08/G09

Sport suspension RS3 with Audi magnetic ride = 2UC and G08

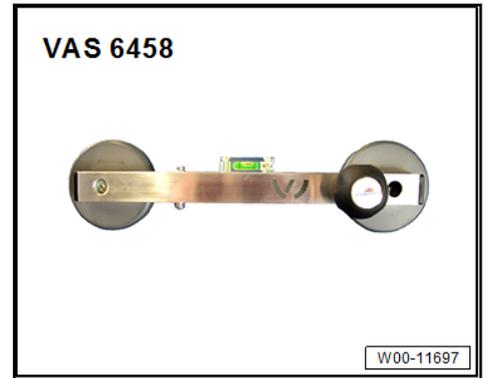
2.6 Measurement Preparations

Special tools and workshop equipment required

- ◆ Brake Pedal Actuator -VAG1869/2-.



◆ Steering Wheel Scales -VAS6458-



◆ Wheel Alignment Computer released by VW/Audi

- The measurement sensor must be properly adjusted and attached to the vehicle; observe device manufacturer's operating instructions.
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.
- Drive the vehicle onto the alignment rack without tension. Move the vehicle back and forth if necessary to relieve any tension on the axle components.
- The steering wheel must be "evened out" into the center position before beginning the axle measurement and adjustment. Use Steering Wheel Scales -VAS6458- for this.

Perform the following steps using "quick access" if one or more driver assistance systems on the vehicle will be calibrated (without a previous axle alignment):

- Before driving the vehicle onto the alignment stand, make sure there is enough space between the vehicle and the calibration device. The distance between the calibration device and the vehicle must be: 120 cm ± 2.5 cm.
- If there is not enough space, back the vehicle onto the wheel alignment platform. A corresponding surface can also be used.
- Check the DTC memory and correct any malfunctions before beginning the calibration.
- Vehicle accurately aligned, suspension bounced and rocked several times
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.
- Connect the battery charger. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.
- Position the wheels so that they are straight.
- Connect the ⇒ Vehicle diagnostic tester to the vehicle and guide the diagnostic cable through the open window.
- The vehicle exterior lamps are off.
- All the vehicle doors are closed.
- Using the screen, turn on the calibration on the wheel alignment computer.

2.7 Wheel Run-Out Compensation

A correct toe-in adjustment will not be possible without performing lateral run-out compensation!

The lateral run-out of the wheel must be balanced (compensated for). Otherwise, the measurement result will be false.

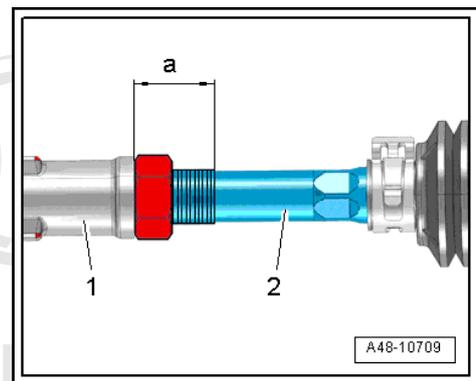
The permitted axial run-out of the rims can exceed the specified toe setting tolerance. If compensation for wheel run-out is not performed, it will not be possible to obtain a correct toe-in adjustment.

Follow the operating instructions provided by the manufacturer of the alignment equipment.

2.8 Maximum Steering Angle, Checking

The wheel alignment computer determines the maximum steering angle.

- If the maximum steering angle was determined on the alignment tester and the value is not within the tolerance, then check for damage or deformations to the steering and suspension components and evaluate the tie rod symmetry. In this case, shorten the "longer" tie rod end (install it deeper into the tie rod) and replace any damaged components.
- If a crooked steering wheel position was determined on the alignment equipment when setting the center position of the steering, then check the steering and suspension components for damage or deformations and replace any damaged components. Check the tie rod symmetry as well.
- Measure dimension -a- on the "shorter" tie rod head. Shorten the "longer" tie rod head to the same dimension. To do this, install the tie rod head -1- deeper on the tie rod -2-.



Dimension -a- of right tie rod end = dimension -a- of left tie rod end; maximum permissible difference between right and left less than 2 mm.

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- When returning the steering to its center position, let the steering wheel "come to its center" using even movements.

2.9 Axle Alignment Procedure

Work procedure for axle alignment, overview



Note

*The vehicle must only be measured at curb weight position.
Refer to ⇒ [page 414](#).*

The following sequence of procedure steps must be observed.

- 1 - Drive the vehicle onto the alignment rack without tension. Move the vehicle back and forth if necessary to relieve any tension on the axle components.

- 2 - The steering wheel must be “evened out” into the center position before beginning the axle measurement and adjustment. Use Steering Wheel Scales -VAS6458- for this.
- 3 - Perform wheel run-out compensation. Refer to [⇒ R2.7 un-
Out Compensation](#), page 417 .
- 4 - Check the maximum steering angle. Refer to [⇒ S2.8 teer-
ing Angle, Checking](#), page 418 .
- 5 - Check front axle camber and adjust if necessary. Refer to [⇒ A2.11 xle Camber, Adjusting](#), page 423 .
- 6 - Check rear axle camber and adjust if necessary. Refer to [⇒ A2.12 xle Camber, Adjusting](#), page 425 .
- 7 - Check rear axle toe and adjust if necessary. Refer to [⇒ A2.13 xle Toe, Adjusting](#), page 427 .
- 8 - Check the front axle toe and adjust if necessary. Refer to [⇒ A2.14 xle Toe, Adjusting](#), page 428 .



Note

- ◆ *If adjustments were made to the suspension during the axle alignment on vehicles with ESP or ABS, a calibration of the Steering Angle Sensor -G85- must be performed using the ⇒ Vehicle diagnostic tester.*
- ◆ *If the rear axle setting was changed, the following driver assistance systems must be calibrated:*
- ◆ *Lane Assist. Refer to [⇒ A4.1 ssistance Systems Front Cam-
era, Calibrating](#), page 449 ,*
- ◆ *Rearview Camera System. Refer to ⇒ Electrical System;
Rep. Gr. 91; Rearview Camera System; Rearview Camera
System, Calibrating.*
- ◆ *Adaptive Cruise Control. Refer to [⇒ C3.1ruise Control
\(ACC\), Adjusting](#), page 431 .*

2.10 Axle Alignment Specified Values

Specified values valid for all engine versions.

Refer to [⇒ C2.5 ontrol Number \(PR Number\) Explanations](#),
page 415

Standard Suspension 2UA and G01/G02/G03/G04/G05/G14/G15/G16/G21/G22/G23/G24/G41/G42/G43/G44/G51		
-Front Axle-		
Total toe	10' ± 10'	
Individual toe	5' ± 5'	
Camber (wheels in straight-ahead position). Refer to ³⁾ .	-35' ± 30'	
Maximum permissible difference between both sides	maximum 30'	
Toe differential angle at 20° steering angle. Refer to ⁴⁾ .	1° 19' ± 20'	
Caster	7° 25' ± 30'	
Maximum permissible difference between both sides	maximum 30'	
Maximum steering angle at inner wheel	40° 38'	
-Rear Axle-		
Total toe	Multi-Link Sus- pension	25' ± 10'



Standard Suspension 2UA and G01/G02/G03/G04/G05/G14/G15/G16/G21/G22/G23/G24/G41/G42/G43/G44/G51		
	Torsion beam axle. Refer to ⁵⁾ .	20' ± 12'
Individual toe	Multi-Link Suspension	12.5' ± 5'
	Torsion beam axle. Refer to ⁵⁾ .	10' ± 6'
Camber	Multi-Link Suspension	-1° 20' ± 30'
	Torsion beam axle. Refer to ⁶⁾ .	-1° ± 10'
Maximum permissible difference between both sides	Multi-Link Suspension	maximum 30'
	Torsion Beam Axle	maximum 30'
Maximum permissible deviation from the running direction	Multi-Link Suspension	maximum 12'
	Torsion Beam Axle	maximum 20'

Sport Suspension 2UC and G01/G02/G03/G04/G21/G22/G23/G24/G41/G42/G43/G44/G45/G62/G63/G64		
-Front Axle-		
Total toe		10' ± 10'
Individual toe		5' ± 5'
Camber (wheels in straight-ahead position). Refer to ³⁾ .		-46' ± 30'
Maximum permissible difference between both sides		maximum 30'
Toe differential angle at 20° steering angle. Refer to ⁴⁾ .		1° 30' ± 20'
Caster		7° 40' ± 30'
Maximum permissible difference between both sides		maximum 30'
Maximum steering angle at inner wheel		40° 13'
-Rear axle-		
Total toe	Multi-Link Suspension	25' ± 10'
	Torsion beam axle. Refer to ⁵⁾ .	24' ± 12'
Individual toe	Multi-Link Suspension	12.5' ± 5'
	Torsion beam axle. Refer to ⁵⁾ .	12' ± 6'
Camber	Multi-Link Suspension	-1° 20' ± 30'
	Torsion beam axle. Refer to ⁶⁾ .	-1° ± 10'
Maximum permissible difference between both sides	Multi-Link Suspension	maximum 30'
	Torsion Beam Axle	maximum 30'
Maximum permissible deviation from the running direction	Multi-Link Suspension	maximum 12'

Sport Suspension 2UC and G01/G02/G03/G04/G21/G22/G23/G24/G41/G42/G43/G44/G45/G62/G63/G64		
	Torsion Beam Axle	maximum 20'

Heavy Duty Suspension 2UF and G01/G02/G03/G04/G21/G22/G23/G24/G25		
-Front Axle-		
Total toe		10' ± 10'
Individual toe		5' ± 5'
Camber (wheels in straight-ahead position). Refer to ³⁾ .		-21' ± 30'
Maximum permissible difference between both sides		maximum 30'
Toe differential angle at 20° steering angle. Refer to ⁴⁾ .		1° 09' ± 20'
Caster		7° 11' ± 30'
Maximum permissible difference between both sides		maximum 30'
Maximum steering angle at inner wheel		41°05'
-Rear Axle-		
Total toe	Multi-Link Suspension	25' ± 10'
	Torsion beam axle. Refer to ⁵⁾ .	16' ± 12'
Individual toe	Multi-Link Suspension	12.5' ± 5'
	Torsion beam axle. Refer to ⁵⁾ .	8' ± 6'
Camber	Multi-Link Suspension	-1° 20' ± 30'
	Torsion beam axle. Refer to ⁶⁾ .	-1° ± 10'
Maximum permissible difference between both sides	Multi-Link Suspension	maximum 30'
	Torsion Beam Axle	maximum 30'
Maximum permissible deviation from the running direction	Multi-Link Suspension	maximum 12'
	Torsion Beam Axle	maximum 20'

Sport Suspension with Audi Magnetic Ride 2UC and G05/G07/G25/G45		
-Front Axle-		
Total toe		10' ± 10'
Individual toe		5' ± 5'
Camber (wheels in straight-ahead position). Refer to ³⁾ .		-46' ± 30'
Maximum permissible difference between both sides		maximum 30'
Toe differential angle at 20° steering angle. Refer to ⁴⁾ .		1° 30' ± 20'
Caster		7° 40' ± 30'
Maximum permissible difference between both sides		maximum 30'
Maximum steering angle at inner wheel		41°13'



Sport Suspension with Audi Magnetic Ride 2UC and G05/G07/G25/G45		
-Rear Axle-		
Total toe	Multi-Link Suspension	25' ± 10'
Individual toe	Multi-Link Suspension	12.5' ± 5'
Camber	Multi-Link Suspension	-1° 20' ± 30'
Maximum permissible difference between both sides		maximum 30'
Maximum permissible deviation from the running direction	Multi-Link Suspension	maximum 12'

S-line Sport Suspension 2UG and G34/G35/G36/G47/G48/G49/G50	
-Front Axle-	
Total toe	10' ± 10'
Individual toe	5' ± 5'
Camber (wheels in straight-ahead position). Refer to ³⁾ .	-52' ± 30'
Maximum permissible difference between both sides	maximum 30'
Toe differential angle at 20° steering angle. Refer to ⁴⁾ .	1° 40' ± 20'
Caster	7° 51' ± 30'
Maximum permissible difference between both sides	maximum 30'
Maximum steering angle at inner wheel	39°57'

-Rear axle		
Total toe	Multi-Link Suspension	25' ± 10'
	Torsion beam axle. Refer to ⁵⁾ .	27' ± 12'
Individual toe	Multi-Link Suspension	12.5' ± 5'
	Torsion beam axle. Refer to ⁵⁾ .	13,5' ± 6'
Camber	Multi-Link Suspension	-1° 20' ± 30'
Maximum permissible difference between both sides	Torsion beam axle. Refer to ⁶⁾ .	-1° ± 10'
	Multi-Link Suspension	maximum 30'
	Torsion Beam Axle	maximum 30'
	Multi-Link Suspension	maximum 12'
Maximum permissible deviation from the running direction	Multi-Link Suspension	maximum 12'
	Torsion Beam Axle	maximum 20'

Sport Suspension S3 and Sport Suspension S3 Audi Magnetic Ride 2UC and G05/G07/G26/G27/G46/G47/G97	
-Front Axle-	
Total toe	10' ± 10'
Individual toe	5' ± 5'

Sport Suspension S3 and Sport Suspension S3 Audi Magnetic Ride 2UC and G05/G07/G26/G27/G46/G47/G97	
Camber (wheels in straight-ahead position). Refer to ³⁾ .	-52' ± 30'
Maximum permissible difference between both sides	maximum 30'
Toe differential angle at 20° steering angle. Refer to ⁴⁾ .	1° 40' ± 20'
Caster	7° 51' ± 30'
Maximum permissible difference between both sides	maximum 30'
Maximum steering angle at inner wheel	39°57'
-Rear axle-	
Total toe	25' ± 10'
Individual toe	12.5' ± 5'
Camber	-1° 20' ± 30'
Maximum permissible difference between both sides	maximum 30'
Maximum permissible deviation from the running direction	maximum 12'

Sport Suspension RS3 2UC and G08/G09	
-Front Axle-	
Total toe	10' ± 10'
Individual toe	5' ± 5'
Camber (wheels in straight-ahead position). Refer to ³⁾ .	-52' ± 30'
Maximum permissible difference between both sides	maximum 30'
Toe differential angle at 20° steering angle. Refer to ⁴⁾ .	1° 40' ± 20'
Caster	7° 51' ± 30'
Maximum permissible difference between both sides	maximum 30'
Maximum steering angle at inner wheel	39°57'
-Rear axle-	
Total toe	10' ± 10'
Individual toe	5' ± 5'
Camber	-1° 20' ± 30'
Maximum permissible difference between both sides	maximum 30'
Maximum permissible deviation from the running direction	maximum 12'

3) Camber corrections are not possible. The camber can only be centered evenly within the tolerance range by sliding the subframe.

4) Wheel stop on outer wheel is reduced by this amount. It can also be indicated negatively in the wheel alignment computer depending on manufacturer.

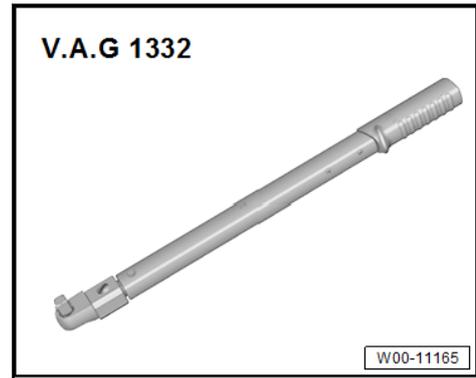
5) Toe is not adjustable. If measured values are not within specified range, check axle beam for damage and replace if necessary.

6) Camber corrections are not possible. If measured values are not within specified range, check axle beam for damage and replace if necessary.

2.11 Front Axle Camber, Adjusting

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-

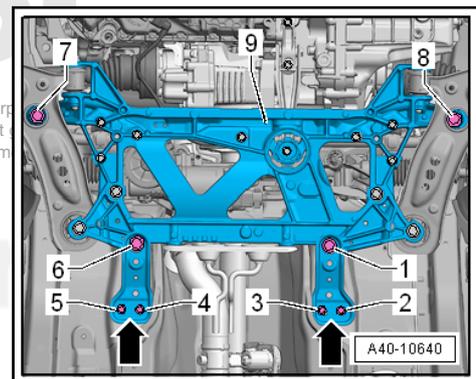


Camber cannot be adjusted.

The camber can only be centered evenly within the tolerance range by sliding the subframe.

- It is only permissible to slide the subframe to the left or right. Under no circumstances slide it in or against the direction of travel!
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- Remove the bolts -1, 6, 7 and 8- in succession and install the new bolts loosely.

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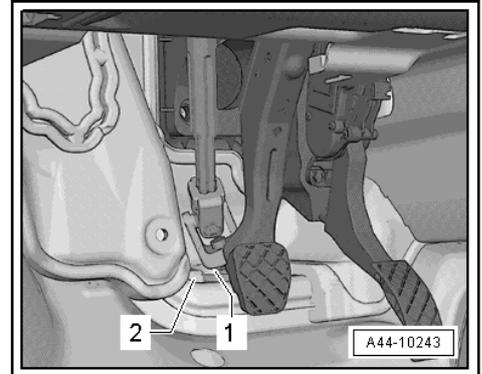
- Move the subframe -9- sideways until the camber is even on both sides. Refer to ⇒ [A2.10 Alignment Specified Values](#), page 419 .
- Tighten the subframe bolts -1, 6, 7 and 8-.

After sliding the subframe and steering gear along with it as well, clearance between universal joint of the steering column and the cutout of plenum chamber bulkhead must be checked.



- Remove the securing nuts -arrows- and remove the footwell trim panel.

There must be at least 5 mm of free space all around between the universal joint -1- and the cutout of the plenum chamber bulkhead -2-.



Tightening Specifications

- ◆ Refer to ⇒ [-2.1 Subframe”, page 21](#)
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.

2.12 Rear Axle Camber, Adjusting

⇒ [A2.12.1 xle Camber, Adjusting, Vehicles with Torsion Beam Axle”, page 425](#)

⇒ [A2.12.2 xle Camber, Adjusting, Vehicles with Multi-Link Suspension”, page 425](#)

2.12.1 Rear Axle Camber, Adjusting, Vehicles with Torsion Beam Axle

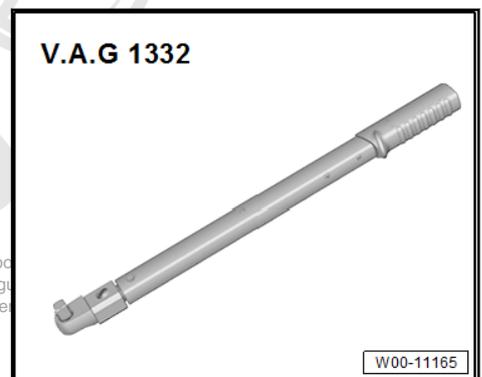
Camber cannot be adjusted.

If measured values are not within the specified range, check the axle beam for damage and replace if necessary.

2.12.2 Rear Axle Camber, Adjusting, Vehicles with Multi-Link Suspension

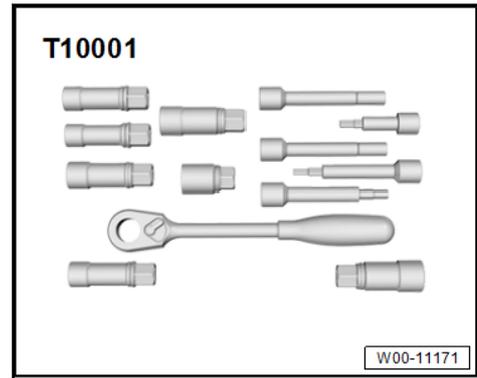
Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-



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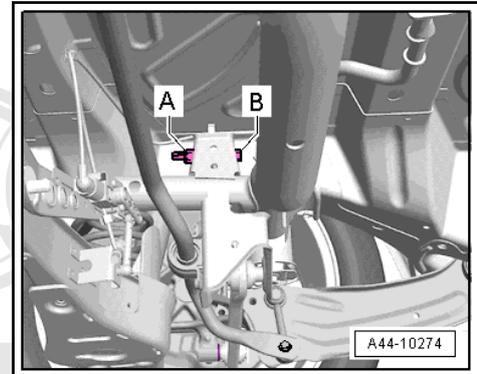
- ◆ 18 mm socket from the Shock Absorber Set -T10001-



- ◆ Insert Tool - 18mm -T10179-

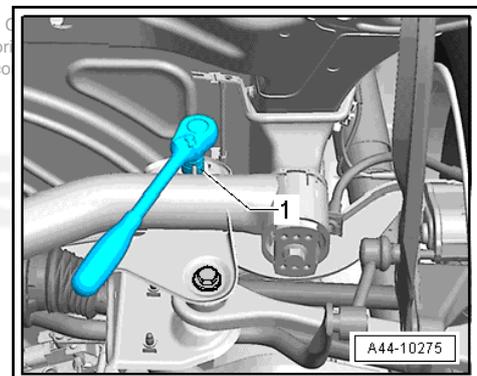


- Remove the nut -A- on the upper control arm threaded connection from the subframe and loosely install a new nut.



- Set the camber by turning the eccentric bolt -B- using the 18 mm socket from the Shock Absorber Set -T10001-.

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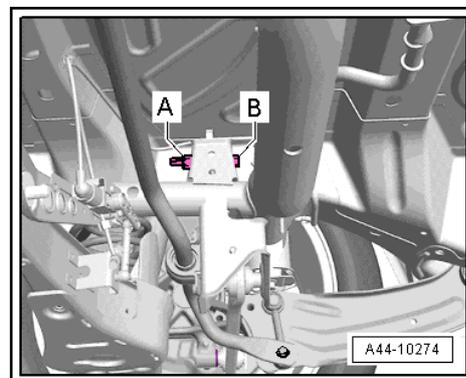
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- The eccentric bolt -B- can also be turned by turning the hex head at the “top of the bolt”.

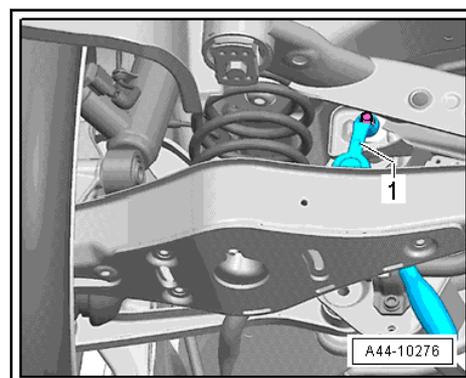
 Note

The maximum adjustment range is 90° to left or right of center position.

- Tighten the nut -A- using the Insert Tool - 18mm -T10179-.



- Use the Insert Tool - 18mm -T10179- -1- as shown.



- After the nut -A- is tightened, check the camber value once more. Refer to [⇒ A2.10 Alignment Specified Values](#), page 419.

Tightening Specifications

- ◆ Refer to [⇒ -5.1 Transverse Link](#), page 302

2.13 Rear Axle Toe, Adjusting

[⇒ A2.13.1 xle Toe, Adjusting, Vehicles with Torsion Beam Axle](#), page 427

[⇒ A2.13.2 xle Toe, Adjusting, Vehicles with Multi-Link Suspension](#), page 428

2.13.1 Rear Axle Toe, Adjusting, Vehicles with Torsion Beam Axle

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The total toe value for the rear axle is not adjustable.
By sliding the rear axle is it possible to even out the individual toe values.

- Loosening the bolts from the mounting bracket.
- Determine the individual toe settings of the axle beam in the oblong holes of the mounting bracket.



If the total toe value is outside the permitted tolerance, or if determining the individual toe values is not possible the axle beam must be checked for damage and if necessary replaced.

The body must if necessary be checked/measured or serviced in the area of the mounting points. Refer to ⇒ Body Repair Repair Manual.

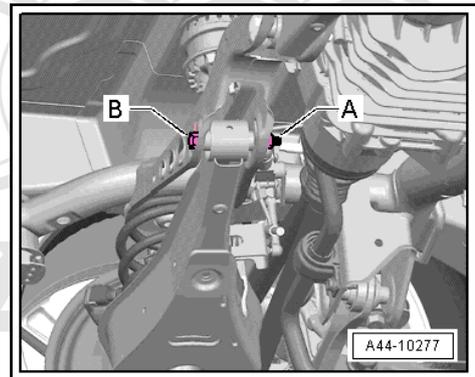
2.13.2 Rear Axle Toe, Adjusting, Vehicles with Multi-Link Suspension

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-



- Remove the nut -A- on the lower control arm threaded connection from the subframe and loosely install a new nut.



- Adjust the toe by turning the eccentric screw -B-.

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Note

The maximum adjustment range is 90° to left or right of center position.

- Tighten the nut -A-.
- After the nut -A- is tightened, check the toe value again.
Refer to ⇒ [A2.10 Alignment Specified Values](#), page 419 .

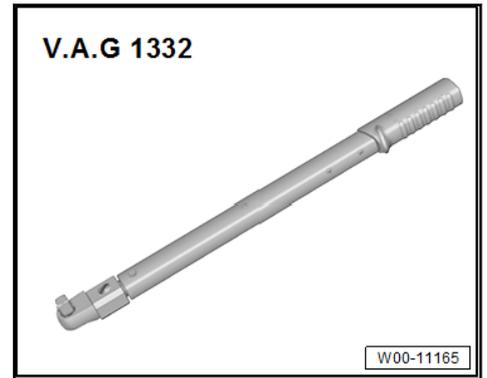
Tightening Specifications

- ◆ Refer to ⇒ [-5.1 Transverse Link](#), page 302

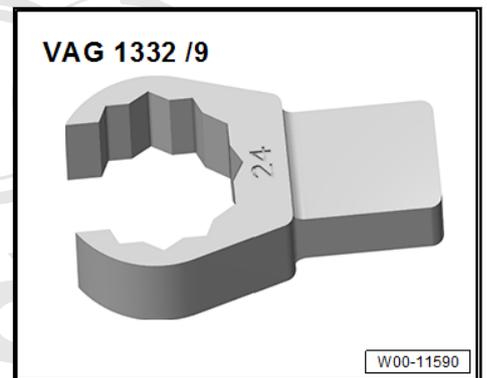
2.14 Front Axle Toe, Adjusting

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-

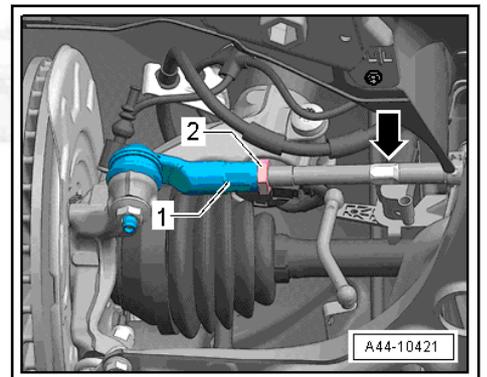


- ◆ Torque Wrench 1332 Insert - Open Ring Wrench - 24mm -VAG1332/9-



Procedure

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- To loosen or tighten the lock nut -2-, counterhold at the tie rod end -1- with a suitable tool.
- Loosen the lock nut -2-.
- Adjust toe on left and right wheels at the hex fitting -arrow-.

Note

- ◆ *Make sure that boot on steering gear is not damaged or twisted. Twisted boots wear out quickly.*
- ◆ *Only tighten the lock nuts when the vehicle is resting on the ground - the tie rod end must be parallel to the suspension strut steering lever.*
- Tighten the lock nut -2- and check the toe-in value again.

After tightening the lock nut -2-, it is possible that the value deviates slightly.



If the measured toe nevertheless lies within the tolerance, the adjustment is correct. Refer to [⇒ A2.10 Alignment Specified Values](#), page 419 .

Tightening Specifications

- ◆ Refer to [⇒ G3.2 Gear Servicing](#), page 475



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3 Adaptive Cruise Control (ACC)

⇒ [C3.1 Cruise Control \(ACC\), Adjusting](#), page 431

3.1 Adaptive Cruise Control (ACC), Adjusting

⇒ [A3.1.1 Adaptive Cruise Control \(ACC\) Radar Sensors](#), page 431

⇒ [P3.1.2 Procedure with Setting Device - Basic SetVAS6430/1A through MY 2016](#), page 432

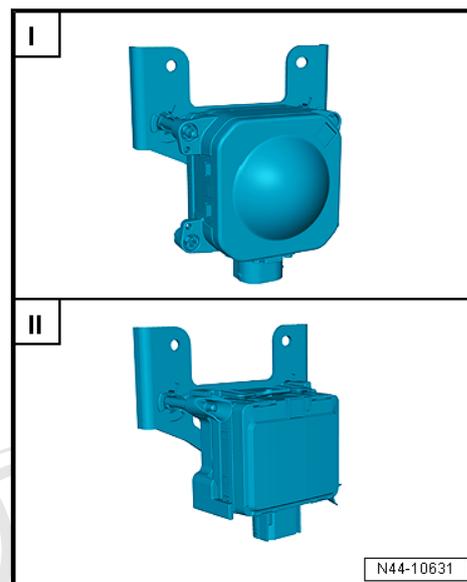
⇒ [P3.1.3 Procedure with Setting Device - Basic SetVAS6430/1A through MY 2016](#), page 438

⇒ [P3.1.4 Procedure with Setting Device - Basic SetVAS6430 from MY 2017](#), page 445

3.1.1 Varying Adaptive Cruise Control (ACC) Radar Sensors

There are two ACC radar sensors (Right Adaptive Cruise Control Sensor -G259- and Control Module for Adaptive Cruise Control -J428-).

Version I:



- ◆ Ball-shaped surface
- ◆ Adjustment procedure through MY 2016. Refer to ⇒ [P3.1.2 Procedure with Setting Device - Basic SetVAS6430/1A through MY 2016](#), page 432 or Refer to ⇒ [P3.1.3 Procedure with Setting Device - Basic SetVAS6430/1A through MY 2016](#), page 438 .
- ◆ Adjustment procedure from MY 2017. Refer to ⇒ [P3.1.4 Procedure with Setting Device - Basic SetVAS6430 from MY 2017](#), page 445 .

Version II:

- ◆ Flat surface
- ◆ Adjustment procedure through MY 2016. Refer to ⇒ [P3.1.2 Procedure with Setting Device - Basic SetVAS6430/1A through MY 2016](#), page 432 or Refer to ⇒ [P3.1.3 Procedure with Setting Device - Basic SetVAS6430/1A through MY 2016](#), page 438 .

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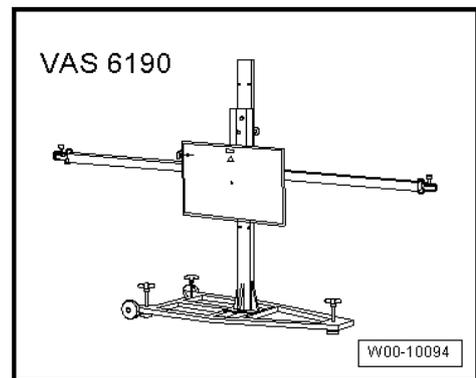
[with Setting Device - Basic Set VAS6430/1A through MY 2016", page 438](#) .

- ◆ Adjustment procedure from MY 2017. Refer to ⇒ [P3.1.4 procedure with Setting Device - Basic Set VAS6430 from MY 2017", page 445](#) .

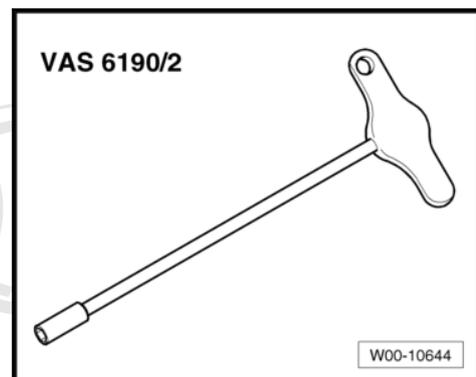
3.1.2 Adjustment Procedure with Setting Device - Basic Set -VAS6430/1A- through MY 2016

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester
- ◆ Wheel Alignment Computer
- ◆ Setting Device - Basic Set -VAS6430/1A-



- ◆ ACC Adjuster -VAS6190/2-



Note

- ◆ **Before driving the vehicle onto the alignment stand, check whether there is a sufficiently large space between the vehicle and the Setting Device Basic Set -VAS6430/1A-. The distance between the Setting Device - Basic Set - VAS6430/1A- and the vehicle must be 120 cm ± 2.5 cm.**
- ◆ **If there is not enough space, drive vehicle the backward on the alignment stand in order to be able to use the space.**
- Check the DTC memory and correct any malfunctions before beginning the calibration.

The calibration procedure is described here using the Setting Device - Basic Set -VAS6430/1A-. The ADC Adjustment Fixture -VAS6041- and the ADC Adjustment Fixture -VAS6041/1A- can also be used.

 Note

Do not perform the steps under "Calibration procedure without a previous axle alignment" if an axle alignment has already been performed.

Calibration is Necessary if:

The rear axle toe was adjusted.

The Control Module for Adaptive Cruise Control -J428- was removed and installed.

The front lock carrier was loosened or adjusted.

The impact member was loosened or moved.

There is damage on the front impact member or lock carrier.

The adjustment angle is greater than -0.8° to $+0.8^\circ$.

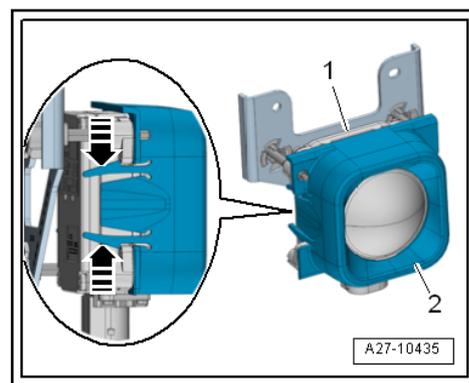
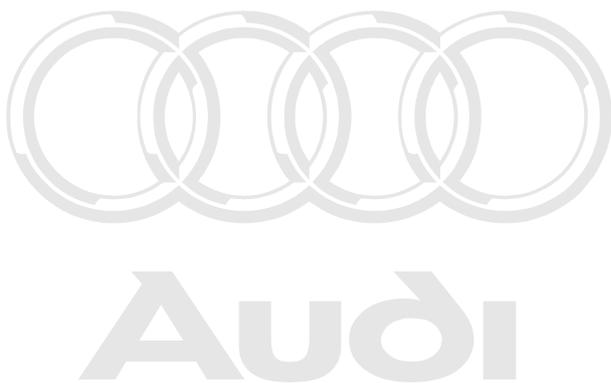
Calibration Procedure without a Previous Axle Alignment

- Connect the battery charger. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Charging.
- Select the Adaptive Cruise Control button on the wheel alignment computer.
- Mount the quick clamps to the rear wheels.
- Mount the measurement sensor to the rear wheels.
- Perform a wheel run-out compensation on the rear wheels.

 Note

The Setting Device Basic Set -VAS6430/1A- must not be moved on the calibration beam.

Calibration Procedure with or without a Previous Axle Alignment

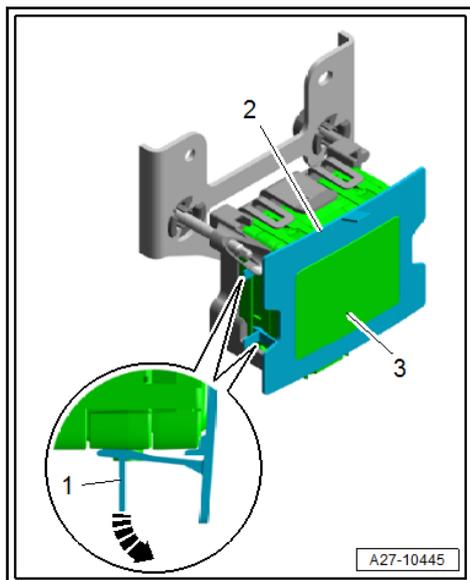


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– Open the tabs in direction of arrows –

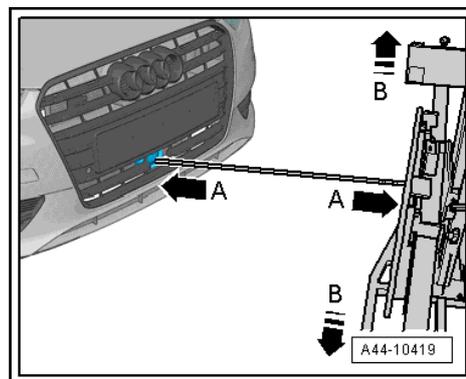
- Remove the cover -2- from the Control Module for Adaptive Cruise Control -J428- -1-.

◆ **Version II**

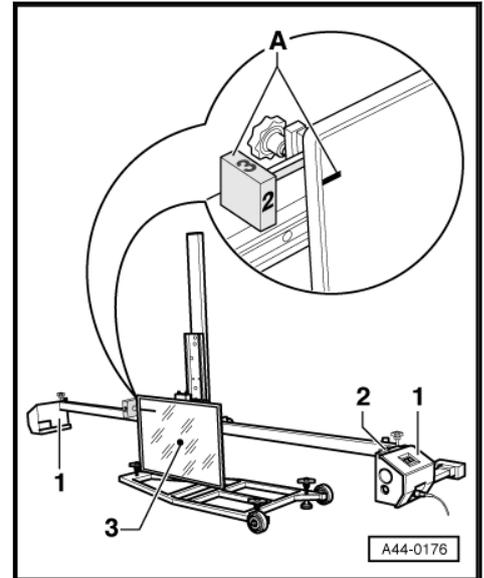


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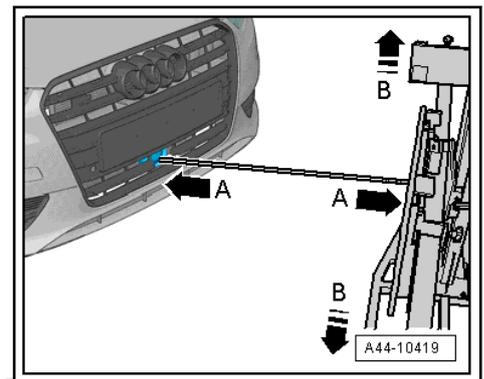
- Release the retainers -1- in direction of -arrow-.
- Remove the trim -2- from the Control Module for Adaptive Cruise Control -J428- -3-.
- Connect the Vehicle Diagnostic Tester with its diagnostic cable.
- Remove all dirt on the sensor lens.



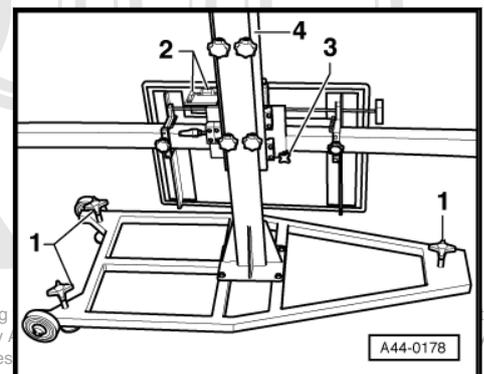
- Position the ACC Adjustment Device -VAS6430/1A- at a distance -A- of $120 \text{ cm} \pm 2.5 \text{ cm}$ from the sensor lens to the mirror surface.
- Mount the front wheel measuring sensors -1- onto the Setting Device - Basic Set -VAS6430/1A-.



- In area -A-, bring item -2- on rotary knob into alignment with marking on mirror (number 2 on rotary knob must face toward vehicle).
- Now align the Setting Device Basic Set -VAS6430/1A- by sliding it sideways -arrows B- so that the laser beam is horizontally centered on the sensor lens.



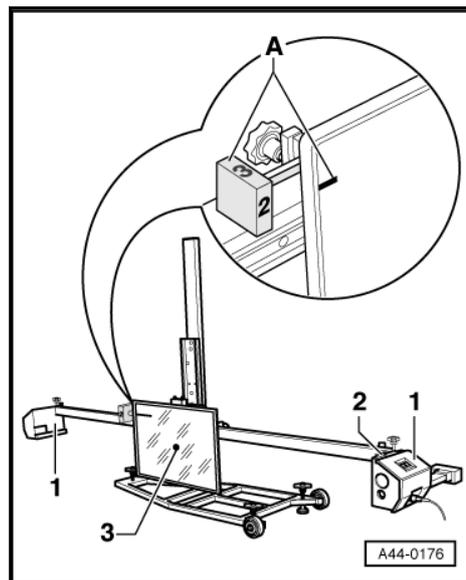
- Bring the bubble levels -2- on the Setting Device - Basic Set -VAS6430/1A- into balance using adjustment screws -1-.



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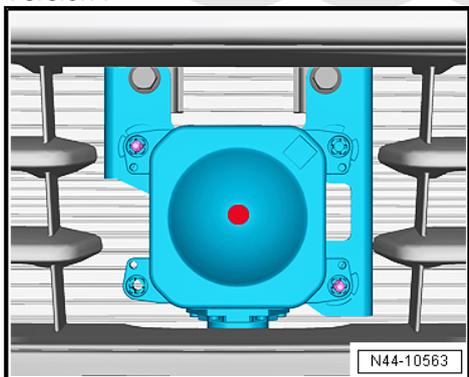
- Adjust vertical slits -4- on Setting Device - Basic Set -VAS6430/1A- so that the laser beam is vertically centered on sensor lens.
- Adjust the same front axle individual toe values using fine adjustment screw -3-.

- The difference between individual toe values must be less than 6' or they must be the same.
- Bring bubble levels -2- on measurement sensor -1- into balance.



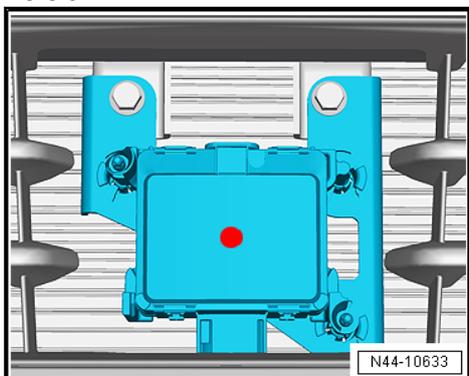
- Now using the laser beam -3-, check if the laser beam contacts the sensor lens.

◆ Version I



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◆ Version II



 Note

- ◆ *If the laser beam meets the center of the sensor lens at this step after adjusting the same individual toe values, the ACC Adjustment Device Setting Device - Basic Set - VAS6430/1A--VAS6430/1A- is aligned correctly (positioned).*
- ◆ *If the laser beam does not meet the center of the sensor lens, the ACC Adjustment Device Setting Device - Basic Set - VAS6430/1A- must be aligned again.*

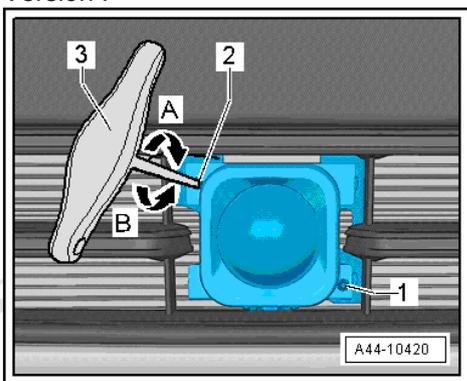
Perform any Subsequent work Using the Vehicle Diagnostic Tester:

The ⇒ Vehicle diagnostic tester is connected.

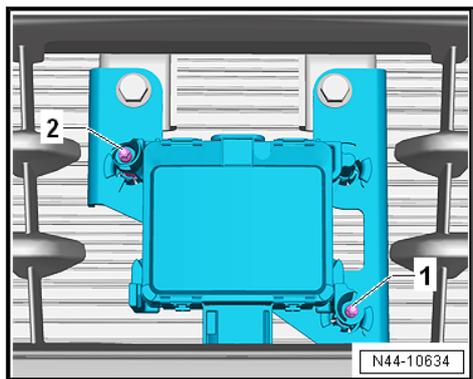
- Select the **Diagnostic** mode and start the diagnosis.
- Select the **Test plan** tab.
- Select the **Select individual test** button and select the following tree structure consecutively:
 - ◆ Body
 - ◆ Electrical system
 - ◆ 01 - OBD-capable systems
 - ◆ 13 - Distance regulation -J428
 - ◆ 13 - Distance Regulation Control Module, functions
 - ◆ 13 - Adjustment

The ⇒ Vehicle diagnostic tester continues with the calibrating procedure from here.

- ◆ Version I



- Use the bolts -1 and 2- for adjustment in “Guided Fault Finding”.
- To adjust the adaptive cruise control sensor, use the ACC Adjuster -VAS6190/2- -3-.
- ◆ Version II



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- Use the bolts -1 and 2- for adjustment in "Guided Fault Finding".
- To adjust the adaptive cruise control sensor, use the ACC Adjuster -VAS6190/2-.



WARNING

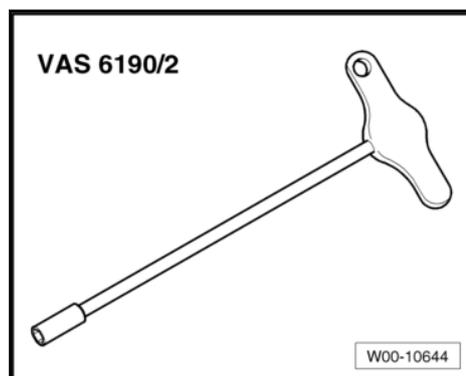
The adaptive cruise control calibration is confirmed when "Output diagnostic test complete" appears on the → Vehicle diagnostic tester.

- Switch off the ignition.
- Disconnect the Diagnostic Cable connector from data link connector.
- Disconnect the battery charger. Refer to → Electrical Equipment; Rep. Gr. 27; Battery; Battery, Charging.

3.1.3 Adjustment Procedure with Setting Device - Basic Set -VAS6430/1A- through MY 2016

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester
- ◆ Wheel Alignment Computer
- ◆ ACC Adjuster -VAS6190/2-



◆ Setting Device - Basic Set -VAS6430/1A-



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◆ ACC Reflector Mirror - Audi -VAS6430/3-



Note

- ◆ *Before driving the vehicle onto the wheel alignment platform, check whether there is a sufficiently large space between the vehicle and the ACC Alignment Plate -VAS6430-. The distance between the Setting Device - Basic Set -VAS6430/1A- and the vehicle must be $120\text{ cm} \pm 2.5\text{ cm}$.*
- ◆ *If there is not enough space, drive vehicle the backward on the alignment stand in order to be able to use the space.*
- ◆ *The Setting Device Basic Set -VAS6430/1A- must not be moved on the calibration beam.*
- Check the DTC memory and correct any malfunctions before beginning the calibration.

Calibration is necessary if:

The rear axle toe was adjusted.

The Control Module for Adaptive Cruise Control -J428- was removed and installed.

The front lock carrier was loosened or adjusted.

The impact member was loosened or moved.

There is damage on the front impact member or lock carrier.

The adjustment angle is greater than -0.8° to $+0.8^\circ$.



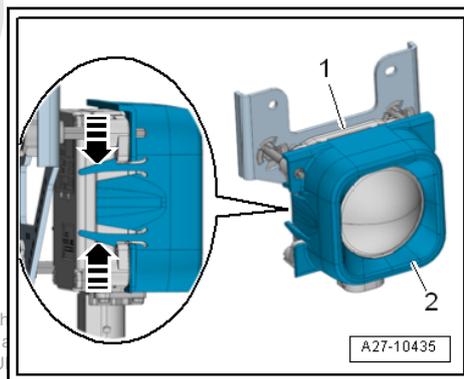
Note

Do not perform the steps under "Calibration procedure without a previous axle alignment" if an axle alignment has already been performed.

Calibration procedure without a previous axle alignment

- Connect the battery charger. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Charging.
- Select Adaptive Cruise Control on the wheel alignment computer.
- Mount the quick clamps to the rear wheels.
- Mount the measurement sensor to the rear wheels.
- Perform a wheel run-out compensation on the rear wheels.

Calibration procedure with or without a previous axle alignment

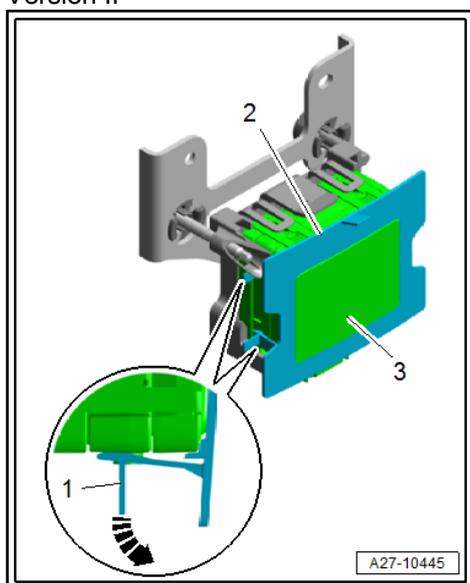


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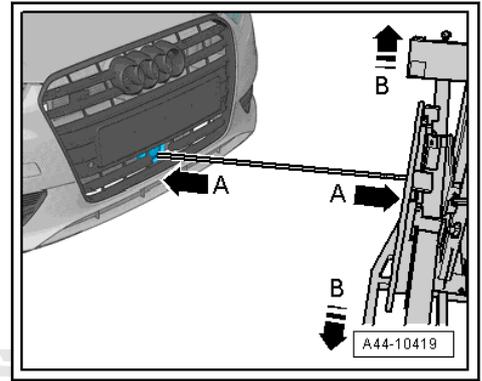
◆ Version I

- Open the tabs in direction of -arrows-.
- Remove the cover -2- from the Control Module for Adaptive Cruise Control -J428- -1-.

◆ Version II

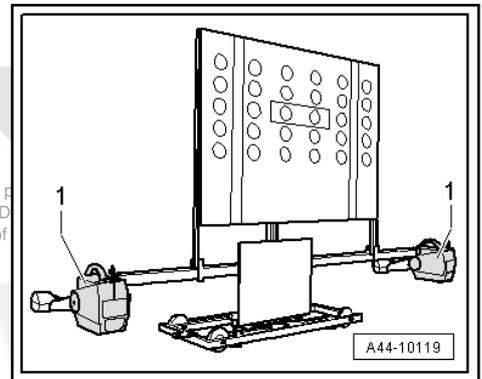


- Release the retainers -1- in direction of -arrow-.
- Remove the trim -2- from the Control Module for Adaptive Cruise Control -J428- -3-.
- Connect the Vehicle Diagnostic Tester with its diagnostic cable.
- Remove all the dirt on the sensor lens and on the inside of the radar cover.

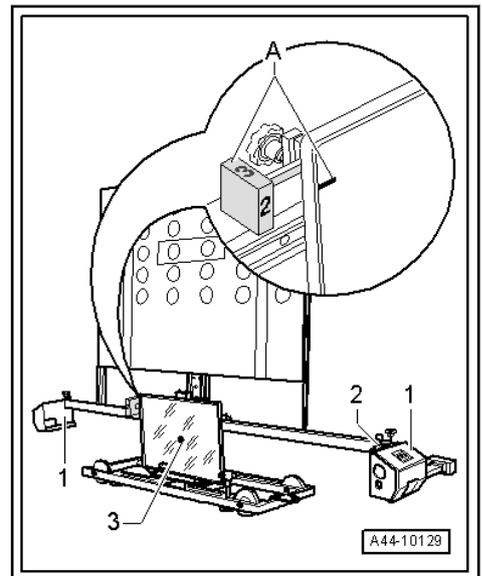


- Position the Setting Device Basic Set -VAS6430/1A- at a distance -A- of 120 cm \pm 2.5 cm from the sensor lens to the mirror surface.
- Mount the front wheel measuring sensors -1- onto the Setting Device Basic Set -VAS6430/1A-.

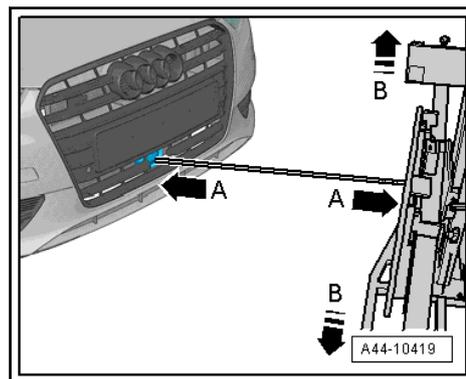
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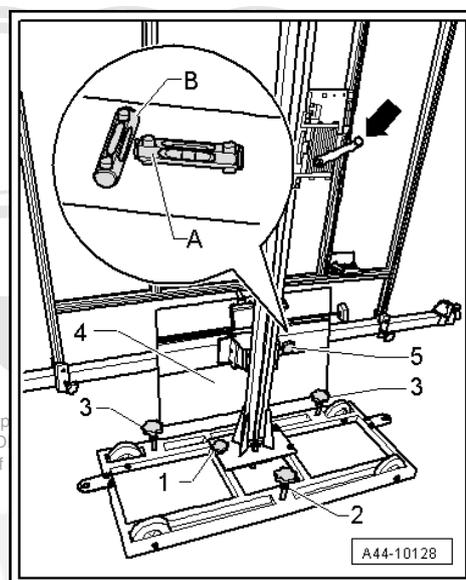
- In area -A-, bring item -2- on rotary knob into alignment with marking on mirror (number 2 on rotary knob must face toward vehicle).



- Now align the Setting Device Basic Set -VAS6430/1A- by sliding it sideways in direction of -arrows B- so that the laser beam is horizontally centered on the sensor lens.

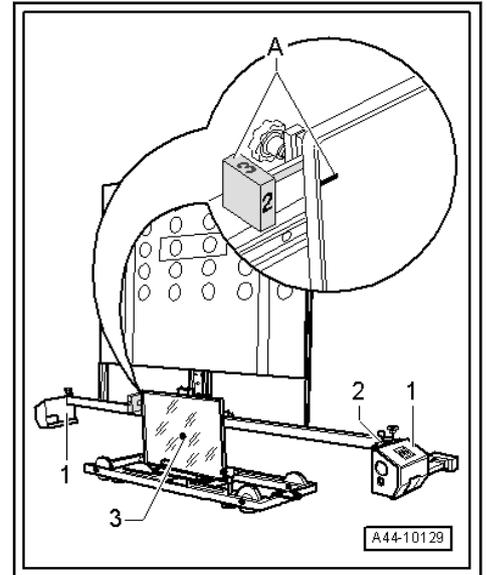


- Balance the bubble levels -A and B- on the Setting Device Basic Set -VAS6430/1A- using the adjusting screws -1, 2 and 3-.



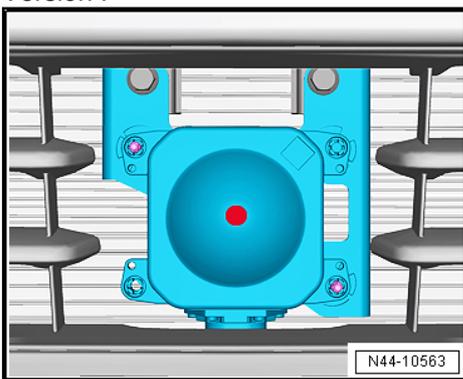
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- Adjust the mirror -4- using the crank -arrow- on the Setting Device Basic Set -VAS6430/1A- so the laser beam is vertically centered on the sensor lens.
- Adjust the same front axle individual toe settings using fine adjustment screw -5-.
- The difference between individual toe values must be less than 6' or they must be the same.
- Bring bubble levels -2- on measurement sensor -1- into balance.

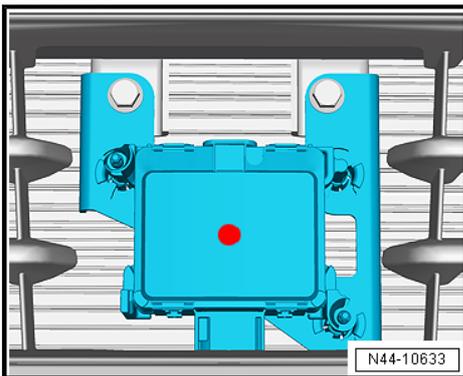


- Now using the laser beam -3-, check if the laser beam contacts the sensor lens.

◆ Version I



◆ Version II



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 Note

- ◆ *If the laser beam meets the center of the sensor lens at this step after adjusting the same individual toe values, the Setting Device Basic Set -VAS6430/1A- is aligned correctly (positioned).*
- ◆ *If the laser beam does not meet the center of the sensor lens, the Setting Device Basic Set -VAS6430/1A- must be aligned again.*

Perform any Subsequent Work using the Vehicle Diagnostic Tester:

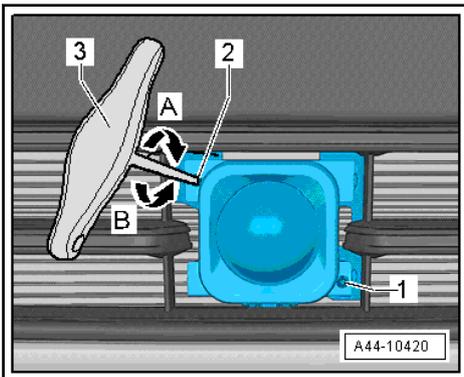
The → Vehicle diagnostic tester is connected.

- Select the **Diagnostic** mode and start the diagnosis.
- Select the **Test plan** tab.
- Select the **Select individual test** button and select the following tree structure consecutively:

- ◆ Body
- ◆ Electrical system
- ◆ 01 - OBD-capable systems
- ◆ 13 - Distance regulation -J428
- ◆ 13 - Distance Regulation Control Module, functions
- ◆ 13 - Adjustment

Now follow the instructions on the screen to perform the calibration.

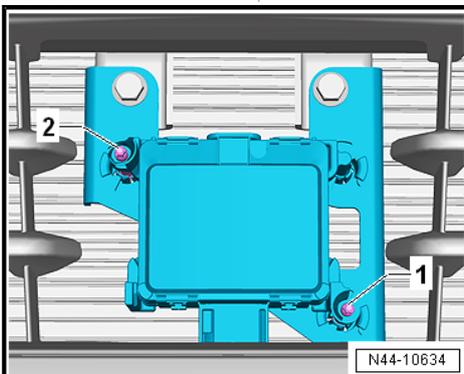
◆ Version I



- Use the bolts -1 and 2- for adjustment in “Guided Fault Finding”.
- To adjust the adaptive cruise control sensor, use the ACC Adjuster -VAS6190/2- -3-.

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◆ Version II



- Use the bolts -1 and 2- for adjustment in “Guided Fault Finding”.
- To adjust the adaptive cruise control sensor, use the ACC Adjuster -VAS6190/2-.



WARNING

The adaptive cruise control calibration is confirmed when "Output diagnostic test complete" appears on the → Vehicle diagnostic tester.

- Switch off the ignition.
- Disconnect the Diagnostic Cable connector from data link connector.
- Disconnect the battery charger. Refer to → Electrical Equipment; Rep. Gr. 27; Battery; Battery, Charging.

3.1.4 Adjustment Procedure with Setting Device - Basic Set -VAS6430- from MY 2017

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester
- ◆ Wheel Alignment Computer
- ◆ Setting Device - Basic Set -VAS6430/1- or Setting Device - Basic Set -VAS6430/1A-



- ◆ ACC Reflector Mirror -VAS6430/10-

Procedure

The procedure is described for a John Bean V3D Aligner - VAS6331-.

- Check if the adaptive cruise control (ACC) radar sensor is seated correctly in the bracket.
- Before beginning the adjustment, read out the DTC memory and correct any malfunctions present.
- The bolts on the ACC radar sensor are only for the first basic setting of the sensor.

There are two options for adjusting the adaptive cruise control sensors:

The "quick access"

Select this procedure for the following operations if only the adjustment should be performed.

- ◆ The Control Module for Adaptive Cruise Control -J428- was removed and installed.
- ◆ The front lock carrier was loosened or adjusted.
- ◆ The front impact member was loosened or adjusted.



- ◆ There is damage on the front impact member or lock carrier.
- ◆ The adjustment angle is greater and -0.8° to $+0.8^\circ$.

The "complete alignment"

Select this procedure for the following operations if the adjustment and a wheel alignment should be performed.

- ◆ The rear axle toe was adjusted.
- ◆ The vehicle suspension was changed, for example changing from standard to sport suspension.



Note

Both procedures are programmed in the wheel alignment computer. The respective procedure is performed automatically. It is only necessary to select the appropriate program for the procedure that will be performed.

Do not perform the steps under "Calibration procedure without a previous axle alignment" if an axle alignment has already been performed.

- Preparation Work for Calibrating and Adjusting Driver Assist Systems. Refer to [⇒ W2.4 ork for Calibrating Driver Assistance Systems](#), page 415 .
- The ACC Setting Device must not be moved on the calibration beam.

Calibration Procedure without Previous Axle Alignment

- Switch off the ignition.
- Connect the battery charger for the battery support mode. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Charging.
- Position the wheels so that they are straight.
- Connect the Vehicle Diagnostic Tester to the vehicle and guide the diagnostic cable through the open window.
- Turn off all vehicle exterior lamps.
- Close all vehicle doors.
- Mount the quick clamps to the rear wheels.
- Mount the measurement sensor to the rear wheels.
- Perform a wheel run-out compensation on the rear wheels.

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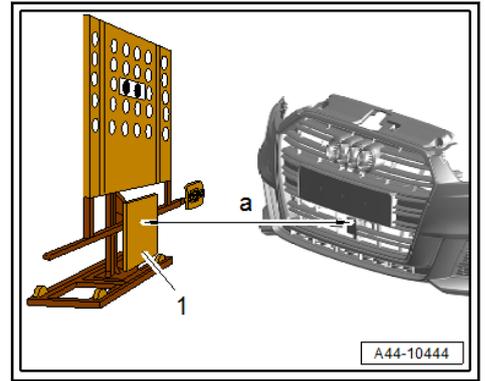
Calibration procedure with or without previous axle alignment



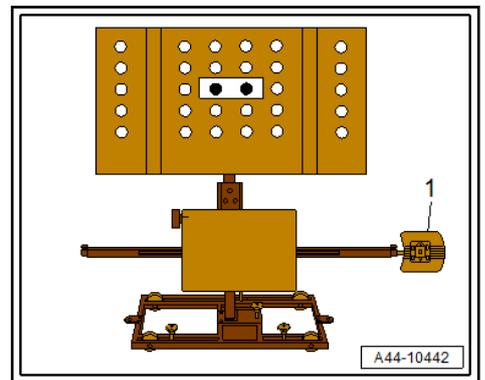
Note

Before starting an adaptive cruise control (ACC) adjustment check the sensor and frames for damage, external influences and secure fit. Service any damaged components.

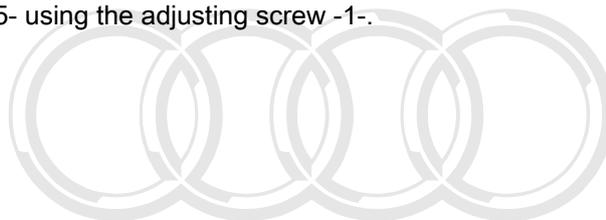
- Select the ACC calibration button on the wheel alignment computer.
- Install the ACC Reflector Mirror -VAS6430/10- centered on the calibration beam.
- Remove any dirt from the sensor lens.



- Position the Setting Device - Basic Set -VAS6430/1A- using the ACC Reflector Mirror -VAS6430/10- -1- centered and parallel at the distance -a- to the sensor lens in the radiator grille.
- Dimension -a- = 120 ± 2.5 cm
- Place the Camera -VAS6331/1- -1- for the ADR/ ACC adjustment on the Setting Device - Basic Set -VAS6430- on the right side and tighten.



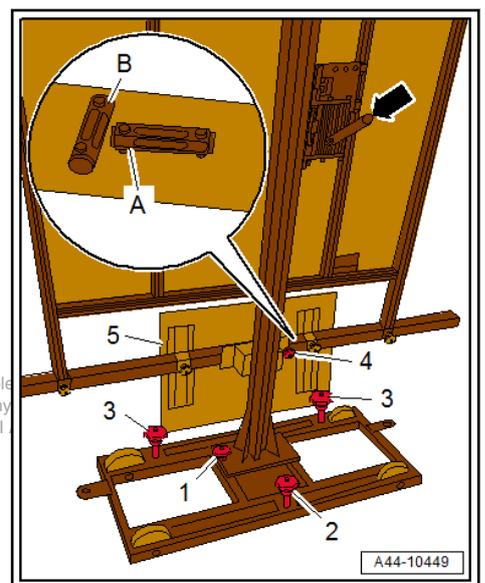
- Level the bubble level -A- on the ACC Reflector Mirror -VAS6430- -5- using the adjusting screw -1-.



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- Level the bubble level -B- using the adjusting screw -2 and 3- in the scale.



- Adjust the height of the reflector mirror with the crank -arrow-, so that the laser beam is in the vertical center of the sensor lens.
- If necessary, reposition the reflector mirror at the side on the calibration beam until the laser beam is in the horizontal center of the sensor lens.
- Turn the fine adjustment screw -4- until the display on the wheel alignment computer is within the tolerance range.
- Using the laser beam on the reflector mirror, check again if the laser beam contacts the center of the sensor lens. If necessary align the reflector mirror again.

Perform any subsequent work using the Vehicle Diagnostic Tester:

The ⇒ Vehicle diagnostic tester is connected.

- Select the **Diagnostic** mode and start the diagnosis.
- Select the **Test plan** tab.
- Select the **Select individual test** button and select the following tree structure consecutively:
 - ◆ Body
 - ◆ Electrical system
 - ◆ 01 - OBD-capable systems
 - ◆ 13 - Distance regulation -J428
 - ◆ 13 - Distance Regulation Control Module, functions
 - ◆ 13 - Adjustment

Follow the instructions on the screen to perform the adjustment.



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4 Driver Assistance Systems Front Camera

⇒ [A4.1 ssistance Systems Front Camera, Calibrating", page 449](#)

4.1 Driver Assistance Systems Front Camera, Calibrating

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester with its diagnostic cable
- ◆ Setting Device - Basic Set -VAS6430/1A-



- ◆ Wheel Alignment Computer



Note

- ◆ *Check if the Driver Assistance Systems Front Camera - R242- is seated correctly in the bracket.*
- ◆ *Perform a visual inspection to see if the camera visual area is free.*
- ◆ *Check the DTC memory and correct any malfunctions before beginning the calibration.*

There are Two Choices for Calibrating:

The "quick access"

This procedure should be selected for the following activities if only the calibration will be performed.

- ◆ "No or incorrect basic setting/adaptation" is stored actively in the DTC memory.
- ◆ the Driver Assistance Systems Front Camera -R242- was removed and installed or replaced,
- ◆ the windshield is replaced or removed,
- ◆ On vehicles with electronic damping (Audi magnetic ride), the control position was reprogrammed.

The "complete alignment"

This procedure should be selected for the following activities if a calibration and a wheel alignment will be performed.

- ◆ The rear axle toe was adjusted.
- ◆ the vehicle suspension was changed, for example, changing from standard to Sport suspension.



Note

Both procedures are programmed in the wheel alignment computer. The respective procedure is performed automatically. It is only necessary to select the appropriate program for the procedure that will be performed.

Note the preparation work for calibrating assistance systems. Refer to ⇒ [W2.4 ork for Calibrating Driver Assistance Systems](#), page 415 .

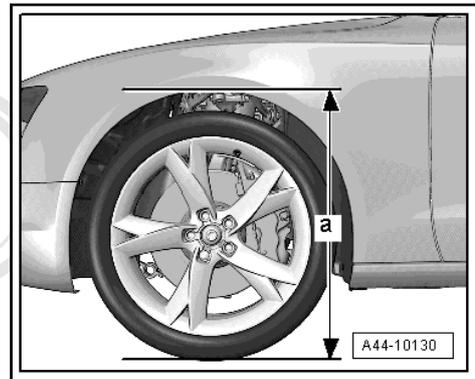
Calibration without a previous axle alignment

- Select the front camera calibration procedure in the alignment computer.
- Attach the quick-action clamps to all four wheels.
- Mount the measurement sensor to the rear wheels.
- Perform a wheel run-out compensation on the rear wheels.

Calibration with a previous axle alignment

- Connect the battery charger. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Charging.
- Position the wheels so that they are straight.
- Connect the Vehicle Diagnostic Tester to the vehicle and guide the diagnostic cable through the open window.
- Turn off all vehicle exterior lamps.
- Close all vehicle doors.

Calibrating/adjusting procedure with or without a previous axle alignment

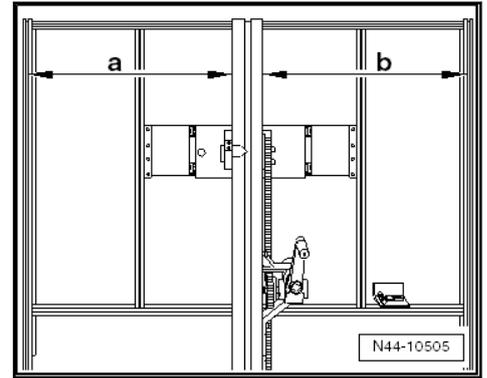


- Determine and then note the body height -a- at all four wheels in the center of the wheel between the wheel contact surface and the lower edge of the fender.

- Select the front camera calibration procedure in the alignment computer.

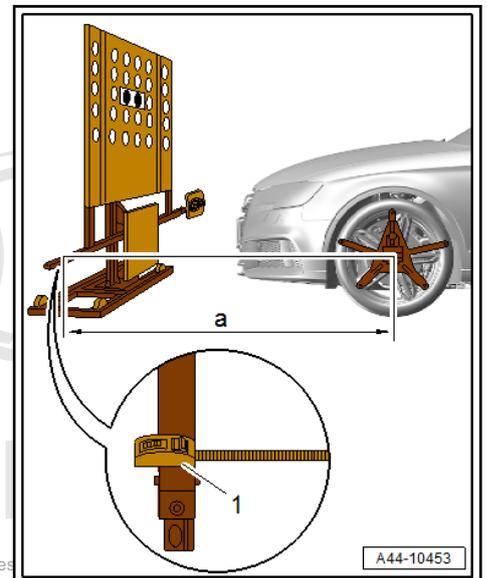
- Make sure the calibration board is positioned in the center and is locked in place.

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Dimension a = b

- Position the Setting Device Basic Set -VAS6430/1A- at a distance of -A- 150 cm \pm 2.5 cm from the center of the wheel hub on the front wheels to the beam on the Setting Device Basic Set -VAS6430/1A- as shown.



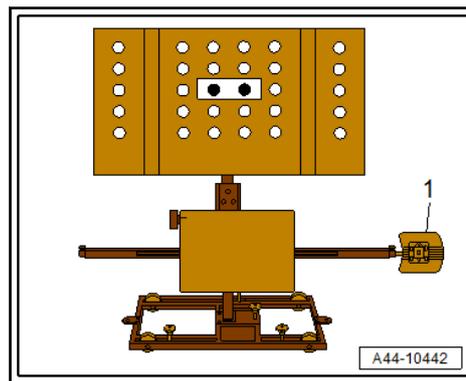
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1 - Measuring tape

 **Note**

The Setting Device Basic Set -VAS6430/1A- must not be moved on the calibration beam.

- Place the Camera -VAS6331/1- -1- for the ADR/ ACC adjustment on the Setting Device - Basic Set -VAS6430- on the right side and tighten.



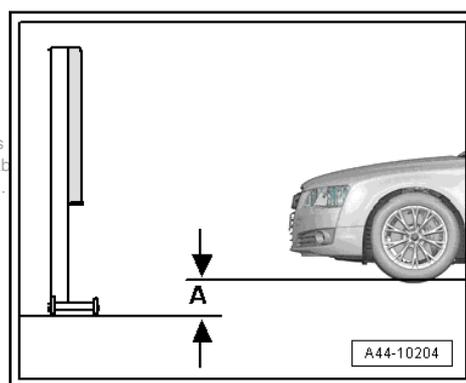
 **Note**

The alignment stand must be in the lowest level position for the next step.

- Enter the height value -A- between the Setting Device Basic Set -VAS6430/1A- contact patch and the wheel contact surface as shown in the illustration and enter it in the alignment computer.

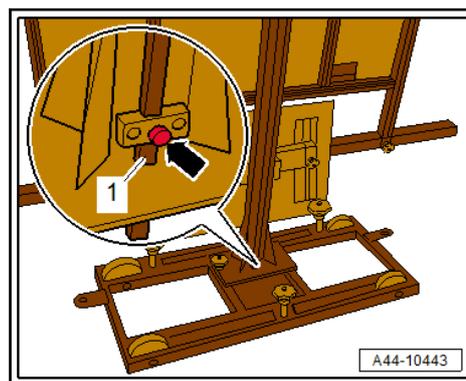


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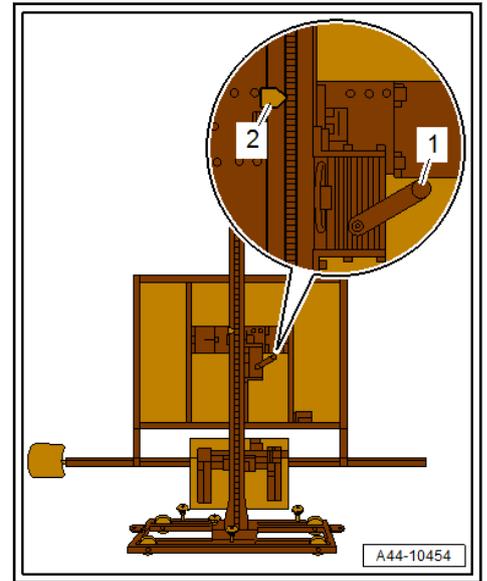


 **Note**

- ◆ *Height calibration board for all Audi SUV models: 1400 mm + height value -A-.*
 - ◆ *Height calibration board for all Audi non-SUV models: 1200 mm + height value -A-.*
- Loosen the bolt -arrow- and place the measuring bar -1- on the floor.



- Adjust the calibration board to the specified height -2- according to the wheel alignment computer using the crank -1-.

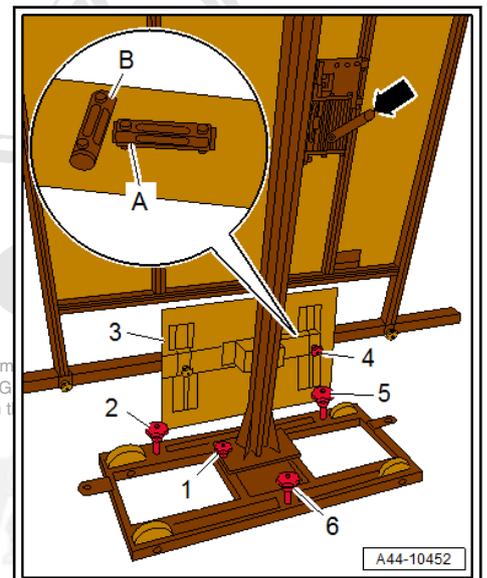


If the specified height was reached -2-, then the measuring bar must be pushed slightly upward and secured with the clamping screw.

 **Note**

If in later procedures the height of the calibration board must be corrected, make sure the measuring bar is touching the ground when this is being done.

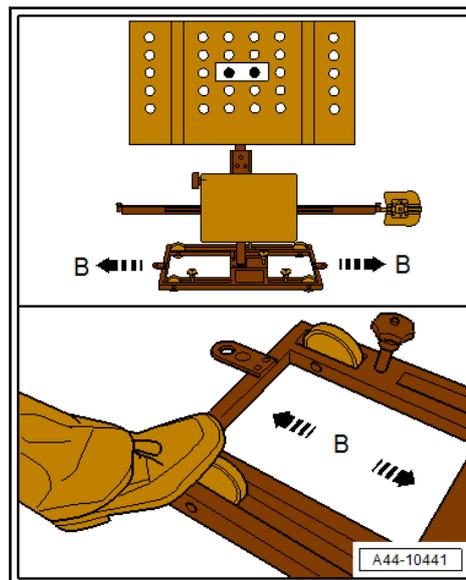
- Balance the bubble level -A- using the adjusting screw -1-.



The bubble level adjustment -A- serves to balance the ground conditions.

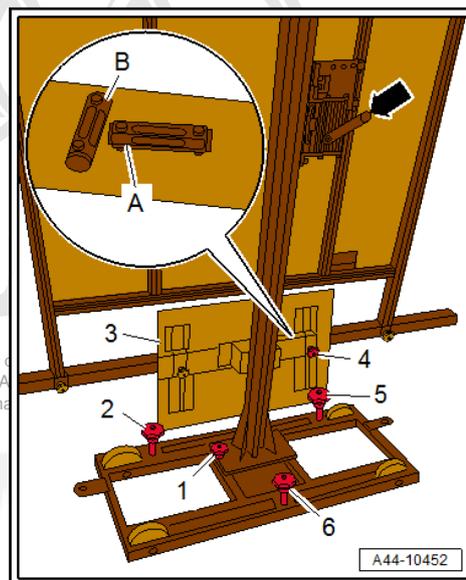
- Move the Setting Device Basic Set -VAS6430/1A- sideways in direction of -arrow B- until the display on the alignment computer is within the tolerance range.

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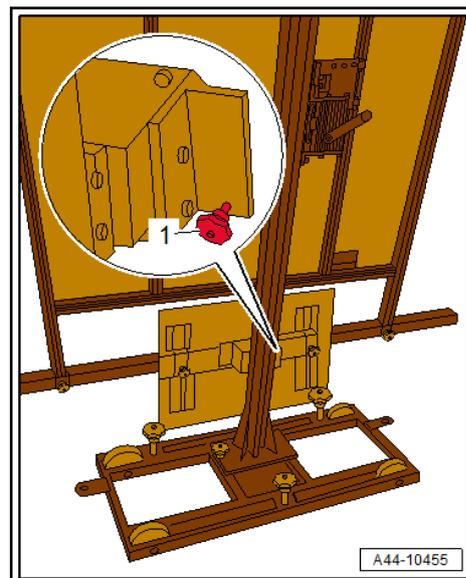


- Secure the Setting Device Basic Set -VAS6430/1A- by tightening the bolts -2 and 3- slightly. (This prevents the Setting Device Basic Set -VAS6430- from rolling away).

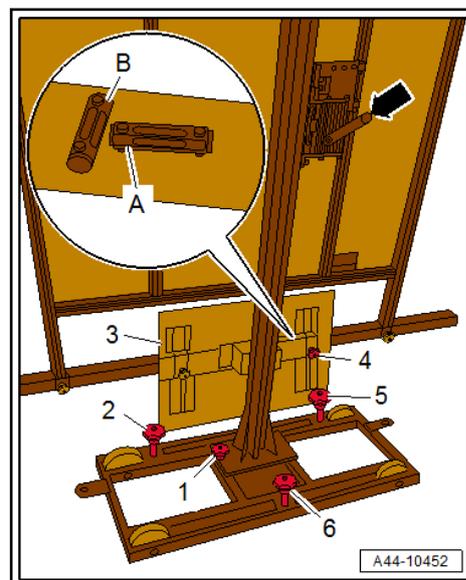
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- Turn the fine adjustment screw -1- until the display on the wheel alignment computer is within the tolerance range.



- Balance the bubble level -A- using the adjusting screw -1-.



- Level the bubble level -B- using the adjusting screw -2 and 3- in the scale.

 **Note**

Because small height changes can result after adjusting the bubble levels, the height of the calibration board must be checked again. Refer to ⇒ [page 453](#).

Perform any subsequent work using the Vehicle Diagnostic Tester:

The ⇒ Vehicle diagnostic tester is connected.

- Select the **Diagnostic** mode and start the diagnosis.

- Select the **Test plan** tab.

- Select the **Select individual test** button and select the following tree structure consecutively:

- ◆ Body
- ◆ Electrical system
- ◆ 01 - OBD-capable systems
- ◆ A5 - Driver Assistance Systems Front Camera - R242
- ◆ A5 - Driver Assistance Systems Front Camera, functions
- ◆ A5 - Control module calibrating

The ⇒ Vehicle diagnostic tester continues with the calibrating procedure from here.

Now follow the instructions on the screen to perform the calibration.

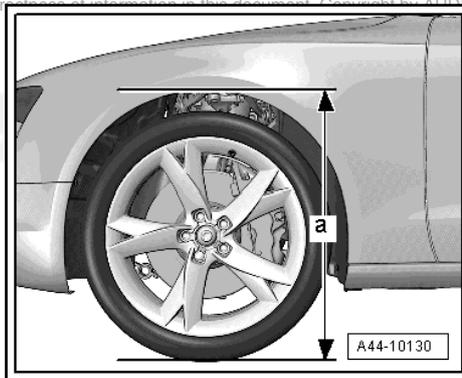


Note

Next, determine the height of the body.

- Enter the noted body height -a-.

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48 – Steering

1 Steering Wheel

⇒ [-1.1 Steering Wheel", page 457](#)

⇒ [W1.2 heel, Removing and Installing", page 459](#)

1.1 Overview - Steering Wheel



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1 - Locking Bracket

2 - Steering Column Electronics Control Module -J527-

- With Airbag Spiral Spring/Return Spring with Slip Ring -F138-
- Removing and installing. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Steering Column Switch Module; Overview - Steering Column Switch Module.

3 - Steering Wheel Airbag (4-Spoke Steering Wheel)

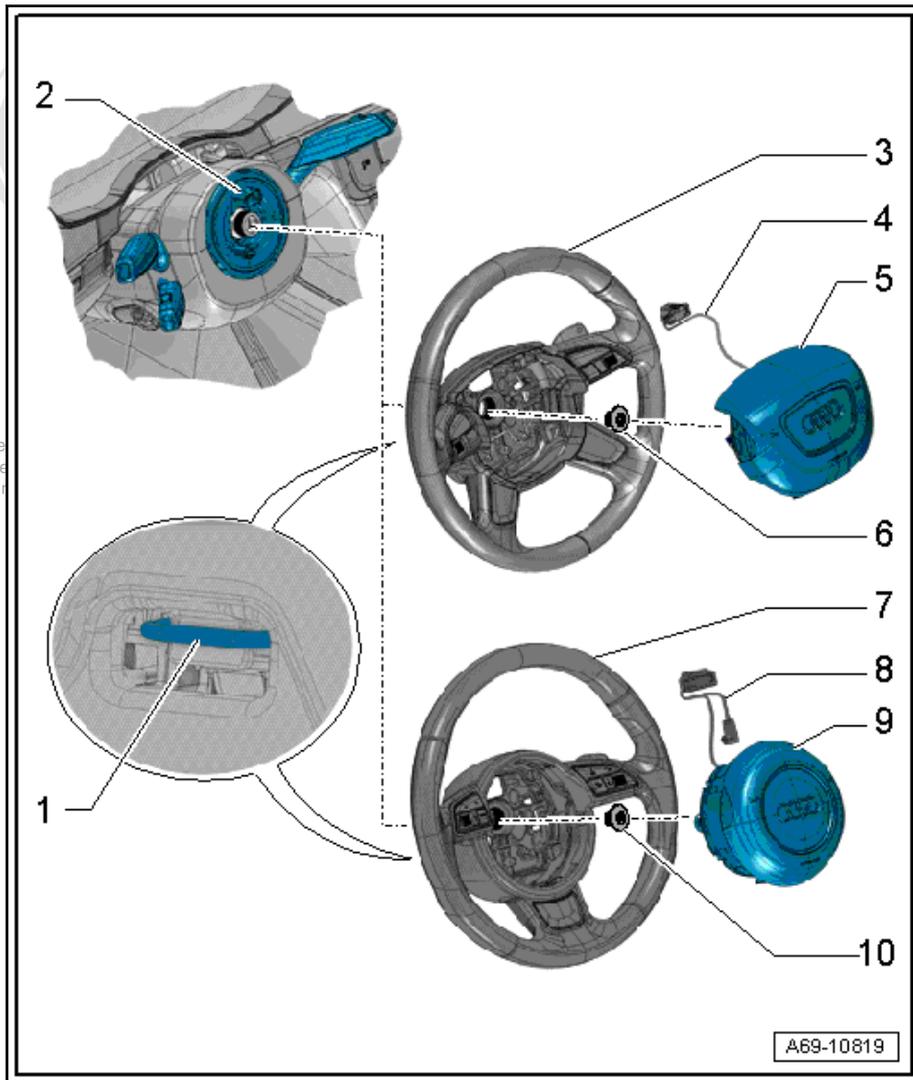
- There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Removing and Installing. Refer to ⇒ [W1.2 heel, Removing and Installing", page 459](#) .

4 - Wiring Harness

- For Driver Airbag Igniter -N95-

5 - Airbag Unit

- With Driver Airbag Igniter -N95- and Driver Airbag Igniter 2 -N250-



⚠ WARNING
 Follow the safety precautions when working on airbags. Refer to ⇒ Body Interior; Rep. Gr. 00; Safety Precautions; Safety Precautions when Working with Pyrotechnic Components.

- Removing and installing. Refer to ⇒ Body Interior; Rep. Gr. 69; Driver Side Airbag; Overview - Driver Side Airbag.

6 - Bolt

- 30 Nm +90°
- Always replace if removed

7 - Steering Wheel Airbag (3-Spoke-Steering Wheel)

- There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Removing and Installing. Refer to ⇒ [W1.2 heel, Removing and Installing", page 459](#) .

8 - Wiring Harness

- For Driver Airbag Igniter -N95-

9 - Airbag Unit

- With Driver Airbag Igniter -N95- and Driver Airbag Igniter 2 -N250-



- Removing and installing. Refer to ⇒ Body Interior; Rep. Gr. 69; Driver Side Airbag; Overview - Driver Side Airbag.

10 - Bolt

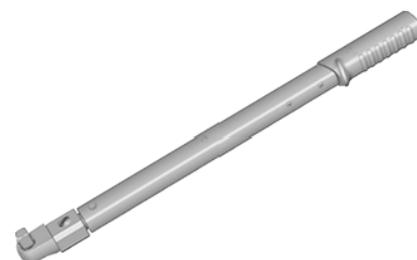
- 30 Nm +90°
- Always replace if removed

1.2 Steering Wheel, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench, 40-200Nm -VAG1332A-

V.A.G 1332

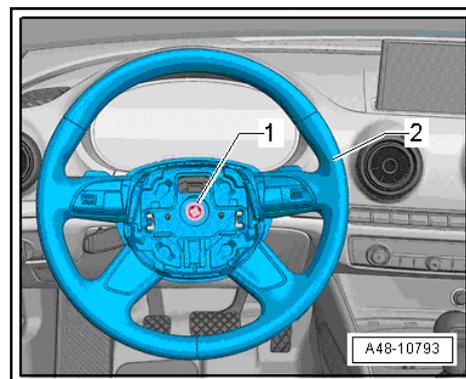


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Removing



- Position the steering wheel as far back as possible. Use the entire steering column adjustment range to do this.
- Remove the airbag unit. Refer to ⇒ Body Interior; Rep. Gr. 69; Driver Side Airbag; Overview - Driver Side Airbag.



Note

Removal and installation of steering wheel must take place in center position (wheels in straight-ahead position).

- Bring wheels in the straight position.
- Remove the bolt -1-.
- Mark the position of steering wheel/column with a felt-tip pen.
- Remove the steering wheel -2- from the steering column.

Installing

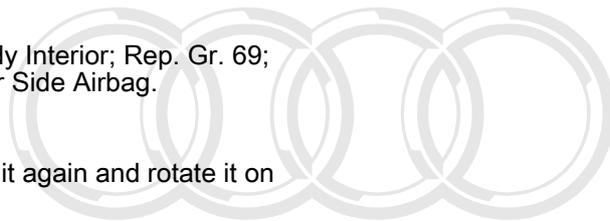
Install in reverse order of removal while noting the following:

Before positioning steering wheel, make sure wheels are in straight position.

- When installing a removed steering wheel, ensure that the markings on the steering column/steering wheel are aligned.
- When installing a new steering wheel (without a marking): mount the steering wheel in its center position (the steering wheel spokes must be horizontal and the wheels must be in the straight-ahead position).
- Install the airbag unit. Refer to ⇒ Body Interior; Rep. Gr. 69; Driver Side Airbag; Overview - Driver Side Airbag.
- Perform a road test.
- If steering wheel is crooked, remove it again and rotate it on steering column splines.

Tightening Specifications

- ◆ Refer to ⇒ [-1.1 Steering Wheel", page 457](#)



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2 Steering Column

⇒ [-2.1 Steering Column", page 461](#)

⇒ [C2.2 olumn, Handling and Transporting", page 463](#)

⇒ [C2.3 olumn, Checking for Damage", page 464](#)

⇒ [C2.4 olumn, Removing and Installing", page 465](#)

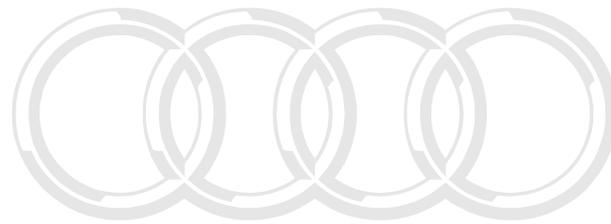
⇒ [S2.5 teering Column Lock Control ModuleJ764, Removing and Installing", page 471](#)

2.1 Overview - Steering Column



Note

- ◆ *Always replace self-locking nuts.*
- ◆ *Always replace corroded bolts/nuts.*
- ◆ *Always replace the bolts and nuts, which are tightened with an additional turn.*



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1 - Instrument Panel Central Tube

2 - Shear Bolt

- Loosening and tightening. Refer to ⇒ [S2.5 teering Column Lock Control ModuleJ764, Removing and Installing](#), page 471

3 - Steering Column

- Removing and Installing. Refer to ⇒ [C2.4 ol-umn, Removing and Installing](#), page 465 .
- The steering column must be engaged on the instrument panel central tube mounting bracket when installing (assembly aid).
- Different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).

4 - Bolt

- 20 Nm
- Always replace if removed

5 - Steering Lock Housing with Lock Cylinder and Ignition/Starter Switch

- Removing and installing. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Steering Column Switch Module; Overview - Steering Column Switch Module.

6 - Electronic Steering Column Lock Control Module -J764-

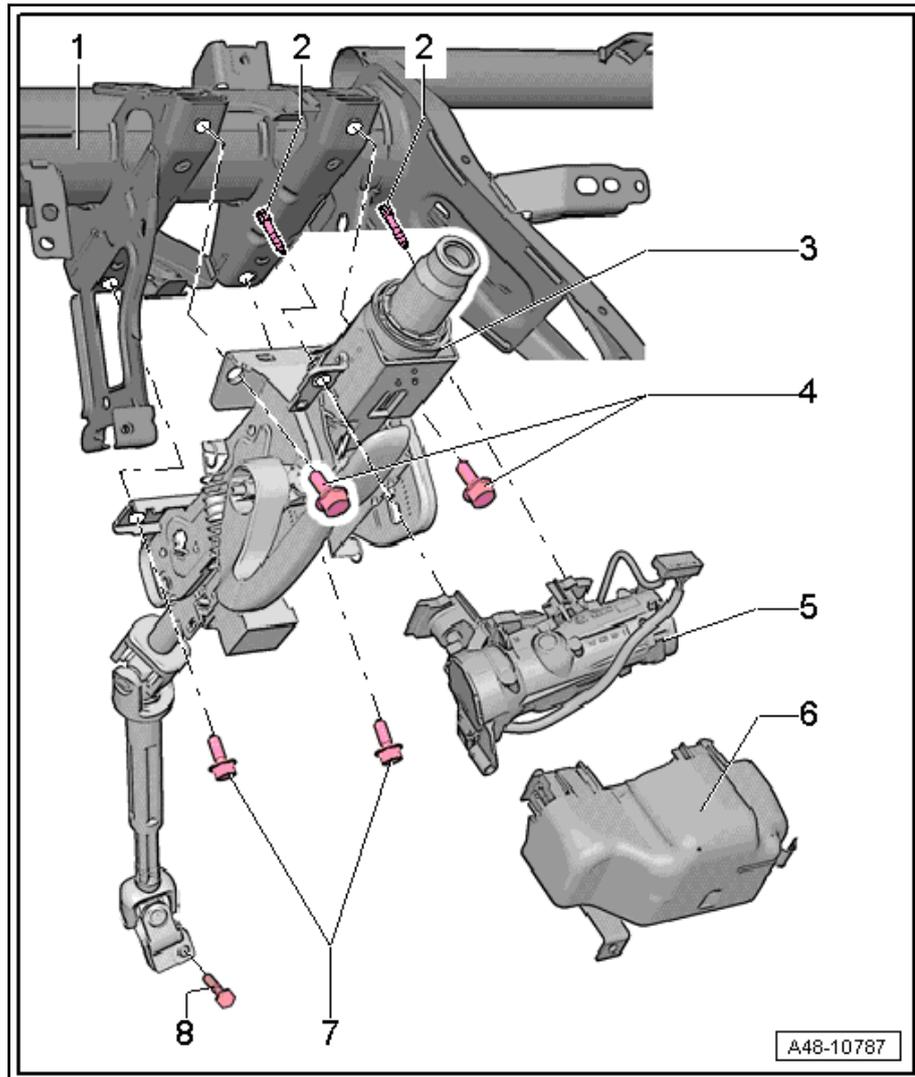
- Installed on vehicles with "Keyless Access Authorization System"
- Removing and Installing. Refer to ⇒ [S2.5 teering Column Lock Control ModuleJ764, Removing and Installing](#), page 471 .

7 - Bolt

- 20 Nm
- Always replace if removed

8 - Bolt

- 20 Nm +90°
- Always replace if removed
- Clean the threaded hole (for example, using a thread tap) before installing the new bolt.



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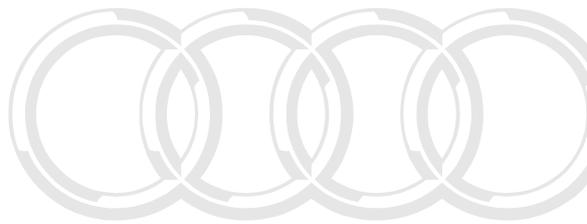
2.2 Steering Column, Handling and Transporting



WARNING

- ◆ *The steering column must always be handled correctly.*
- ◆ *Incorrect handling of steering column may cause damage to steering column and therefore lead to a safety risk.*

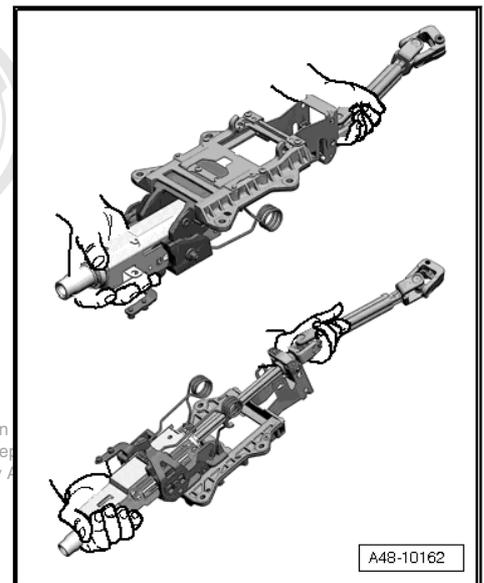
Correct Handling and Transport of Steering Column



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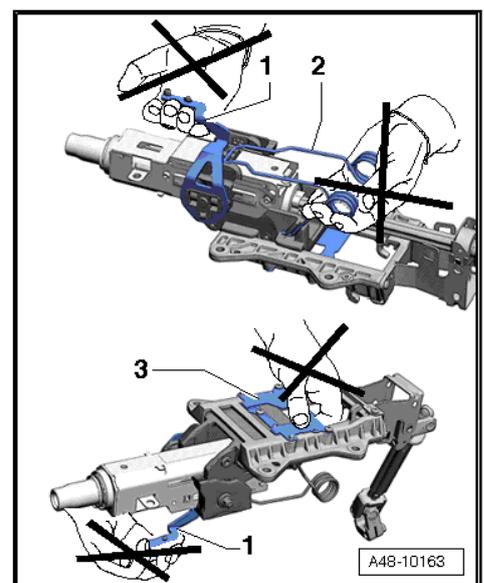
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erWin



- Transport steering column using two hands.
- Hold the steering column at upper steering rod tube and in area of upper universal joint.

Incorrect Handling of Steering Column

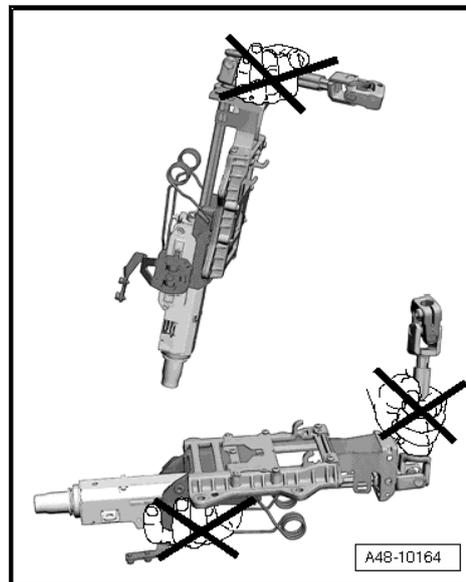


Transporting at the following components leads to damaging to steering column:



- 1 - Clamping Lever
- 2 - Weight Compensation Springs
- 3 - Deformation Element

Damage to universal joint bushings on lower steering column bushing due to:



- Holding and carrying the steering column with a hand on the connecting shaft
- Bending joints more than 90°

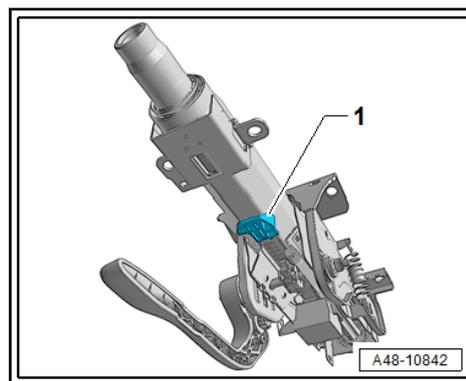
2.3 Steering Column, Checking for Damage

Visual Check

- Check whether parts of steering column indicate damage.
- Check the steering column end stop -1- for secure fit and damage.



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Note

If the steering column end stop is loose, damaged or missing, the steering column must be removed.

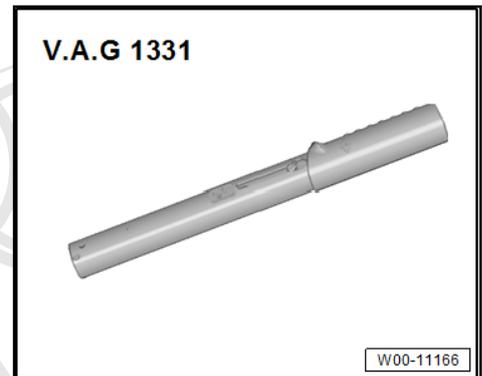
Function Test

- Check whether steering column can be turned without catching or difficulty of movement.
- Check if the steering column can be adjusted with respect to length and height.

2.4 Steering Column, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench, 6-50Nm -VAG1331A-



Removing

The steering column is delivered only as a complete replacement part. Service is not possible.

The steering lock housing can be removed and installed. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Steering Column Switch Module; Overview - Steering Column Switch Module.

The Electronic Steering Column Lock Control Module -J764- can be removed and installed. Refer to ⇒ [S2.5 Steering Column Lock Control Module J764, Removing and Installing](#), page 471 .

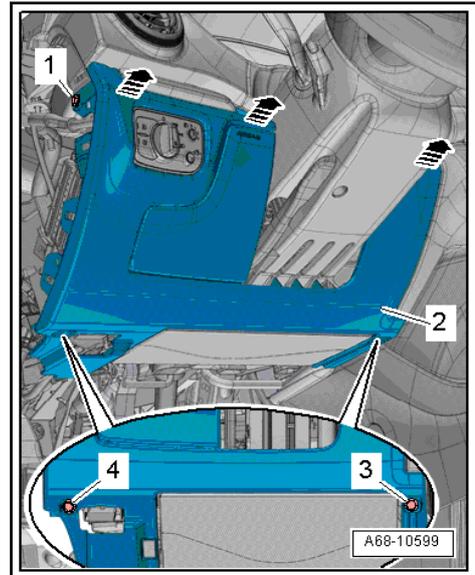
- Bring wheels in the straight position.
- Pull the lever downward beneath steering column.
- Push the steering column as far down as possible and remove it.
- Remove the steering wheel. Refer to ⇒ [W1.2 wheel, Removing and Installing](#), page 459 .



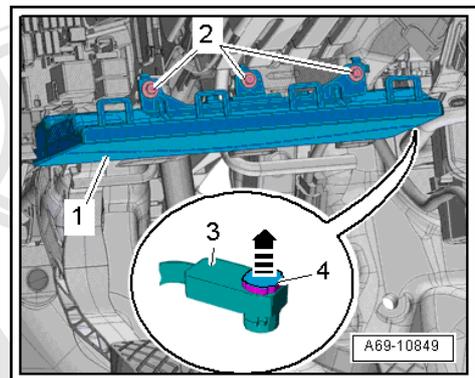
WARNING

Follow the safety precautions when working on airbags. Refer to ⇒ Body Interior; Rep. Gr. 00; Safety Precautions; Safety Precautions when Working with Pyrotechnic Components.

- Remove the instrument panel cover on the driver side -2-. Refer to ⇒ Body Interior; Rep. Gr. 68; Storage Compartments/Covers; Overview - Driver Side Instrument Panel Cover.



- Remove the driver side knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69; Knee Airbags; Overview - Knee Airbag.



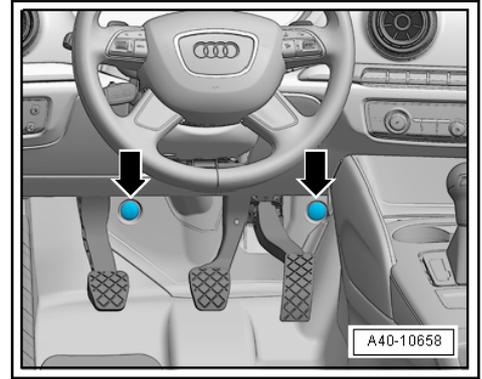
Caution

There is a risk of damaging the surface of the knee airbag from mechanical stress.

- ◆ *Perform a visual inspection after work is completed to check if the knee airbag surface is damaged on the perforation especially.*

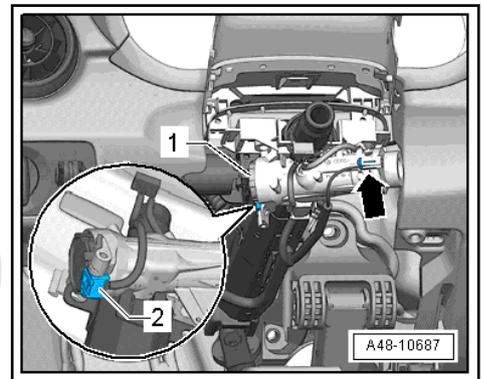
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- Remove the footwell vent under the steering column. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Air Duct; Overview - Passenger Compartment Air Ducts and Air Distribution.
- Remove the securing nuts -arrows- and remove the footwell trim panel.



- Remove the steering column switch module. Refer to
 => Electrical Equipment; Rep. Gr. 94; Steering Column
 Switch Module; Overview - Steering Column Switch Module.

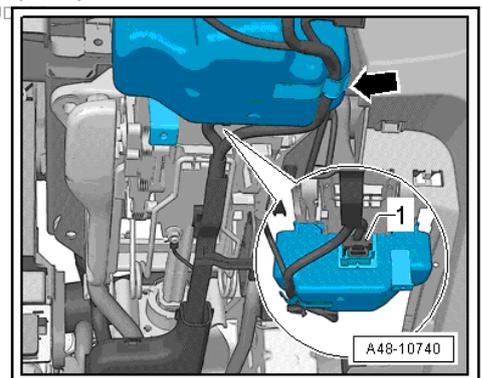
Vehicles with Ignition Switch



- Remove the connector -arrow- from the Anti-Theft Immobilizer Reader Coil -D2-.
- Remove the connector -2- from the ignition/starter switch -1-.
- Free up the wires.

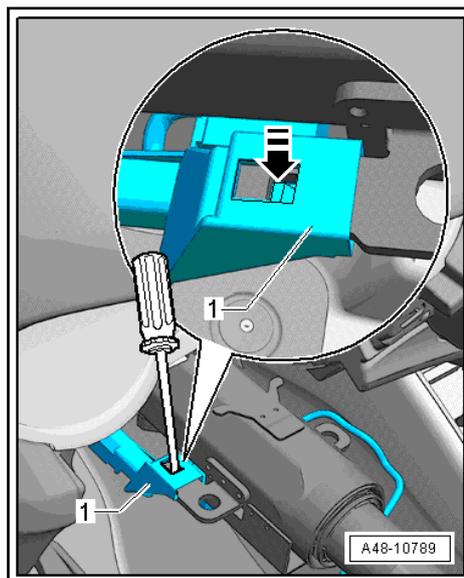
Vehicles with "Keyless Access Authorization System"

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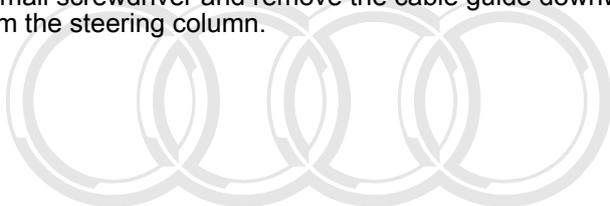


- Release the connector -1- and remove it from the Electronic Steering Column Lock Control Module -J764-.
- Free up the wire at the retaining bracket -arrow-.

Continuation for All



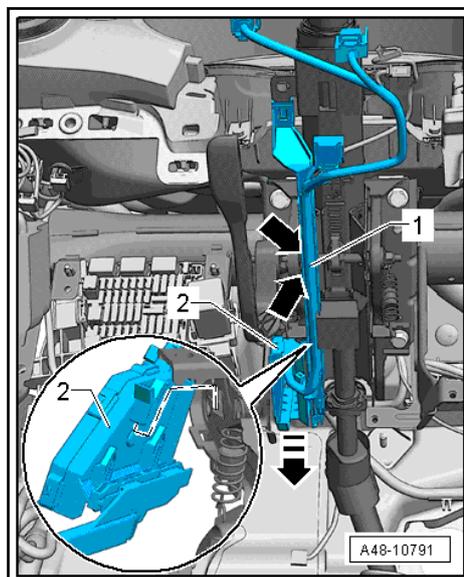
- Disengage the cable guide -1- from the steering column. To do so, release the tab in direction of -arrow- using a small screwdriver and remove the cable guide forward from the metal retainer.
- Disengage the cable guide -1- from the steering column. To do so, release the tabs on the cable guide -arrows- using a small screwdriver and remove the cable guide downward from the steering column.



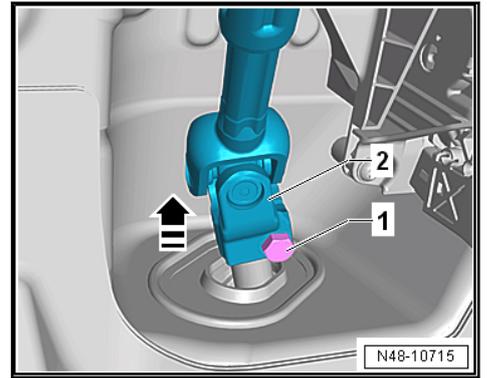
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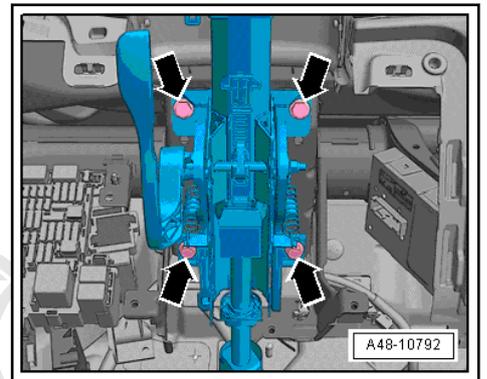
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- Release the lower cable bracket -2- and remove it downward.
- Set the wire for the steering column aside.
- Remove the screw -1- for the universal joint -2- and then remove the universal joint in direction of -arrow-.



- Remove the bolts -arrows-. disengage and remove the steering column upward from the mounting bracket.

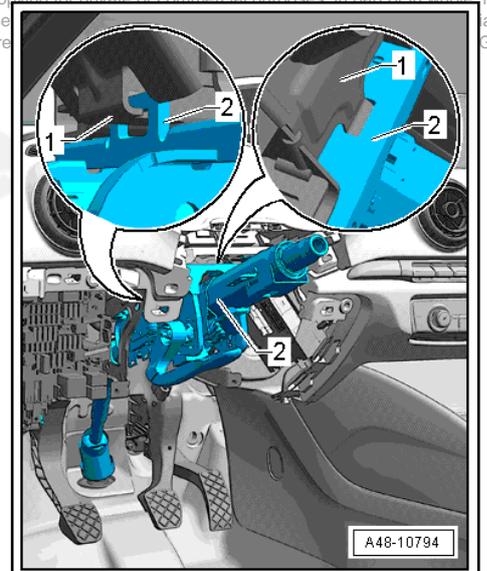


Caution

Refer to ⇒ ***C2.2 column, Handling and Transporting***, page ***463*** for the correct handling and transport of steering column.

Installing

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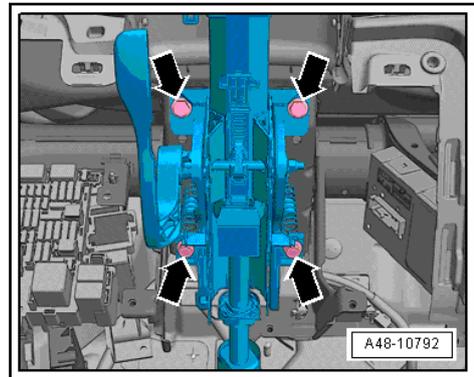


Install in reverse order of removal while noting the following:

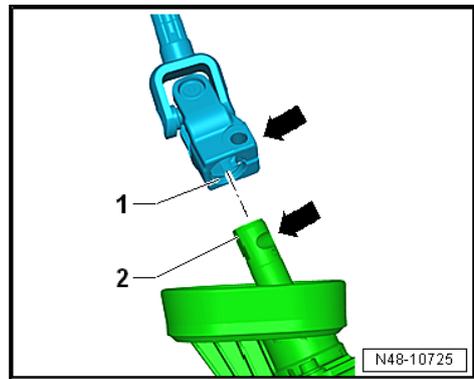
- Engage the steering column -2- in the assembly aids on the mounting bracket -1- at the top and bottom.



- Align the steering column to the mounting bracket and install.
- Tighten the upper steering column bolts -arrows-.



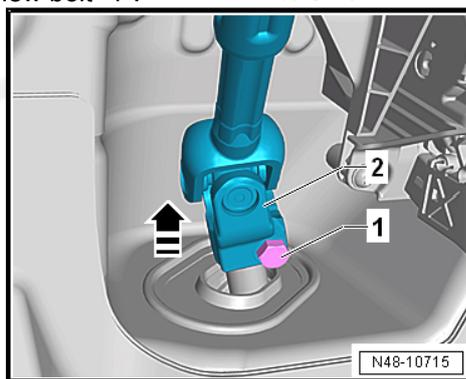
- Tighten the lower steering column bolts -arrows-.
- Mount the flat side on the universal joint -1- onto the flat area of the steering gear -2-.



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- The opening on the steering gear must exactly align with the round hole for the bolt -arrows-.
- Clean the threaded hole (for example, using a thread tap) before installing the new bolt -1-.

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WARNING

Using the installed bolt -1-, make sure the universal joint is seated correctly by pulling it. Tighten the bolt.

- After installing the steering column switch module, the Steering Angle Sensor -G85- must be calibrated by starting the respective program on the ⇒ Vehicle diagnostic tester.

Tightening Specifications

- ◆ Refer to ⇒ [-2.1 Steering Column](#), page 461
- ◆ Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Air Routing; Overview - Air Routing and Air Distribution in Vehicle Interior.
- ◆ Refer to ⇒ Body Interior; Rep. Gr. 69; Knee Airbags; Overview - Knee Airbag
- ◆ Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Steering Column Switch Module; Overview - Steering Column Switch Module.

2.5 Electronic Steering Column Lock Control Module -J764-, Removing and Installing

Special tools and workshop equipment required

- ◆ Angle hand drill
- ◆ 8.5 mm diameter drill

Removing

If a control module is being replaced, then select the function "Replace" for the respective control module on the ⇒ Vehicle Diagnostic Tester in "Guided Functions".

Follow the instructions on the screen.

- Bring wheels in the straight position.
- Pull the lever on the side of the steering column downward.
- Push the steering column as far down as possible and remove it.
- Push the lever on the side of the steering column upward again.
- Remove the steering column switch module. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Steering Column Switch Module; Overview - Steering Column Switch Module.



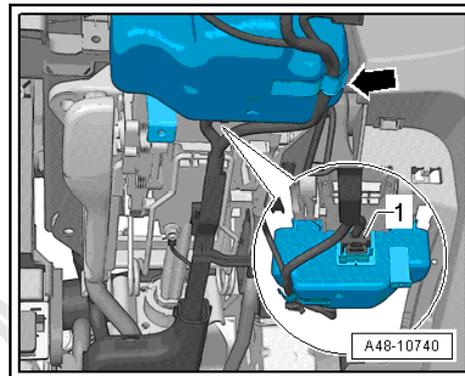
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The shavings must not get into the steering column.

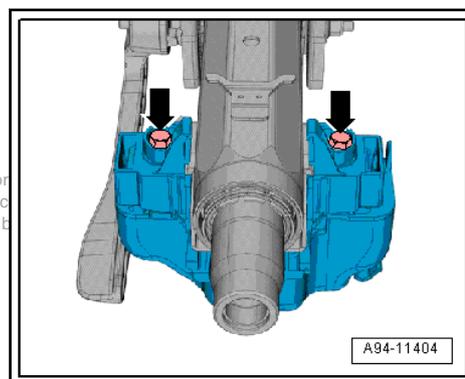
Protect the steering column from any falling shavings using, for example, a cloth.

- Release the connector -1- and remove it from the Electronic Steering Column Lock Control Module -J764-.



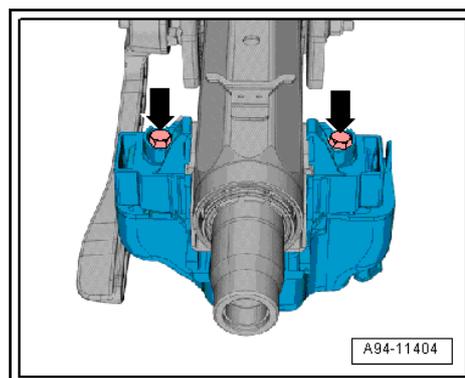
- Free up the wire at the retaining bracket -arrow-.
- Drill out the shear bolts -arrows- using an angle hand drill and an 8.5 mm diameter drill bit.

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- Remove any shavings with a brush.
- Carefully remove the Electronic Steering Column Lock Control Module -J764- from the steering column.

Installing



Install in reverse order of removal. Note the following:

- Secure the Electronic Steering Column Lock Control Module -J764- with new shear bolts -arrows-.
- Tighten the shear bolts -arrows- evenly until the bolt heads shear off.
- If the Electronic Steering Column Lock Control Module -J764- was replaced, then the Electronic Steering Column Lock Control Module -J764- must be adapted by selecting the "Replace" function on the ⇒ Vehicle Diagnostic Tester in "Guided Functions".

3 Steering Gear

⇒ [-3.1 Steering Gear", page 473](#)

⇒ [G3.2 ear, Servicing", page 475](#)

⇒ [G3.3 ear, Handling and Transporting", page 477](#)

⇒ [G3.4 ear, Removing and Installing", page 478](#)

⇒ [R3.5 emoving and Installing", page 480](#)

⇒ [R3.6 od, Removing and Installing", page 483](#)

⇒ [R3.7 od End, Removing and Installing", page 486](#)

3.1 Overview - Steering Gear

If the components of the front axle (axle components and/or wheel rim) are replaced if damaged, the tightening specifications on the following threaded connections must be checked, when these threaded connections are not replaced during the repair procedure.

- ◆ Testing torque 80 Nm for nut -item 4- ⇒ [Item 4 \(page 474\)](#) and -item 15- ⇒ [Item 15 \(page 475\)](#) on the tie rod end -item 1- ⇒ [Item 1 \(page 476\)](#) and -item 8- ⇒ [Item 8 \(page 476\)](#) .
- ◆ Testing torque 55 Nm for tie rod lock nut -item 2- ⇒ [Item 2 \(page 476\)](#) and -item 9- ⇒ [Item 9 \(page 476\)](#) .

Until the testing torque is reached in the tightening direction turning of the connection is not permitted.



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1 - Bolt

- 70 Nm +90°
- Always replace if removed

2 - Subframe

3 - Power Steering Gear

- Different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- With integrated Power Steering Control Module -J500- and Steering Angle Sensor -G85-
- Check the Power Steering Control Module -J500- and Steering Angle Sensor -G85- in Guided Fault Finding using the ⇒ Vehicle diagnostic tester.
- The Power Steering Control Module -J500- and Steering Angle Sensor -G85- cannot be replaced individually. Replace the steering gear if faulty.
- Steering Gear, Removing and Installing. Refer to ⇒ [G3.4 ear, Removing and Installing](#), page 478 .

4 - Nut

- 20 Nm +90°
- Replace after removing
- Counterhold on the tie rod end inner contact to prevent it from rotating when tightening.

5 - Right Wheel Bearing Housing

6 - Heat Shield

- Depending on the engine installed, there are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).

7 - Bolt

- 6 Nm
- Depending on the engine installed, three or four are installed. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- For securing the electrical wire

8 - Threaded Bushing

- Quantity: 2

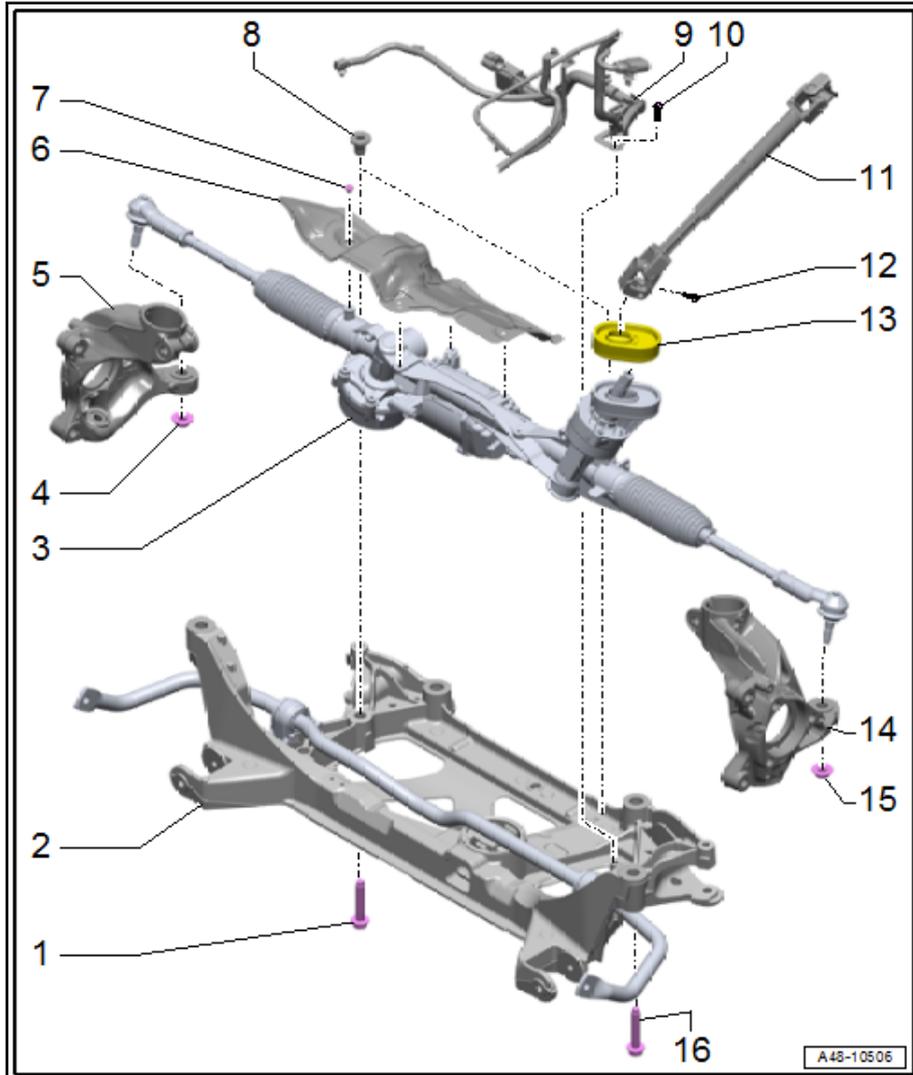
9 - Wire

10 - Expanding Clip

11 - Steering Shaft with Universal Joint

12 - Bolt

- Always replace if removed
- Tightening specification: refer to -item 8- ⇒ [Item 8 \(page 462\)](#) .
- Clean the threaded hole (for example, using a thread tap) before installing the new bolt.



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Refer to the ⇒ Electronic Parts Catalog (ETKA).

13 - Seal

- Replace if damaged

14 - Left Wheel Bearing Housing

15 - Nut

- 20 Nm +90°
- Replace after removing
- Counterhold on the tie rod end inner contact to prevent it from rotating when tightening.

16 - Bolt

- 70 Nm +90°
- Always replace if removed

3.2 Steering Gear, Servicing

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1 - Right Tie Rod End

- Check the dust caps for damage and correct seating

2 - Nut

- 70 Nm
- When loosening and tightening, counterhold at the tie rod end

3 - Spring Clamp**4 - Boot**

- Removing and Installing. Refer to [R3.5 emoving and Installing](#), page 480 .
- Check for damage
- Must not be twisted after toe is adjusted

5 - Clamp

- Always replace if removed
- Install new clamp using Locking Pliers - VAS6199-

6 - Tie Rod

- 100 Nm
- If faulty, replace with the tie rod end
- Removing and Installing. Refer to [R3.6 od, Removing and Installing](#), page 483 .

7 - Steering Gear Housing**8 - Left Tie Rod End**

- Check the dust caps for damage and correct seating

9 - Nut

- 70 Nm
- When loosening and tightening, counterhold at the tie rod end

10 - Spring Clamp**11 - Boot**

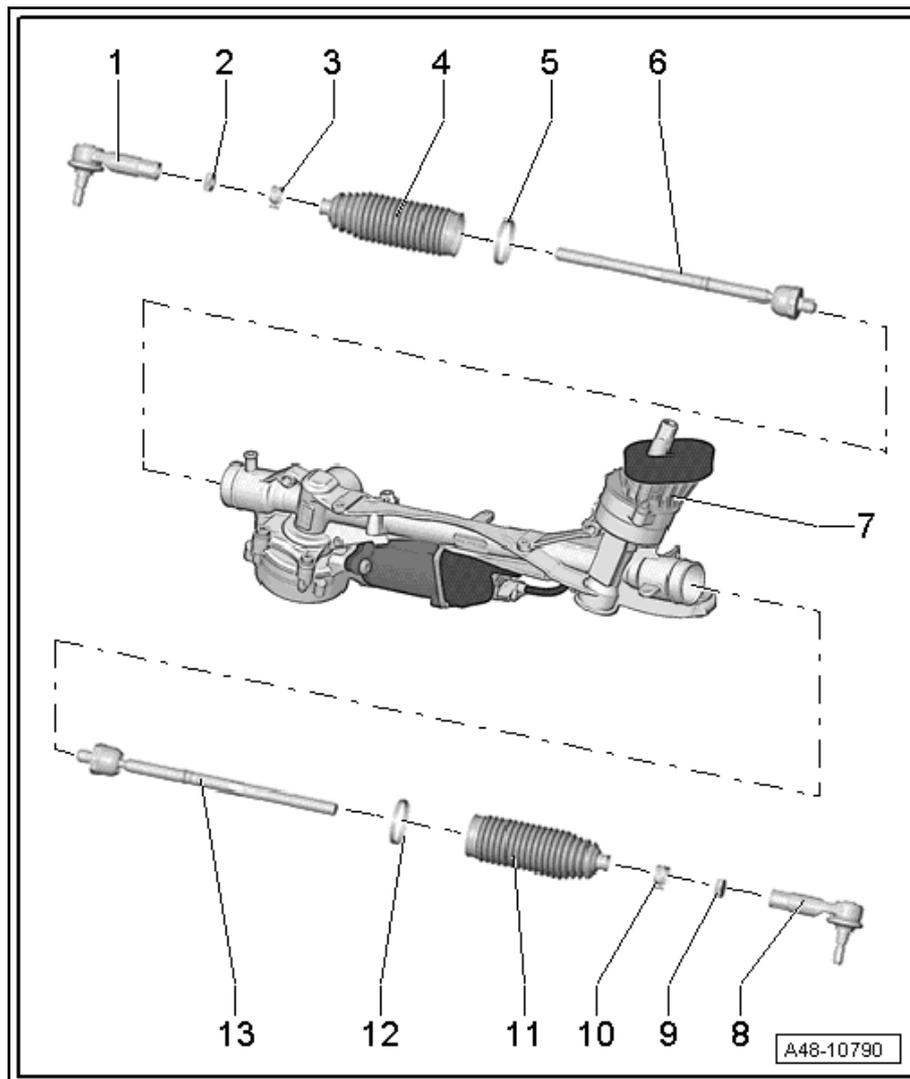
- Removing and Installing. Refer to [R3.5 emoving and Installing](#), page 480 .
- Check for damage
- Must not be twisted after toe is adjusted

12 - Clamp

- Always replace if removed
- Install new clamp using Locking Pliers -VAS6199-

13 - Tie Rod

- 100 Nm
- If faulty, replace with the tie rod end
- Removing and Installing. Refer to [R3.6 od, Removing and Installing](#), page 483 .



3.3 Steering Gear, Handling and Transporting

Special tools and workshop equipment required

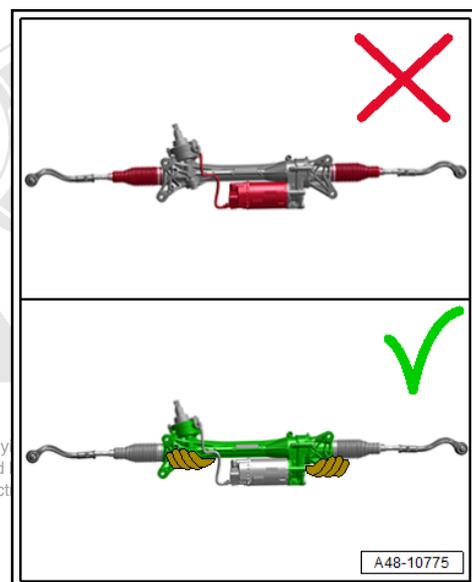
- ◆ Safety Gloves

 **WARNING**

Damage to the steering gear poses a safety risk.

- ◆ *The steering gear must always be handled correctly.*

Steering Gear, Handling And Transporting Incorrectly



Transporting at the components colored in “red” causes damage to the steering gear.

- Boot: damaged when pressed, grabbed, or placed on hard surfaces.
- Engine: treating harshly or placing on hard surfaces may damage the connectors and/or wires.

The steering gear must not be under any mechanical load:

- ◆ A steering gear that has fallen onto a hard surface or shows any sign of damage must not be installed in the vehicle.

Steering Gear, Handling And Transporting Correctly

 **WARNING**

Risk of injuring the hands.

- ◆ *Wear safety gloves.*

- Transport the steering gear using both hands.
- Only grab the steering gear at the areas colored in “green”.

3.4 Steering Gear, Removing and Installing

Special tools and workshop equipment required

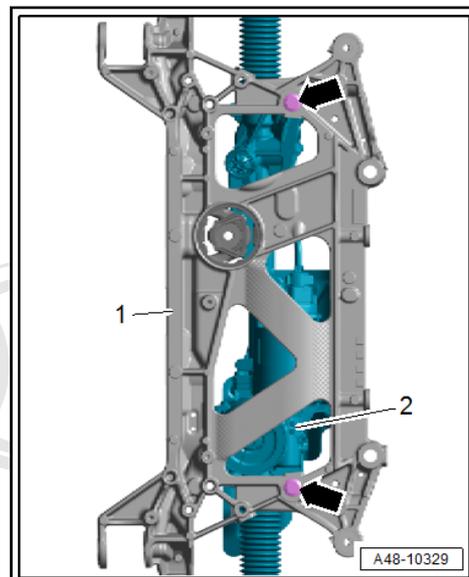
- ◆ Torque Wrench, 6-50Nm -VAG1331A-



- ◆ Torque Wrench, 40-200Nm -VAG1332A-



Removing



- Remove the subframe with the steering gear. Refer to [w2.5 ith Steering Gear, Removing and Installing](#), page 51 .
- Remove the bolts -arrows-.
- Remove steering gear from subframe.

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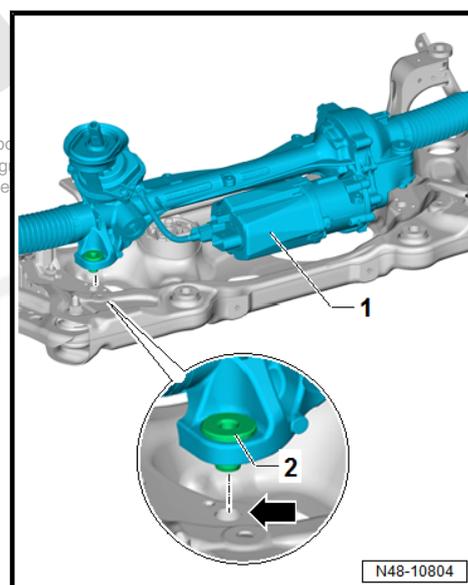
Installing

Install in reverse order of removal. Note the following:

Note

- ◆ *Coat the seal on the steering gear with lubricant such as soft soap before installing the steering gear.*
 - ◆ *After attaching the steering gear to the drive axle, make sure that the seal on the steering gear rests on the mounting plate without kinks and seals the opening to the footwell correctly. Water leak and/or noises may be the result.*
 - ◆ *Make sure sealing surfaces are clean.*
- Position the steering gear -1- on the subframe.

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- The steering gear threaded sleeves -2- must be inserted into the subframe holes -arrow-.
- Position the steering gear bolts.
- Install the subframe with the steering gear. Refer to [⇒ w2.5 ith Steering Gear, Removing and Installing](#), page 51 .

Note

Make sure the ball joint boot is not damaged or twisted.

- If the steering gear was removed and reinstalled or if a new steering gear was installed, calibrate the Steering Angle Sensor -G85- by selecting the “Basic setting” function on the ⇒ Vehicle diagnostic tester.
- If a new steering gear was installed, the Power Steering Control Module -J500- must be adapted. ⇒ Vehicle diagnostic tester - function “Replacing the control module”
- If the steering gear was removed and reinstalled, a road test must be done to check the steering wheel position. If the steering wheel is crooked, then an axle alignment must be performed. Refer to [⇒ A2 lignment](#), page 412 .

- If a new steering gear was installed, an axle alignment must be performed. Refer to ⇒ [A2 alignment](#), page 412 .

Tightening Specifications

- ◆ Refer to ⇒ [-3.1 Steering Gear](#), page 473

3.5 Boot, Removing and Installing

Special tools and workshop equipment required

- ◆ Hose Clip Pliers -VAG1275A-



- ◆ Torque Wrench, 40-200Nm -VAG1332A-



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- ◆ Open Ring Wrench - 24mm -VAG1332/11-



◆ Locking Pliers -VAS6199-



Removing

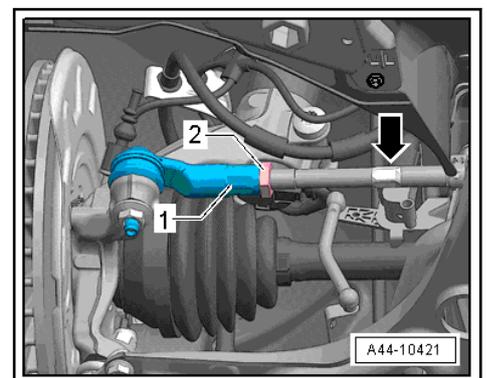
 **Caution**

There is a risk of destroying the steering gear from moisture and dirt getting inside when the boot is faulty.

- ◆ *There must be a visible film of grease present on the steering rack near the splines. If the film of grease is missing, replace the steering gear.*
- ◆ *Dirt must not enter through the faulty boot or get into the open steering gear when cleaning the steering gear and surrounding components, when removing the steering gear components or when greasing the steering gear.*

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- Follow the guidelines for clean working conditions. Refer to [⇒ f3.6 or Clean Working Conditions](#), page 8 .
- Turn the steering wheel into straight ahead position.
- Remove the wheel. Refer to [⇒ a1 nd Tires](#)”, page 411 .
- Clean outside of steering gear in area of boot.
- While doing this, no dirt must enter the steering gear through the faulty boot.
- Mark the location of the nut -2- on the tie rod.



- Loosen the nut -2- while counterholding the tie rod end -1-.
- Loosen the spring clamp -item 10- [⇒ Item 10 \(page 476\)](#) from the boot using the Hose Clip Pliers -VAG1275A- and slide onto the tie rod.
- Remove the clamp -item 5- [⇒ Item 5 \(page 476\)](#) and pull the boot off of steering gear housing.
- Now twist tie rod out of tie rod end.

- Remove the nut from the tie rod.
- Pull off the boot with spring clamp from tie rod.

Installing

Install in the reverse order of removal while noting the following:

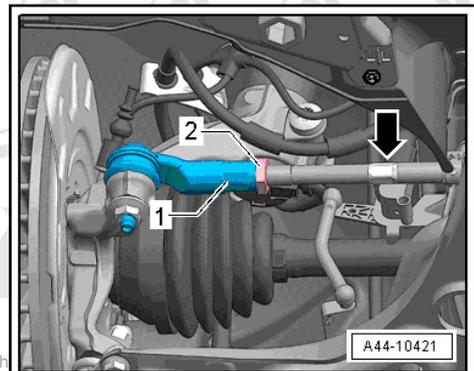


Caution

Risk of damaging the boot due to improper handling.

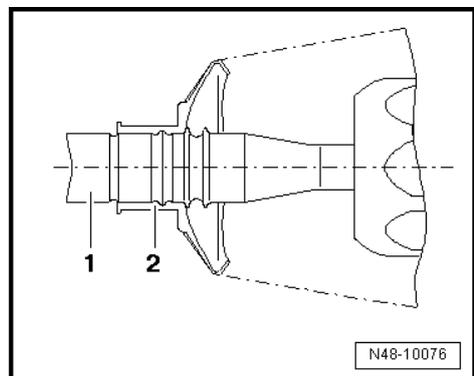
- ◆ **Do not crush the boot folds.**
- ◆ **Do not bring the boot into contact with hard or sharp objects.**

- Check the seating of the boot on the steering gear for damage. Replace the steering gear if the seal seat is damaged.
- Turn the steering wheel into straight ahead position.
- Guide new clamp and boot onto the tie rod.
- Install the tie rod up to the marking made during removal.

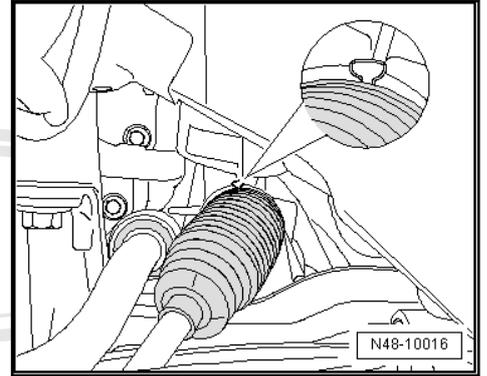


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- Tighten the lock nut -2- to tightening specification, while counterholding on tie rod end -1-.
- Lightly grease the sealing surface of the boot to the tie rod with grease from the repair kit.
- Slide the boot -2- onto tie rod -1- as shown.



- Secure the spring clamp on the boot using Hose Clip Pliers -VAG1275A-.
- Lightly grease the sealing surface of the boot to the steering gear housing with grease from the repair kit.
- Slide the boot onto steering gear housing.



- Tighten the new clamp using the Locking Pliers -VAS6199- to the extent shown.
- Perform a vehicle alignment. Refer to [⇒ A2 lignment”, page 412](#).
- Perform the basic setting for the Steering Angle Sensor -G85- on the ⇒ Vehicle diagnostic tester in “Guided Fault Finding”.
- The perform the basic setting to the steering on the ⇒ Vehicle diagnostic tester in “Guided Fault Finding”.

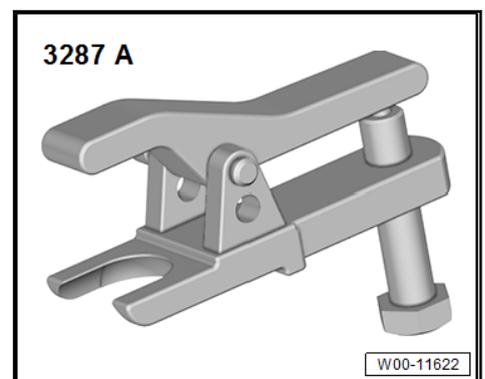
Tightening Specifications

- ◆ Refer to [⇒ G3.2 ear, Servicing”, page 475](#)
- ◆ Refer to [⇒ a1 nd Tires”, page 411](#)

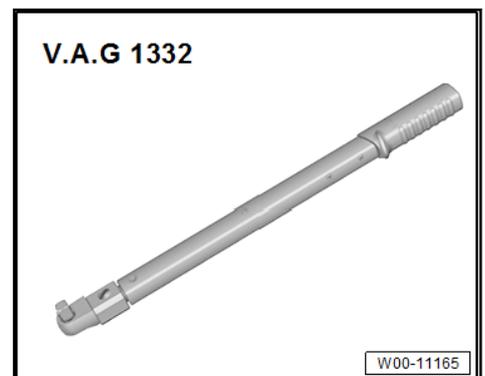
3.6 Tie Rod, Removing and Installing

Special tools and workshop equipment required

- ◆ Puller - Ball Joint -3287A-



- ◆ Torque Wrench, 40-200Nm -VAG1332A-

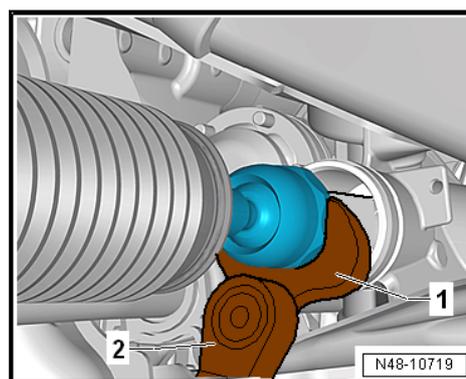


◆ Torque Wrench Insert - Open Jaw -VAG1923-



Removing

- Remove the boot. Refer to [⇒ R3.5 emoving and Installing”, page 480](#).
- Turn the steering as follows:
 - For the left tie rod, turn the steering to the right until stop
 - For the right tie rod, turn the steering to the left until stop
- Remove the tie rod.



- 1 - Torque Wrench Insert - Open Jaw -VAG1923-
- 2 - Torque Wrench, 40-200Nm -VAG1332A-



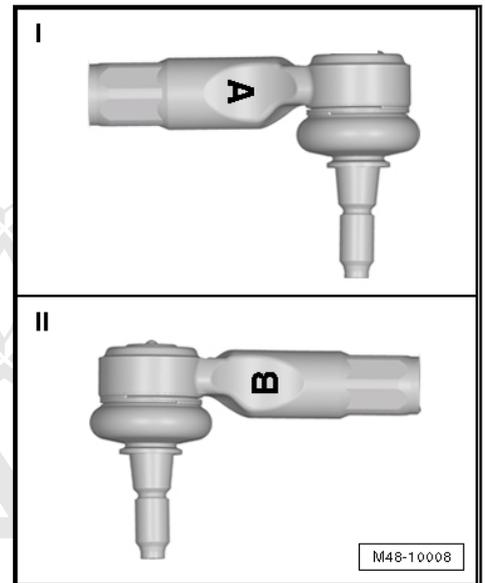
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Risk of destroying the steering gear with entering moisture and dirt with a faulty boot.

- ◆ ***Check the splines on the steering rack for a visible lubricating film.***
- ◆ ***If the film of grease is missing, replace the steering gear.***

Installing the Tie Rod



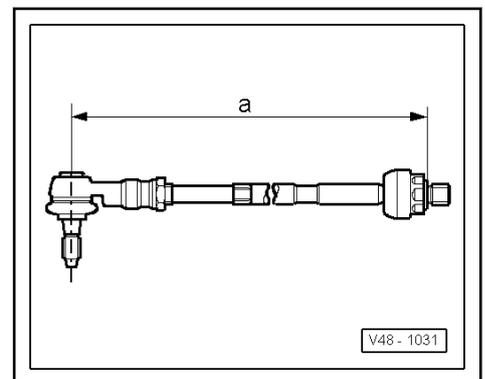
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- Make sure the correct tie rod end is installed on each side.

I - Right tie rod end identified with an "A"

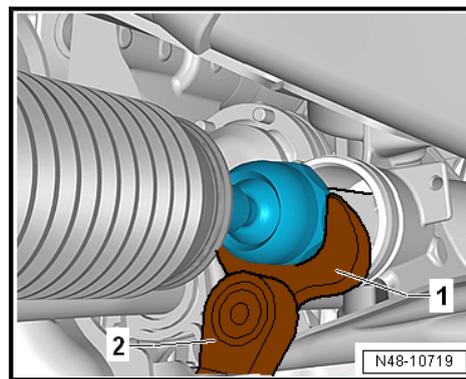
II - Left tie rod end identified with a "B"

- Turn the steering wheel into straight ahead position.
- Guide new clamp and boot onto the tie rod.
- Twist the tie rod far enough into tie rod end until dimension -a- is obtained.



Dimension -a- = 373 ± 1 mm

- Twist the tie rod into steering gear and tighten to tightening specification.



- 1 - Torque Wrench Insert - Open Jaw -VAG1923-
 - 2 - Torque Wrench, 40-200Nm -VAG1332A-
- Further installation is performed in reverse order of the removal.
- Install the boot. Refer to [⇒ R3.5 emoving and Installing](#), page 480 .
 - Perform a vehicle alignment. Refer to [⇒ A2 lignment](#) , page 412 .
 - Perform the basic setting for the Steering Angle Sensor -G85- using the ⇒ Vehicle diagnostic tester.
 - Perform a basic setting to the steering using the ⇒ Vehicle diagnostic tester.

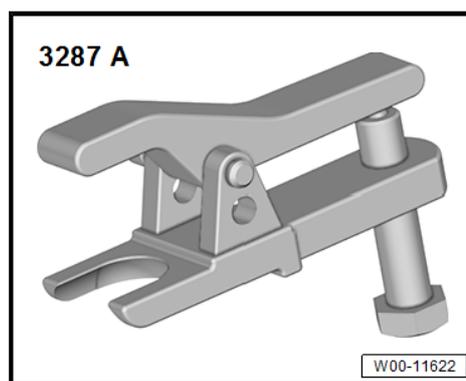
Tightening Specifications

- ◆ Refer to [⇒ G3.2 ear, Servicing](#) , page 475
- ◆ Refer to [⇒ -3.1 Steering Gear](#) , page 473

3.7 Tie Rod End, Removing and Installing

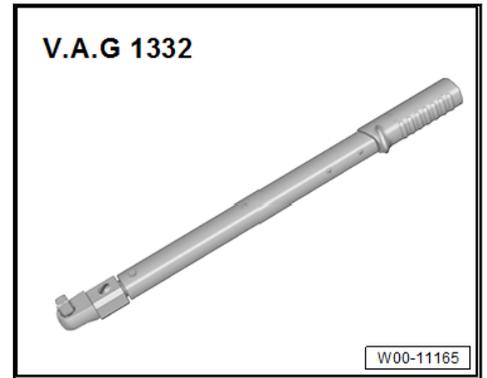
Special tools and workshop equipment required

- ◆ Puller - Ball Joint -3287A-

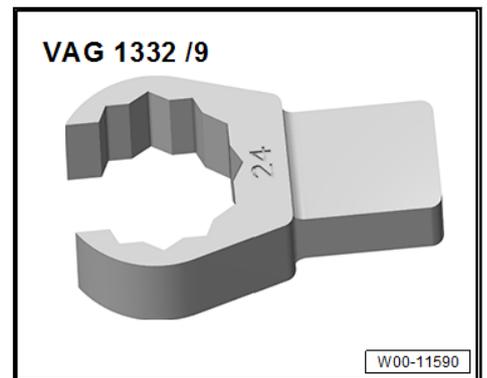


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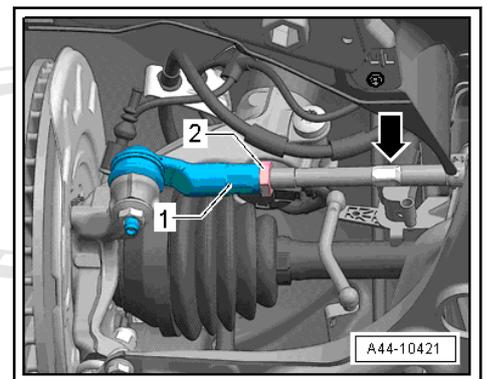
- ◆ Torque Wrench, 40-200Nm -VAG1332A-



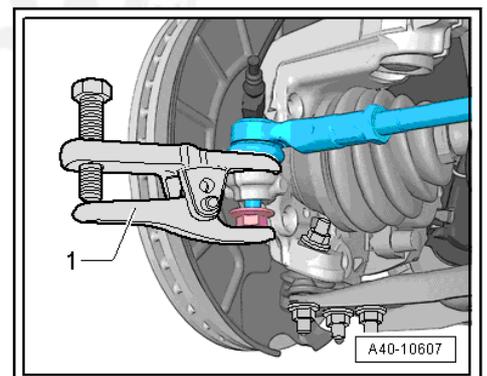
- ◆ Torque Wrench 1332 Insert - Open Ring Wrench - 24mm -VAG1332/9-



Remove the Tie Rod End.

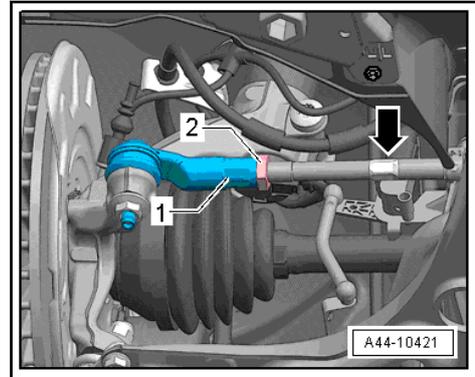


- Turn the steering wheel into straight ahead position.
- Remove the front wheel. Refer to [⇒ a1 nd Tires”, page 411](#)
- Loosen the nut -2- while counterholding the tie rod end -1-.
- Loosen the nut from the tie rod end, but do not remove it yet.

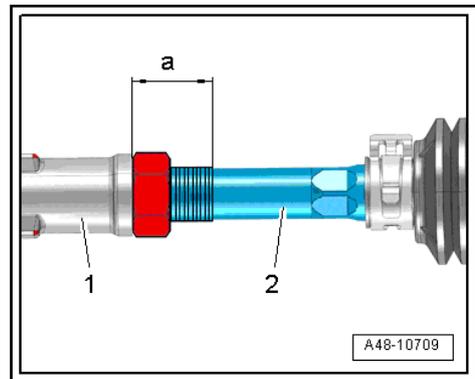




- To protect the thread, screw the nut on the pin several turns.
- Press off tie rod end from wheel bearing housing with Puller - Ball Joint -3287A- -1- and then remove the nut.
- Remove the tie rod end -1- from the tie rod while counter-holding on the tie rod hex fitting -arrow- if necessary.



Tie Rod End, Installing



Install in reverse order of removal. Note the following:

- Install the tie rod end -1- on the tie rod -2-.
- The dimension -a- must be the same on the right and left tie rod end.
- The maximum permitted difference between the right and left < 2 mm.

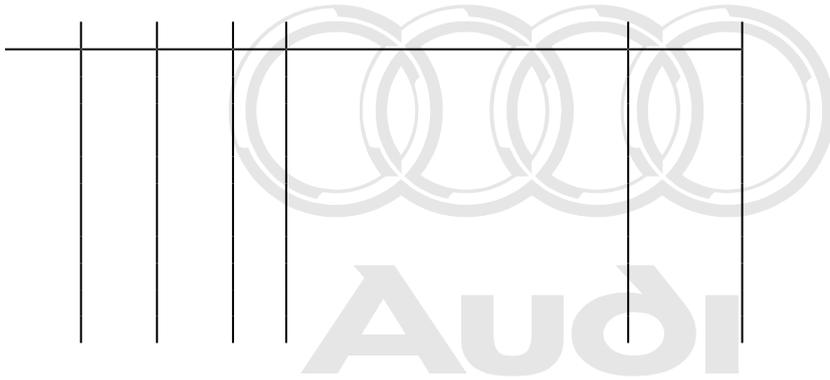
Install in reverse order of removal. Note the following:

- Perform a vehicle alignment. Refer to [⇒ A2 lignment”, page 412](#) .

Tightening Specifications

- ◆ Refer to [⇒ G3.2 ear, Servicing”, page 475](#)
- ◆ Refer to [⇒ -3.1 Steering Gear”, page 473](#)
- ◆ Refer to [⇒ a1 nd Tires”, page 411](#)

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