



Repair Manual Golf 2015 ➤ Golf Variant 2015 ➤

Suspension, Wheels, Steering

Edition 03.2016





List of Workshop Manual Repair Groups

Repair Group

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



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00 – Technical Data

1 Evaluating Vehicles in Collisions

(Edition 03.2016)

⇒ [“1.1 Collision Vehicle Evaluation Checklist”, page 1](#)

1.1 Collision Vehicle Evaluation Checklist

When servicing load-bearing or wheel-supporting components on accident vehicles, damages on suspension could remain undiscovered. These undiscovered damages may lead to heavy damages in continued vehicle operation. Therefore, on accident vehicles, the listed components must be checked in the described manner and sequence, independent of performing an axle alignment. If no deviations from the specified values were determined during an axle alignment, then no deformations of the chassis are present.

Visual and Function Check of Steering System

- ◆ Visual check for deformations and cracks
- ◆ Check for play in tie rod joints and steering gear
- ◆ Visual inspection for faulty boots and grease boots
- ◆ Check electric and hydraulic lines and hoses for chafe marks, cuts and kinks.
- ◆ Check of hydraulic lines, threaded connections and steering gear for proper seal
- ◆ Make sure the steering gear and lines are securely fastened.
- ◆ Check proper function through entire steering angle by turning steering wheel from stop to stop. Steering wheel must be rotary without hitching at equal force.

Visual and Function Check of Suspension

- Observe the sequence of the following test steps!
- ◆ Check all components shown in assembly overviews for deformation, cracks and other damages
- ◆ Replace damaged components
- ◆ Perform a vehicle alignment on a Volkswagen AG approved alignment rack.

Visual and Function Check for Wheels, Tires

- ◆ Check for run-out and imbalance.
- ◆ Check tires for cuts and impact damage on tread and flanks.
- ◆ Check the tire pressure. Refer to the tire pressure label on the driver side B-pillar or on the fuel filler door for the correct tire pressure.

Replace the tire if the wheel rim and/or the tire are damaged. This also applies when the course of the accident and damage on the vehicle points to possible non-visible damages.

Another criteria is the age of the tires: the tires must not be older than 6 years.

If in Doubt

- As soon as a safety risk cannot be ruled out, the tire(s) must be replaced.



Entire Vehicle

Check other vehicle systems, for example:

- ◆ Brake system including ABS
- ◆ Exhaust system and passenger protection by visual and function check

Test values, adjustment values and notes can be found in respective repair manuals/ELSA.

Checking of accident vehicles described here, refers to suspension and does not lay claim to completeness for entire vehicle.

Electronic Vehicle Systems

Safety related systems, such as: ABS/EDS; Airbag; electronically controlled suspension systems; electromechanical; electrohydraulic steering and other driver assist systems, must be checked for possible stored fault messages using the Vehicle Diagnostic Tester . If a fault is stored in the Diagnostic Trouble Code (DTC) memory, then perform the corresponding repair in the repair manual/ELSA. After the repair the corresponding system must be checked again for stored faults to be sure that the function is established again.



2 Safety Precautions

⇒ [“2.1 Start/Stop System Safety Precautions”, page 3](#)

⇒ [“2.2 Subframe Safety Precautions”, page 3](#)

2.1 Start/Stop System Safety Precautions



WARNING

If vehicle will be driven on the streets, all bolts and nuts must be tightened properly!



WARNING

Risk of injury due to the engine automatically starting on vehicles with a Start/Stop system.

- ◆ *For vehicles with an active start/stop system, the engine can automatically start if necessary.*
- ◆ *Make sure the start/stop system is off whenever working on the vehicle. Turn off the ignition and turn it back on only when necessary.*

2.2 Subframe Safety Precautions

- ◆ Welding and straightening work on supporting or wheel carrying components of the suspension is not permitted.
- ◆ Always replace corroded bolts/nuts.
- ◆ Bonded rubber bushings can only be turned to a limited extent. Therefore, the threaded connections of the components with bonded rubber bushings should only be tightened when the wheel bearing housing is lifted (curb weight position). Refer to ⇒ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”, page 6](#).





3 Repair Information

⇒ [“3.1 Shock Absorber Leaks”, page 4](#)

⇒ [“3.2 Shock Absorber Noises”, page 4](#)

⇒ [“3.3 Shock Absorbers, Checking when Removed”, page 5](#)

⇒ [“3.4 Steering Gear”, page 5](#)

⇒ [“3.5 Seals, Sealing Rings”, page 6](#)

⇒ [“3.6 Bolts and Nuts”, page 6](#)

⇒ [“3.7 Electrical Components”, page 6](#)

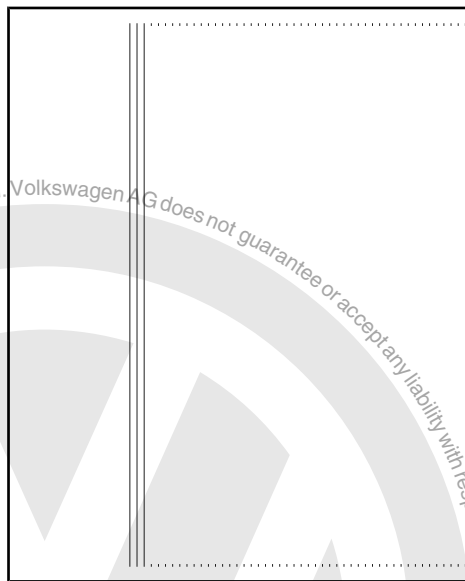
⇒ [“3.8 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring”, page 6](#)

3.1 Shock Absorber Leaks

Shock absorbers are frequently rejected and exchanged 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:

- ◆ Oil leakage (shaded in illustration) is visible, but dull, matte and possibly dry due to dust.
- ◆ Oil excretion extends from upper shock absorber connection (piston rod oil seal) no further than lower spring plate -arrow-



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 not complaint with approximately 70% of the rejected shock absorbers and the replacement was not justified.

With complaints that are interpreted as rumbling or knocking sounds, proceed as follows.

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



Note

Only in the rarest of cases shock absorbers are the fault for noises.

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 topped off.

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

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



Note

- ◆ *If this is not the case, the shock absorber must be replaced. As long as there is no large loss of oil, the mode of operation corresponds to that of a conventional shock absorber.*
- ◆ *The damping function is also completely available without gas pressure, as long as there is no large loss of oil. However, noise may increase.*

3.4 Steering Gear

To perform a problem-free and successful steering gear repair, extreme caution and cleanliness, as well as properly functioning tools are an important requirement. Understandably, general safety guidelines apply when performing repairs.

A series of applicable general notes for individual repair procedures - otherwise listed several times at many points in the repair manual - has been collected here. They apply for this repair manual.

- ◆ Thoroughly clean connecting points and their surrounding areas before loosening.
- ◆ When installing steering gear, make sure centering sleeves are correctly seated between console and steering gear.
- ◆ Place removed parts on a clean surface and cover to prevent contamination. Use foils and paper. Only use lint-free cloths!
- ◆ Install clean parts only: remove the replacement part from its packaging just before installing it.
- ◆ Use exclusively lubricants and sealants marked with part numbers.



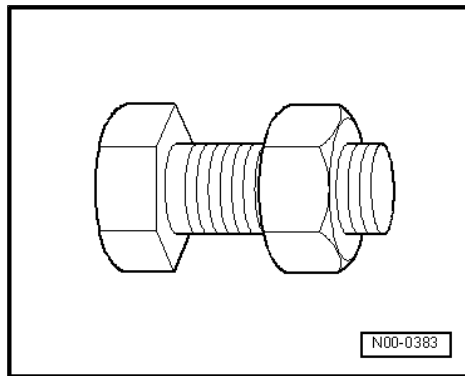
- ♦ Carefully cover or seal open components, if repairs are not carried out immediately.

3.5 Seals, Sealing Rings

- ♦ Always replace the gaskets and seals.
- ♦ After removing seals, inspect contact surface on housings and shafts for burrs and damage and repair if necessary.
- ♦ Remove all residual sealant of fluid seals from sealing surfaces, no sealant residue must enter the steering gear housing when doing this.

3.6 Bolts and Nuts

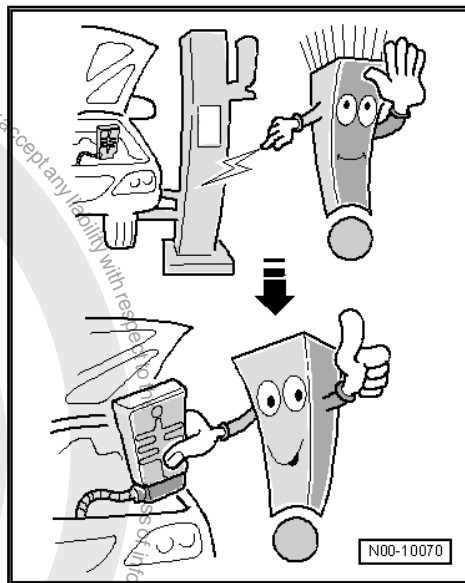
- ♦ Loosen and tighten the bolt and nut from the covers and housings diagonally.
- ♦ Do not cant but loosen and tighten especially sensitive parts in diagonal manner in stages, for example servo motor with control module.
- ♦ Tightening specifications for non-lubricated bolts and nuts are given.
- ♦ Always replace self-locking nuts and bolts.



3.7 Electrical Components

Surely 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 lead to malfunctions by touching the electrical components of steering gear and steering column.

- Touch a grounded object, for example a water pipe or a vehicle hoist, before working on electrical components. Do not make direct contact on connector terminals.



3.8 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring

⇒ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”, page 6](#)

⇒ [“3.8.2 Wheel Bearing in Curb Weight, Rear Axle, Lifting Vehicles with Coil Spring”, page 8](#)

3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle

Special tools and workshop equipment required

- ♦ Engine and Gearbox Jack - VAS6931-



- ◆ Tensioning Strap - T10038-
- ◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-



Caution

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 motion.

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

Otherwise, the bonded rubber bushing will be stressed resulting in a shortened service life.

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



Note

Before appropriate suspension is raised, vehicle must be strapped to lift arms of hoist using Tensioning Strap - T10038- .



WARNING

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 Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149- with wheel bolt on wheel hub.



Note

Tightening of the respective bolts/nuts must then only occur after dimension -a- between the wheel hub center and the lower edge of wheel housing has been attained.

Dimension -a- is dependent on standing height of installed suspension:

Chassis ¹⁾	Standing Height -a- in mm
Basic (G01+2UA/G02+2UA/G07+2UA/G18/G22)	383 ± 10 mm
Sport (G01+2UC+GM1/G01+2UP/G02+2UC+GM1/G07+2UC/G21/G26)	368 ± 10 mm
Raised (G01+2UF/G02+2UF/G24/G25/G27)	398 ± 10 mm
DCC (G03+2UQ/G03+2UH)	373 ± 10 mm
GTI (G06+2UC/G06+2UC+GM1+A8H/G06+2UC+GM3+A8G/G06+2UJ/G04+2UM/G29)	368 ± 10 mm
GTI heavy duty suspension (G06+2UN)	383 ± 10 mm

¹⁾ The suspension that the vehicle is equipped with is indicated on the vehicle data plate. The suspension is indicated by a PR number. Allocation of the PR number according to the suspension.

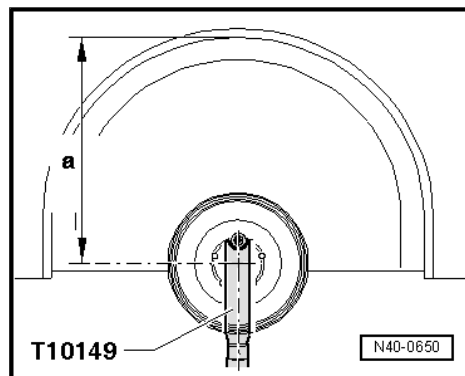
- Lift the wheel bearing housing using the Engine and Gearbox Jack - VAS6931- until dimension -a- is reached.



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 bolts and nuts.
- Lower the wheel bearing housing.
- Remove the Engine and Gearbox Jack - VAS6931- from under the vehicle.
- Remove Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149- .



3.8.2 Wheel Bearing in Curb Weight, Rear Axle, 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-



Caution

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 motion.

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

Otherwise, the bonded rubber bushing will be stressed resulting in a shortened service life.

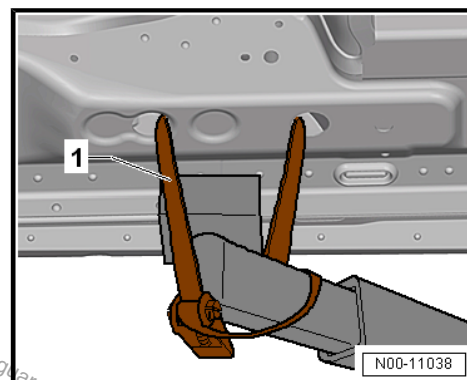
By raising the axle on one side using the Engine and Gearbox Jack - VAS6931- and Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149- , this position can be simulated on the hoist.



Note

Before lifting the axle on one side, the vehicle must be secured on both sides to the lift arms of the lift using Tensioning Strap - T10038- .

1 - Tensioning Strap - T10038-



WARNING

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 Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149- with wheel bolt.



Note

Tightening of the respective bolts/nuts must then only occur after dimension -a- between the wheel hub center and the lower edge of wheel housing has been attained.

Dimension -a- is dependent on standing height of installed suspension:

Chassis ¹⁾	Standing Height -a- in mm
Basic (G01/G02/G07/G18/G22 +2UA)	385 ± 10 mm
Sport (G01/G02/G07 +2UC, G21)	370 ± 10 mm
Raised (G01/G02 +2UF)	400 ± 10 mm
DCC (G03)	375 ± 10 mm
GTI (G06+2UC/ G06 + 2UJ/ G04 + 2UM)	370 ± 10 mm
GTI heavy duty suspension (G06 + 2UN)	385 ± 10 mm

¹⁾ The suspension that the vehicle is equipped with is indicated on the vehicle data plate. The suspension is indicated by a PR number. Allocation of the PR number according to the suspension.

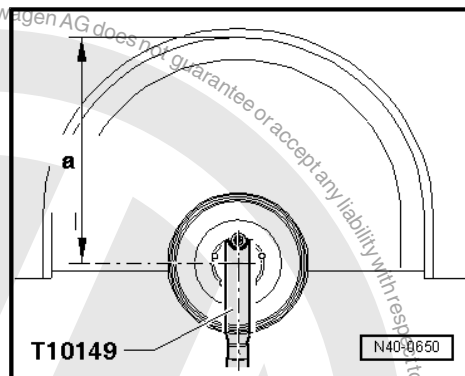
- Lift the wheel bearing housing using the engine/gearbox jack until dimension -a- is reached.



WARNING

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

- Tighten the bolts and nuts.
- Lower the wheel bearing housing.
- Remove the Engine and Gearbox Jack - VAS6931- from under the vehicle.
- Remove the Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-





4 Disposal

⇒ ["4.1 Front Shock Absorbers, Venting and Emptying", page 11](#)

⇒ ["4.2 Rear Shock Absorbers, Venting and Emptying", page 12](#)

4.1 Front Shock Absorbers, Venting and Emptying

⇒ ["4.1.1 Front Shock Absorbers, Venting and Emptying, Standard Shock Absorber", page 11](#)

⇒ ["4.1.2 Front Shock Absorbers, Venting and Emptying, DCC Shock Absorber", page 12](#)

4.1.1 Front Shock Absorbers, Venting and Emptying, Standard Shock Absorber

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



WARNING

Wear protective eyewear while drilling.

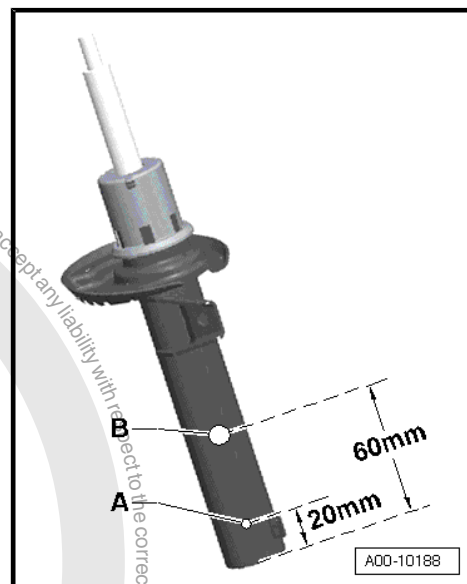
- Drill a 3 mm hole -A- through the shock absorber outer tube.



Note

Gas escapes when drilling.

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





4.1.2 Front Shock Absorbers, Venting and Emptying, DCC Shock Absorber

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



WARNING

Wear protective eyewear while drilling.

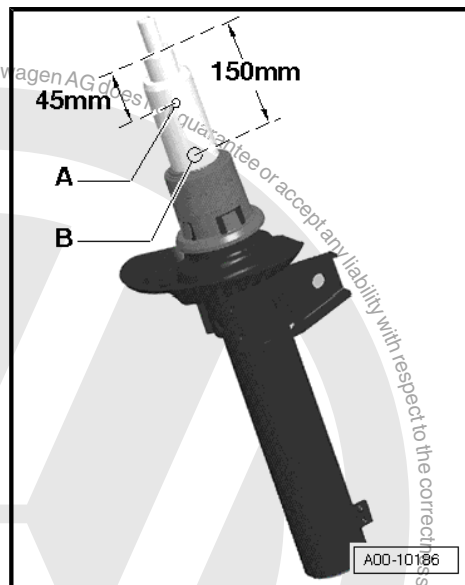
- Drill a 3 mm hole -A- through the shock absorber outer tube.



Note

Gas escapes when drilling.

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



4.2 Rear Shock Absorbers, Venting and Emptying

⇒ [“4.2.1 Rear Shock Absorbers, Venting and Emptying, Standard Shock Absorber”, page 12](#)

⇒ [“4.2.2 Rear Shock Absorbers, Venting and Emptying, DCC Shock Absorber”, page 13](#)

4.2.1 Rear Shock Absorbers, Venting and Emptying, Standard Shock Absorber

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



WARNING

Wear protective eyewear while drilling.

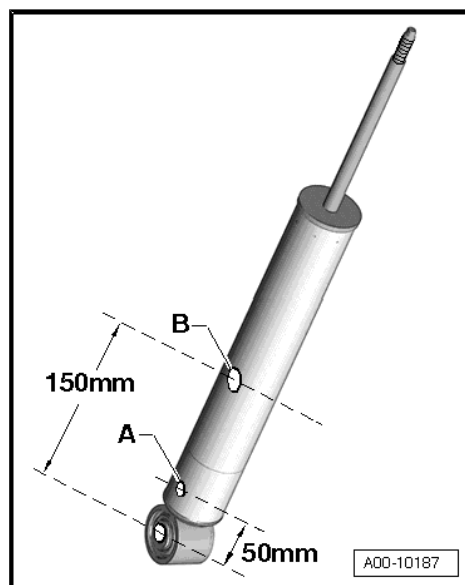
- Drill a 3 mm hole -A- through the shock absorber outer tube.



Note

Gas escapes when drilling.

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





4.2.2 Rear Shock Absorbers, Venting and Emptying, DCC Shock Absorber

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



WARNING

Wear protective eyewear while drilling.

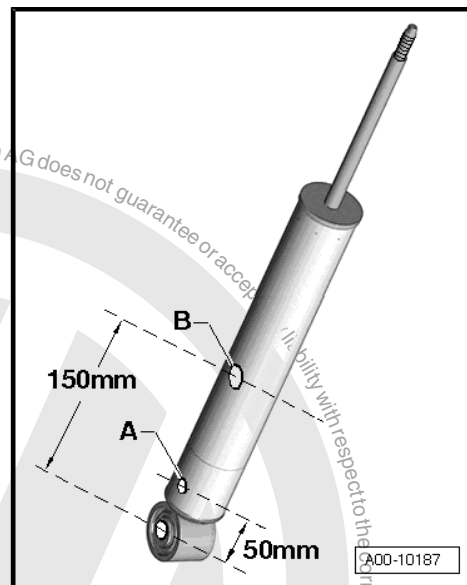
- Drill a 3 mm hole -A- through the shock absorber outer tube.



Note

Gas escapes when drilling.

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



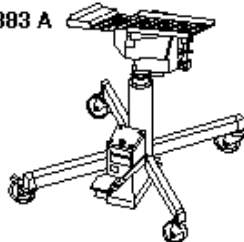


5 Special Tools

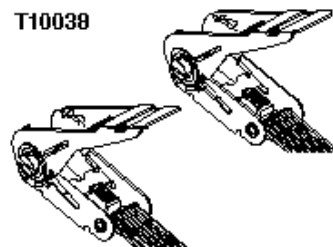
Special tools and workshop equipment required

- ◆ Engine and Gearbox Jack - VAS6931-
- ◆ Tensioning Strap - T10038-
- ◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-

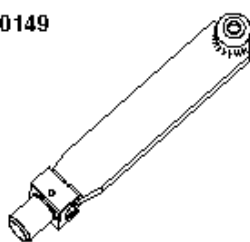
V.A.G 1383 A



T10038



T10149



W40-0126



40 – Front Suspension

1 Front Axle

⇒ [“1.1 Overview - Front Axle”, page 15](#)

1.1 Overview - Front Axle

I - Refer to

⇒ [“2 Subframe”, page 16](#)

II - Refer to

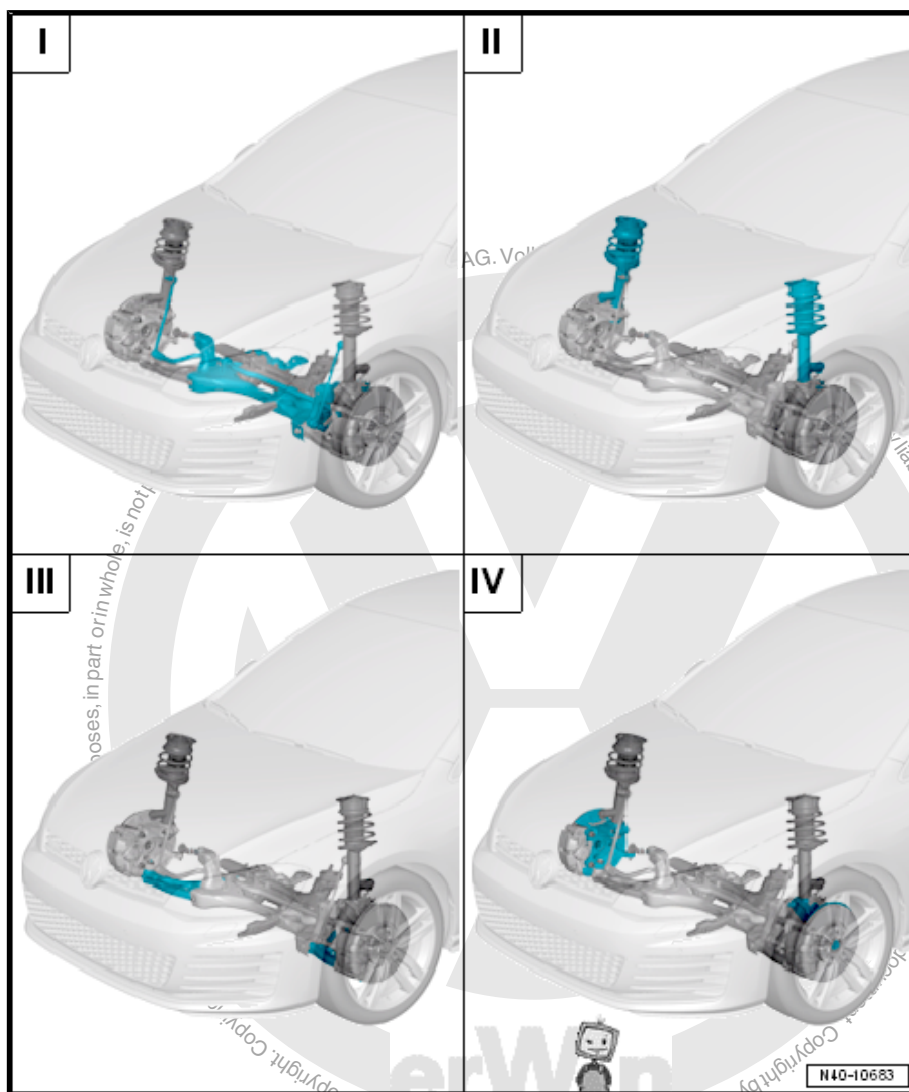
⇒ [“3 Suspension Strut and Upper Control Arm”, page 44](#)

III - Refer to

⇒ [“4 Lower Control Arm and Ball Joint”, page 54](#)

IV - Refer to

⇒ [“5 Wheel Bearing”, page 70](#)





2 Subframe

⇒ ["2.1 Overview - Subframe", page 16](#)

⇒ ["2.2 Subframe, Securing", page 17](#)

⇒ ["2.3 Subframe, Lowering", page 20](#)

⇒ ["2.4 Subframe without Steering Gear, Removing and Installing", page 23](#)

⇒ ["2.5 Subframe with Steering Gear, Removing and Installing", page 27](#)

⇒ ["2.6 Subframe, Servicing", page 32](#)

⇒ ["2.7 Stabilizer Bar, Removing and Installing", page 38](#)

⇒ ["2.8 Coupling Rod, Removing and Installing", page 42](#)

⇒ ["2.9 Thread in Longitudinal Member, Servicing", page 43](#)

2.1 Overview - Subframe

1 - Stabilizer Bar with the Rubber Bushings

- ❑ Removing and installing. Refer to ⇒ ["2.7 Stabilizer Bar, Removing and Installing", page 38](#)

2 - Nut

- ❑ 65 Nm
- ❑ Replace after removal
- ❑ Counterhold at socket head of joint bolt when tightening

3 - Suspension Strut

4 - Coupling Rod

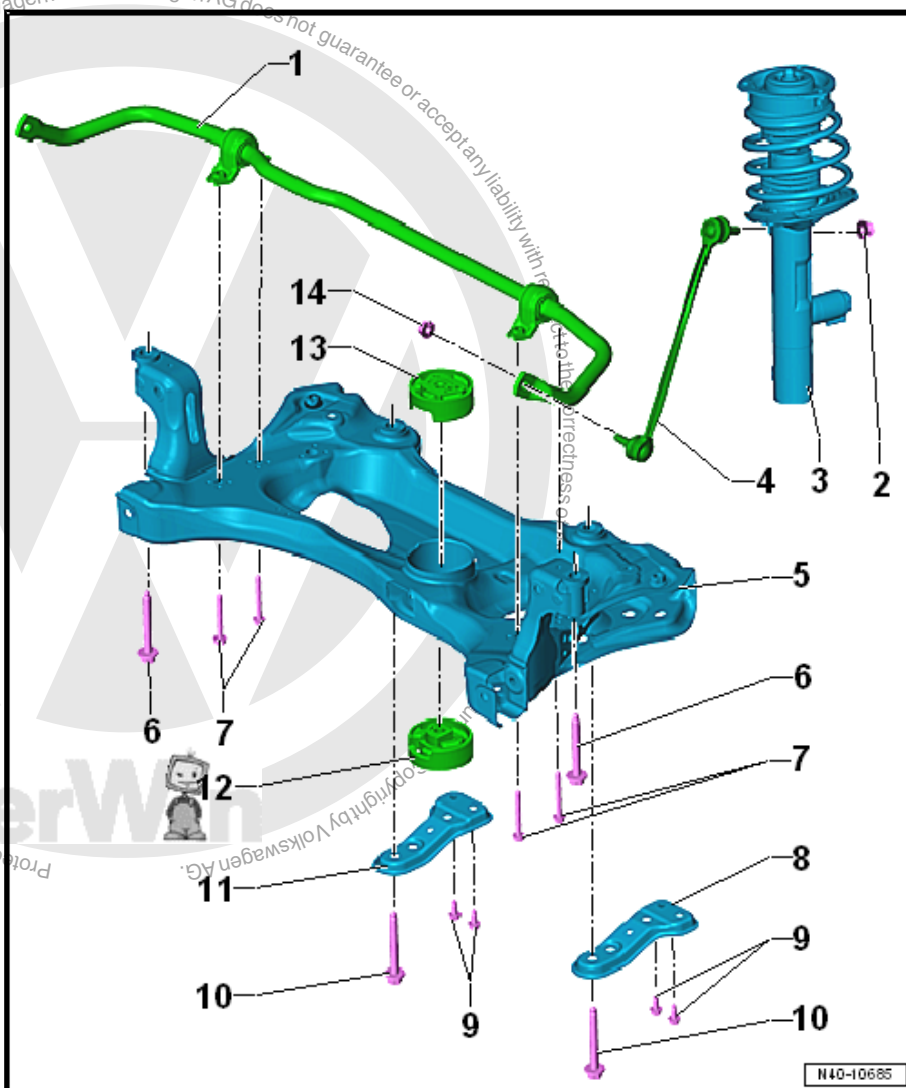
- ❑ Removing and installing. Refer to ⇒ ["2.8 Coupling Rod, Removing and Installing", page 42](#)

5 - Subframe

- ❑ Securing. Refer to ⇒ ["2.2 Subframe, Securing", page 17](#)
- ❑ Lowering. Refer to ⇒ ["2.3 Subframe, Lowering", page 20](#)
- ❑ Removing and installing without steering gear. Refer to ⇒ ["2.4 Subframe without Steering Gear, Removing and Installing", page 23](#)
- ❑ Removing and installing with steering gear. Refer to ⇒ ["2.5 Subframe with Steering Gear, Removing and Installing", page 27](#)

6 - Bolt

- ❑ 70 Nm + 180° turn





- ☐ Replace after removal

7 - Bolt

- ☐ 20 Nm + 180° turn
- ☐ Replace after removal

8 - Left Support

9 - Bolt

- ☐ 50 Nm +90°
- ☐ Replace after removal

10 - Bolt

- ☐ 70 Nm + 180° turn
- ☐ Replace after removal

11 - Right Support

12 - Lower Bonded Rubber Bushing for Pendulum Support

- ☐ Replacing. Refer to ⇒ ["2.6 Subframe, Servicing", page 32](#)

13 - Upper Bonded Rubber Bushing for Pendulum Support

- ☐ Replacing. Refer to ⇒ ["2.6 Subframe, Servicing", page 32](#)

14 - Nut

- ☐ 65 Nm
- ☐ Replace after removal
- ☐ Counterhold at socket head of joint bolt when tightening

2.2 Subframe, Securing

Special tools and workshop equipment required

- ◆ Assembly Tool, Sub-frame Alignment - T10486A-
- ◆ Four Locating Pins - T10486/1-
- ◆ Locating Pins - T10486/2-
- ◆ Engine and Gearbox Jack - VAS6931- with Universal Support Plate - VAG1359/2-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolts - Subframe to Body
- ◆ Bolts - Pendulum Support to Transmission
- ◆ Bolts - Right Support to Subframe
- ◆ Bolts - Left Support to Subframe

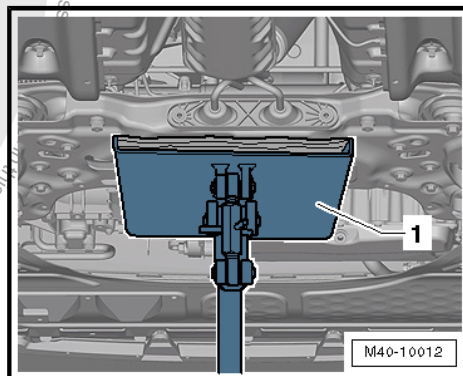
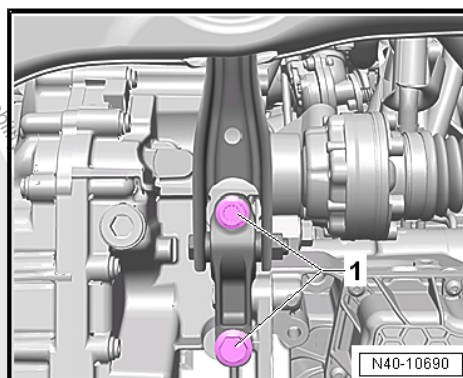


Note

- ◆ For certain assemblies on the vehicle, subframe or complete front axle must be removed.
 - ◆ The original position of the subframe to the body is ensured by using four Locating Pins - T10486/1- .
 - ◆ Two Locating Pins - T10486/1- are a component of the Assembly Tool, Sub-frame Alignment - T10486A- . If the Assembly Tool, Sub-frame Alignment - T10486A- is already in the service operation, then only the addition of the two Locating Pins - T10486/1- is required.
 - ◆ If the Assembly Tool, Sub-frame Alignment - T10486A- is not already in the service operation, then the Assembly Tool, Sub-frame Alignment - T10486A- is to be used. It contains four Locating Pins - T10486/1- and two Locating Pins - T10486/2- . The Locating Pins - T10486/2- are not needed for the following procedure.
- Remove the front and rear noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
 - Remove the pendulum support bolts -1- from the transmission.

Place the Engine and Gearbox Jack - VAS6931- -1- under the subframe.

- If necessary, clean the threads of the Locating Pins - T10486/1- .





- To secure the subframe, the Locating Pins - T10486/1- must be installed at the positions -3, 5, 7 and 8- one after the other.

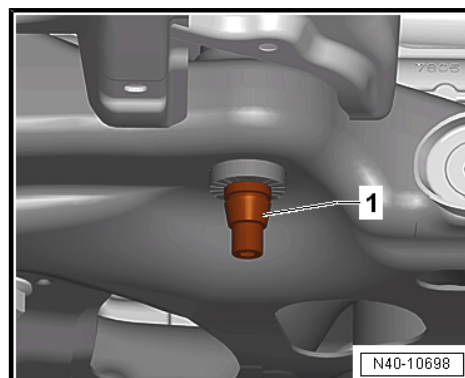
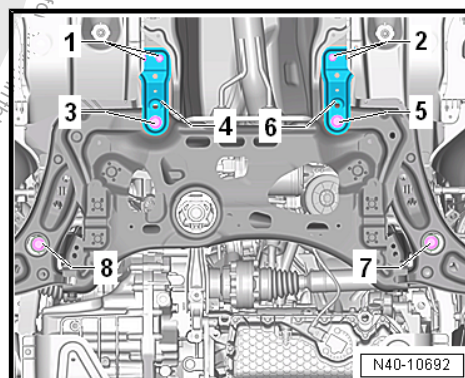
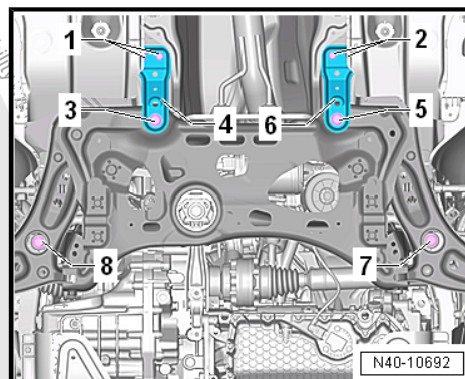


Note

The Locating Pins - T10486/1- may only be tightened to a maximum of 20 Nm, since otherwise the locating pin threads will be damaged.

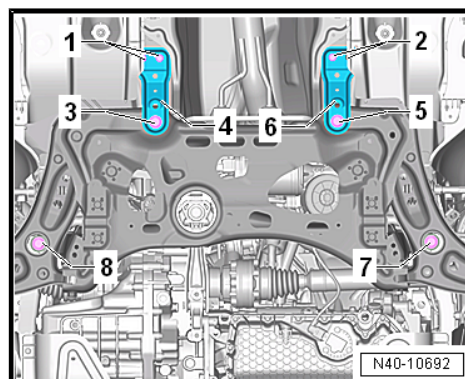
Secure the Rear Subframe

- Remove the bolts -1-.
- Remove the bolt -3- and the support -4-.
- Insert the Locating Pin - T10486/1- -1- and tighten to 20 Nm.



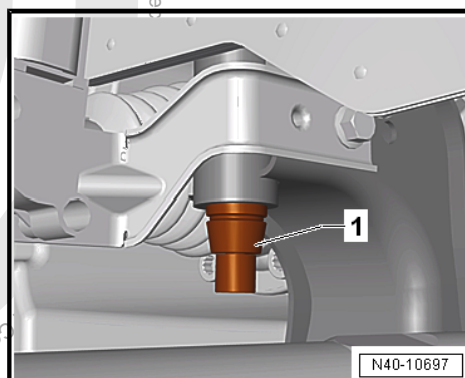
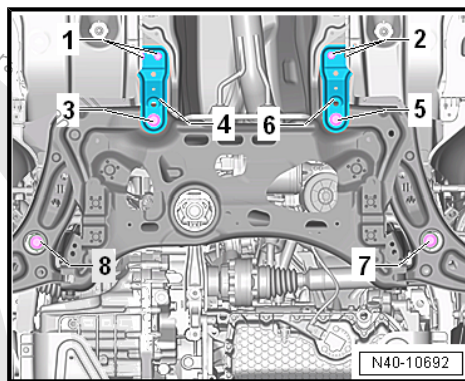
- Remove the bolts -2-.
- Remove the bolt -5- and the support -6-.
- Insert the Locating Pin - T10486/1- and tighten to 20 Nm.

Front Subframe, Securing





- Remove the bolt -8-.
- Insert the Locating Pin - T10486/1- -1- and tighten to 20 Nm.

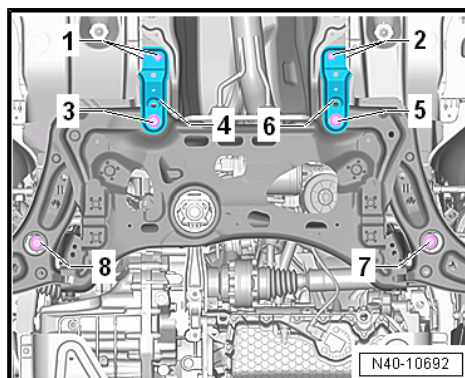


- Remove the bolt -7-.
- Insert the Locating Pin - T10486/1- and tighten to 20 Nm.
- Securing the subframe is completed when all above mentioned bolts are replaced with Locating Pins - T10486/1- one after the other.
- The subframe position is now secured.

Locating Pins - T10486/1- , Removing

The removal is reverse of installation, noting the following:

- Only remove one locating pin and replace this with a bolt.
- For vehicles with a vehicle level sensor, perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .



Tightening Specifications

- ◆ Refer to ⇒ [“2.1 Overview - Subframe”, page 16](#)
- ◆ Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount or ⇒ Engine Mechanical, Fuel Injection and Glow Plug; Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount .
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

If the steering wheel is found to be crooked during a road test despite using the Locating Pins - T10486/1- , then an axle alignment is necessary. In this case, put the axle alignment log in the vehicle files.

2.3 Subframe, Lowering

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-



- ◆ Engine and Gearbox Jack - VAS6931-
- ◆ Locating Pins - T10486/1-
- ◆ Vehicle Diagnostic Tester



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

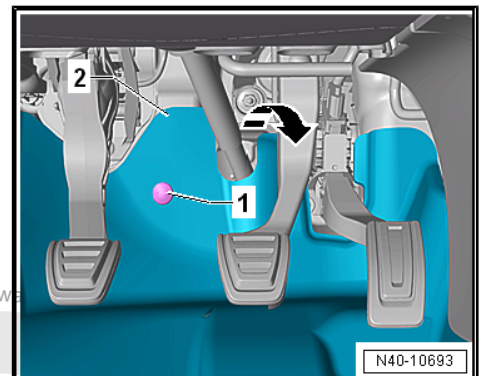
- ◆ Bolt - Universal Joint to Steering Gear
- ◆ Bolts - Pendulum Support to Transmission
- ◆ Nut - Coupling Rod to Stabilizer Bar

Removing

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

Vehicle with "Keyless Access" Keyless Locking and Starting System

- Switch the ignition off and open the driver door so the steering wheel lock locks.
- Remove the bolt -1- and fold the footwell trim panel -2- in direction of -arrow- into the vehicle interior.



- Remove the bolt -1- from the universal joint -2-. Then remove the universal joint in direction of -arrow-.

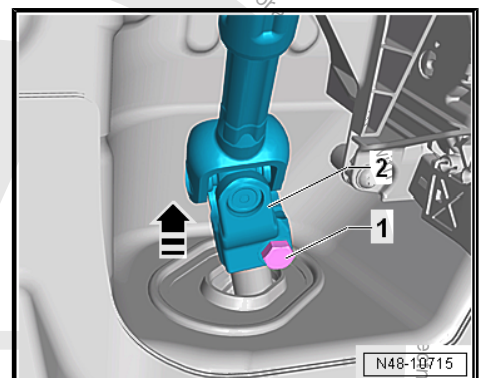


Caution

If the universal joint is separated from the steering gear, the following work cannot be performed:

- ◆ Connect the battery.
- ◆ Switch on the ignition.
- ◆ Turning the steering gear
- ◆ Turning the steering column

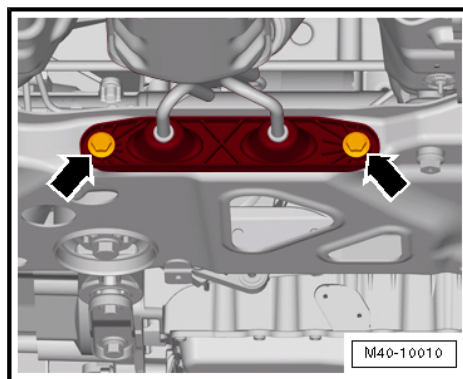
These points must be observed, because otherwise it can cause irreparable damage.



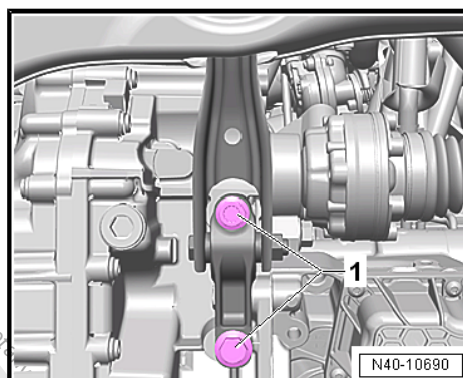
- Remove the lower noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .



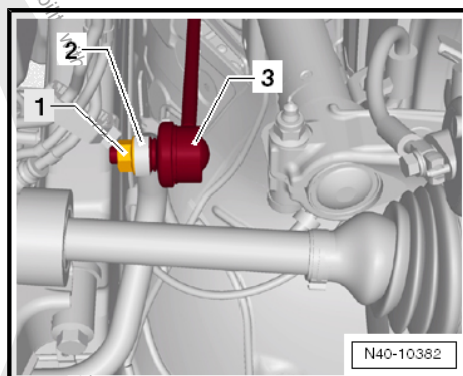
- Remove the exhaust system bracket from the subframe -arrows-.



- Remove the pendulum support bolts -1-.



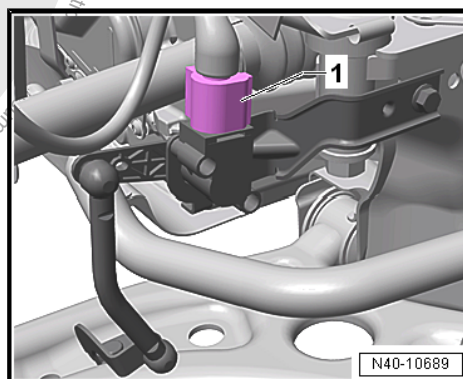
- Remove the hex nut -1- from the right and left coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.



Vehicles with a Vehicle Level 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





- Place the Engine and Gearbox Jack - VAS6931- -1- under the subframe.
- Secure the subframe and lower it approximately 10 cm. Refer to ⇒ [“2.2 Subframe, Securing”, page 17](#) .



Note

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

Installing

Install in reverse order of removal. Note the following:



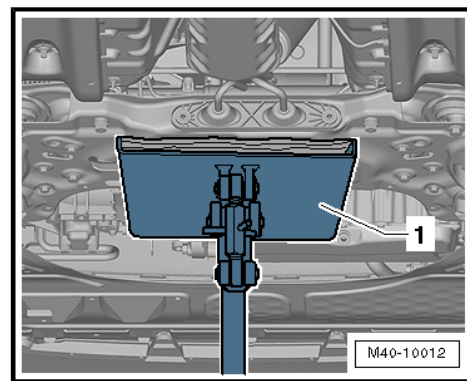
Note

- ◆ *Coat the seal on the steering gear with lubricant such as soft soap before installing the steering gear.*
- ◆ *After attaching the steering gear to universal joint, make sure that seal on steering gear is positioned to mounting plate without kinks. The opening to foot well must be sealed correctly. Ingress of water and/or noises may be the result.*
- ◆ *Make sure sealing surfaces are clean.*
- Remove the Locating Pins - T10486/1- . Refer to ⇒ [page 20](#) .
- For vehicles with a vehicle level sensor, perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- ◆ Refer to ⇒ [“2.1 Overview - Subframe”, page 16](#)
- ◆ Refer to ⇒ [“3.1 Overview - Steering Gear”, page 350](#)
- ◆ Refer to ⇒ [“2.1 Overview - Steering Column”, page 338](#)
- ◆ Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount or ⇒ Engine Mechanical, Fuel Injection and Glow Plug; Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount .
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- ◆ Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler or ⇒ Engine Mechanical, Fuel Injection and Glow Plug; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

If the steering wheel is found to be crooked during a road test despite using the Locating Pins - T10486/1- , then an axle alignment is necessary. In this case, put the axle alignment log in the vehicle files.



2.4 Subframe without Steering Gear, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Locating Pins - T10486/1-
- ◆ Engine and Gearbox Jack - VAS6931-



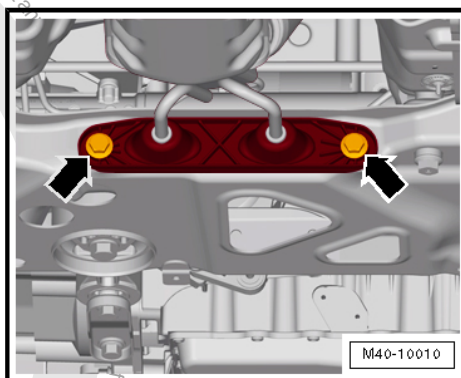
Removing



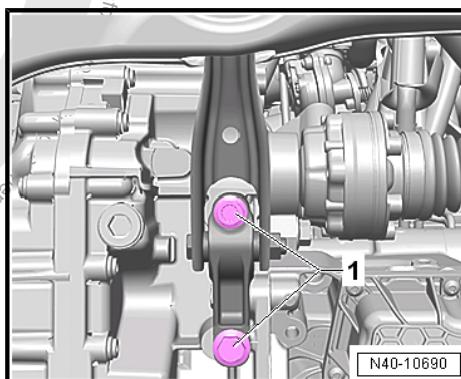
Note

Subframe is removed together with control arms.

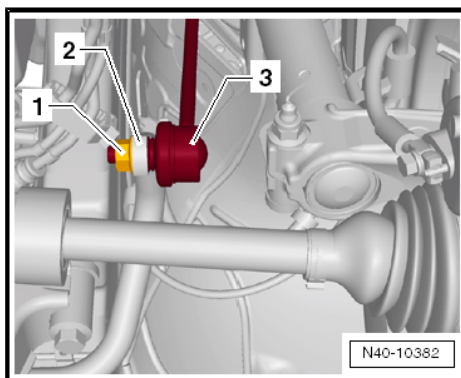
- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.
- Remove the lower noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation .
- Remove the exhaust system bracket from the subframe -arrows-.



- Remove the pendulum support bolts -1-.

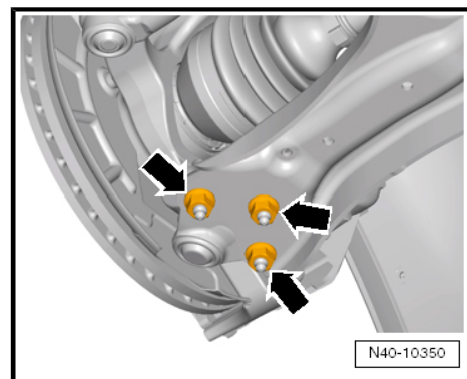


- Remove the hex nut -1- from the right and left coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.





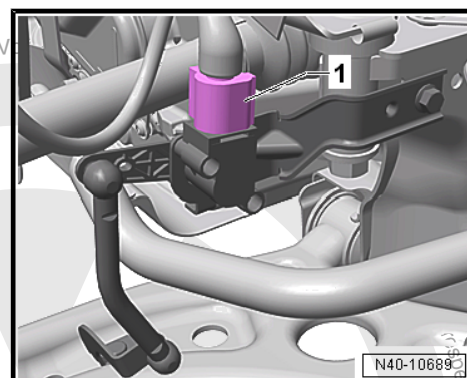
- Remove the nuts -arrows- on the left and right side of the vehicle.



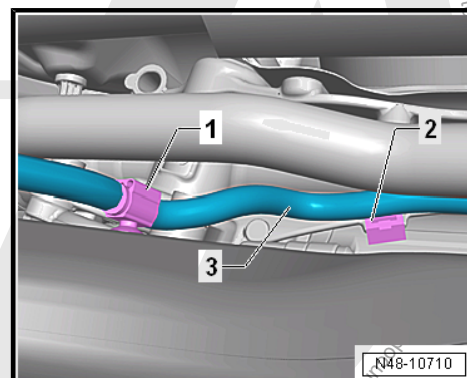
Vehicles with Level Control System Sensor

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

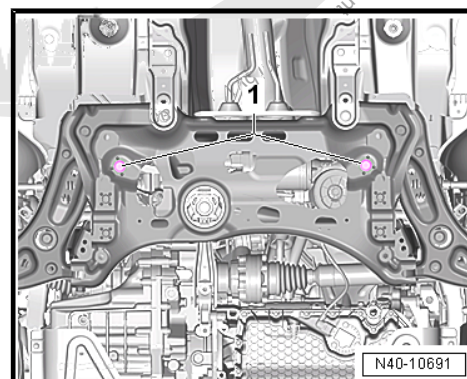
Continuation for all Vehicles



- Remove the clips -1 and 2- for the wiring harness -3- from the subframe and the steering gear.

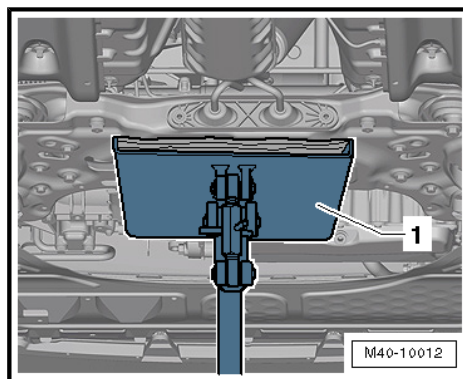


- Remove the steering gear bolts -1-.
- Pry the steering gear out of the subframe alignment sleeves.

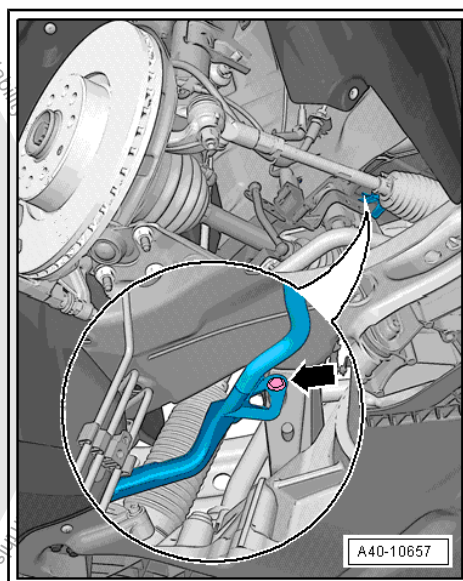




- Place the -VAS6931- -1- under the subframe.
- Secure the subframe (refer to [⇒ "2.2 Subframe, Securing", page 17](#)) and lower it approximately 10 cm.



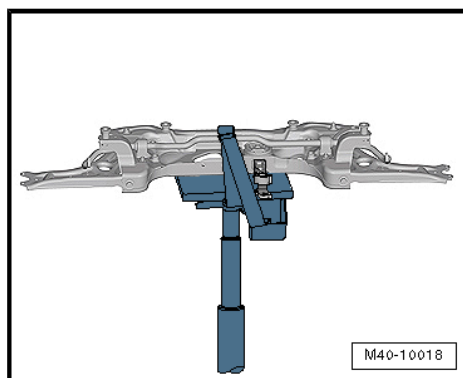
- Remove the expanding clip -arrow-.
- Lower the subframe using the -VAS6931- .



- Secure the subframe on the -VAS6931- .
- Secure the steering gear on the body.

Installing

Install in reverse order of removal while noting the following:





- Tighten nuts -arrows-.



Note

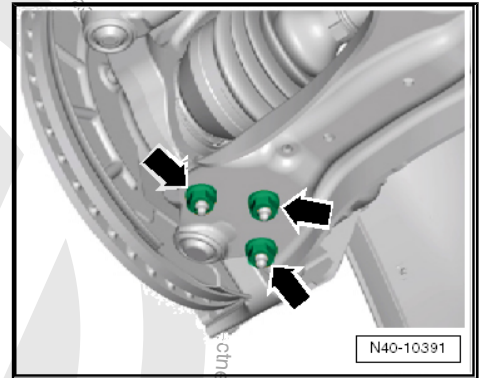
*Tighten the nuts -arrows- in curb weight position. Refer to
⇒ ["3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle", page 6](#) .*

- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the
⇒ Vehicle diagnostic tester.

Tightening Specifications

- ◆ Refer to ⇒ ["2.1 Overview - Subframe", page 16](#)
- ◆ Refer to ⇒ ["2.1 Overview - Steering Column", page 338](#)
- ◆ Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount .
- ◆ Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- ◆ Exhaust system to subframe. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- ◆

If the steering wheel is still crooked after using the -T10486/1- then an axle alignment is necessary. In this case the record it in the vehicles axle alignment log.



2.5 Subframe with Steering Gear, Removing and Installing

Special tools and workshop equipment required

- ◆ Puller - Ball Joint - T10187-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-

Removing

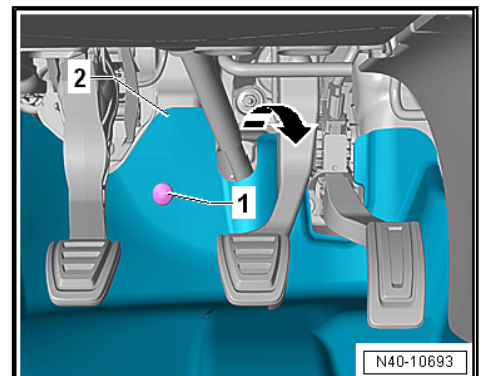
- Turn the steering wheel in the straight position and remove the ignition key so that the steering wheel lock engages.

Vehicles with "Keyless Access" Keyless Locking and Starting System

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

Continuation for all Vehicles.

- Remove the bolts -1- and fold the footwell trim panel -2- in the direction of the -arrow- into the vehicle interior.





- Remove the bolt -1- from the universal joint -2-. Then remove the universal joint in direction of -arrow-.

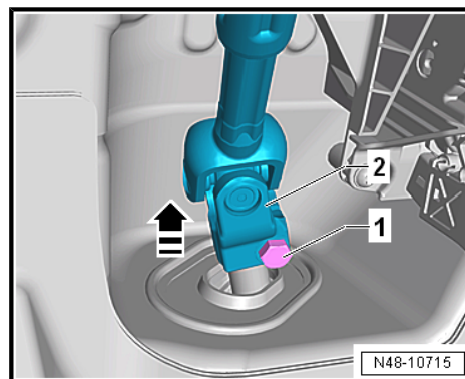


Caution

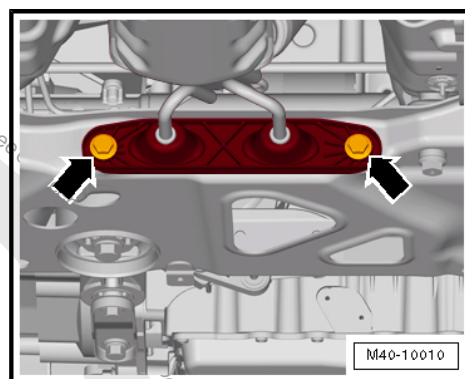
If the universal joint is separated from the steering gear, the following work cannot be performed:

- ◆ *Connect the battery.*
- ◆ *Switching on the ignition*
- ◆ *Turning the steering gear*
- ◆ *Turning the steering column.*

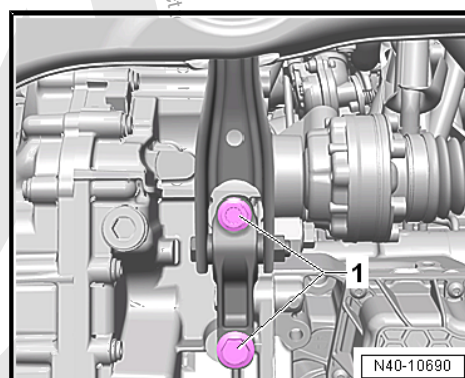
These points must be observed since performing these actions could cause irreparable damage.



- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.
- Remove the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Remove the exhaust system bracket from the subframe -arrows-.

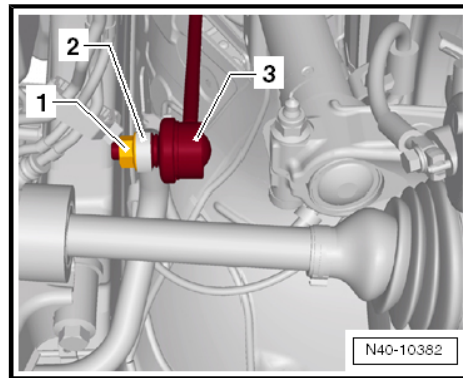


- Remove the pendulum support bolts -1-.

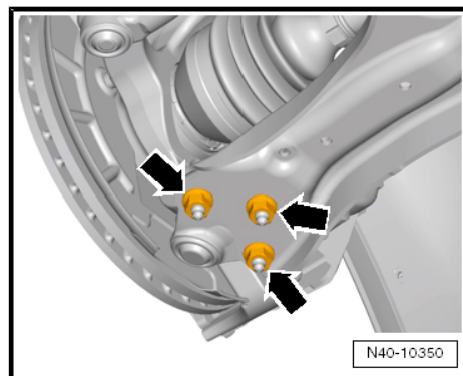




- Remove the hex nut -1- from the right and left coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.



- Remove the nuts -arrows- on the left and right side of the vehicle.
- Remove the control arm from the ball joint.



- Loosen the nut from the tie rod end, but do not unscrew yet.

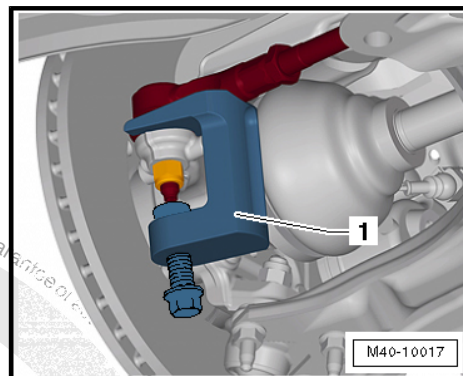


Caution

To protect the thread, screw the nut on the pin a few turns.

- Remove the tie rod end from the wheel bearing housing and remove the nut.

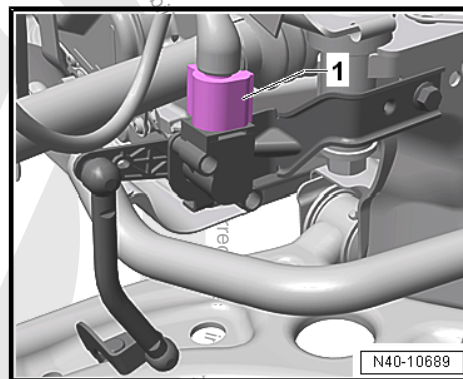
1 - -T10187-



Vehicles with Level Control System Sensor

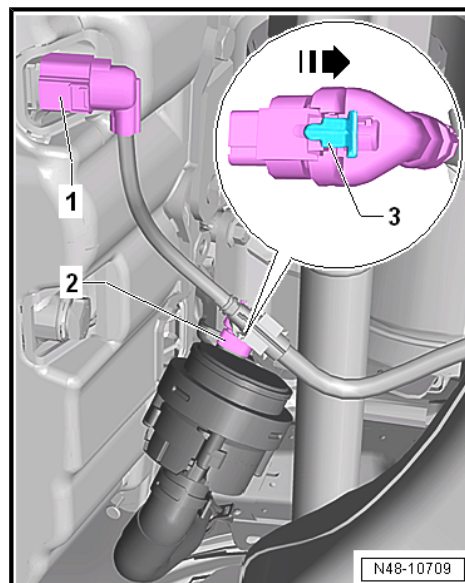
- Disconnect the connector -1- from the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- .

Continuation for all Vehicles

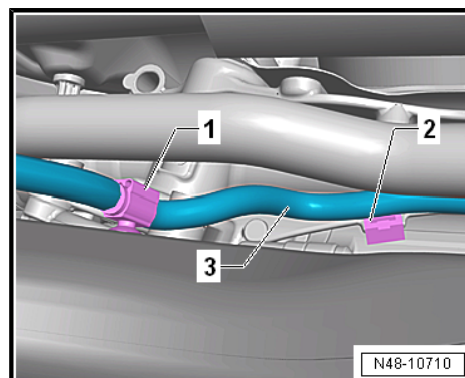




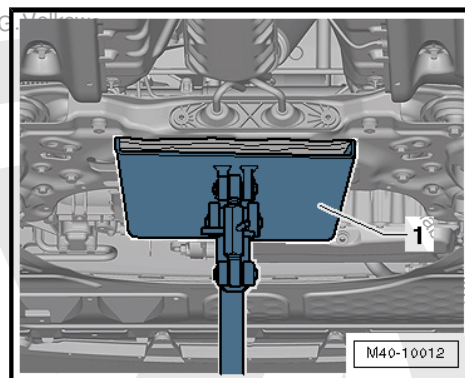
- Disconnect the connector -1- for the Oil Level Thermal Sensor - G266- .
- If equipped, disconnect the connector -2- from the After-Run Coolant Pump - V51- . To do so, open the catch -3- in the direction of the -arrow- and release the connector.



- Remove the clips -1- and -2- for the wiring harness -3- from the subframe and the steering gear.



- Place the -VAS6931- -1- under the subframe.
- Secure the subframe (refer to ["2.2 Subframe, Securing", page 17](#)) and lower it approximately 10 cm.

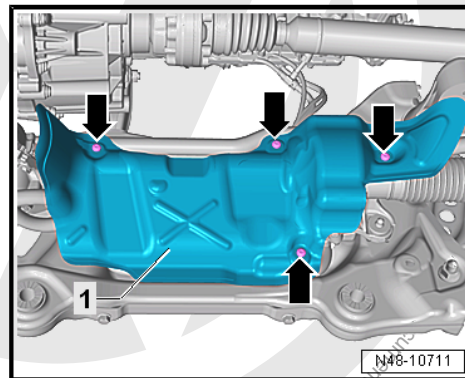


- Remove the bolts -arrows- and remove the heat shield -1- from the steering gear.



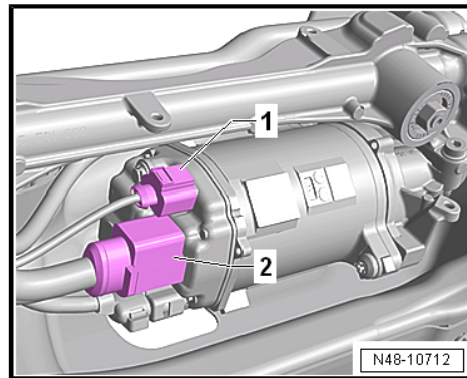
Note

Different heat shields -1- are installed depending on the engine. On some engine versions, the connectors for the steering gear are accessible without having to remove the heat shield.

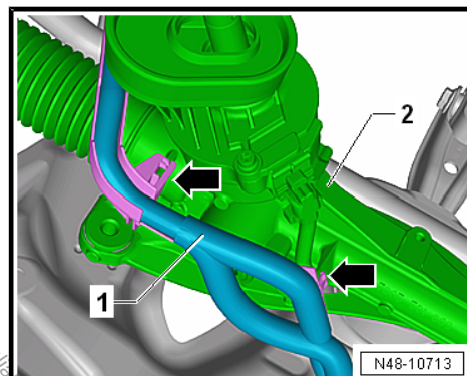




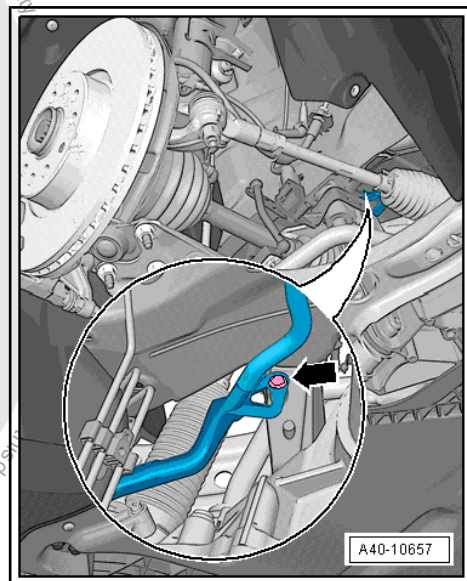
- Disconnect the connectors -1 and 2- from the steering gear.



- Unclip the wiring harness -1- from the steering gear -2- -arrows-.



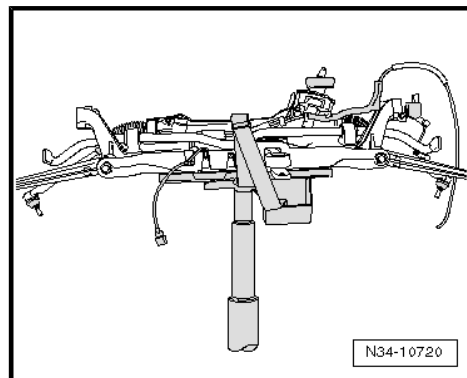
- Remove the expanding clip -arrow-.
- Lower the subframe using the -VAS6931- .



- Secure the subframe to the -VAS6931- with the accompanying strap.

Installing

Install in reverse order of removal. Note the following:



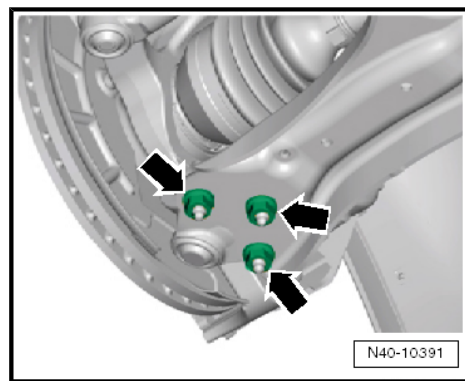


- Tighten nuts -arrows-.



Note

- ♦ *Tighten the nuts -arrows- in curb weight position. Refer to ⇒ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”](#), page 6 .*
 - ♦ *Coat the seal on the steering gear with lubricant such as soft soap before installing the steering gear.*
 - ♦ *After attaching steering gear to the universal joint, make sure that seal on steering gear is positioned on the mounting plate without and kinks and is sealed correctly. The opening to the footwell must be sealed correctly. Ingress of water and/or noises may be the result.*
 - ♦ *Make sure sealing surfaces are clean.*
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.



Tightening Specifications

- ♦ Refer to ⇒ [“2.1 Overview - Subframe”](#), page 16
- ♦ Refer to ⇒ [“5.1 Overview - Wheel Bearing”](#), page 70
- ♦ Refer to ⇒ [“3.1 Overview - Steering Gear”](#), page 350
- ♦ Refer to ⇒ [“2.1 Overview - Steering Column”](#), page 338
- ♦ Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount .
- ♦ Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- ♦ Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- ♦ ⇒ [“1.1 Wheel Bolt Tightening Specifications”](#), page 286

If the steering wheel is still crooked after using the -T10486/1- then an axle alignment is necessary. In this case the record it in the vehicles axle alignment log.

2.6 Subframe, Servicing

Special tools and workshop equipment required

- ♦ Bearing Installer - Wheel Hub/Bearing Kit - T10205-
- ♦ Torque Wrench 1332 40-200Nm - VAG1332-
- ♦ Hydraulic Press - VAS6178-
- ♦ Pneumatic/Hydraulic Foot Pump - VAS6179-
- ♦ Hydraulic Press - Bushing Tool Kit - VAS6779-
- ♦ Thrust Piece - VAS6779/1-
- ♦ Threaded Rod - VAS6779/2-
- ♦ Hexagon Nut - VAS6779/3-
- ♦ Tube - VAS6779/4-
- ♦ Thrust Piece - VAS6779/5-
- ♦ Funnel - VAS6779/6-



- ◆ Insert - VAS6779/7-1A-
- ◆ Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit Pressure Head - T10205/13-
- ◆ Press Plate - VW401-
- ◆ Press Piece - Multiple Use - VW412-



Caution

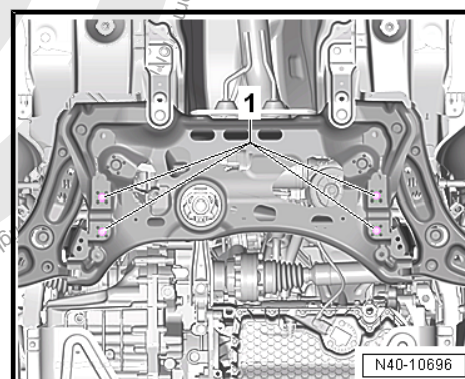
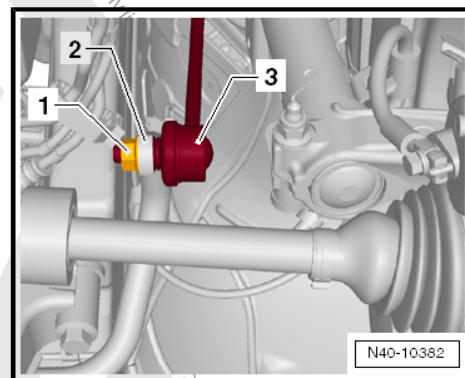
This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Nut - Coupling Rod to Stabilizer Bar
- ◆ Bolts - Subframe to Stabilizer Bar

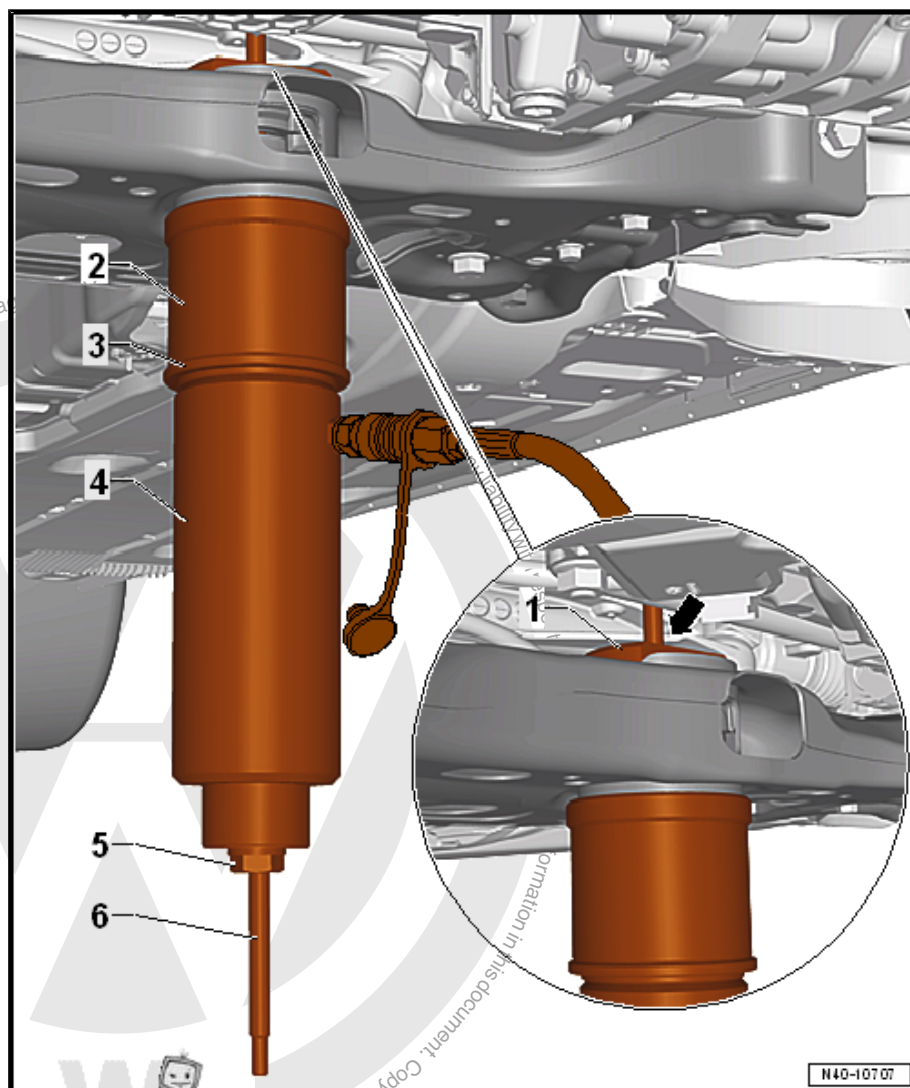
Replace the Pendulum Support Bonded Rubber Bushing.

- Remove the front noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Remove the hex nut -1- from the right and left coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.
- Remove the stabilizer bar bolts -1-.
- Leave the stabilizer bar in the installed position on the vehicle.
- Remove the pendulum support. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 10 ; Subframe Mount; Pendulum Support, Removing and Installing or ⇒ Engine Mechanical, Fuel Injection and Glow Plug; Rep. Gr. 10 ; Subframe Mount; Pendulum Support, Removing and Installing .



Pressing Out the Bonded Rubber Bushing

- Install the Hydraulic Press - Bushing Tool Kit - VAS6779- as shown in the illustration on the subframe.
- Position the Thrust Piece - VAS6779-1- -1- with the flat side -arrow- on the bonded rubber bushing in the driving direction.



- 1 - Thrust Piece - VAS6779/1-
- 2 - Tube - VAS6779/4-
- 3 - Thrust Piece - VAS6779/5-
- 4 - Hydraulic Press - VAS6178- with Bearing Installer - Wheel
Hub/Bearing Kit Pressure Head - T10205/13-
- 5 - Hexagon Nut - VAS6779/3-
- 6 - Threaded Rod - VAS6779/2-



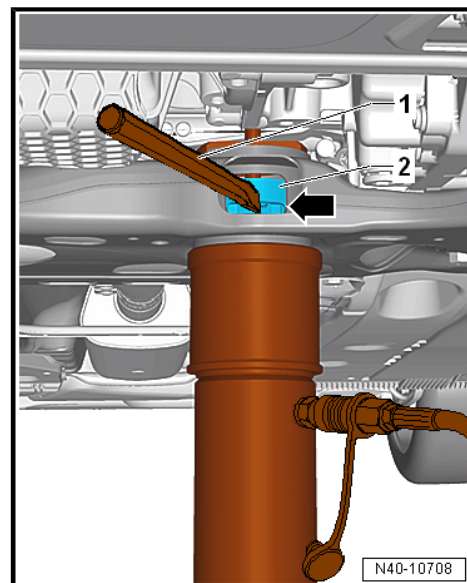
- Press out both bonded rubber bushings until the upper bonded rubber bushing -2- is visible through the opening for the pendulum support -arrow- in the subframe.
- Perform a visual inspection of the upper bonded rubber bushing -2- outer race.
- If the upper bonded rubber bushing -2- outer race is deformed, 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 -2- outer race.



Note

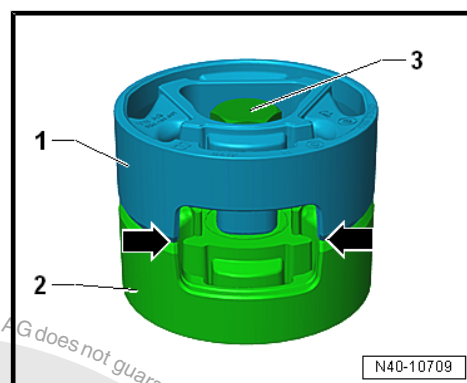
This work sequence is necessary to prevent tilting of the bonded rubber bushing outer race in the area of the pendulum support opening in the subframe.

- Completely press out both bonded rubber bushings at the same time.

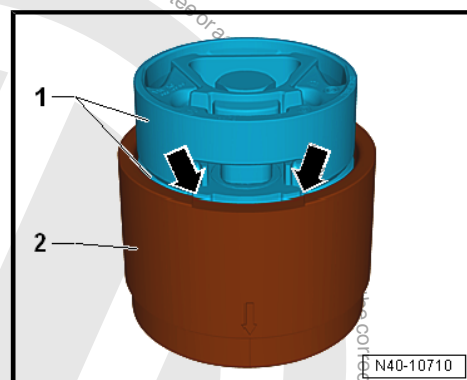


Prepare the Bonded Rubber Bushing Before Pressing In.

- 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 -1 and 2- using the original bolt -3- hand tight.



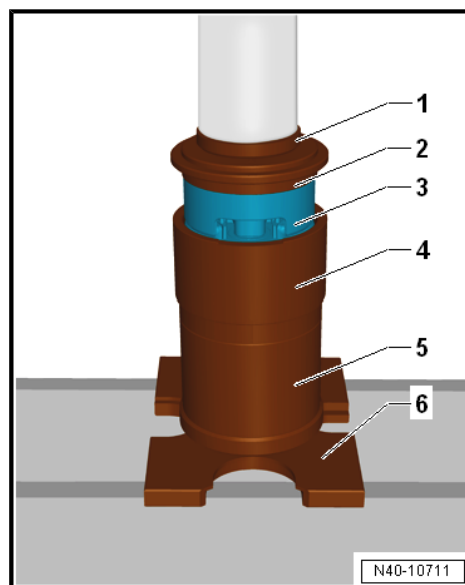
- Place the bonded rubber bushing -1- with the bolt head facing up in the larger diameter of the Funnel - VAS6779/6- -2-.
- Align the bonded rubber bushing -1- in the Funnel - VAS6779/6- -2-. The bonded rubber bushing opening must precisely face the recess -arrows- in the Funnel - VAS6779/6- -2-.



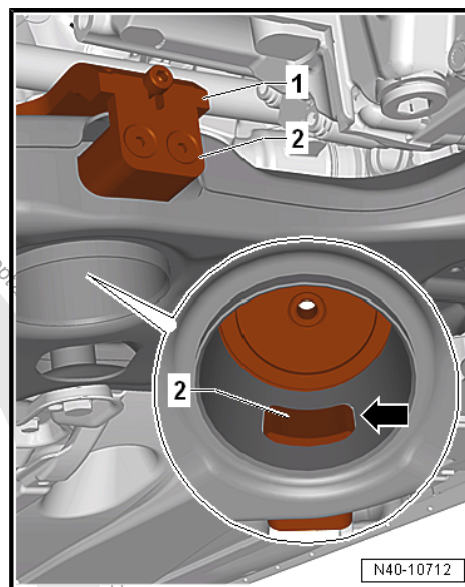


- Press the bonded rubber bushing -3- in the Funnel -VAS6779/6- as shown in the illustration until stop.

- 1 - Press Piece - Multiple Use - VW412-
- 2 - Thrust Piece - VAS6779/5- , the side with the letter »A« points up
- 3 - Bonded rubber bushing
- 4 - Funnel - VAS6779/6-
- 5 - Tube - VAS6779/4-
- 6 - Press Plate - VW401-

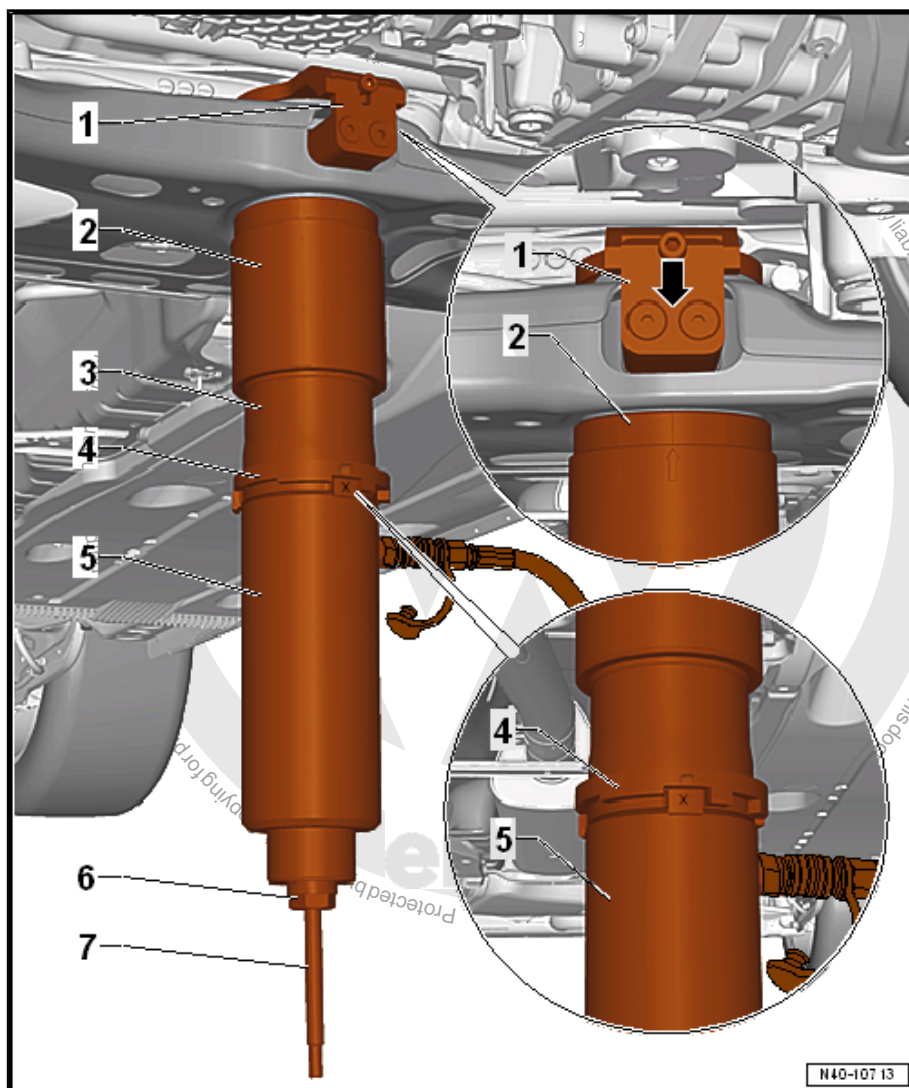


- Insert the Counter Hold - VAS6779/7- -1- into the subframe.
- Insert the Insert - VAS6779/7-1A- -2- in the pendulum support opening in the subframe.
- Fasten the Insert - VAS6779/7-1A- -2- onto the Counter Hold - VAS6779/7- -1-.
- Make sure that the Insert - VAS6779/7-1A- -2- is seated correctly in the subframe opening -arrow-.



Installing the Bonded Rubber Bushing

- Install the Threaded Rod - VAS6779/2- -7- in the Counter Hold - VAS6779/7- -1-.
- Install the Hydraulic Press - Bushing Tool Kit - VAS6779- as shown in the illustration on the subframe.



1 - Counter Hold - VAS6779/7-

2 - Funnel - VAS6779/6- , -arrow marking- on the Funnel - VAS6779/6- must align in the center of both bolts -arrow-.

3 - Thrust Piece - VAS6779/9-

4 - Incremental Ring - VAS6779/8- , the marking -I- on the Incremental Ring - VAS6779/8- must align with the marking -X- on the Thrust Piece - VAS6779/9-

5 - Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit Pressure Head - T10205/13-

6 - Hexagon Nut - VAS6779/3-

7 - Threaded Rod - VAS6779/2-

- Press in both bonded rubber bushing at the same time.
- Remove Hydraulic Press - Bushing Tool Kit - VAS6779- from the subframe and check seating of the pressed in bonded rubber bushing.
- Fasten the stabilizer bar with the subframe and the coupling rod.
- Install the pendulum support. Refer to ➤ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 10 ; Subframe Mount; Pendulum Support, Removing and Installing or ➤ Engine Me-



chanical, Fuel Injection and Glow Plug; Rep. Gr. 10 ; Sub-frame Mount; Pendulum Support, Removing and Installing .

- Install the front noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation

Tightening Specifications

- ◆ Refer to ➤ ["2.1 Overview - Subframe", page 16](#)
- ◆ Refer to ➤ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount or ➤ Engine Mechanical, Fuel Injection and Glow Plug; Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount
- ◆ Refer to ➤ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

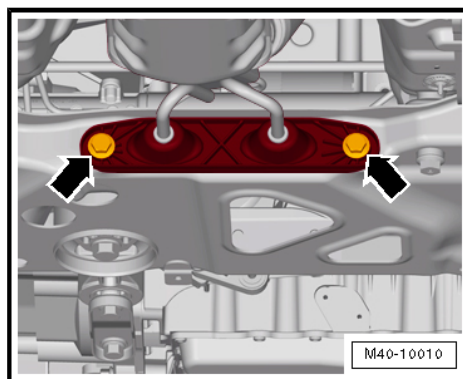
2.7 Stabilizer Bar, Removing and Installing

Special tools and workshop equipment required

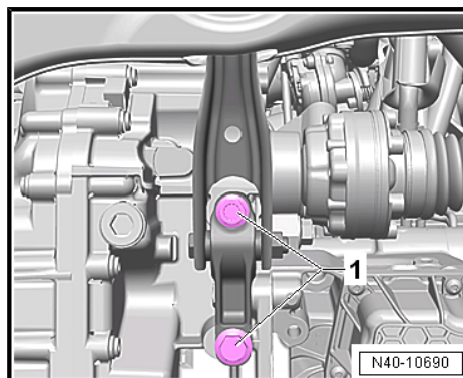
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931-

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.
- Remove the lower noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Remove the exhaust system bracket from the subframe -arrows-.

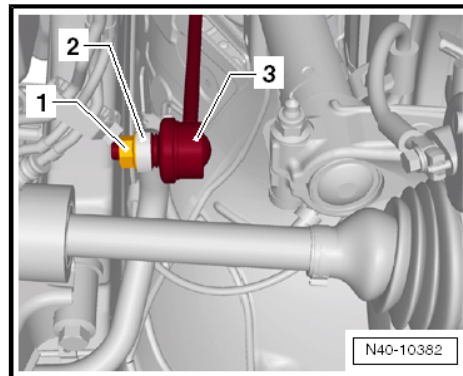


- Remove the pendulum support bolts -1-.

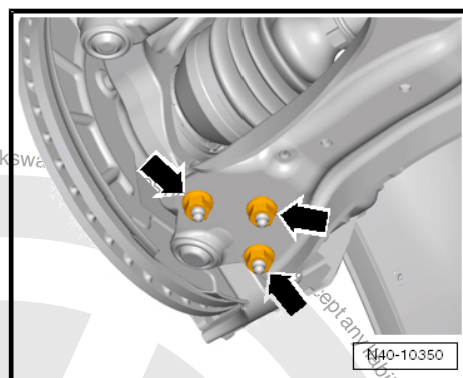




- Remove the hex nut -1- from the right and left coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.

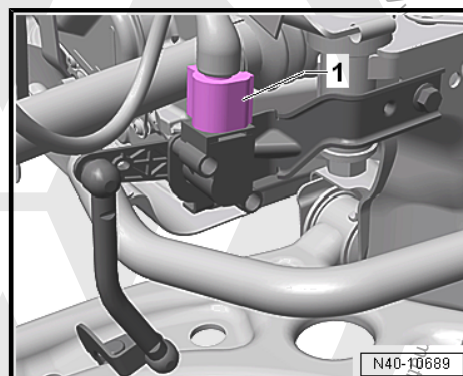


- Remove the nuts -arrows- on the left and right side of the vehicle.

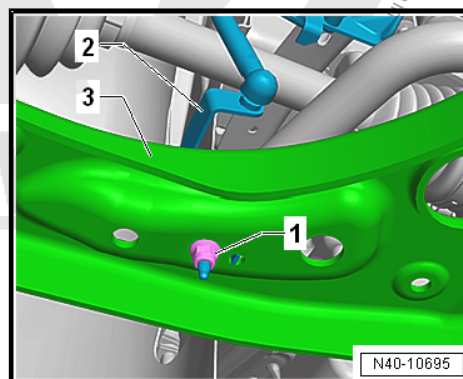


Vehicles with Level Control System Sensor

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



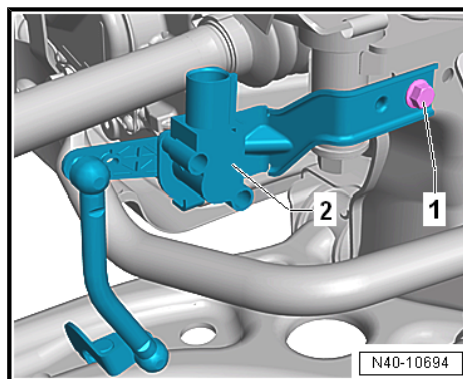
- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control System Sensor - G289- from the control arm -3-.



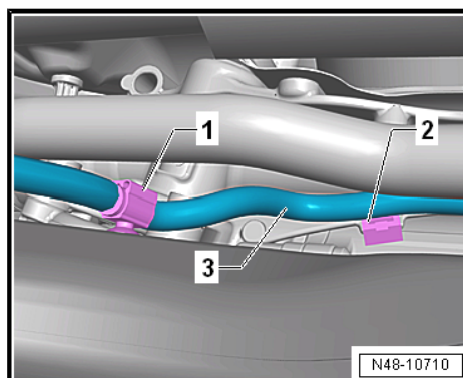


- Remove the bolt -1-.
- Remove the Left Front Level Control System Sensor - G78-
-2- or Right Front Level Control Sensor - G289-

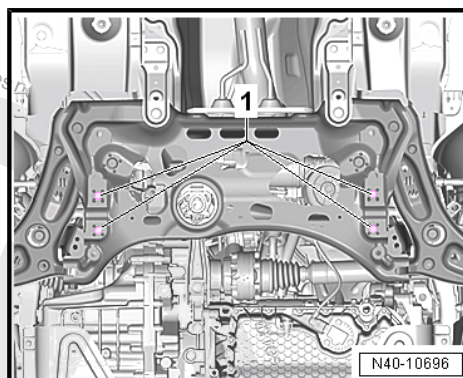
Continuation for all Vehicles.



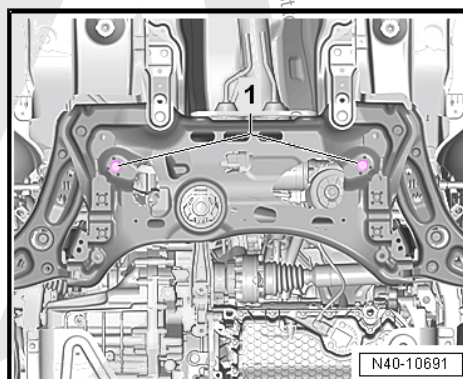
- Remove the clips -1 and 2- for the wiring harness -3- from the subframe and the steering gear.



- Remove the stabilizer bar bolts -1-.

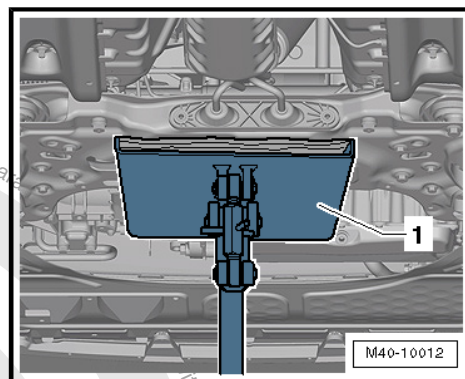


- Remove the steering gear bolts -1-.
- Pry the steering gear out of the subframe alignment sleeves.





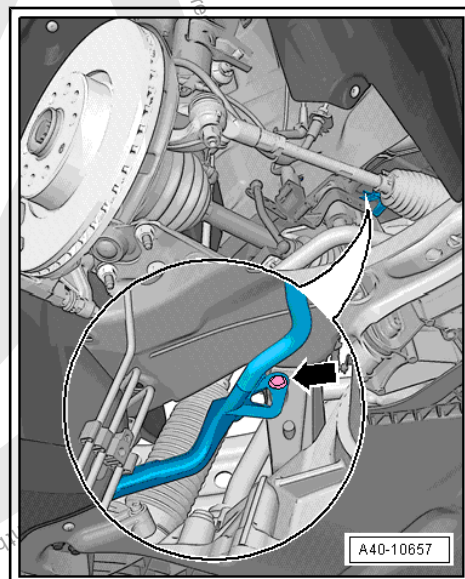
- Place the -VAS6931- 1- under the subframe.
- Secure the subframe (refer to [⇒ "2.2 Subframe, Securing", page 17](#)) and lower it approximately 10 cm.



- Remove the expanding clip -arrow-.
- Lower the subframe with the -VAS6931- until the stabilizer bar can be removed toward the rear.

Installing

Install in reverse order of removal while noting the following:



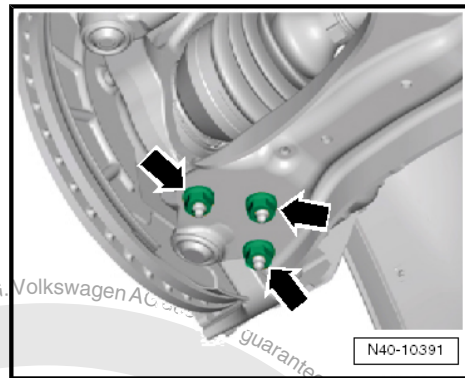


- Tighten nuts -arrows-.



Note

- ♦ Tighten the nuts -arrows- in curb weight position. Refer to ⇒ ["3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle", page 6](#).
 - ♦ The level control system sensor lever must point toward vehicle exterior.
 - ♦ The thread on the vehicle level sensor must be installed into the exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the ⇒ Vehicle diagnostic tester.



Tightening Specifications

- ♦ Refer to ⇒ ["2.1 Overview - Subframe", page 16](#)
- ♦ Refer to ⇒ ["2.1 Overview - Steering Column", page 338](#)
- ♦ Refer to ⇒ ["2.1 Overview - Front Level Control System Sensor", page 277](#)
- ♦
- ♦ Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount .
- ♦ Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- ♦ Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- ♦ ⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#)

If the steering wheel is still crooked after using the Locating Pins - T10486/1- then an axle alignment is necessary. In this case the record it in the vehicles axle alignment log.

2.8 Coupling Rod, Removing and Installing

Special tools and workshop equipment required

- ♦ Torque Wrench 1332 40-200Nm - VAG1332-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

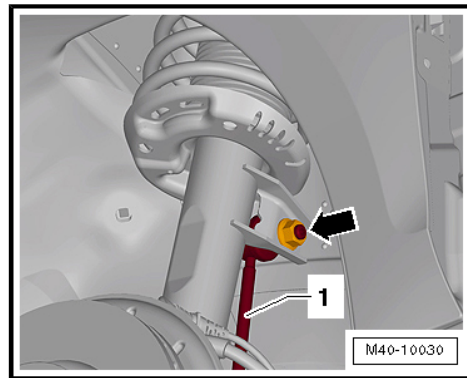
- ♦ Nut - Coupling Rod to Stabilizer Bar
- ♦ Nut - Coupling Rod to Suspension Strut

Removing

- Raise the vehicle.



- Remove the nut -arrow- and coupling rod -1- from the suspension strut.



- Remove the hex nut -1- from the coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2-.

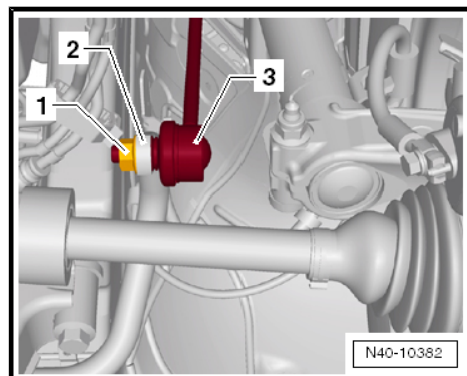
Installing

Install in reverse order of removal. Note the following:

- Tighten the coupling rod nuts on the suspension strut or stabilizer bar, counterholding on the multipoint socket head if necessary.

Tightening Specifications

- ◆ Refer to ➔ [“2.1 Overview - Subframe”, page 16](#)



2.9 Thread in Longitudinal Member, Servicing

It is possible to service the threads of the weld nuts in the longitudinal member depending on certain conditions. Refer to ➔ Body Repair; Rep. Gr. 50 .





3 Suspension Strut and Upper Control Arm

⇒ ["3.1 Overview - Suspension Strut and Upper Control Arm", page 44](#)

⇒ ["3.2 Suspension Strut, Removing and Installing", page 45](#)

⇒ ["3.3 Suspension Strut, Servicing", page 51](#)

3.1 Overview - Suspension Strut and Upper Control Arm

1 - Spring Seat

- ❑ Note the installation position

2 - Shock Absorber

- ❑ Different versions. Refer to the Parts Catalog.

3 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removal
- ❑ The bolt tip must face in direction of travel.

4 - Wheel Bearing Housing

- ❑ Different versions. Refer to the Parts Catalog.

5 - Nut

- ❑ Replace after removal

6 - Protective Sleeve

- ❑ Different versions. Refer to the Parts Catalog.

7 - Coil Spring

- ❑ Removing and installing. Refer to [⇒ "3.3 Suspension Strut, Servicing", page 51](#).
- ❑ Surface of spring coil may not be damaged.
- ❑ Different versions. Refer to the Parts Catalog.

8 - Axial Groove Ball Bearing

9 - Stop Buffer

- ❑ Different versions. Refer to the Parts Catalog.

10 - Suspension Strut Bearing

- ❑ Note installation position. Refer to [⇒ page 49](#).

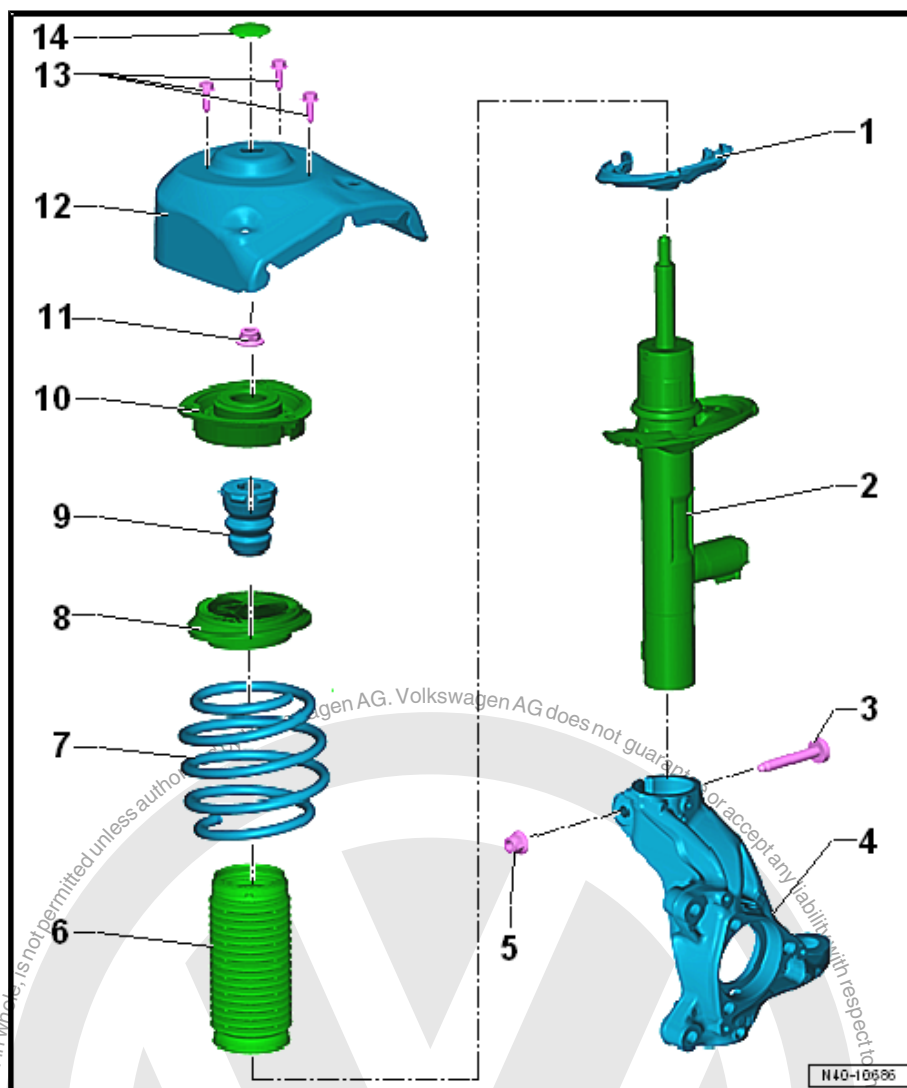
11 - Nut

- ❑ 60 Nm
- ❑ Replace after removal

12 - Body Front

13 - Bolt

- ❑ 15 Nm + 90°





- ❑ Replace after removal

14 - Cover

3.2 Suspension Strut, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Spreader Tool - 3424-
- ◆ Engine and Gearbox Jack - VAS6931-
- ◆ Engine/Gearbox Jack Adapter - Wheel Hub Support - T10149-
- ◆ Drive Shaft Remover - T10520-

Removing

- Loosen drive axle bolt on the wheel hub. Refer to
⇒ ["6.4 Drive Axle Threaded Connection, Loosening and Tightening", page 101](#) .



Caution

The wheel bearing must not be under load when the drive axle threaded connection on the wheel side is loose.

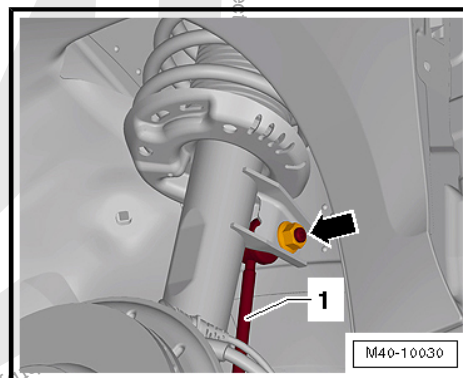
If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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 120 Nm.

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the nut -arrow- and the coupling rod -1- from the suspension strut.
- Disengage the wire for the ABS speed sensor from the suspension strut.





Vehicles with Level Control System Sensor

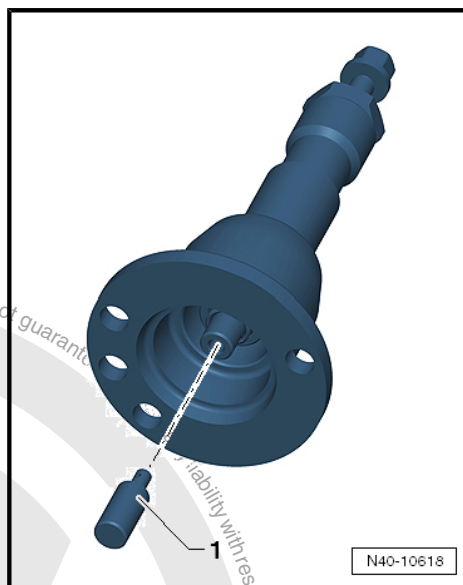
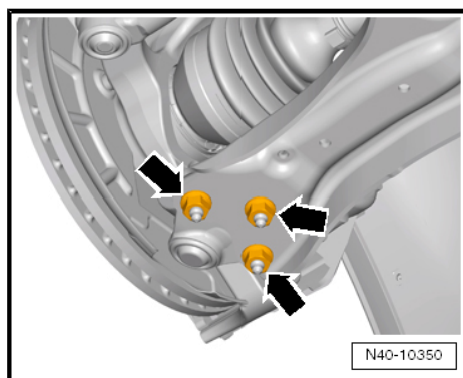
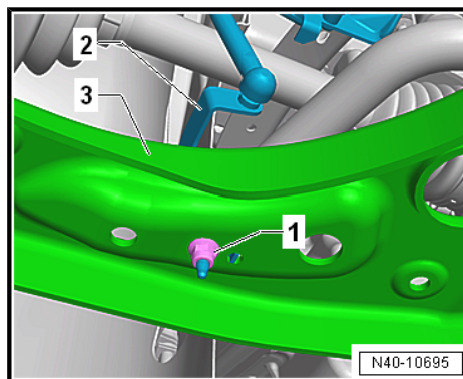
- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for all Vehicles

- Remove the nuts -arrows-.
- Remove the wheel bearing housing with the ball joint from the control arm.
- Remove the drive axle outer joint from the wheel hub.

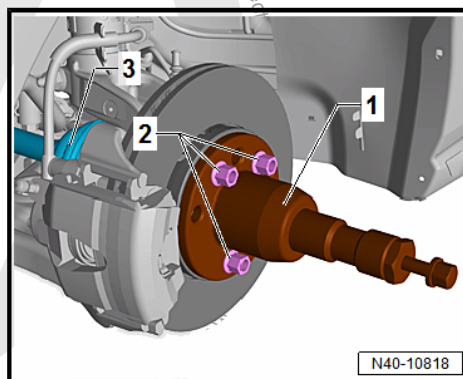
If the drive axle cannot be pulled out of the wheel bearing, then the drive axle can be pushed out of the wheel bearing using the Drive Shaft Remover - T10520- .

Before using the -T10520- , make sure that the thrust piece -1- is installed.



Using the -T10520- :

- Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.





- Follow the specified sequence exactly.

I - Tighten the knurled nut -1- hand-tight.

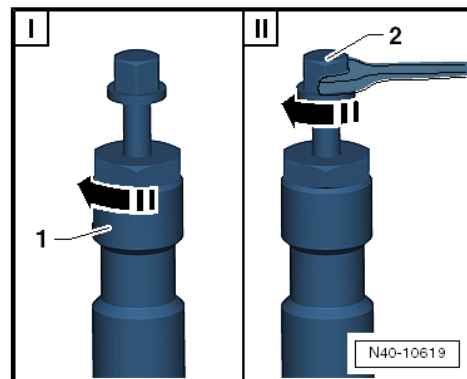
II - Only turn the bolt -2- using a wrench and press out the drive axle using the -T10520- .



Note

At the end of the tasks or to set back, the spindles must be brought back into the original position so that the hydraulic operation can be used.

- Secure the drive axle to the body using wire.



Caution

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

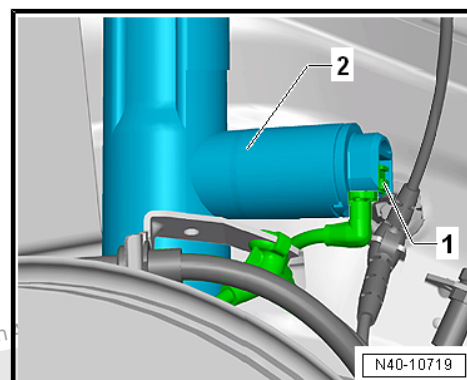
Vehicles with Adaptive Chassis DCC

- Disconnect the connector -1- from the shock absorber -2-.



Note

If there is moisture in the connector area, blow compressed air on the contacts on the shock absorber and the connectors.



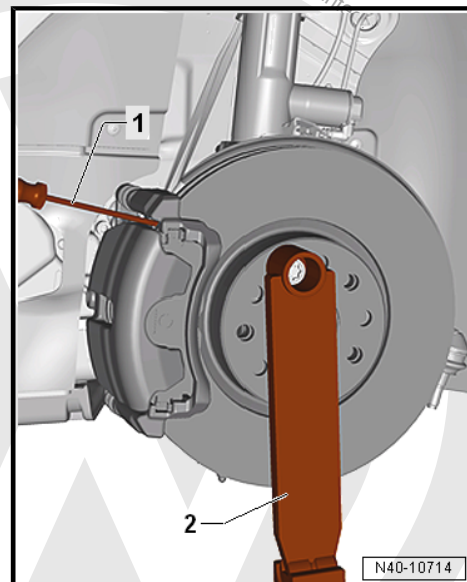
Continuation for all Vehicles.

- Insert a screwdriver -1- in the brake rotor between the brake caliper and brake carrier.
- Secure the -VAS6931- using -T10149- -2- to wheel hub with a wheel bolt.



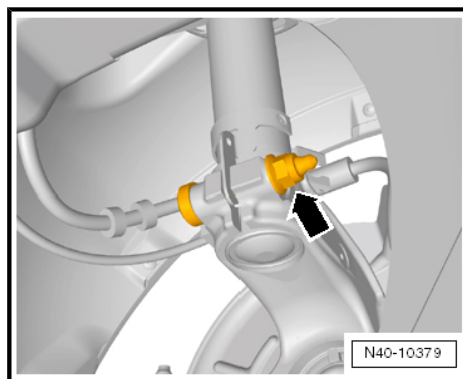
WARNING

- ◆ *Do not lift or lower the vehicle when the -VAS6931- is under the vehicle. The vehicle could slip off the hoist.*
- ◆ *Do not leave the -VAS6931- under the vehicle any longer than necessary.*





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



- Insert -3424- into wheel bearing housing slot.

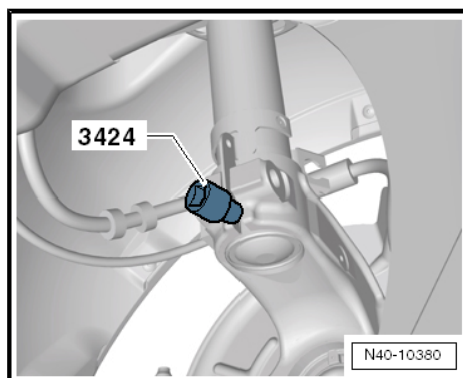


Note

Pay attention that the -3424- is only inserted in the wheel bearing housing. Only insert it far enough that the suspension strut metal retainer is not damaged.

- Turn the ratchet 90° and remove it from the -3424- .
- Press the brake rotor toward the suspension strut by hand.

Otherwise the shock absorber tube could tilt in the wheel bearing housing hole.



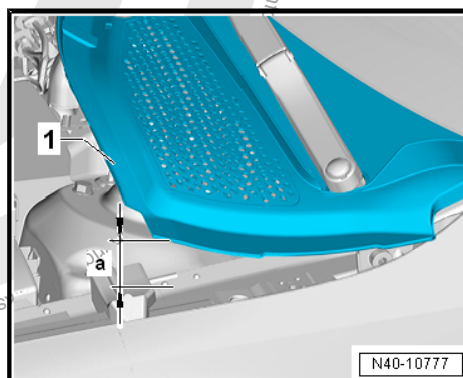
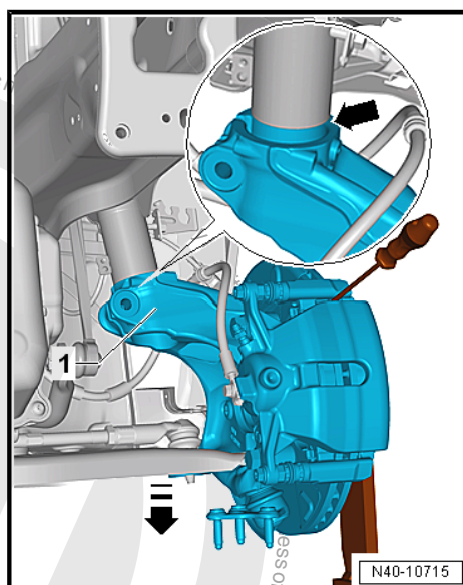
- Lower the wheel bearing housing -1- using the -VAS6931- in the direction of the -arrow-.
- Lower the wheel bearing housing -1- so that the shock absorber tube hangs freely -arrow-.
- Fasten the ball joint to the control arm again and secure the wheel bearing housing to the subframe.
- Remove the -VAS6931- from underneath the -T10149- .



WARNING

- ◆ **Do not leave the -VAS6931- under the vehicle any longer than necessary.**

- Remove the seal from the entire length of the plenum chamber cover.
 - Remove the clips.
 - Lift the plenum chamber cover -1- to maximum 60 mm.
- a - 60 mm

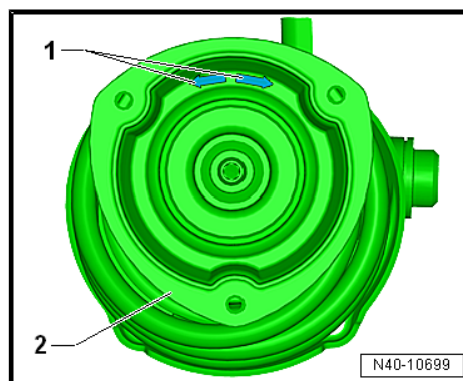
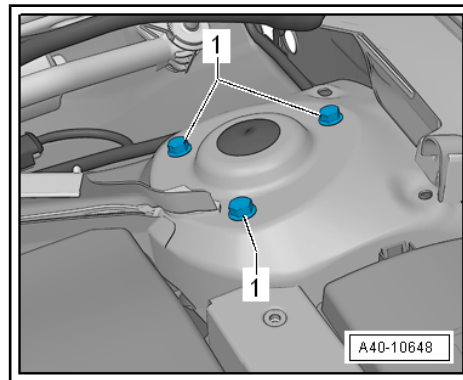




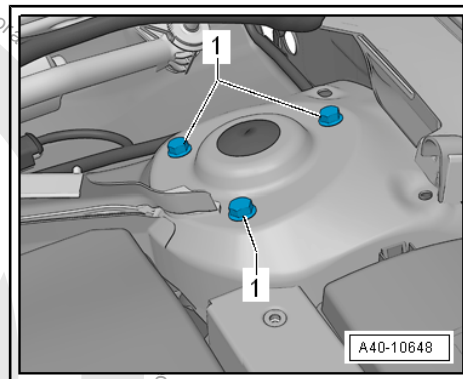
- Remove the bolts -1- for upper strut mount and remove shock absorber mount.

Installing

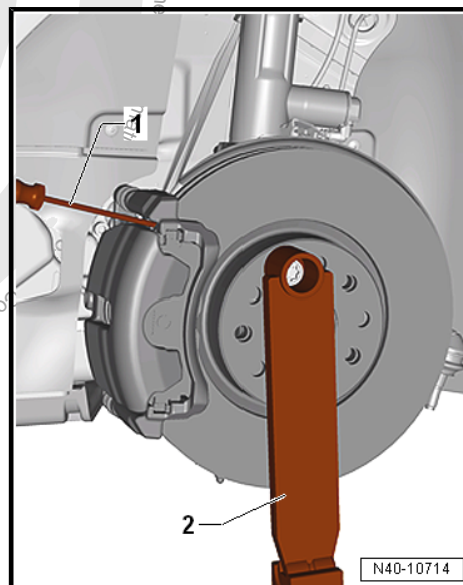
- Position the suspension strut so that the arrows -1- are always inside.
- One of the two arrows -1- on the spring plate -2- must point in the direction of travel.



- Insert the suspension strut and fasten the bolts -1- to the body.

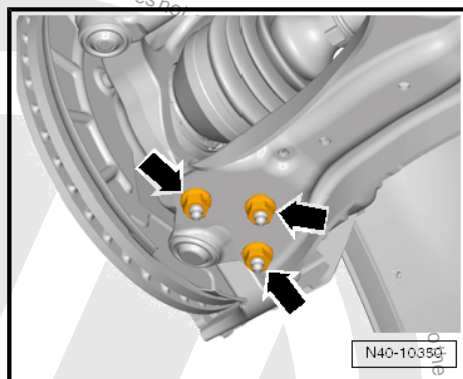


- Place the -VAS6931- under the -T10149- and secure the wheel bearing housing.
- Untie the wheel bearing housing from the subframe.

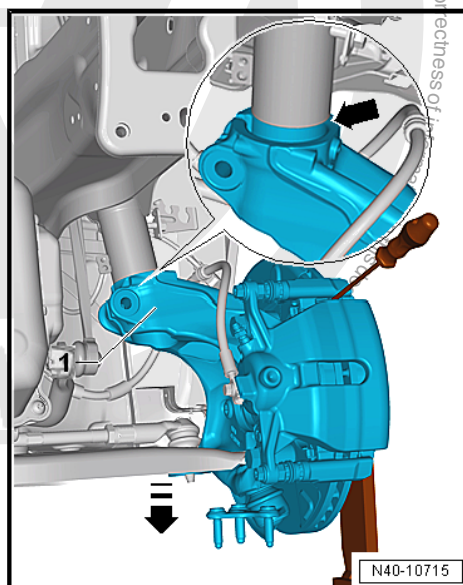




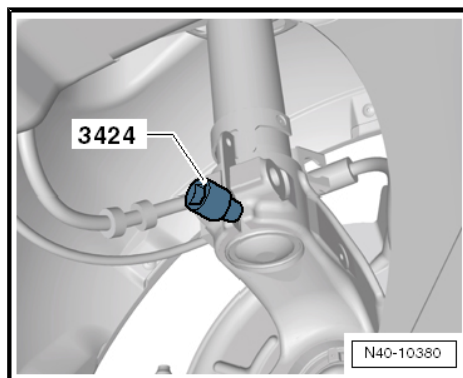
- Remove the nuts -arrows-.
- Remove the wheel bearing housing with the ball joint from the control arm.



- Lower the wheel bearing housing -1- using the -VAS6931- in the direction of the -arrow-.
- Push the wheel bearing housing with the -VAS6931- upward and install it on the suspension strut at the same time.
- Re-bolt the ball joint to the control arm and push the wheel bearing housing upward again until the end position on the suspension strut is reached.

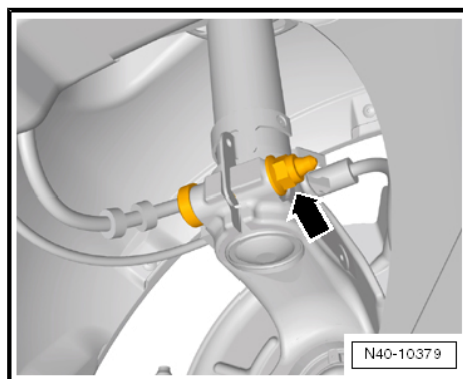


- Remove the -3424- .



- Insert the new bolt with tip facing the direction of travel.
- Fasten the wheel bearing housing with the new nut -arrow- to the suspension strut.

Further installation is the reverse order of removal. Note the following:



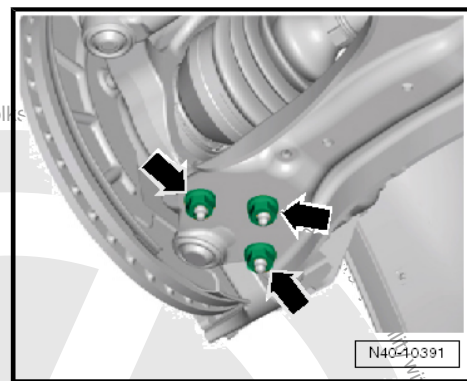


- Tighten nuts -arrows-.



Note

- ◆ *Tighten the nuts -arrows- in curb weight position. Refer to ⇒ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”, page 6](#).*
- ◆ *The level control system sensor lever must point toward vehicle exterior.*
- ◆ *The thread on the vehicle level sensor must be installed into the exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.*
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.



Tightening Specifications

- ◆ Refer to ⇒ [“3.1 Overview - Suspension Strut and Upper Control Arm”, page 44](#)
- ◆ Refer to ⇒ [“4.1 Overview - Lower Control Arm and Ball Joint”, page 54](#)
- ◆ Refer to ⇒ [“2.1 Overview - Subframe”, page 16](#)
- ◆ Refer to ⇒ [“2.1 Overview - Front Level Control System Sensor”, page 277](#)
- ◆ Refer to ⇒ [“6.2 Overview - Drive Axle”, page 80](#)
- ◆ Refer to ⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)

3.3 Suspension Strut, Servicing

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Spring Compressor Kit - Spring Tensioner - VAG1752/1-
- ◆ Spring Compressor Kit - Spring Retainer w/Inserts - VAG1752/4-
- ◆ Spring Compressor Kit - Strut Clamping Block - VAG1752/20-
- ◆ Shock Absorber Set - T10001-
- ◆ Shock Absorber Set - Socket - T10001/5-
- ◆ Shock Absorber Set - Extension SW7 - T10001/8-
- ◆ Shock Absorber Set - Reversible Ratchet - T10001/11-
- ◆ Ratchet (commercially available)
- ◆ Torque Wrench 1332 Insert - Ring Wrench - 21mm - VAG1332/7-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

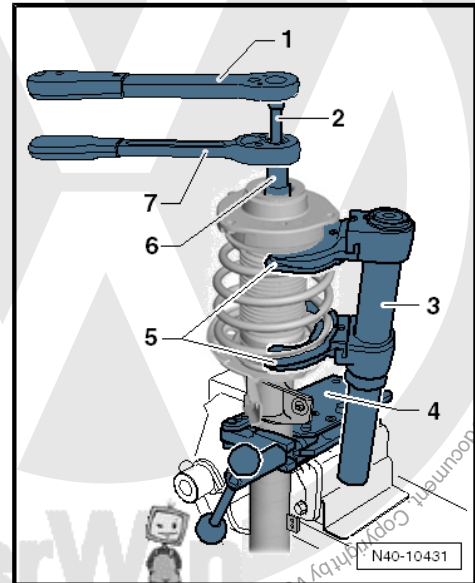
Mandatory Replacement Parts

- ◆ Nut - Shock Absorber
- Remove the suspension strut. Refer to ➤ [page 45](#) .

Removing Spring

- Clamp the Spring Compressor Kit - Strut Clamping Block - VAG1752/20- -4- in a vise.
- Tighten the suspension strut in the Spring Compressor Kit - Strut Clamping Block - VAG1752/20- -4-.
- Pretension the coil spring using the Spring Compressor Kit - Spring Tensioner - VAG1752/1- until the upper axial groove ball bearing is free.

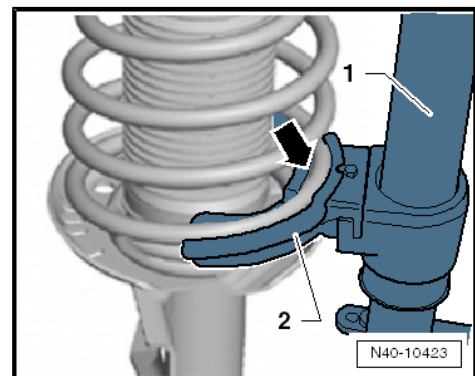
- 1 - Torque Wrench 1332 40-200Nm - VAG1332-
- 2 - Shock Absorber Set - Extension SW7 - T10001/8-
- 3 - Spring Compressor Kit - Spring Tensioner - VAG1752/1-
- 4 - Spring Compressor Kit - Strut Clamping Block - VAG1752/20-
- 5 - Spring Compressor Kit - Spring Retainer w/Inserts - VAG1752/4-
- 6 - Shock Absorber Set - Socket - T10001/5-
- 7 - Shock Absorber Set - Reversible Ratchet - T10001/11-



WARNING

First pre-load spring far 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-.



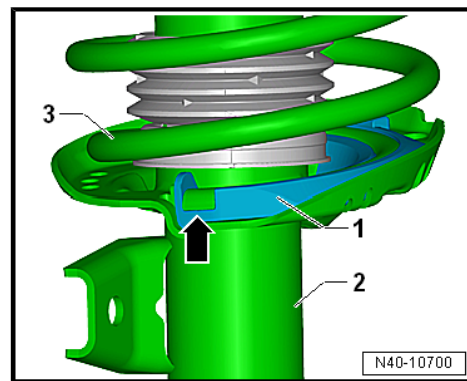


Installing Spring

- Place the spring support -1- in the shock absorber -2-.
- Place the coil spring -3- with the Spring Compressor Kit - Spring Tensioner - VAG1752/1- on the lower spring support.

End of spring coil must rest against stop -arrow-.

- Assemble all additional parts and tighten the new nut on the piston rod.
- Relieve the tension on the Spring Compressor Kit - Spring Tensioner - VAG1752/1- and remove from the coil spring.
- Remove the suspension strut from the Spring Compressor Kit - Strut Clamping Block - VAG1752/20- .
- Install the suspension strut. Refer to [⇒ "3.2 Suspension Strut, Removing and Installing", page 45](#) .



Tightening Specifications

- ◆ Refer to [⇒ "3.1 Overview - Suspension Strut and Upper Control Arm", page 44](#)



4 Lower Control Arm and Ball Joint

⇒ [“4.1 Overview - Lower Control Arm and Ball Joint”, page 54](#)

⇒ [“4.2 Lower Control Arm, Removing and Installing”, page 55](#)

⇒ [“4.3 Ball Joint, Checking”, page 61](#)

⇒ [“4.4 Ball Joint, Removing and Installing”, page 62](#)

⇒ [“4.5 Front Lower Control Arm Bonded Rubber Bushing, Replacing”, page 65](#)

⇒ [“4.6 Lower Control Arm Rear Bonded Rubber Bushing, Replacing”, page 67](#)

4.1 Overview - Lower Control Arm and Ball Joint

1 - Wheel Bearing Housing

- ❑ Different versions. Refer to the Parts Catalog

- ❑ Removing and installing. Refer to
⇒ [“5.2 Wheel Bearing Housing, Removing and Installing”, page 70](#)

2 - Nut

- ❑ 60 Nm
- ❑ Replace after removal

3 - Ball Joint

- ❑ Removing and installing. Refer to
⇒ [“4.4 Ball Joint, Removing and Installing”, page 62](#)

4 - Nut

- ❑ 40 Nm +45°
- ❑ Replace after removal
- ❑ Tighten in the curb weight position. Refer to
⇒ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”, page 6](#)

5 - Lower Control Arm

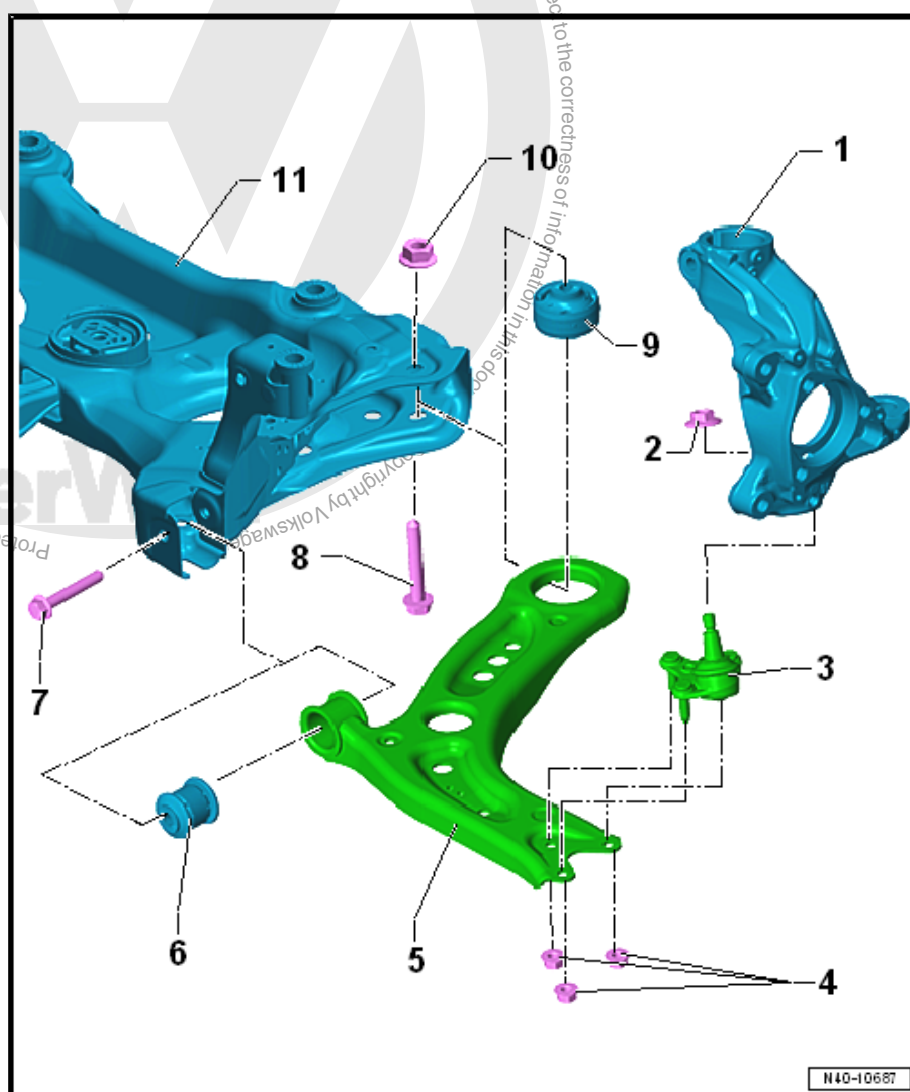
- ❑ Removing and installing. Refer to
⇒ [“4.2 Lower Control Arm, Removing and Installing”, page 55](#)

6 - Front Bonded Rubber Bushing

- ❑ Replacing. Refer to ⇒ [“4.5 Front Lower Control Arm Bonded Rubber Bushing, Replacing”, page 65](#)

7 - Bolt

- ❑ 70 Nm + 180°
- ❑ Replace after removal
- ❑ Tighten in the curb weight position. Refer to
⇒ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”, page 6](#)





8 - Bolt

- ☐ 70 Nm + 180°
- ☐ Replace after removal

9 - Rear Bonded Rubber Bushing

- ☐ Replacing. Refer to ⇒ ["4.6 Lower Control Arm Rear Bonded Rubber Bushing, Replacing", page 67](#)

10 - Nut

11 - Subframe

4.2 Lower Control Arm, Removing and Installing

⇒ ["4.2.1 Lower Control Arm, Removing and Installing, Vehicles with Manual Transmission, DSG Transmission 0CW", page 55](#)

⇒ ["4.2.2 Lower Control Arm, Removing and Installing, Vehicles with DSG Transmission 0D9", page 57](#)

4.2.1 Lower Control Arm, Removing and Installing, Vehicles with Manual Transmission, DSG Transmission 0CW

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-

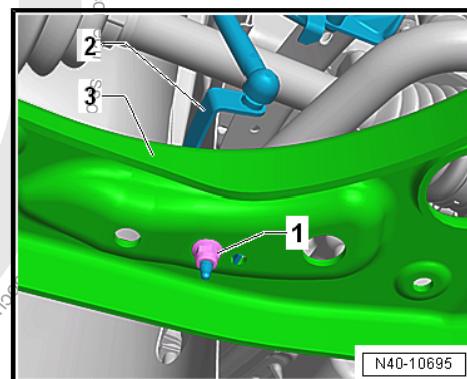
Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Loosen the wheel housing liner in the rear area and fold forward.

Vehicles with Level Control System Sensor

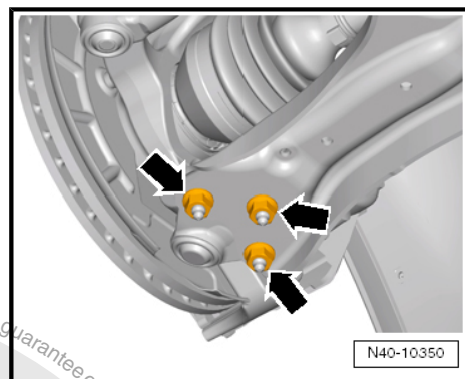
- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for all Vehicles





- Remove the nuts -arrows-.
- 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.

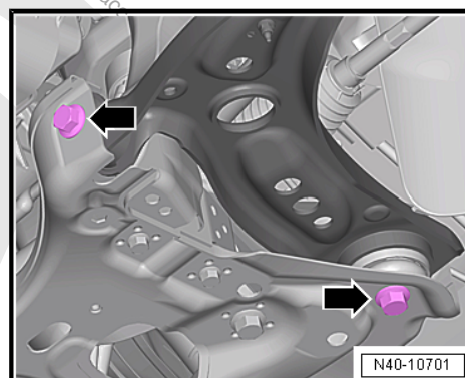


- Remove the bolts -arrows-.



Note

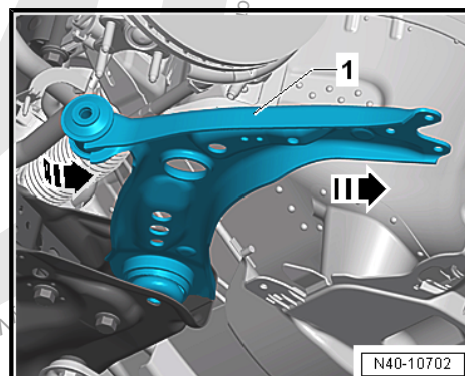
The rear bolt is attached with a nut. Counterhold the nut when loosening.



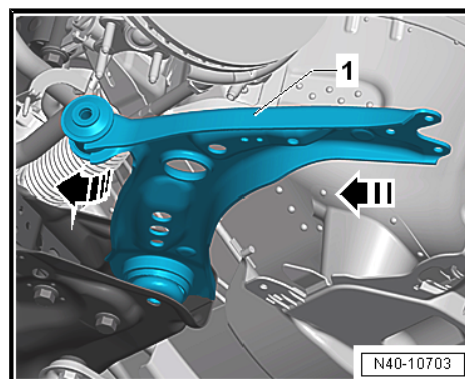
- Swivel the control arm -1- toward the rear and then remove it from the subframe in direction of -arrow-.

Installing

Install in reverse order of removal. Note the following:



- Insert the rear control arm -1- into the subframe in direction of -arrow- and swivel it forward.





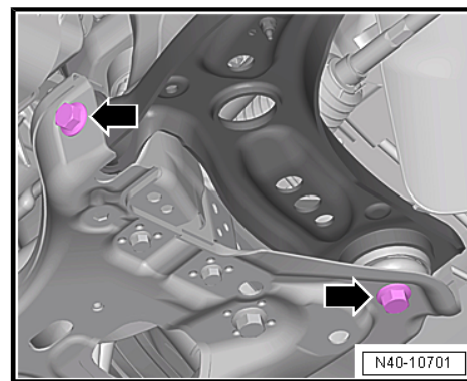
- Tighten the screws -arrows-.



Note

The rear bolt must be attached with a new nut. Counterhold the nut when tightening.

Further installation is the reverse order of removal. Note the following:

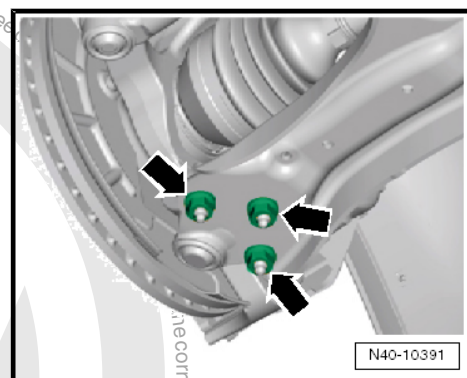


- Tighten nuts -arrows-.



Note

- ◆ *Tighten the nuts -arrows- in curb weight position. Refer to ⇒ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”, page 6](#).*
- ◆ *The level control system sensor lever must point toward vehicle exterior.*
- ◆ *The thread on the vehicle level sensor must be installed into the exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.*



- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the ⇒ Vehicle diagnostic tester.

Tightening Specifications

- ◆ Refer to ⇒ [“4.1 Overview - Lower Control Arm and Ball Joint”, page 54](#)
- ◆ Refer to ⇒ [“2.1 Overview - Front Level Control System Sensor”, page 277](#)
- ◆ Refer to ⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

4.2.2 Lower Control Arm, Removing and Installing, Vehicles with DSG Transmission 0D9

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine Support - T10533-

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.



- Remove the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Loosen the wheel housing liner in the rear area and fold forward.

Vehicles with Level Control System Sensor

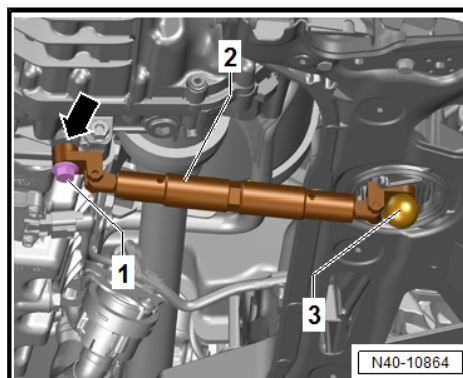
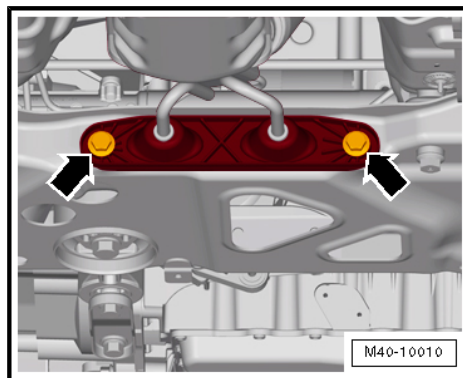
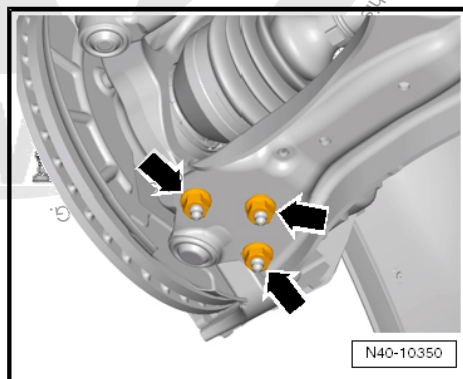
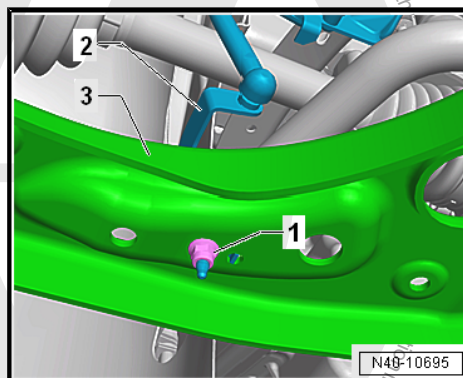
- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for all Vehicles

- Remove the nuts -arrows-.
- 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.
- Remove the pendulum support. Refer to ➤ Rep. Gr. 10 ; Stabilizer Bar; Pendulum Support, Removing and Installing.
- Loosen the exhaust system double clamp. Refer to ➤ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

- Remove the exhaust system bracket from the subframe -arrows-.
- Completely assemble the -T10533- to reach the shortest length.

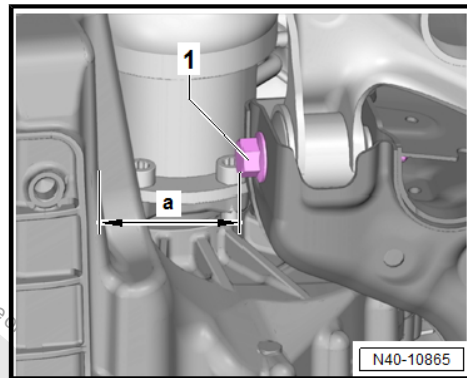
- Install the -T10533- -2- with the highest angle -arrow- on the transmission. To do so use the shortest bolt of the pendulum support thread -1-.
- Push the engine/transmission assembly forward until the -T10533/5- -3- can be inserted in the pendulum support bearing.



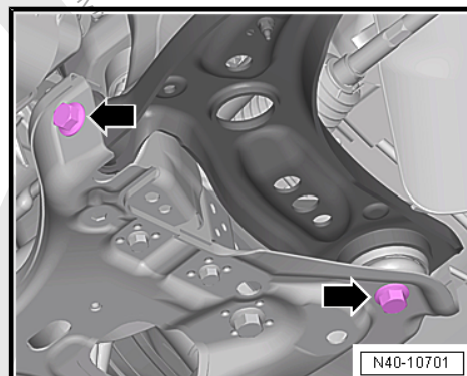


- Turn the -T10533- until the distance -a- between the bolt for the control arm -1- and the transmission is reached.

a = 85 mm



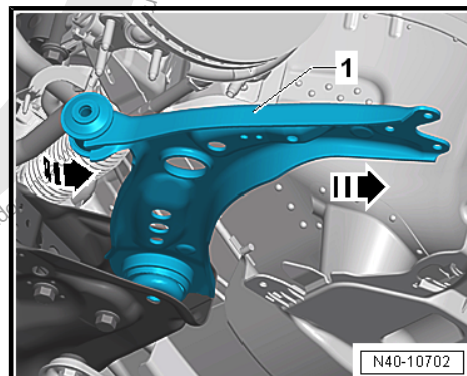
- Remove the bolts -arrows-.



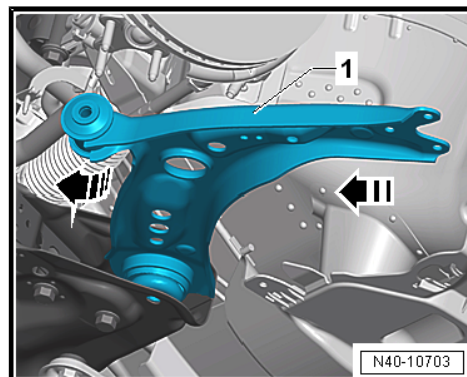
- Swivel the control arm -1- toward the rear and then remove it from the subframe in direction of -arrow-.

Installing

Install in reverse order of removal. Note the following:



- Insert the rear control arm -1- into the subframe in direction of -arrow- and swivel it forward.





- Tighten the screws -arrows-.



Note

*Tighten the bolts -arrows- and nuts in curb weight position. Refer to
⇒ "3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil
Spring, Front Axle", page 6.*

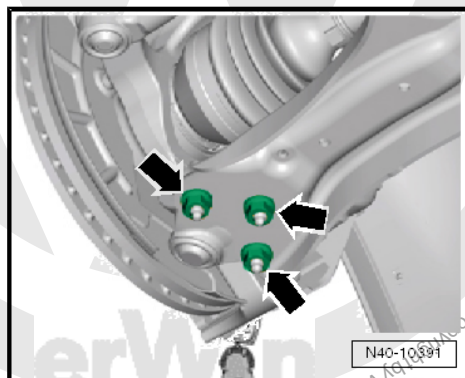
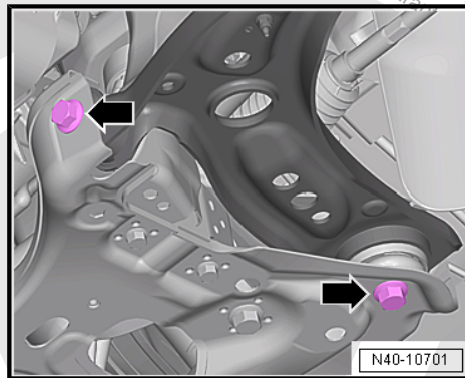
- Tighten nuts -arrows-.



Note

*Tighten the nuts -arrows- in curb weight position. Refer to
⇒ "3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil
Spring, Front Axle", page 6.*

- Remove the -T10533- .
- Remove the exhaust system double clamp. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Exhaust Pipes/Mufflers, Separating .
- Install the pendulum support. Refer to ⇒ Rep. Gr. 10 ; Sub-frame Mount; Pendulum Support, Removing and Installing .





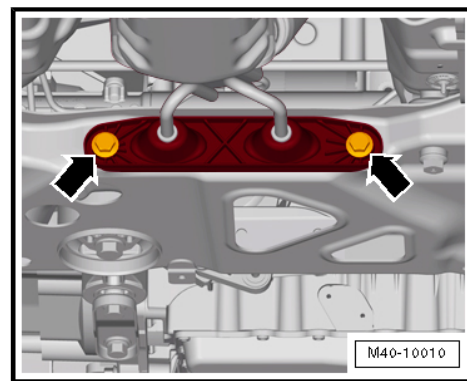
- Install the exhaust system bracket from the subframe -arrows-.

Further installation is the 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 exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the
⇒ Vehicle diagnostic tester.



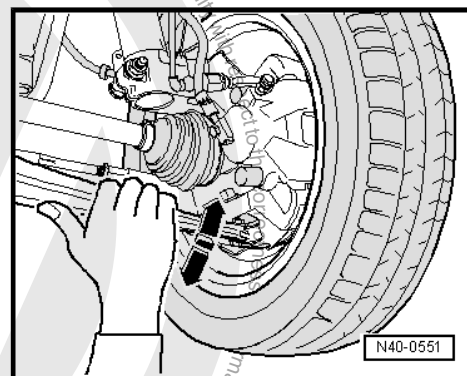
Tightening Specifications

- ◆ Refer to
⇒ [“4.1 Overview - Lower Control Arm and Ball Joint”, page 54](#)
- ◆ Refer to
⇒ [“2.1 Overview - Front Level Control System Sensor”, page 277](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Pendulum support bolts. Refer to ⇒ Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount .
- ◆ Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- ◆ Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- ◆ Exhaust system to subframe. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

4.3 Ball Joint, Checking

Axial Play, Checking

- Forcefully pull control arm down in direction of -arrow- and press up again.





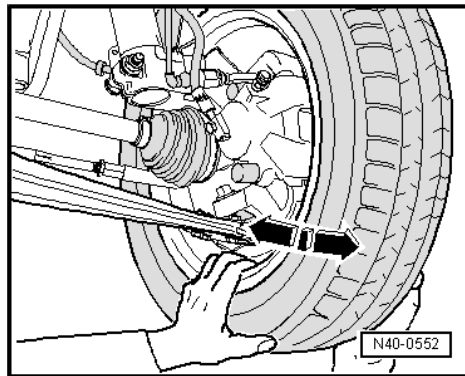
Radial Clearance, Checking

- Forcefully push lower part of wheel inward and outward in direction of -arrow-.



Note

- ◆ *There should not be any noticeable or visible “play” in either of the two checks.*
- ◆ *Observe lower ball joint while performing checks.*
- ◆ *Make allowance for any wheel bearing play or “play” in strut mounting at top.*
- ◆ *Check rubber boot for damage, replace lower ball joint, if necessary.*



4.4 Ball Joint, Removing and Installing

Special tools and workshop equipment required

- ◆ Puller - Ball Joint - 3287A-
- ◆ Digital Torque Wrench - VAG1756A-
- ◆ Torque Wrench 1332 Insert - Ring Wrench - 18mm - VAG1332/10-
- ◆ Drive Shaft Remover - T10520-
- ◆ Torx Key Socket Set - VAG1603A-

Removing

- Loosen drive axle bolt on the wheel hub. Refer to [⇒ “6.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 101](#).



Caution

The wheel bearing must not be under load when the drive axle threaded connection on the wheel side 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.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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 120 Nm.***

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.



Vehicles with Level Control System Sensor

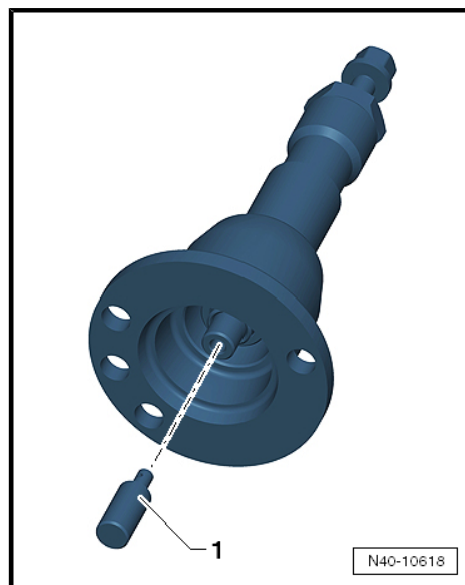
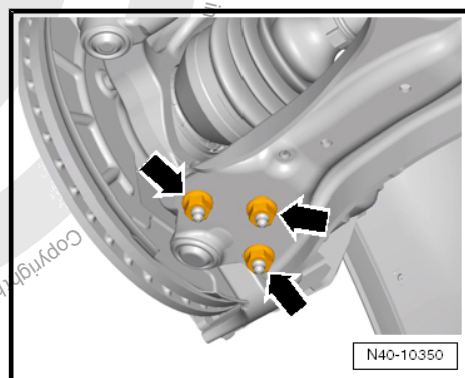
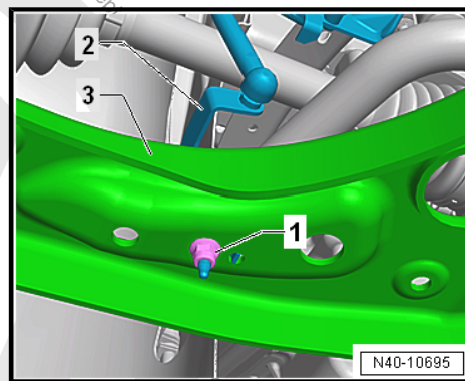
- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for all Vehicles

- Remove the nuts -arrows-.
- Pull the drive axle slightly off the wheel hub.

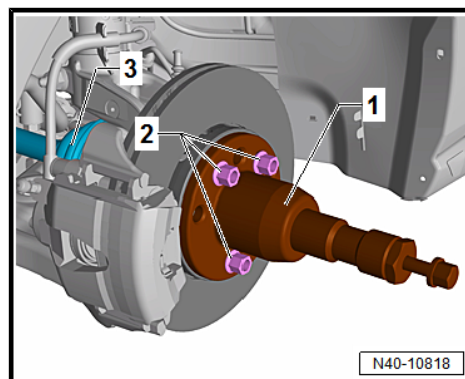
If the drive axle cannot be pulled out of the wheel bearing, then the drive axle can be pushed out of the wheel bearing using the -T10520-.

Before using the -T10520- , make sure that the thrust piece -1- is installed.



Using the -T10520- :

- Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.





- Follow the specified sequence exactly.

I - Tighten the knurled nut -1- hand-tight.

II - Only turn the bolt -2- using a wrench and press out the drive axle using the -T10520- .



Note

At the end of the tasks or to set back, the spindles must be brought back into the original position so that the hydraulic operation can be used.

- Remove the control arm from the ball joint.
- Move the control arm downward as much as needed.
- Loosen the nut on the ball joint -2- but do not remove it.



Caution

To protect the thread, screw the nut on the pin a few turns.

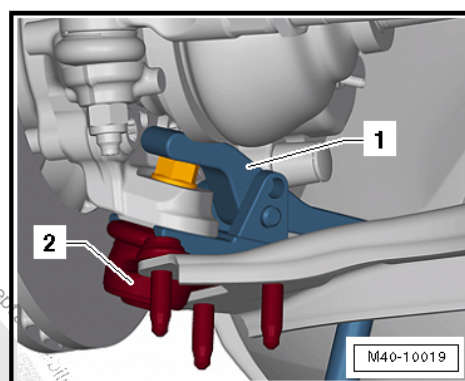
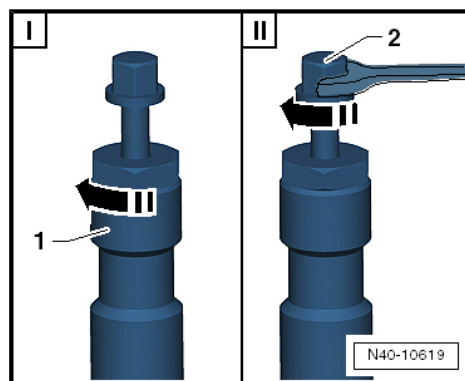
- Remove the ball joint from the wheel bearing housing. Then remove the nut and the ball joint -2-.

1 - -3287A-

Installing

Install in reverse order of removal while noting the following:

- Insert ball joint into wheel bearing housing.
- Install drive axle in wheel hub.
- Install the new self-locking nut while counterholding using -T40- from the TORX® (-VAG1603A-).



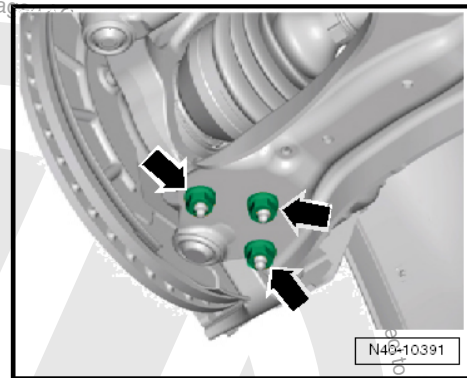


- Tighten nuts -arrows-.



Note

- ◆ Tighten the nuts -arrows- in curb weight position. Refer to [⇒ "3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle", page 6](#).
- ◆ Make sure the ball joint boot is not damaged or twisted.
- ◆ The level control system sensor lever must point toward vehicle exterior.
- ◆ The thread on the vehicle level sensor must be installed into the exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.
- Install the wheel and tighten.
- Tighten drive axle bolt onto the wheel hub. Refer to [⇒ "6.4 Drive Axle Threaded Connection, Loosening and Tightening", page 101](#).



Note

Vehicle must not be standing on its wheels when doing this, otherwise wheel bearing will be damaged.

- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the [⇒ Vehicle diagnostic tester](#).

Tightening Specifications

- ◆ Refer to [⇒ "4.1 Overview - Lower Control Arm and Ball Joint", page 54](#)
- ◆ Refer to [⇒ "2.1 Overview - Front Level Control System Sensor", page 277](#)
- ◆ Refer to [⇒ "6.2 Overview - Drive Axle", page 80](#)
- ◆ Refer to [⇒ "1.1 Wheel Bolt Tightening Specifications", page 286](#)

4.5 Front Lower Control Arm Bonded Rubber Bushing, Replacing

Special tools and workshop equipment required

- ◆ Wishbone Rubber Mount Assembly Tool - T10219-
- ◆ Press Plate - VW402-
- ◆ Press Piece - Rod - VW411-
- ◆ Press Piece - Multiple Use - VW412-
- ◆ Installation Lubricant - G 294 421 A1-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

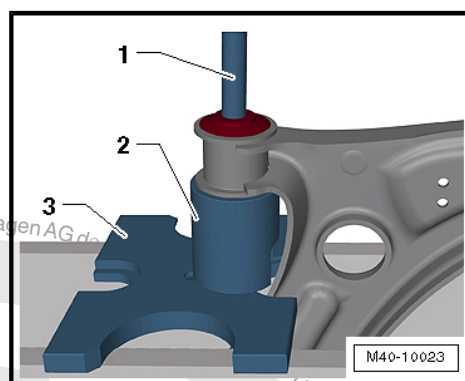
Mandatory Replacement Parts

- ◆ Nuts - Lower Control Arm to Ball Joint
- ◆ Bolts - Subframe to Lower Control Arm
- Remove the lower control arm. Refer to [⇒ "4.2 Lower Control Arm, Removing and Installing", page 55](#).

Pressing Out the Bonded Rubber Bushing

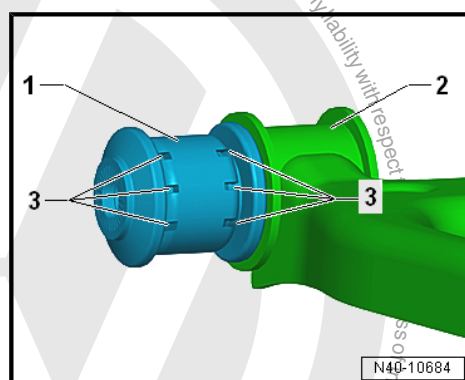
- Press out bonded rubber bushings as depicted in the illustration.

- 1 - Press Piece - Rod - VW411-
- 2 - Wishbone Rubber Mount Assembly Tool - Tube - T10219/1- (the opening must face the control arm)
- 3 - Press Plate - VW402-

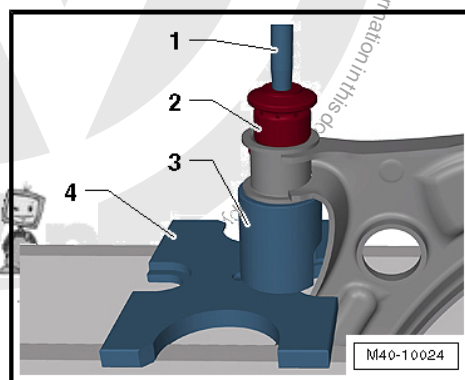


Installing the Bonded Rubber Bushing

- Align the bonded rubber bushing -1- with the control arm -2-. The grooves -3- must point to the control arm -2- as shown.
- Apply Installation Lubricant - G 294 421 A1- onto the outside of the bonded rubber bushing.



- Install the bonded rubber bushing as illustrated.
- 1 - Wishbone Rubber Mount Assembly Tool-Drift - T10219/2-
 - 2 - Bonded rubber bushing
 - 3 - Wishbone Rubber Mount Assembly Tool - Tube - T10219/1- (the opening must face the control arm)
 - 4 - Press Plate - VW402-

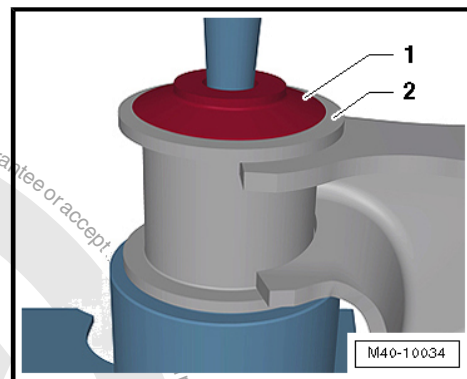


Note

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.

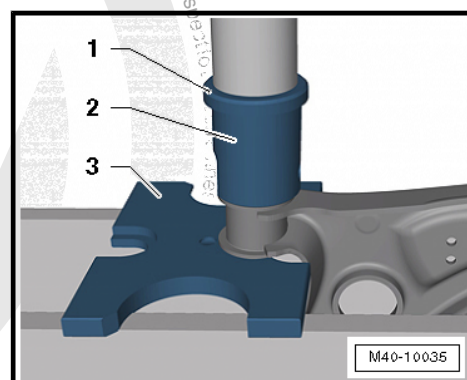


- Install the bonded rubber bushing until the core -1- and the transverse link hole -2- are at the same height.



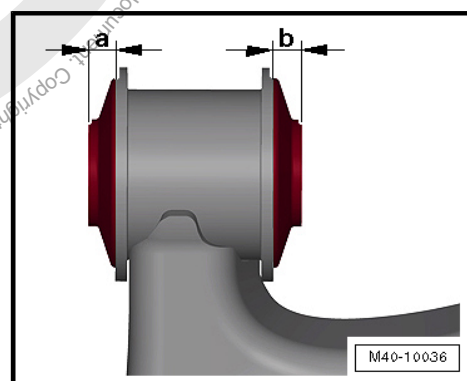
- Press back bearing slightly in control arm.

- 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.

- Install the lower control arm. Refer to [⇒ "4.2 Lower Control Arm, Removing and Installing", page 55](#).



4.6 Lower Control Arm Rear Bonded Rubber Bushing, Replacing

Special tools and workshop equipment required

- ◆ Bearing Installer - Wheel Bearing - 3345-
- ◆ Bearing Installer - Multiple Use - 3348-
- ◆ Press Plate - VW401-
- ◆ Press Piece - Rod - VW411-
- ◆ Press Piece - Multiple Use - VW412-
- ◆ Bearing Installer - Ball Joint/Bushing/Bearing - VW459-
- Remove the control arm. Refer to [⇒ "4.2 Lower Control Arm, Removing and Installing", page 55](#).
- ◆ Vehicles with manual transmission, DSG transmission 0CW.
Refer to [⇒ "4.2.1 Lower Control Arm, Removing and Installing, Vehicles with Manual Transmission, DSG Transmission 0CW", page 55](#)

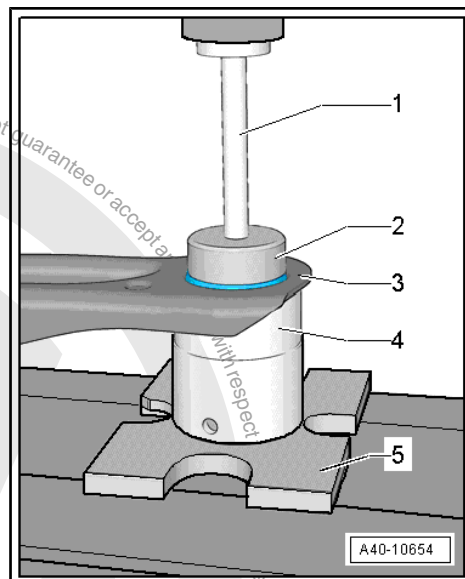


- ♦ Vehicles with DSG Transmission 0D9. Refer to
⇒ ["4.2.2 Lower Control Arm, Removing and Installing, Vehicles with DSG Transmission 0D9", page 57](#) .

Bonded Rubber Bushing, Pressing Out

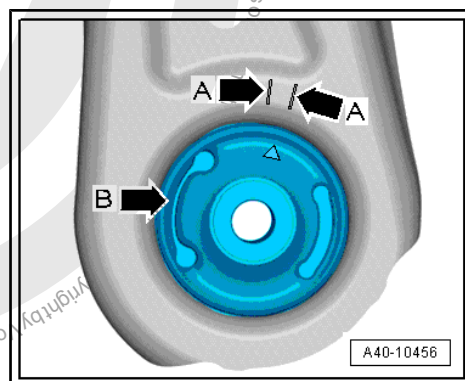
- Press out the bonded rubber bushings as shown.

- 1 - -VW411-
- 2 - -3348-
- 3 - Control Arm
- 4 - -3345-
- 5 - -VW401-



Bonded Rubber Bushing Installed Position

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



Bonded Rubber Bushing, Pressing In

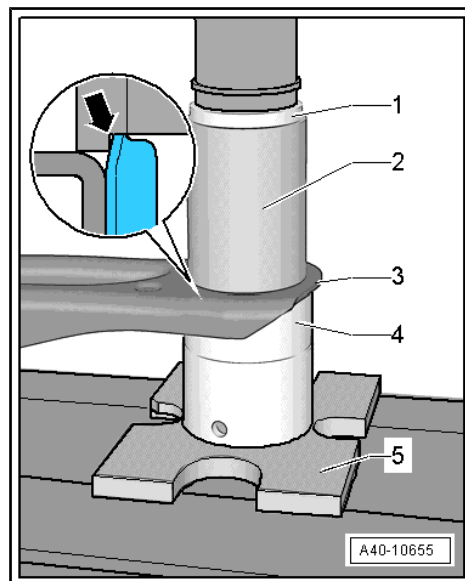
- Install the bonded rubber bushing as shown.

- 1 - -VW412-
- 2 - -VW459/2- , the inner offset in the sleeve -arrow- points downward
- 3 - Control Arm
- 4 - -3345-
- 5 - -VW401-



Note

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

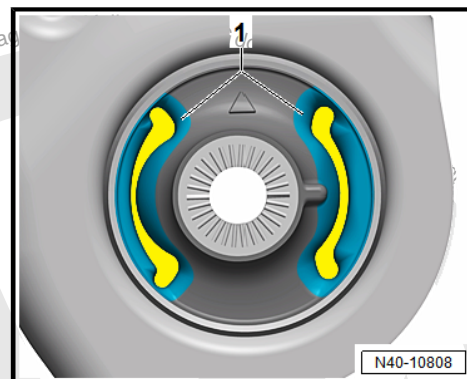




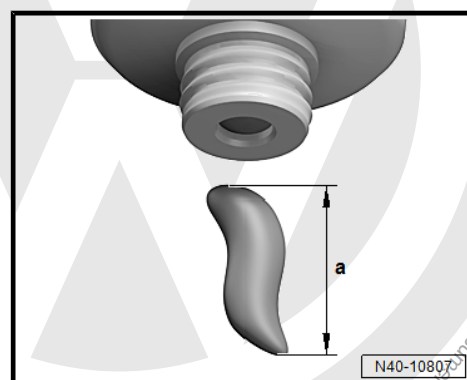
Greasing Bonded Rubber Bushing:

The kidney-shaped area -1- of the bonded rubber bushing must be lubricated.

- To do so, apply grease in the kidney-shaped area -1- starting from the top working outward.
- Use the Grease - N.052.150.00.- .



- The required quantity of grease together for both sides should be approximately 1 cm -dimension a- as shown.
- Half of the grease quantity (approximately 0.5 cm) must be applied per kidney-shaped area.
- The grease quantity must be applied on the top using a commercially available brush.
- The contact surfaces to the control arm must not come in contact with grease.
- Install the control arm
⇒ ["4.2 Lower Control Arm, Removing and Installing", page 55](#) .
- ◆ Vehicles with manual transmission, DSG transmission 0CW. Refer to ⇒ [page 56](#)
- ◆ Vehicles with DSG Transmission 0D9. Refer to ⇒ [page 59](#) .





5 Wheel Bearing

⇒ [“5.1 Overview - Wheel Bearing”, page 70](#)

⇒ [“5.2 Wheel Bearing Housing, Removing and Installing”, page 70](#)

⇒ [“5.3 Wheel Bearing Unit, Removing and Installing”, page 75](#)

5.1 Overview - Wheel Bearing

1 - Cover Plate

2 - Bolt

- 12 Nm

3 - Wheel Bearing Unit

- Removing and installing. Refer to
⇒ [“5.3 Wheel Bearing Unit, Removing and Installing”, page 75](#)
- Cannot be serviced

4 - Bolt

- 200 Nm + 180°
- Replace after removal
- Loosening and tightening. Refer to
⇒ [“6.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 101](#)

5 - Wheel Bearing Housing

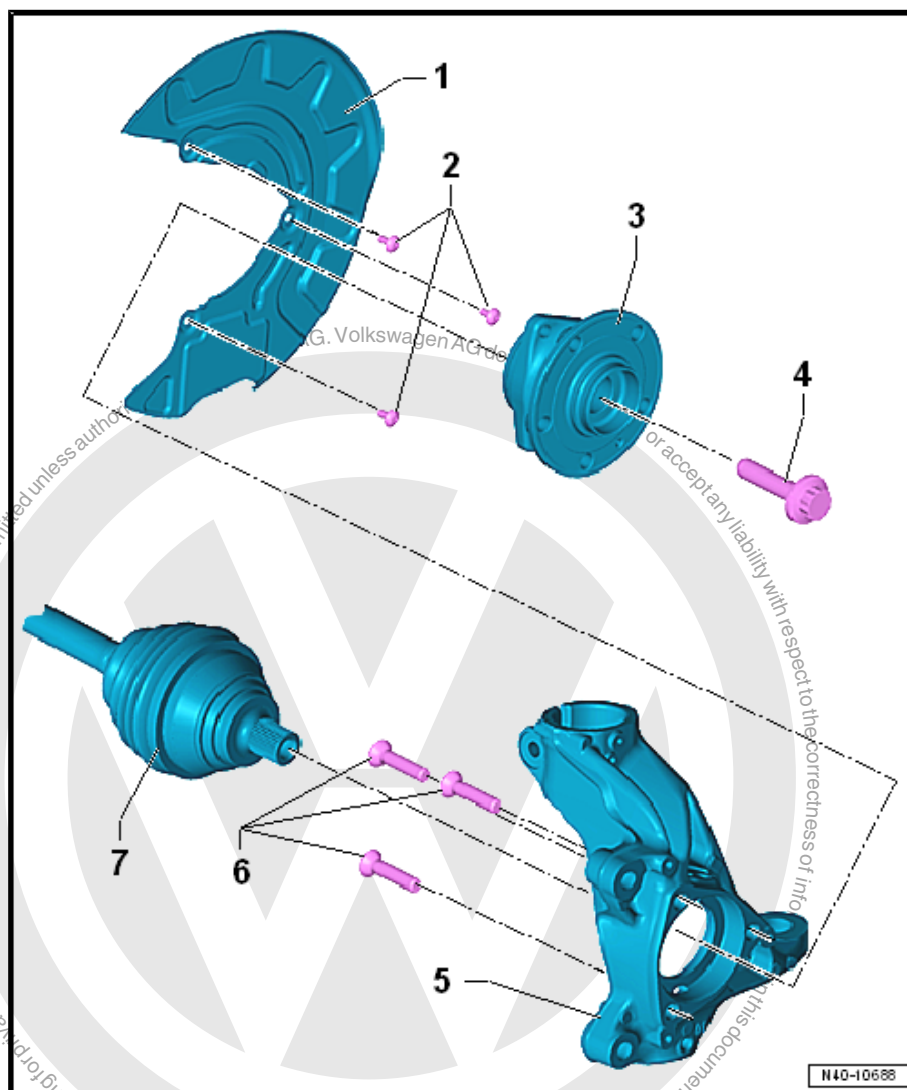
- There are different versions. For allocation. Refer to the Parts Catalog.
- Removing and installing. Refer to
⇒ [“5.2 Wheel Bearing Housing, Removing and Installing”, page 70](#)

6 - Bolt

- 70 Nm + 90°
- Replace after removal

7 - Drive Axle

- Do not let the drive axle hang down. 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 Parts Catalog.



5.2 Wheel Bearing Housing, Removing and Installing

Special tools and workshop equipment required

- ◆ Ball Joint Splitter - 3287A-
- ◆ Spreader Tool - 3424-



- ◆ Puller - Ball Joint - T10187-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931-
- ◆ Digital Torque Wrench - VAG1756A-
- ◆ Drive Shaft Remover - T10520-

Removing

- Remove the drive axle bolt. Refer to
⇒ ["6.4 Drive Axle Threaded Connection, Loosening and Tightening", page 101](#).



Caution

The wheel bearing must not be under load when the drive axle threaded connection on the wheel side is loose.

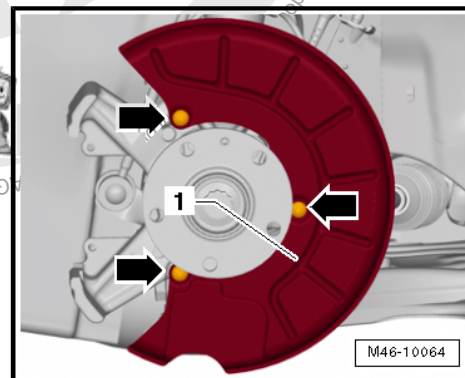
If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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 120 Nm.*

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the brake caliper and tie it to the vehicle body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Front Brakes; Overview - Front Brakes .
- Remove the ABS speed sensor. Refer to ⇒ Brake System; Rep. Gr. 45 ; Sensors; Front ABS Wheel Speed Sensor - G45- / -G47- , Removing and Installing .
- Remove the brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Overview - Front Brakes .
- Remove and free up the brake line bracket and electrical wires from the wheel bearing housing.
- Remove the cover plate -1- from the wheel bearing housing -arrow-.





- Loosen the nut from the tie rod end, but do not unscrew yet.

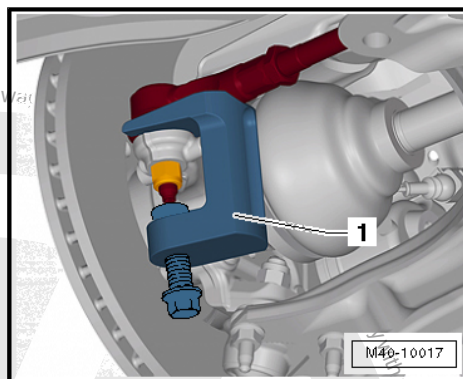


Caution

To protect the thread, screw the nut on the pin a few turns.

- Remove the tie rod from the wheel bearing housing and remove the nut.

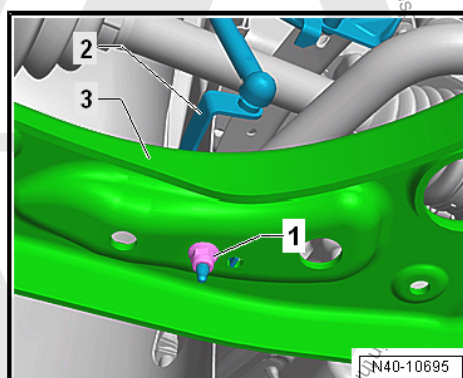
1 - -T10187-



Vehicles with Level Control System Sensor

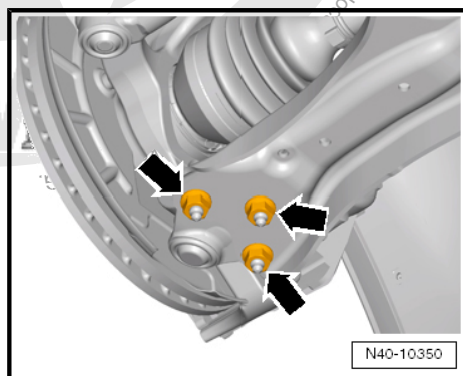
- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for all Vehicles

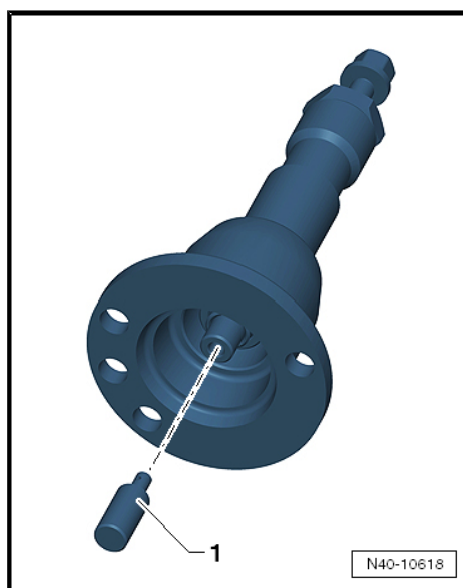


- Loosen the nuts -arrows-.
- Remove the control arm from the ball joint.
- Remove the drive axle outer joint from the wheel hub.

If the drive axle cannot be pulled out of the wheel bearing, then the drive axle can be pushed out of the wheel bearing using the -T10520- .



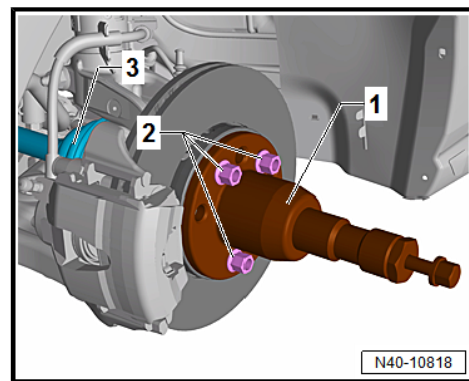
Before using the -T10520- , make sure that the thrust piece -1- is installed.





Using the -T10520- :

- Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.



- Follow the specified sequence exactly.

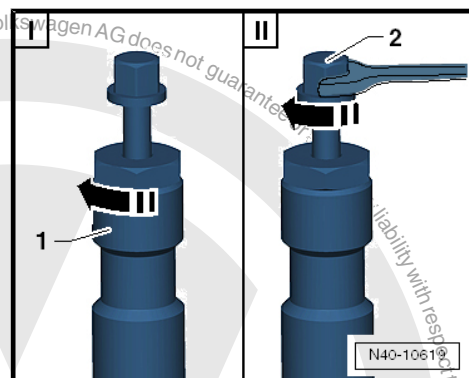
I - Tighten the knurled nut -1- hand-tight.

II - Only turn the bolt -2- using a wrench and press out the drive axle using the -T10520- .

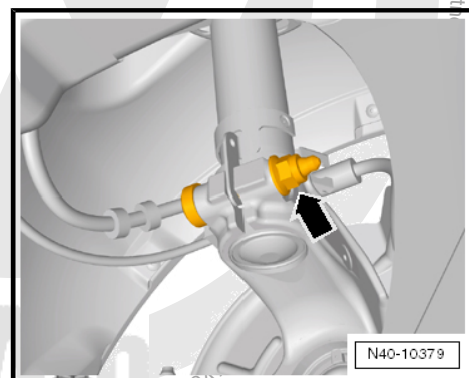


Note

At the end of the tasks or to set back, the spindles must be brought back into the original position so that the hydraulic operation can be used.



- Secure the drive axle to the body using wire.
- Place the -VAS6931- under the wheel bearing housing.
- Remove the threaded connection on the wheel bearing housing/suspension strut -arrow-.





- Insert -3424- into wheel bearing housing slot.



Note

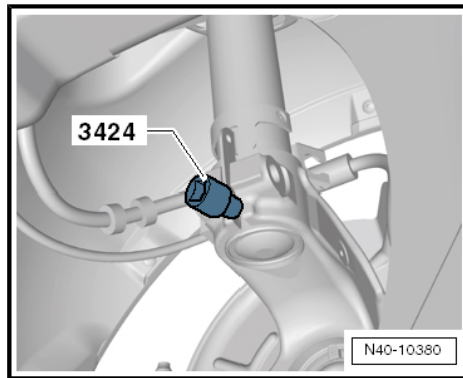
Pay attention that the -3424- is only inserted in the wheel bearing housing. Only insert it far enough that the suspension strut metal retainer is not damaged.

- Turn the ratchet 90° and remove it from the -3424- .
- Remove the wheel bearing housing from the suspension strut.



Note

If the wheel bearing housing is being replaced, then the ball joint must also be replaced. New nuts must be used.



Installing

Install in reverse order of removal while noting the following:

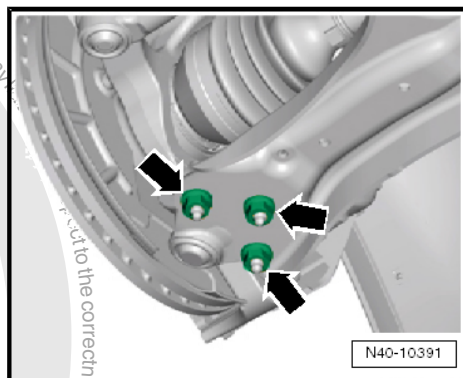
- Tighten nuts -arrows-.



Note

- ♦ *Tighten the nuts -arrows- in curb weight position. Refer to ➔ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”, page 6](#). The level control system sensor lever must point toward vehicle exterior.*
- ♦ *The thread on the vehicle level sensor must be installed into the exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.*

- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.



Tightening Specifications

- ♦ Refer to ➔ [“5.1 Overview - Wheel Bearing”, page 70](#)
- ♦ Refer to ➔ [“4.1 Overview - Lower Control Arm and Ball Joint”, page 54](#)
- ♦ Refer to ➔ [“3.1 Overview - Suspension Strut and Upper Control Arm”, page 44](#)
- ♦ Refer to ➔ [“6.2 Overview - Drive Axle”, page 80](#)
- ♦ Refer to ➔ [“2.1 Overview - Front Level Control System Sensor”, page 277](#)
- ♦ Refer to ➔ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ♦ Speed sensor bolt. Refer to ➔ Brake System; Rep. Gr. 45 ; Sensors; Overview - Front Axle Speed Sensor .
- ♦ Bolts for cover plate, brake caliper and brake rotor. Refer to ➔ Brake System; Rep. Gr. 46 ; Front Brakes; Overview - Front Brakes .



5.3 Wheel Bearing Unit, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-

Removing

- Remove the drive axle bolt. Refer to
⇒ [“6.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 101](#) .



Caution

The wheel bearing must not be under load when the drive axle threaded connection on the wheel side 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.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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 120 Nm.*

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.

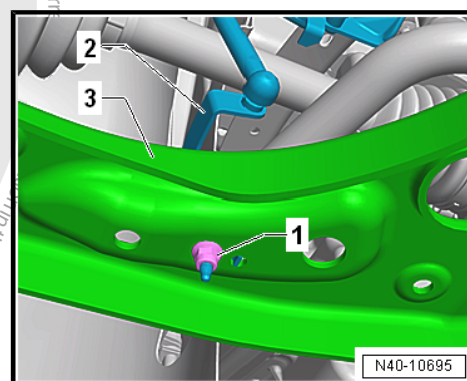
Remove the brake caliper and tie it to the vehicle body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Front Brakes; Overview - Front Brakes .

- Remove the brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Overview - Front Brakes .

Vehicles with Level Control System Sensor

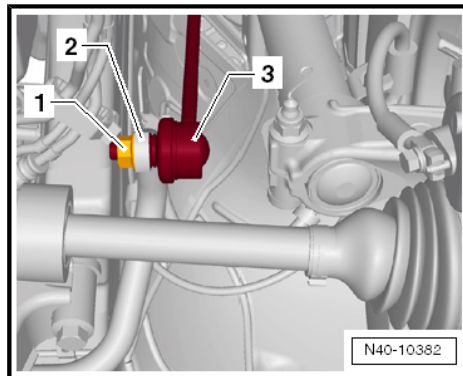
- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for all Vehicles

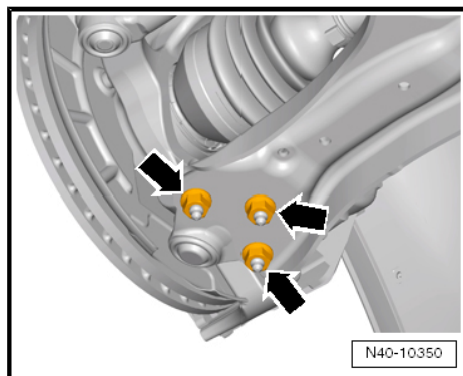




- Remove the hex nut -1- from the coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2-.



- Remove the nuts -arrows-.
- Remove the control arm from the ball joint.
- Remove the drive axle outer joint from the wheel hub.
- Secure the drive axle to the body using wire.
- Attach the ball joint to the control arm again -arrows-.

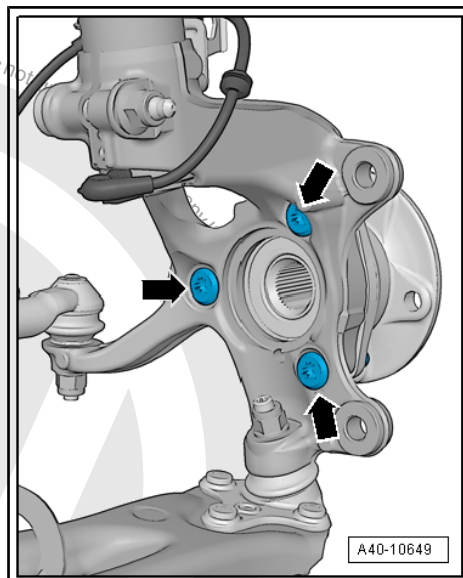


- Remove the bolts -arrows-.
- Remove wheel bearing unit from wheel bearing housing.



Caution

- **Avoid contaminating with dirt and damaging the seal when lifting, setting down/storing.**

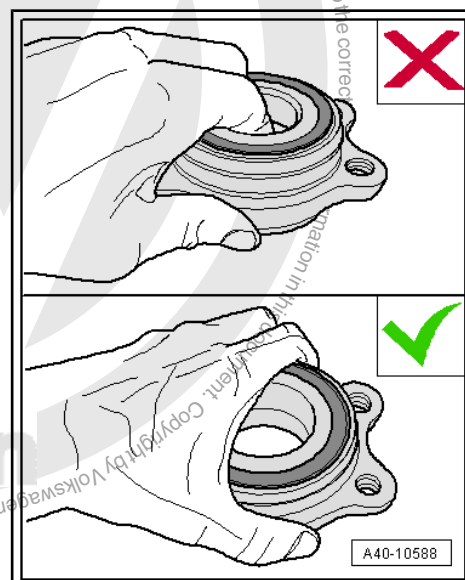
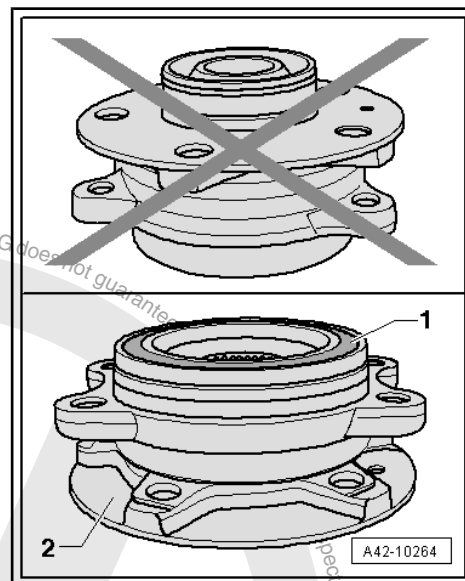




- The wheel bearing 1- must face up in order to remove the wheel bearing unit.
- Always set the wheel bearing unit down on the wheel hub -2-.
- Never reach inside when lifting the wheel bearing.
- Hold the wheel bearing only on the outside.

Installing

Install in reverse order of removal. Note the following:



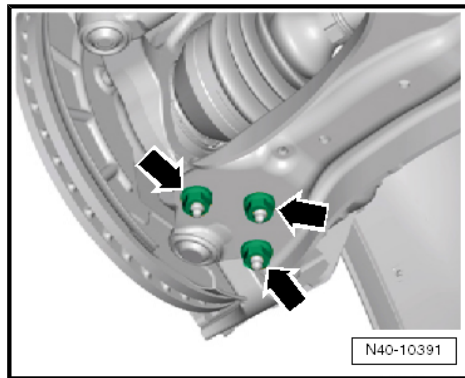


- Tighten nuts -arrows-.



Note

- ◆ Tighten the nuts -arrows- in curb weight position. Refer to ⇒ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”, page 6](#).
 - ◆ The level control system sensor lever must point toward vehicle exterior.
 - ◆ The thread on the vehicle level sensor must be installed into the exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.



Tightening Specifications

- ◆ Refer to ⇒ [“5.1 Overview - Wheel Bearing”, page 70](#)
- ◆ Refer to ⇒ [“6.2 Overview - Drive Axle”, page 80](#)
- ◆ Refer to ⇒ [“2.1 Overview - Subframe”, page 16](#)
- ◆ Refer to ⇒ [“4.1 Overview - Lower Control Arm and Ball Joint”, page 54](#)
- ◆ Refer to ⇒ [“2.1 Overview - Front Level Control System Sensor”, page 277](#)
- ◆ Brake rotor bolt. Refer to ⇒ Brake System; Rep. Gr. 46 ; Overview - Front Brakes .





6 Drive Axle

⇒ [“6.1 Overview - Drive Axle”, page 79](#)

⇒ [“6.2 Overview - Drive Axle”, page 80](#)

⇒ [“6.3 Drive Axle, Removing and Installing”, page 85](#)

⇒ [“6.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 101](#)

⇒ [“6.5 Drive Axle Heat Shield, Removing and Installing”, page 102](#)

⇒ [“6.6 Drive Axle, Disassembling and Assembling”, page 103](#)

⇒ [“6.7 Outer CV Joint, Checking”, page 113](#)

⇒ [“6.8 Inner CV Joint, Checking”, page 114](#)

6.1 Overview - Drive Axle

I -

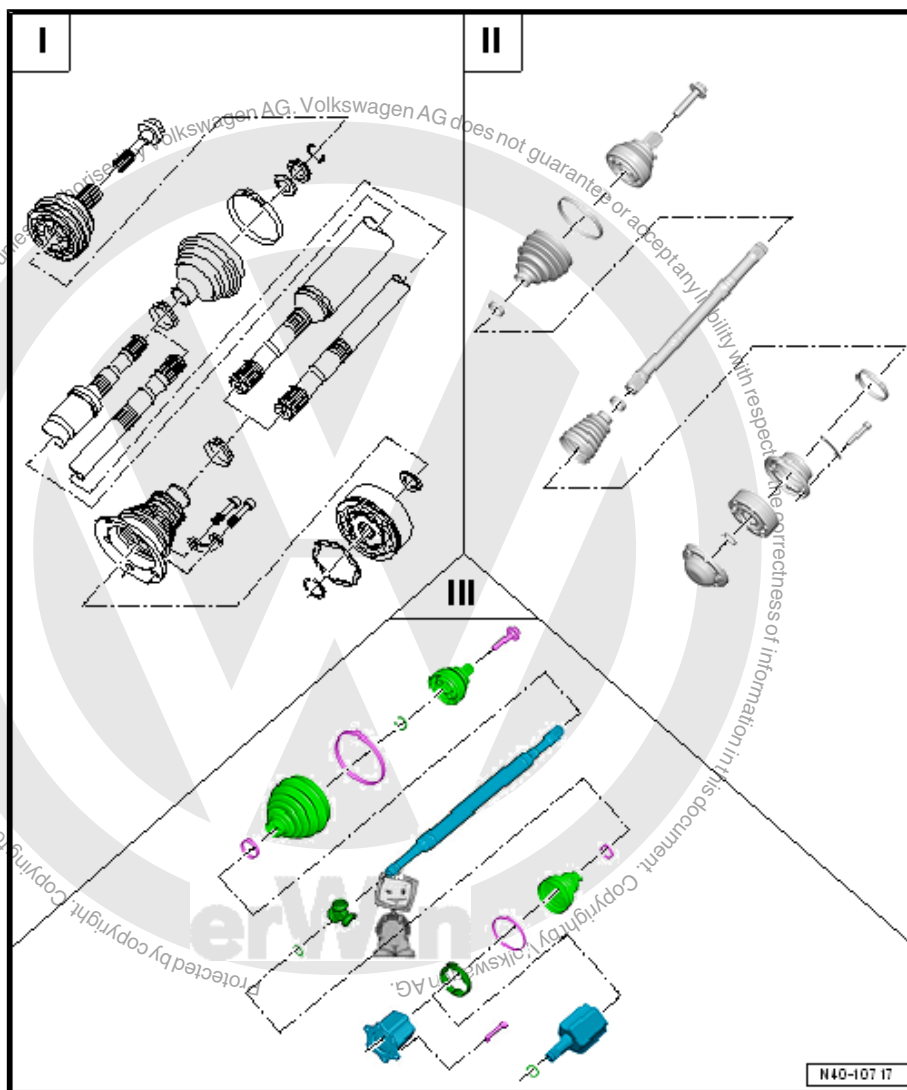
⇒ [“6.2.1 Overview - Drive Axle, CV Joint VL 100”, page 80](#)

II -

⇒ [“6.2.2 Overview - Drive Axle, CV Joint VL 107”, page 82](#)

III -

⇒ [“6.2.3 Overview - Drive Axle, Triple Roller Joint AAR3300i”, page 84](#)



Difference of Drive Axles in Installed Condition

	VL100	VL107	AAR3300i At- tached	AAR3300i Bol- ted
Diameter of inner joint in mm	100	107	-	-



	VL100	VL107	AAR3300i At- tached	AAR3300i Bol- ted
Cover between inner joint and flange shaft	-	X	-	-
Inner joint inserted into transmis- sion (automatic transmission only)	-	-	X	-

6.2 Overview - Drive Axle

⇒ [“6.2.1 Overview - Drive Axle, CV Joint VL 100”, page 80](#)

⇒ [“6.2.2 Overview - Drive Axle, CV Joint VL 107”, page 82](#)

⇒ [“6.2.3 Overview - Drive Axle, Triple Roller Joint AAR3300i”,
page 84](#)

6.2.1 Overview - Drive Axle, CV Joint VL 100

1 - Outer CV Joint

- ☐ Replace only as complete unit.
- ☐ Removing. Refer to [⇒ page 104](#).
- ☐ Installing: Using a plastic hammer, drive onto the shaft as far as the stop
- ☐ Checking. Refer to [⇒ “6.7 Outer CV Joint, Checking”, page 113](#).

2 - Bolt

- ☐ 200 Nm +180°
- ☐ Replace after removal
- ☐ Loosening and tightening. Refer to [⇒ “6.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 101](#).

3 - Right Drive Axle

4 - Clamp

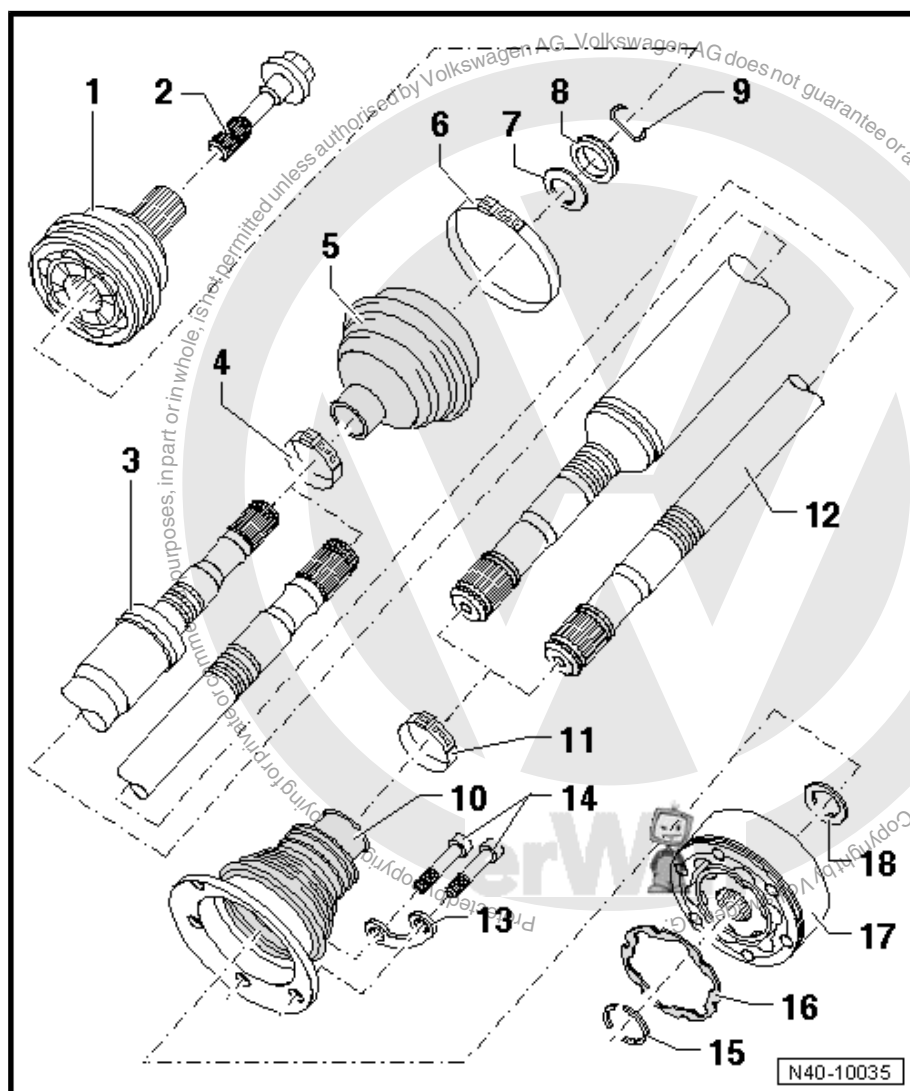
- ☐ Replace after removal
- ☐ Tensioning. Refer to [⇒ Fig. “Tensioning Clamp on Small Diameter”, page 106](#)

5 - CV Boot

- ☐ Check for tears and scuffing
- ☐ Material: polyelastomer

6 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to [⇒ Fig. “Tightening Clamping Sleeve on Outer Joint”, page 106](#)





7 - Plate Spring

- ☐ Installed position. Refer to
⇒ [Fig. "Installed Location of Spring Washer and Thrust Washer on Outer Joint"](#), page 104
- ☐ Allocation. Refer to the Parts Catalog.

8 - Thrust Ring

- ☐ Installed position. Refer to
⇒ [Fig. "Installed Location of Spring Washer and Thrust Washer on Outer Joint"](#), page 104
- ☐ Allocation. Refer to the Parts Catalog.

9 - Locking Ring

- ☐ Replace after removal
- ☐ Insert in shaft groove

10 - CV Boot

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

11 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to ⇒ [Fig. "Tightening Clamping Sleeve on Outer Joint"](#), page 106

12 - Left Drive Axle

13 - Locking Plate

14 - Internal Multipoint Bolt

- ☐ 40 Nm
- ☐ Replace after removal
- ☐ M8 x 48
- ☐ First tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification

15 - Locking Ring

- ☐ Remove and install using Circlip Pliers - VW161A-

16 - Seal

- ☐ Bonding surface on CV joint must be free of grease and oil!

17 - Inner CV Joint

- ☐ Replace only as complete unit.
- ☐ Removing. Refer to ⇒ [Fig. "Removing the Inner CV Joint"](#), page 105
- ☐ Installing ⇒ [Fig. "Pressing on Inner CV Joint"](#), page 105
- ☐ Checking. Refer to ⇒ ["6.8 Inner CV Joint, Checking"](#), page 114

18 - Plate Spring

- ☐ Installed position. Refer to ⇒ [page 105](#)



6.2.2 Overview - Drive Axle, CV Joint VL 107

1 - Bolt

- ☐ 200 Nm +180°
- ☐ Replace after removal
- ☐ Loosening and tightening. Refer to ➤ ["6.4 Drive Axle Threaded Connection, Loosening and Tightening", page 101](#).
- ☐ Before installing, clean the threads in the CV joint with a tap.

2 - Outer CV Joint

- ☐ Replace only as complete unit.
- ☐ Removing. Refer to ➤ [page 107](#).
- ☐ Installing: Using a plastic hammer, drive onto the shaft as far as the stop
- ☐ Checking. Refer to ➤ ["6.7 Outer CV Joint, Checking", page 113](#).

3 - Locking Ring

- ☐ Replace after removal
- ☐ Insert in shaft groove

4 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to ➤ [Fig. "Tightening Clamping Sleeve On Outer Joint", page 109](#)

5 - CV Boot

- ☐ Check for tears and scuffing
- ☐ Material: polyelastomer

6 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to ➤ [Fig. "Tensioning Clamp On Small Diameter", page 109](#)

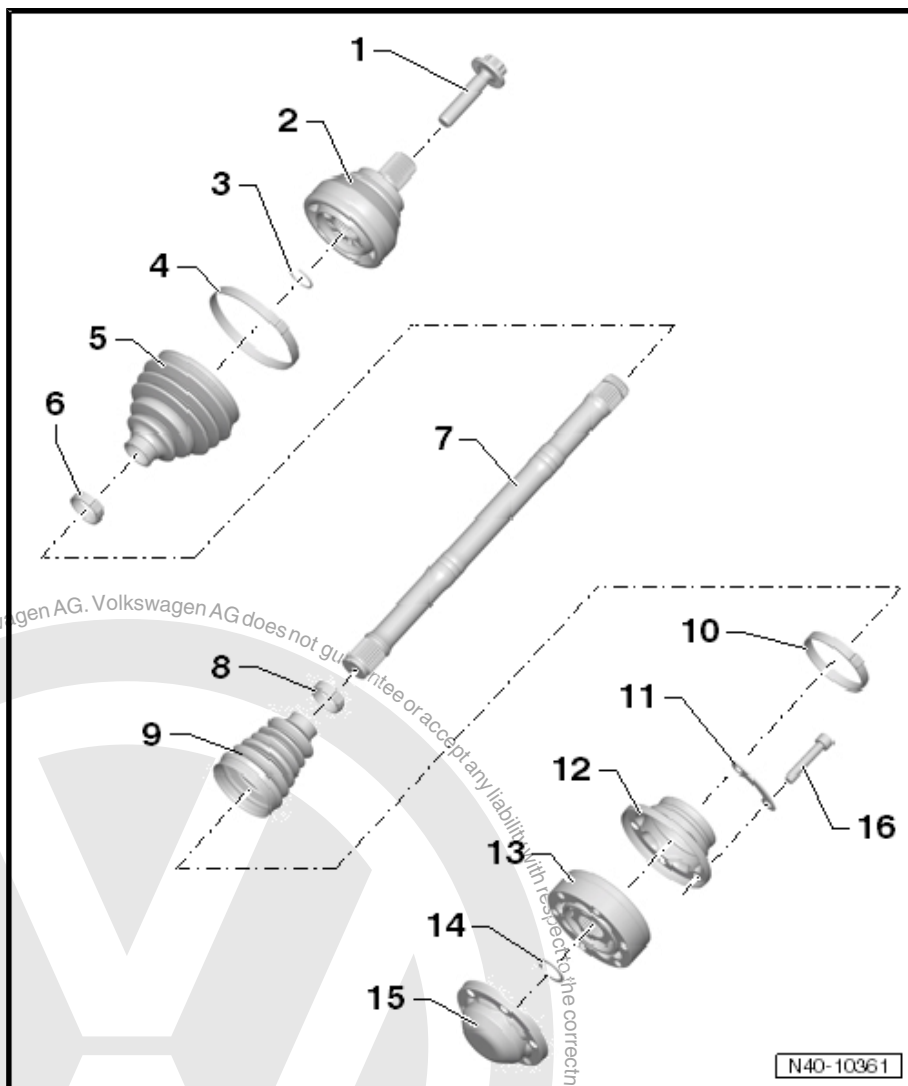
7 - Axle Shaft

8 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to ➤ [Fig. "Tensioning Clamp On Small Diameter", page 109](#)

9 - CV Boot

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





10 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to ⇒ [Fig. "“Tightening Clamping Sleeve On Outer Joint”", page 109](#)

11 - Locking Plate

12 - Cover

- ☐ Carefully drive off using a drift
- ☐ Coat the sealing surface with -D 454 300 A2- before installing it on the CV joint
- ☐ Adhesive surface must be free of oil and grease

13 - Inner CV Joint

- ☐ Replace only as complete unit.
- ☐ Removing. Refer to ⇒ [Fig. "“Removing the Inner CV Joint”", page 108](#)
- ☐ Installing. Refer to ⇒ [Fig. "“Pressing On Inner CV Joint”", page 108](#)
- ☐ Checking. Refer to ⇒ ["6.8 Inner CV Joint, Checking", page 114](#) .

14 - Locking Ring

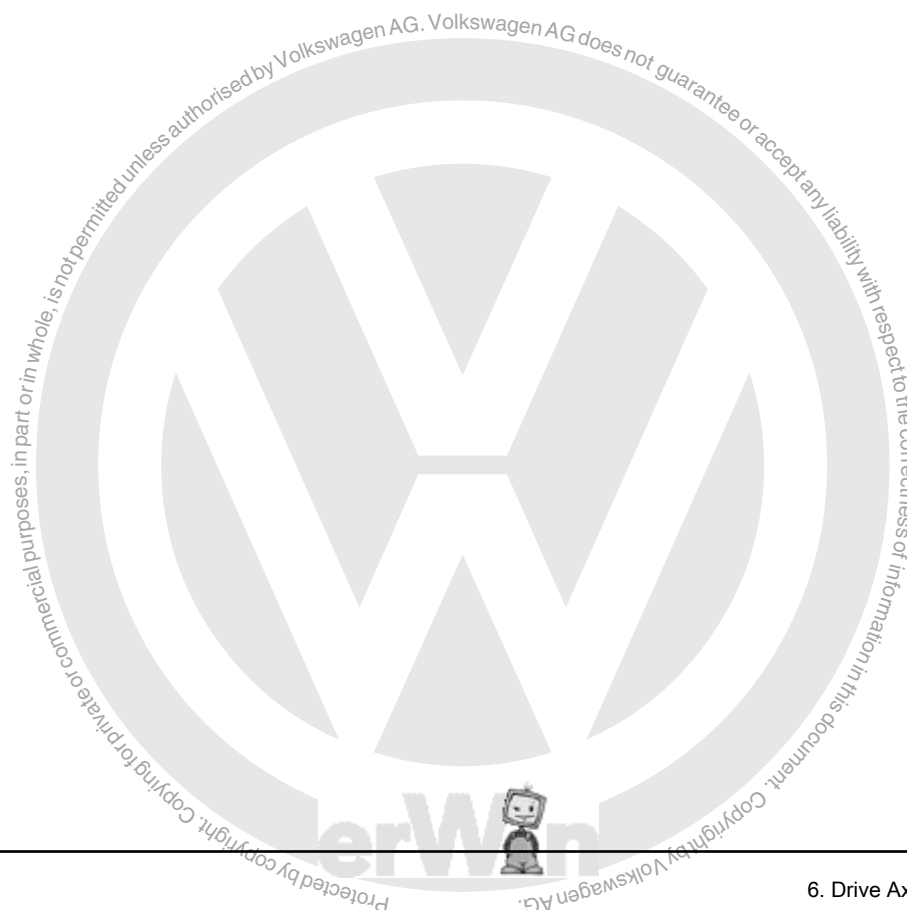
- ☐ Remove and install using Circlip Pliers - VW161A- .

15 - Cover

- ☐ Replace after removal
- ☐ Always replace if removed
- ☐ Removing. Refer to ⇒ [Fig. "“Drive Off Cover for Inner Joint”", page 107](#)

16 - Internal Multipoint Bolt

- ☐ 70 Nm
- ☐ Replace after removal
- ☐ M10 x 52
- ☐ First tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification



6.2.3 Overview - Drive Axle, Triple Roller Joint AAR3300i

1 - Bolt

- ☐ 200 Nm +180°
- ☐ Replace after removal
- ☐ Loosening and tightening. Refer to
⇒ ["6.4 Drive Axle Threaded Connection, Loosening and Tightening", page 101](#) .
- ☐ Before installing, clean the threads in the CV joint with a tap.

2 - Outer CV Joint

- ☐ Replace only as complete unit.
- ☐ Removing. Refer to
⇒ [page 110](#) .
- ☐ Installing: Drive onto shaft with plastic hammer until compressed circlip seats.
- ☐ Checking. Refer to
⇒ ["6.7 Outer CV Joint, Checking", page 113](#) .

3 - Locking Ring

- ☐ Replace after removal
- ☐ Insert in shaft groove

4 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to
⇒ [Fig. "Tightening Clamping Sleeve on Outer Joint", page 112](#)

5 - CV Boot

- ☐ Check for tears and scuffing
- ☐ Material: polyelastomer

6 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to
⇒ [Fig. "Tightening the Tensioning Clamp on the Smaller Diameter on the Inner/Outer Joint", page 113](#)

7 - Axle Shaft

8 - Triple Roller Star with Rollers

The chamfer -arrow- faces the drive axle splines.

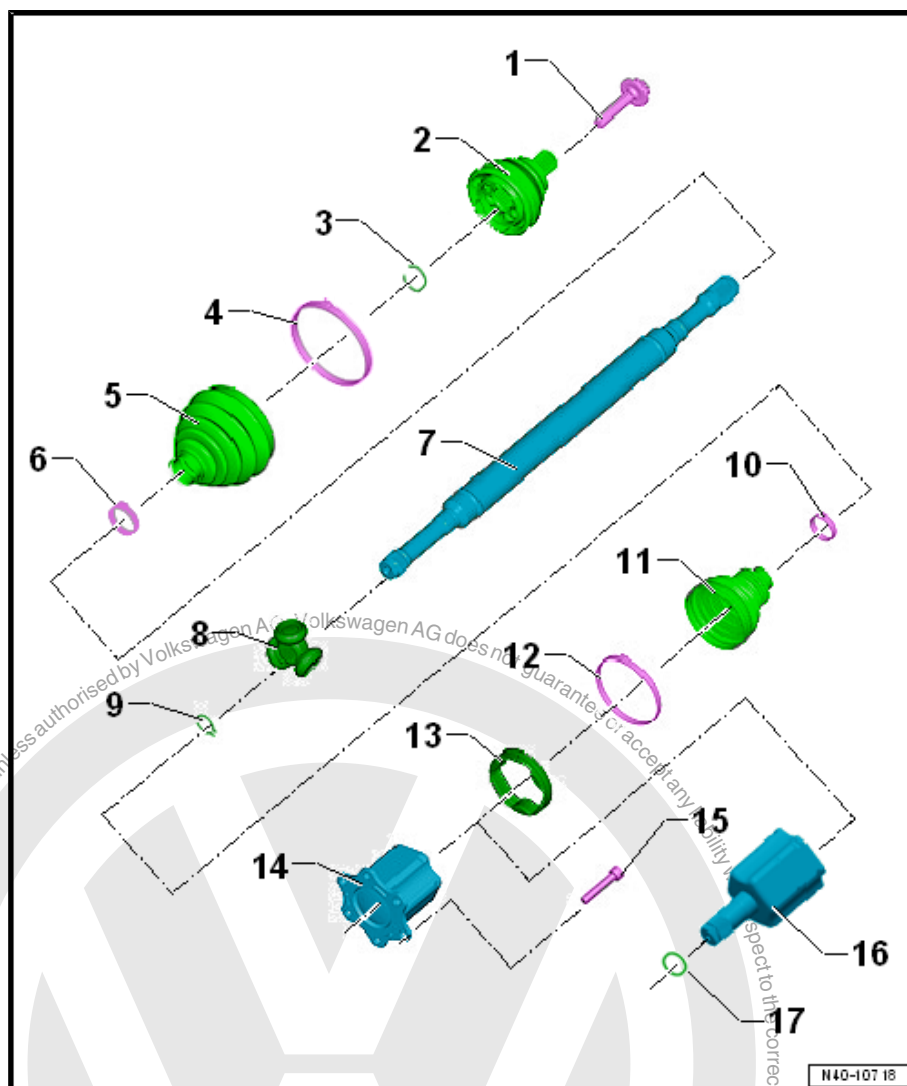
- ☐ Removing. Refer to ⇒ [page 110](#) .

9 - Locking Ring

- ☐ Replace after removal
- ☐ Insert in shaft groove

10 - Clamp

- ☐ Replace after removal





- ☐ Tensioning. Refer to
⇒ [Fig. “Tightening the Tensioning Clamp on the Smaller Diameter on the Inner/Outer Joint”](#),
[page 113](#)

11 - CV Boot for Triple Roller Joint

- ☐ Check for tears and scuffing

12 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to
⇒ [Fig. “Tightening the Tensioning Clamps on the Larger Diameter on the Inner Joint.”](#), [page 112](#)

13 - Adapter

14 - Joint

- ☐ Removing. Refer to ⇒ [page 110](#) .

15 - Internal Multipoint Bolt

- ☐ 70 Nm
- ☐ M10 x 23
- ☐ First tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification

16 - Joint

- ☐ Removing. Refer to ⇒ [page 110](#) .

17 - Locking Ring

- ☐ Replace after removal
- ☐ Insert in shaft groove

6.3 Drive Axle, Removing and Installing

⇒ [“6.3.1 Drive Axle, Removing and Installing, Left Drive Axle, CV Joint VL 100 and VL 107”](#), [page 85](#)

⇒ [“6.3.2 Drive Axle, Removing and Installing, Right Drive Axle, CV Joint VL 100 and VL 107”](#), [page 89](#)

⇒ [“6.3.3 Drive Axle, Removing and Installing, Triple Roller Joint AAR3300i Attached”](#), [page 93](#)

⇒ [“6.3.4 Drive Axle, Removing and Installing, Triple Roller Joint AAR3300i Bolted”](#), [page 97](#)

6.3.1 Drive Axle, Removing and Installing, Left Drive Axle, CV Joint VL 100 and VL 107

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Drive Shaft Remover - T10520-



Caution

When disassembling and performing repairs on a vehicle, the drive axles must not hang down loosely and contact the stops in the joint by over bending.



Removing

- Remove the drive axle bolt. Refer to
⇒ [“6.4 Drive Axle Threaded Connection, Loosening and Tightening”](#), [page 101](#) .



Caution

The wheel bearing must not be under load when the drive axle threaded connection on the wheel side is loose.

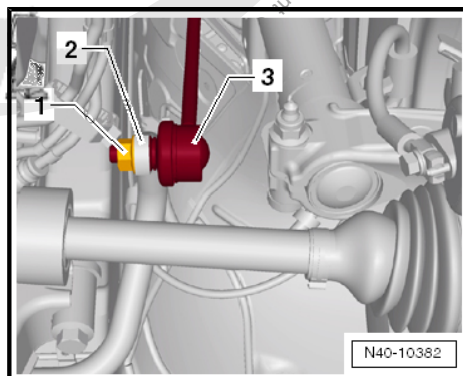
If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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 120 Nm.**

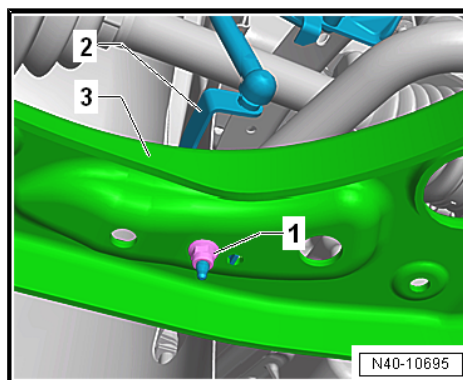
- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the noise insulation. Refer to ➔ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Remove the hex nut -1- from the right and left coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2-.



Vehicles with Level Control System Sensor

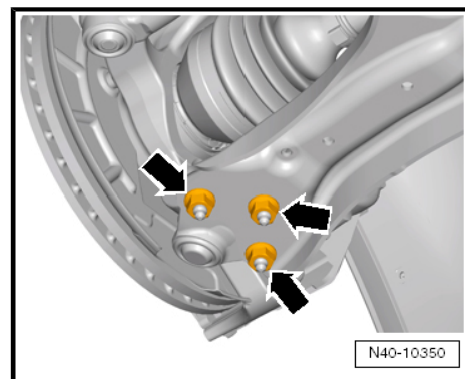
- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for all Vehicles



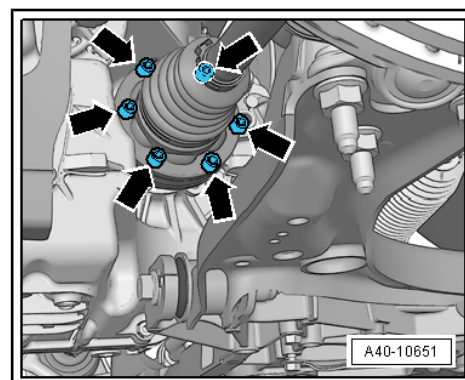


- Remove the nuts -arrows- from the ball joint.
- Disengage the control arm from the ball joint.

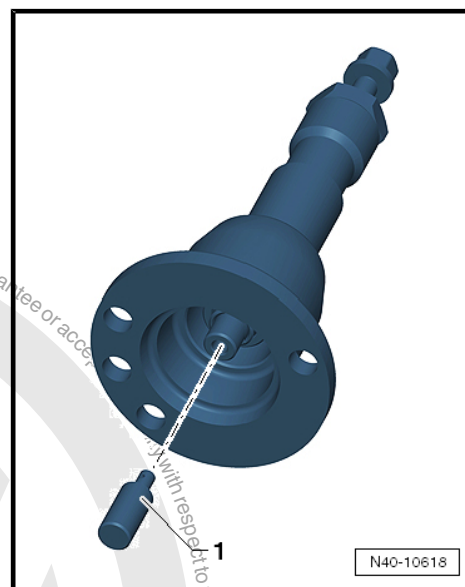


- Remove the drive axle from the flange shaft/transmission -arrows-.
- Push the wheel bearing housing to the left.
- Pull the drive axle out of the wheel hub.

If the drive axle cannot be pulled out of the wheel bearing, then the drive axle can be pushed out of the wheel bearing using the -T10520- .

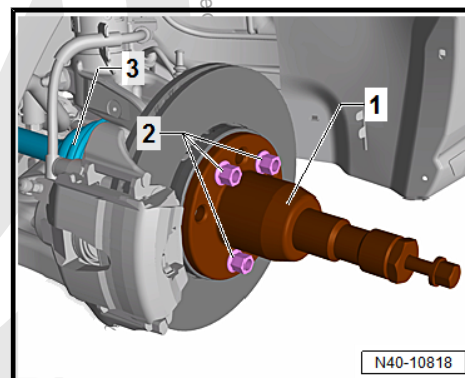


Before using the -T10520- , make sure that the thrust piece -1- is installed.



Using the -T10520- :

- Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.





- Follow the specified sequence exactly.

I - Tighten the knurled nut -1- hand-tight.

II - Only turn the bolt -2- using a wrench and press out the drive axle using the -T10520- .



Note

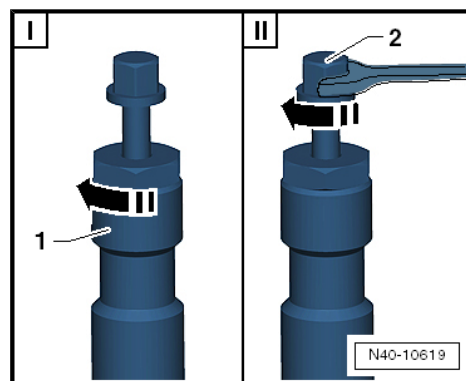
At the end of the tasks or to set back, the spindles must be brought back into the original position so that the hydraulic operation can be used.

- 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 Parts Catalog.



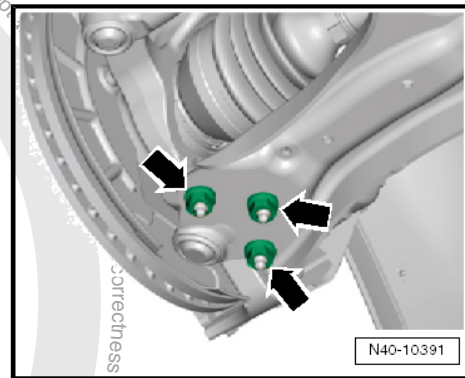


- Tighten nuts -arrows-.



Note

- ◆ Tighten the nuts -arrows- in curb weight position. Refer to ➤ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”, page 6](#).
- ◆ The level control system sensor lever must point toward vehicle exterior.
- ◆ The thread on the vehicle level sensor must be installed into the exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.



Tightening Specifications

- ◆ Refer to ➤ [“6.2 Overview - Drive Axle”, page 80](#)
- ◆ Refer to ➤ [“6.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 101](#)
- ◆ Refer to ➤ [“2.1 Overview - Front Level Control System Sensor”, page 277](#)
- ◆ Refer to ➤ [“2.1 Overview - Subframe”, page 16](#)
- ◆ Refer to ➤ [“4.1 Overview - Lower Control Arm and Ball Joint”, page 54](#)
- ◆ Refer to ➤ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Noise insulation bolts. Refer to ➤ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ➤ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

6.3.2 Drive Axle, Removing and Installing, Right Drive Axle, CV Joint VL 100 and VL 107

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Drive Shaft Remover - T10520-



Caution

When disassembling and performing repairs on a vehicle, the drive axles must not hang down loosely and contact the stops in the joint by over bending.



Removing

- Remove the drive axle bolt. Refer to
⇒ [“6.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 101](#).



Caution

The wheel bearing must not be under load when the drive axle threaded connection on the wheel side is loose.

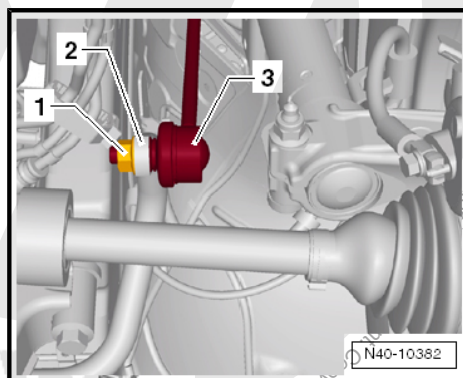
If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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 120 Nm.*

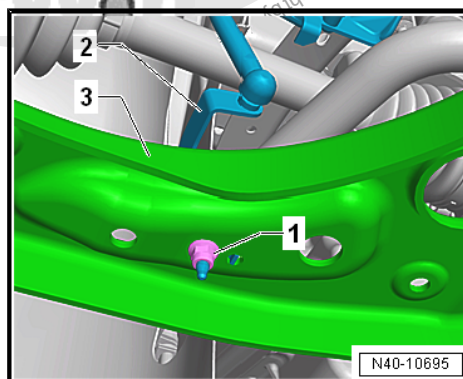
- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Remove the hex nut -1- from the right and left coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2-.



Vehicles with Level Control System Sensor

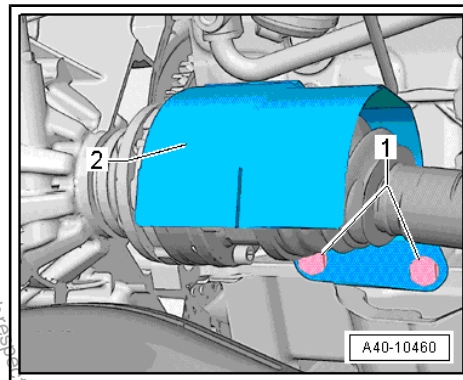
- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for all Vehicles



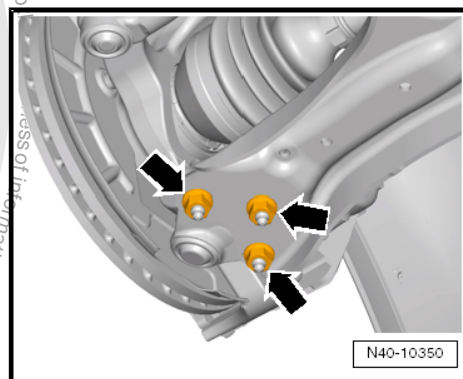


- If installed remove the bolts -1- and the heat shield -2-.
- Remove the drive axle from the transmission flange.

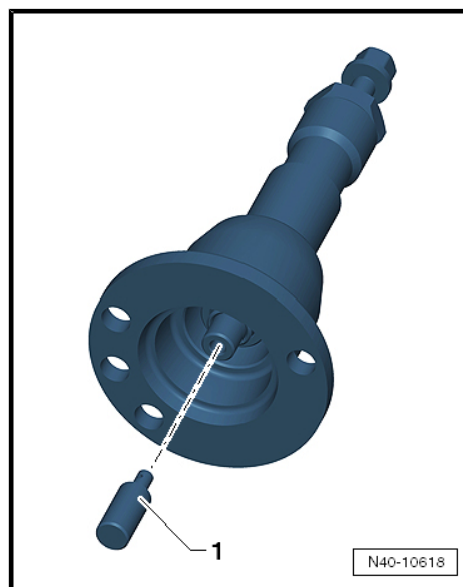


- Remove the nuts -arrows- from the ball joint.
- Disengage the control arm from the ball joint.
- Pivot the suspension strut outward, while doing so push the drive axle out of the wheel bearing unit.

If the drive axle cannot be pulled out of the wheel bearing, then the drive axle can be pushed out of the wheel bearing using the -T10520- .

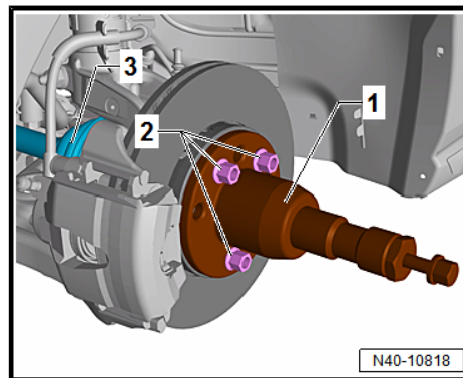


Before using the -T10520- , make sure that the thrust piece -1- is installed.



Using the -T10520- :

- Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.





– Follow the specified sequence exactly.

I - Tighten the knurled nut -1- hand-tight.

II - Only turn the bolt -2- using a wrench and press out the drive axle using the -T10520- .



Note

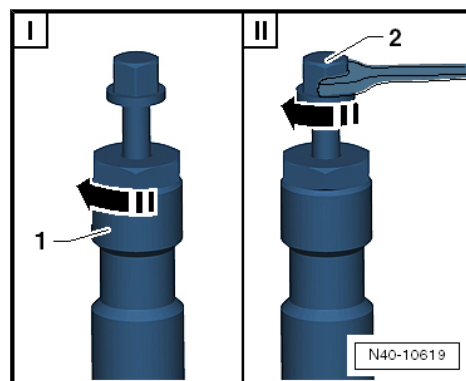
At the end of the tasks or to set back, the spindles must be brought back into the original position so that the hydraulic operation can be used.

– 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 Parts Catalog.



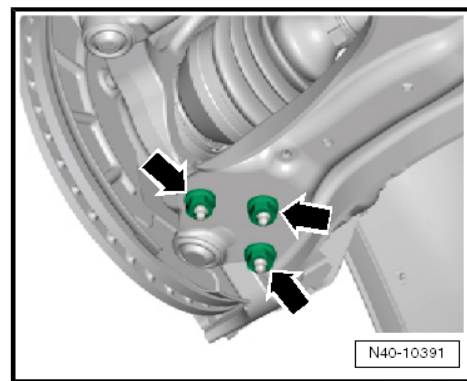


- Tighten nuts -arrows-.



Note

- ◆ Tighten the nuts -arrows- in curb weight position. Refer to ⇒ [“3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle”, page 6](#).
- ◆ The level control system sensor lever must point toward vehicle exterior.
- ◆ The thread on the vehicle level sensor must be installed into the exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.



- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the ⇒ Vehicle diagnostic tester.

Tightening Specifications

- ◆ Refer to ⇒ [“6.2 Overview - Drive Axle”, page 80](#)
- ◆ Refer to ⇒ [“6.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 101](#)
- ◆ Refer to ⇒ [“2.1 Overview - Front Level Control System Sensor”, page 277](#)
- ◆ Refer to ⇒ [“2.1 Overview - Subframe”, page 16](#)
- ◆ Refer to ⇒ [“4.1 Overview - Lower Control Arm and Ball Joint”, page 54](#)
- ◆ Refer to ⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview Noise Insulation .
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

6.3.3 Drive Axle, Removing and Installing, Triple Roller Joint AAR3300i Attached

Special tools and workshop equipment required

- ◆ Drive Axle Wedge Tool - T10161-
- ◆ Drive Shaft Remover - T10520-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-



Caution

When disassembling and performing repairs on a vehicle, the drive axles must not hang down loosely and contact the stops in the joint by over bending.



Removing

- Remove the drive axle bolt. Refer to
⇒ [“6.4 Drive Axle Threaded Connection, Loosening and Tightening”, page 101](#).



Caution

The wheel bearing must not be under load when the drive axle threaded connection on the wheel side is loose.

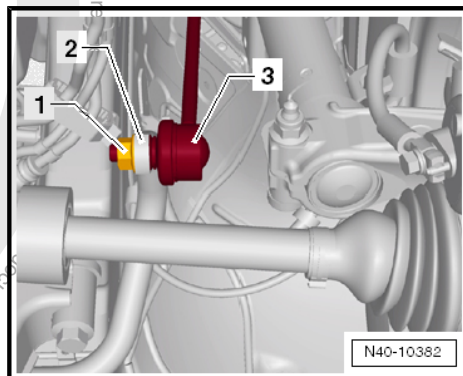
If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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 120 Nm.*

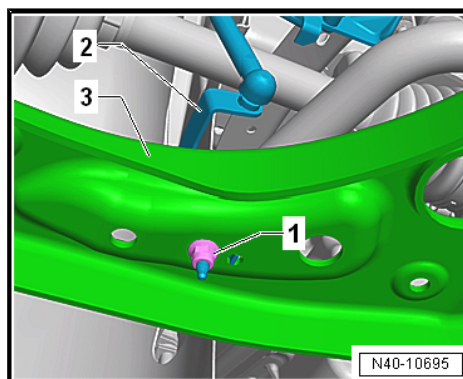
- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Remove the hex nut -1- from the right and left coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2-.



Vehicles with Level Control System Sensor

- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for all Vehicles

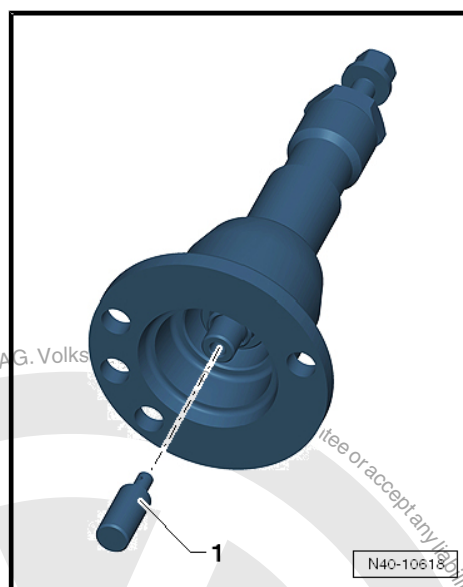
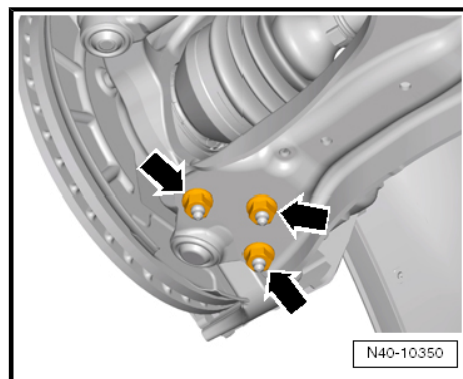




- Remove the nuts -arrows-.
- Remove the wheel bearing housing with the ball joint from the control arm.
- Pull the drive axle out of the wheel hub and tie it securely to the body.

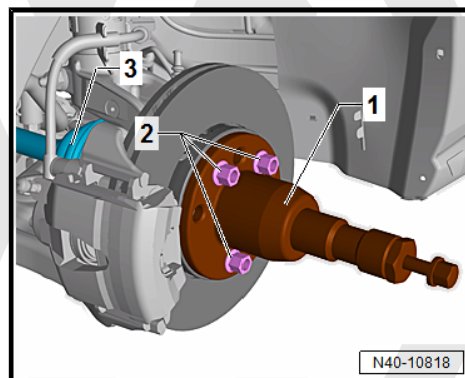
If the drive axle cannot be pulled out of the wheel bearing, then the drive axle can be pushed out of the wheel bearing using the -T10520-.

Before using the -T10520- , make sure that the thrust piece -1- is installed.



Using the -T10520- :

- Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.



- Follow the specified sequence exactly.

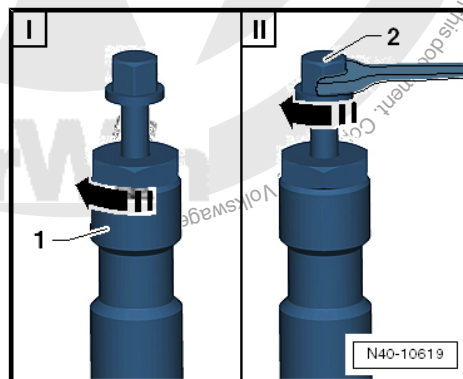
I - Tighten the knurled nut -1- hand-tight.

II - Only turn the bolt -2- using a wrench and press out the drive axle using the -T10520- .



Note

At the end of the tasks or to set back, the spindles must be brought back into the original position so that the hydraulic operation can be used.





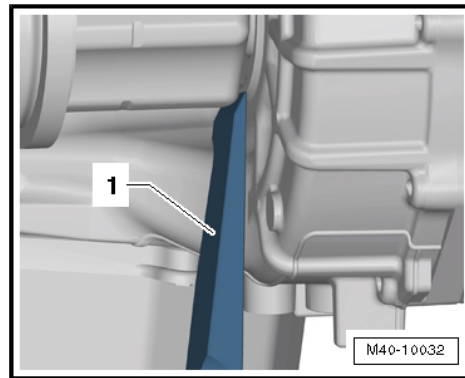
- Place the -T10161- -1- between the transmission housing and the triple roller joint.
- Using a rubber hammer, hit the inner joint on the -T10161- and remove it from the transmission.
- Remove the drive axle.

Installing

Install in reverse order of removal. Note the following:

- Install new 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 into the joint up to the stop.
- Now slide the joint into the transmission with a »jerk«.

The sliding part inside the joint can be used for this »jerk«. When doing this, do not pull the drive axle too far out of the joint.



Caution

Never use a hammer or mallet!

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



Caution

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

- Install the outer joint as far as possible into the wheel hub splines.
- Install the lower noise insulation. Refer to ➔ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation .

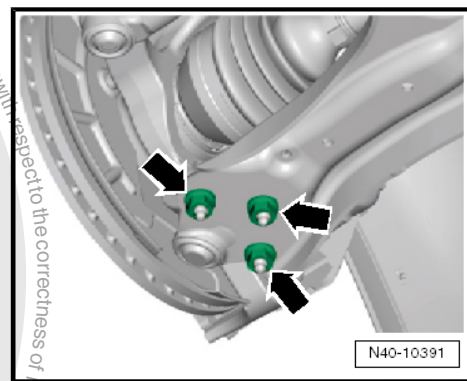


- Attach the ball joint to the control arm -arrows-.



Note

- ◆ *Tighten the nuts -arrows- in curb weight position. Refer to ➤ ["3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle"](#), page 6 .*
- ◆ *Make sure the ball joint boot is not damaged or twisted.*
- ◆ *The level control system sensor lever must point toward vehicle exterior.*
- ◆ *The thread on the vehicle level sensor must be installed into the exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.*
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the ➤ Vehicle diagnostic tester.



Tightening Specifications

- ◆ Refer to ➤ ["6.2 Overview - Drive Axle"](#), page 80
- ◆ Refer to ➤ ["6.4 Drive Axle Threaded Connection, Loosening and Tightening"](#), page 101
- ◆ Refer to ➤ ["2.1 Overview - Front Level Control System Sensor"](#), page 277
- ◆ Refer to ➤ ["2.1 Overview - Subframe"](#), page 16
- ◆ Refer to ➤ ["4.1 Overview - Lower Control Arm and Ball Joint"](#), page 54
- ◆ Refer to ➤ ["1.1 Wheel Bolt Tightening Specifications"](#), page 286
- ◆ Noise insulation bolts. Refer to ➤ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ➤ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

6.3.4 Drive Axle, Removing and Installing, Triple Roller Joint AAR3300i Bolted

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Drive Shaft Remover - T10520-



Caution

When disassembling and performing repairs on a vehicle, the drive axles must not hang down loosely and contact the stops in the joint by over bending.



Removing

- Remove the drive axle bolt. Refer to
⇒ [“6.4 Drive Axle Threaded Connection, Loosening and Tightening”](#), page 101 .



Caution

The wheel bearing must not be under load when the drive axle threaded connection on the wheel side is loose.

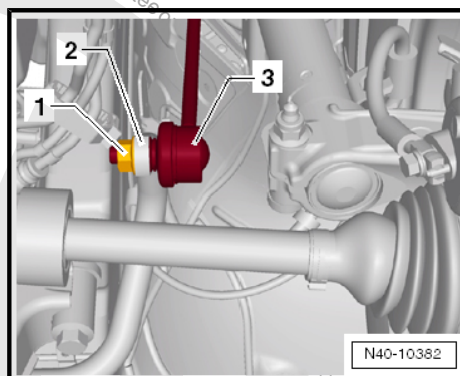
If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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 120 Nm.*

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Remove the hex nut -1- from the right and left coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2-.

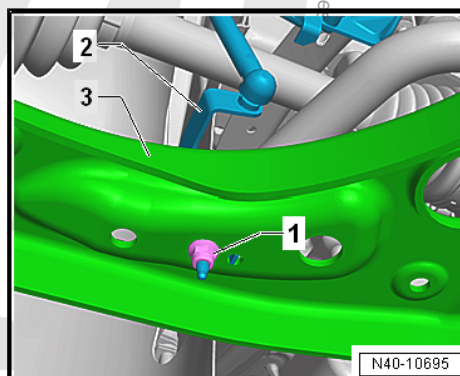


Vehicles with Level Control System Sensor

- Remove the nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.

Continuation for all Vehicles

- Remove the drive axle from the flange shaft/transmission.

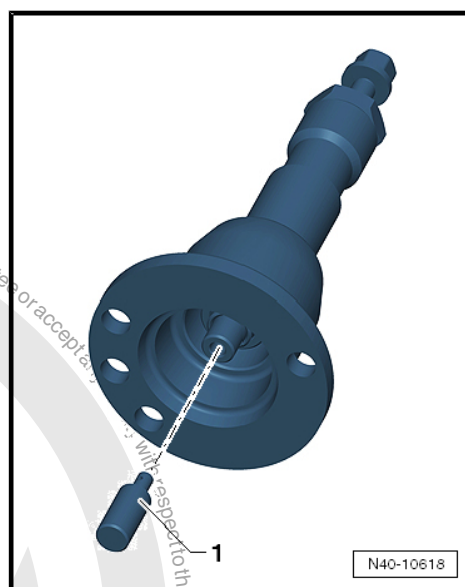
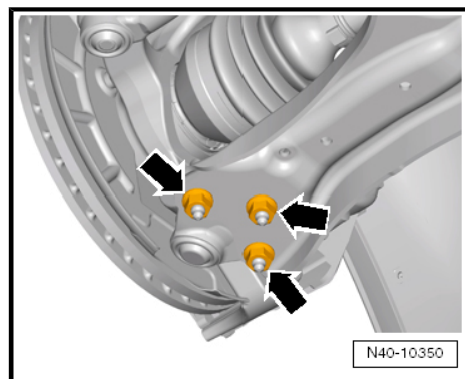




- Remove the nuts -arrows-.
- Remove the wheel bearing housing with the ball joint from the control arm.
- Remove the drive axle from the wheel hub.

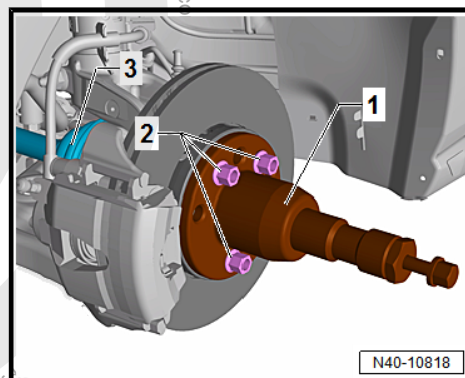
If the drive axle cannot be pulled out of the wheel bearing, then the drive axle can be pushed out of the wheel bearing using the -T10520- .

Before using the -T10520- , make sure that the thrust piece -1- is installed.



Using the -T10520- :

- Secure the -T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.





- Follow the specified sequence exactly.

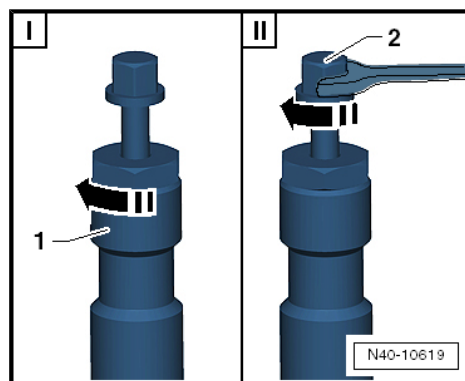
I - Tighten the knurled nut -1- hand-tight.

II - Only turn the bolt -2- using a wrench and press out the drive axle using the -T10520- .



Note

At the end of the tasks or to set back, the spindles must be brought back into the original position so that the hydraulic operation can be used.



Installing

Remove any paint residue and/or corrosion on the outer joint threads/splines.

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



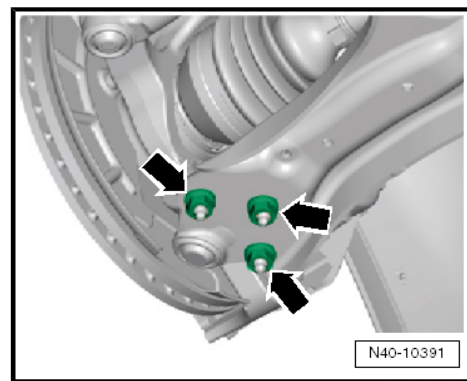


- Tighten nuts -arrows-.



Note

- ◆ Tighten the nuts -arrows- in curb weight position. Refer to ⇒ ["3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle", page 6](#).
- ◆ Make sure the ball joint boot is not damaged or twisted.
- Position the drive axle inner joint and tighten the bolts in a diagonal sequence to 10 Nm.
- Tighten the internal multi-point bolts diagonally to the tightening specification.



Note

- ◆ The level control system sensor lever must point toward vehicle exterior.
- ◆ The thread on the vehicle level sensor must be installed into the exterior hole in the control arm. The tab on the vehicle level sensor bracket must lock into the inner hole in order to assure a correct installation position.
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the ⇒ Vehicle diagnostic tester.
- Install the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Tighten drive axle bolt onto the wheel hub. Refer to ⇒ ["6.4 Drive Axle Threaded Connection, Loosening and Tightening", page 101](#) .

Tightening Specifications

- ◆ Refer to ⇒ ["6.2 Overview - Drive Axle", page 80](#)
- ◆ Refer to ⇒ ["6.4 Drive Axle Threaded Connection, Loosening and Tightening", page 101](#)
- ◆ Refer to ⇒ ["2.1 Overview - Front Level Control System Sensor", page 277](#)
- ◆ Refer to ⇒ ["2.1 Overview - Subframe", page 16](#)
- ◆ Refer to ⇒ ["4.1 Overview - Lower Control Arm and Ball Joint", page 54](#)
- ◆ Refer to ⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#)
- ◆ Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

6.4 Drive Axle Threaded Connection, Loosening and Tightening

Special tools and workshop equipment required

- ◆ Socket AF 24 mm - T10361A-
- ◆ Digital Torque Wrench - VAG1756A-



Caution

The wheel bearing must not be under a load while the drive axle threaded connection on the wheel side 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.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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:

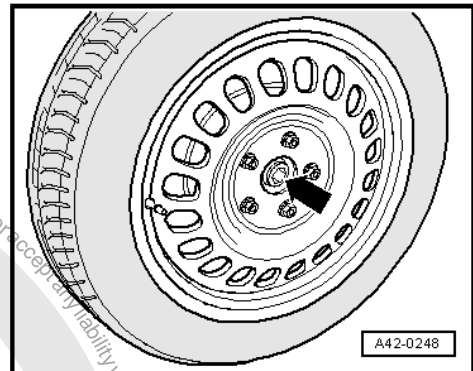
- ◆ *Install an outer joint in place of the drive axle.*
- ◆ *Tighten the outer joint to 120 Nm.*

Loosening the 12-Point Bolt

- With vehicle still resting on wheels, loosen the twelve-point bolt with Socket AF 24 - T10361A- maximum 90°, otherwise, wheel bearing will be damaged.
- Lift the vehicle just enough so that the wheels are hanging free.
- Press the brake pedal. A second technician will be needed.
- Remove the twelve-point bolt -arrow-.

Twelve-Point Bolt, Fastening

- Replace the twelve-point bolt.



Note

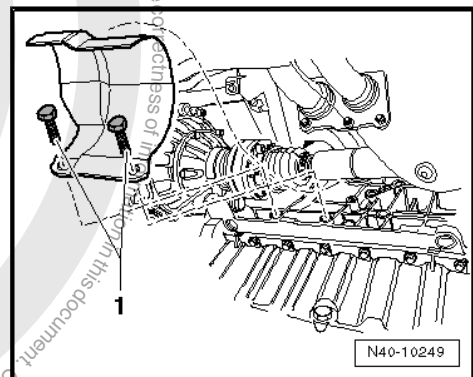
Wheels must not yet touch the ground to tighten the drive axle, the wheel bearing may otherwise be damaged.

- Press the brake pedal. A second technician will be needed.
- Tighten the twelve-point bolt to 200 Nm.
- Lower the vehicle onto its wheels.
- Turn the twelve-point bolt an additional 180°.

6.5 Drive Axle Heat Shield, Removing and Installing

Front Wheel Drive (FWD)

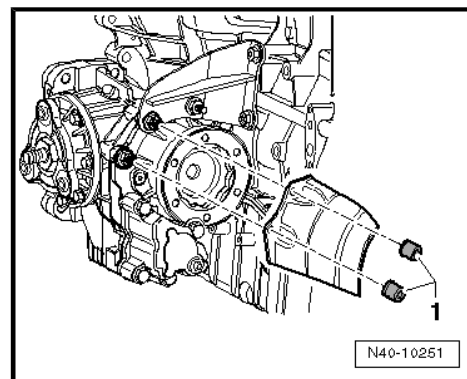
Component	Tightening Specification
Bolts -1-	25 Nm





All Wheel Drive (AWD)

Component	Tightening Specification
Nuts -1-	20 Nm



6.6 Drive Axle, Disassembling and Assembling

⇒ ["6.6.1 Drive Axle, Disassembling and Assembling, CV Joint VL100", page 103](#)

⇒ ["6.6.2 Drive Axle, Disassembling and Assembling, CV Joint VL107", page 106](#)

⇒ ["6.6.3 Drive Axle, Disassembling and Assembling, Triple Roller Joint AAR3300i", page 109](#)

6.6.1 Drive Axle, Disassembling and Assembling, CV Joint VL100

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 1331 5-50Nm - VAG1331-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Clamping Pliers - VAG1682A
- ◆ Tripod Joint Tool - T10065-
- ◆ Slide Hammer Set - VW771-
- ◆ Puller - Driveshaft - T10382-
- ◆ Puller - Driveshaft - T10382/1-
- ◆ Spindles - T10382/2-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolt - Outer CV Joint to Drive Axle
- ◆ Clamps - CV Boot



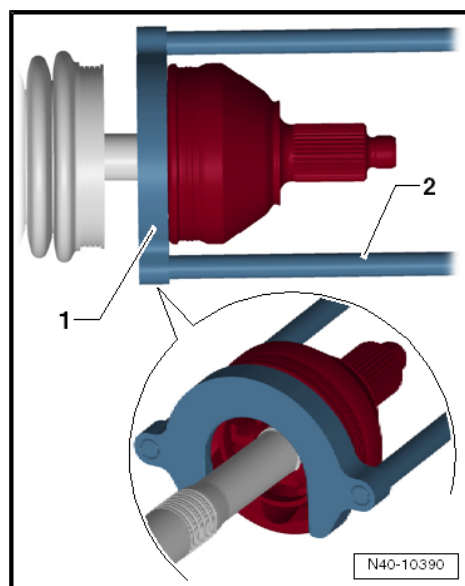
Removing the Outer CV Joint

- Secure the drive axle with protective covers in a vise clamp.
- Fold back boot.
- Align the Puller - Driveshaft - T10382- so that the flat side of the Puller - Driveshaft - T10382/1- faces the Spindles - T10382/2- .
- Attach the Puller - Driveshaft - 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 - Driveshaft - Removing Plate - T10382/1-

2 - Puller - Driveshaft - Spindles - T10382/2-

Installing the Outer CV Joint

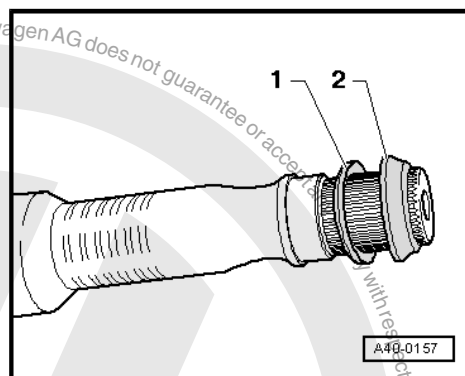


Installed Location of Spring Washer and Thrust Washer on Outer Joint

1 - Plate Spring

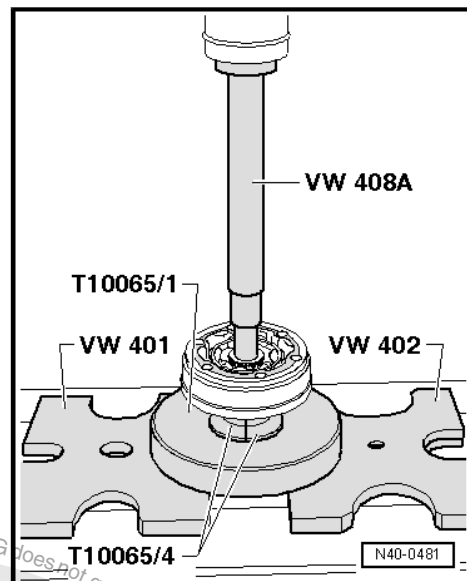
2 - Thrust Ring

- Install the new circlips.
- Slide new CV boot onto drive axle if necessary.
- Use a plastic hammer to install it on the shaft until the locking ring locks secure.



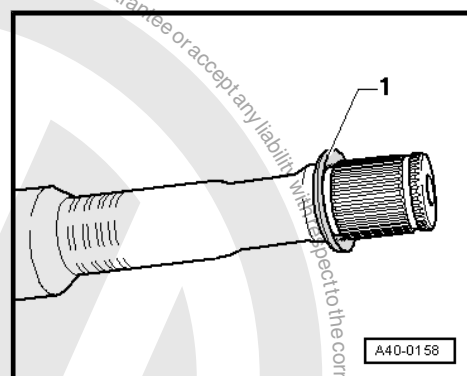


Removing the Inner CV Joint Assembling



Installed Location of the Plate Spring on Inner Joint

1 - Plate Spring

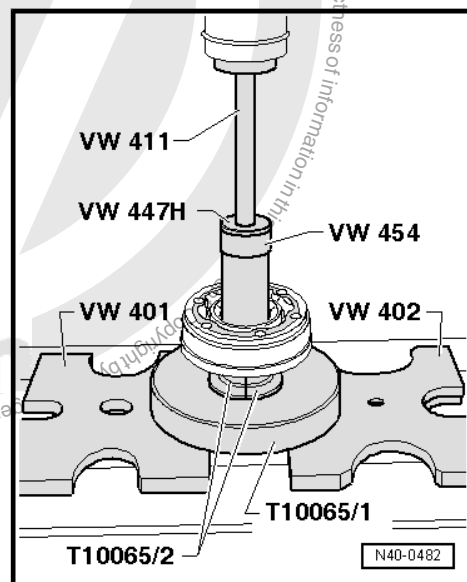


Pressing on Inner CV Joint



Note

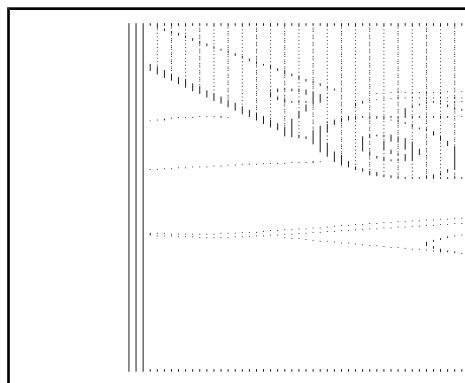
Chamfer on inner diameter of ball hub (splines) must face the contact shoulder on the drive axle.





Tightening Clamping Sleeve on Outer Joint

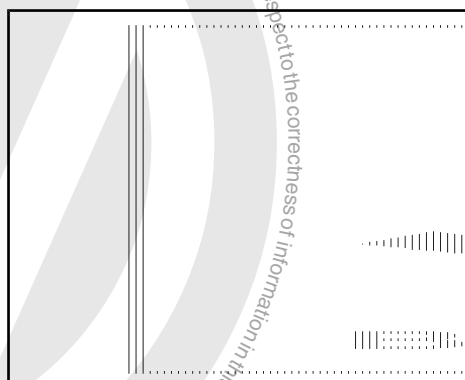
- Position Clamping Pliers - VAG1682A- as shown in illustration. When doing this, make sure that edges of clamping pliers are seated in corners -arrows B- of clamp.
- Tension clamp by turning spindle with a torque wrench (do not tilt clamp tool).



Note

- ◆ *The hard material of the joint boot (compared to rubber) makes it necessary to use a stainless steel hose clamp. It is only possible to tighten the hose clamp with Clamping Pliers - VAG1682A- .*
- ◆ *Tightening specification: 25 Nm.*
- ◆ *Use torque wrench -C- with adjustment range 5 to 50 Nm (for example Torque Wrench 5-50Nm - VAG1331-).*
- ◆ *Be sure thread of spindle -A- of clamp tool moves freely. Grease with MOS 2 grease if necessary.*
- ◆ *If the thread is tight, for example, dirty, the required tensioning force for the hose clamp will not be achieved in spite of correct torque specification settings.*

Tensioning Clamp on Small Diameter



6.6.2 Drive Axle, Disassembling and Assembling, CV Joint VL107

Special tools and workshop equipment required

- ◆ Press Plate - VW401-
- ◆ Press Plate - VW402-
- ◆ Press Piece - Rod - VW408A-
- ◆ CV Joint Press Sleeve - VW522-
- ◆ Press Block - 40-204A-
- ◆ Clamping Pliers - VAG1682A-
- ◆ Puller - Driveshaft - T10382/1-
- ◆ Spindles - T10382/2-
- ◆ Puller - Driveshaft - T10382-
- ◆ Slide Hammer Set - VW771-
- ◆ Torque Wrench 1331 5-50Nm - VAG1331-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

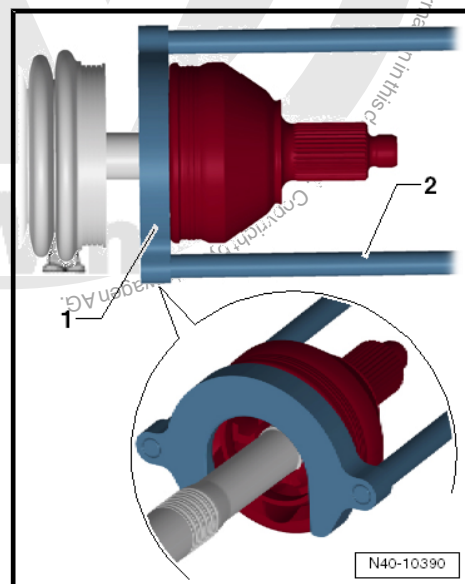
- ◆ Bolt - Outer CV Joint to Drive Axle
- ◆ Clamps - CV Boot

Removing the Outer CV Joint

- Secure the drive axle with protective covers in a vise clamp.
 - Fold back boot.
 - Align the Puller - Driveshaft - T10382- so that the flat side of the Puller - Driveshaft - T10382/1- faces the Spindles - T10382/2- .
 - Attach the Puller - Driveshaft - 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 - Driveshaft - Removing Plate - T10382/1-
 - 2 - Puller - Driveshaft - Spindles - T10382/2-

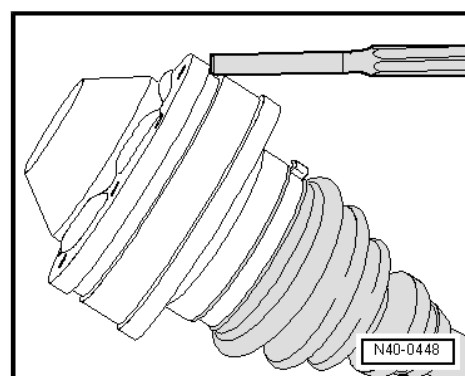
Installing the Outer CV Joint

- Install the new circlips.
- Slide new CV boot onto drive axle if necessary.
- Use a plastic hammer to install it on the shaft until the locking ring locks secure.



Drive Off Cover for Inner Joint

- Remove the circlip.
- Remove both clamps, and push the CV boot toward outer joint.
- Drive off the CV boot with a drift.





Removing the Inner CV Joint

Assembling

Pressing On Inner CV Joint

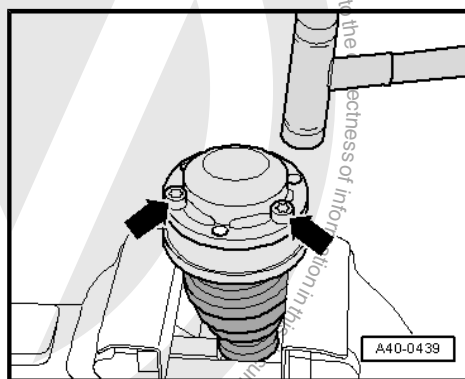
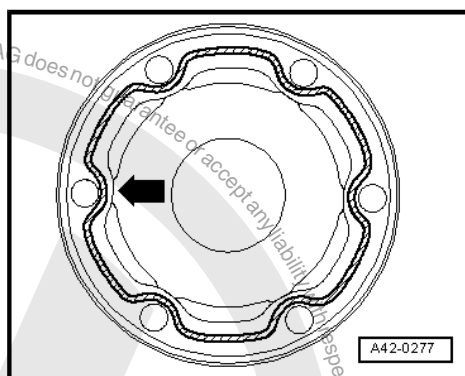
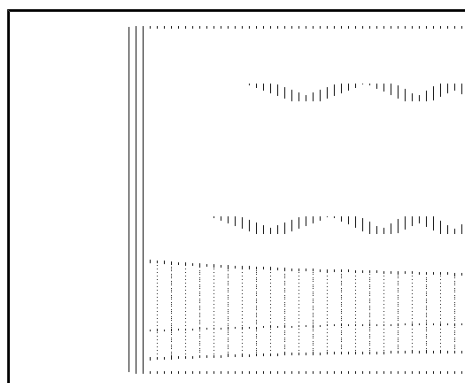
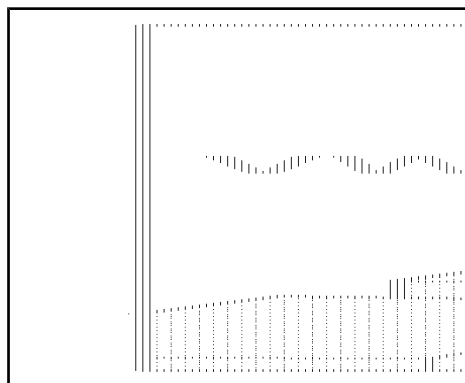
- Press on joint until stop.
- Install the circlip.

- Coat the cover sealing surface with -D 454 300 A2-.
- Apply a continuous sealant bead with a 2 to 3 mm diameter in the area of the inner holes -arrow- on the clean surface of the cover.

- Align new cover with bolts -arrows- to bolt holes.

It must be aligned exactly because it cannot be aligned after driving on.

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





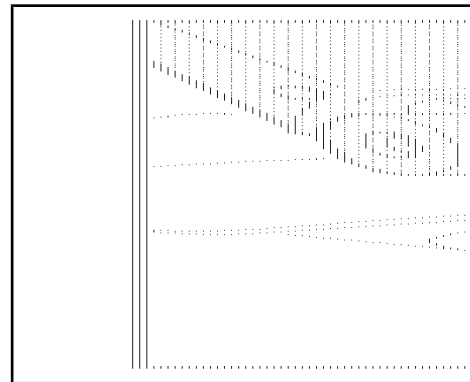
Tightening Clamping Sleeve On Outer Joint

- Position Clamping Pliers - VAG1682A- as shown in illustration. When doing this, make sure that edges of clamping pliers are seated in corners -arrows B- of clamp.
- Tension clamp by turning spindle with a torque wrench (do not tilt clamp tool).



Note

- ◆ *The hard material of the joint boot (compared to rubber) makes it necessary to use a stainless steel hose clamp. It is only possible to tighten the hose clamp with Clamping Pliers - VAG1682A- .*
- ◆ *Tightening specification: 25 Nm.*
- ◆ *Use torque wrench -C- with adjustment range 5 to 50 Nm (for example Torque Wrench 5-50Nm - VAG1331-).*
- ◆ *Be sure thread of spindle -A- of clamp tool moves freely. Grease with MOS 2 grease if necessary.*
- ◆ *If the thread is tight, for example, dirty, the required tensioning force for the hose clamp will not be achieved in spite of correct torque specification settings.*



Tensioning Clamp On Small Diameter

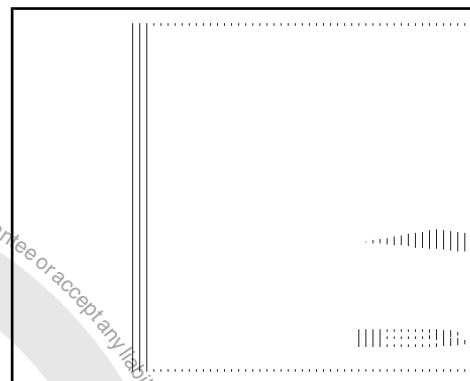
Outer CV joint, checking. Refer to

⇒ [“6.7 Outer CV Joint, Checking”, page 113](#)

Inner CV joint, checking. Refer to

⇒ [“6.8 Inner CV Joint, Checking”, page 114](#)

CV joint, checking function. Refer to ⇒ [page 115](#)



6.6.3 Drive Axle, Disassembling and Assembling, Triple Roller Joint AAR3300i

Special tools and workshop equipment required

- ◆ Press Plate - VW401-
- ◆ Press Plate - VW402-
- ◆ Press Piece - Rod - VW408A-
- ◆ Press Piece - Multiple Use - VW411-
- ◆ Press Piece - 37mm - VW416B-
- ◆ Press Piece - Multiple Use - VW447H-
- ◆ Hose Clip Pliers - VAG1275A-
- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Clamping Pliers - VAG1682A-
- ◆ Puller - Driveshaft - T10382/1-
- ◆ Spindles - T10382/2-



- ◆ Tripod Joint Tool - T10065-
- ◆ Slide Hammer Set - VW771-
- ◆ Puller - Driveshaft - T10382-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolt - Outer CV Joint to Drive Axle
- ◆ Clamps - CV Boot
- ◆ Lock Ring - Triple Roller Joint
- ◆ Lock Ring - Triple Roller Star with Rollers

Removing the Outer CV Joint

- Secure the drive axle with protective covers in a vise clamp.
- Fold back boot.
- Align the Puller - Driveshaft - T10382- so that the flat side of the Puller - Driveshaft - T10382/1- faces the Spindles - T10382/2- .
- Attach the Puller - Driveshaft - 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 - Driveshaft - Removing Plate - T10382/1-

2 - Puller - Driveshaft - Spindles - T10382/2-

Installing Outer CV Joint

- Install the new circlips.
- Slide new CV boot onto drive axle if necessary.
- Use a plastic hammer to install it on the shaft until the locking ring locks secure.

Triple Roller Joint, Disassembling

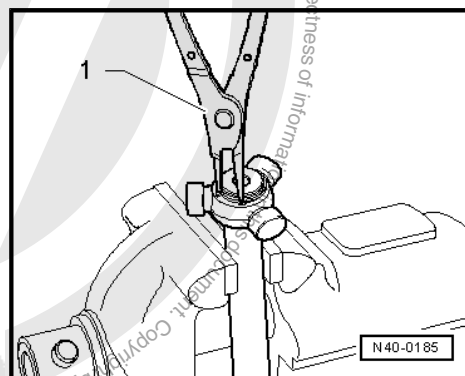
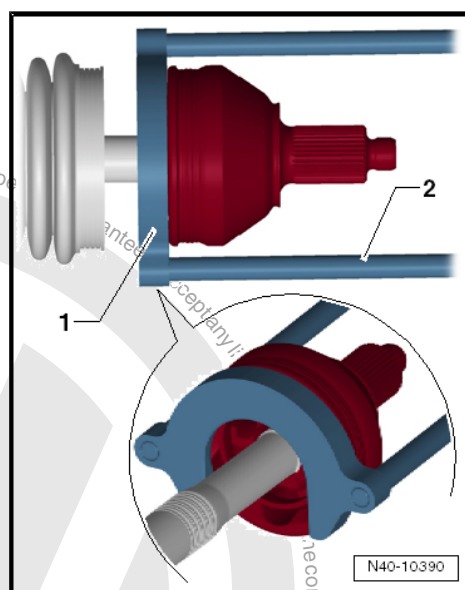
- Secure the drive axle with protective covers in a vise clamp.
- Open both clamps at inner joint and slide back CV boot.
- Remove joint from drive axle.

- Remove the circlip.

1 - Pliers (commercially available)

- or Circlip Pliers - VW161A-

- Insert the drive axle into the press.





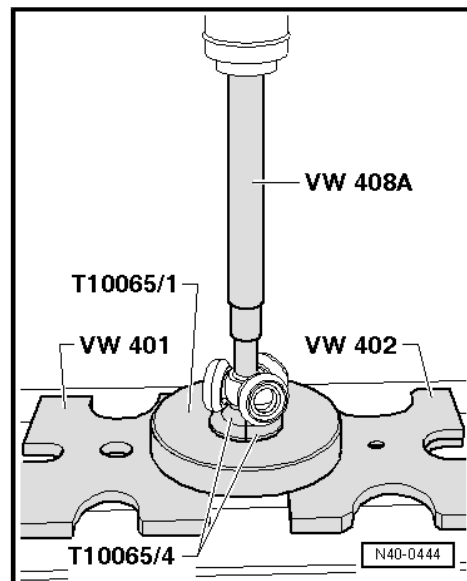
- Press the triple roller star off the axle shaft.
- Pull off CV boot from shaft.
- Clean shaft, joint and groove for oil seal.

Triple Roller Joint, Assembling

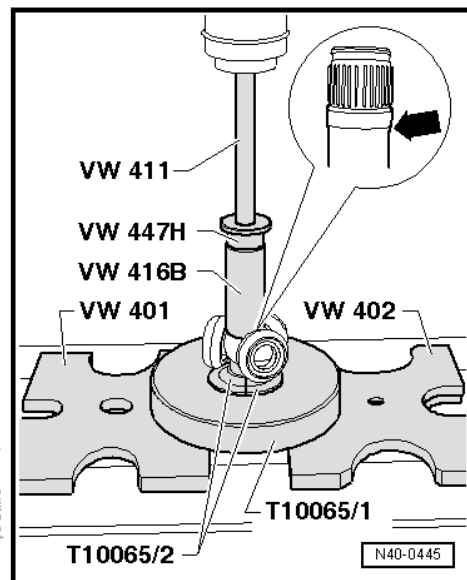
- Slide small clamp for joint protective boot onto shaft.
- Slide CV boot onto shaft.

Triple Roller Star, Installing

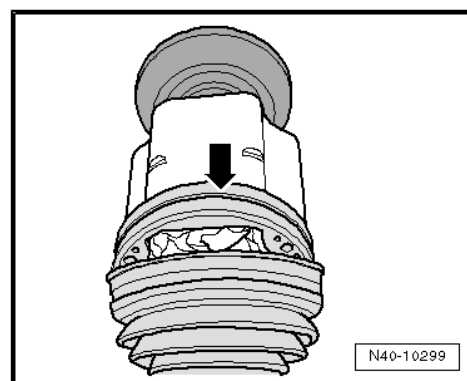
The chamfer on triple roller star -arrow- faces the shaft. This is used as an assembly aid.



- 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 drive axle splines and triple roller star with Lubricating Paste - G 052 142 A2- .
- Insert securing ring, be sure to fit properly.
- Press half of the total amount of grease from the repair kit into the triple roller joint.
- Position the boot adapter on the joint.
- Slide joint piece over rollers and secure.
- Press the remaining amount of grease from the repair kit into the rear side of the triple roller joint.



- Slide the CV boot onto the boot adapter and make sure the CV boot engages correctly in the groove on the adapter -arrow-.



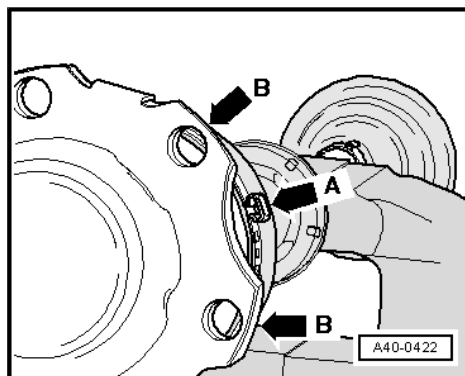


- Install the clamping sleeve.



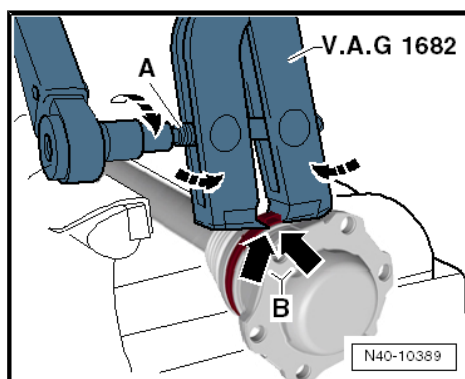
Note

The clamping ear of the clamp in direction of -arrow A- must be between the fixing flanges of the joint -B arrows-. This is to make sure that the internal multipoint bolts are installed correctly when installing the drive axle.



Tightening the Tensioning Clamps on the Larger Diameter on the Inner Joint.

- Position Clamping Pliers - VAG1682A- as shown in illustration. When doing this, make sure that edges of clamping pliers are seated in corners -arrows B- of clamp.
- Tension clamp by turning spindle with a torque wrench (do not tilt clamp tool).

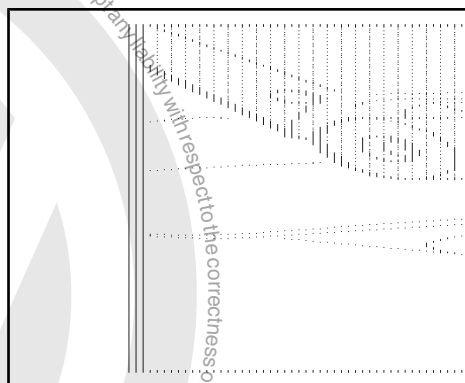


Note

- ♦ *The hard material of the joint boot (compared to rubber) makes it necessary to use a stainless steel hose clamp. It is only possible to tighten the hose clamp with Clamping Pliers - VAG1682A- .*
- ♦ *Tightening specification: 25 Nm.*
- ♦ *Use torque wrench -C- with adjustment range 5 to 50 Nm (for example Torque Wrench 5-50Nm - VAG1331-).*
- ♦ *Be sure thread of spindle -A- of clamp tool moves freely. Grease with MOS 2 grease if necessary.*
- ♦ *If the thread is tight, for example, dirty, the required tensioning force for the hose clamp will not be achieved in spite of correct torque specification settings.*

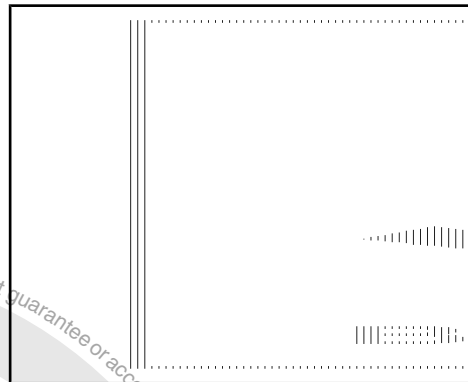
Tightening Clamping Sleeve on Outer Joint

- Position Clamping Pliers - VAG1682A- as shown in illustration. When doing this, make sure that edges of clamping pliers are seated in corners -arrows B- of clamp.
- Tension clamp by turning spindle with a torque wrench (do not tilt clamp tool).





Tightening the Tensioning Clamp on the Smaller Diameter on the Inner/Outer Joint

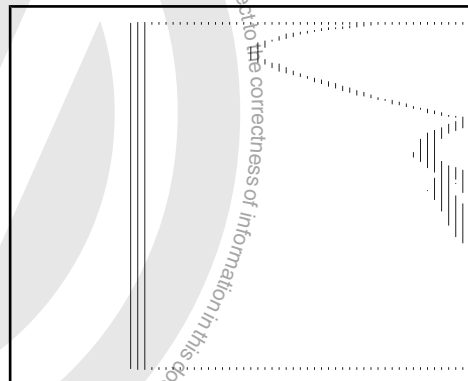


6.7 Outer CV Joint, Checking

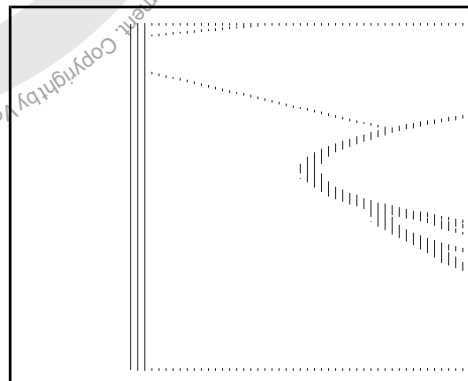
It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.

Removing

- Mark position of ball hub to ball cage and to housing before disassembling, using electro-writer or grindstone.
- Swivel the ball hub and ball cage.
- Remove the balls one after the other.



- Turn cage until the two rectangular windows -arrow- are aligned with the joint housing.
- Lift out cage with hub.



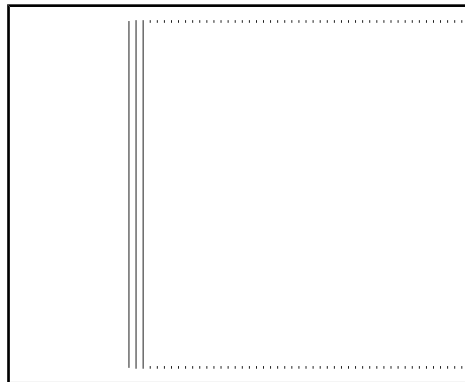


- Swing segment of hub into rectangular window of cage.
- Fold hub out from cage.

The 6 balls of each joint belong to one tolerance group. Check stub axle, hub, cage and balls for small depressions (pitting build-up) and chafing. Excessive circumferential backlash in joint makes itself noticed via tip-in shock, in such cases joint should be replaced. Flattening and running marks of balls are no reason to replace joint.

Installing

- Press in half of the total grease amount (40 grams) into joint body.
- Insert cage with hub into joint body.
- Press in opposing balls in sequence, during this, previous position of ball hub to ball cage and to joint body must be established again.
- Install new circlip into the hub.
- Distribute remaining grease in the joint boot.



6.8 Inner CV Joint, Checking

Removing

The joint must be disassembled for the following work:

- ◆ Replace the grease if it is very dirty
- ◆ For checking the contact surfaces for wear
- ◆ For checking the bearings for wear
- Swivel the ball hub and ball cage.
- Remove the joint in direction of -arrow-.
- Remove the balls from the cage.



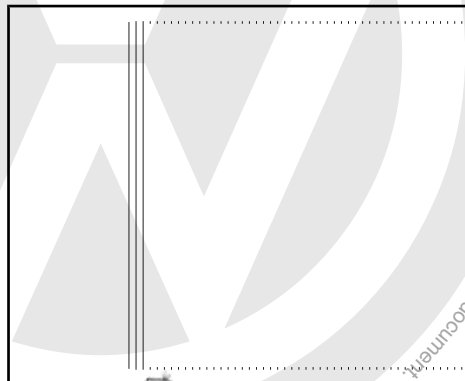
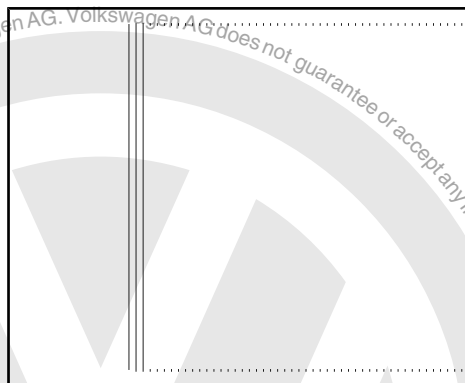
Note

Ball hub and joint piece are paired. Do not mix up.

- Flip out ball hub from ball cage via running path of ball -arrows-.
- Check joint piece, ball hub, ball cage and balls for small broken off depressions (pitting build-up) and chafing.

Excessive circumferential backlash in joint makes itself noticed via tip-in shock. Joint must be replaced in such cases. Flattening and running marks of balls are no reason to replace joint.

Installing

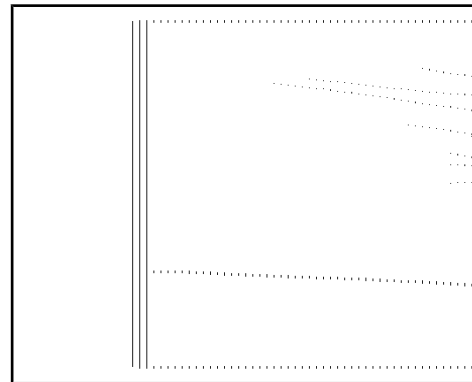




- Insert ball hub into ball cage via two chamfers. The installation position is at random. Press balls into cage.

Ball hub has 2 different distances between ball tracks, a larger and a smaller.

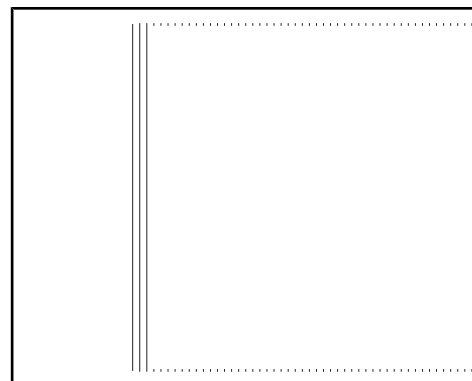
- Insert hub with cage and balls upright into joint piece.



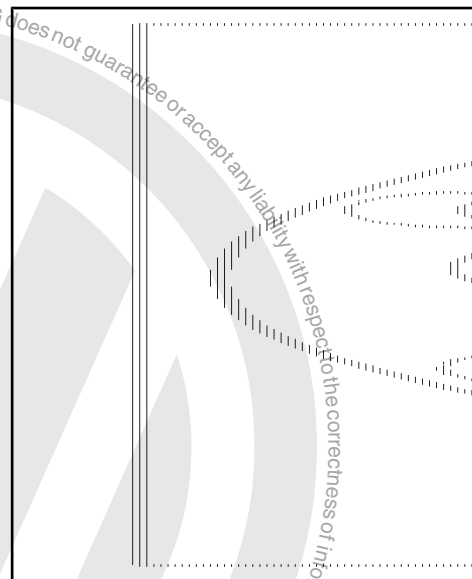
When inserting, make sure that in each case the wide gap -a- at joint piece contacts narrow gap -b- at hub after swinging in.

Chamfer on inner diameter of ball hub (splines) must face large diameter of joint piece.

- Also note chamfer on inner diameter of ball hub, it must be visible after swiveling in.



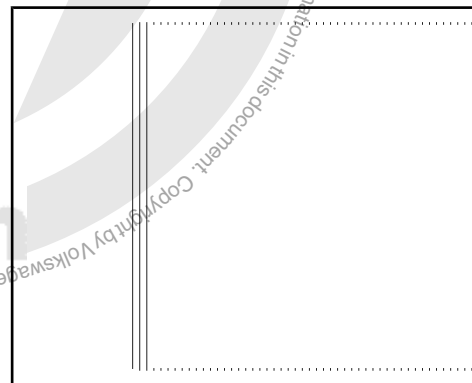
- Swing in ball hub, to do this swing out hub far enough from cage -arrows- so that the balls have the distance of the running paths.



- Swing in hub with balls by pressing forcefully onto cage -arrow-.

CV Joint, Checking for Function

CV joint is properly assembled, if ball hub can be slid back and forth by hand over whole compensation length.



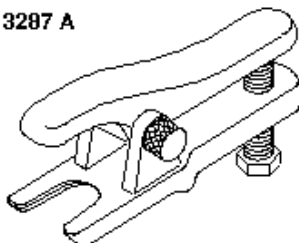


7 Special Tools

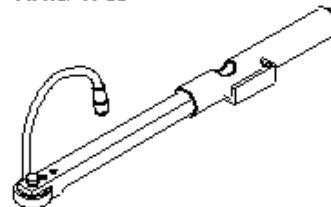
Special tools and workshop equipment required

- ◆ Puller - Ball Joint - 3287A-
- ◆ Digital Torque Wrench - VAG1756A-
- ◆ Torque Wrench 1332 Insert - Ring Wrench - 18mm - VAG1332/10-

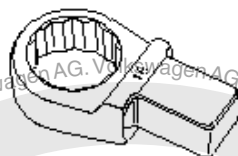
3287 A



V.A.G 1756



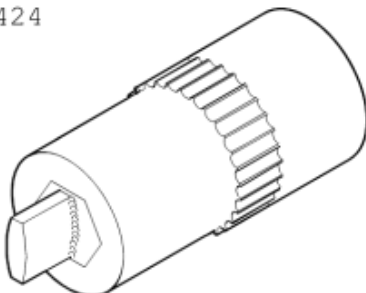


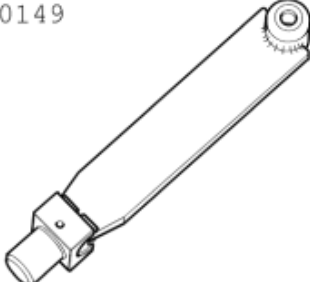

V.A.G 1332/10



G40-0071



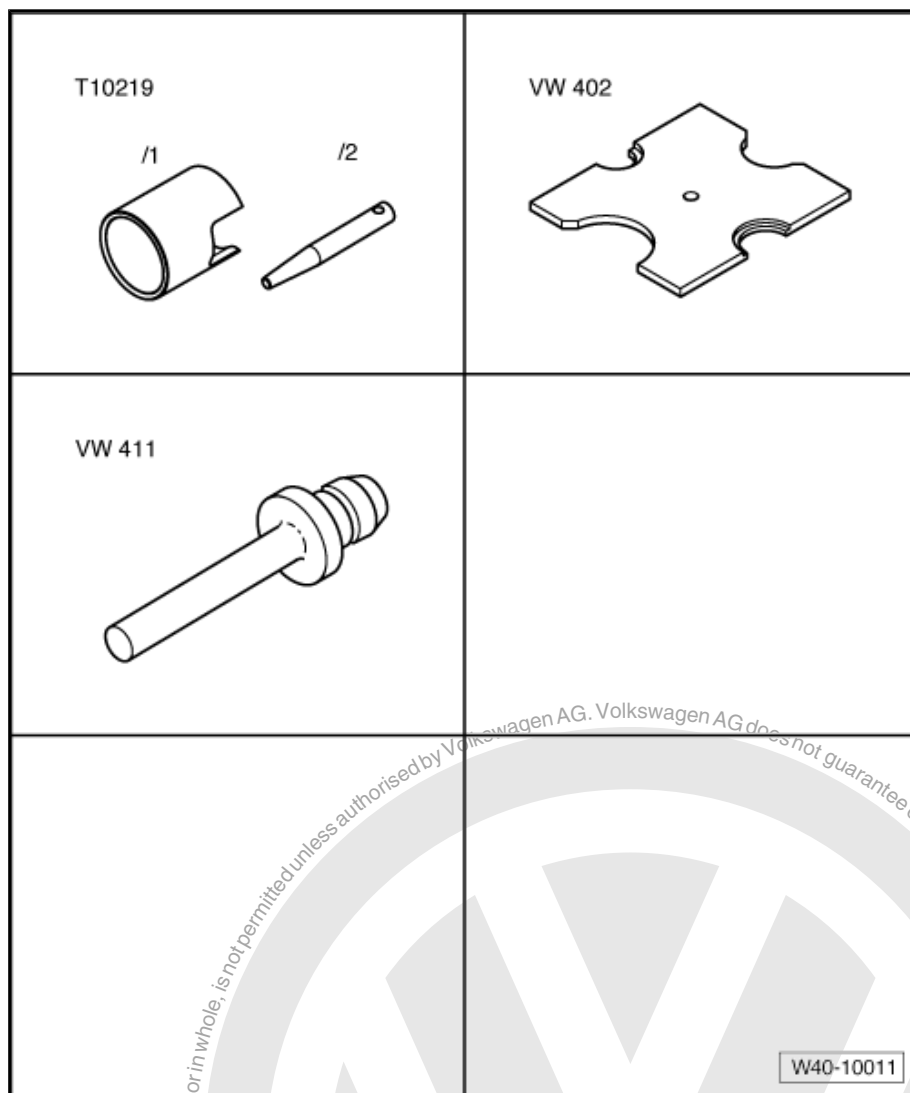
- ◆ Torque Wrench 1332
40-200Nm - VAG1332-
- ◆ Spreader Tool - 3424-
- ◆ Engine and Gearbox Jack -
VAS6931-
- ◆ Engine/Gearbox Jack
Adapter - Wheel Hub Sup-
port - T10149-

<p>3424</p> 	<p>V.A.G 1332</p> 
<p>V.A.G 1383</p> 	<p>T10149</p> 
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W40-10003

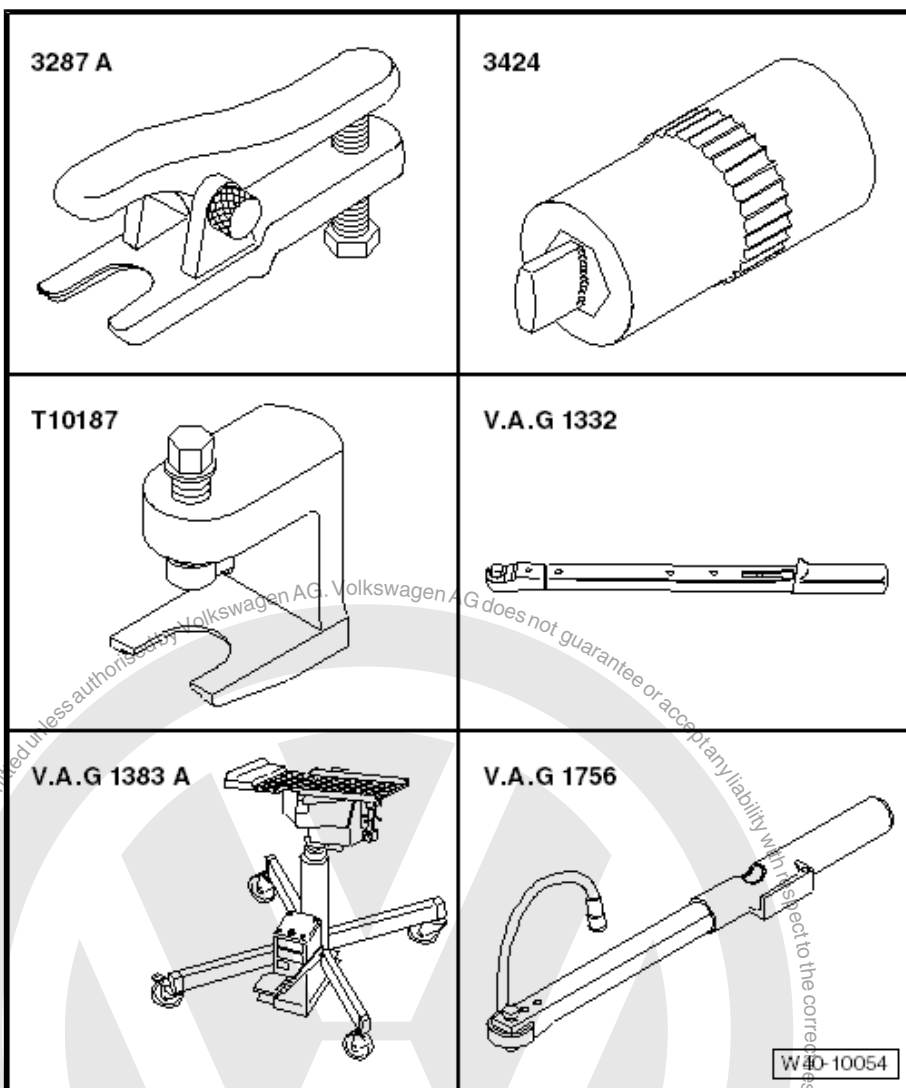


- ◆ Wishbone Rubber Mount Assembly Tool - T10219-
- ◆ Press Plate - VW402-
- ◆ Press Piece - Rod - VW411-



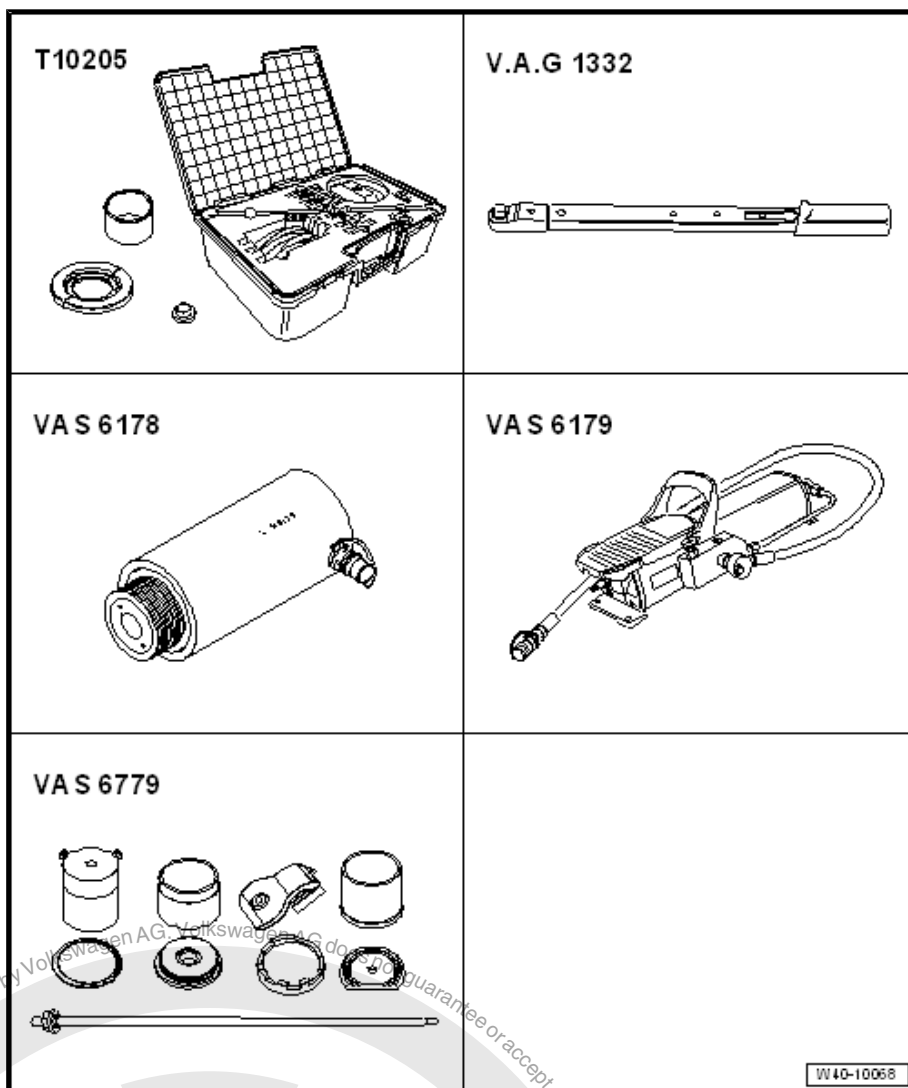


- ◆ Puller - Ball Joint - 3287A-
- ◆ Spreader Tool - 3424-
- ◆ Puller - Ball Joint - T10187-
- ◆ Torque Wrench 1332
40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack -
VAS6931-
- ◆ Digital Torque Wrench -
VAG1756A-



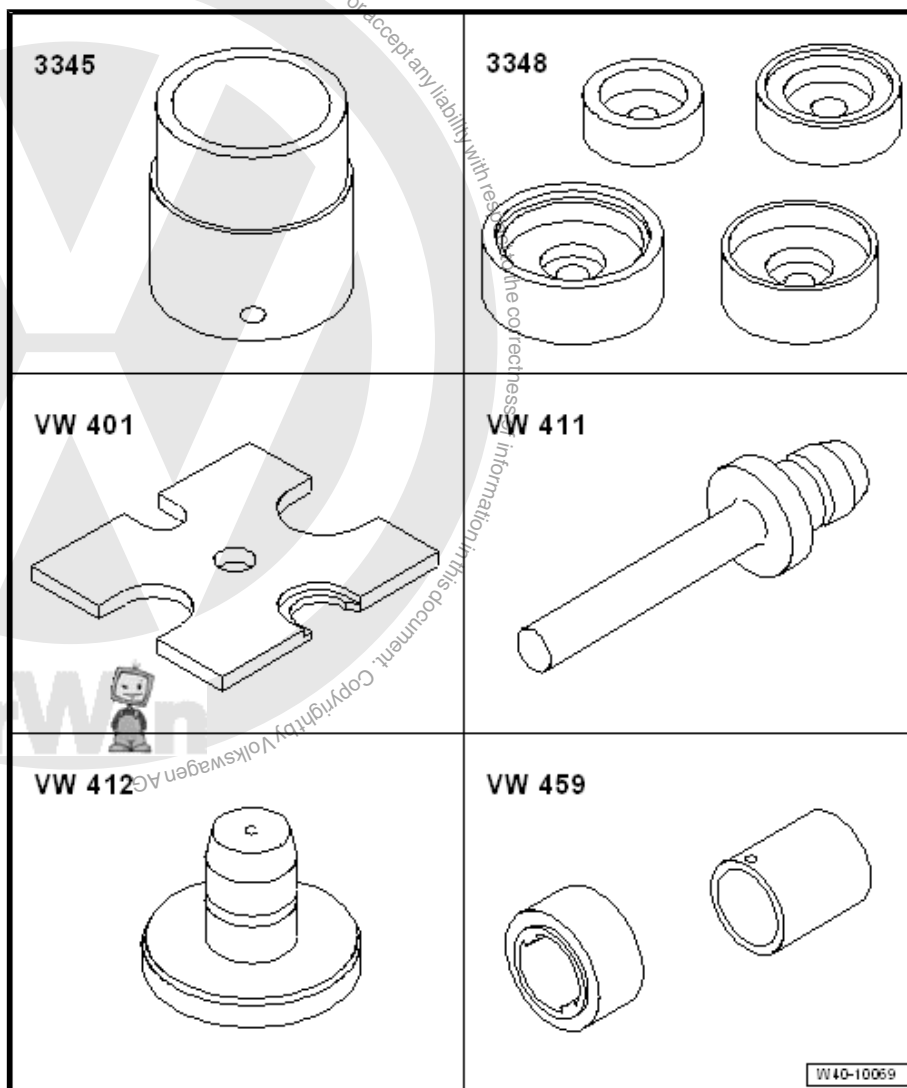


- ◆ Bearing Installer - Wheel Hub/Bearing Kit - T10205-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Hydraulic Press - VAS6178-
- ◆ Pneumatic/Hydraulic Foot Pump - VAS6179-
- ◆ Hydraulic Press - Bushing Tool Kit - VAS6779-





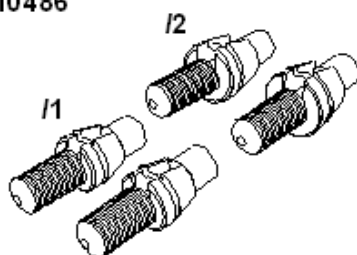
- ◆ Bearing Installer - Wheel Bearing - 3345-
- ◆ Bearing Installer - Multiple Use - 3348-
- ◆ Press Plate - VW401-
- ◆ Press Piece - Rod - VW411-
- ◆ Press Piece - Multiple Use - VW412-
- ◆ Bearing Installer - Ball Joint/Bushing/Bearing - VW459-



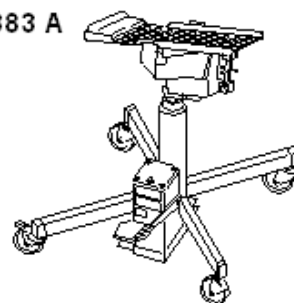


- ◆ Four Locating Pins - T10486/1-
- ◆ Engine and Gearbox Jack - VAS6931- with Universal Support Plate - VAG1359/2-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-

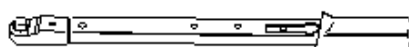
T10486



V.A.G 1383 A



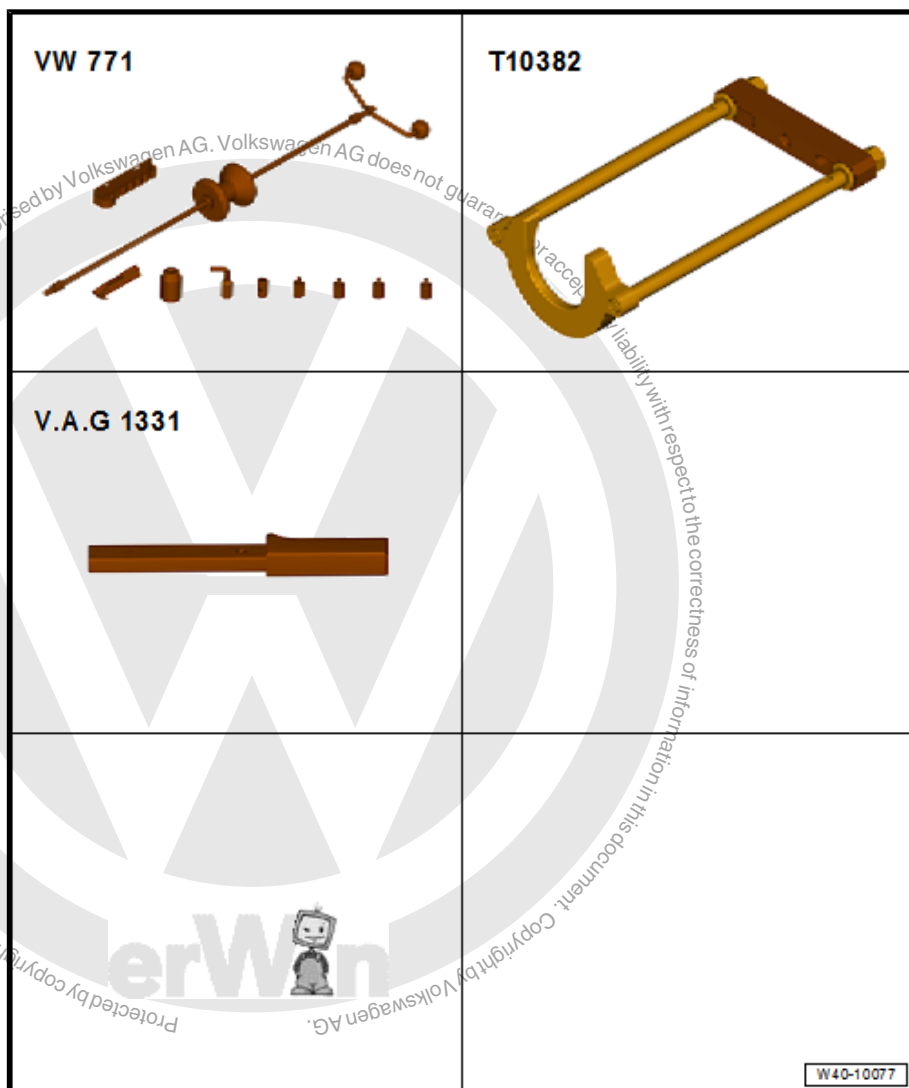
V.A.G 1332



W 40-1007 0



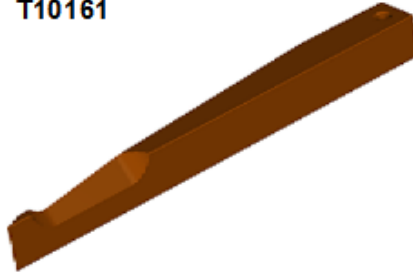
- ◆ Puller - Driveshaft - T10382-
- ◆ Slide Hammer Set - VW771-
- ◆ Torque Wrench 1331 5-50Nm - VAG1331-



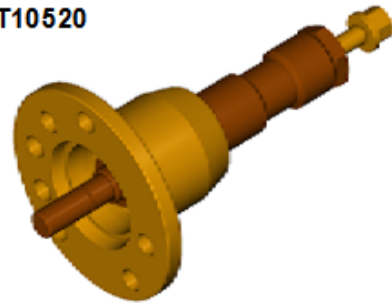


- ◆ Drive Axle Wedge Tool - T10161-
- ◆ Drive Shaft Remover - T10520-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-

T10161



T10520



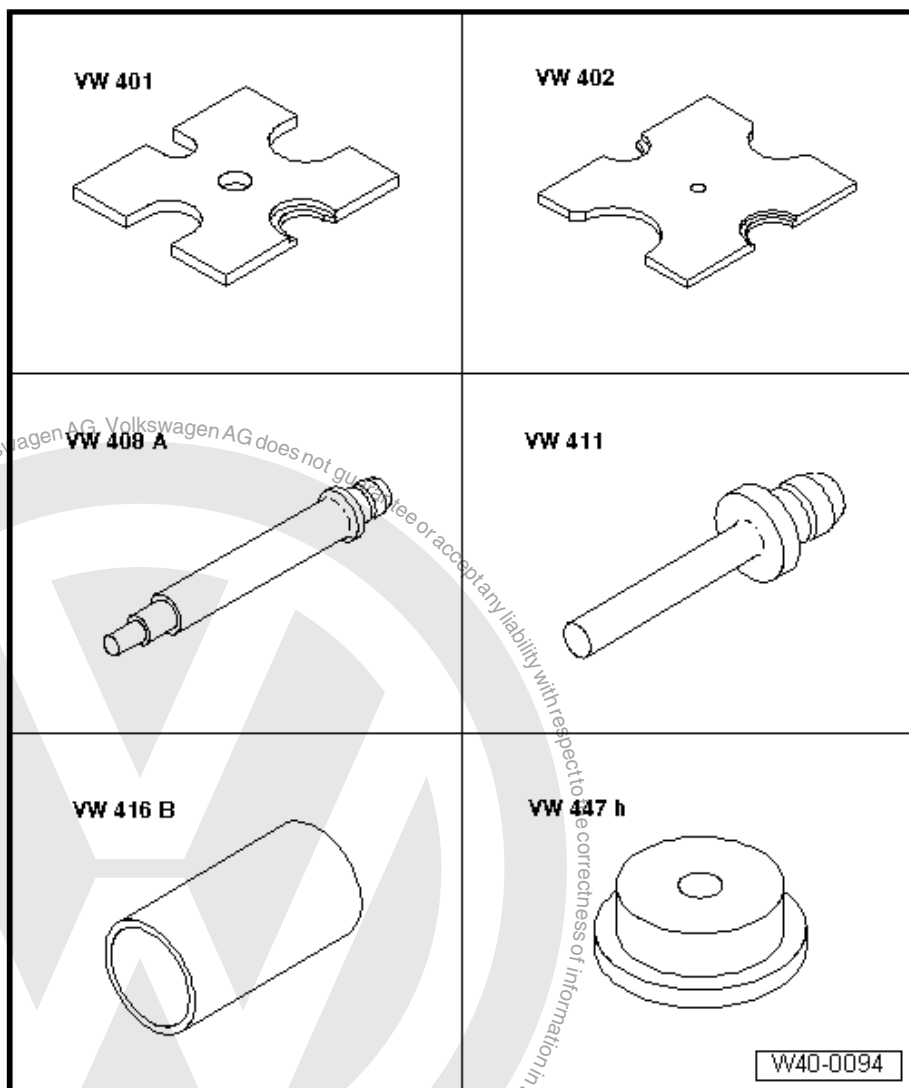
V.A.G 1332



W40-10078

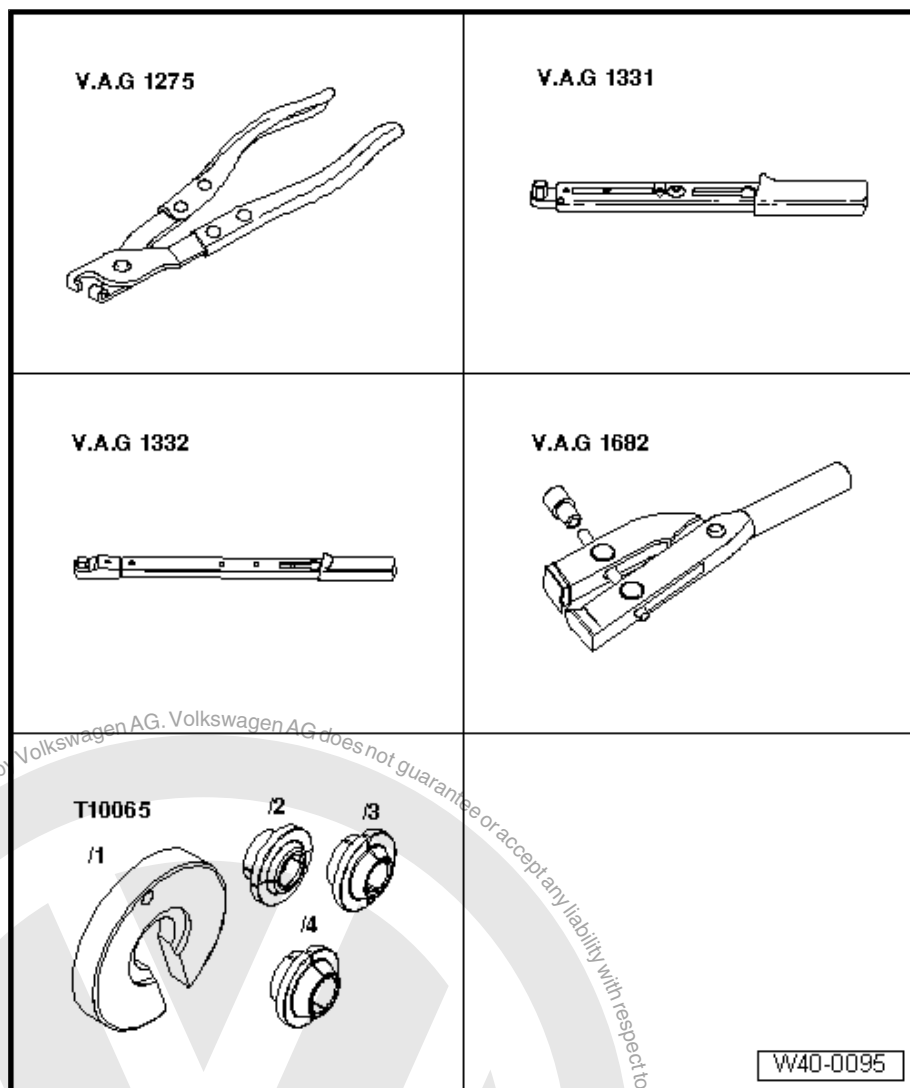


- ◆ Press Plate - VW401-
- ◆ Press Plate - VW402-
- ◆ Press Piece - Rod - VW408A-
- ◆ Press Piece - Rod - VW411-
- ◆ Press Piece - 37mm - VW416B-
- ◆ Press Piece - Multiple Use - VW447H-



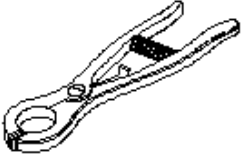


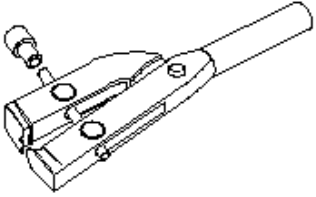
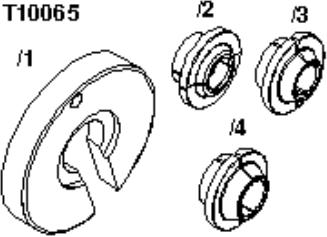


- ◆ Hose Clip Pliers - VAG1275A-
- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Clamping Pliers - VAG1682A-
- ◆ Tripod Joint Tool - T10065-





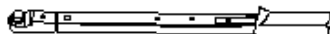
- ◆ Circlip Pliers - VW161A-
- ◆ Torque Wrench 1331
5-50Nm - VAG1331-
- ◆ Torque Wrench 1332
40-200Nm - VAG1332-
- ◆ Clamping Pliers -
VAG1682A-
- ◆ Tripod Joint Tool - T10065-

<p>VW 161 A</p> 	<p>V.A.G 1331</p> 
<p>V.A.G 1332</p> 	<p>V.A.G 1682</p> 
<p>T10065</p> 	<p>VW40-0101</p>

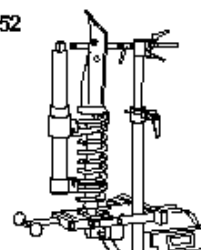


- ◆ Torque Wrench 1332
40-200Nm - VAG1332-
- ◆ Spring Compressor Kit -
Spring Tensioner -
VAG1752/1-
- ◆ Spring Compressor Kit -
Spring Retainer w/Inserts -
VAG1752/4-
- ◆ Shock Absorber Set -
T10001-

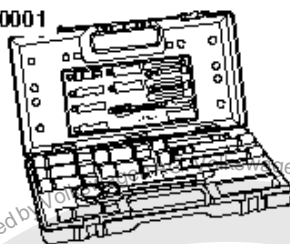
V.A.G 1332



V.A.G 1752



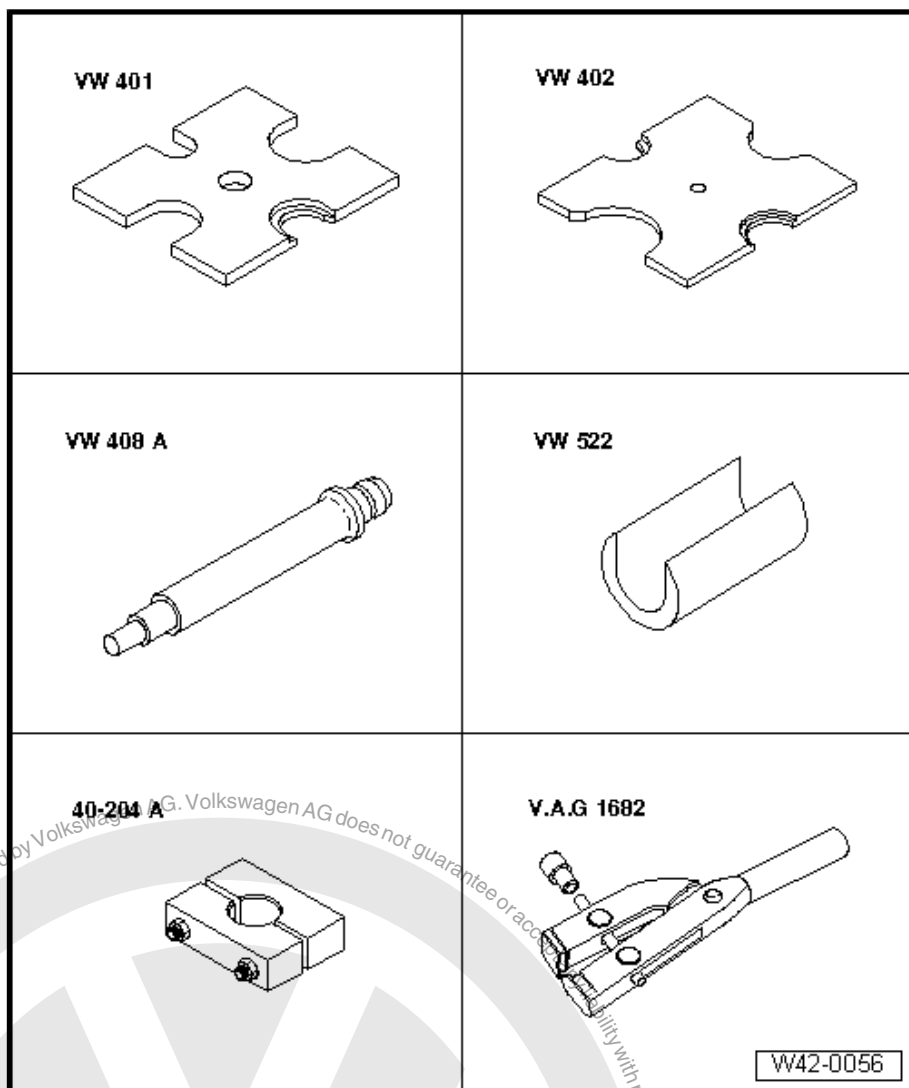
T 10001



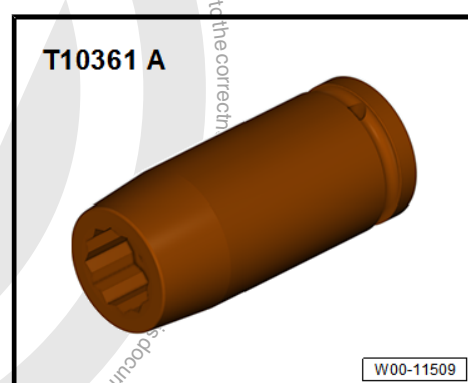
W40-0119



- ◆ Press Plate - VW401-
- ◆ Press Plate - VW402-
- ◆ Press Piece - Rod - VW408A-
- ◆ CV Joint Press Sleeve - VW522-
- ◆ Press Block - 40-204A-
- ◆ Clamping Pliers - VAG1682A-

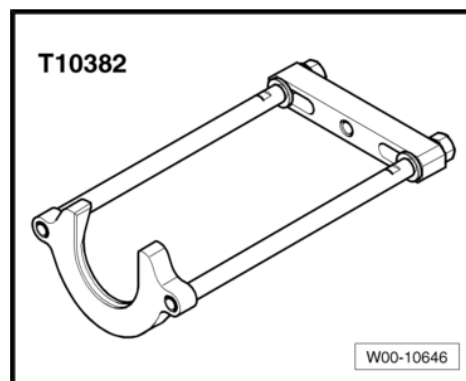


- ◆ Socket AF 24 mm - T10361A-

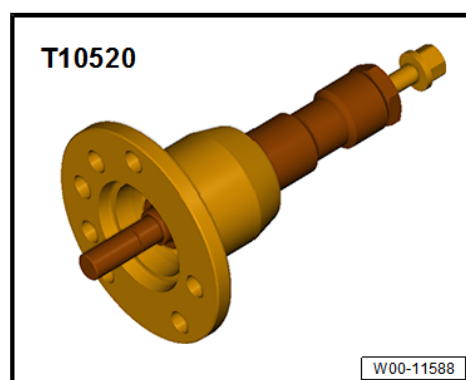




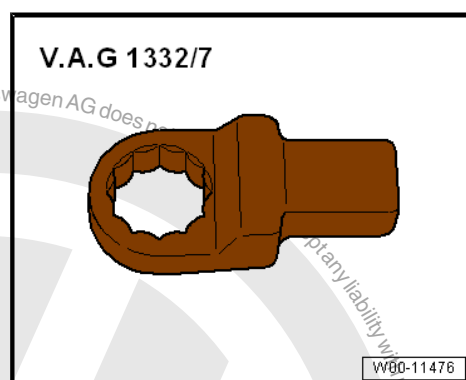
◆ Puller - Driveshaft - T10382-



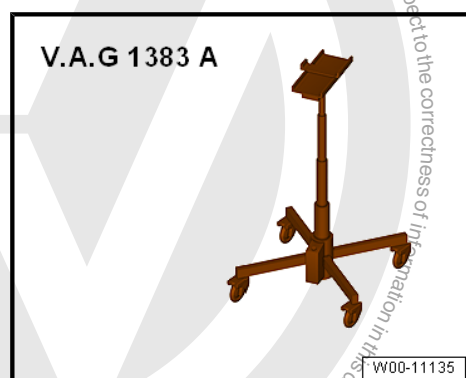
◆ Drive Shaft Remover - T10520-



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



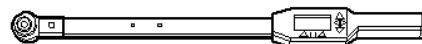
◆ Engine and Gearbox Jack - VAS6931-





◆ Digital Torque Wrench - VAG1756A-

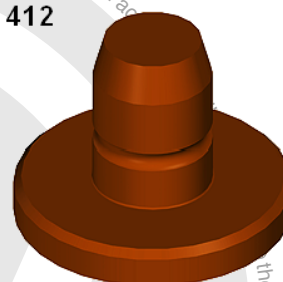
V.A.G 1756 A



W00-10682

◆ Press Piece - Multiple Use - VW412-

VW 412



W00-11421



42 – Rear Suspension

1 Rear Axle

⇒ [“1.1 Overview - Rear Axle”, page 132](#)

⇒ [“1.2 Rear Axle, Lowering”, page 136](#)

⇒ [“1.3 Rear Axle, Removing and Installing”, page 142](#)

1.1 Overview - Rear Axle

⇒ [“1.1.1 Overview - Rear Axle, Torsion Beam Axle”, page 132](#)

⇒ [“1.1.2 Overview - Rear Axle, Multi-Link Suspension”, page 133](#)

⇒ [“1.1.3 Overview - Rear Axle, Multi-Link Suspension, AWD”, page 135](#)

1.1.1 Overview - Rear Axle, Torsion Beam Axle

I - Refer to

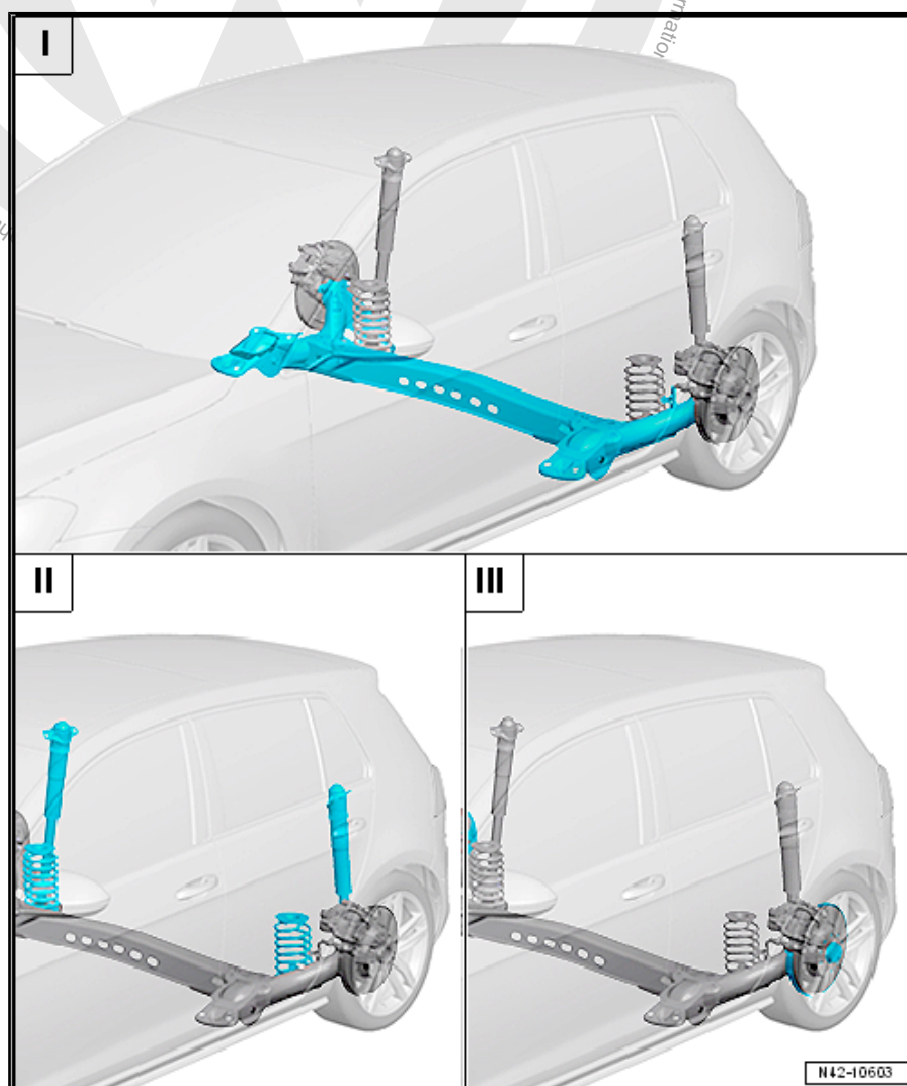
⇒ [“2 Axle Beam”, page 150](#)

II - Refer to

⇒ [“6 Suspension Strut/Shock Absorber, Spring”, page 191](#)

III - Refer to

⇒ [“7 Wheel Bearing and Trailing Arm”, page 209](#)



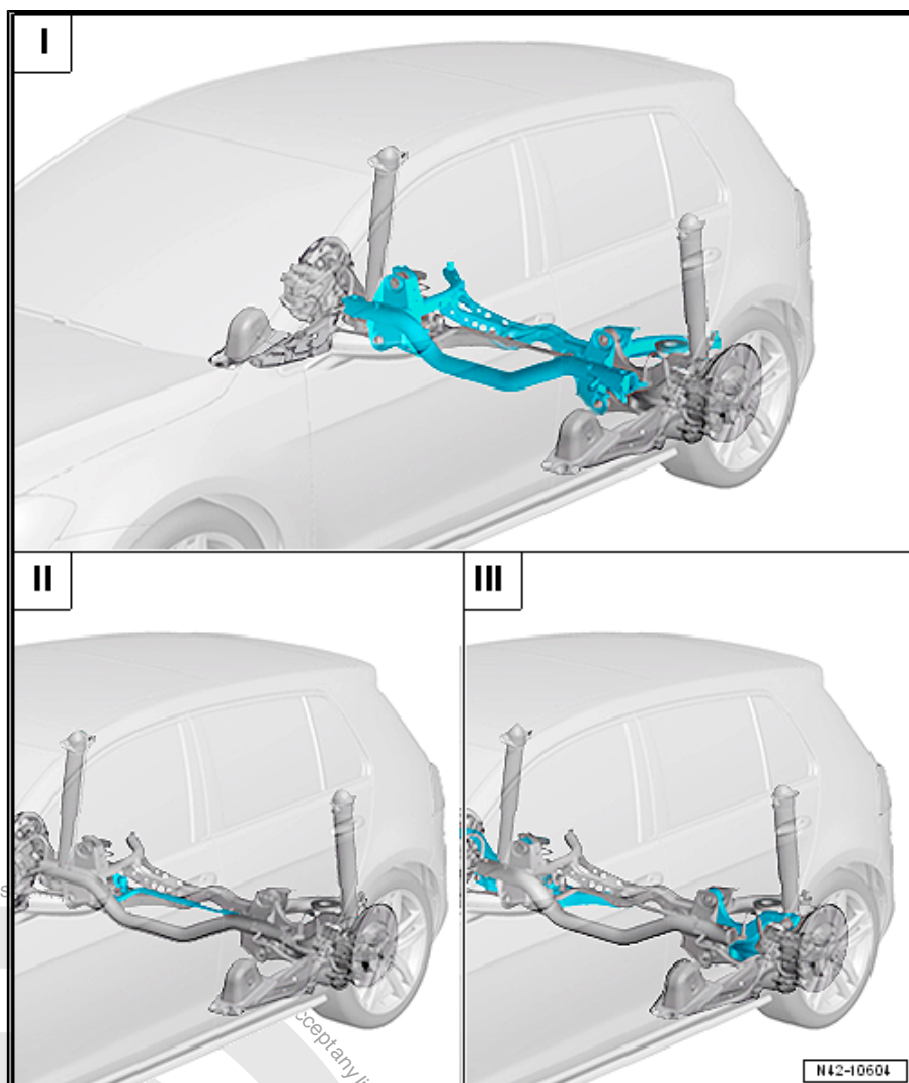


1.1.2 Overview - Rear Axle, Multi-Link Suspension

I - Refer to
⇒ ["3 Subframe", page 157](#)

II - Refer to
⇒ ["4 Stabilizer Bar",
page 177](#)

III - Refer to
⇒ ["5 Control Arm, Tie Rod",
page 181](#)



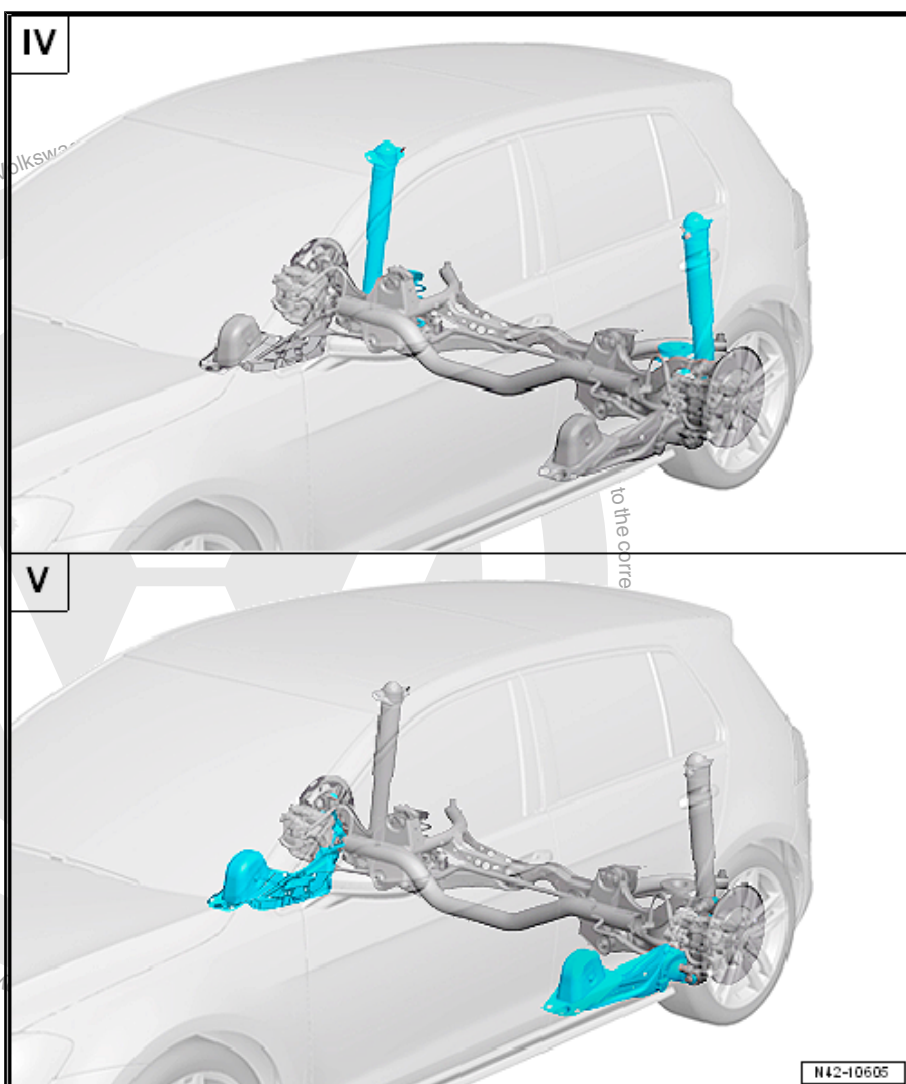


IV - Refer to

⇒ **"6 Suspension Strut/Shock Absorber, Spring", page 191**

V - Refer to

⇒ **"7 Wheel Bearing and Trailing Arm", page 209**





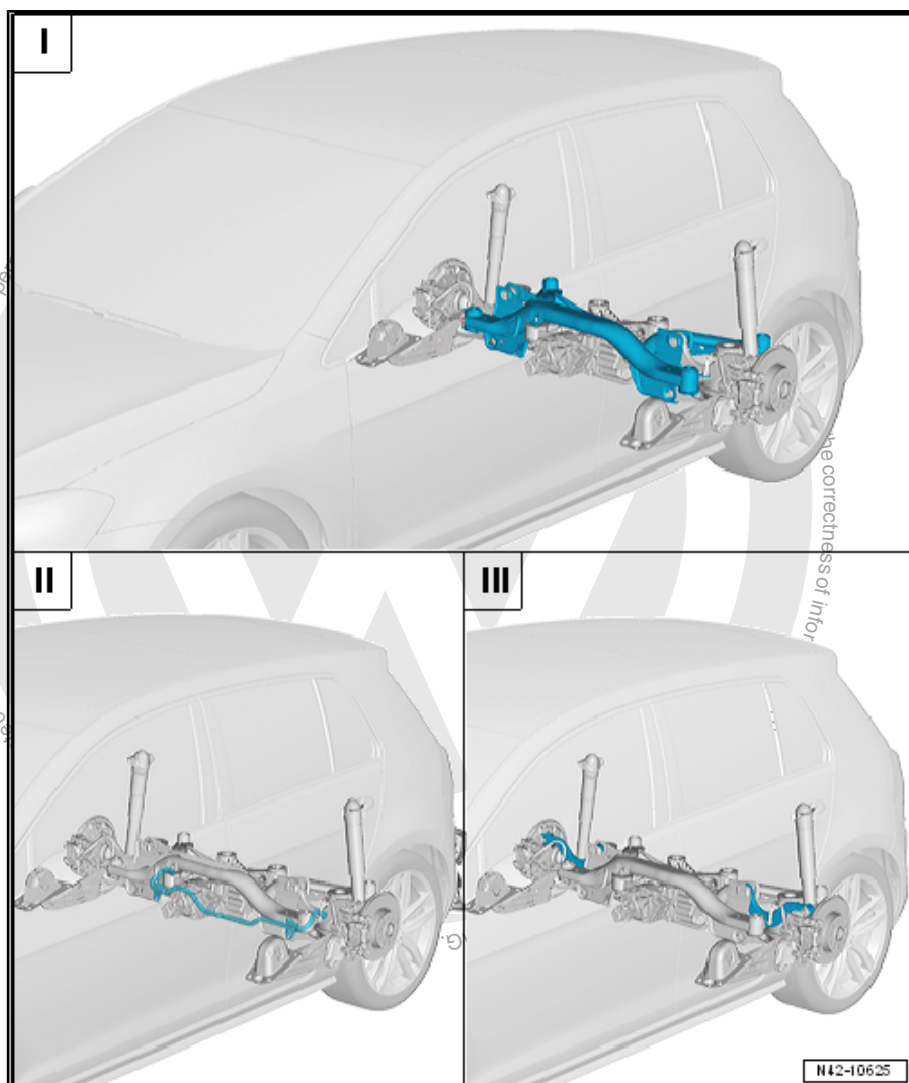
1.1.3 Overview - Rear Axle, Multi-Link Suspension, AWD

I - Refer to
⇒ ["3 Subframe", page 157](#)

II - Refer to
⇒ ["4 Stabilizer Bar",
page 177](#)

III - Refer to
⇒ ["5 Control Arm, Tie Rod",
page 181](#)

for commercial purposes, in part or in whole, is not per-





IV - Refer to

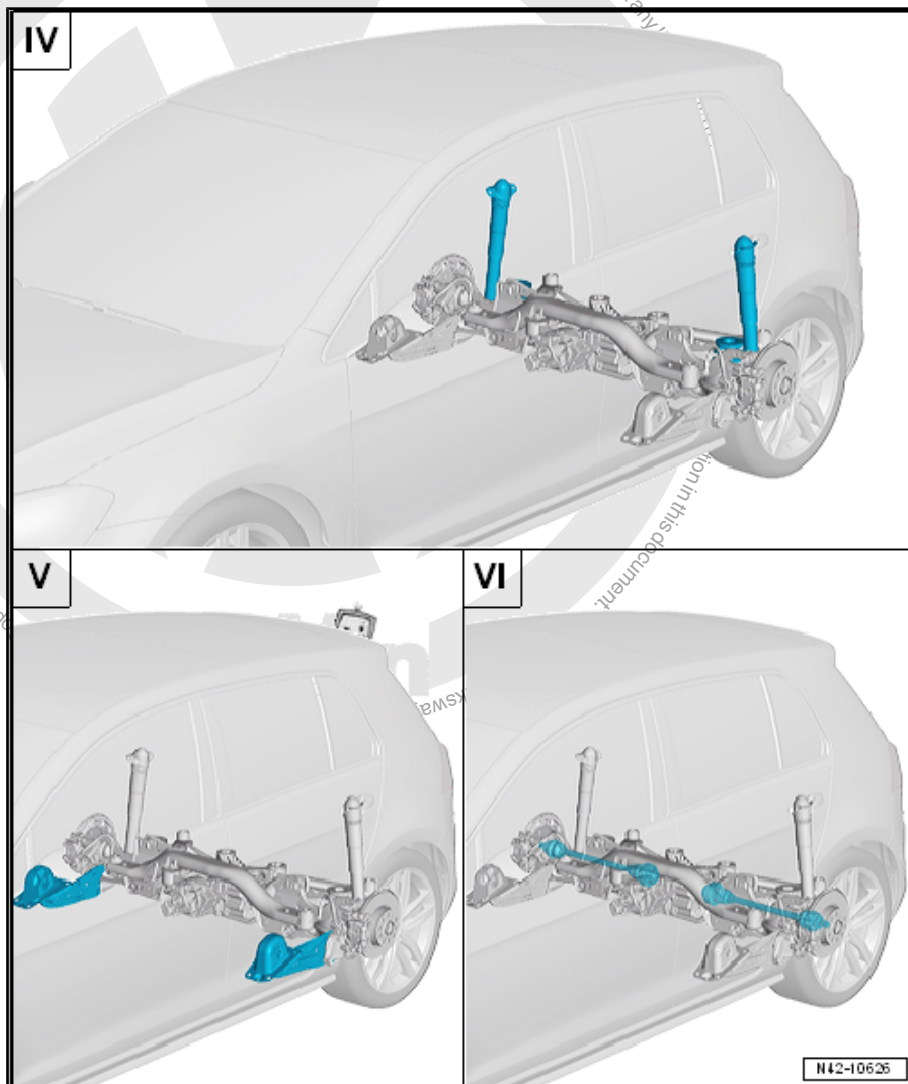
⇒ **"6 Suspension Strut/Shock Absorber, Spring", page 191**

V - Refer to

⇒ **"7 Wheel Bearing and Trailing Arm", page 209**

VI - Refer to

⇒ **"8 Drive Axle", page 240**



1.2 Rear Axle, Lowering

⇒ **"1.2.1 Rear Axle, Lowering, Multi-Link Suspension", page 136**

⇒ **"1.2.2 Rear Axle, Lowering, Multi-Link Suspension, AWD", page 139**

1.2.1 Rear Axle, Lowering, Multi-Link Suspension

Special tools and workshop equipment required

- ◆ Subframe Bushing Tool Kit - 3301-
- ◆ Bearing Installer - Control Arm - 3346-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.



Mandatory Replacement Parts

- ◆ Bolts - Subframe to Body

Lower the Subframe with Attachments.

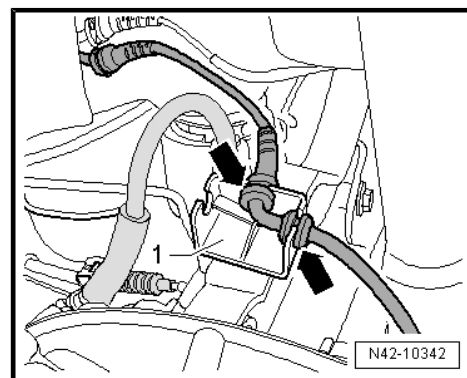
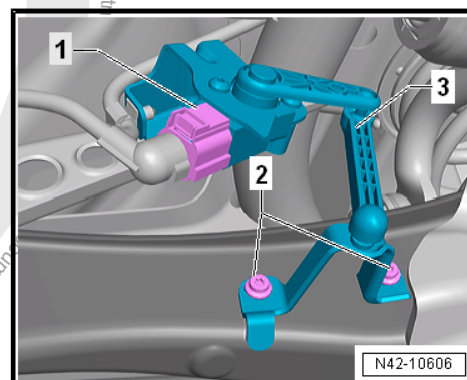
- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.
- Remove the brake calipers on both sides of the vehicle and hang on the body.
- Remove the springs. Refer to ["6.4 Spring, Removing and Installing", page 202](#).
- Remove the rear muffler. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler or ⇒ Engine Mechanical, Fuel Injection and Glow Plugs; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler

Vehicles with a Vehicle Level Sensor

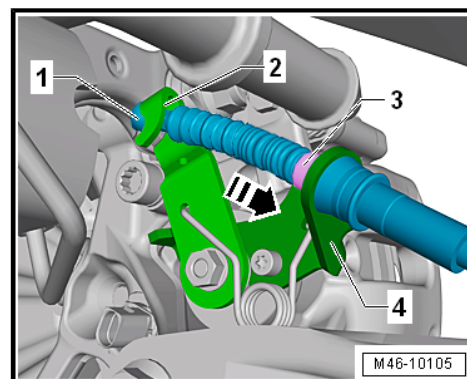
- Disconnect the connector -1-.

Continuation for All Vehicles

- Disconnect the right and left connectors from the ABS speed sensor.



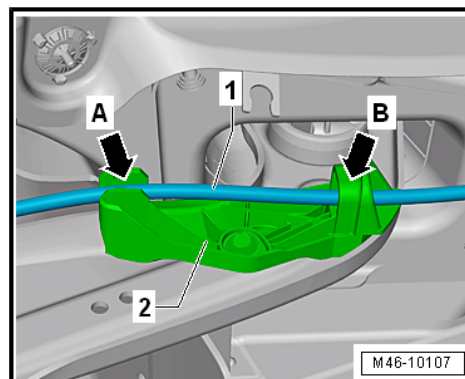
- Unclip the right and left speed sensor wires from the bracket -1- -arrows-.



- Push the lever on the brake caliper -2- in direction of -arrow-.
- Disengage the parking brake cable -1- from the lever on the brake caliper -2-.
- Squeeze the tabs -3- and remove the parking brake cable -1- from the bracket -4- on the brake caliper.



- Pull the brake cable -1- out of the retainer -arrow A- on the bracket -2-.
- Remove the brake cable -1- from the guide -arrow B- on the bracket -2-.

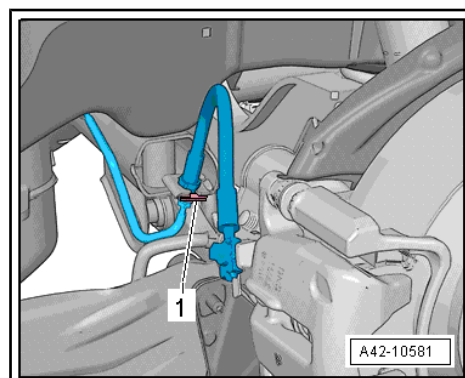


- Remove the clamps -1- on both sides of the vehicle.
- Free up the brake lines from the bracket.



Note

Do not disconnect the brake line.



- Secure both sides of the vehicle on the hoist arms using Tensioning Straps - T10038- .

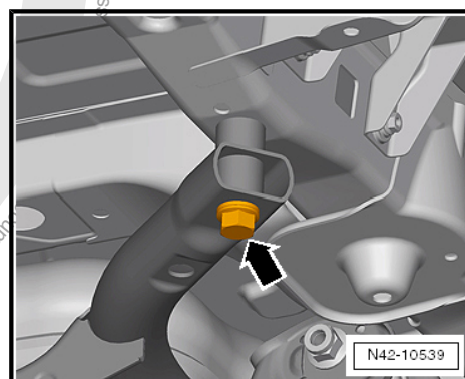
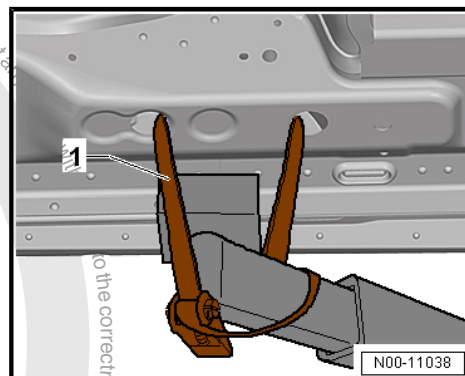
1 - Tensioning Strap - T10038-



WARNING

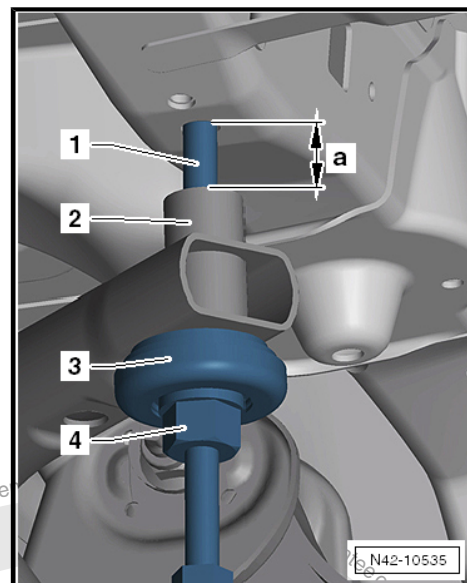
The vehicle could slide off the hoist if it is not secured.

- Secure the subframe on the two front bolts. Refer to
⇒ ["3.2 Subframe, Securing", page 158](#) .
- Remove the bolt from the back of the subframe on the right side -arrow-.





- Install the Bearing Installer - Component - 3346/2- with the Subframe Bushing Tool Kit - 3301- and Nut - Component - 3346/3- into the threaded hole in the longitudinal member.
- 1 - Bearing Installer - Component - 3346/2-
- 2 - Subframe
- 3 - Subframe Bushing Tool Kit - 3301-
- 4 - Nut - Component - 3346/3-
- Remove the left rear bolt from the subframe.
- Turn the Nut - Component - 3346/3- on the Bearing Installer - Component - 3346/2- until the subframe is lowered by dimension -a- = 40 mm.



Subframe with Attachments, Installing

Installation is the reverse of removal, with special attention to the following:

Tightening Specifications

- ◆ Refer to ⇒ ["3 Subframe", page 157](#)
- ◆ Refer to ⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#)
- ◆ Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler or ⇒ Engine Mechanical, Fuel Injection and Glow Plugs; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- For vehicles with a vehicle level sensor, perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .
- On vehicles with level control system sensor, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting.
- Evaluating need for axle alignment. Refer to ⇒ ["3.6 Evaluating Need for Axle Alignment", page 304](#) .

1.2.2 Rear Axle, Lowering, Multi-Link Suspension, AWD

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolts - Subframe to Body

Lower the Subframe with Attachments.

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.



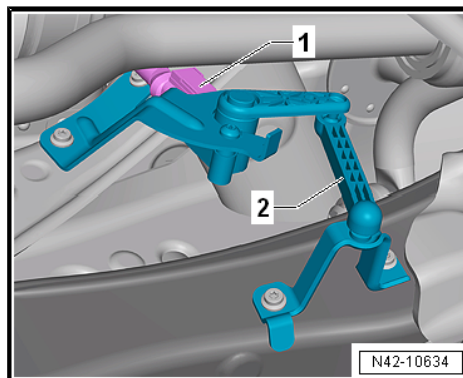
- Remove the brake calipers on both sides of the vehicle and hang on the body.
- Remove the springs. Refer to
⇒ [“6.4 Spring, Removing and Installing”, page 202](#) .
- Remove the rear muffler. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler or ⇒ Engine Mechanical, Fuel Injection and Glow Plugs; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler

Vehicles with A Vehicle Level Sensor

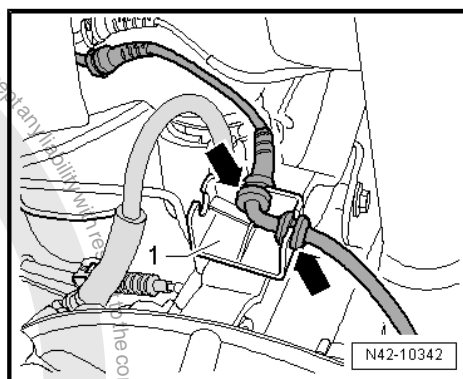
- Disconnect the connector -1- from the vehicle level sensor -2-.

Continuation for All Vehicles

- Disconnect the right and left connectors from the ABS speed sensor.



- Unclip the right and left speed sensor wires from the bracket -1- -arrows-.

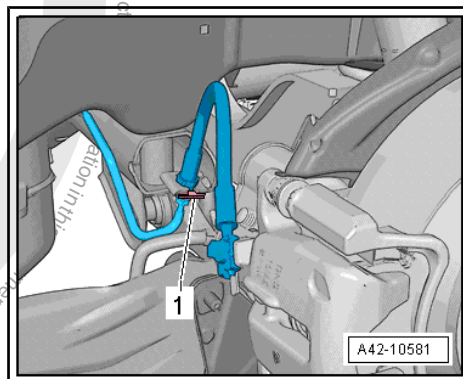


- Remove the clamps -1- on both sides of the vehicle.
- Free up the brake lines from the bracket.



Note

Do not disconnect the brake line.



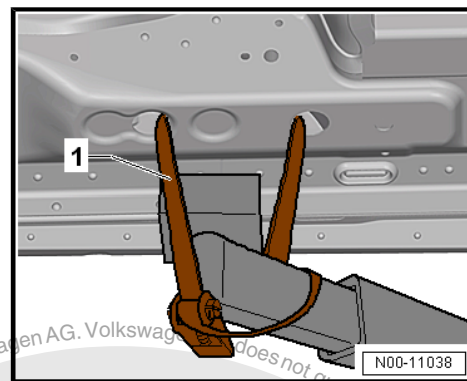


- Secure both sides of the vehicle on the hoist arms using Tensioning Straps - T10038- .
- 1 - Tensioning Strap - T10038-



WARNING

The vehicle could slide off the hoist if it is not secured.



- Secure the subframe. Refer to [⇒ "3.2 Subframe, Securing", page 158](#) .
- Carefully lower the subframe with its attachments approximately 20 mm.
- Disconnect the connector from the Haldex clutch above the final drive.
- Unclip the brake line -1- from the clip -arrow- on the left side.



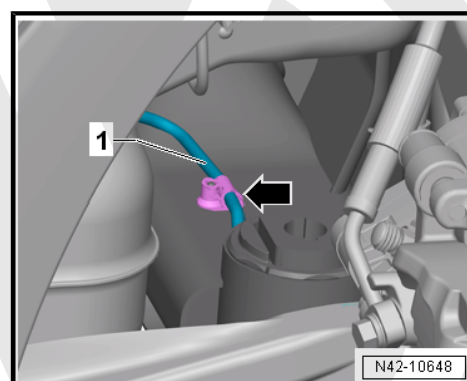
Note

This will destroy the clip, so it will have to be replaced.

- Carefully lower the subframe with its components approximately 140 mm.

Subframe with Attachments, Installing

Installation is the reverse of removal, with special attention to the following:



Tightening Specifications

- ◆ Refer to [⇒ "3.1.2 Overview - Subframe, Multi-Link Suspension, AWD", page 158](#)
- ◆ Refer to [⇒ "1.1 Wheel Bolt Tightening Specifications", page 286](#)
- ◆ Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler or ⇒ Engine Mechanical, Fuel Injection and Glow Plugs; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- For vehicles with a vehicle level sensor, perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .
- On vehicles with level control system sensor, perform headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .
- Evaluating need for axle alignment. Refer to [⇒ "3.6 Evaluating Need for Axle Alignment", page 304](#) .



1.3 Rear Axle, Removing and Installing

⇒ "1.3.1 Rear Axle, Removing and Installing, Torsion Beam Axle",
page 142

⇒ "1.3.2 Rear Axle, Removing and Installing, Multi-Link Suspension, FWD", page 144

⇒ "1.3.3 Rear Axle, Removing and Installing, Multi-Link Suspension, AWD", page 147

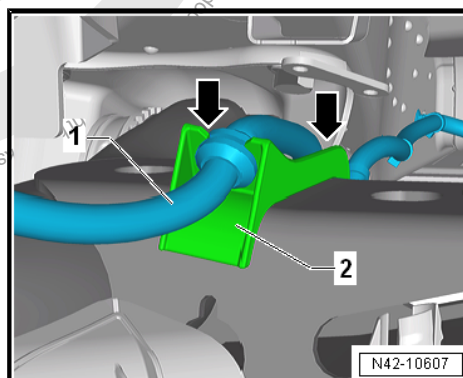
1.3.1 Rear Axle, Removing and Installing, Torsion Beam Axle

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931-

Removing

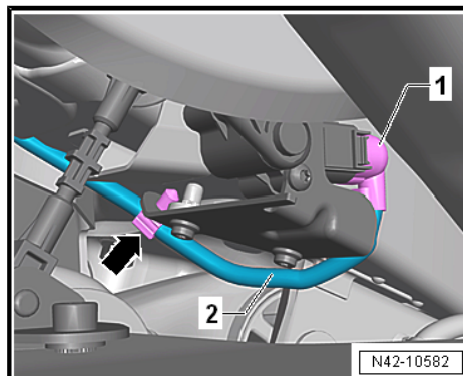
- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Release and disconnect the connector from the Right and Left Rear ABS Wheel Speed Sensors .
- Remove the rear brake cable. Refer to ⇒ Brake System; Rep. Gr. 46 ; Parking Brake; Rear Brake Cable, Removing and Installing .
- Remove the right and left brake calipers and tie them to the body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview ⇒ Rear Brakes .
- Unclip the wire -1- from the bracket -2- on both sides of the axle beam -arrows-.



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-.

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
⇒ ["6.4 Spring, Removing and Installing", page 202](#) .

- Secure both sides of the vehicle on the hoist arms using -
T10038- .

1 - -T10038-

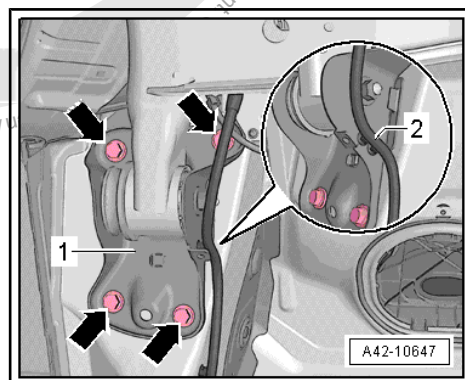
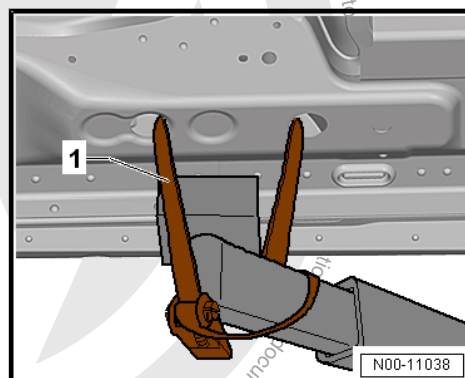
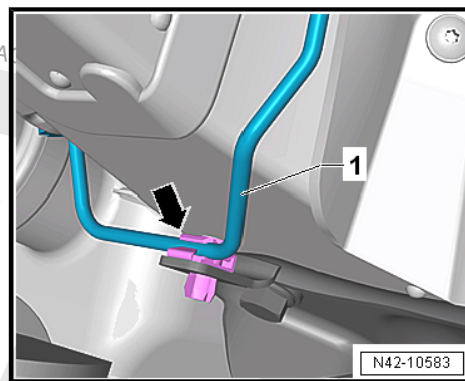


WARNING

The vehicle could slide off the hoist if it is not secured.

- Place the -VAS6931- underneath.

- Unclip and free up the wire -2- on the mounting bracket -1- and on the axle beam.
- Mark the position of the bolts -arrows- on the mounting bracket -1- on the right and left vehicle side and remove them.





- Remove the rear axle from the shock absorbers -arrows-.
- Lower the rear axle using -VAS6931- -1-.
- 1 - -VAS6931-
- 2 - -VAG1359/2-

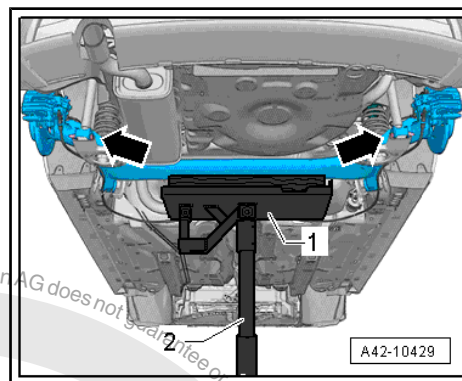
Installing

Install in reverse order of removal. Note the following:

- Tighten the shock absorber threaded connection on the axle beam in curb weight position.

Tightening Specifications

- ◆ Refer to ⇒ [“2.1 Overview - Axle Beam”, page 150](#)
- ◆ Refer to
⇒ [“6.1.1 Overview - Suspension Strut, Shock Absorber and Spring, Torsion Beam Axle”, page 191](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Bolts for brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Overview - Rear Brakes .
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .



1.3.2 Rear Axle, Removing and Installing, Multi-Link Suspension, FWD

Special tools and workshop equipment required

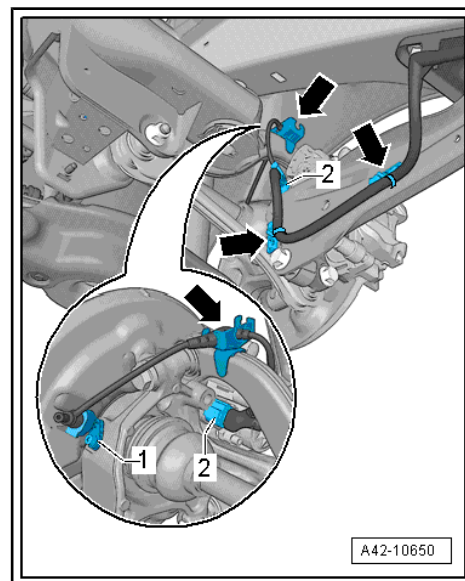
- ◆ Tensioning Strap - T10038-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-

Removing the Subframe and its Attachments

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.



- 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-.

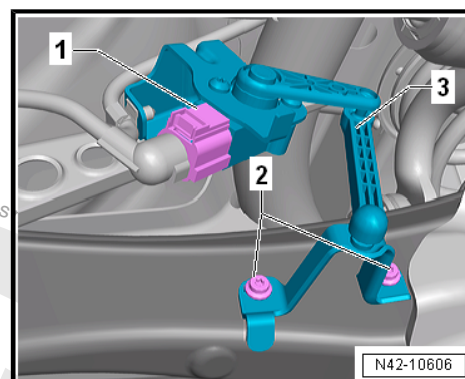


Vehicles with Level Control System Sensor

- Disconnect the connector -1-.
- Remove the bolts -2-.
- Remove the Left Rear Level Control System Sensor - G76-3- from the transverse link.

Continuation for all Vehicles

- Remove the springs. Refer to [⇒ "6.4 Spring, Removing and Installing", page 202](#).



- Remove the clamps -1- on both sides of the vehicle.
- Free up the brake lines from the bracket.

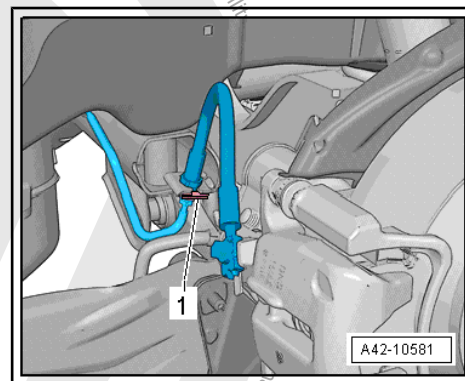


Note

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 ; Overview - Rear Brakes .
- Remove the rear muffler. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- Secure both sides of the vehicle on the hoist arms using - T10038- .

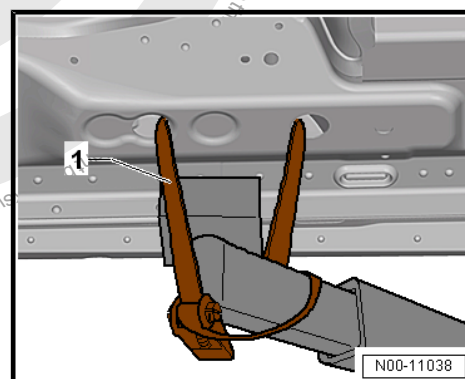
1 - -T10038-



WARNING

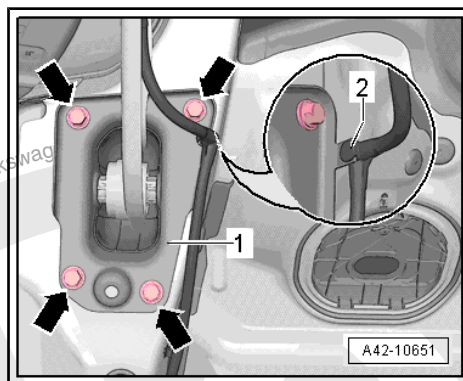
The vehicle could slide off the hoist if it is not secured.

- Secure the subframe. Refer to [⇒ "3.2 Subframe, Securing", page 158](#).





- 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-.
- Carefully lower the subframe with its components 30 mm maximum.

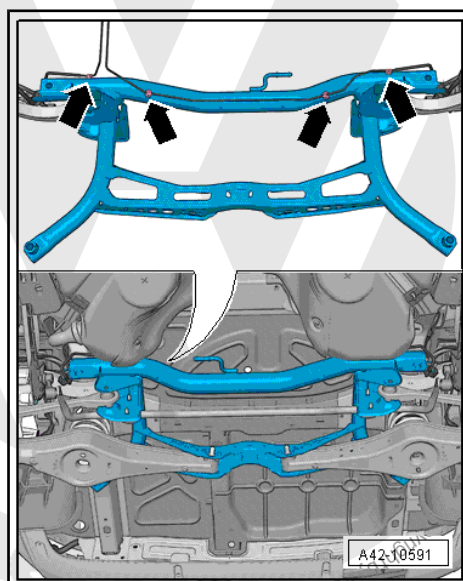


- Remove the brake line from the clips -arrows-.



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.
- Lower subframe with attachments.



Note

When lowering, ensure the brake lines and wires have sufficient clearance.

Subframe, Installing with Attachments

Install in reverse order of removal. Note the following:

Tightening Specifications

- ◆ Refer to ⇒ ["3 Subframe", page 157](#)
- ◆ Refer to ⇒ ["7.2 Overview - Trailing Arm", page 213](#)
- ◆ Refer to
⇒ ["6.1.2 Overview - Suspension Strut, Shock Absorber and Spring, Multi-Link Suspension", page 192](#)
- ◆ Refer to
⇒ ["2.2 Overview - Rear Level Control System Sensor", page 278](#)
- ◆ Refer to
⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#)
- ◆ Bolts for brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Overview - Rear Brakes .
- ◆ Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the
⇒ Vehicle diagnostic tester.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .
- Evaluate if an axle alignment is needed. Refer to
⇒ ["3.6 Evaluating Need for Axle Alignment", page 304](#) .



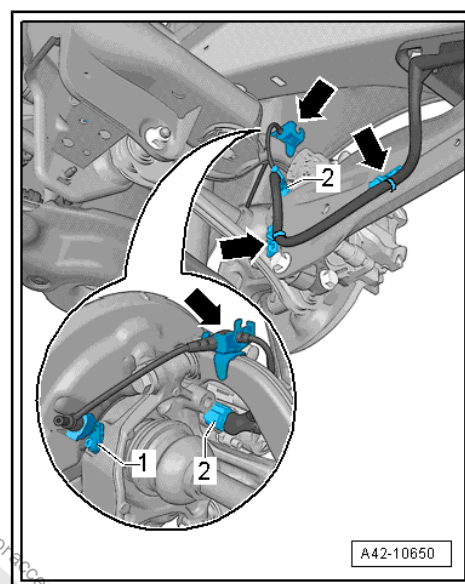
1.3.3 Rear Axle, Removing and Installing, Multi-Link Suspension, AWD

Special tools and workshop equipment required

- ◆ Tensioning Strap - T10038-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-

Removing the Subframe and its Attachments

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.
- 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-.

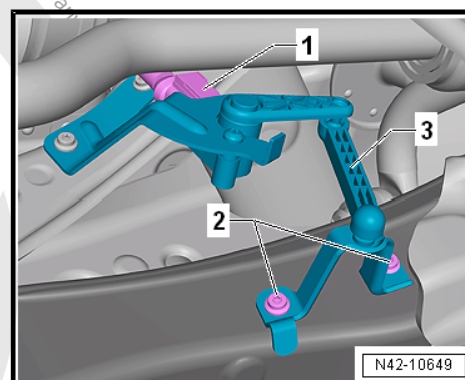


Vehicles with Level Control System Sensor

- Disconnect the connector -1-.
- Remove the bolts -2-.
- Remove the Left Rear Level Control System Sensor - G76-3- from the transverse link.

Continuation for all Vehicles

- Remove the springs. Refer to ["6.4 Spring, Removing and Installing", page 202](#).



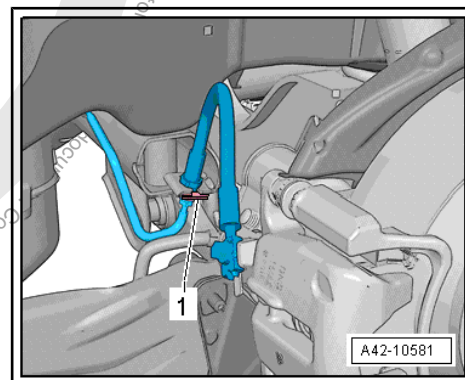
- Remove the clamps -1- on both sides of the vehicle.
- Free up the brake lines from the bracket.



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 ; Overview - Rear Brakes .
- Remove the rear muffler. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .





- Secure both sides of the vehicle on the hoist arms using - T10038- .

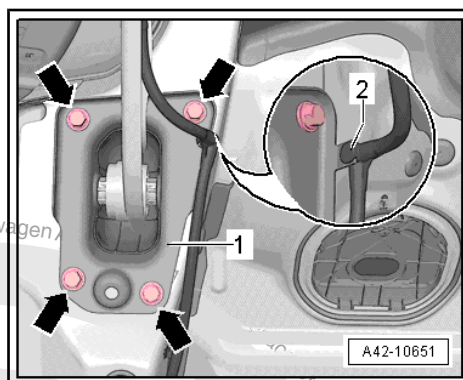
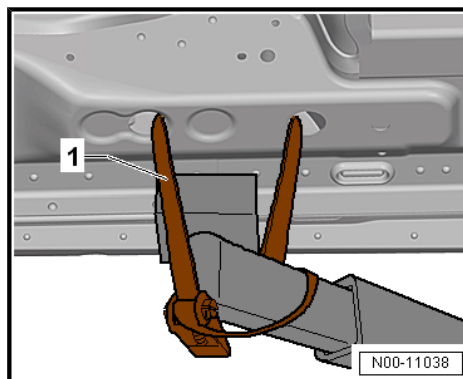
1 - -T10038-



WARNING

The vehicle could slide off the hoist if it is not secured.

- Secure the subframe. Refer to
⇒ ["3.2 Subframe, Securing", page 158](#) .
- 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-.
- Carefully lower the subframe with its attachments approximately 20 mm.
- Disconnect the connector from the Haldex clutch above the final drive.
- Carefully lower the subframe with its attachments an additional 30 mm.



Note

When lowering, make sure there is enough clearance between the brake lines, electrical lines and centering pins to the drive axle.



- Remove the brake line on both sides from the clips -arrows-.



Note

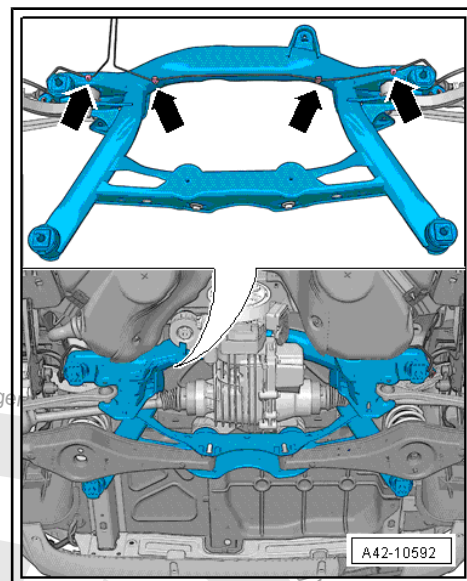
- ◆ The clips will get damaged while doing this and will have to be replaced.
- ◆ For better illustration, the subframe is shown from above and is removed.

- Carefully lower subframe with components.



Note

Make sure there is enough clearance for brake lines, electrical lines and drive axle centering pin when lowering.



Subframe, Installing with Attachments

Install in reverse order of removal. Note the following:

Tightening Specifications

- ◆ Refer to
⇒ [“3.1.2 Overview - Subframe, Multi-Link Suspension, AWD”, page 158](#)
- ◆ Refer to ⇒ [“7.2 Overview - Trailing Arm”, page 213](#)
- ◆ Refer to
⇒ [“6.1.2 Overview - Suspension Strut, Shock Absorber and Spring, Multi-Link Suspension”, page 192](#)
- ◆ Refer to
⇒ [“2.2 Overview - Rear Level Control System Sensor”, page 278](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Bolts for brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Overview - Rear Brakes .
- ◆ Double clamp for exhaust pipes. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler.
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .
- Evaluate if an axle alignment is needed. Refer to
⇒ [“3.6 Evaluating Need for Axle Alignment”, page 304](#) .



2 Axle Beam

⇒ ["2.1 Overview - Axle Beam", page 150](#)

⇒ ["2.2 Axle Beam Bonded Rubber Bushing, Replacing", page 150](#)

2.1 Overview - Axle Beam

1 - Cover

2 - Bolt

- ☐ 50 Nm + 45°
- ☐ Replace after removal

3 - Bolt

- ☐ 70 Nm + 360°
- ☐ Replace after removal
- ☐ Tighten in the curb weight position

4 - Bushing

- ☐ For the rear brake cable

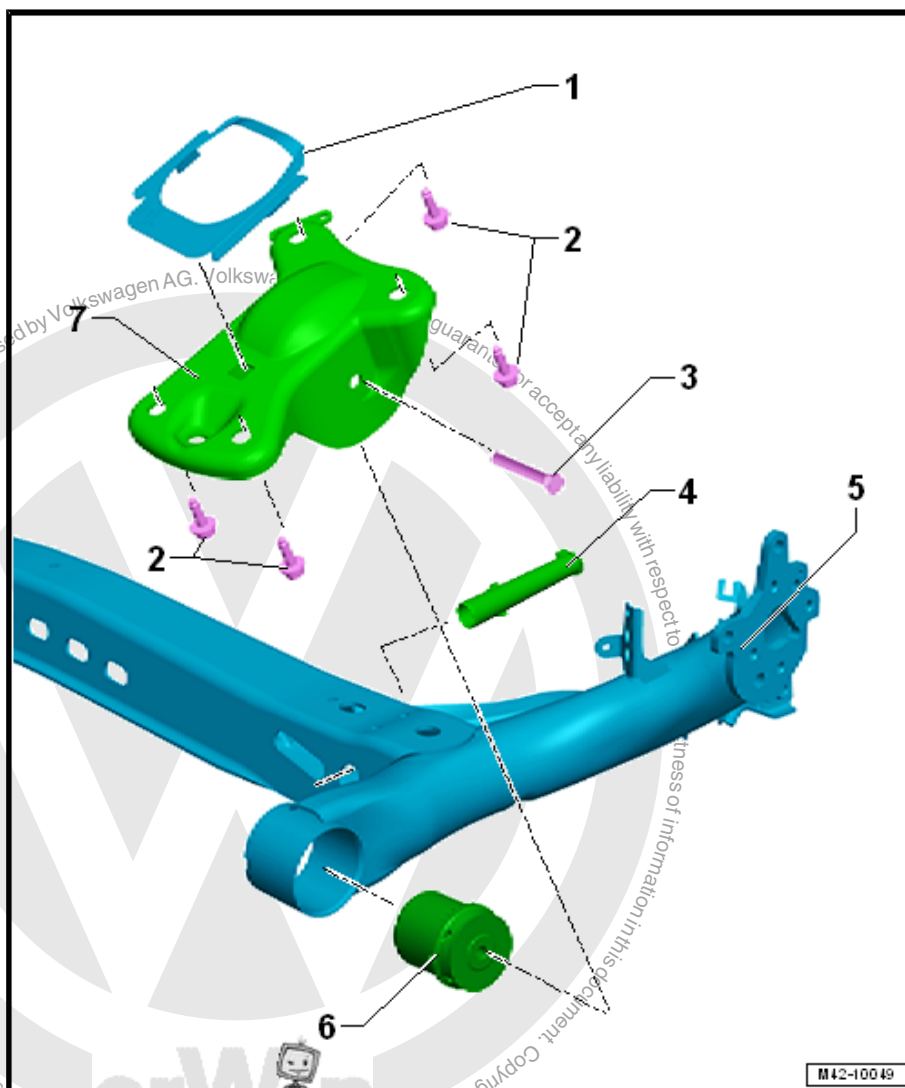
5 - Axle Beam

- ☐ Removing and installing. Refer to
⇒ ["1.3.1 Rear Axle, Removing and Installing, Torsion Beam Axle", page 142](#)

6 - Bonded Rubber Bushing

- ☐ Note the installation position
- ☐ Replacing. Refer to
⇒ ["2.2 Axle Beam Bonded Rubber Bushing, Replacing", page 150](#)

7 - Mounting Bracket



2.2 Axle Beam Bonded Rubber Bushing, Replacing

Special tools and workshop equipment required

- ◆ Tensioning Strap - T10038-
- ◆ Vibration Damper Assembly Tool - T10254-
- ◆ Vibration Damper Assembly Tool - T10495-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931- -2- with Universal Support Plate - VAG1359/2-



- ◆ Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit - Pressure Head - T10205/13-
 - ◆ Pneumatic/Hydraulic Foot Pump - VAS6179-
- T10495/2- , Modifying**



Caution

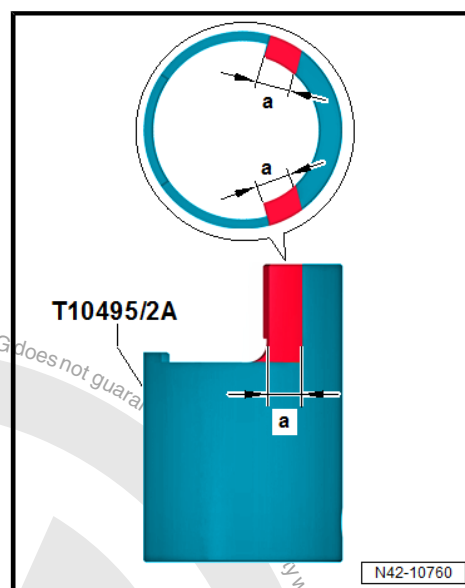
To use the -T10495/2- properly, it must be modified before using.

The -T10495/2A- must not be modified.

- Clamp the -T10495/2- in a vise with jaw protectors.
- The red areas -a- must be cut out.
- a = 18 mm
- Use a file to deburr the edges after cutting out the areas.
- An -A- must be added to the number identification on the tool.
- The new tool number is now -T10495/2A- .
- Apply corrosion protection.

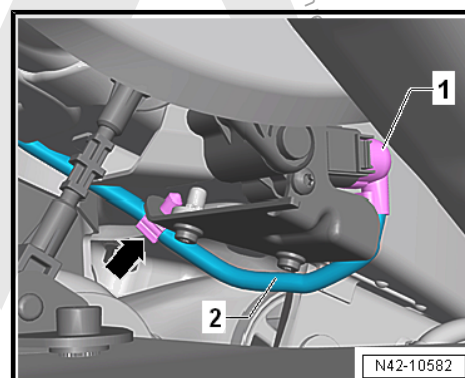
Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.



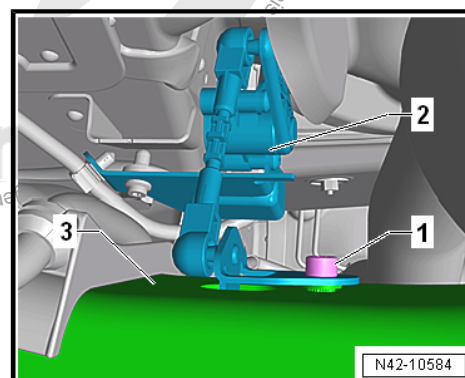
Vehicles with Level Control System Sensor

- 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-.
- Remove the lever of the Left Rear Level Control System Sensor - G76- -2- from the axle beam -3-.

Continuation for all vehicles.



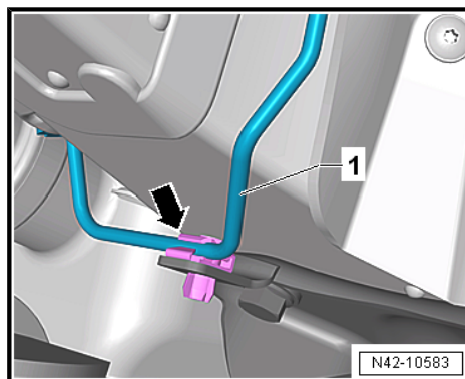


- Unclip the brake line -1- on the right mounting bracket from the clip -arrow-.

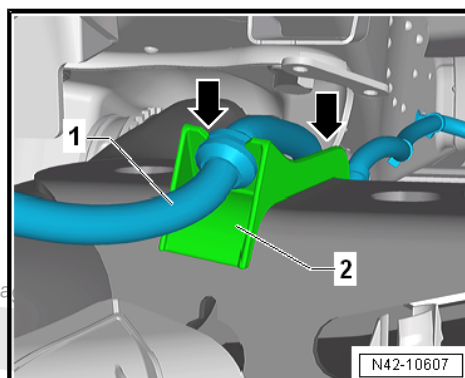


Note

This will destroy the clip, so it will have to be replaced.



- Unclip the wire -1- from the bracket -2- on both sides of the axle beam -arrows-.



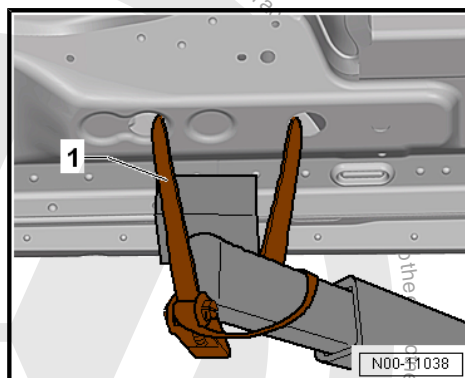
- Secure both sides of the vehicle on the hoist arms using -T10038-.

1 - -T10038-

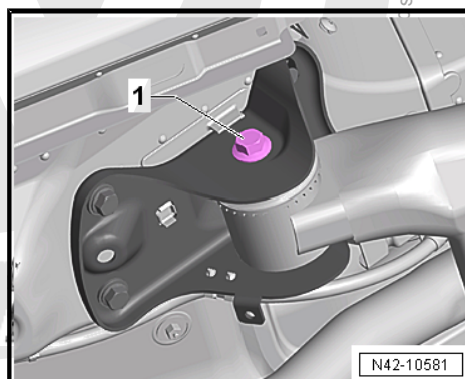


WARNING

The vehicle could slide off the hoist if it is not secured.

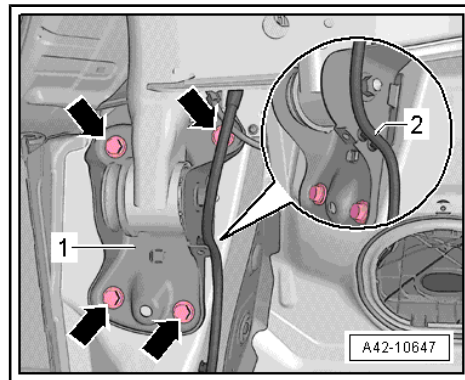


- Loosen the right and left bolt -1-.
- Place the -VAS6931- and -VAG1359/2- with suitable padding underneath.

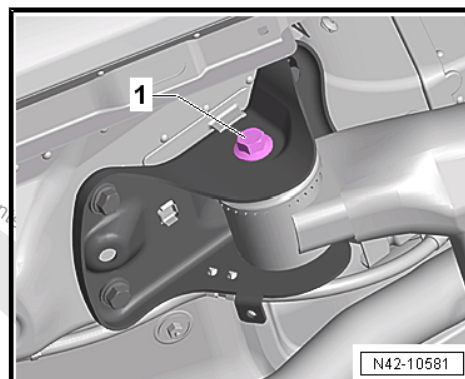




- Unclip the wire -2- from the mounting bracket -1-.

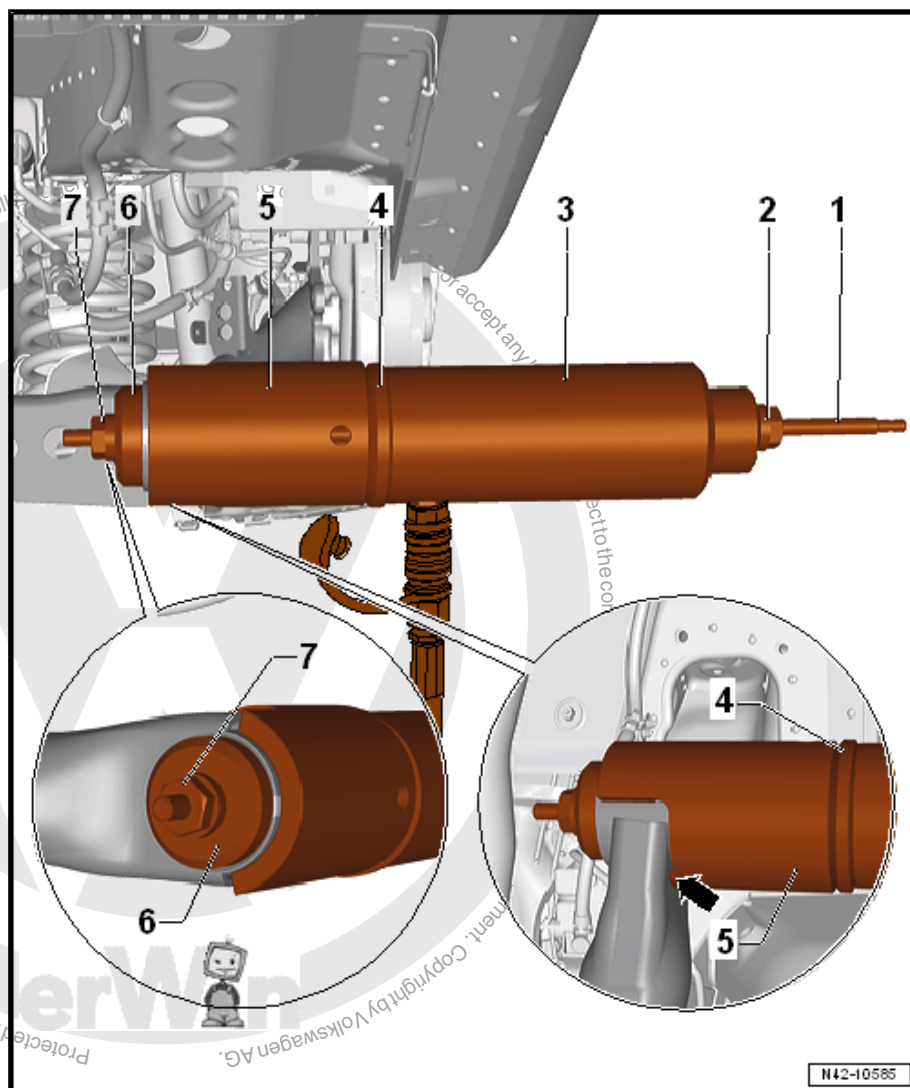


- Carefully lower the rear axle using the -VAS6931- until it is possible to remove the bolt -1-.
- Remove the bolts -1- for the right and left axle beam.



- Mount the special tools as illustrated.





1 - -T10254/5-

2 - -T10254/4-

3 - -VAS6178- with -T10205/13-

4 - -T10495/3-

5 - -T10495/2-

6 - -T10495/1-

7 - -T10254/4-

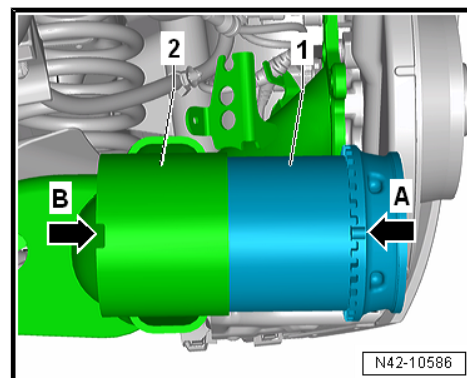
– Activate the pump and remove the bonded rubber bushing.



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 - -T10254/5-

2 - -T10254/4-

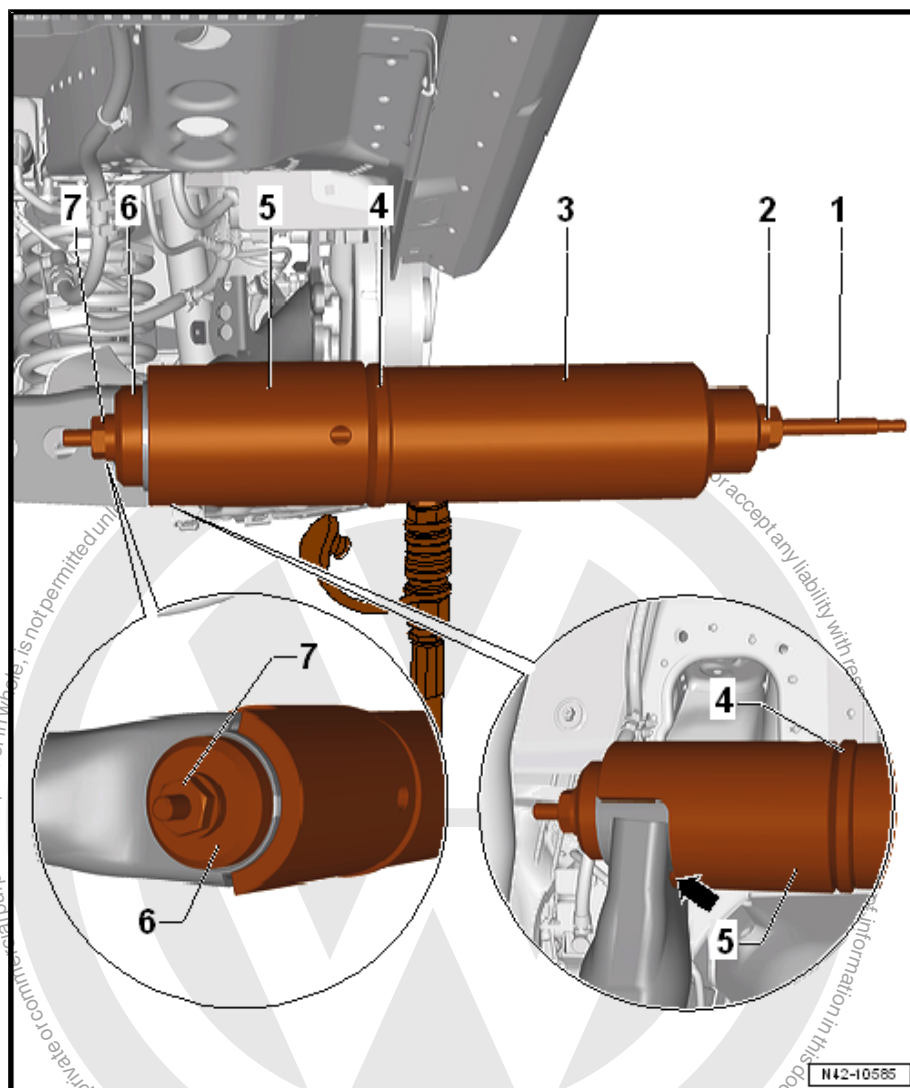
3 - -VAS6178- with -T10205/13-

4 - -T10495/1-

5 - Bonded Rubber Bushing

6 - -T10495/3-

7 - -T10254/4-



- Before installing bonded rubber bushing, make sure that the mark on the bonded rubber bushing aligns with the mark on the axle beam.
- Press in the bonded rubber mount to the stop.
- Check the installed position of the bonded rubber bushing.

Further installation is the reverse order of removal.

Tightening Specifications

- ◆ Refer to ⇒ [“2.1 Overview - Axle Beam”, page 150](#)
- ◆ Refer to
⇒ [“2.2 Overview - Rear Level Control System Sensor”, page 278](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .



3 Subframe

⇒ ["3.1 Overview - Subframe", page 157](#)

⇒ ["3.2 Subframe, Securing", page 158](#)

⇒ ["3.3 Subframe, Servicing", page 165](#)

3.1 Overview - Subframe

⇒ ["3.1.1 Overview - Subframe, Multi-Link Suspension", page 157](#)

⇒ ["3.1.2 Overview - Subframe, Multi-Link Suspension, AWD", page 158](#)

3.1.1 Overview - Subframe, Multi-Link Suspension

1 - Subframe

- ☐ Subframe with attachments, removing and installing. Refer to ["1.3.2 Rear Axle, Removing and Installing, Multi-Link Suspension, FWD", page 144](#).

2 - Bolt

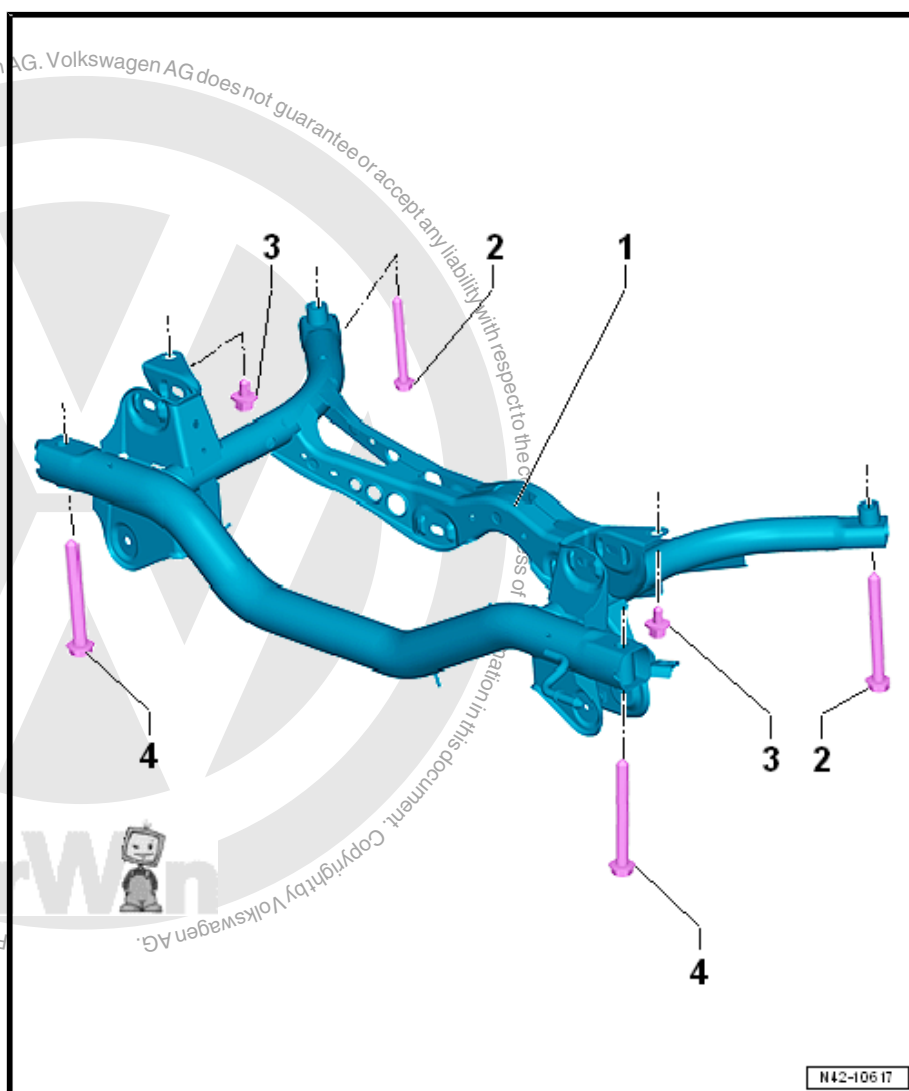
- ☐ 70 Nm + 180°
- ☐ Replace after removal

3 - Bolt

- ☐ 50 Nm + 45°
- ☐ Replace after removal

4 - Bolt

- ☐ 70 Nm + 180°
- ☐ Replace after removal



N42-10617



3.1.2 Overview - Subframe, Multi-Link Suspension, AWD

1 - Subframe

- ❑ Subframe with attachments, removing and installing. Refer to
⇒ ["1.3.3 Rear Axle, Removing and Installing, Multi-Link Suspension, AWD"](#), page 147 .

2 - Rear Bonded Rubber Bushing

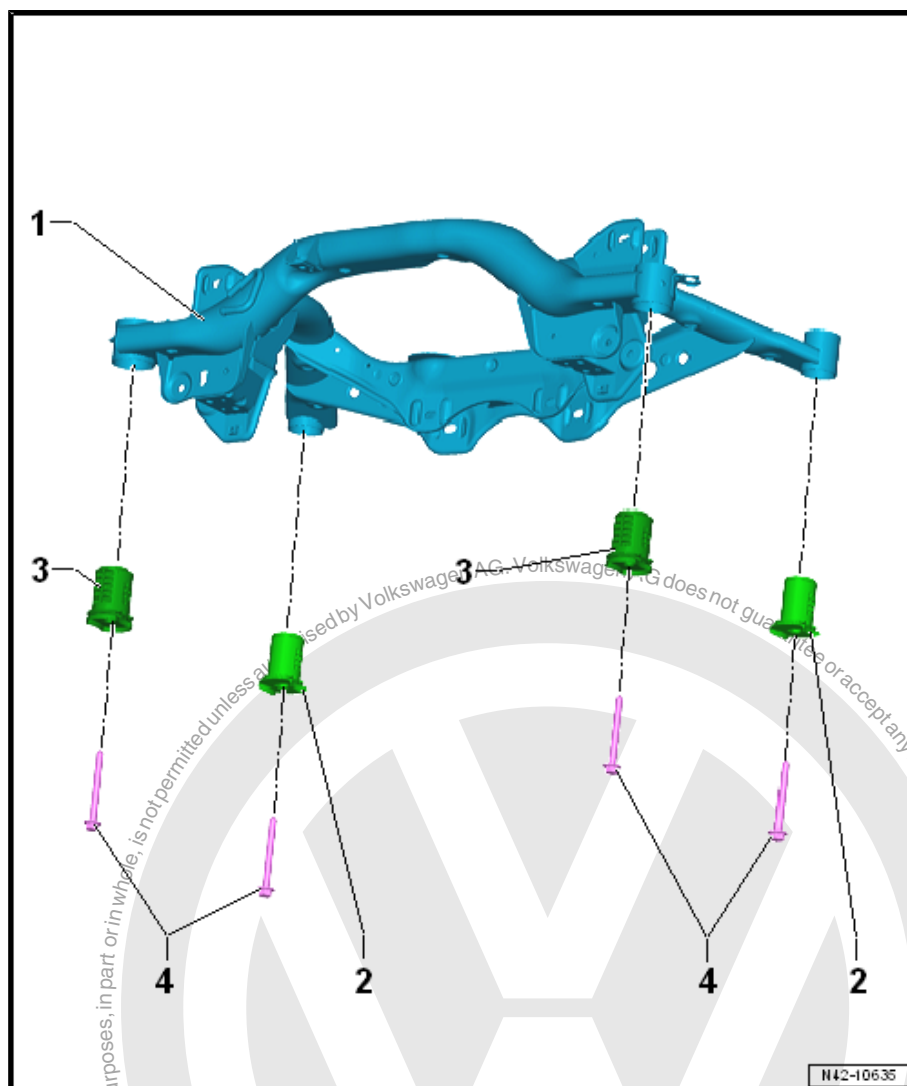
- ❑ Replacing. Refer to
⇒ ["3.3.2 Rear Bonded Rubber Bushing, Replacing"](#), page 171 .

3 - Front Bonded Rubber Bushing

- ❑ Replacing. Refer to
⇒ ["3.3.1 Front Bonded Rubber Bushing, Replacing"](#), page 165 .

4 - Bolt

- ❑ 70 Nm +180°
- ❑ Replace after removal



3.2 Subframe, Securing

⇒ ["3.2.1 Subframe, Securing, Multi-Link Suspension, FWD"](#), page 158

⇒ ["3.2.2 Subframe, Securing, Multi-Link Suspension, AWD"](#), page 162

3.2.1 Subframe, Securing, Multi-Link Suspension, FWD

Special tools and workshop equipment required

- ◆ Locating Pins - T10096-
- ◆ Engine and Gearbox Jack - VAS6931-
- ◆ Rear Axle Support - T10552-

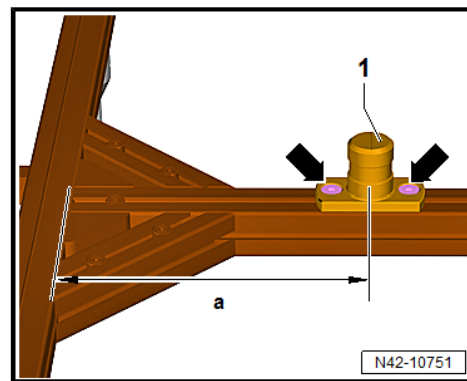


-T10552- , Preparing

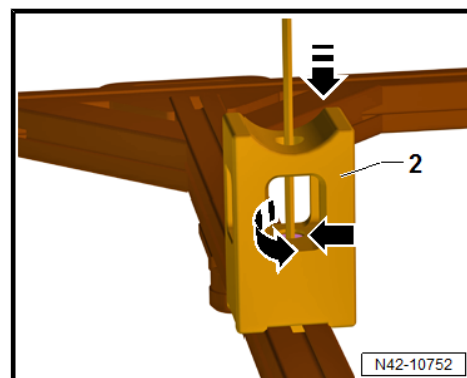
- Loosen the bolts -arrows- and adjust the dimension -a-.

a - 250 mm

Tighten the bolts -arrows-.



- Loosen the bolt -arrow- for the -T10552/2- -2-.

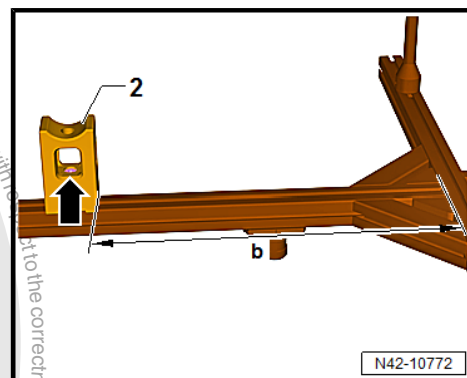


- Turn the -T10552/2- -2- so that the profile is perpendicular to the direction of travel.

- Adjust the dimension -b-.

b - 330 mm

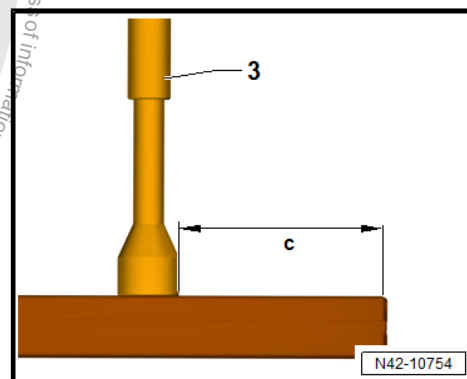
Tighten the bolt -arrow- to 30 Nm.



- Loosen the -T10552/1- -3- on both sides at the bottom.

- Adjust the dimension -c-.

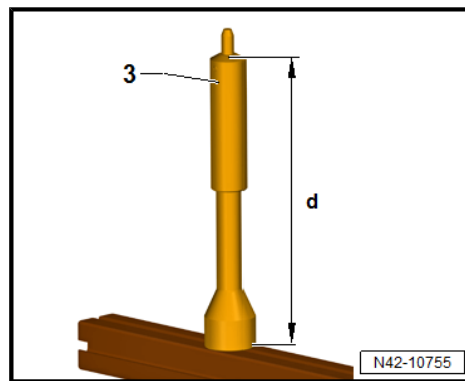
c - 47 mm



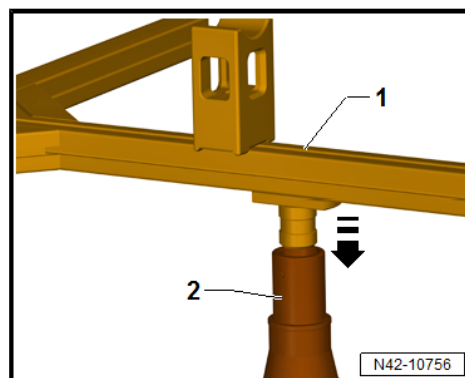


- Turn the -T10552/1- -3- on both sides until the dimension -d- is set.

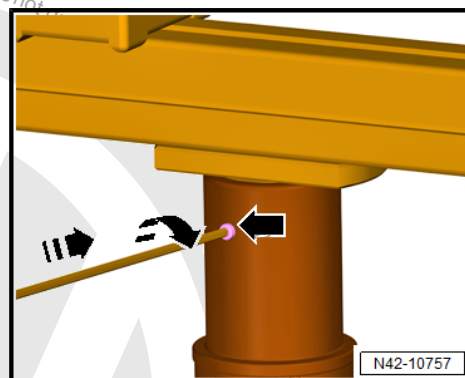
d - 230 mm



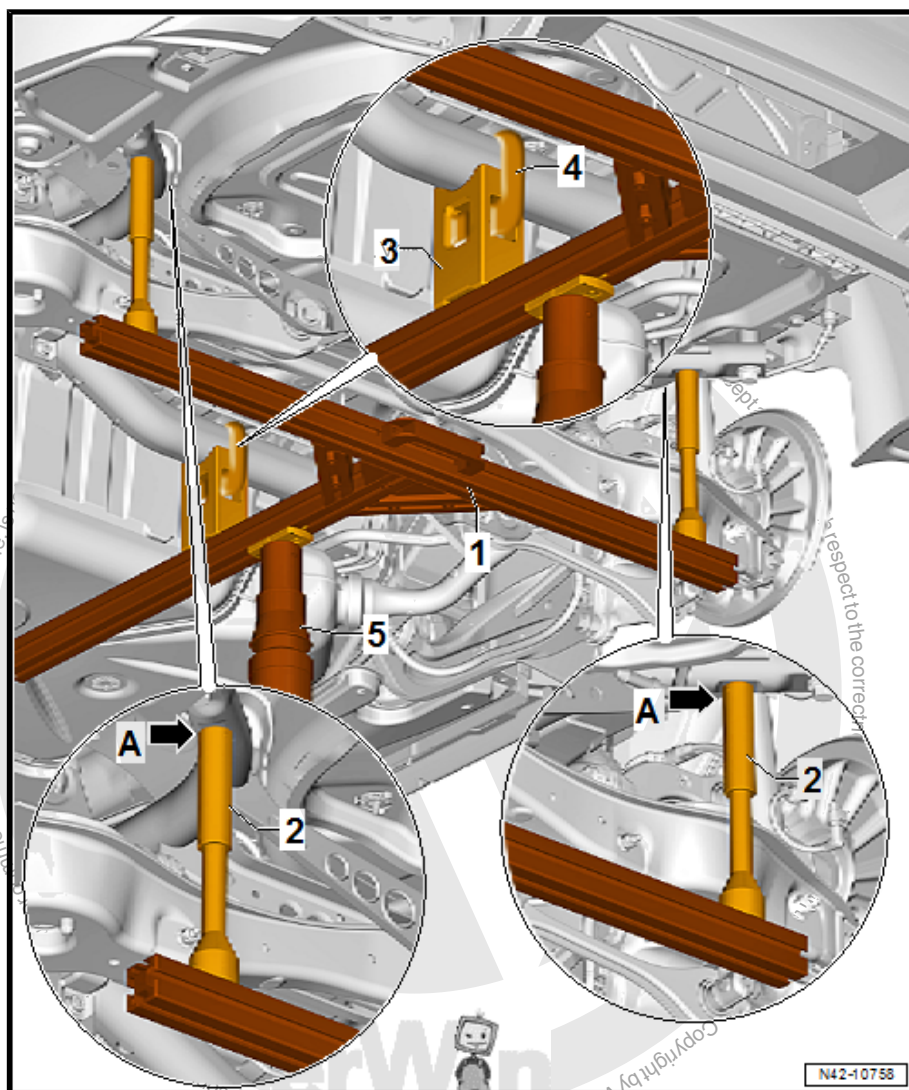
- Place the -T10552- -1- on the -VAG1383A- or -VAS6931- .



- Tighten the bolt -arrow- to 30 Nm



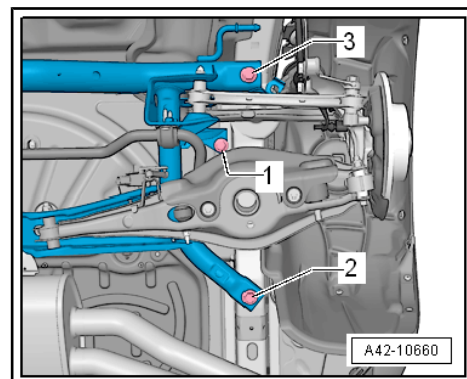
- Position the -T10552- -1- with the -VAG1383A- or -VAS6931- -5- under the rear axle and move it upward.



- Insert the -T10552/1- -2- into the holes on the rear axle
-A arrows-.
- Secure the -T10552/2- -3- to the rear axle using a Tensioning
Strap -4-.

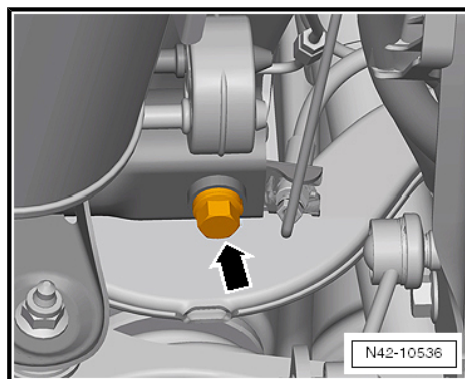
-T10096- , Installing

- Remove the left and right bolt -1-.
- To secure the subframe, the -T10096- must be installed at the
positions -2 and 3- one after the other on both sides of the
vehicle.





- Unscrew one of the front bolts of the subframe -arrow-.



- Install the - T10096- -1-.

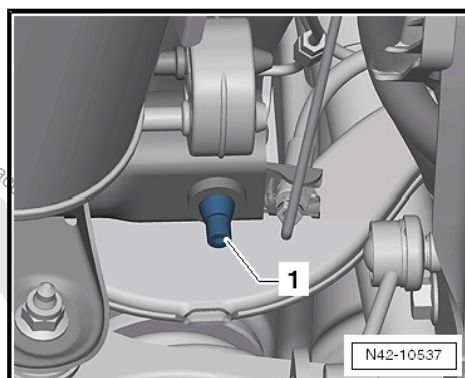


Note

The -T10096- may only be tightened to a maximum of 20 Nm, otherwise the threads of the locating pins will be damaged.

- The same procedure must be performed for the second front bolt and the rear bolts of the subframe.

The subframe position is now secured.



3.2.2 Subframe, Securing, Multi-Link Suspension, AWD

Special tools and workshop equipment required

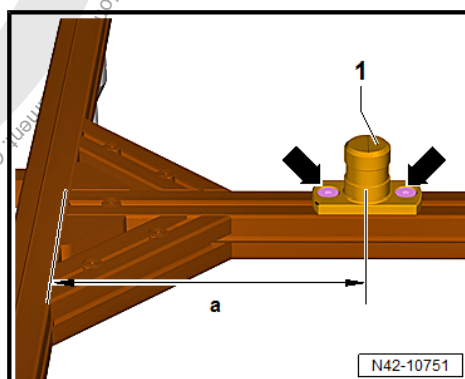
- ◆ Locating Pins - T10096-
- ◆ Engine and Gearbox Jack - VAS6931-
- ◆ Rear Axle Support - T10552-

-T10552- Preparing

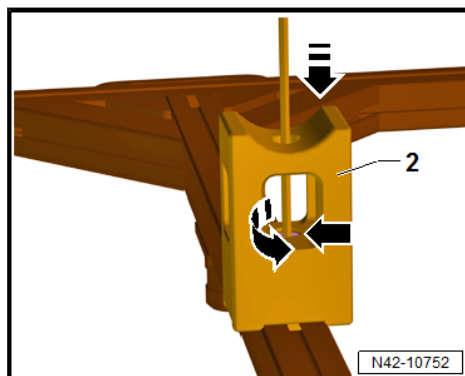
- Loosen the bolts -arrows- and adjust the dimension -a-.

a - 250 mm

Tighten the bolts -arrows-.

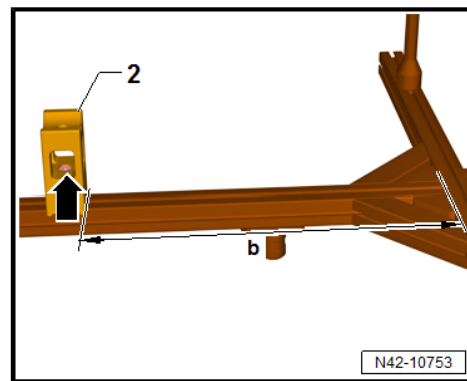


- Loosen the bolt -arrow- for the -T10552/2- -2-.

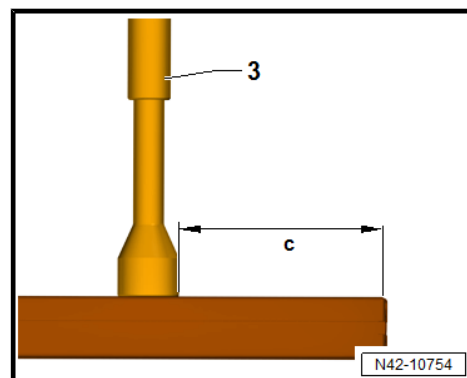




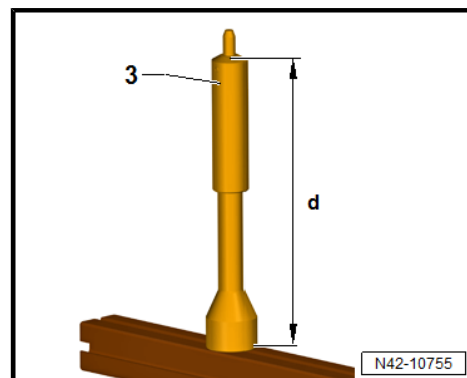
- Turn the -T10552/2- -2- so that the profile is in the direction of travel.
 - Adjust the dimension -b-.
- b - 410 mm
- Tighten the bolt -arrow- to 30 Nm.



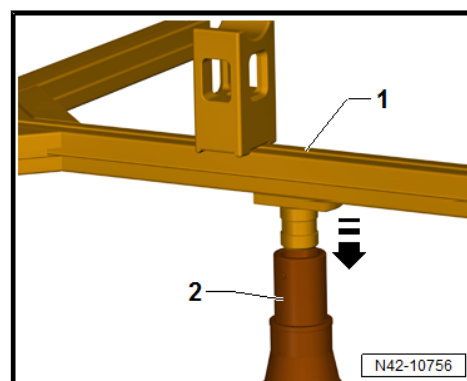
- Loosen the -T10552/1- -3- on both sides at the bottom.
 - Adjust the dimension -c-.
- c - 47 mm



- Turn the -T10552/1- -3- on both sides until the dimension -d- is set.
- d - 215 mm

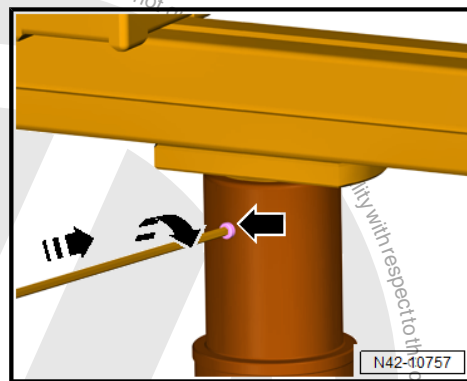


- Place the Rear Axle Support - T10552- -1- on the -VAG1383A- or -VAS6931- .

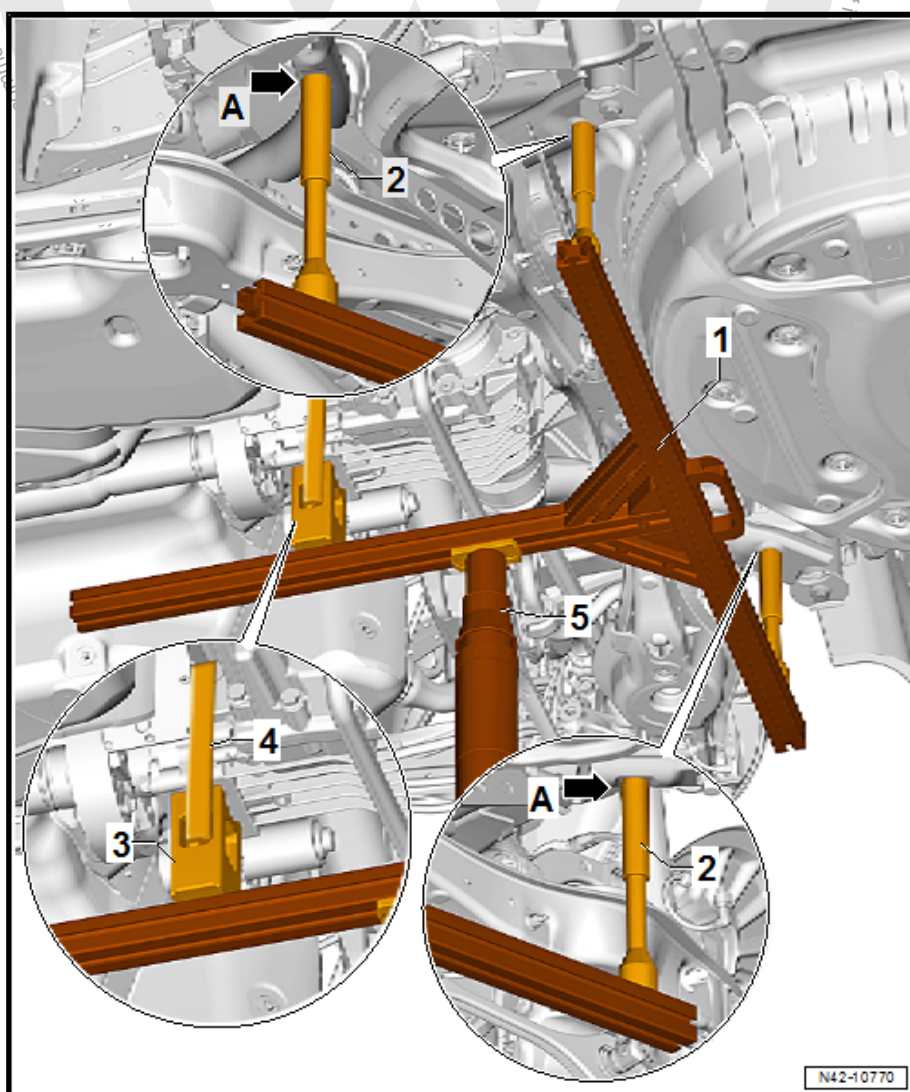




- Tighten the bolt -arrow- to 30 Nm.



- Position the -T10552- -1- with the -VAG1383A- or -VAS6931- -1- under the rear axle and move it upward.



- Insert the -T10552/1- -2- into the holes on the rear axle -A arrows-.
- Secure the -T10552/2- -3- to the rear axle using a Tensioning Strap -4-.



-T10096- , Installing

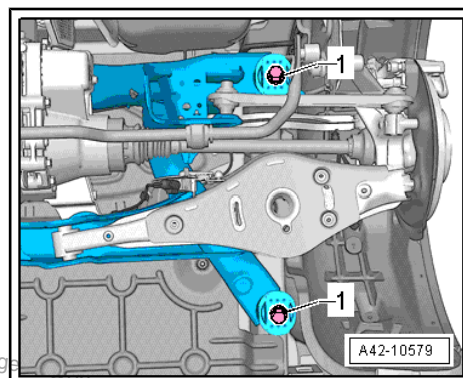
To secure the subframe, the -T10096- must be installed at the positions -1- one after the other on both sides of the vehicle.

- Remove a hex bolt -1- from both sides.



Note

Only the left side of the vehicle is shown in the illustration.



- Install the - T10096- -1-.

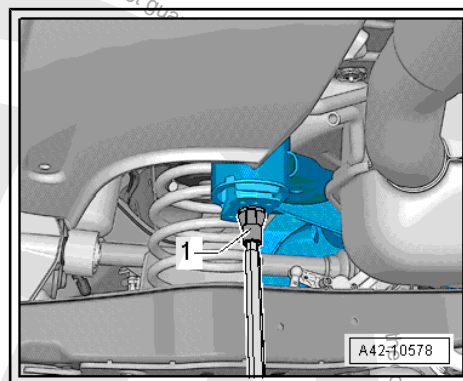


Note

The -T10096- may only be tightened to a maximum of 20 Nm, otherwise the threads of the locating pins will be damaged.

- Replace the bolts on the subframe one after the other with the -T10096- -1- on both sides and tighten to 20 Nm.

The subframe position is now secured.



3.3 Subframe, Servicing

⇒ ["3.3.1 Front Bonded Rubber Bushing, Replacing", page 165](#)

⇒ ["3.3.2 Rear Bonded Rubber Bushing, Replacing", page 171](#)

3.3.1 Front Bonded Rubber Bushing, Replacing

Special tools and workshop equipment required

- ◆ Tensioning Strap - T10038-
- ◆ Hydraulic Press - Rear Subframe Bushing Tool Kit - T10263-
- ◆ Subframe Bushing Assembly Tool Kit - T10356-
- ◆ Engine and Gearbox Jack - VAS6931-
- ◆ Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit - Pressure Head - T10205/13-
- ◆ Pneumatic/Hydraulic Foot Pump - VAS6179-
- ◆ Bearing Installer - Wheel Hub/Bearing Kit - T10205A-



Note

- ♦ If a bonded rubber bushing is faulty, then the bonded rubber bushing on the opposite side must also be replaced. For the correct allocation. Refer to the Parts Catalog.
- ♦ Check the other bearing before switching out a defected bonded rubber bushing.
- ♦ If there are any tears or other visible damages, replace the bonded rubber bushing.
- ♦ To replace the rubber bonded bushing, the subframe must be lowered at the front or the rear. It is not necessary to remove the subframe.
- ♦ Identify mounting location to subframe before removing the bonded rubber bushing.

Pressing Out Bonded Rubber Bushing, Front

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.
- Remove the spring. Refer to
⇒ ["6.4 Spring, Removing and Installing", page 202](#) .
- Remove the rear muffler. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- Remove the clamps -1- on both sides of the vehicle.



Note

Do not disconnect the brake line.

- Secure both sides of the vehicle on the hoist arms using Tensioning Straps - T10038- .

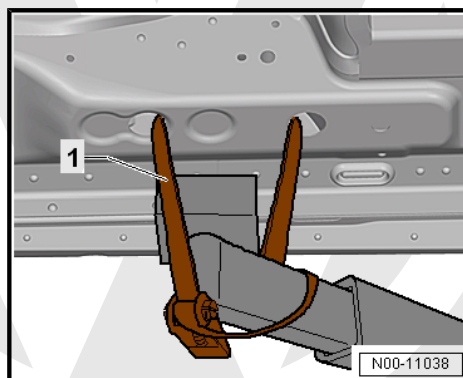
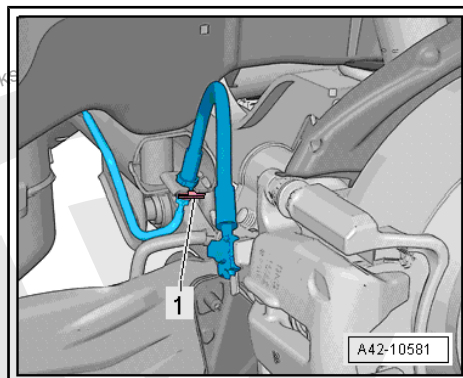
1 - Tensioning Strap - T10038-



WARNING

The vehicle could slide off the hoist if it is not secured.

- Secure the subframe. Refer to
⇒ ["3.2 Subframe, Securing", page 158](#) .



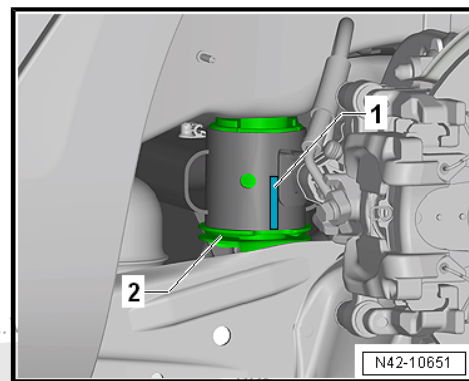


- Mark the installation location of the bonded rubber bushing on the subframe with a felt-tip pen -1-.

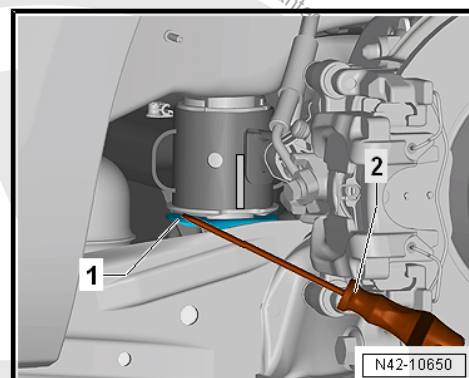


Note

Apply the mark -1- on the subframe in the middle of the recess on the bonded rubber mounting -2-.



- Use a screwdriver -2- pry off the anti-twist mechanism -1- near the bonded rubber bushing mounting retaining lugs.
- Lower the subframe approximately 100 mm (3.93 in.) using the Engine and Gearbox Jack - VAS6931- .

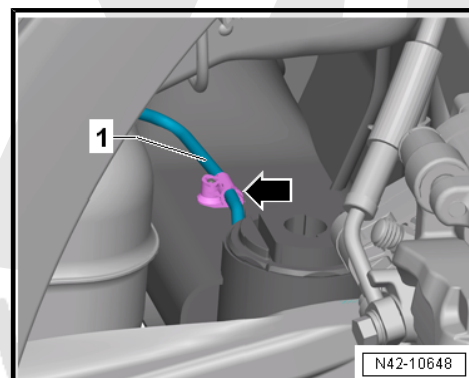


- Unclip the brake line -1- from the clip -arrow- on the left side.

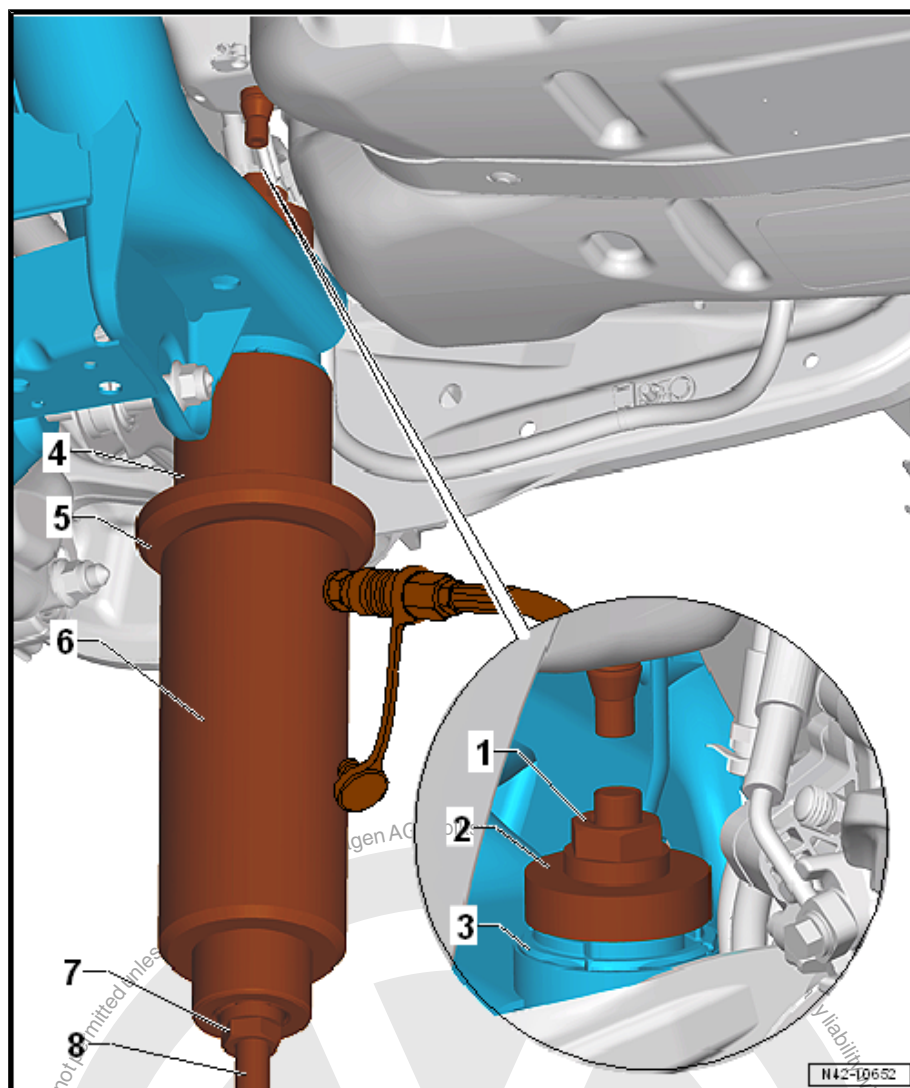


Note

This will destroy the clip, so it will have to be replaced.



- Use the special tools as shown.



- 1 - Nut - T10263/5-
- 2 - 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 Pressure Head - T10205/13-
- 7 - Nut - T10263/5-
- 8 - Threaded Rod - T10263/4-
- Pretension special tools.
- Press out the bonded rubber mount.

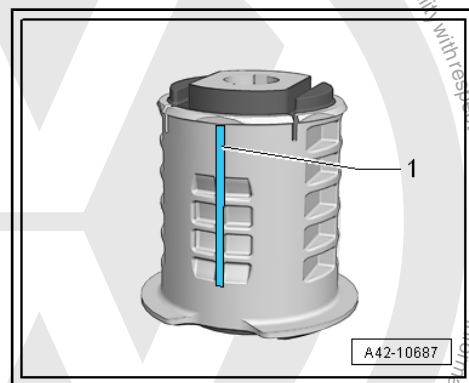


Note

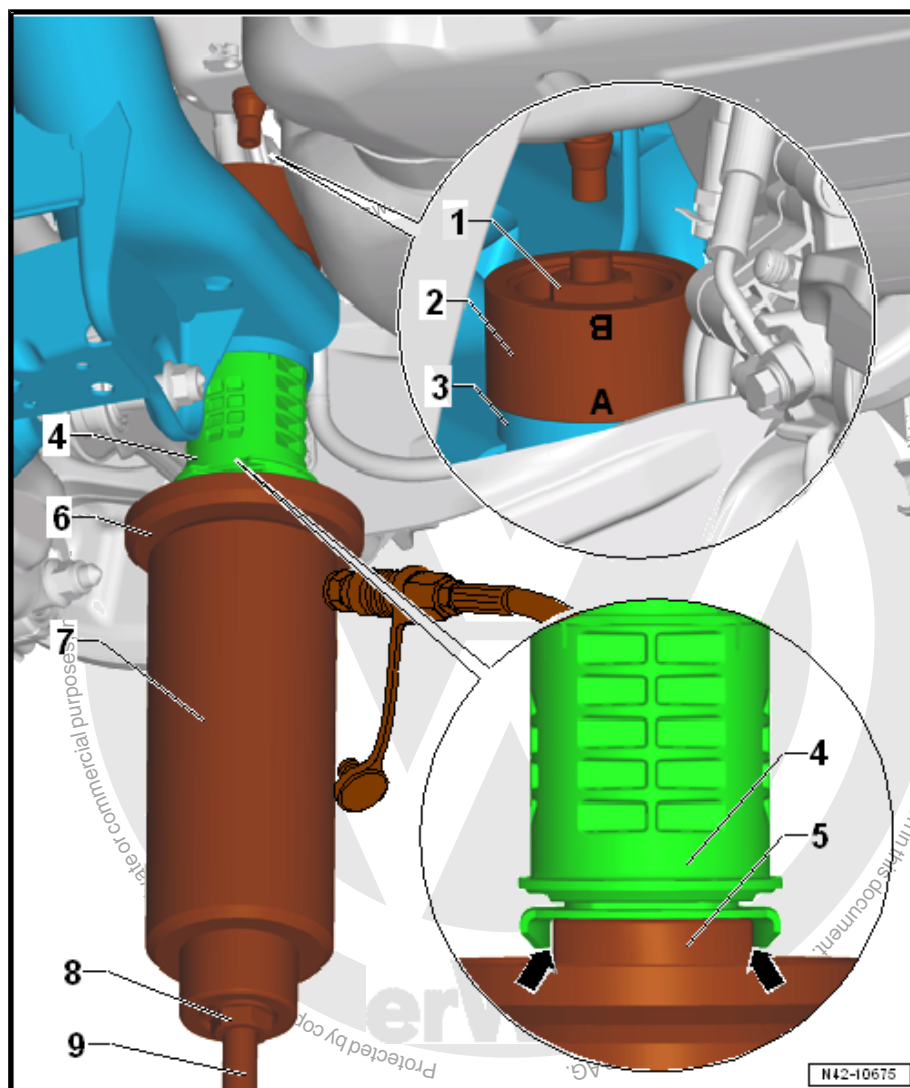
- ◆ When removing the bonded rubber mounting, the bearing outer race is shorn off. There is a loud crack when this happens.
- ◆ After removing the bonded rubber bushing, it must be removed from the Tube - T10356/2- by tapping lightly with a hammer.

Press In on the Front Bonded Rubber Bushing

- Apply a line -1- on the vertical rib of the bonded rubber bushing to help mount.



- Apply mounting paste to the outer edge of the bonded rubber bushing.
- Insert special tools with bonded rubber bushing into subframe as illustrated.



- 1 - Nut - T10263/5-
- 2 - Thrust Piece - T10356/7- - the mark -A- points to the subframe
- 3 - Subframe
- 4 - Adjust the bonded rubber bushing to the marks (the marks need to align)
- 5 - Bushing - T10356/8- - the flattened sides need to fit into the cover of the bonded rubber bushing -arrows-.
- 6 - Gripping Device - T10205/1-
- 7 - Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit Pressure Head - T10205/13-
- 8 - Nut - T10263/5-
- 9 - Threaded Rod - T10263/4-
- Check the position of the bonded rubber bushing and, if necessary, align and pre-tighten special tools with bonded rubber bushing.



Note

- ◆ *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.*
- ◆ *When installing, make sure the bonded rubber bushing does not tilt, otherwise the outer ring could be damaged.*
- Operate the pump to press in the bonded rubber bushing until the shoulder is positioned on the subframe “without gap”.

Install in reverse order of removal, note the following:

Tightening Specifications

- ◆ Refer to
⇒ [“3.1.2 Overview - Subframe, Multi-Link Suspension, AWD”, page 158](#)
- ◆ Refer to
⇒ [“3.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

3.3.2 Rear Bonded Rubber Bushing, Replacing

Special tools and workshop equipment required

- ◆ Tensioning Strap - T10038-
- ◆ Hydraulic Press - Rear Subframe Bushing Tool Kit - T10263-
- ◆ Subframe Bushing Assembly Tool Kit - T10356-
- ◆ Engine and Gearbox Jack - VAS6931-
- ◆ Hydraulic Press - VAS6178- with Pressure Head - T10205/13-
- ◆ Pneumatic/Hydraulic Foot Pump - VAS6179-
- ◆ Bearing Installer - Wheel Hub/Bearing Kit - T10205A-



Note

- ◆ *If a bonded rubber bushing is faulty, then the bonded rubber bushing on the opposite side must also be replaced. For the correct allocation. Refer to the Parts Catalog.*
- ◆ *Check the other bearing before switching out a defected bonded rubber bushing.*
- ◆ *If there are any tears or other visible damages, replace the bonded rubber bushing.*
- ◆ *To replace the rubber bonded bushing, the subframe must be lowered at the front or the rear. It is not necessary to remove the subframe.*
- ◆ *Identify mounting location to subframe before removing the bonded rubber bushing.*

Pressing Out Rear Bonded Rubber Bushing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.

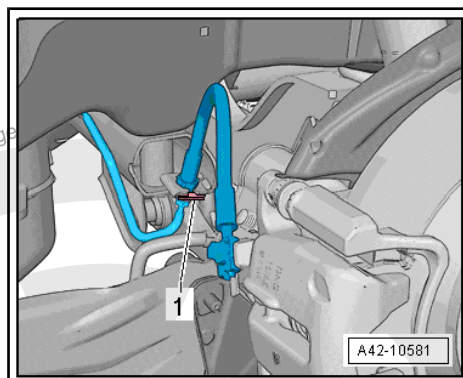


- Remove the spring. Refer to
⇒ ["6.4 Spring, Removing and Installing", page 202](#) .
- Remove the rear muffler. Refer to ⇒ Rep. Gr. 26 ; Exhaust
Pipes/Mufflers; Overview - Muffler .
- Remove the clamps -1- on both sides of the vehicle.



Note

Do not disconnect the brake line.



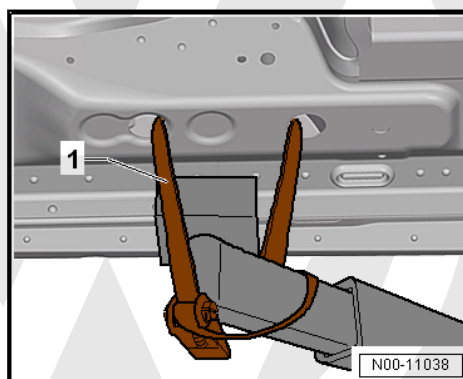
- Secure both sides of the vehicle on the hoist arms using Tensioning Straps - T10038- .

1 - Tensioning Strap - T10038-



WARNING

The vehicle could slide off the hoist if it is not secured.

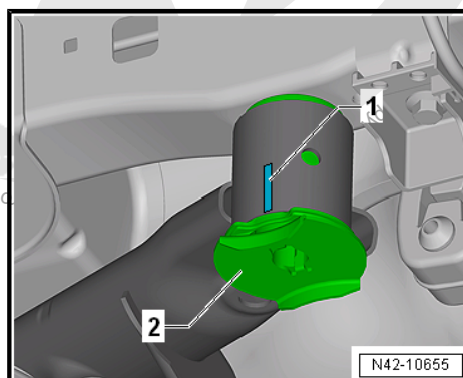


- Secure the subframe. Refer to
⇒ ["3.2 Subframe, Securing", page 158](#) .
- Mark the installation location of the bonded rubber bushing on the subframe with a felt-tip pen -1-.

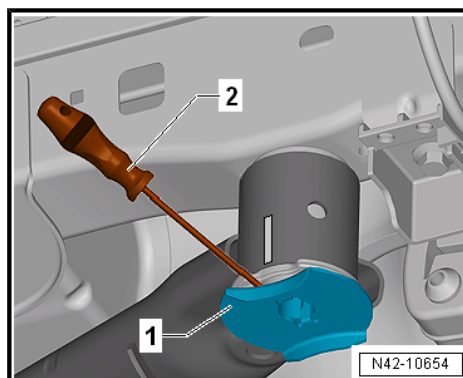


Note

Apply the mark -1- on the subframe in the middle of the recess on the bonded rubber mounting -2-.



- Use a screwdriver -2- to pry off the anti-twist mechanism -1- near the bonded rubber bushing mounting retaining lugs.
- Lower the subframe approximately 100 mm (3.93 in.) using the Engine and Gearbox Jack - VAS6931- .



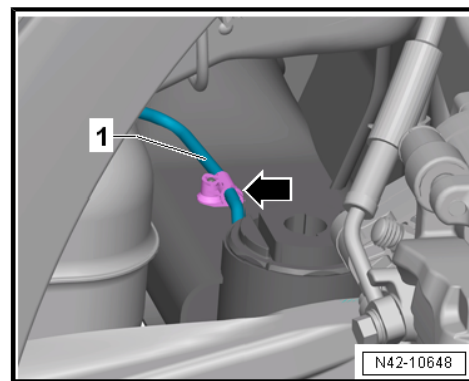


- Unclip the brake line -1- from the clip -arrow- on the left side.

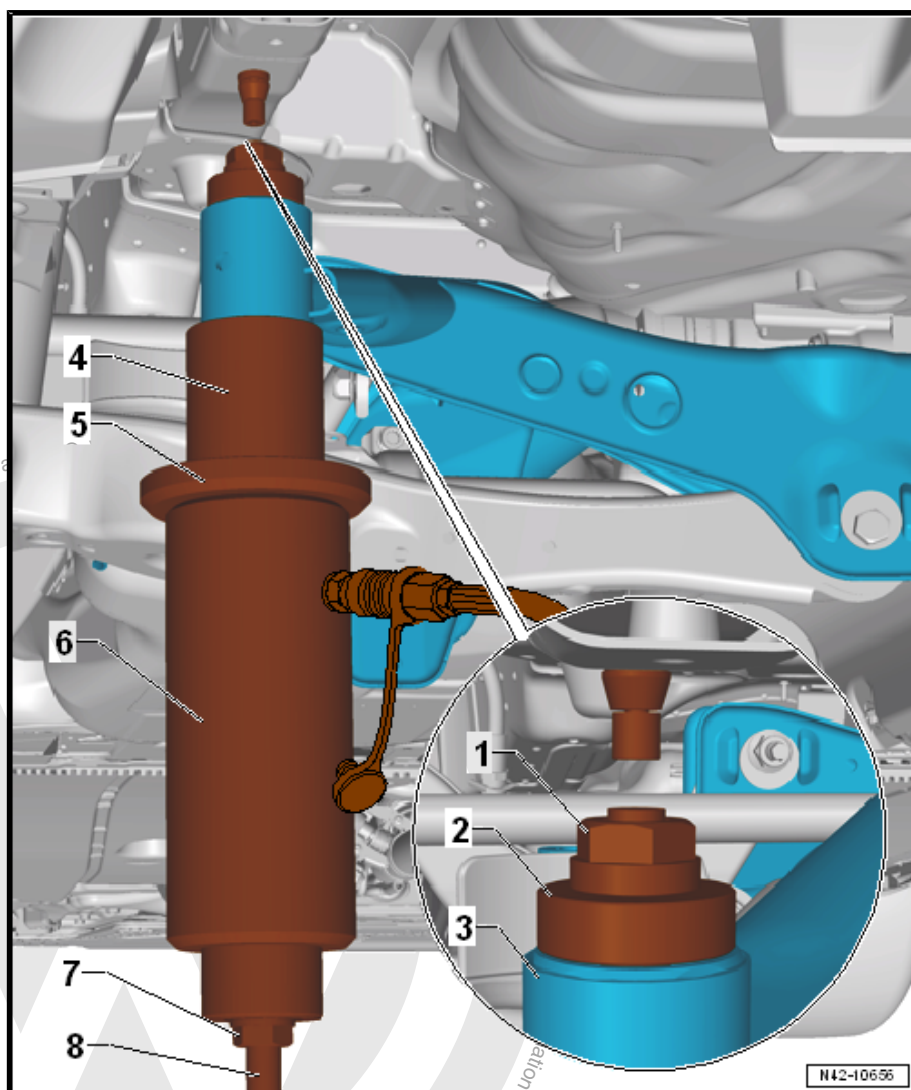


Note

This will destroy the clip, so it will have to be replaced.



- Use the special tools as shown.



- 1 - Nut - T10263/5-
- 2 - Thrust Piece - T10356/5-
- 3 - Subframe
- 4 - Tube - T10356/6- , side with offset points to subframe
- 5 - Gripping Device - T10205/1-



6 - Hydraulic Press - VAS6178- with Pressure Head - T10205/13-

7 - Nut - T10263/5-

8 - Threaded Rod - T10263/4-

- Pretension special tools.
- Press out the bonded rubber mount.

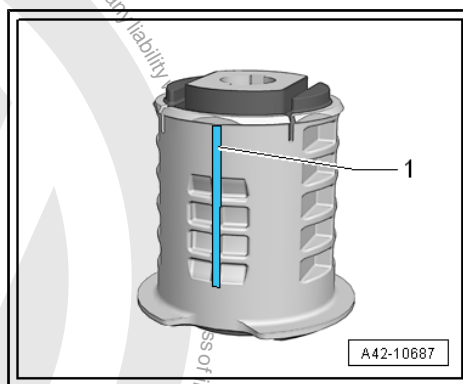


Note

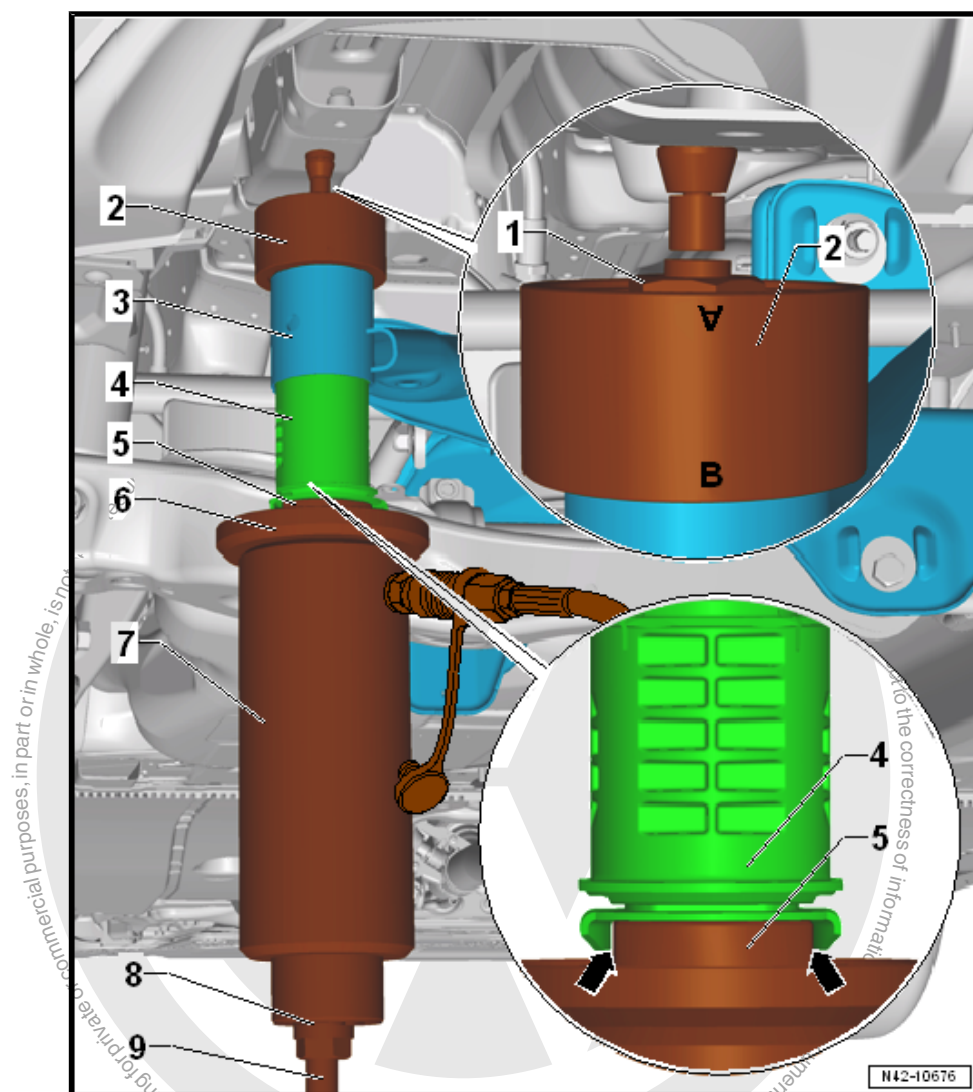
- ◆ *When removing the bonded rubber mounting, the bearing outer race is shorn off. There is a loud crack when this happens.*
- ◆ *After removing the bonded rubber bushing, it must be removed from the Tube - T10356/6- by tapping lightly with a hammer.*

Press In the Rear Bonded Rubber Bushing

- Apply a line -1- on the vertical rib of the bonded rubber bushing to help mount.



- Apply mounting paste to the outer edge of the bonded rubber bushing.
- Insert special tools with bonded rubber bushing into subframe as illustrated.



1 - Nut - T10263/5-

2 - Assembly Tool - Bushing - T10356/7- - the marking 'B' points to the subframe

3 - Subframe

4 - Adjust the bonded rubber bushing to the marks (the marks 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 - Gripping Device - T10205/1-

7 - Hydraulic Press - VAS6178- with Pressure Head - T10205/13-

8 - Nut - T10263/5-

9 - Threaded Rod - T10263/4-

- Check the position of the bonded rubber bushing and, if necessary, align and pre-tighten special tools with bonded rubber bushing.



Note

When installing, make sure the bonded rubber bushing does not tilt, otherwise the outer ring could be damaged.

- Operate the pump to press in the bonded rubber bushing until the shoulder is positioned on the subframe “without gap”.

Install in reverse order of removal, note the following:

Tightening Specifications

- ◆ Refer to
⇒ [“3.1.2 Overview - Subframe, Multi-Link Suspension, AWD”, page 158](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .





4 Stabilizer Bar

⇒ ["4.1 Overview - Stabilizer Bar", page 177](#)

⇒ ["4.2 Stabilizer Bar, Removing and Installing", page 178](#)

⇒ ["4.3 Coupling Rod, Removing and Installing", page 179](#)

4.1 Overview - Stabilizer Bar

⇒ ["4.1.1 Overview - Stabilizer Bar, Multi-Link Suspension, FWD", page 177](#)

⇒ ["4.1.2 Overview - Stabilizer Bar, Multi-Link Suspension, AWD", page 178](#)

4.1.1 Overview - Stabilizer Bar, Multi-Link Suspension, FWD

1 - Lower Transverse Link

2 - Nut

- ☐ 20 Nm + 180°
- ☐ Replace after removal

3 - Coupling Rod

- ☐ Removing and installing. Refer to
⇒ ["4.3 Coupling Rod, Removing and Installing", page 179](#).

4 - Bolt

- ☐ 20 Nm + 90°
- ☐ Replace after removal
- ☐ Install evenly

5 - Bolt

- ☐ Replace after removal

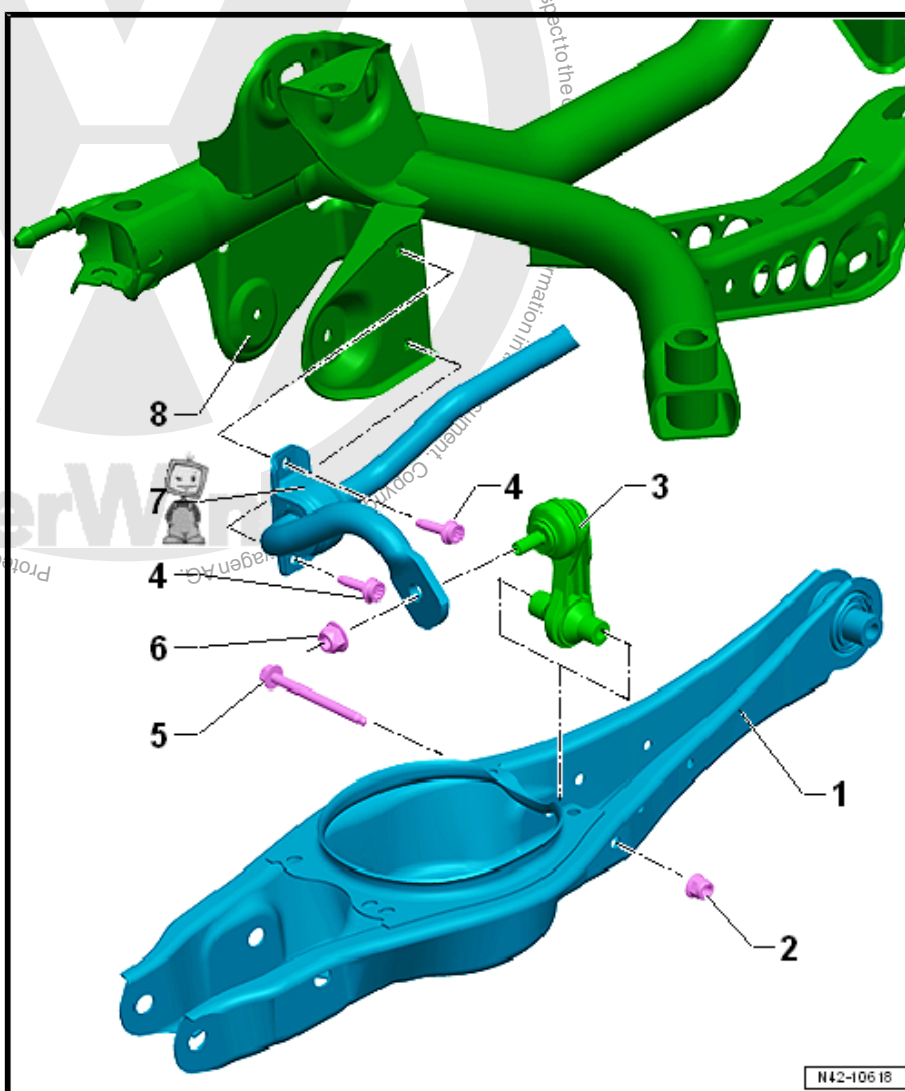
6 - Nut

- ☐ 55 Nm
- ☐ Counterhold at connecting link socket head when tightening

7 - Stabilizer Bar

- ☐ With rubber bushings
- ☐ Removing and installing. Refer to
⇒ ["4.2 Stabilizer Bar, Removing and Installing", page 178](#).

8 - Subframe





4.1.2 Overview - Stabilizer Bar, Multi-Link Suspension, AWD

1 - Lower Transverse Link

2 - Nut

- ☐ 20 Nm +180°
- ☐ Replace after removal

3 - Coupling Rod

- ☐ Removing and installing. Refer to
⇒ ["4.3 Coupling Rod, Removing and Installing", page 179](#).

4 - Bolt

- ☐ 20 Nm +90°
- ☐ Replace after removal
- ☐ Install evenly

5 - Bolt

- ☐ Replace after removal

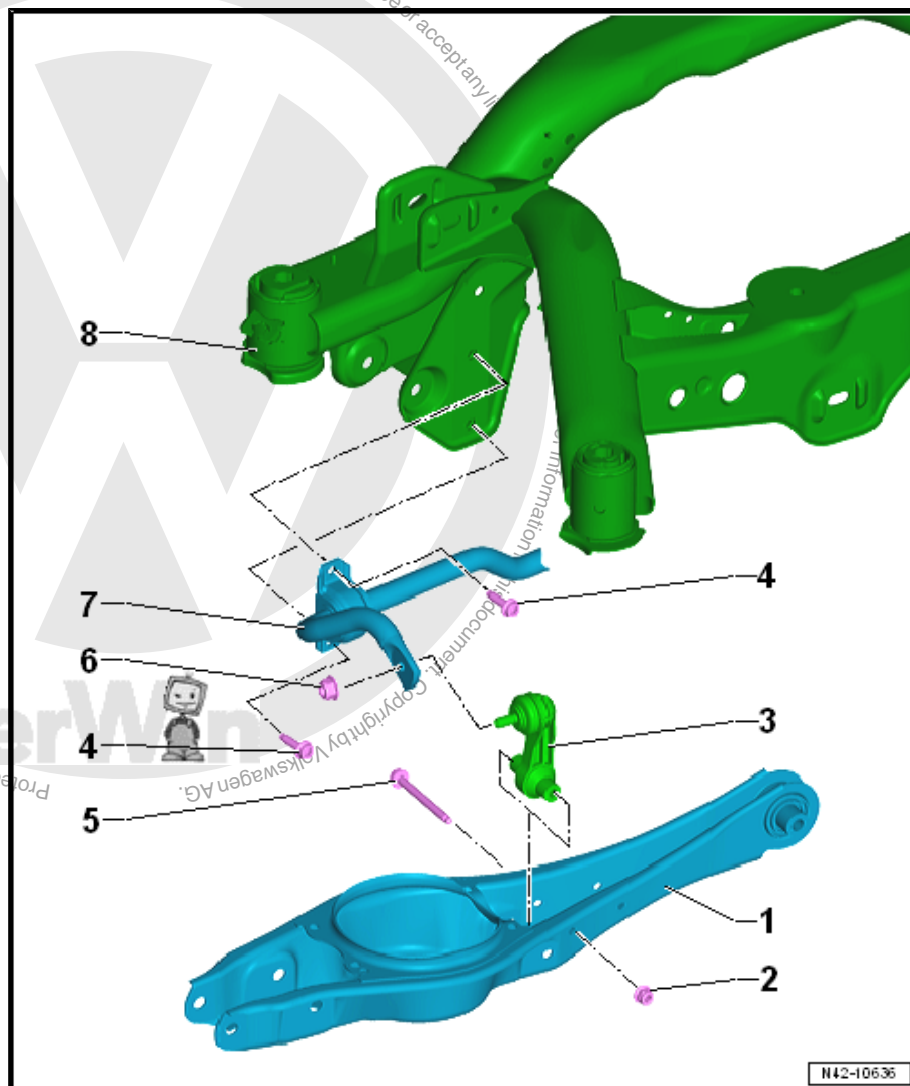
6 - Nut

- ☐ 55 Nm
- ☐ Counterhold at connecting link socket head when tightening

7 - Stabilizer Bar

- ☐ With rubber bushings
- ☐ Removing and installing. Refer to
⇒ ["4.2 Stabilizer Bar, Removing and Installing", page 178](#).

8 - Subframe



4.2 Stabilizer Bar, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolt - Stabilizer Bar to Subframe

Removing

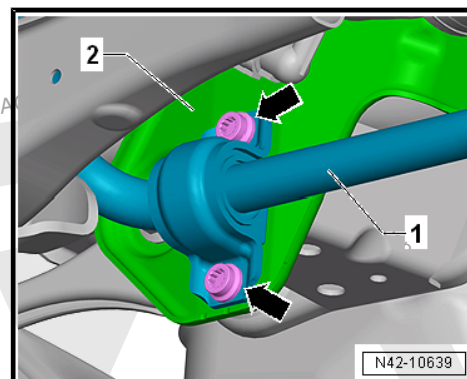
- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.



Note

The following work steps are described for the left side of the vehicle. These work steps also apply simultaneously for right side of vehicle.

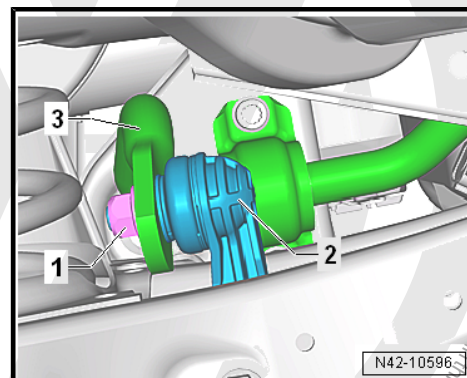
- Remove the bolts -arrows- for the stabilizer bar -1-



- Remove the nut -1- from the coupling rod -2-.
- Remove the coupling rod -2- from the stabilizer bar -3-.
- Remove the stabilizer bar -1- from the subframe -2-.

Installing

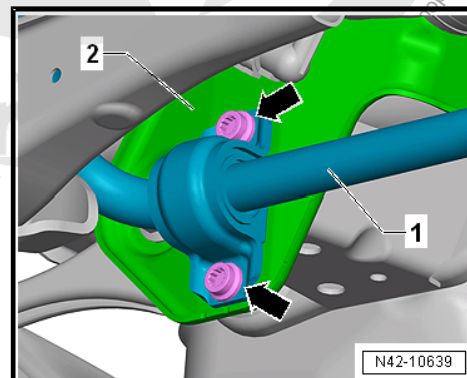
Install in reverse order of removal. Note the following:



- Evenly tighten the bolts -arrows- for the stabilizer bar -1- to the subframe -2-.

Tightening Specifications

- ◆ Refer to ⇒ [“4.1 Overview - Stabilizer Bar”, page 177](#)
- ◆ Refer to ⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)



4.3 Coupling Rod, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-

Removing

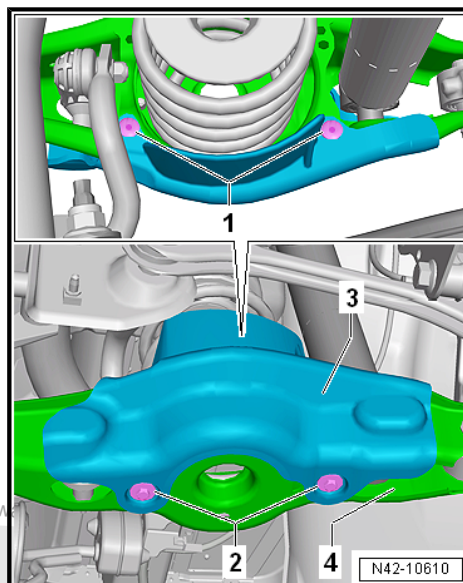
- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.
- Remove the spring. Refer to ⇒ [“6.4 Spring, Removing and Installing”, page 202](#).



Vehicles with Stone Chip Protection

- Remove the expanding rivets -1-.
- Remove the bolts -2- for the stone chip protection -3-.

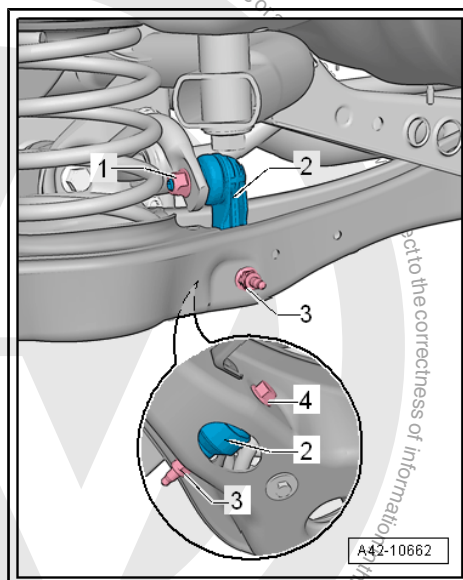
Continuation for All Vehicles



- Remove the nuts -1 and 3- and the bolt -4-.
- Remove the coupling rod -2- from the stabilizer bar and trailing arm.

Installing

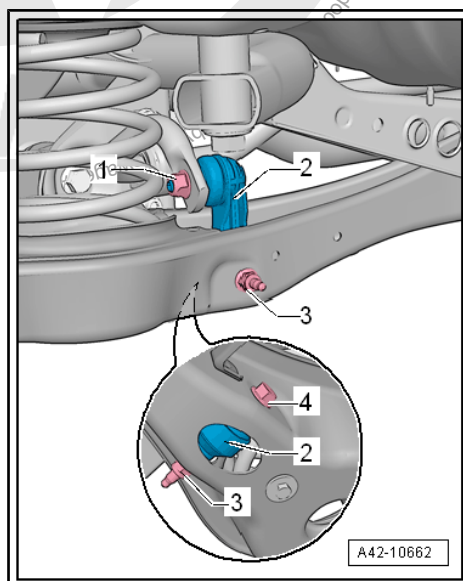
Install in reverse order of removal. Note the following:



- Insert the coupling rod -2-, install the nuts -1 and 3- and tighten in curb weight position.
- When tightening the nut -1-, counterhold at the inner multipoint fitting of the bolt.

Tightening Specifications

- ◆ Refer to ["4.1 Overview - Stabilizer Bar", page 177](#)
- ◆ Refer to ["1.1 Wheel Bolt Tightening Specifications", page 286](#)





5 Control Arm, Tie Rod

⇒ ["5.1 Overview - Transverse Link", page 181](#)

⇒ ["5.2 Overview - Tie Rod", page 184](#)

⇒ ["5.3 Upper Transverse Link, Removing and Installing", page 185](#)

⇒ ["5.4 Lower Transverse Link, Removing and Installing", page 187](#)

⇒ ["5.5 Tie Rod, Removing and Installing", page 189](#)

5.1 Overview - Transverse Link

⇒ ["5.1.1 Overview - Transverse Link, Multi-Link Suspension, FWD", page 181](#)

⇒ ["5.1.2 Overview - Transverse Link, Multi-Link Suspension, AWD", page 183](#)

5.1.1 Overview - Transverse Link, Multi-Link Suspension, FWD

1 - Nut

- ☐ Replace after removal

2 - Washer

3 - Upper Transverse Link

- ☐ Removing and installing. Refer to
⇒ ["5.3 Upper Transverse Link, Removing and Installing", page 185](#)

4 - Bolt

- ☐ 130 Nm + 180°
- ☐ Replace after removal
- ☐ Always tighten the threaded connections in curb weight position. Refer to
⇒ ["3.8.2 Wheel Bearing in Curb Weight, Rear Axle, Lifting Vehicles with Coil Spring", page 8](#).

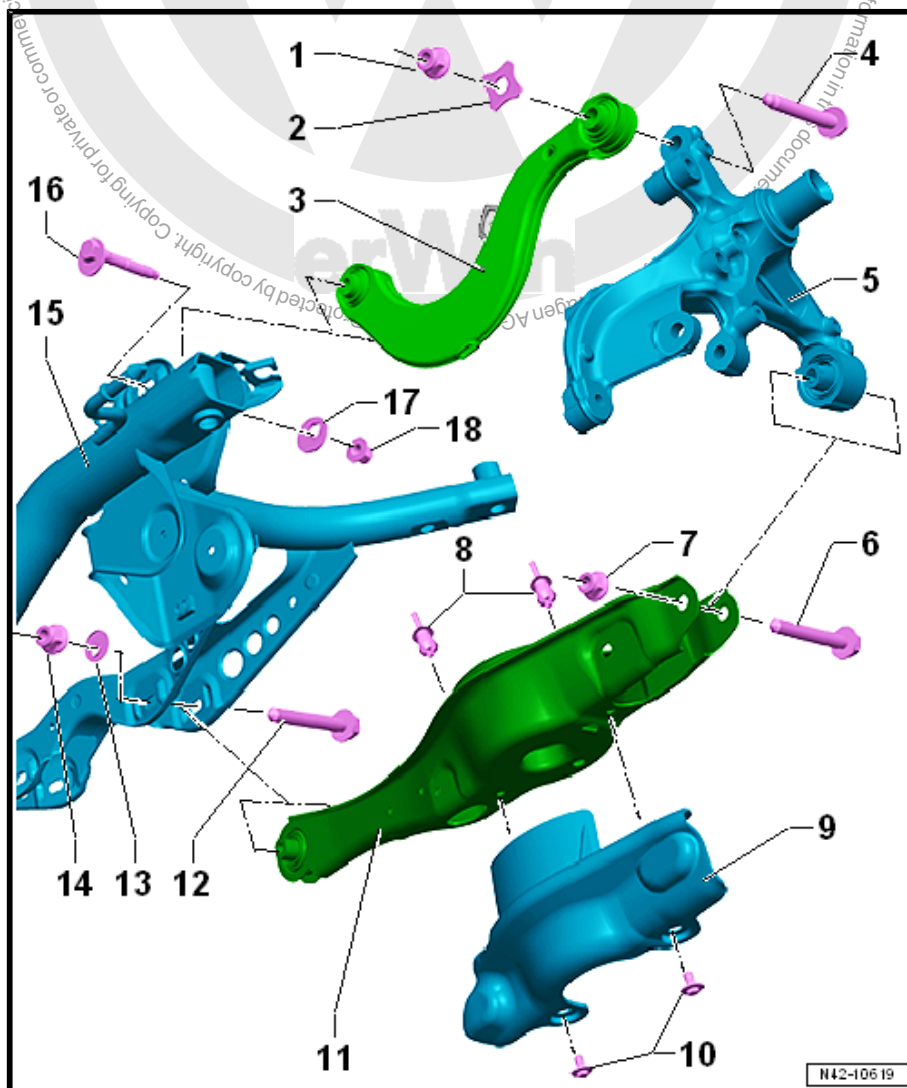
5 - Wheel Bearing Housing

6 - Bolt

- ☐ 70 Nm + 180°
- ☐ Replace after removal
- ☐ Always tighten the threaded connections in curb weight position. Refer to
⇒ ["3.8.2 Wheel Bearing in Curb Weight, Rear Axle, Lifting Vehicles with Coil Spring", page 8](#).

7 - Nut

- ☐ Replace after removal



N42-10619



8 - Expanding Rivet

9 - Stone Chip Protection

10 - Bolt

- ☐ 8 Nm

11 - Lower Transverse Link

- ☐ Removing and installing. Refer to ⇒ [“5.4 Lower Transverse Link, Removing and Installing”, page 187](#)

12 - Eccentric Bolt

- ☐ Perform a vehicle alignment after loosening
- ☐ Do not turn more than 90° right or left (that is smallest to largest possible adjustment).

13 - Eccentric Washer

- ☐ Inner bore with tab

14 - Nut

- ☐ 95 Nm
- ☐ Replace after removal
- ☐ Always tighten the threaded connections in curb weight position. Refer to ⇒ [“3.8.2 Wheel Bearing in Curb Weight, Rear Axle, Lifting Vehicles with Coil Spring”, page 8](#) .

15 - Subframe

16 - Eccentric Bolt

- ☐ Perform a vehicle alignment after loosening
- ☐ Do not turn more than 90° right or left (that is smallest to largest possible adjustment)

17 - Eccentric Washer

- ☐ Inner bore with tab

18 - Nut

- ☐ 95 Nm
- ☐ Replace after removal
- ☐ Always tighten the threaded connections in curb weight position. Refer to ⇒ [“3.8.2 Wheel Bearing in Curb Weight, Rear Axle, Lifting Vehicles with Coil Spring”, page 8](#) .



5.1.2 Overview - Transverse Link, Multi-Link Suspension, AWD

1 - Washer

2 - Nut

- ☐ Replace after removal

3 - Upper Transverse Link

- ☐ Removing and installing. Refer to
⇒ ["5.3 Upper Transverse Link, Removing and Installing", page 185](#).

4 - Washer

5 - Bolt

- ☐ 130 Nm +180°
- ☐ Replace after removal
- ☐ Always tighten threaded connections in curb weight position.

6 - Wheel Bearing Housing

7 - Nut

- ☐ Replace after removal

8 - Expanding Rivet

9 - Bolt

- ☐ 70 Nm +180°
- ☐ Replace after removal
- ☐ Always tighten threaded connections in curb weight position.

10 - Lower Transverse Link

- ☐ Removing and installing. Refer to
⇒ ["5.4 Lower Transverse Link, Removing and Installing", page 187](#).

11 - Stone Chip Protection

12 - Bolt

- ☐ 8 Nm

13 - Subframe

14 - Eccentric Bolt

- ☐ Perform a vehicle alignment after loosening
- ☐ Do not turn more than 90° right or left (that is smallest to largest possible adjustment)

15 - Nut

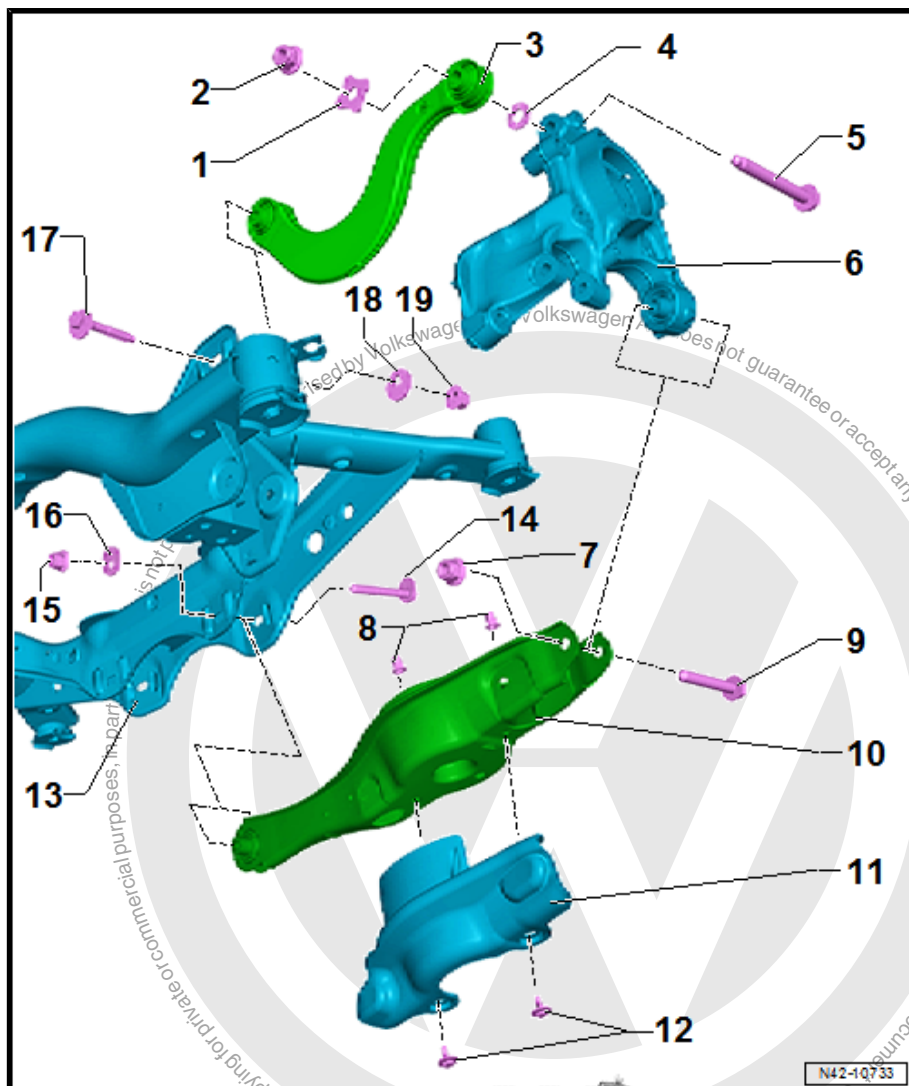
- ☐ 95 Nm
- ☐ Replace after removal
- ☐ Always tighten threaded connections in curb weight position.

16 - Eccentric Washer

- ☐ Inner bore with tab

17 - Eccentric Bolt

- ☐ Perform a vehicle alignment after loosening





- ☐ Do not turn more than 90° right or left (that is smallest to largest possible adjustment)

18 - Eccentric Washer

- ☐ Inner bore with tab

19 - Nut

- ☐ 95 Nm
- ☐ Replace after removal
- ☐ Always tighten threaded connections in curb weight position.

5.2 Overview - Tie Rod

⇒ ["5.2.1 Overview - Tie Rod, Multi-Link Suspension, FWD", page 184](#)

⇒ ["5.2.2 Overview - Tie Rod, Multi-Link Suspension, AWD", page 185](#)

5.2.1 Overview - Tie Rod, Multi-Link Suspension, FWD

1 - Subframe

2 - Bolt

- ☐ 70 Nm + 180°
- ☐ Replace after removal

3 - Wheel Bearing Housing

4 - Tie Rod

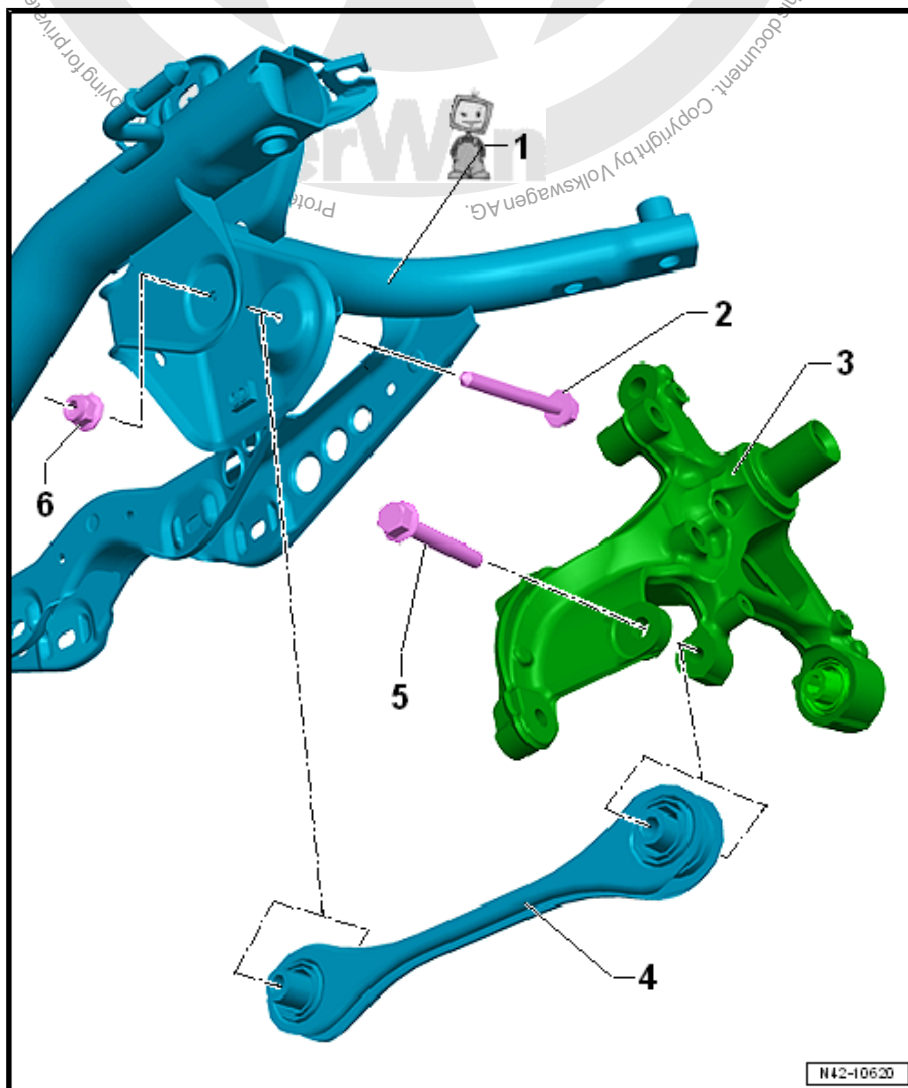
- ☐ Removing and installing. Refer to
⇒ ["5.5 Tie Rod, Removing and Installing", page 189](#)

5 - Bolt

- ☐ 70 Nm + 180°
- ☐ Replace after removal
- ☐ Always tighten the threaded connections in curb weight position. Refer to
⇒ ["3.8.2 Wheel Bearing in Curb Weight, Rear Axle, Lifting Vehicles with Coil Spring", page 8](#).

6 - Nut

- ☐ Replace after removal





5.2.2 Overview - Tie Rod, Multi-Link Suspension, AWD

1 - Subframe

2 - Bolt

- ☐ Replace after removal

3 - Wheel bearing housing

4 - Tie rod

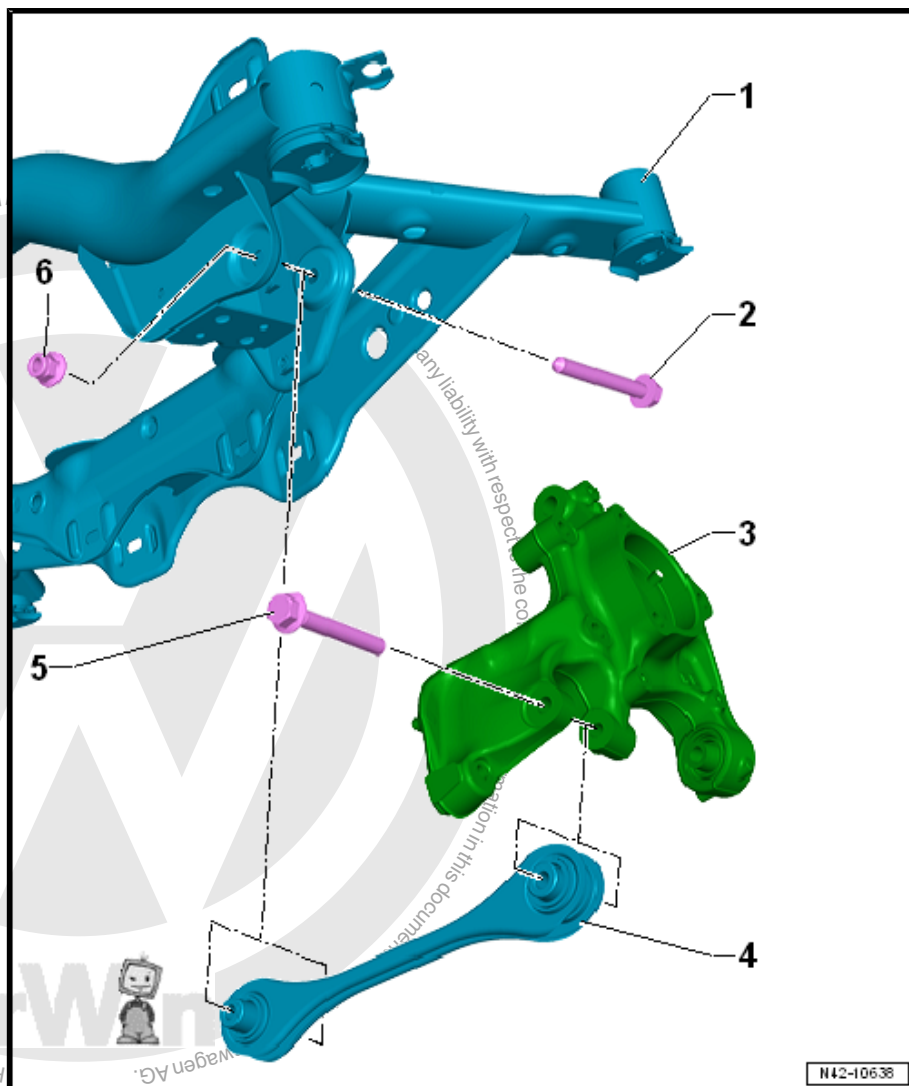
- ☐ Removing and installing. Refer to
⇒ ["5.5 Tie Rod, Removing and Installing", page 189](#)

5 - Bolt

- ☐ 70 Nm +180°
- ☒ Replace after removal
- ☐ Always tighten threaded connections in curb weight position.

6 - Nut

- ☐ 70 Nm +180°
- ☐ Replace after removal



5.3 Upper Transverse Link, Removing and Installing

⇒ ["5.3.1 Upper Transverse Link, Removing and Installing", page 185](#)

⇒ ["5.3.2 Upper Transverse Link, Removing and Installing, All Wheel Drive", page 186](#)

5.3.1 Upper Transverse Link, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

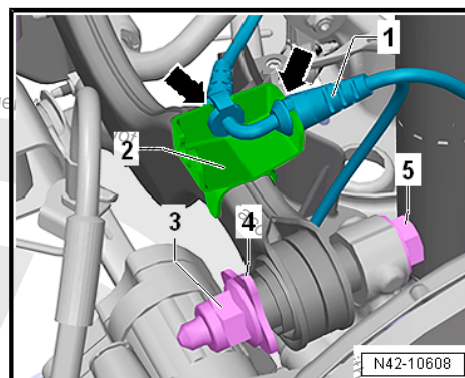


Mandatory Replacement Parts

- ◆ Bolt - Wheel Bearing Housing to Upper Transverse Link
- ◆ Nut - Wheel Bearing Housing to Upper Transverse Link

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.
- Remove the spring. Refer to
⇒ ["6.4 Spring, Removing and Installing", page 202](#) .
- Disengage the line -1- from the bracket -2- -arrows-.
- Remove the nut -3- and the washer -4-.
- Remove the bolt -5-.



- Mark the position of eccentric bolt -3- to the subframe using, for example, a felt-tip marker.
- Remove the nut -2- and the eccentric bolt -3-.
- Remove the upper control arm -1-.

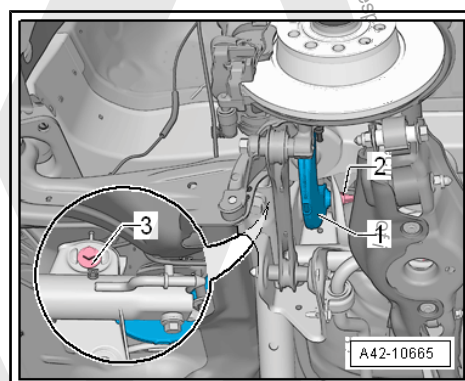
Installing

Install in reverse order of removal. Note the following:

- Only fasten the control arm in the curb weight position.

Tightening Specifications

- ◆ Refer to ⇒ ["5.1 Overview - Transverse Link", page 181](#)
- ◆ Refer to
⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#)
- Perform an axle alignment. Refer to
⇒ ["3.5 Axle Alignment Procedure", page 302](#) .



5.3.2 Upper Transverse Link, Removing and Installing, All Wheel Drive

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

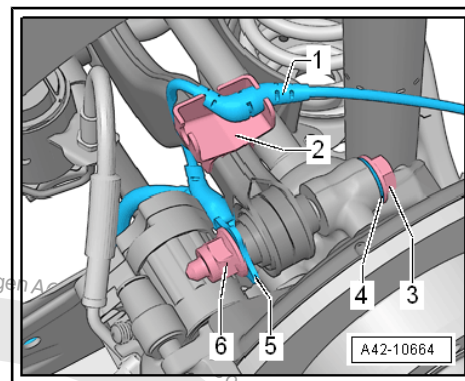
Mandatory Replacement Parts

- ◆ Bolt - Wheel Bearing Housing to Upper Transverse Link
- ◆ Nut - Wheel Bearing Housing to Upper Transverse Link



Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.
- Remove the spring. Refer to
⇒ ["6.4 Spring, Removing and Installing", page 202](#) .
- Disengage the line -1- from the bracket -2-.
- Remove the nut -6- and the washer -5-.
- Remove the bolt -3- and washer -4-.



- Mark the position of eccentric bolt -3- to the subframe using, for example, a felt-tip marker.
- Remove the nut -2- and the eccentric screw -3-.
- Remove the upper control arm -1-.

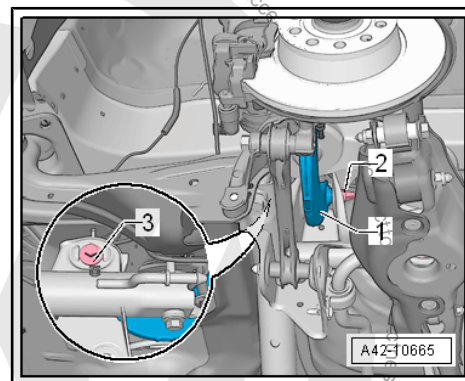
Installing

Install in reverse order of removal. Note the following:

- Only fasten the control arm in the curb weight position.

Tightening Specifications

- ◆ Refer to ⇒ ["5.1 Overview - Transverse Link", page 181](#)
- ◆ Refer to
⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#)
- Perform an axle alignment. Refer to
⇒ ["3.5 Axle Alignment Procedure", page 302](#) .



5.4 Lower Transverse Link, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332

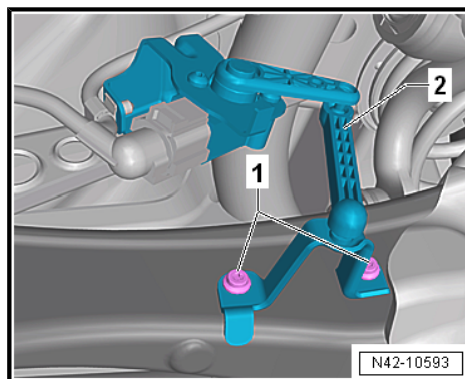
Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.



Vehicles with Level Control System Sensor

- Remove the bolts -1-.
- Remove the Left Rear Level Control System Sensor -2- bracket.

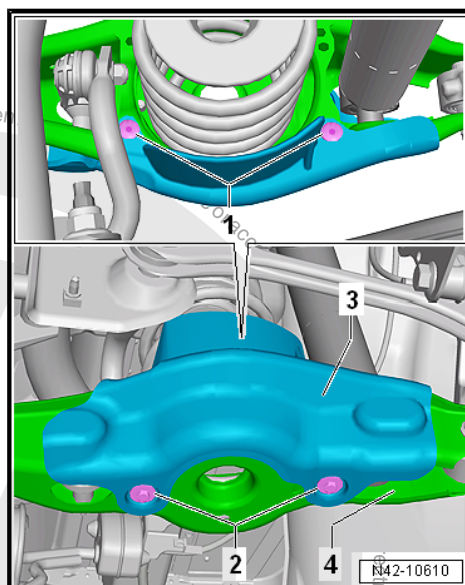


Vehicles with Stone Chip Protection

- Remove the expanding rivets -1-.
- Remove the bolts -2- for the stone chip protection -3-.

Continuation for all Vehicles

- Remove the spring. Refer to [⇒ "6.4 Spring, Removing and Installing", page 202](#) .
- Disengage the rear exhaust system and lower it. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .





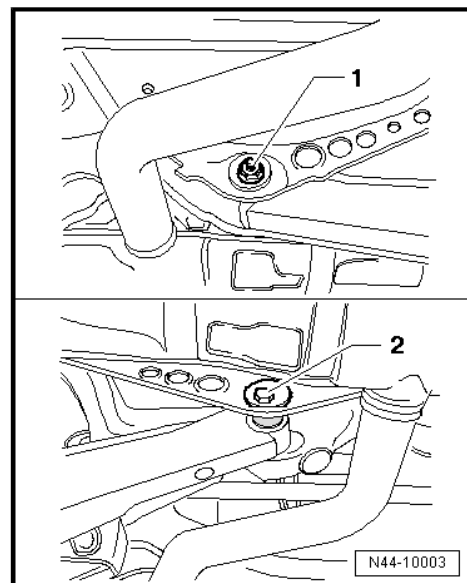
- Mark the position of the eccentric screw -2- in relation to the subframe, for example using a felt-tip pen.
- Unscrew the nut -1- and remove the bolt -2-.
- Remove lower transverse link.

Installing

Install in reverse order of removal while noting the following:

Tightening Specifications

- ◆ Refer to ⇒ [“5.1 Overview - Transverse Link”, page 181](#)
- ◆ Refer to
⇒ [“2.4 Left/Right Rear Level Control System Sensor G76 / G77 , Removing and Installing”, page 282](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Rear exhaust system. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/ Mufflers; Overview - Muffler .
- Observe the mark made for the eccentric screw -2- in relation to the subframe.
- Only fasten the transverse link in the curb weight position.
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp, Headlamp, Adjusting .
- Perform an axle alignment. Refer to
⇒ [“3.5 Axle Alignment Procedure”, page 302](#) .



5.5 Tie Rod, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

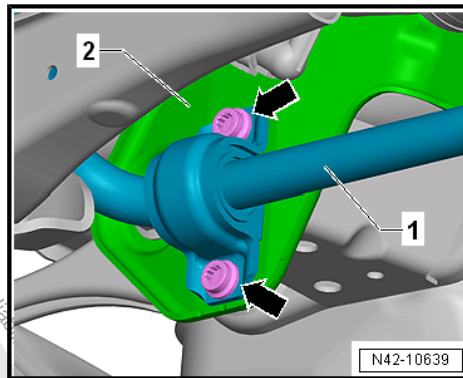
- ◆ Bolt - Stabilizer Bar to Subframe
- ◆ Bolt- Tie Rod to Wheel Bearing Housing
- ◆ Bolt - Tie Rod to Subframe
- ◆ Nut - Tie Rod to Subframe

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.



- Remove the bolts -arrows- for the stabilizer bar -1-



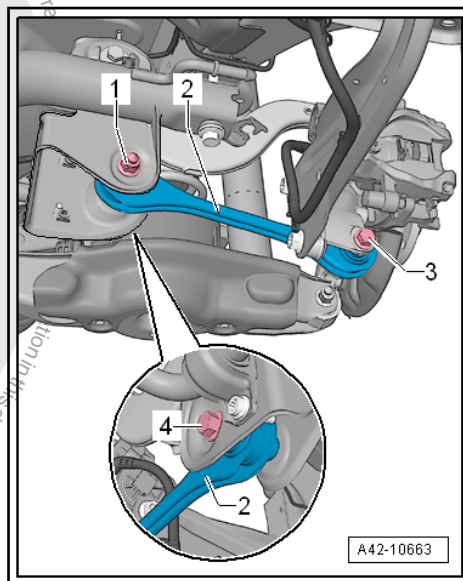
- Loosen the nut -1- and the bolt -3- several turns.
Remove the bolt -3-.
Remove the nut -1- and then remove the bolt -4- to the rear.
Remove the tie rod -2-.

Installing

Install in reverse order of removal. Note the following:

Tightening Specifications

- ◆ Refer to ⇒ [“5.2 Overview - Tie Rod”, page 184](#)
- ◆ Refer to ⇒ [“4.1 Overview - Stabilizer Bar”, page 177](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- The tie rods may only be fastened when the dimension between wheel hub center and lower edge of wheel housing, measured before assembly, is achieved.
- Perform an axle alignment.





6 Suspension Strut/Shock Absorber, Spring

⇒ [“6.1 Overview - Suspension Strut, Shock Absorber and Spring”, page 191](#)

⇒ [“6.2 Shock Absorber, Removing and Installing”, page 193](#)

⇒ [“6.3 Shock Absorber, Servicing”, page 200](#)

⇒ [“6.4 Spring, Removing and Installing”, page 202](#)

6.1 Overview - Suspension Strut, Shock Absorber and Spring

⇒ [“6.1.1 Overview - Suspension Strut, Shock Absorber and Spring, Torsion Beam Axle”, page 191](#)

⇒ [“6.1.2 Overview - Suspension Strut, Shock Absorber and Spring, Multi-Link Suspension”, page 192](#)

6.1.1 Overview - Suspension Strut, Shock Absorber and Spring, Torsion Beam Axle

1 - Bolt

- ☐ 50 Nm + 45°
- ☐ Replace after removal

2 - Shock Absorber

- ☐ Removing and installing. Refer to
⇒ [“6.2 Shock Absorber, Removing and Installing”, page 193](#)
- ☐ Always vent and drain faulty shock absorbers before disposal.

3 - Upper Spring Support

- ☐ Place on body “tab”.

4 - Spring

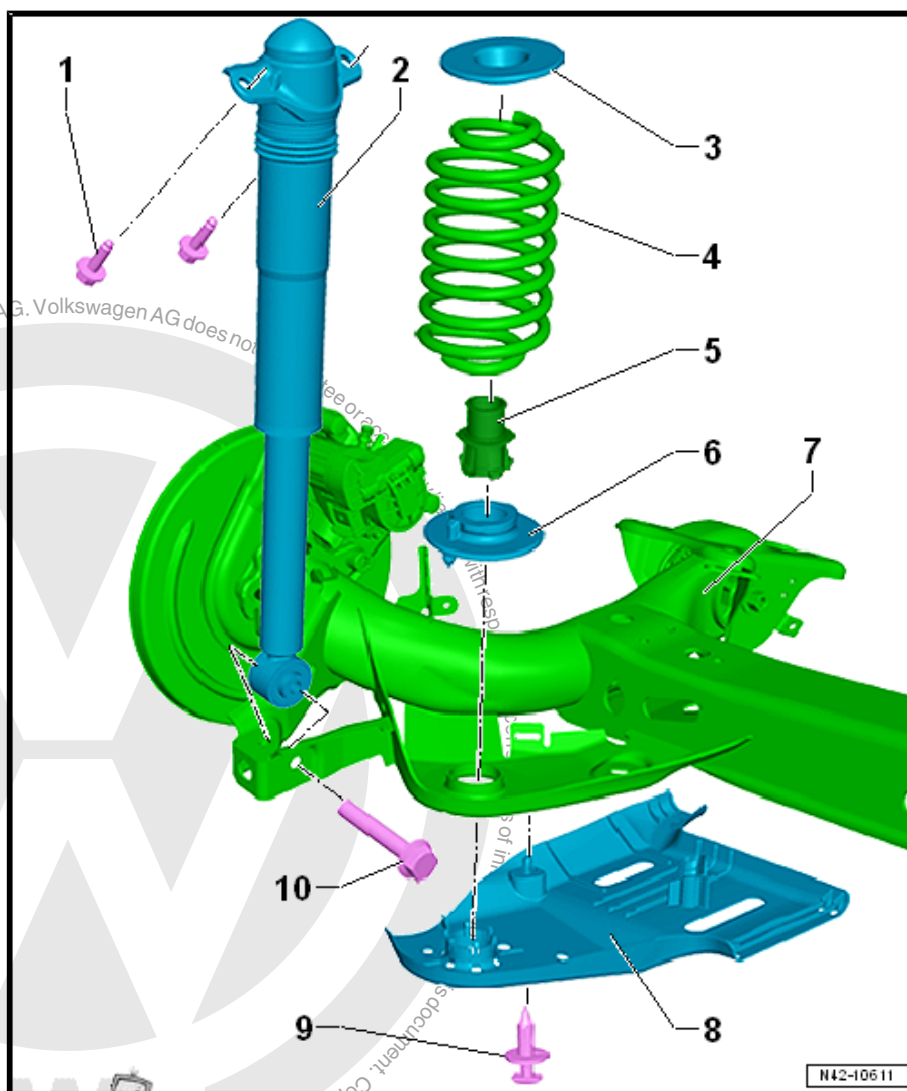
- ☐ Removing and installing. Refer to
⇒ [“6.4.1 Spring, Removing and Installing, Torsion Beam Axle”, page 202](#)

5 - Clamping Ring

- ☐ Press in the clamping ring until flush after installing the stone chip protection.

6 - Low 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 - Axle Beam

8 - Stone Chip Protection

9 - Expanding Rivet

10 - Bolt

- ☐ 70 Nm + 180°
- ☐ Replace after removal
- ☐ Always tighten threaded connection in curb weight position

6.1.2 Overview - Suspension Strut, Shock Absorber and Spring, Multi-Link Suspension

1 - Bolt

- ☐ 50 Nm + 45°
- ☐ Replace after removal

2 - Shock Absorber

- ☐ Removing and installing. Refer to [⇒ "6.2 Shock Absorber, Removing and Installing", page 193](#)
- ☐ Observe the installation position of the cable tie closure
- ☐ Always vent and drain faulty shock absorbers before disposal.

3 - Upper Spring Support

- ☐ Place on body "tab".

4 - Spring

- ☐ Removing and installing. Refer to [⇒ "6.4 Spring, Removing and Installing", page 202](#)

5 - Clip

- ☐ Serves as an assembly aid

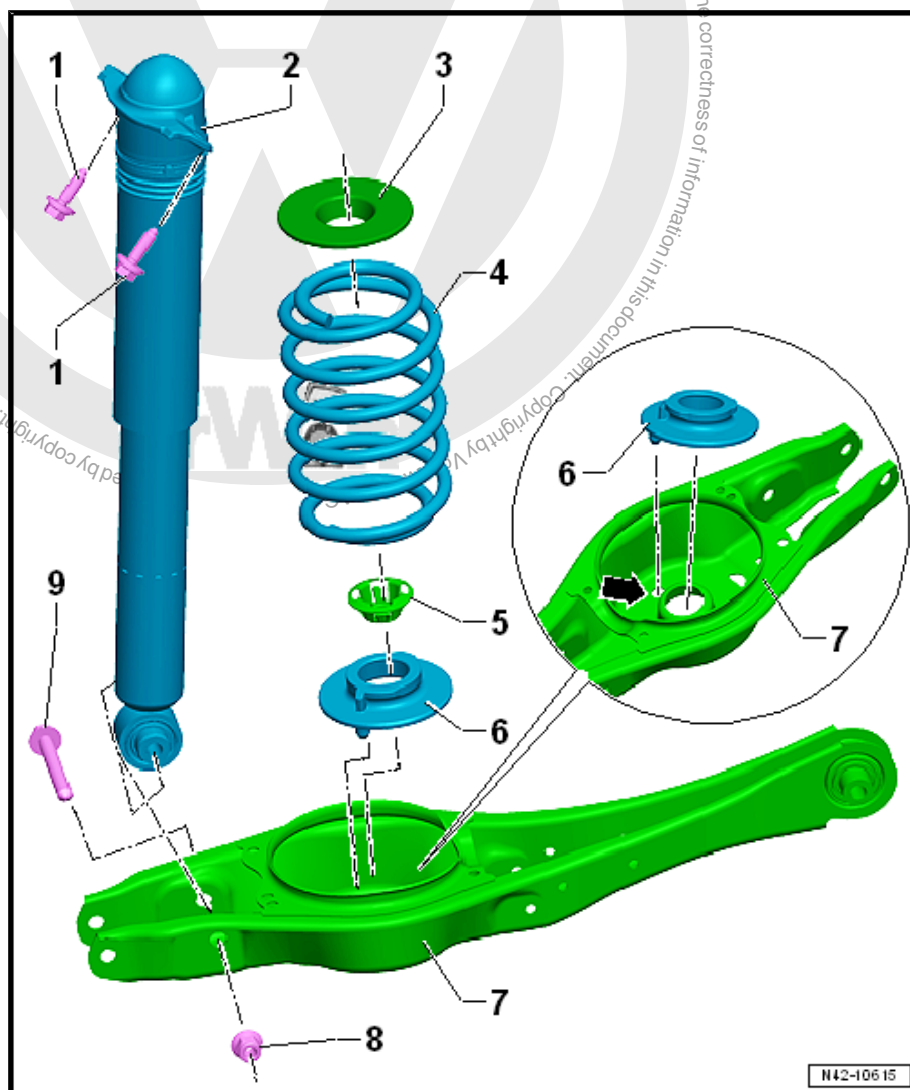
6 - Low Spring Support

- ☐ Spring end rotated up to stop
- ☐ When assembling, insert the pin into the spring mount opening on the lower transverse link -arrow-.

7 - Lower Transverse Link

8 - Nut

- ☐ 70 Nm + 180°
- ☐ Replace after removal
- ☐ Always tighten threaded connection in curb weight position





9 - Bolt

- ☐ Replace after removal

6.2 Shock Absorber, Removing and Installing

⇒ [“6.2.1 Shock Absorber, Removing and Installing, Torsion Beam Axle”, page 193](#)

⇒ [“6.2.2 Shock Absorber, Removing and Installing, Multi-Link Suspension, Left Shock Absorber”, page 195](#)

⇒ [“6.2.3 Shock Absorber, Removing and Installing, Multi-Link Suspension, Right Shock Absorber”, page 197](#)

6.2.1 Shock Absorber, Removing and Installing, Torsion Beam Axle

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Torque Wrench 1410 - VAG1410-
- ◆ Spring Compressor Kit - Spring Tensioner - VAG1752/1-
- ◆ Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

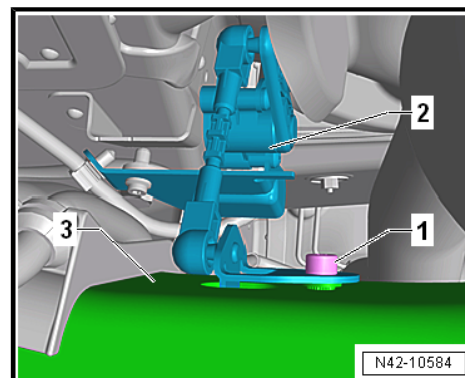
- ◆ Bolts - Shock Absorber to Body
- ◆ Bolts - Shock Absorber to Axle Beam

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the rear wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Rear Wheel Housing Liner, Removing and Installing .

Vehicles with a Vehicle Level Sensor

- Remove the bolt -1-.
- Remove the lever of the Left Rear Level Control System Sensor - G76- -2- from the axle beam -3-





Vehicles with Adaptive Chassis DCC

- Disconnect the connector -1- from the shock absorber -2-.
- Remove the wire -3- from the shock absorber -2- -arrow-.



Note

If there is moisture in the connector area, blow compressed air on the contacts on the shock absorber and the connector.

Continuation for All Vehicles

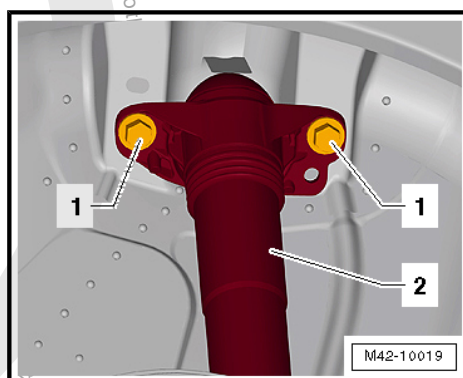
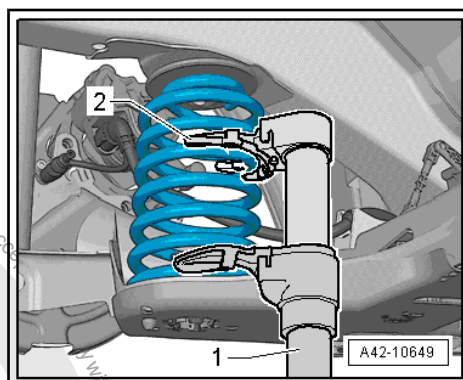
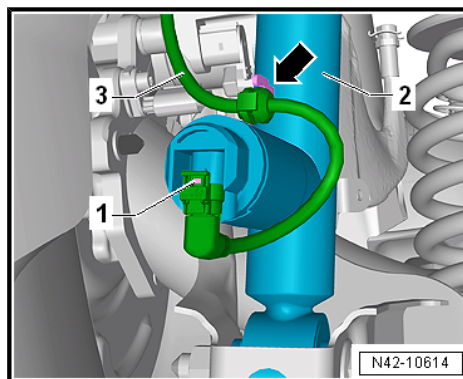
- Insert the Spring Tensioner -1-.
- 1 - Spring Compressor Kit - Spring Tensioner - VAG1752/1-
- 2 - Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A-



WARNING

Make sure the coil spring is seated correctly in the Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A- -2- (danger of accident).

- Tension the coil spring until the shock absorber is not under tension.
- Remove the bolts -1- from the shock absorber -2-.





- Remove the bolt -1-.
- Remove the shock absorber.

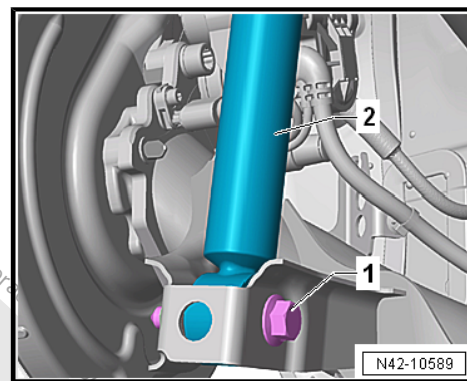
Installing

Installation is the reverse of removal, with special attention to the following:

- For vehicles with a vehicle level sensor, perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- ◆ Refer to
⇒ [“6.1.1 Overview - Suspension Strut, Shock Absorber and Spring, Torsion Beam Axle”, page 191](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Rear Wheel Housing Liner, Removing and Installing .



6.2.2 Shock Absorber, Removing and Installing, Multi-Link Suspension, Left Shock Absorber

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Torque Wrench 1410 - VAG1410-
- ◆ Spring Compressor Kit - Spring Tensioner - VAG1752/1-
- ◆ Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A-
- ◆ Spring Compressor Kit - Adapter Blocks - VAG1752/9-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolts - Shock Absorber to Body
- ◆ Bolt - Shock Absorber to Lower Transverse Link
- ◆ Nut - Shock Absorber to Lower Transverse Link

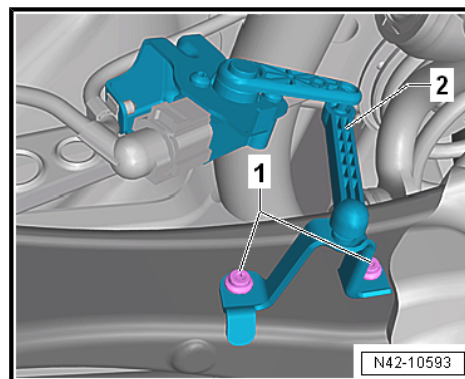
Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the rear wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Rear Wheel Housing Liner, Removing and Installing .



Vehicles with a Vehicle Level Sensor

- Remove the bolts -1-.
- Remove the Left Rear Level Control System Sensor - G76-2- bracket.



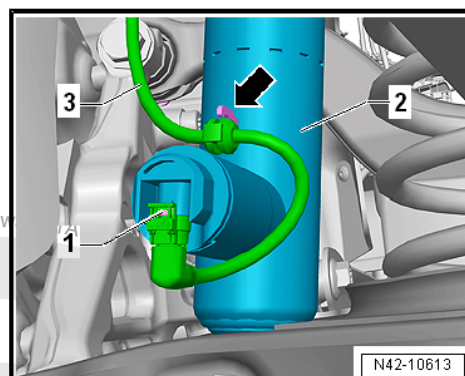
Vehicles with Adaptive Chassis DCC

- Disconnect the connector -1- from the shock absorber -2-.
- Remove the wire -3- from the shock absorber -2- -arrow-.



Note

If there is moisture in the connector area, blow compressed air on the contacts on the shock absorber and the connector.



Continuation for All Vehicles

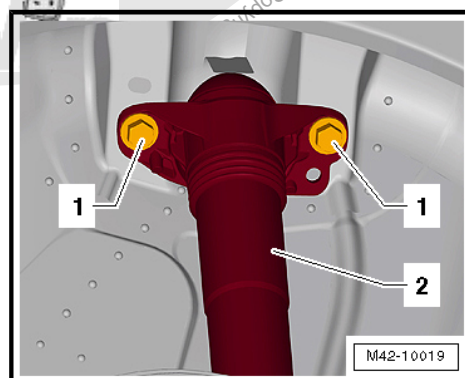
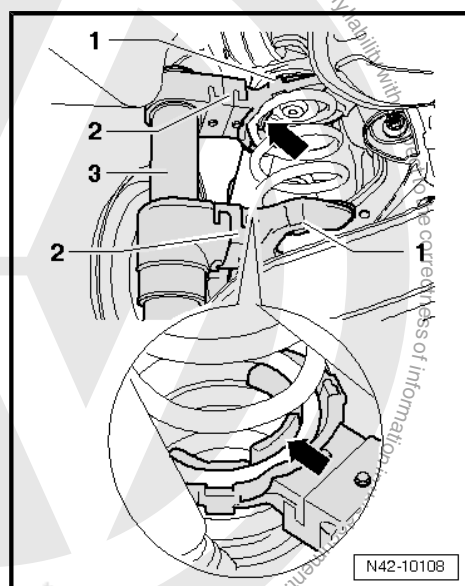
- Insert the Spring Compressor -3-.
- 1 - Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A-
- 2 - Spring Compressor Kit - Adapter Blocks - VAG1752/9-
- 3 - Spring Compressor Kit - Spring Tensioner - VAG1752/1-



WARNING

Make sure the coil spring is seated correctly in the Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A-2- (danger of accident).

- Tension the coil spring until the shock absorber is not under tension.
- Remove the bolts -1- from the shock absorber -2-.





Vehicles with Stone Chip Protection

- Remove the expanding rivets -1-.
- Remove the bolts -2- for the stone chip protection -3-.
- Remove the stone chip protection -3- from the lower transverse link -4-.

Continuation for All Vehicles

- Remove the nut -1- and the bolt -2-.
- Remove the shock absorber.

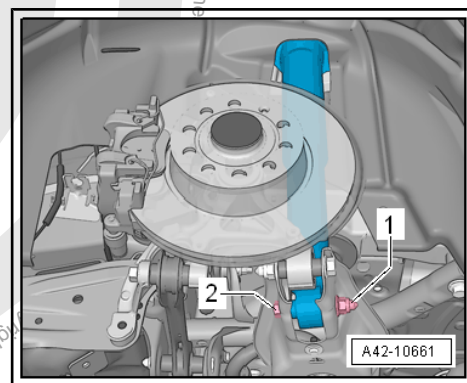
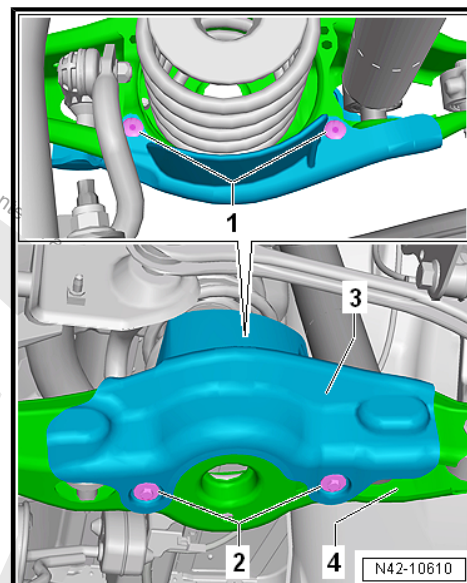
Installing

Installation is the reverse of removal, with special attention to the following:

- For vehicles with a vehicle level sensor, perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- ◆ Refer to
⇒ [“6.1.2 Overview - Suspension Strut, Shock Absorber and Spring, Multi-Link Suspension”, page 192](#)
- ◆ Refer to ⇒ [“5.1 Overview - Transverse Link”, page 181](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Rear Wheel Housing Liner, Removing and Installing .
- Only fasten the shock absorber with the transverse link in the curb weight position.



6.2.3 Shock Absorber, Removing and Installing, Multi-Link Suspension, Right Shock Absorber

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Torque Wrench 1410 - VAG1410-
- ◆ Spring Compressor Kit - Spring Tensioner - VAG1752/1-
- ◆ Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A-
- ◆ Spring Compressor Kit - Adapter Blocks - VAG1752/9-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

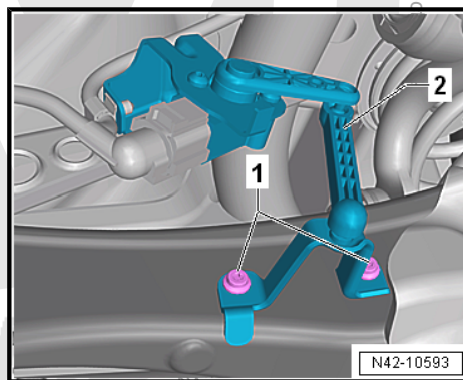
- ◆ Bolts - Shock Absorber to Body
- ◆ Bolt - Shock Absorber to Lower Transverse Link
- ◆ Nut - Shock Absorber to Lower Transverse Link

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the rear wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Rear Wheel Housing Liner, Removing and Installing .

Vehicles with a Vehicle Level Sensor

- Remove the bolts -1-.
- Remove the Left Rear Level Control System Sensor - G76-2- bracket.



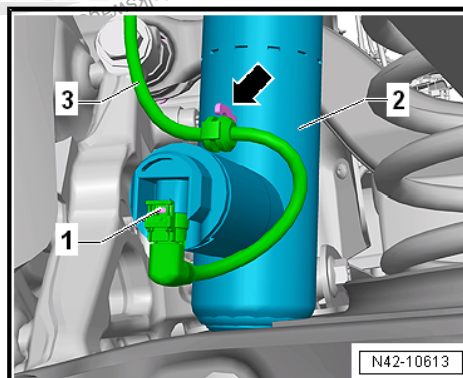
Vehicles with Adaptive Chassis DCC

- Disconnect the connector -1- from the shock absorber -2-.
- Remove the wire -3- from the shock absorber -2- -arrow-.



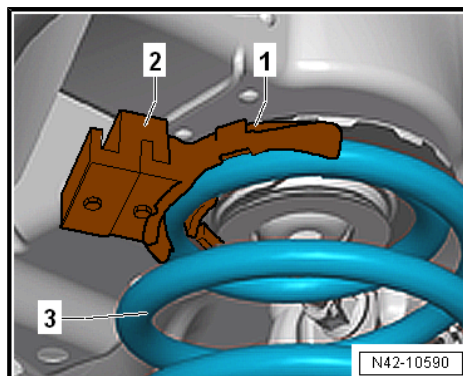
Note

If there is moisture in the connector area, blow compressed air on the contacts on the shock absorber and the connector.



Continuation for All Vehicles

- Position the Spring Retainer with Inserts - VAG1752/3A- -1- with the Spring Compressor Kit - Adapter Blocks - VAG1752/9-2- on the uppermost spring coil -3-.





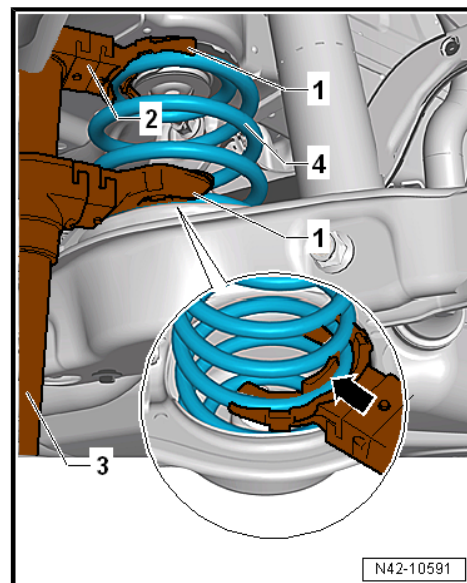
- Position the Spring Compressor -3- on the Spring Compressor Kit - Adapter Blocks - VAG1752/9- -2-.
- Insert the lower Spring Retainer with Inserts - VAG1752/3A- into the spring -4- at the same time.
- Fasten the Spring Compressor -3- to the Spring Compressor Kit - Adapter Blocks - VAG1752/9- -2-.

- 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

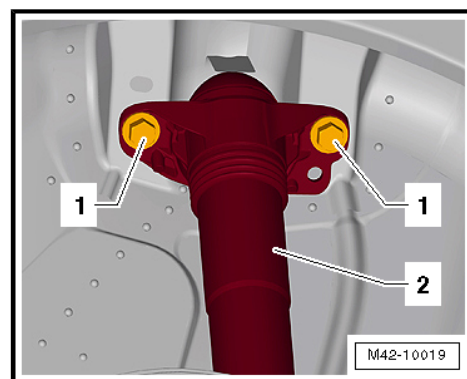


WARNING

Make sure the coil spring is seated correctly in the Spring Compressor Kit - Spring Retainer with Inserts - VAG1752/3A- -arrow- (danger of accident).



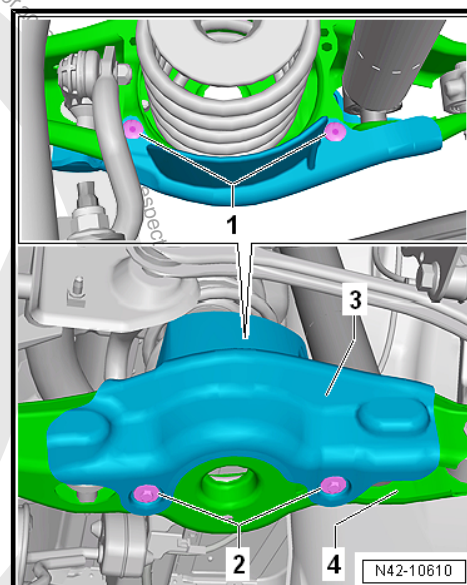
- Tension the coil spring until the shock absorber is not under tension.
- Remove the bolts -1- from the shock absorber -2-.



Vehicles with Stone Chip Protection

- Remove the expanding rivets -1-.
- Remove the bolts -2- for the stone chip protection -3-.
- Remove the stone chip protection -3- from the lower transverse link -4-.

Continuation for All Vehicles





- Remove the nut -1- and the bolt -2-.
- Remove the shock absorber.

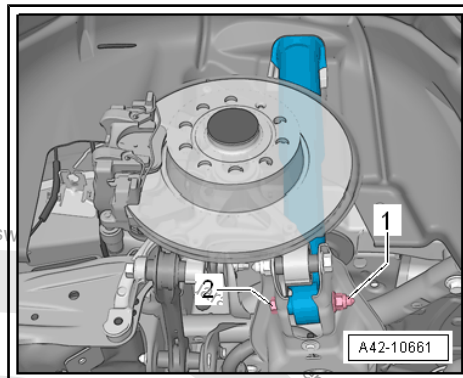
Installing

Installation is the reverse of removal, with special attention to the following:

- For vehicles with a vehicle level sensor, perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

- ◆ Refer to
⇒ [“6.1.2 Overview - Suspension Strut, Shock Absorber and Spring, Multi-Link Suspension”, page 192](#)
- ◆ Refer to ⇒ [“5.1 Overview - Transverse Link”, page 181](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Rear Wheel Housing Liner Removing and Installing .
- Only fasten the shock absorber with the transverse link in the curb weight position.



6.3 Shock Absorber, Servicing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ Shock Absorber Set - T10001-
- ◆ Shock Absorber Set - Socket - T10001/1-
- ◆ Shock Absorber Set - Extension with Counter Holder 1 - T10001/9-
- ◆ Commercially available ring spanner insert, such as »Hazet 6630c-21«



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Nut - Shock Absorber Mount to Shock Absorber



1 - Shock Absorber

- ☐ Removing and installing. Refer to
⇒ ["6.2 Shock Absorber, Removing and Installing", page 193](#).
- ☐ Always vent and drain faulty shock absorbers before disposal.
- ☐ Removed shock absorber, checking

2 - Protective Tube

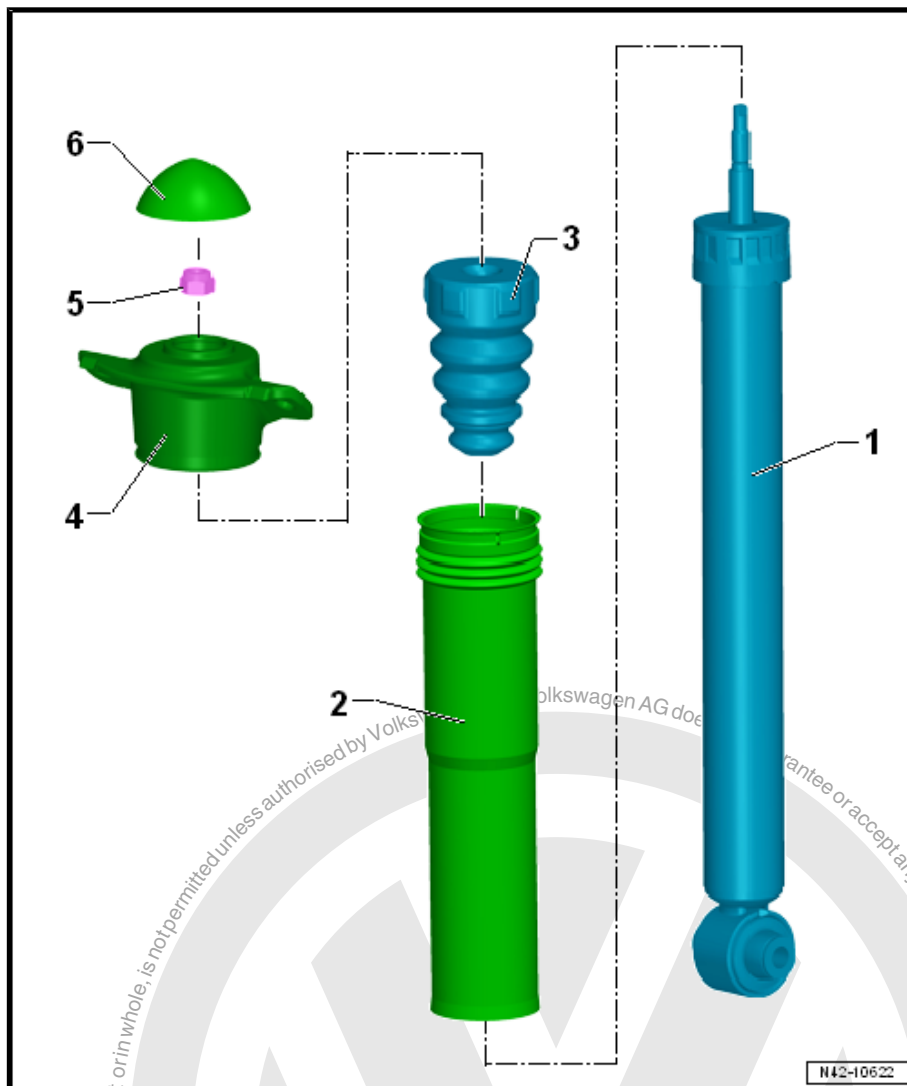
3 - Stop Buffer

4 - Shock Absorber Mount

5 - Nut

- ☐ 25 Nm
- ☐ Replace after removal
- ☐ Loosening and tightening. Refer to
⇒ [Fig. "Loosening and Tightening Bolted Connection for Shock Absorber Mount", page 201](#)

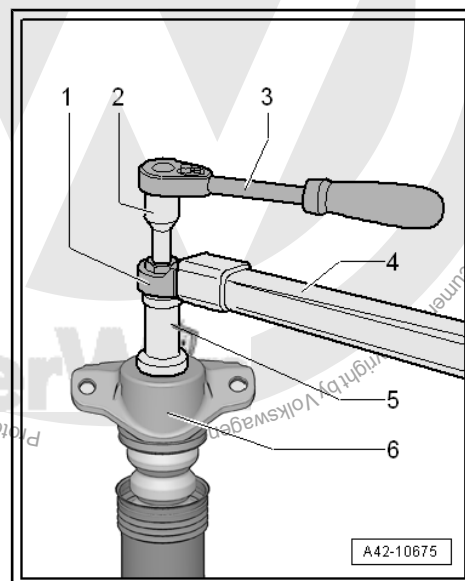
6 - Cover



Loosening and Tightening Bolted Connection for Shock Absorber Mount

- 1 - Commercially available ring spanner insert, such as "Hazet 6630c-21"
- 2 - Shock Absorber Set - Extension with Counter Holder 1 - T10001/9-
- 3 - Ratchet (commercially available)
- 4 - Torque Wrench 1331 5-50Nm - VAG1331-
- 5 - Shock Absorber Set - Socket - T10001/1-
- 6 - Shock absorber mount

Installation is the reverse of removal, with special attention to the following:





- Slide the protective pipe -1- onto the shock absorber mount -2-.
- Install and tighten the cable tie -3-.

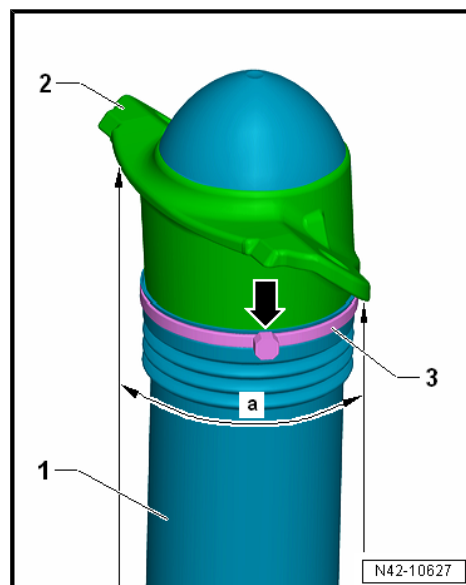


Note

The closure -arrow- of the cable tie -3- must be in area -a-.

Tightening Specifications

- ◆ Refer to ⇒ [“6.3 Shock Absorber, Servicing”, page 200](#)



6.4 Spring, Removing and Installing

⇒ [“6.4.1 Spring, Removing and Installing, Torsion Beam Axle”, page 202](#)

⇒ [“6.4.2 Spring, Removing and Installing, Multi-Link Suspension”, page 204](#)

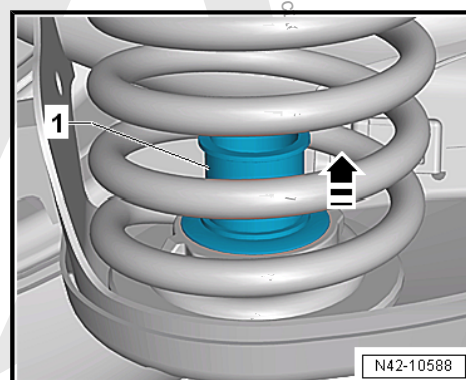
6.4.1 Spring, Removing and Installing, Torsion Beam Axle

Special tools and workshop equipment required

- ◆ -VAG1752/1-
- ◆ -VAG1752/3A-
- ◆ -VAG1752/9- , not illustrated

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the clip -1- in the direction of -arrow- until stop.





- Insert the Spring Tensioner -1-.

1 - -VAG1752/1-

2 - -VAG1752/3A-



WARNING

Make sure the coil spring is seated correctly in the - VAG1752/3A- -2- (danger of accident).

- Tension the coil spring and remove it.



Note

Use a wrench or a reversible ratchet to tighten the spring compressor.

Installing

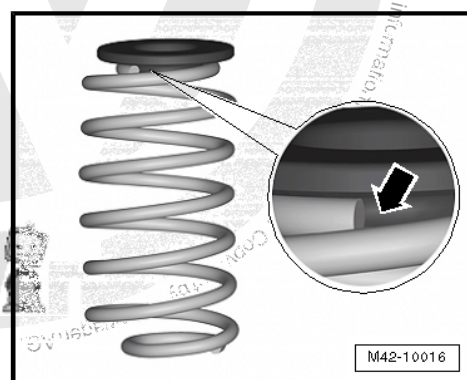
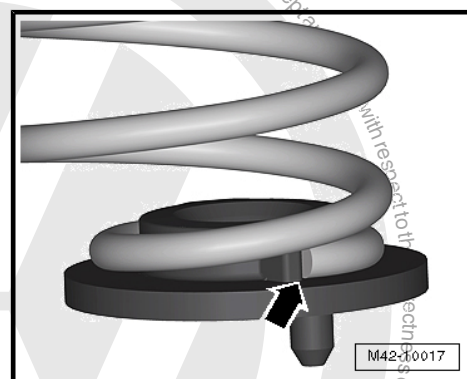
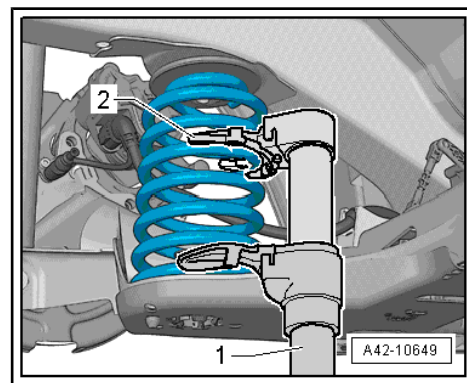
Install in reverse order of removal. Note the following:

- Make sure the washer is not damaged.
- Replace the washer if necessary.
- Install the washer on the coil spring.

The spring start -arrow- must touch the stop of lower spring support.

- Install the spring and the spring support.
- Spring seat has a pin on bottom.
- Insert this pin into the torsion beam axle opening.

- 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 .

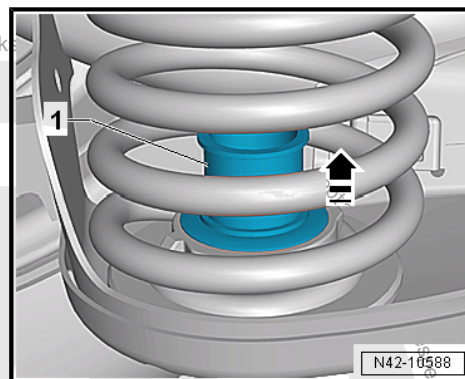




- Press in the clip -1- in the reverse direction of -arrow- until stop.

Tightening Specifications

- ♦ Refer to
⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#)



6.4.2 Spring, Removing and Installing, Multi-Link Suspension

Special tools and workshop equipment required

- ♦ Tensioning Strap - T10038-
- ♦ Torque Wrench 1332 40-200Nm - VAG1332-
- ♦ Torque Wrench 1410 - VAG1410-
- ♦ Spring Compressor Kit - VAG1752-
- ♦ Engine and Gearbox Jack - VAS6931- or Engine and Gearbox Jack - VAG1383A-

Removing

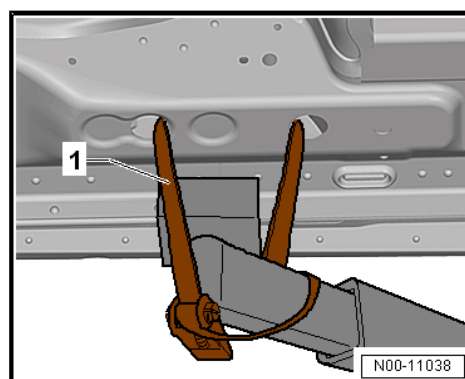
- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Secure both sides of the vehicle on the hoist arms using - T10038- .

1 - -T10038-



WARNING

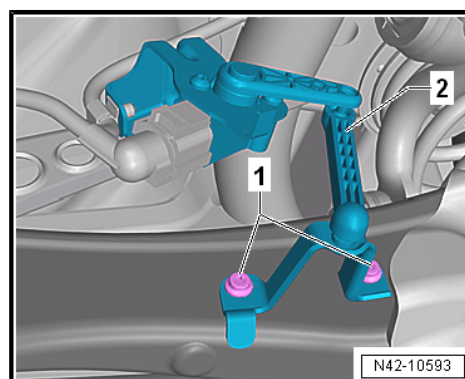
The vehicle could slide off the hoist if it is not secured.



Vehicles with Level Control System Sensor

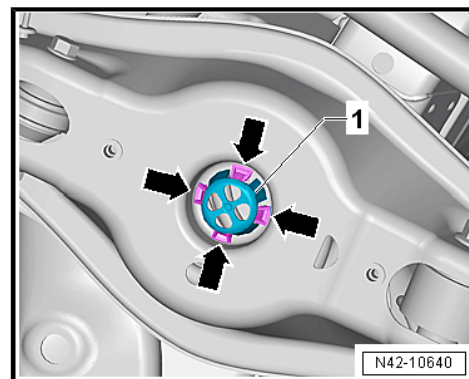
- Remove the bolts -1-.
- Remove the Left Rear Level Control System Sensor -2- bracket.

Continuation for All Vehicles.





- Press the tabs -arrows- on the assembly aid -1- inward.
- Remove the assembly aid -1- upward.
- Position the - VAS6931- or -VAG1383A- under the transverse link and push lightly upward.



- Insert the Spring Compressor -3-.

1 - -VAG1752/3A-

2 - -VAG1752/9-

3 - -VAG1752/1-

4 - Spring



WARNING

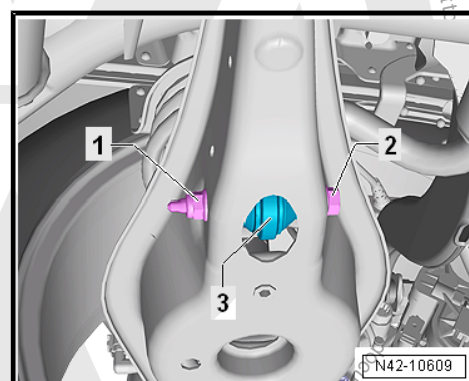
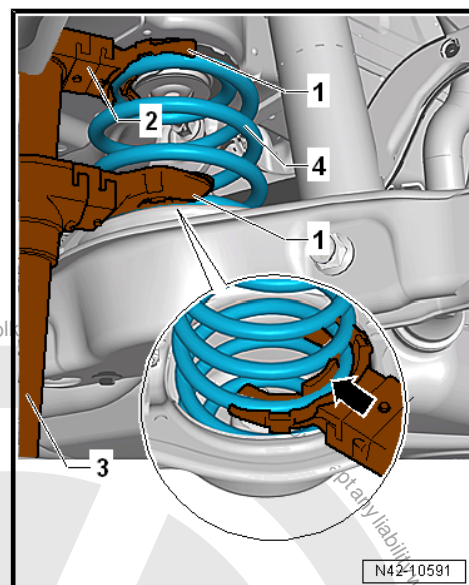
Make sure the coil spring is seated correctly in the VAG1752/3A- -arrow- (danger of accident).



Note

Use a wrench or a reversible ratchet to tighten the spring compressor.

- Tension the coil spring.
- 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 absorber threaded connection.
- Remove the nut -3- and then the bolt -4- for the wheel bearing housing threaded connection.



WARNING

Hold the -VAG1752/1- with the spring tensioned (risk of accident).

- Slowly lower the -VAS6931- or -VAG1383A- under the lower transverse link, until the -VAG1752/1- with the tensioned spring can be removed.

Installing

Install in reverse order of removal. Note the following:

- Make sure the washer is not damaged.
- Replace the washer if necessary.
- Install the washer on the coil spring.

The spring start -arrow- must touch the stop of lower spring support.

- Install the spring and the spring support.
- Spring seat has a pin on bottom.

- Insert this pin into hole of lower transverse link -arrow-.

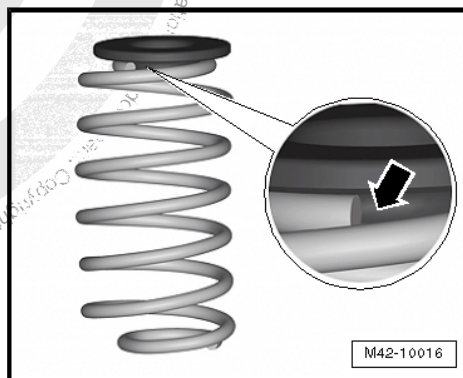
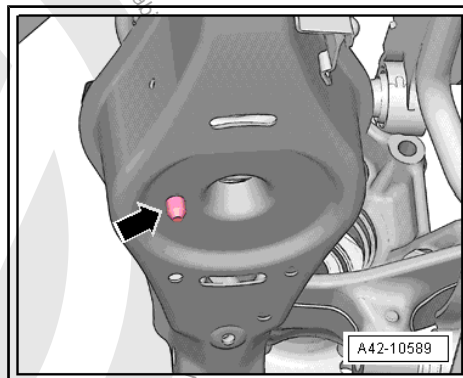
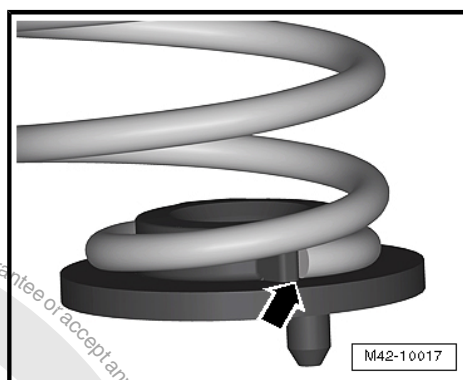
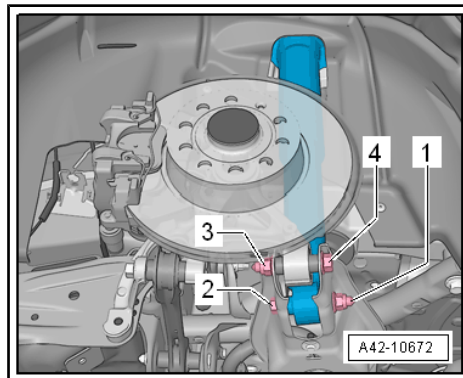
- Insert the top of the spring support into the upper spring end.
- The bead on the spring support -arrow- must fit into the coil spring correctly.



WARNING

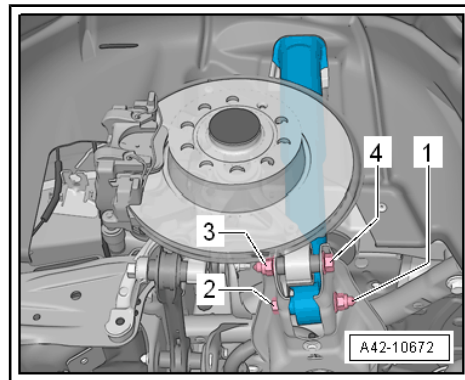
Hold the -VAG1752/1- with the spring tensioned (risk of accident).

- Push the -VAS6931- or -VAG1383A- under the transverse link upward.

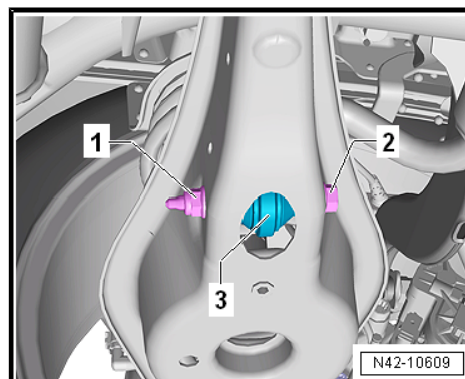




- Insert the bolt -4- for connecting the wheel bearing housing and tighten the nut -3-.
- Insert the bolt -2- for connecting the shock absorber and tighten the nut -1-.



- Insert the bolt -2- for the coupling rod -3- and tighten the nut -1-.



- Release the tension on the spring -4- while positioning the upper spring support onto tab of body.

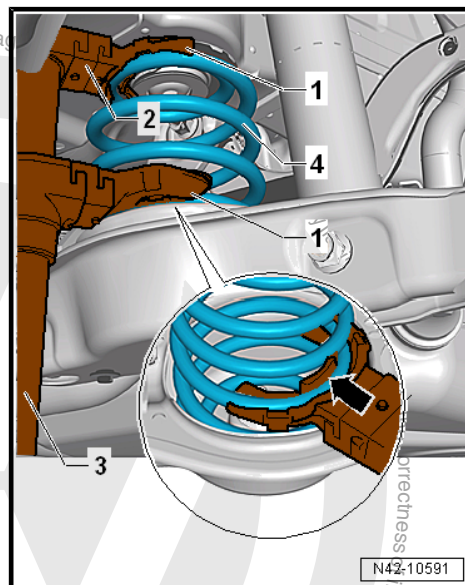
- Remove the Spring Tensioner -3-.

1 - -VAG1752/3A-

2 - -VAG1752/9-

3 - -VAG1752/1-

4 - Spring

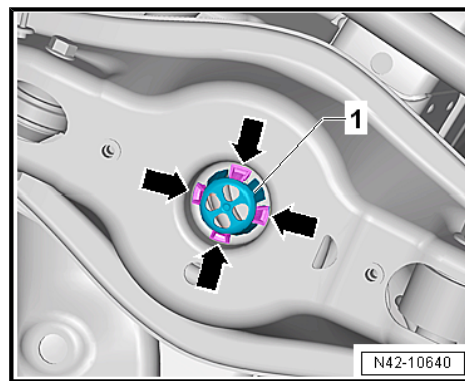




- Insert the assembly aid -1- and push downward.
- The tabs -arrows- must engage.
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.

Tightening Specifications

- ◆ Refer to ⇒ [“4.1 Overview - Stabilizer Bar”, page 177](#)
- ◆ Refer to ⇒ [“5.1 Overview - Transverse Link”, page 181](#)
- ◆ Refer to
⇒ [“6.1 Overview - Suspension Strut, Shock Absorber and Spring”, page 191](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)





7 Wheel Bearing and Trailing Arm

⇒ [“7.1 Overview - Wheel Bearing”, page 209](#)

⇒ [“7.2 Overview - Trailing Arm”, page 213](#)

⇒ [“7.3 Wheel Bearing Housing, Removing and Installing”, page 213](#)

⇒ [“7.4 Wheel Bearing Unit, Removing and Installing”, page 222](#)

⇒ [“7.5 Wheel Bearing Housing Bonded Rubber Bushing, Replacing”, page 229](#)

⇒ [“7.6 Trailing Arm with Mounting Bracket, Removing and Installing”, page 234](#)

⇒ [“7.7 Trailing Arm, Servicing”, page 237](#)

7.1 Overview - Wheel Bearing

⇒ [“7.1.1 Overview - Wheel Bearing, Torsion Beam Axle”, page 209](#)

⇒ [“7.1.2 Overview - Wheel Bearing, Multi-Link Suspension”, page 211](#)

⇒ [“7.1.3 Overview - Wheel Bearing, Multi-Link Suspension, AWD”, page 212](#)

7.1.1 Overview - Wheel Bearing, Torsion Beam Axle





1 - Dust Cap

- ☐ Replace after removal
- ☐ Removing and installing. Refer to
⇒ ["7.4 Wheel Bearing Unit, Removing and Installing", page 222](#)
- ☐ A perfect seal is only achieved using a new dust cap.

2 - Bolt

- ☐ 200 Nm +90°
- ☐ Replace after removal

3 - Wheel Bearing Unit

- ☐ Removing and installing. Refer to
⇒ ["7.4 Wheel Bearing Unit, Removing and Installing", page 222](#)
- ☐ The wheel bearing and wheel hub are installed together in a housing.
- ☐ The wheel bearing unit is maintenance free and has zero play. Adjusting or servicing is not possible!

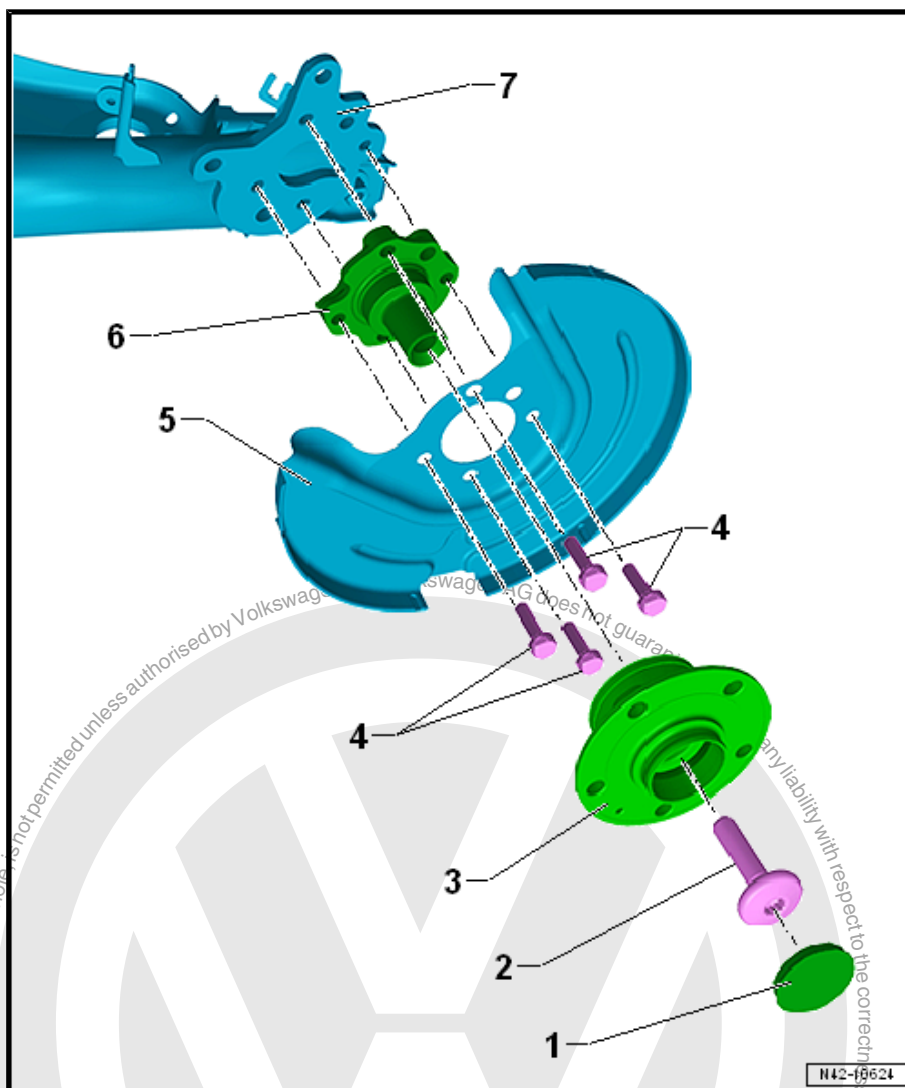
4 - Bolt

- ☐ 30 Nm + 90°
- ☐ Replace after removal

5 - Heat Shield

6 - Stub Axle

7 - Axle Beam





7.1.2 Overview - Wheel Bearing, Multi-Link Suspension

1 - Wheel Bearing Housing

- ❑ Removing and installing. Refer to
⇒ ["7.3 Wheel Bearing Housing; Removing and Installing", page 213](#)

2 - Bonded Rubber Bushing

- ❑ Replacing. Refer to
⇒ ["7.5 Wheel Bearing Housing Bonded Rubber Bushing; Replacing", page 229](#)

3 - Bolt

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

4 - Brake Rotor

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

5 - Dust Cap

- ❑ Replace after removal
- ❑ Removing and installing. Refer to
⇒ ["7.4 Wheel Bearing Unit; Removing and Installing", page 222](#)
- ❑ A perfect seal is only achieved using a new dust cap.

6 - Bolt

- ❑ 200 Nm +90°
- ❑ Replace after removal
- ❑ Clean the threads in the stub axle with a thread tap first.

7 - Wheel Bearing Unit

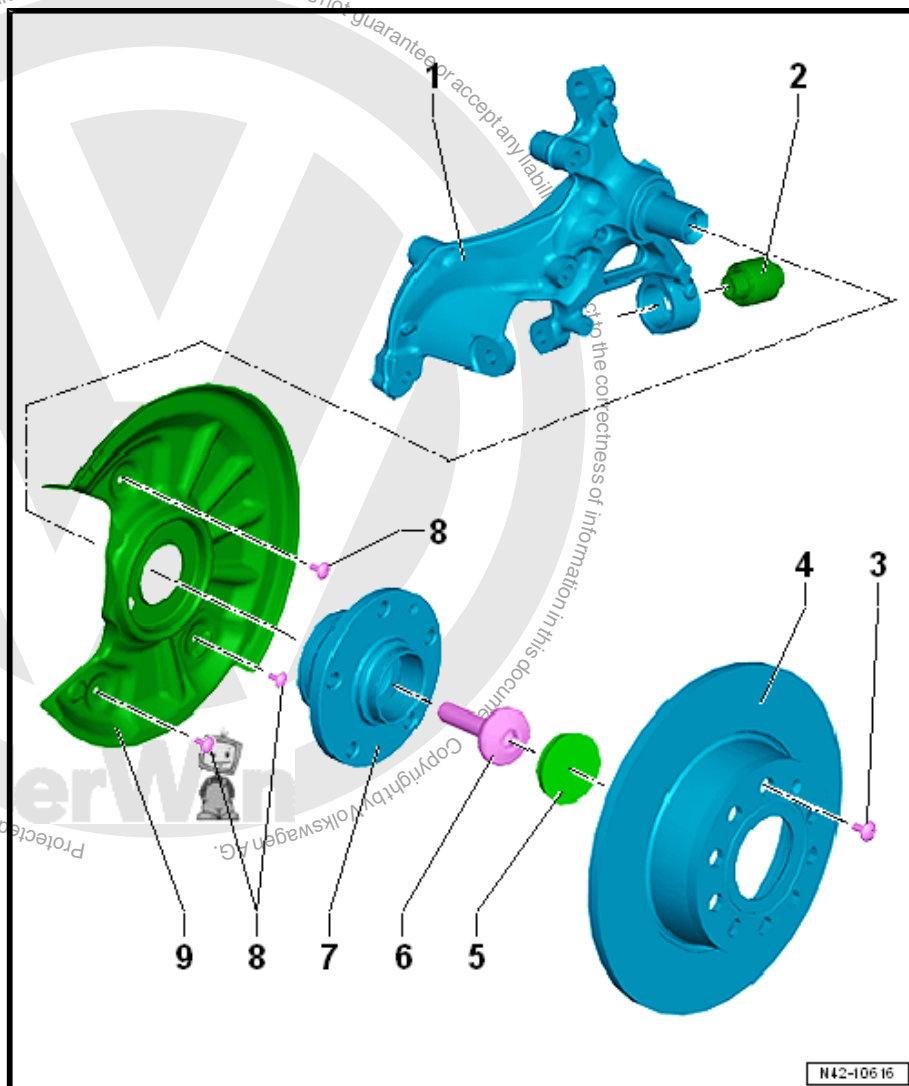
- ❑ Removing and installing. Refer to ⇒ ["7.4 Wheel Bearing Unit; Removing and Installing", page 222](#)
- ❑ The wheel bearing and wheel hub are installed together in a housing.
- ❑ The wheel bearing unit is maintenance free and has zero play. Adjusting or servicing is not possible!

8 - Bolt

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

9 - Heat Shield

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



7.1.3 Overview - Wheel Bearing, Multi-Link Suspension, AWD

1 - Drive Axle

2 - Bolt

- ☐ 70 Nm +90°
- ☐ Replace after removal

3 - Wheel Bearing Housing

- ☐ Removing and installing. Refer to
⇒ ["7.3.2 Wheel Bearing Housing, Removing and Installing, Multi-Link Suspension, AWD", page 217](#).

4 - Bonded Rubber Bushing

- ☐ Replacing. Refer to
⇒ ["7.5 Wheel Bearing Housing Bonded Rubber Bushing, Replacing", page 229](#)

5 - Brake rotor

- ☐ Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .

6 - Bolt

- ☐ Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .

7 - Bolt

- ☐ 200 Nm +180°
- ☐ Replace after removal
- ☐ Loosening and tightening. Refer to ⇒ ["8.2 Drive Axle Threaded Connection, Loosening and Tightening", page 241](#) .
- ☐ Clean the threads in the stub axle with a thread tap first.

8 - Wheel Bearing Unit

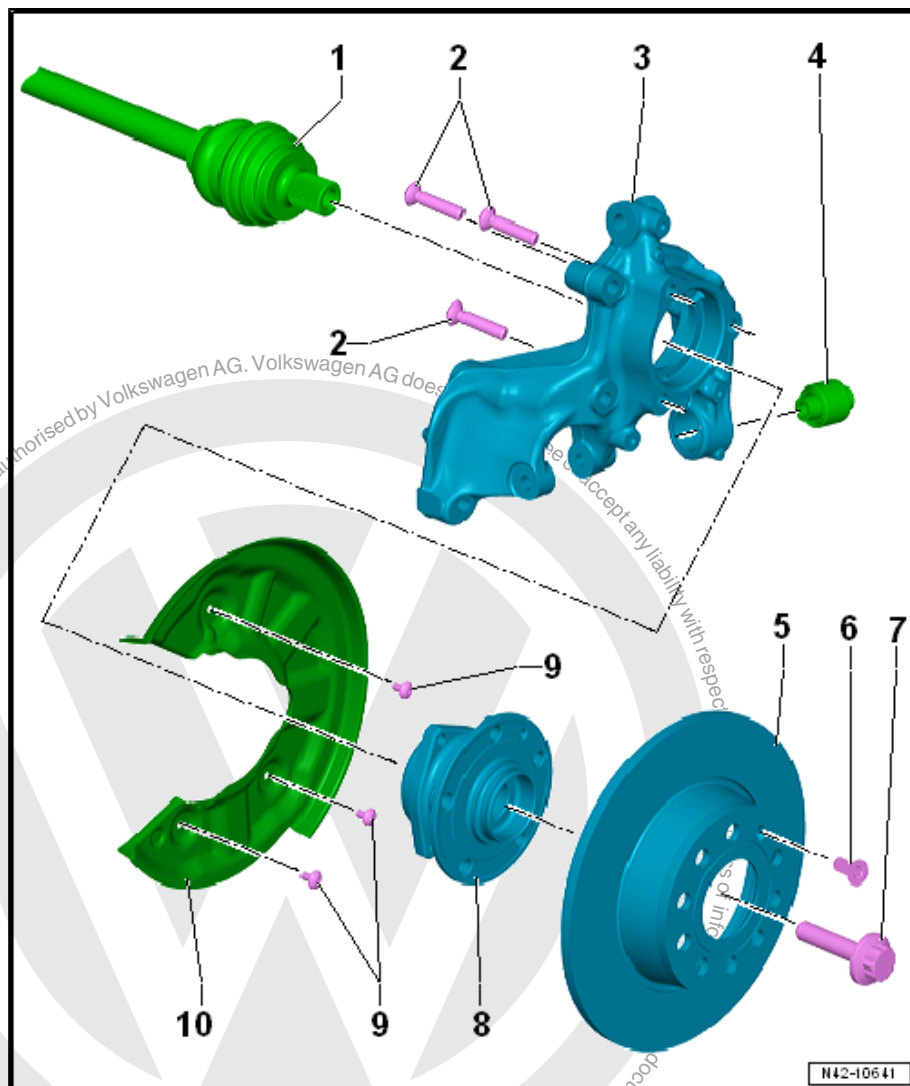
- ☐ Removing and installing. Refer to
⇒ ["7.4.3 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension, AWD", page 227](#) .
- ☐ The wheel bearing and wheel hub are installed together in a housing.
- ☐ The wheel bearing unit is maintenance free and has zero play. Adjusting or servicing is not possible!

9 - Bolt

- ☐ Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .

10 - Heat Shield

- ☐ Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .





7.2 Overview - Trailing Arm

1 - Cover

2 - Bolt

- ☐ 50 Nm + 45°
- ☐ Replace after removal

3 - Mounting Bracket

4 - Bolt

- ☐ 90 Nm + 90°
- ☐ Replace after removal

5 - Rivet

- ☐ Replace after removal

6 - Bracket

- ☐ For the rear brake cable

7 - Bolt

- ☐ 70 Nm + 90°
- ☐ Replace after removal
- ☐ M14 x 1.5

8 - Bolt

- ☐ 70 Nm + 90°
- ☐ Replace after removal
- ☐ M12 x 1.5

9 - Wheel Bearing Housing

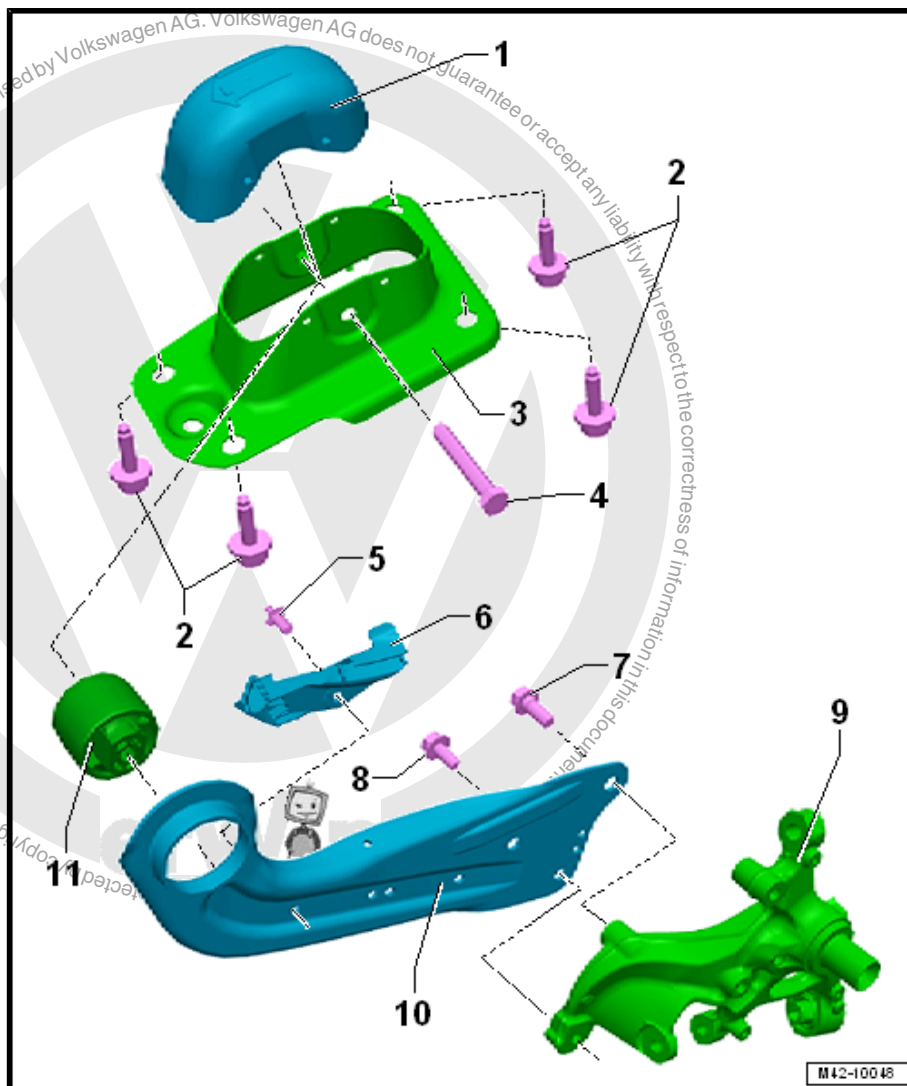
- ☐ There are different versions. Refer to the Parts Catalog.

10 - Trailing Arm

- ☐ Removing and installing. Refer to
⇒ [“7.6 Trailing Arm with Mounting Bracket, Removing and Installing”, page 234](#)

11 - Bonded Rubber Bushing

- ☐ Note the installation position
- ☐ Replacing. Refer to ⇒ [“7.7 Trailing Arm, Servicing”, page 237](#)



7.3 Wheel Bearing Housing, Removing and Installing

⇒ [“7.3.1 Wheel Bearing Housing, Removing and Installing, Multi-Link Suspension, FWD”, page 213](#)

⇒ [“7.3.2 Wheel Bearing Housing, Removing and Installing, Multi-Link Suspension, AWD”, page 217](#)

7.3.1 Wheel Bearing Housing, Removing and Installing, Multi-Link Suspension, FWD

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931-

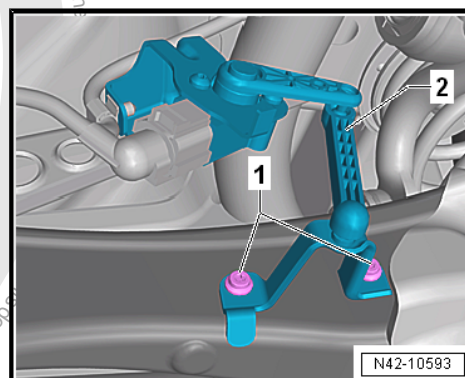


Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the wheel bearing unit. Refer to ➤ ["7.4 Wheel Bearing Unit, Removing and Installing", page 222](#).
- Remove the heat shield. Refer to ➤ Brake System; Rep. Gr. 46 ; Overview - Rear Brakes .

Vehicles with Level Control System Sensor

- Remove the spring. Refer to ➤ ["6.4 Spring, Removing and Installing", page 202](#).
- Remove the bolts -1-.
- Remove the Left Rear Level Control System Sensor -2- bracket.

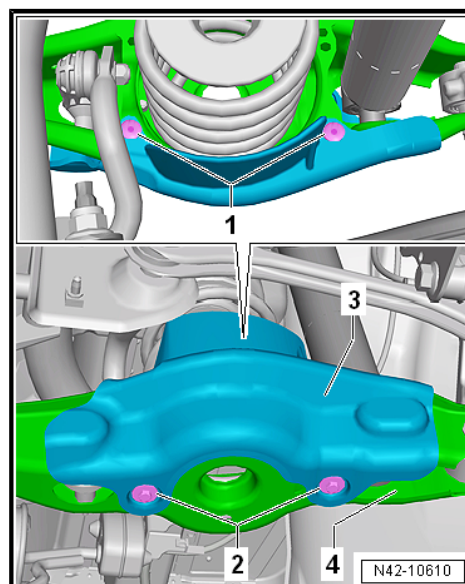


Vehicles with Stone Chip Protection

- Remove the expanding rivets -1-.
- Remove the bolts -2- for the stone chip protection -3-.

Continuation for all Vehicles

- Disconnect the connector from the ABS speed sensor.



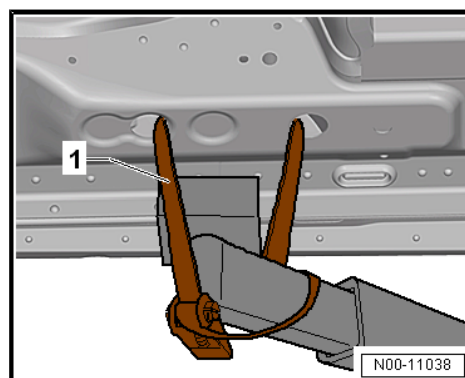
- Secure both sides of the vehicle on the hoist arms using - T10038- .

1 - -T10038-



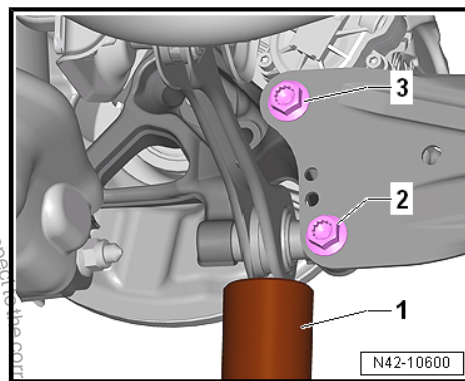
WARNING

The vehicle could slide off the hoist if it is not secured.

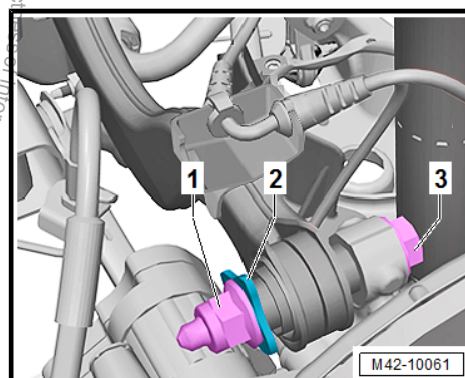




- Place the -VAS6931- -1- under the tie rod and push lightly upward.
- Remove the bolts -2 and 3- one after the other.
- Remove the -VAS6931- -1- from under the tie rod.



- Unscrew the nut -1- and remove the washer -2-.
- Remove the bolt -3-.

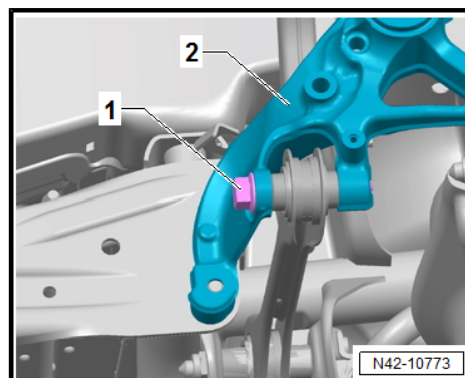


- Remove the bolt -1-.
- Remove the wheel bearing housing -2-.

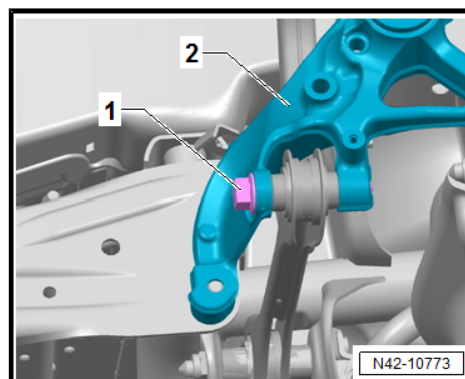
Installing

Install in reverse order of removal while noting the following:

Complete the following steps in the exact order specified.

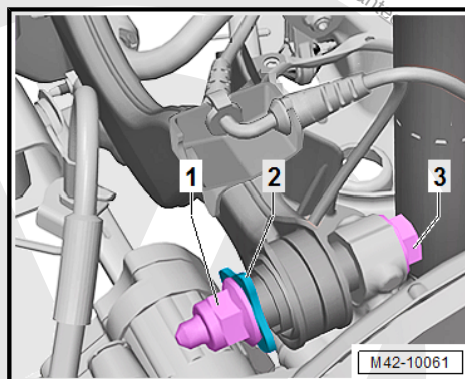


- Insert the wheel bearing housing -2-.
- Insert the bolt -1- and tighten hand-tight.



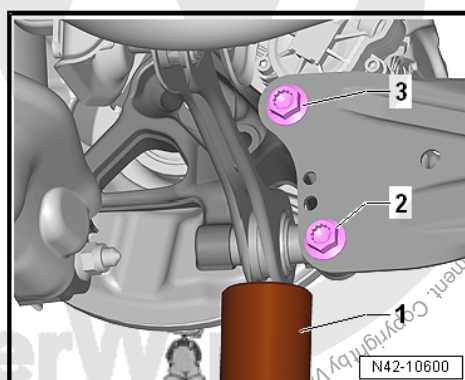


- Insert the bolt -3-.
- Slide on the washer -2-.
- Tighten the nut -1- hand-tight.

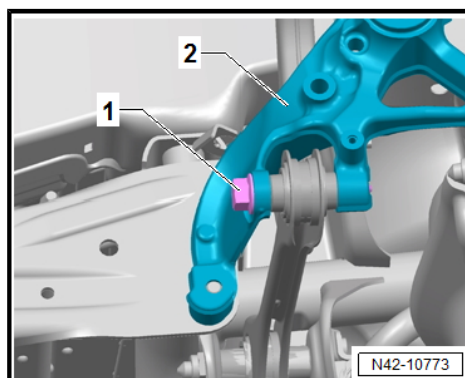


- Place the -VAS6931- -1- under the tie rod and push lightly upward.
- Install the bolts -2- and -3- by hand.
- Remove the -VAS6931- -1- from under the tie rod.
- Install the heat shield. Refer to ⇒ Brake System; Rep. Gr. 46 ; Overview - Rear Brakes .
- Install the wheel bearing unit. Refer to ⇒ ["7.4 Wheel Bearing Unit, Removing and Installing"](#), page 222 .

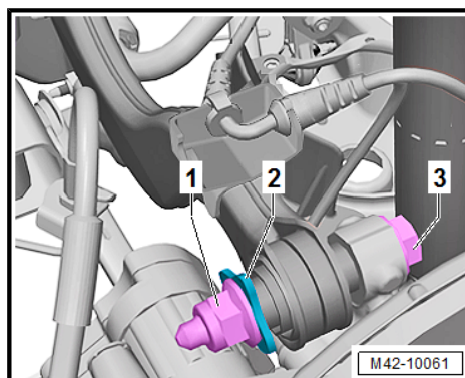
Only fasten the threaded connections on the wheel bearing housing in the curb weight position.



- Tighten the bolt -1-.



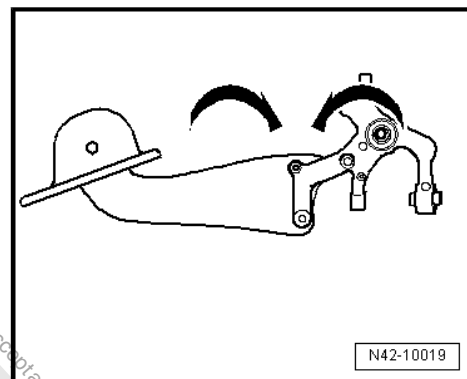
- Tighten the nut -1-.
- Remove the -VAS6931- with the -T10149- from the wheel hub.





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-.

- Install the spring. Refer to
⇒ [“6.4 Spring, Removing and Installing”, page 202](#)

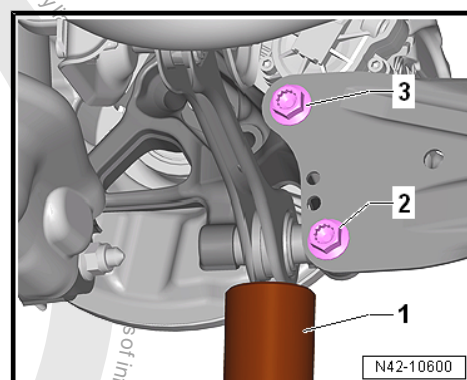


- Tighten the bolts -2 and 3-.

Install in reverse order of removal, note the following:

Tightening Specifications

- ◆ Refer to
⇒ [“7.1.2 Overview - Wheel Bearing, Multi-Link Suspension”, page 211](#)
- ◆ Refer to
⇒ [“6.1.2 Overview - Suspension Strut, Shock Absorber and Spring, Multi-Link Suspension”, page 192](#)
- ◆ Refer to ⇒ [“7.2 Overview - Trailing Arm”, page 213](#)
- ◆ Refer to ⇒ [“5.2 Overview - Tie Rod”, page 184](#)
- ◆ Refer to
⇒ [“2.2 Overview - Rear Level Control System Sensor”, page 278](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Bolts for heat shield, brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Overview - Rear Brakes .
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .



7.3.2 Wheel Bearing Housing, Removing and Installing, Multi-Link Suspension, AWD

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931-

Removing

- Loosen the outer drive axle threaded connection. Refer to
⇒ [“8.2 Drive Axle Threaded Connection, Loosening and Tightening”, page 241](#) .



Caution

The wheel bearing must not be under load when the drive axle threaded connection on the wheel side 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.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

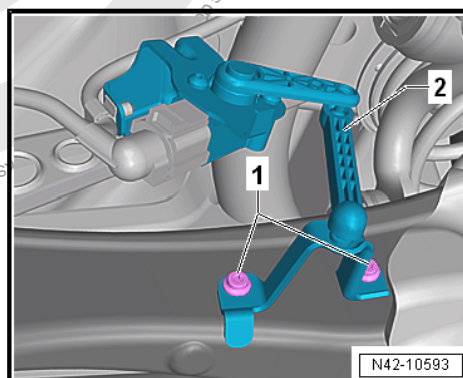
Vehicles without a drive axle must not be moved, otherwise the wheel bearing will be damaged. If a vehicle must be moved, be sure to note the following:

- ◆ *Install an outer joint in place of the drive axle.*
- ◆ *Tighten the outer joint to 120 Nm.*

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the wheel bearing unit. Refer to
⇒ ["7.4 Wheel Bearing Unit, Removing and Installing"](#),
[page 222](#) .
- Remove the heat shield. Refer to ⇒ Brake System; Rep. Gr.
46 ; Overview - Rear Brakes .

Vehicles with Level Control System Sensor

- Remove the spring. Refer to
⇒ ["6.4 Spring, Removing and Installing"](#), [page 202](#) .
- Remove the bolts -1-.
- Remove the Left Rear Level Control System Sensor -2- bracket.

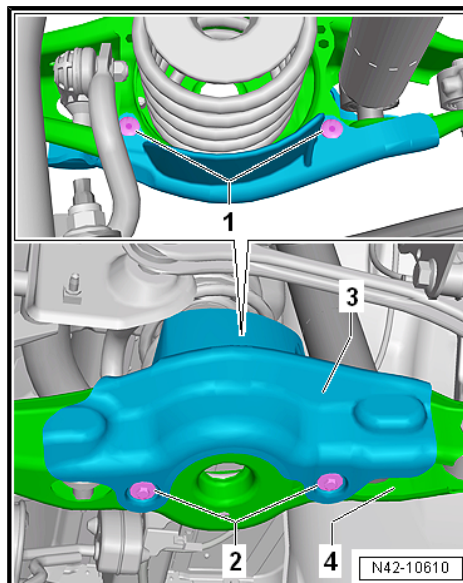


Vehicles with Stone Chip Protection

- Remove the expanding rivets -1-.
- Remove the bolts -2- for the stone chip protection -3-.

Continuation for all Vehicles

- Disconnect the connector from the ABS speed sensor.





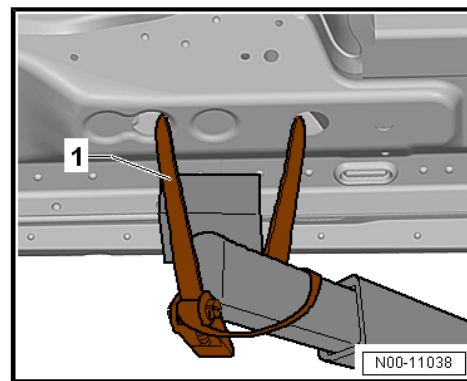
- Secure both sides of the vehicle on the hoist arms using -T10038- .

1 - -T10038-

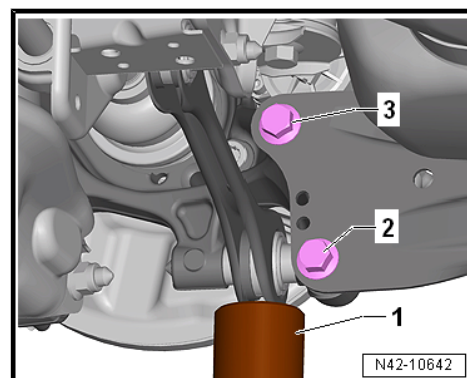


WARNING

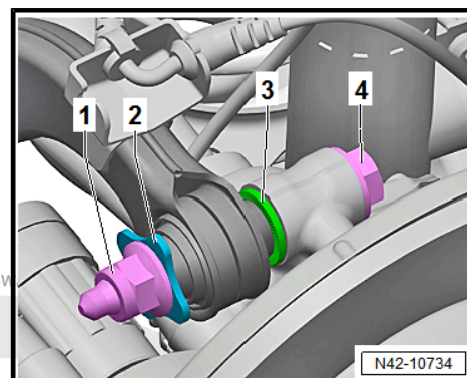
The vehicle could slide off the hoist if it is not secured.



- Place the -VAS6931- -1- under the tie rod and push lightly upward.
- Remove the bolts -2- and -3- one after the other.



- Remove the -VAS6931- -1- from under the tie rod.
- Remove the bolt -4-.
- Remove the washer -3-.

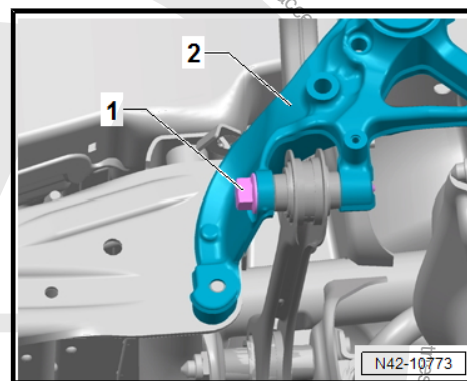


- Remove the bolt -1-.
- Remove the wheel bearing housing -2-.

Installing

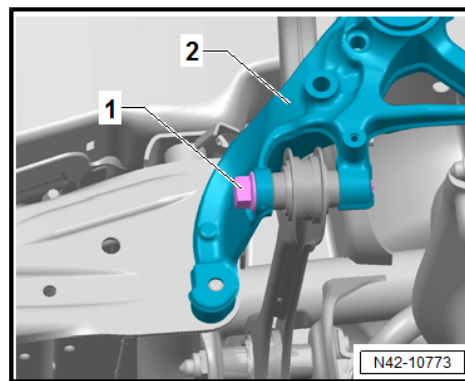
Install in reverse order of removal while noting the following:

Complete the following steps in the exact order specified.

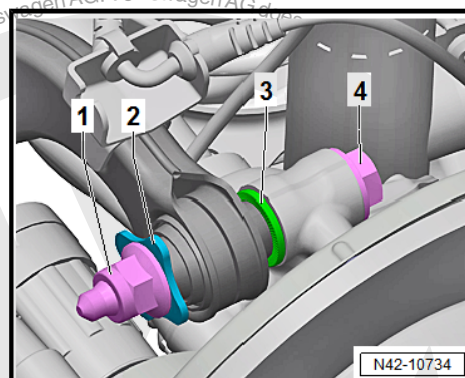




- Insert the wheel bearing housing -2-.
- Insert the bolt -1- and tighten hand-tight.



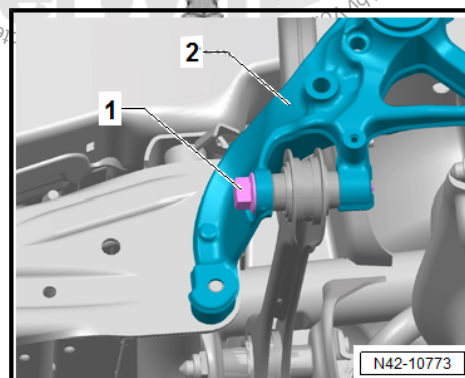
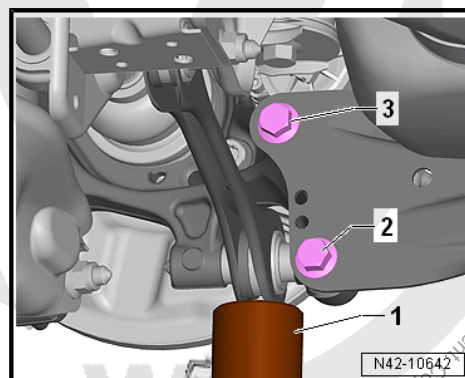
- Insert the bolt -4- with the washer -3-.
- Slide on the washer -2-.
- Tighten the nut -1- hand-tight.



- Place the -VAS6931- -1- under the tie rod and push lightly upward.
- Install the bolts -2 and 3- by hand.
- Remove the -VAS6931- -1- from under the tie rod.
- Install the wheel bearing unit. Refer to [⇒ "7.4 Wheel Bearing Unit, Removing and Installing", page 222](#).
- Install the heat shield. Refer to ⇒ Brake System; Rep. Gr. 46 ; Overview - Rear Brakes .

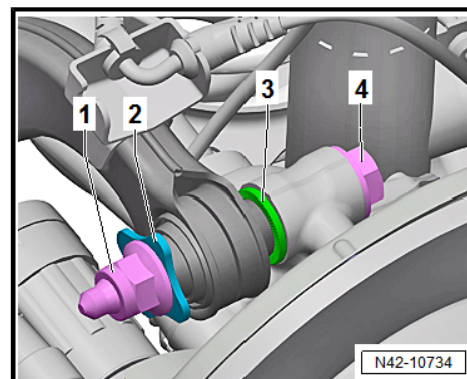
Only fasten the threaded connections on the wheel bearing housing in the curb weight position.

- Tighten the bolt -1-.



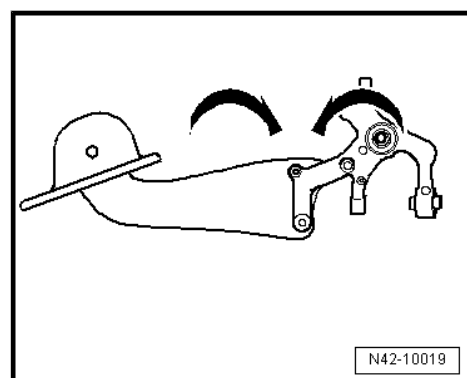


- Tighten the nut -1-.
- Remove the -VAS6931- with the -T10149- from the wheel hub.



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-.

- Install the coil spring. Refer to
⇒ ["6.4 Spring, Removing and Installing", page 202](#) .

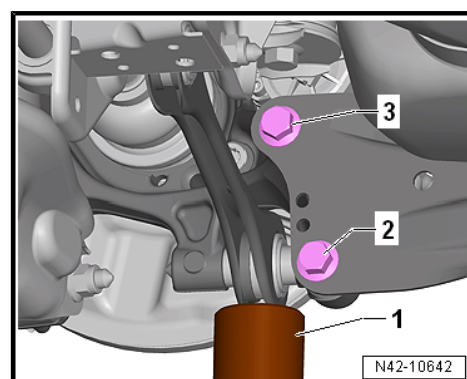


- Tighten the bolts -2 and 3-.

Install in reverse order of removal, note the following:

Tightening Specifications

- ◆ Refer to
⇒ ["7.1.3 Overview - Wheel Bearing, Multi-Link Suspension, AWD", page 212](#)
- ◆ Refer to
⇒ ["6.1.2 Overview - Suspension Strut, Shock Absorber and Spring, Multi-Link Suspension", page 192](#)
- ◆ Refer to ⇒ ["7.2 Overview - Trailing Arm", page 213](#)
- ◆ Refer to ⇒ ["5.2 Overview - Tie Rod", page 184](#)
- ◆ Refer to
⇒ ["8.2 Drive Axle Threaded Connection, Loosening and Tightening", page 241](#)
- ◆ Refer to
⇒ ["2.2 Overview - Rear Level Control System Sensor", page 278](#)
- ◆ Refer to
⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#)
- ◆ Bolts for heat shield, brake caliper and brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46 ; Overview - Rear Brakes
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester ⇒ Vehicle diagnostic tester.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .





7.4 Wheel Bearing Unit, Removing and Installing

⇒ [“7.4.1 Wheel Bearing Unit, Removing and Installing, Torsion Beam Axle”, page 222](#)

⇒ [“7.4.2 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension”, page 225](#)

⇒ [“7.4.3 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension, AWD”, page 227](#)

7.4.1 Wheel Bearing Unit, Removing and Installing, Torsion Beam Axle

Special tools and workshop equipment required

- ◆ Seal Installer - Camshaft Installer Kit - Sleeve - 3241/4-
- ◆ Puller - Grease Cap - VW637/2-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Socket - XZN 18mm - T10162A-
- ◆ Torque Wrench 1410 - VAG1410-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolt - Wheel Bearing Unit to Wheel Bearing Housing
- ◆ Bolt - Wheel Bearing Housing to Brake Carrier

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove wheel.
- Remove the brake carrier with the brake caliper and tie them to the body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .



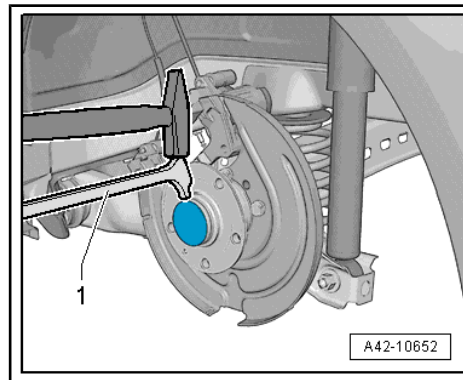
Note

Suspend brake caliper from body.

- Remove the brake rotor bolt and the brake rotor.

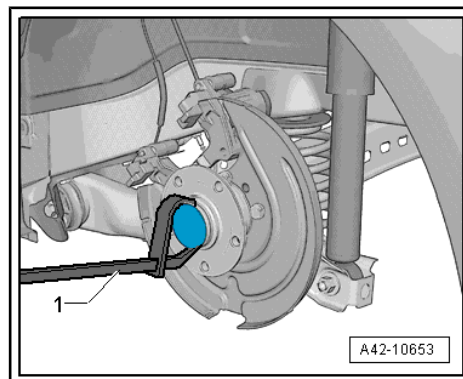


- Loosen dust cap from seat by tapping lightly on claw of Puller
- Grease Cap - VW637/2- -1-



- Press of dust cap.

- 1 - Puller - Grease Cap - VW637/2-



- Remove bolt -1- using Socket - Xzn 18mm - T10162A- -2-.



Caution

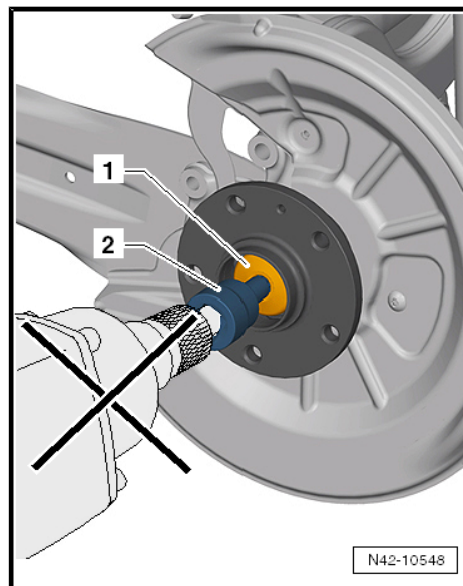
Never use an impact wrench when removing the bolt -1- using the Socket - Xzn 18mm - T10162A- -2-!

- Remove the wheel bearing unit from the axle stub.



Caution

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





The wheel bearing -1- must always face up.

- Always set the wheel bearing unit down on the wheel hub -2-.

Installing

Install in reverse order of removal. Note the following:

- Carefully slide the wheel hubs/wheel bearing unit onto the axle stub.



Caution

Make sure that the wheel hubs/wheel bearing unit does not tilt!

- Install the new bolt and tighten it to the tightening specification.



Note

- ◆ *First tighten the bolt to the specification using the torque wrench.*
- ◆ *Using a rigid wrench when tightening additionally.*



Caution

Never use an impact wrench when tightening the bolt -1- using the Socket - Xzn 18mm - T10162A- -2-!

- Install a new dust cap.

1 - Sleeve - 3241/4-

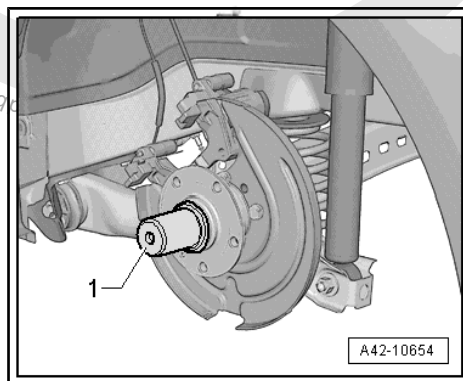
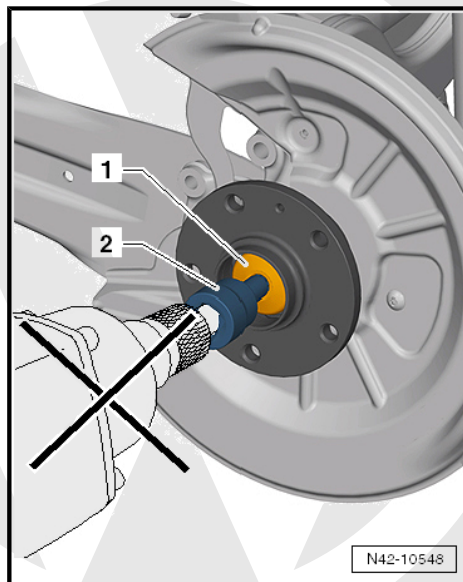
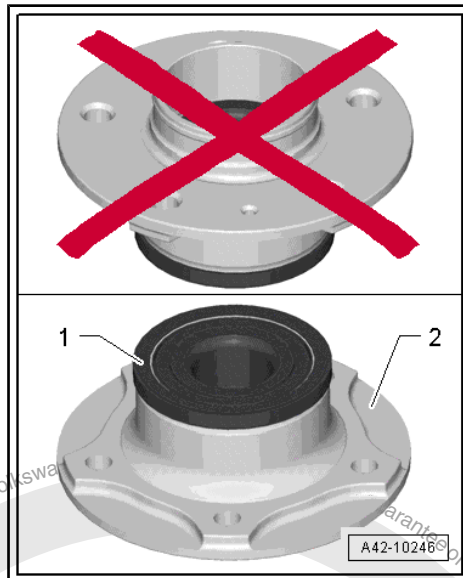


Note

- ◆ *Always replace dust caps.*
- ◆ *Damaged dust caps allow moisture to enter. Therefore, always use the tool shown.*

Tightening Specifications

- ◆ Refer to
⇒ [“7.1.1 Overview - Wheel Bearing, Torsion Beam Axle”, page 209](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .





7.4.2 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension

Special tools and workshop equipment required

- ◆ Seal Installer - Camshaft Installer Kit - Sleeve - 3241/4-
- ◆ Puller - Grease Cap - VW637/2-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Socket - XZN 18mm - T10162A-
- ◆ Torque Wrench 1410 - VAG1410-



Caution

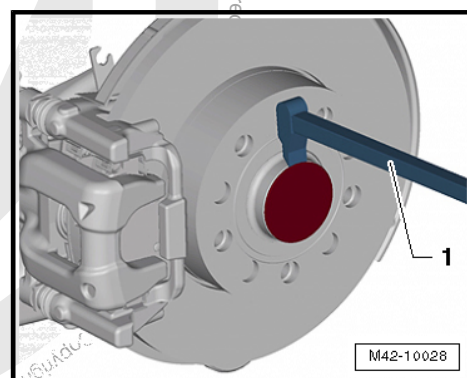
This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolt - Wheel Bearing Unit to Wheel Bearing Housing
- ◆ Bolt - Wheel Bearing Housing to Brake Carrier

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove wheel.
- Loosen dust cap from seat by tapping lightly on claw of Puller - Grease Cap - VW637/2- -1-.



- Press of dust cap.

1 - Puller - Grease Cap - VW637/2-

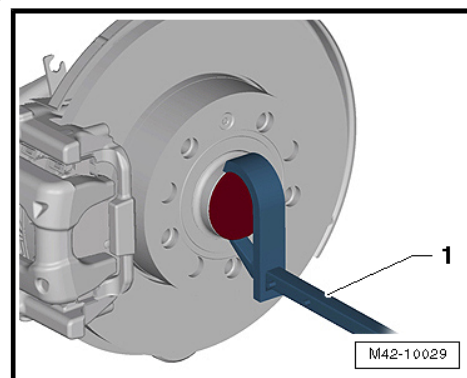
- Remove the brake carrier with the brake caliper and tie them to the body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .



Note

Suspend brake caliper from body.

- Remove the brake rotor bolt and the brake rotor.





- Remove bolt -1- using Socket - Xzn 18mm - T10162A- -2-.



Caution

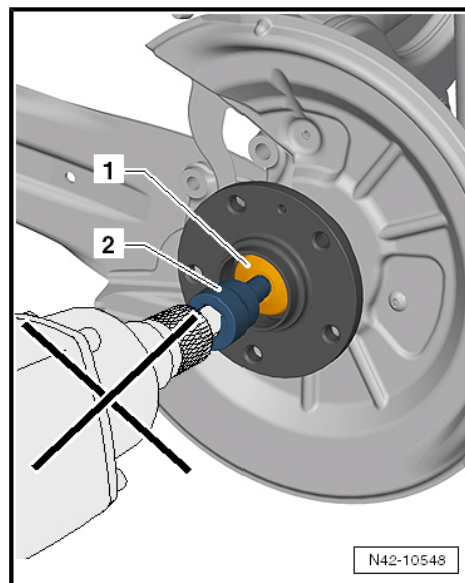
Never use an impact wrench when removing the bolt -1- using the Socket - Xzn 18mm - T10162A- -2-!

- Remove the wheel bearing unit from the axle stub.



Caution

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

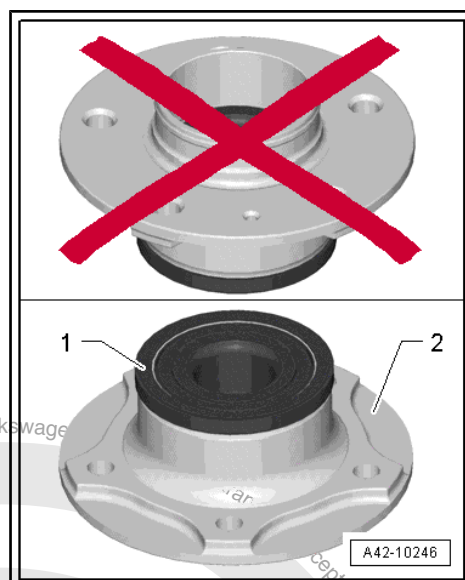


The wheel bearing -1- must always face up.

- Always set the wheel bearing unit down on the wheel hub -2-.

Installing

Install in reverse order of removal. Note the following:



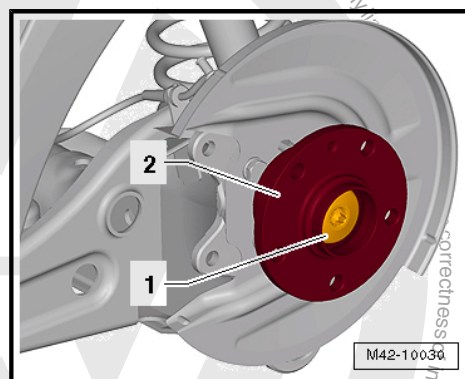
- Carefully install the wheel hub/wheel bearing unit -2- onto the stub axle.



Caution

Make sure that the wheel hubs/wheel bearing unit does not tilt!

- Install the new bolt -1- and tighten it to the tightening specification.





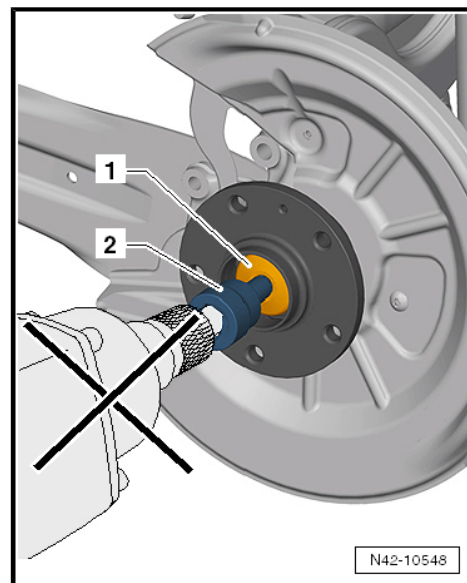
Note

- ◆ First tighten the bolt to the specification using the torque wrench.
- ◆ Using a rigid wrench when tightening additionally.



Caution

Never use an impact wrench when tightening the bolt -1- using the Socket - Xzn 18mm - T10162A- -2-!



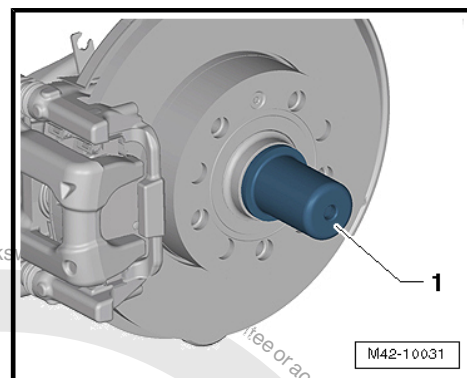
– Install a new dust cap.

1 - Sleeve - 3241/4-



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 Overview - Wheel Bearing Multi-Link Suspension”, page 211](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .

7.4.3 Wheel Bearing Unit, Removing and Installing, Multi-Link Suspension, AWD

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Torque Wrench 1410 - VAG1410-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolt - Wheel Bearing Housing to Brake Caliper



Removing

- Loosen the outer drive axle threaded connection. Refer to ⇒ [“8.2 Drive Axle Threaded Connection, Loosening and Tightening”, page 241](#) .
- Remove coil spring. Refer to ⇒ [“6.4 Spring, Removing and Installing”, page 202](#) .
- Remove the drive axle. Refer to ⇒ [“8.3 Drive Axle, Removing and Installing”, page 242](#) .
- Remove the brake carrier with the brake caliper and tie them to the body with wire. Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .



Note

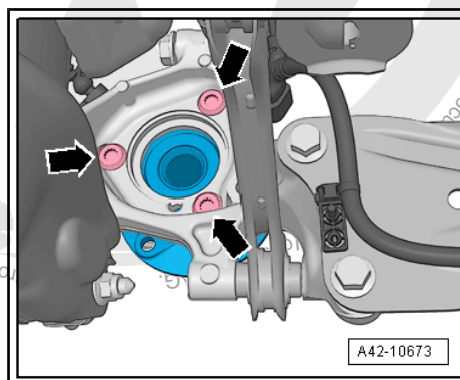
Do not let the brake caliper hang on the brake hose - risk of damage.

- Remove the brake rotor bolt and the brake rotor.
- Remove the bolts -arrows-.
- Remove the wheel bearing unit from the wheel bearing housing.

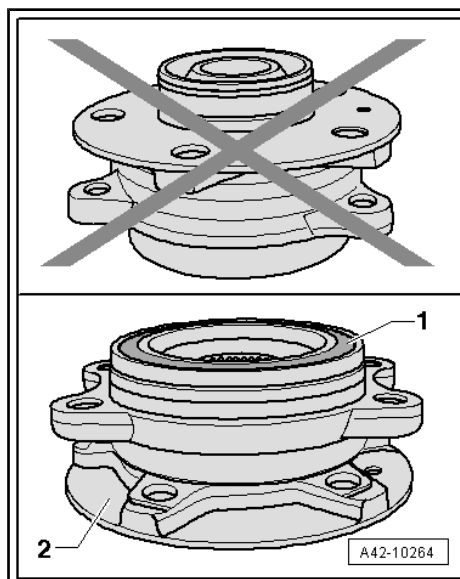


Caution

- *Avoid contaminating with dirt and damaging the seal when setting down/storing.*



- The wheel bearing -1- must always face up.
- Always set the wheel bearing unit down on the wheel hub -2-.





- Never reach into the inside when lifting the wheel bearing.
- Hold the wheel bearing only on the outside.

The same procedure also applies to the wheel bearing without a wheel hub.

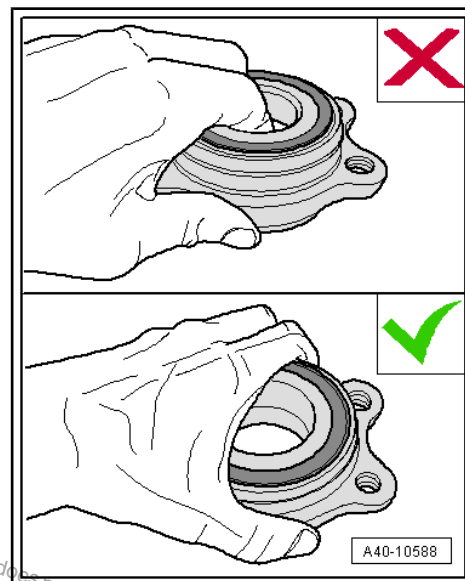
Installing

Install in reverse order of removal. Note the following:

- Only fasten the bolted connections on the wheel bearing housing in the curb weight position.

Tightening Specifications

- ◆ Refer to
⇒ [“7.1.3 Overview - Wheel Bearing, Multi-Link Suspension, AWD”, page 212](#)
- ◆ Refer to
⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- ◆ Refer to
⇒ [“8.2 Drive Axle Threaded Connection, Loosening and Tightening”, page 241](#)
- ◆ Refer to ⇒ Brake System; Rep. Gr. 46 ; Rear Brakes; Overview - Rear Brakes .
- Evaluating Need for Axle Alignment. Refer to the table.



7.5 Wheel Bearing Housing Bonded Rubber Bushing, Replacing

⇒ [“7.5.1 Wheel Bearing Housing Bonded Rubber Bushing, Replacing, FWD”, page 229](#)

⇒ [“7.5.2 Wheel Bearing Housing Bonded Rubber Bushing, Replacing, AWD”, page 231](#)

7.5.1 Wheel Bearing Housing Bonded Rubber Bushing, Replacing, FWD

Special tools and workshop equipment required

- ◆ Subframe Bushing Tool Kit - 3301-
- ◆ Bearing Installer - Control Arm - 3346-
- ◆ Bearing Installer - Carrier Bearing - 3350-
- ◆ Vibration Damper Assembly Tool - T10356-
- ◆ Torque Adapter - 3390-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332

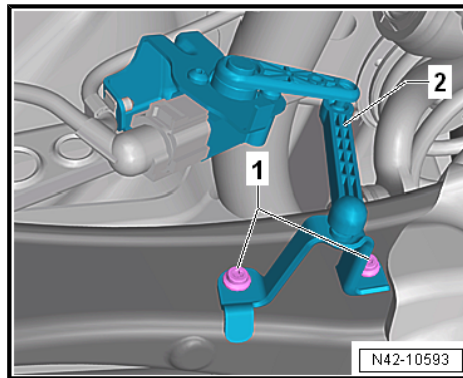
Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.



Vehicles with Level Control System Sensor

- Remove the bolts -1-.
- Remove the Left Rear Level Control System Sensor -2- bracket.

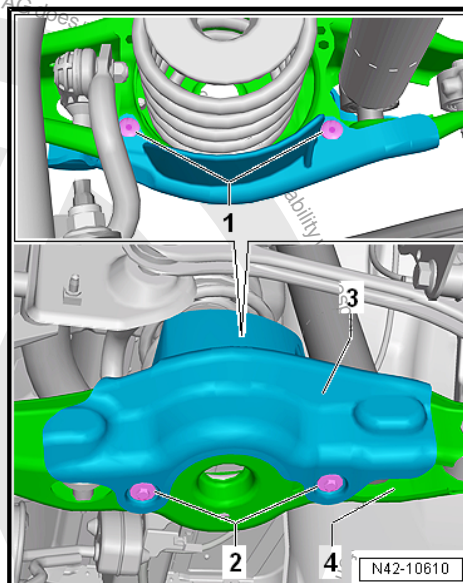


Vehicles with Stone Chip Protection

- Remove the expanding rivets -1-.
- Remove the bolts -2- for the stone chip protection -3-.

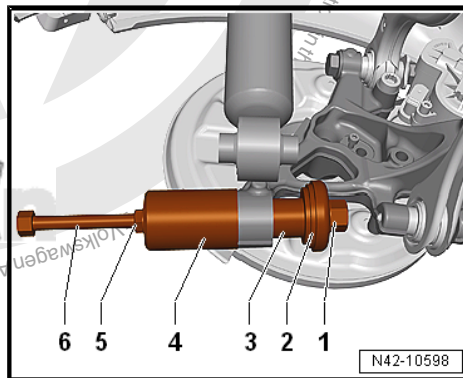
Continuation for All Vehicles.

- Remove the spring. Refer to
⇒ ["6.4 Spring, Removing and Installing", page 202](#) .



Pressing Out Bonded Rubber Bushing

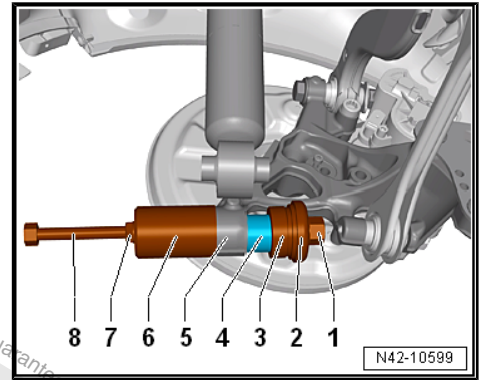
- 1 - -3346/3-
 - 2 - Thrust piece from the -3301-
 - 3 - -3390-
 - 4 - Sleeve from -3350-
 - 5 - Nut
 - 6 - -3346/2-
- Remove the bonded rubber bushing by turning the -3346/3-
-1-. While doing so counterhold on the -3346/2- -6-.





Bonded Rubber Bushing, Installing

- 1 - -3346/3-
 - 2 - Thrust piece from the -3301-
 - 3 - -T10356/5-
 - 4 - Bonded Rubber Bushing
 - 5 - Wheel Bearing Housing
 - 6 - Sleeve from -3350-
 - 7 - Nut
 - 8 - -3346/2-
- Install the bonded rubber bushing until it stops by turning the -3346/3- -1-. While doing so counterhold on the -3346/2- -8-.



Note

- ◆ *Do not use lubricant!*
- ◆ *Insert the bearing carefully so that it is not tilted.*

Installing

Install in reverse order of removal while noting the following:

Tightening Specifications

- ◆ Refer to ⇒ [“7.1 Overview - Wheel Bearing”, page 209](#)
- ◆ Refer to ⇒ [“6.1.2 Overview - Suspension Strut, Shock Absorber and Spring, Multi-Link Suspension”, page 192](#)
- ◆ Refer to ⇒ [“4.1.1 Overview - Stabilizer Bar, Multi-Link Suspension, FWD”, page 177](#)
- Only fasten the threaded connections to the lower transverse link in the curb weight position.
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

7.5.2 Wheel Bearing Housing Bonded Rubber Bushing, Replacing, AWD

Special tools and workshop equipment required

- ◆ Subframe Bushing Tool Kit - 3301-
- ◆ Bearing Installer - Carrier Bearing - 3350-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Press Tool For Viscous Fan - 3367-
- ◆ Torque Adapter - 3390-
- ◆ Bearing Installer - Control Arm - 3346-

Removing

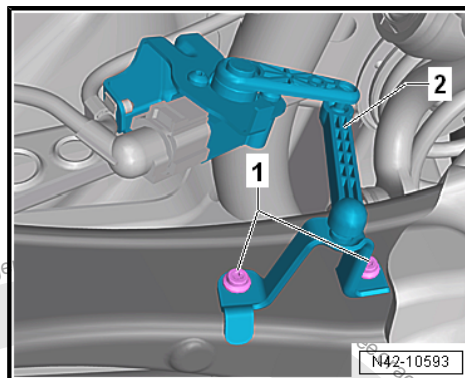
- Loosen the wheel bolts.



- Raise the vehicle.
- Remove the wheel.

Vehicles with Level Control System Sensor

- Remove the bolts -1-.
- Remove the Left Rear Level Control System Sensor -2- bracket.

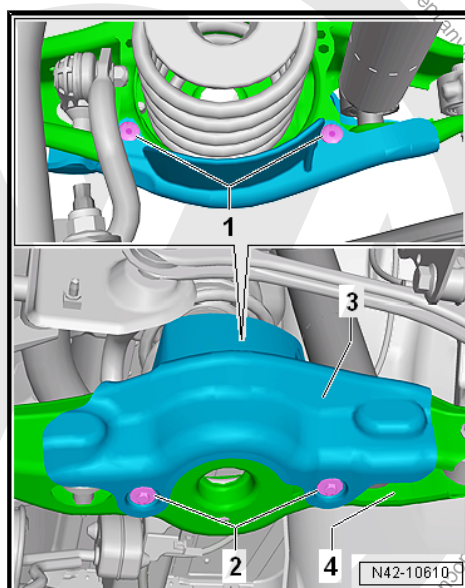


Vehicles with Stone Chip Protection

- Remove the expanding rivets -1-.
- Remove the bolts -2- for the stone chip protection -3-.

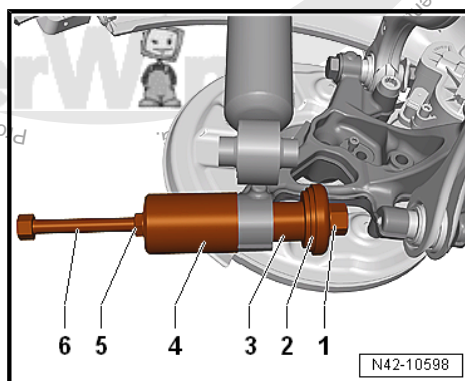
Continuation for All Vehicles.

- Remove the spring. Refer to
[⇒ "6.4 Spring, Removing and Installing", page 202](#).



Pressing out Bonded Rubber Bushing

- 1 - Bearing Installer - Control Arm - Nut - 3346/3-
 - 2 - Thrust piece from the Subframe Bushing Tool Kit - 3301-
 - 3 - Torque Adapter - 3390-
 - 4 - Sleeve from Bearing Installer - Carrier Bearing - 3350-
 - 5 - Nut
 - 6 - Bearing Installer - Control Arm - Spindle - 3346/2-
- Remove the bonded rubber bushing by turning the Bearing Installer - Control Arm - Nut - 3346/3- -1-. While doing so counterhold on the Bearing Installer - Control Arm - Spindle - 3346/2- -6-.



Bonded Rubber Bushing, Installing

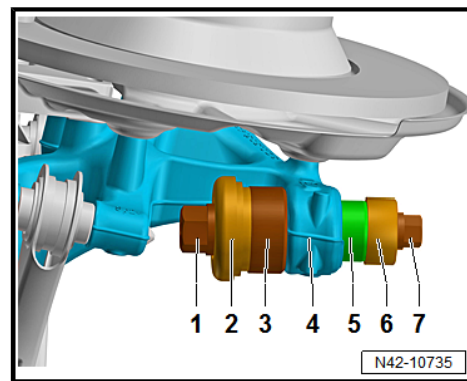


Note

- ◆ *When installing pay attention that the tip of the Subframe Bushing Tool Kit - Bolt - 3301/1- does not come into contact with the wheel bearing housing.*
- ◆ *Do not use lubricant!*
- ◆ *Insert the bearing carefully so that it is not tilted.*

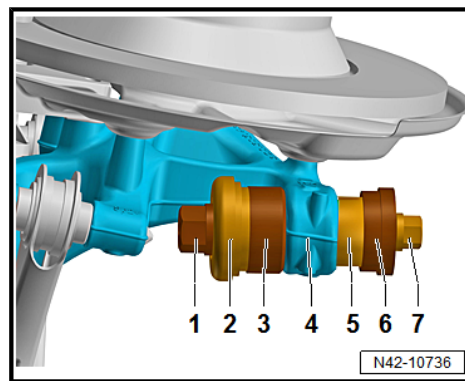
- 1 - Nut from Subframe Bushing Tool Kit - 3301-
- 2 - Thrust piece from the Subframe Bushing Tool Kit - 3301-
- 3 - Thrust piece from the Bearing Installer - Control Arm - 3346- , with the open side to the wheel bearing housing
- 4 - Wheel Bearing Housing
- 5 - Bonded Rubber Bushing
- 6 - Press Tool For Viscous Fan - Thrust Piece - 3367/2-
- 7 - Replacement Bolt for 3301 kit - 3301/4-

- By turning the Subframe Bushing Tool Kit - 3301- -1- pull the bonded rubber bushing until it is just in front of the wheel bearing housing. While doing so counterhold on the Subframe Bushing Tool Kit - Bolt - 3301/1- -8-.





- Remove the tools as shown and install again.
- 1 - Nut from Subframe Bushing Tool Kit - 3301-
- 2 - Thrust piece from the Subframe Bushing Tool Kit - 3301-
- 3 - Thrust piece from the Bearing Installer - Control Arm - 3346- , with the open side to the wheel bearing housing
- 4 - Wheel Bearing Housing
- 5 - Press Tool For Viscous Fan - Thrust Piece - 3367/2-
- 6 - Subframe Bushing Tool Kit - Thrust Piece - 3301/2-
- 7 - Replacement Bolt for 3301 kit - 3301/1-
- Install the bonded rubber bushing until it stops by turning the Bearing Installer - Control Arm - Nut - 3346/3- -1-. While doing so counterhold on the Bearing Installer - Control Arm - Spindle - 3346/2- -8-.



Note

- ♦ *Do not use lubricant!*
- ♦ *Insert the bearing carefully so that it is not tilted.*

Installing

Install in reverse order of removal. Note the following:

Tightening Specifications

- ♦ Refer to ⇒ [“7.1 Overview - Wheel Bearing”, page 209](#)
- ♦ Refer to ⇒ [“6.1.2 Overview - Suspension Strut, Shock Absorber and Spring; Multi-Link Suspension”, page 192](#)
- ♦ Refer to ⇒ [“4.1 Overview - Stabilizer Bar”, page 177](#)
- ♦
- Only fasten the threaded connections to the lower transverse link in the curb weight position.
- For vehicles with a level control system sensor, perform the basic setting for the wheel damping electronics using the Vehicle Diagnostic Tester ⇒ Vehicle diagnostic tester.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

7.6 Trailing Arm with Mounting Bracket, Removing and Installing

Special tools and workshop equipment required

- ♦ Torque Wrench 1332 40-200Nm - VAG1332-
- ♦ Engine and Gearbox Jack - VAS6931-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

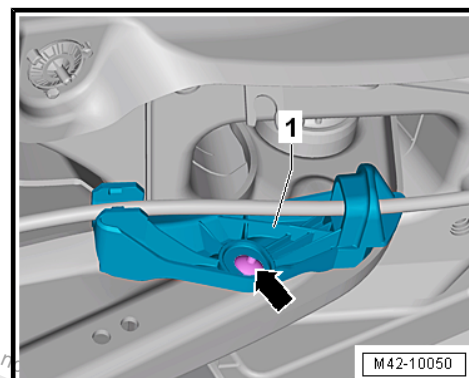


Mandatory Replacement Parts

- ◆ Bolts - Trailing Arm to Wheel Bearing Housing
- ◆ Bolt - Trailing Arm to Mounting Bracket

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove the spring. Refer to
⇒ ["6.4 Spring, Removing and Installing", page 202](#) .
- Remove the rivet inner pin -arrow- toward the inside and remove the bracket -1-.



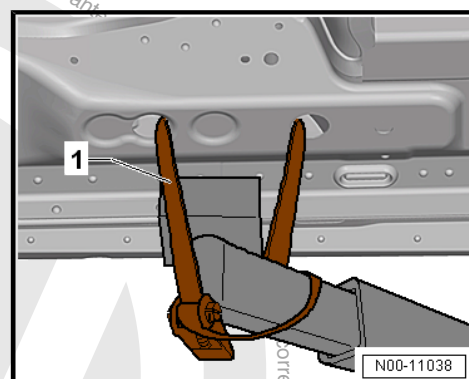
- Secure both sides of the vehicle on the hoist arms using Tensioning Straps - T10038-

1 - Tensioning Strap - T10038-

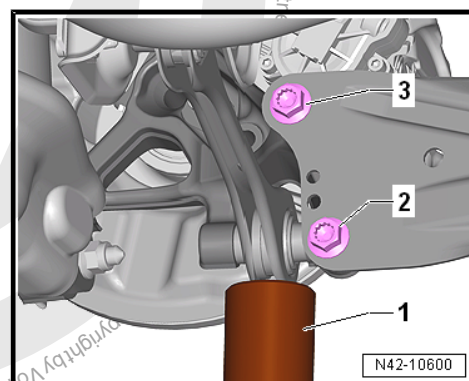


WARNING

The vehicle could slide off the hoist if it is not secured.



- Place the Engine and Gearbox Jack - VAS6931- -1- under the tie rod and push lightly upward.
- Remove the bolts -2 and 3- one after the other.
- Remove the Engine and Gearbox Jack - VAS6931- -1- from under the tie rod.
- Mark the mounting bracket installation location on the body.



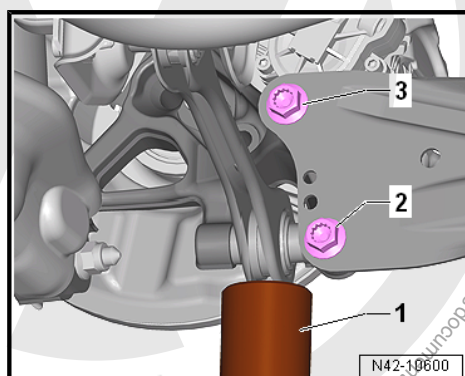
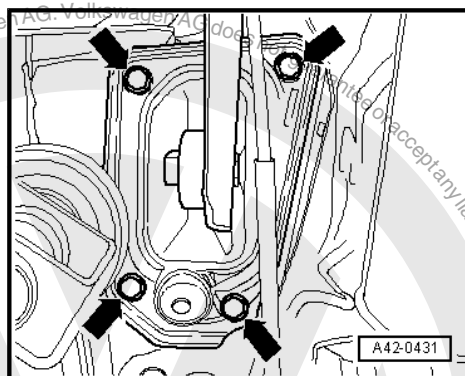
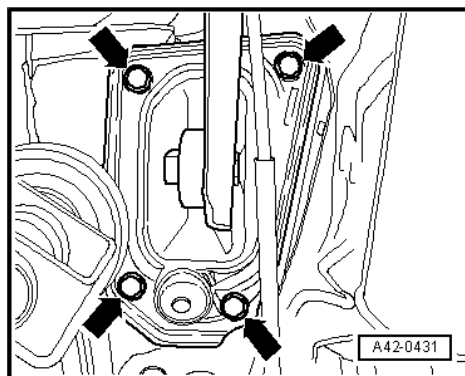


- Remove the bolts -arrows-.
- Remove the trailing arm with mounting bracket.

Installing

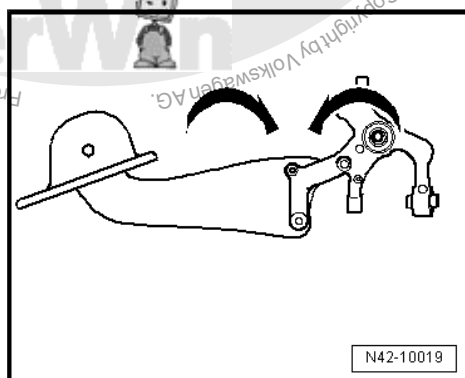
Install in reverse order of removal. Note the following:

- Tighten the bolts -arrows- onto the old impression or the marking applied previously.
- Place the Engine and Gearbox Jack VAS6931--1- under the tie rod and push lightly upward.
- Install the bolts -2 and 3- by hand.
- Remove the Engine and Gearbox Jack - VAS6931--1- from under the tie rod.



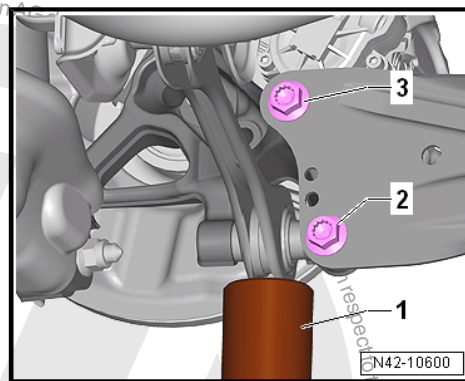
The threaded connection of trailing arm/wheel bearing housing may only be tightened when all other components (spring and shock absorber always) of the respective suspension have been already installed. To tighten, the suspension must be unloaded. Only now do the trailing arm and wheel bearing housing move into the position required in direction of -arrows-.

- Install the spring. Refer to
⇒ ["6.4 Spring, Removing and Installing", page 202](#).





- Tighten the bolts -2 and 3-.

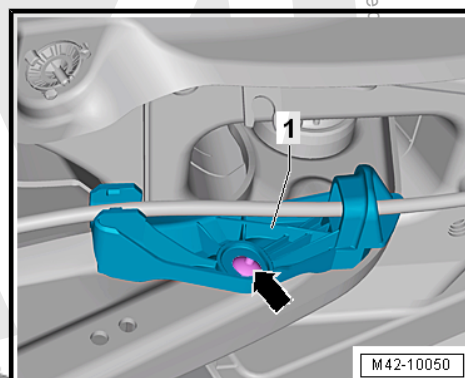


- Position the bracket -1- on the trailing arm.
- Insert a new rivet and push in a new inner pin -arrow-.

Tightening Specifications

- ◆ Refer to ➔ [“7.2 Overview - Trailing Arm”, page 213](#)

After Installation, the Axle Alignment Must Be Checked on an Alignment Rack.



7.7 Trailing Arm, Servicing

Special tools and workshop equipment required

- ◆ Bearing Installer - Wheel Bearing - 3345-
- ◆ Bearing Installer - Control Arm - 3346-
- ◆ Press Plate - VW402-
- ◆ Press Piece - Multiple Use - VW412-
- ◆ Press Piece - Trailing Arm Bushing - T10496-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931-



Caution

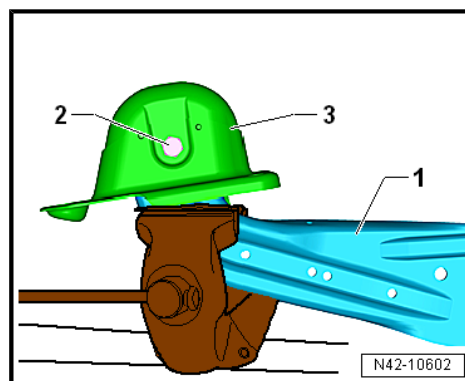
This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolts - Trailing Arm to Wheel Bearing Housing
- ◆ Bolt - Trailing Arm to Mounting Bracket
- Remove trailing arm with mounting bracket. Refer to ➔ [“7.6 Trailing Arm with Mounting Bracket, Removing and Installing”, page 234](#) .

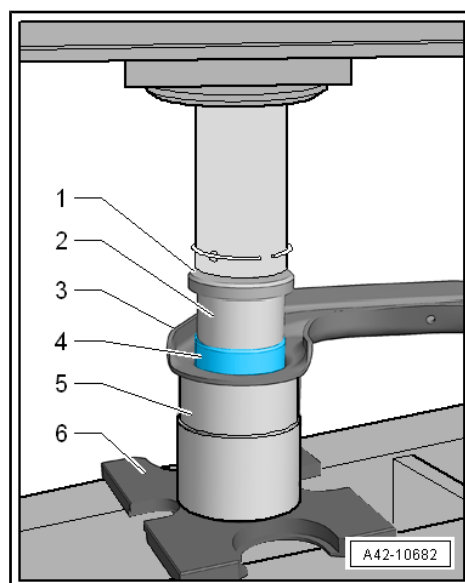


- Clamp the trailing arm -1- in the vise with protective covers.
- Remove the bolt -2- and remove the mounting bracket -3- from the trailing arm.



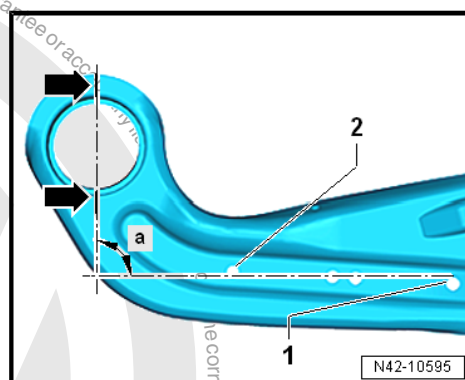
Pressing Out the Bonded Rubber Bushing

- Mount the tools as illustrated.
- 1 - Press Piece - Multiple Use - VW412-
- 2 - Bearing Installer - 3346/1- from the Bearing Installer - Control Arm - 3346- (the deep recess points to the bonded rubber bushing)
- 3 - Trailing arm
- 4 - Bonded rubber bushing
- 5 - Bearing Installer - Wheel Bearing - 3345-
- 6 - Press Plate - VW402-
- Press out the bonded rubber mount.



Installing the Bonded Rubber Bushing

- Mark the position of the bonded rubber bushing on the trailing arm with a right angle.
- Place the outer edge of the right angle on the upper -1- and lower radius -2- of the hole.
- Make a mark over and under the bushing on the trailing arm -arrows-.
- a - 90°

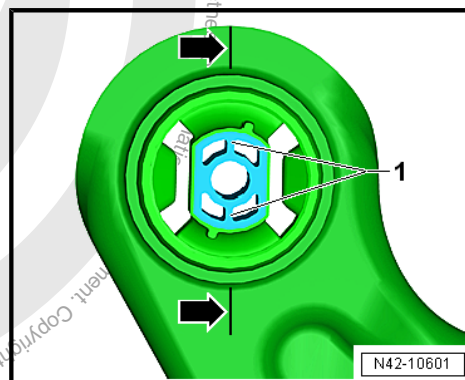


Position the bonded rubber bushing on the trailing arm so that the marked line -arrows- runs along the ribs -1-.



Note

Make absolutely sure that the bonded rubber bushing is in the correct installation position in relation to the trailing arm socket.

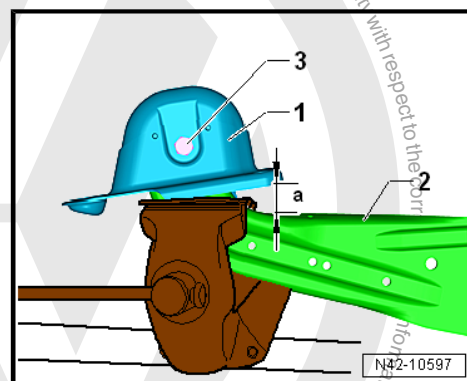
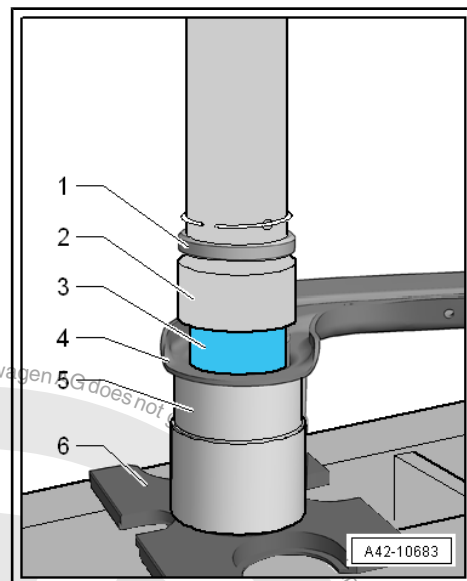




- Mount the tools as illustrated.
- 1 - Press Piece - Multiple Use - VW412-
- 2 - Press Piece - Trailing Arm Bushing - T10496-
- 3 - Bonded rubber bushing
- 4 - Trailing arm
- 5 - Bearing Installer - Wheel Bearing - 3345-
- 6 - Press Plate - VW402-
- Install the bonded rubber bushing.

Determining Installation Position of Mounting Bracket Relative to Trailing Arm

- Clamp the trailing arm -2- in the vise with jaw protectors.
- Position the mounting bracket -1- on the trailing arm -2-.
- Install the bolt -3-.
- Adjust the dimension -a- to 37 mm and tighten the bolt -3-.
- Install the trailing arm with mounting bracket. Refer to ["7.6 Trailing Arm with Mounting Bracket, Removing and Installing", page 234](#).



8 Drive Axle

⇒ ["8.1 Overview - Drive Axle", page 240](#)

⇒ ["8.2 Drive Axle Threaded Connection, Loosening and Tightening", page 241](#)

⇒ ["8.3 Drive Axle, Removing and Installing", page 242](#)

⇒ ["8.4 Drive Axle, Disassembling and Assembling", page 247](#)

⇒ ["8.5 Outer CV Joint, Checking", page 251](#)

⇒ ["8.6 Inner CV Joint, Checking", page 252](#)

8.1 Overview - Drive Axle

1 - Outer CV Joint

- ☐ Replace only as complete unit.
- ☐ Removing. Refer to ⇒ [Fig. "Outer CV Joint, Pressing Off", page 248](#).
- ☐ Installing: Using a plastic hammer, drive onto the shaft as far as the stop
- ☐ Divide the grease evenly in the joint
- ☐ Checking. Refer to ⇒ ["8.5 Outer CV Joint, Checking", page 251](#)

2 - Bolt

- ☐ 200 Nm +180°. Refer to ⇒ ["8.2 Drive Axle Threaded Connection, Loosening and Tightening", page 241](#).
- ☐ Replace after removal
- ☐ Before installing, clean the threads in the CV joint with a tap.

3 - Drive Axle

- ☐ Allocation. Refer to the Parts Catalog.

4 - Clamp

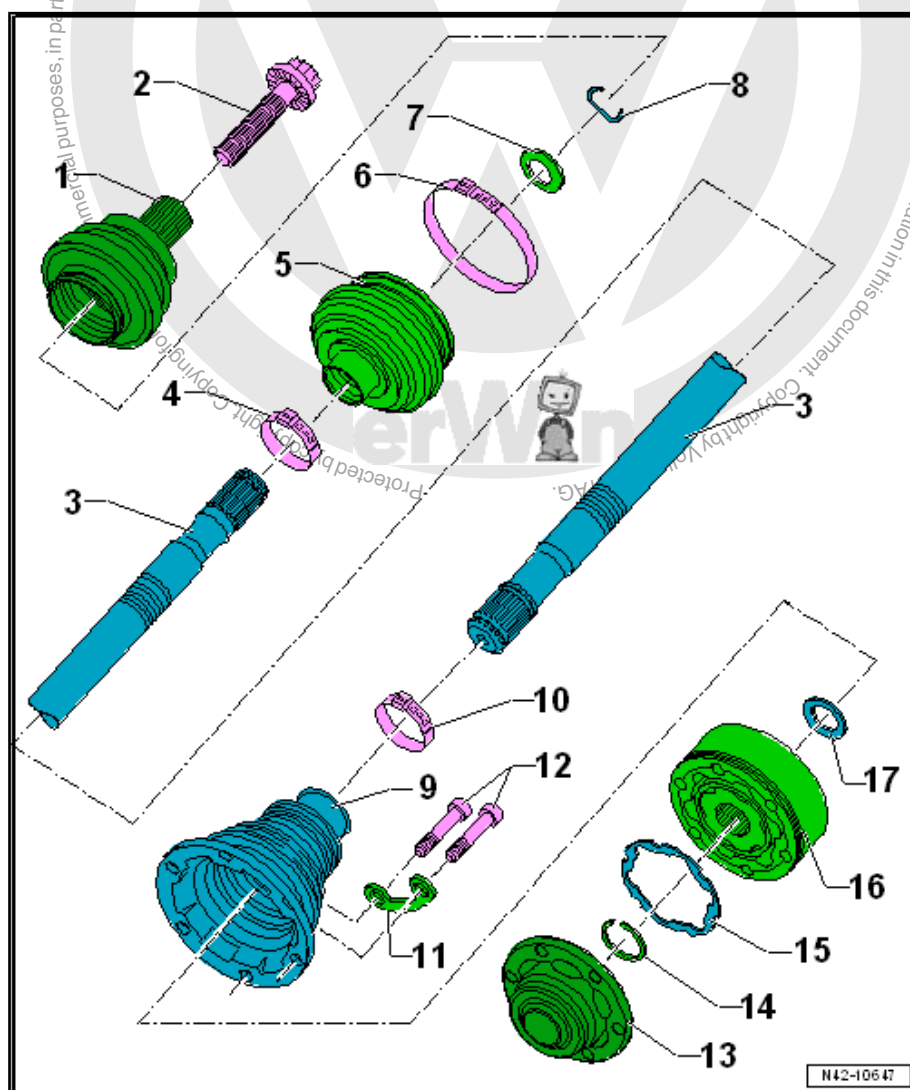
- ☐ Replace after removal
- ☐ Tensioning. Refer to ⇒ [Fig. "Tensioning Clamp on Small Diameter", page 251](#)

5 - CV Boot

- ☐ Check for tears and scuffing
- ☐ Material: polyelastomer

6 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to ⇒ [Fig. "Tightening Clamping Sleeve on Outer Joint", page 250](#)





7 - Plate Spring

- ☐ With inner spline
- ☐ Installed position. Refer to ➔ [Fig. "“Installed Position, Plate Spring on the Outer Joint”", page 248](#)

8 - Locking Ring

- ☐ Replace after removal
- ☐ Insert in shaft groove

9 - CV Boot

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

10 - Clamp

- ☐ Replace after removal
- ☐ Tensioning. Refer to ➔ [Fig. "“Tensioning Clamp on Small Diameter”", page 251](#)

11 - Locking Plate

12 - Internal Multipoint Bolt

- ☐ 40 Nm
- ☐ Replace after removal
- ☐ First tighten diagonally to 10 Nm, then tighten diagonally again to the tightening specification

13 - Cover

- ☐ Always replace if removed
- ☐ Removing. Refer to ➔ [Fig. "“Drive Off Cover for Inner Joint”", page 249](#)

14 - Locking Ring

- ☐ Replace after removal
- ☐ Remove and install using Circlip Pliers - VW161A- .

15 - Seal

- ☐ Replace after removal
- ☐ Bonding surface on CV joint must be free of grease and oil!

16 - Inner CV Joint

- ☐ Replace only as complete unit.
- ☐ Divide the grease evenly in the joint
- ☐ Removing. Refer to ➔ [Fig. "“Removing the Inner CV Joint”", page 249](#)
- ☐ Installing. Refer to ➔ [Fig. "“Pressing On Inner CV Joint”", page 250](#)
- ☐ Checking. Refer to ➔ ["8.6 Inner CV Joint, Checking", page 252](#) .

17 - Plate Spring

- ☐ With inner spline
- ☐ Installed position. Refer to ➔ [Fig. "“Installed Location of the Plate Spring on Inner Joint”", page 249](#)

8.2 Drive Axle Threaded Connection, Loosening and Tightening

Special tools and workshop equipment required

- ◆ Socket AF 24 mm - T10361A-
- ◆ Digital Torque Wrench - VAG1756A-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolt - Outer CV Joint to Drive Axle



Caution

The wheel bearing must not be under a load while the drive axle threaded connection on the wheel side 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.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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 120 Nm.***

Loosening the 12-Point Bolt

- With vehicle still resting on wheels, loosen the twelve-point bolt with Socket AF 24 - T10361A- maximum 90°, otherwise, wheel bearing will be damaged.
- Lift the vehicle just enough so that the wheels are hanging free.
- Press the brake pedal. A second technician will be needed.
- Remove the twelve-point bolt -arrow-.

Twelve-Point Bolt, Fastening

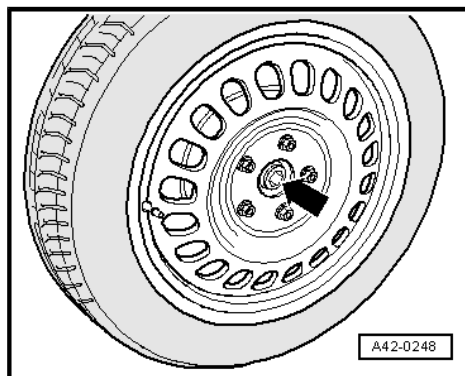
- Replace the twelve-point bolt.



Note

Wheels must not yet touch the ground to tighten the drive axle, the wheel bearing may otherwise be damaged.

- Press the brake pedal. A second technician will be needed.
- Tighten the twelve-point bolt to 200 Nm.
- Lower the vehicle onto its wheels.
- Turn the twelve-point bolt an additional 180°.



8.3 Drive Axle, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Drive Shaft Remover - T10520-
- ◆ Vehicle Diagnostic Tester



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolt - Outer CV Joint to Drive Axle
- ◆ Clamps - CV Boot
- ◆ Lock Ring - Drive Axle
- ◆ Bolt - Stabilizer Bar to Subframe
- ◆ Bolt - Shock Absorber to Lower Transverse Link
- ◆ Nut - Wheel Bearing Housing to Lower Transverse Link
- ◆ Bolt - Wheel Bearing Housing to Lower Transverse Link
- ◆ Bolt - Tie Rod to Subframe



Caution

When disassembling and performing repairs on vehicle, the drive axles must not be allowed to hang down and contact the stops in the joint by overflexing.

Removing

- Loosen the outer drive axle threaded connection. Refer to [⇒ "8.2 Drive Axle Threaded Connection, Loosening and Tightening", page 241](#).



Caution

The wheel bearing must not be under a load while the drive axle threaded connection on the wheel side 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.

The drive axle bolt may be loosened maximum 90° when the vehicle is standing on its wheels.

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

- ◆ Install an outer joint in place of the drive axle.
- ◆ Tighten the outer joint to 120 Nm.

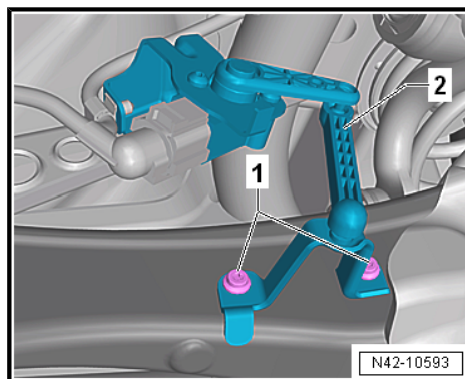


- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Remove coil spring. Refer to [⇒ "6.4 Spring, Removing and Installing", page 202](#).



Vehicles with a Vehicle Level Sensor

- Remove the bolts -1-.
- Remove the Left Rear Level Control System Sensor - G76-
-2- bracket.



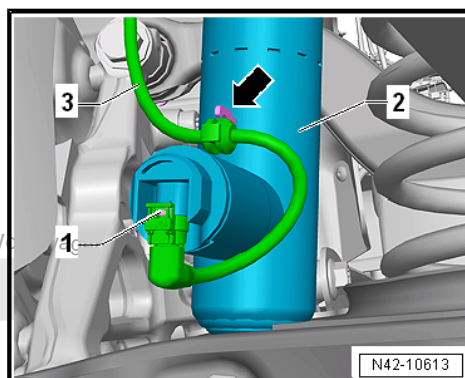
Vehicles with Adaptive Chassis DCC

- Disconnect the connector -1- from the shock absorber -2-.
- Remove the wire -3- from the shock absorber -2- -arrow-.



Note

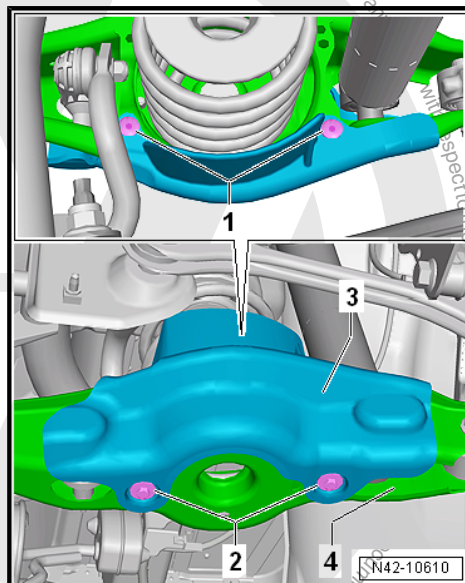
If there is moisture in the connector area, blow compressed air on the contacts on the shock absorber and the connector.



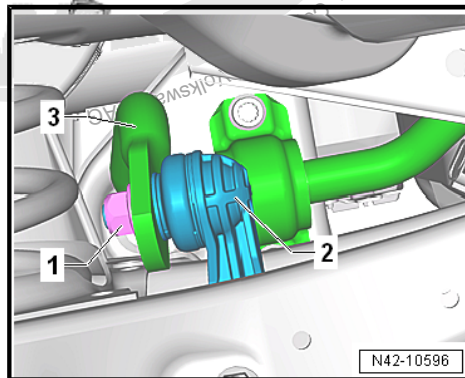
Vehicles with Stone Chip Protection

- Remove the expanding rivets -1-.
- Remove the bolts -2- for the stone chip protection -3-.

Continuation for All Vehicles

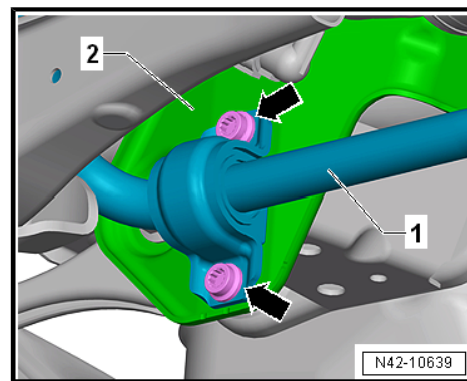


- Remove the nut -1- from the coupling rod -2-.
- Remove the coupling rod -2- from the stabilizer bar -3-.

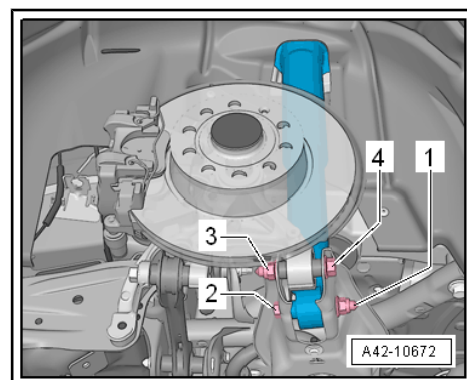




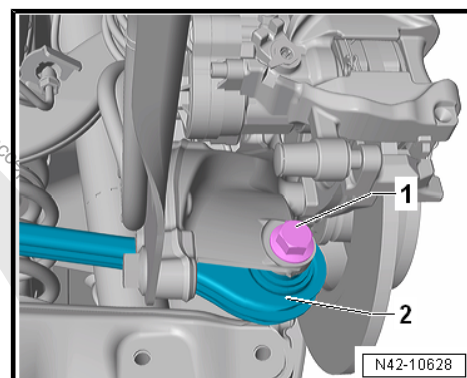
- Remove the bolts -arrows- for the stabilizer bar -1-
- Remove the stabilizer bar -1- from the subframe -2- and pivot downward.



- 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.

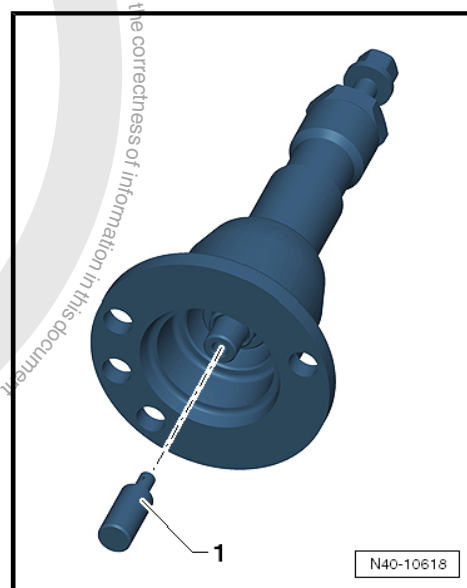


- Remove the bolt -1- for the tie rod -2-
- Remove the drive axle from the transmission flange.
- Tilt the wheel bearing housing outward and remove the drive axle from the transmission flange.



If the drive axle cannot be pulled out of the wheel bearing, then the drive axle can be pushed out of the wheel bearing using the Drive Shaft Remover - T10520- .

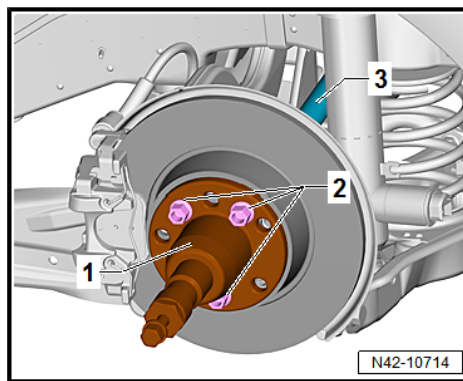
Before using the Drive Shaft Remover - T10520- , make sure that the thrust piece -1- is installed.





Using the Drive Shaft Remover - T10520- :

- Secure the Drive Shaft Remover - T10520- -1- with three wheel bolts -2- on the wheel hub, so that the drive axle -3- can be pressed out.





- Follow the specified sequence exactly.

I - Tighten the knurled nut -1- hand-tight.

II - Only turn the bolt -2- using a wrench and press out the drive axle using the Drive Shaft Remover - T10520- .



Note

At the end of the tasks or to set back, the spindles must be brought back into the original position so that the hydraulic operation can be used.

- Pivot the drive axle downward and remove it from the wheel bearing.

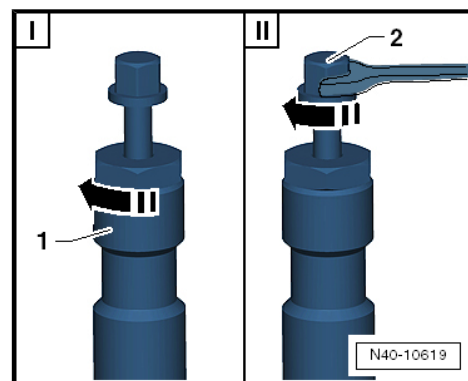
Installing

Install in reverse order of removal. Note the following:

- Only fasten the bolted connections on the wheel bearing housing in the curb weight position.
- For vehicles with a vehicle level sensor, perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .
- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the Parts Catalog.

Tightening Specifications

- ◆ Refer to ➤ [“8.1 Overview - Drive Axle”, page 240](#)
- ◆ Refer to ➤ [“5.1.2 Overview - Transverse Link, Multi-Link Suspension, AWD”, page 183](#)
- ◆ Refer to ➤ [“5.2.2 Overview - Tie Rod, Multi-Link Suspension, AWD”, page 185](#)
- ◆ Refer to ➤ [“6.1.2 Overview - Suspension Strut, Shock Absorber and Spring, Multi-Link Suspension”, page 192](#)
- ◆ Refer to ➤ [“2.2 Overview - Rear Level Control System Sensor”, page 278](#)
- ◆ Refer to ➤ [“8.2 Drive Axle Threaded Connection, Loosening and Tightening”, page 241](#)
- ◆ Refer to ➤ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)
- On vehicles with level control system sensor, perform headlamp basic setting. Refer to ➤ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .



8.4 Drive Axle, Disassembling and Assembling

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 1331 5-50Nm - VAG1331-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Clamping Pliers - VAG1682A-
- ◆ Tripod Joint Tool - T10065-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Clamps - CV Boot

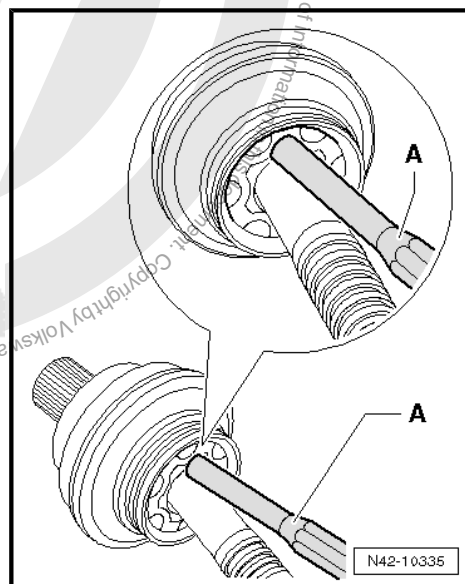
Disassembling

Outer CV Joint, Pressing Off

- Secure the drive axle with protective covers in a vise clamp.
- Remove the clamp.
- Fold back boot.
- Drive CV joint from drive axle using a drift -A-.

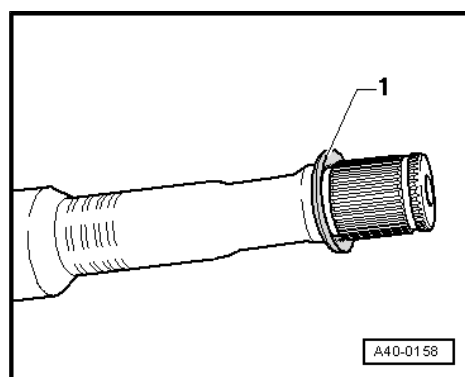
The drift must be precisely positioned on the CV joint ball hub.

Driving Joint On



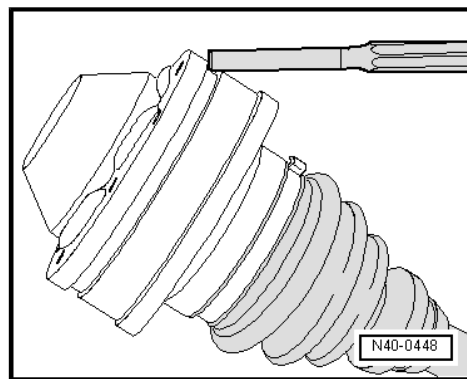
Installed Position, Plate Spring on the Outer Joint

- 1 - Plate Spring
- Insert a new circlip.
- Drive the joint onto the shaft using a plastic hammer until the circlip locks into place.





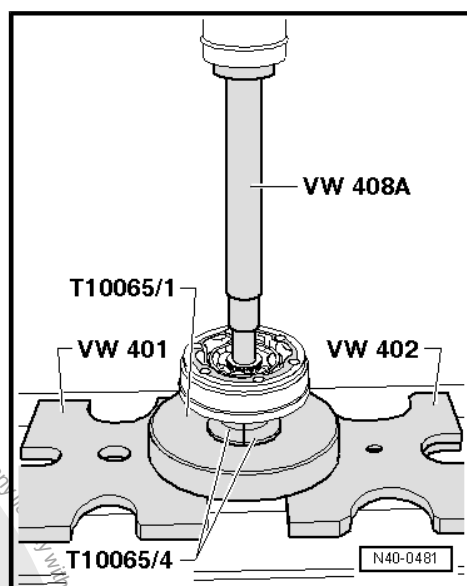
Drive Off Cover for Inner Joint



Removing the Inner CV Joint

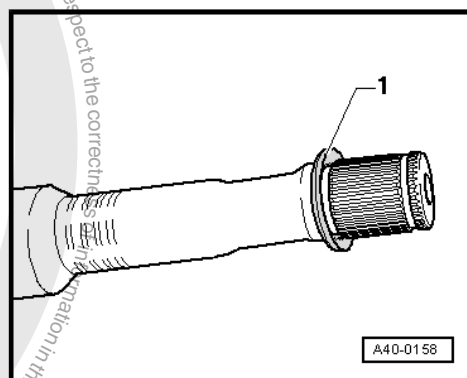
- Press off CV from joint using drift.
- Remove the circlip.
- Remove both clamps, and push the CV boot toward outer joint.

Assembling



Installed Location of the Plate Spring on Inner Joint

- 1 Plate Spring





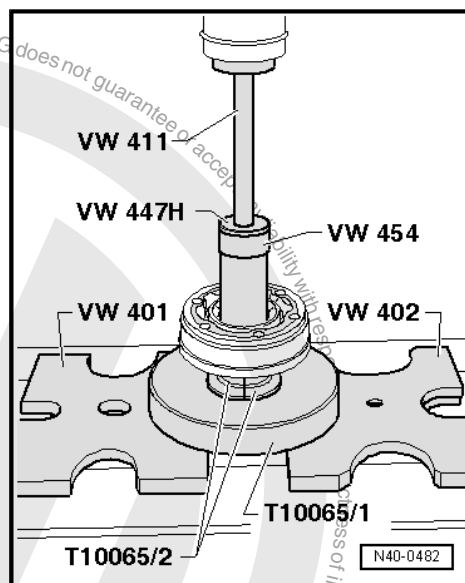
Pressing On Inner CV Joint



Note

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

- Press on joint until stop.
- Install the circlip.



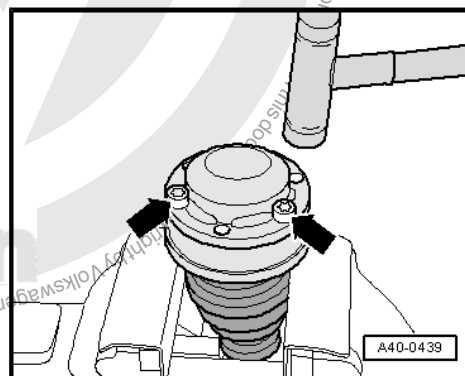
- Align new cover with bolts -arrows- to bolt holes.



Note

It must be aligned exactly because it cannot be aligned after driving on.

- Drive cover on with a plastic hammer.



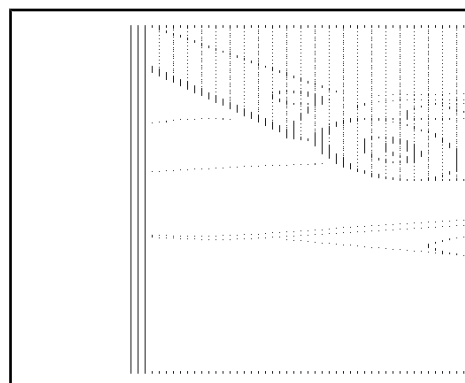
Tightening Clamping Sleeve on Outer Joint

- Position Clamping Pliers - VAG1682A- as shown in illustration. When doing this, make sure that edges of clamping pliers are seated in corners -arrows B- of clamp.
- Tension clamp by turning spindle with a torque wrench (do not tilt clamp tool).



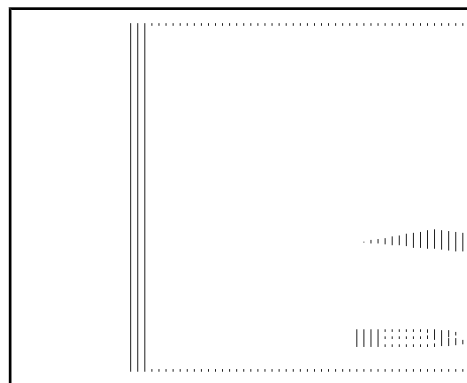
Note

- ◆ *The hard material of the joint boot (compared to rubber) makes it necessary to use a stainless steel hose clamp. It is only possible to tighten the hose clamp with Clamping Pliers - VAG1682A-.*
- ◆ *Tightening specification: 25 Nm.*
- ◆ *Use torque wrench -C- with adjustment range 5 to 50 Nm (for example Torque Wrench 5-50Nm - VAG1331-).*
- ◆ *Be sure thread of spindle -A- of clamp tool moves freely. Grease with MOS 2 grease if necessary.*
- ◆ *If the thread is tight, for example, dirty, the required tensioning force for the hose clamp will not be achieved in spite of correct torque specification settings.*





Tensioning Clamp on Small Diameter

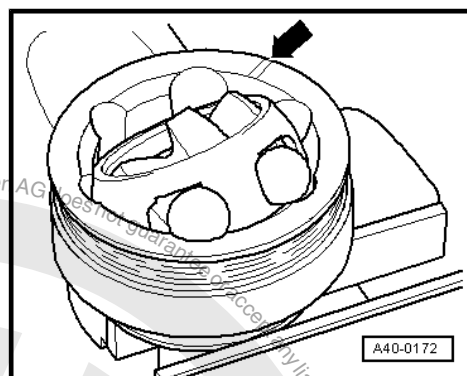


8.5 Outer CV Joint, Checking

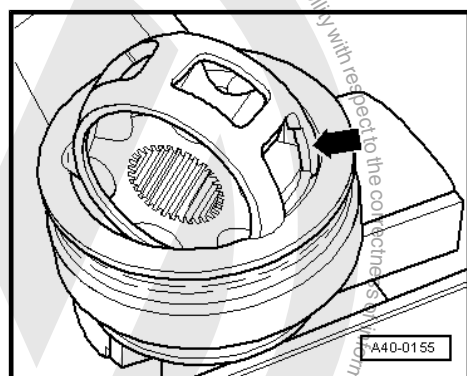
The joint is to be disassembled if badly contaminated to replace the grease, or when the ball contact surfaces show wear or damage.

Removing

- Before disassembling mark ball hub position in relation to the ball cage and housing with an electro-writer or oil stone -arrow-.
- Tilt ball hub and ball cage and remove balls one after another.



- Turn cage until the two rectangular windows -arrow- are aligned with the joint housing.
- Lift out cage with hub.



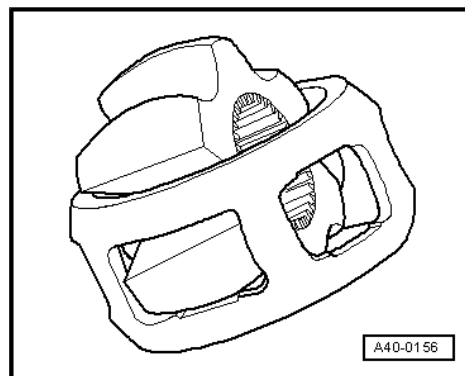


- Swing a hub segment in a cage window.
- Fold hub out from cage.



Note

- ◆ *The six balls of each joint belong to one tolerance group. Check stub axle, hub, cage and balls for small depressions (pitting build-up) and chafing.*
- ◆ *Excessive circumferential backlash in joint makes itself noticed via tip-in shock, in such cases joint should be replaced.*
- ◆ *Flattening and running marks of balls are no reason to replace joint.*



Installing

Install in reverse order of removal. Note the following:

- Press half of the grease amount from the repair kit into the joint housing.
- Insert cage with hub into joint body.



Note

Cage must be installed laterally correct.

- Press in opposing balls in sequence, during this, previous position of ball hub to ball cage and to joint body must be established again.
- Install new circlip in shaft.
- Distribute remaining grease in the joint boot.

8.6 Inner CV Joint, Checking

The joint is to be disassembled if badly contaminated to replace the grease, or when the ball contact surfaces show wear or damage.

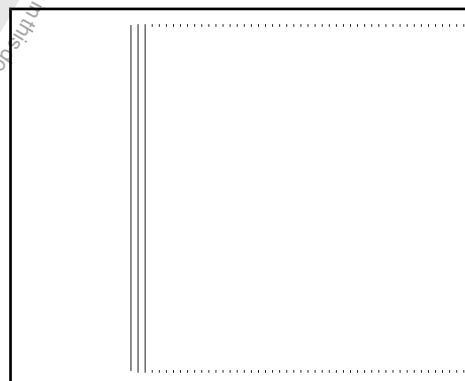


Note

Ball hub and joint piece are paired. Before removing, mark in relation to each other using a waterproof felt-tip pen.

Removing

- Swivel 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 running path of ball -arrows-.
- Check joint piece, ball hub, ball cage and balls for small broken off depressions (pitting build-up) 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 of balls are no reason to replace joint.

Installing

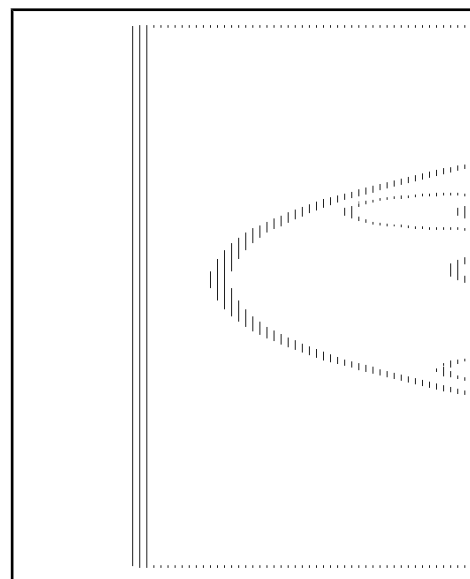
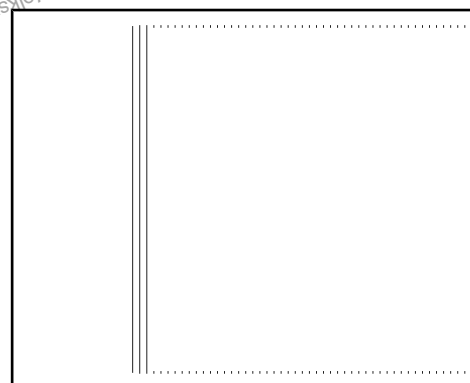
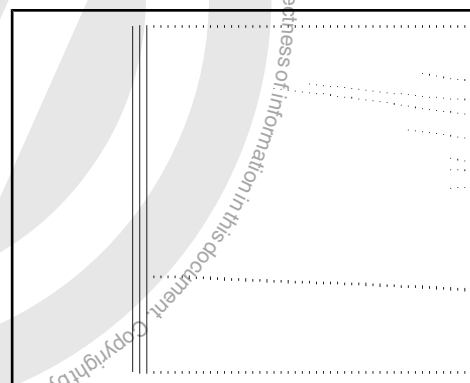
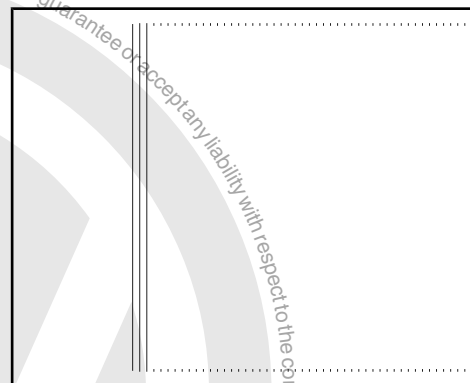
Install in reverse order of removal. Note the following:

- Insert ball hub into ball cage via two chamfers. The installation position is at random. Press balls into cage.
- Insert hub with cage and balls upright into joint piece.

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 large diameter of joint piece.

- Also note chamfer on inner diameter of ball hub, it must be visible after swiveling in.
- Swing in ball hub, to do this swing out hub far enough from cage -arrows- so that the balls have the distance of the running paths.

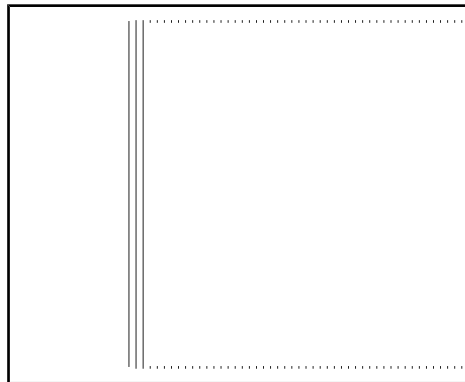




- Swing in hub with balls by pressing forcefully onto cage
-arrow-.

CV joint, checking for function:

CV joint is properly assembled, if ball hub can be slid back and forth by hand over whole compensation length.

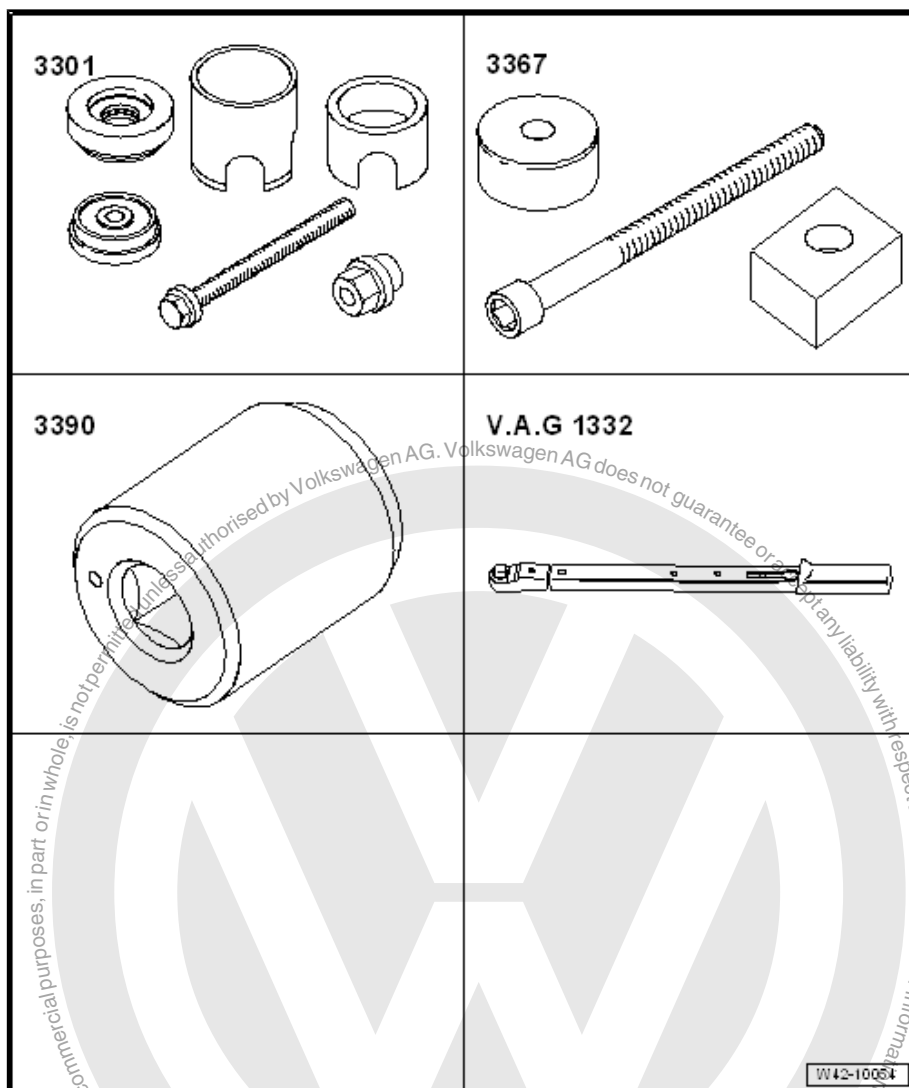




9 Special Tools

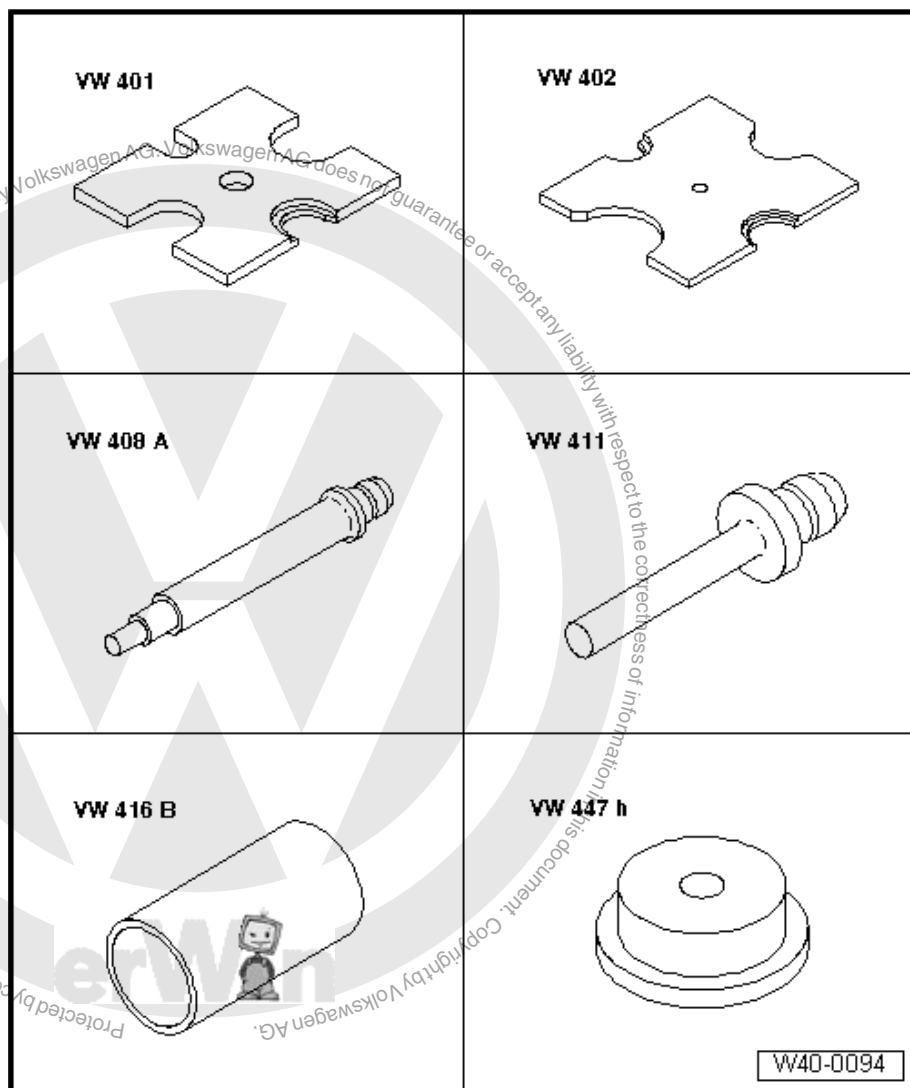
Special tools and workshop equipment required

- ◆ Subframe Bushing Tool Kit - 3301-
- ◆ Press Tool For Viscous Fan - 3367-
- ◆ Torque Adapter - 3390-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-



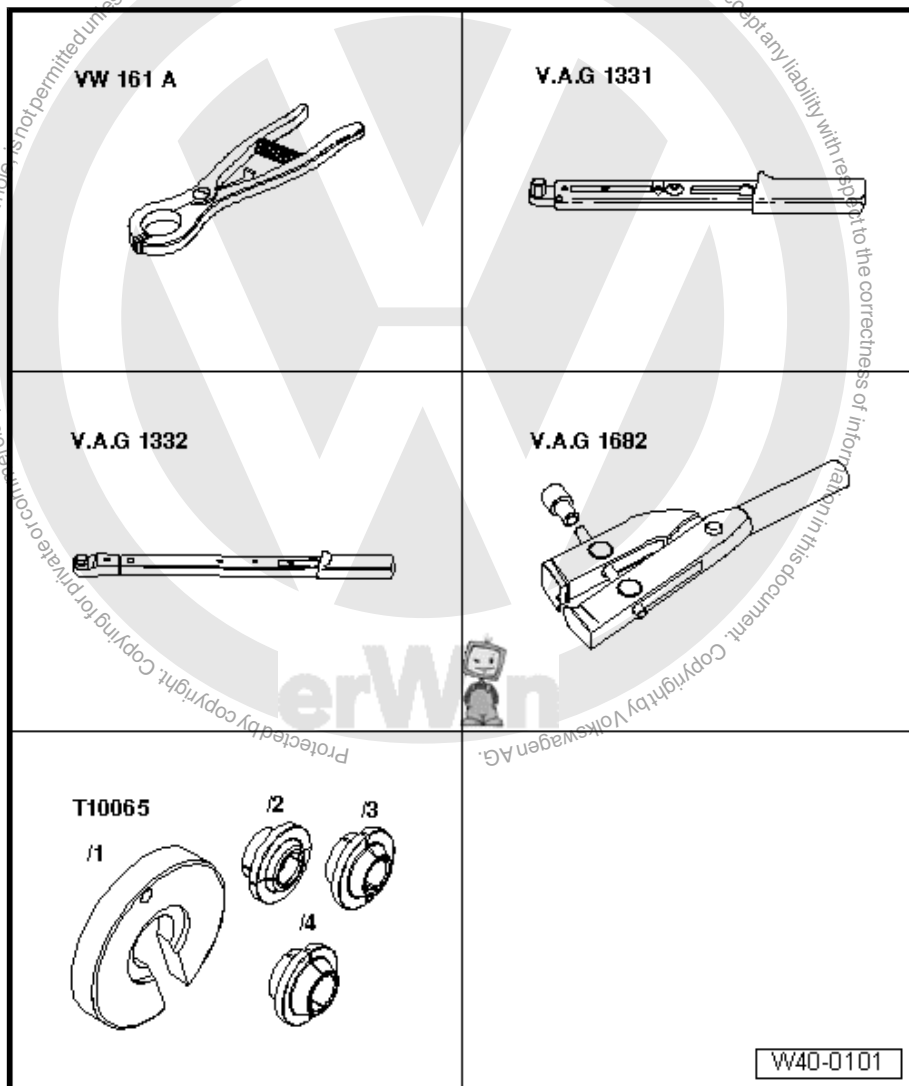


- ◆ Press Plate - VW401-
- ◆ Press Plate - VW402-
- ◆ Press Piece - Rod - VW408A-
- ◆ Press Piece - Rod - VW411-
- ◆ Press Piece - 37mm - VW416B-
- ◆ Press Piece Multiple Use - VW447H-



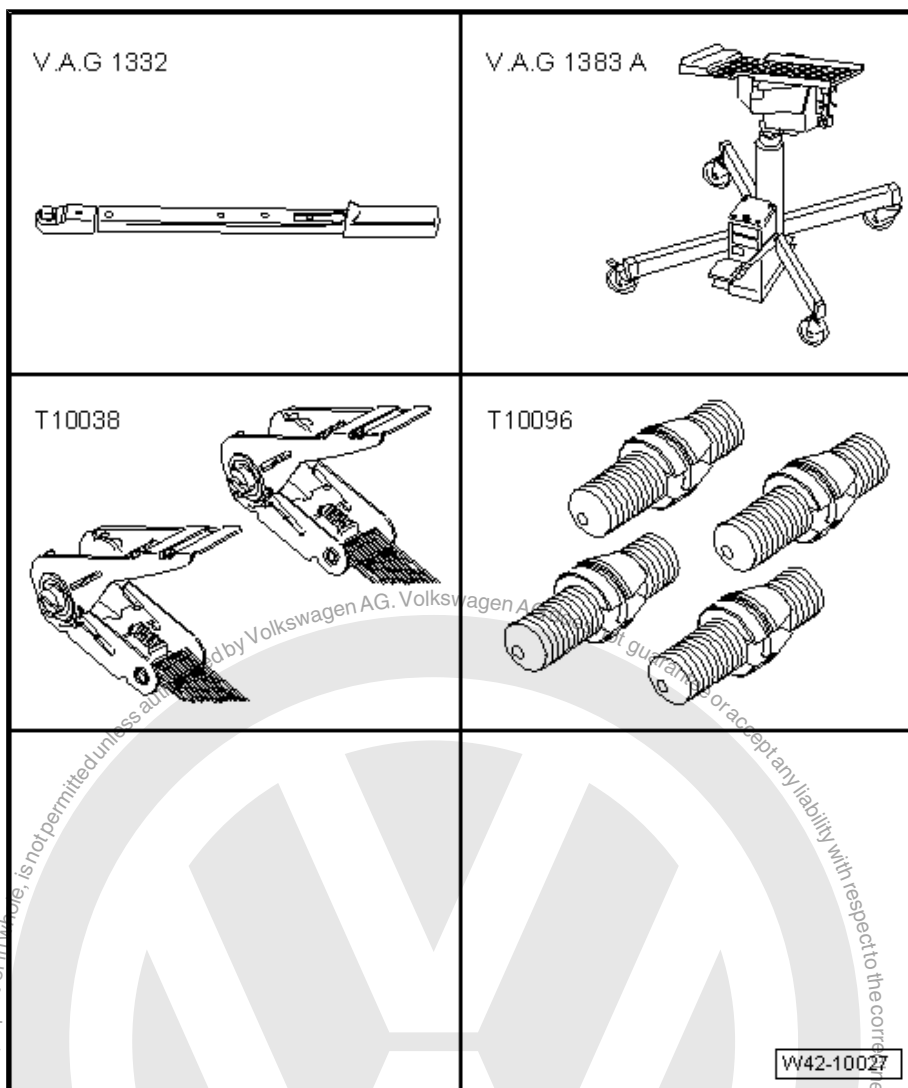


- ◆ Circlip Pliers - VW161A-
- ◆ Torque Wrench 1331
5-50Nm - VAG1331-
- ◆ Torque Wrench 1332
40-200Nm - VAG1332-
- ◆ Clamping Pliers -
VAG1682A-
- ◆ Tripod Joint Tool - T10065



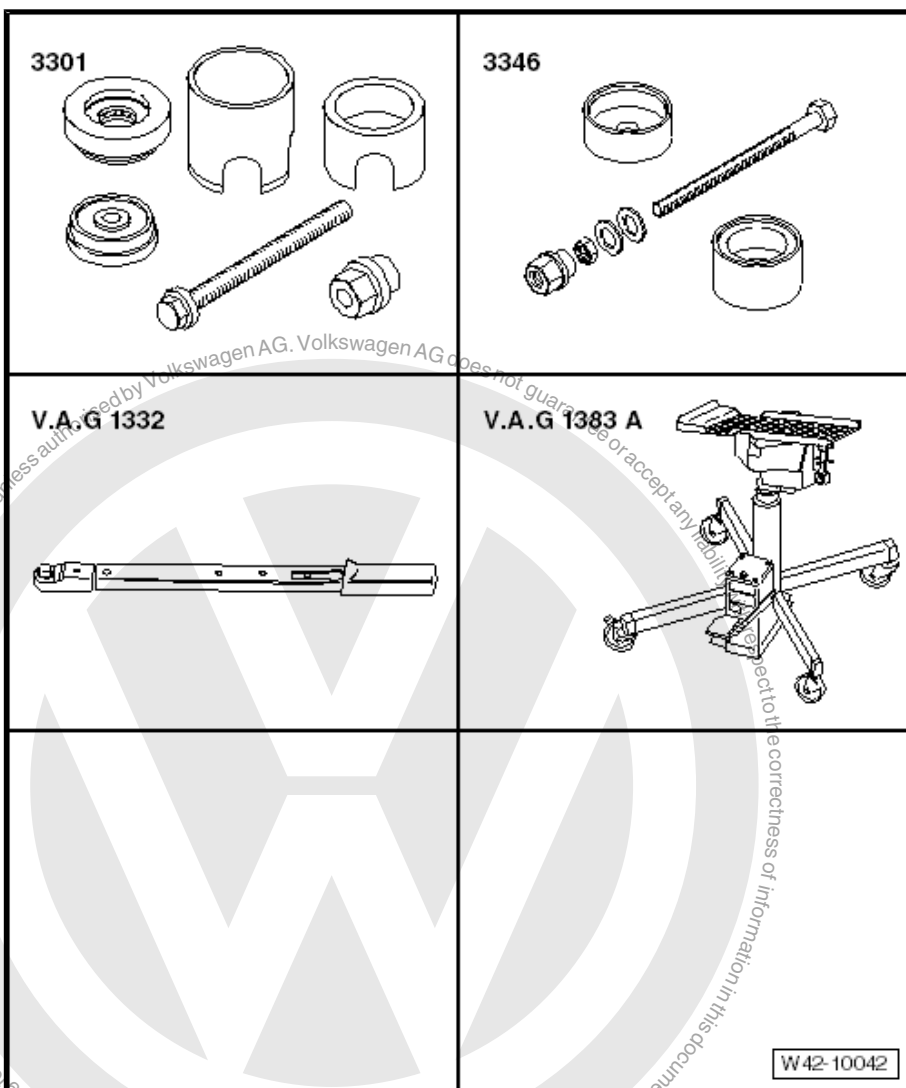


- ◆ Torque Wrench 1332
40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack -
VAS6931-
- ◆ Tensioning Strap - T10038-
- ◆ Locating Pins - T10096-



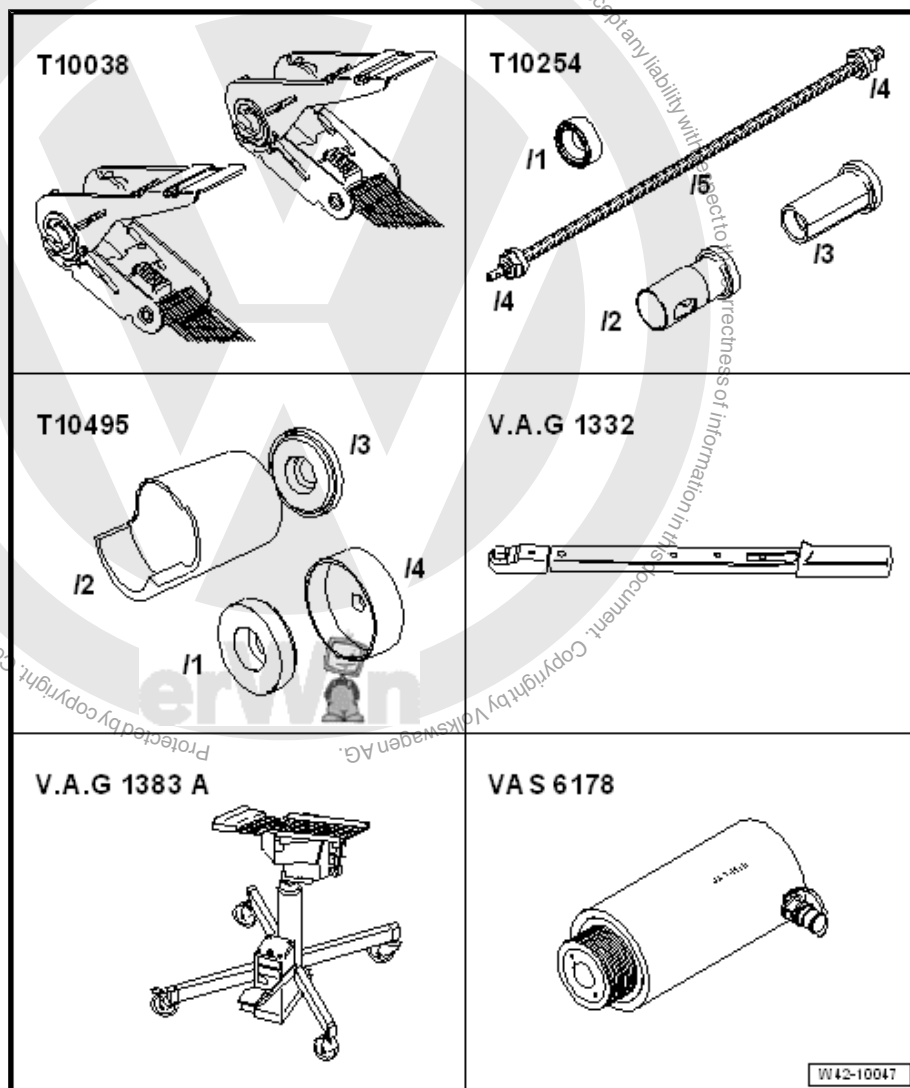


- ◆ Subframe Bushing Tool Kit - 3301-
- ◆ Bearing Installer - Control Arm - 3346-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931-



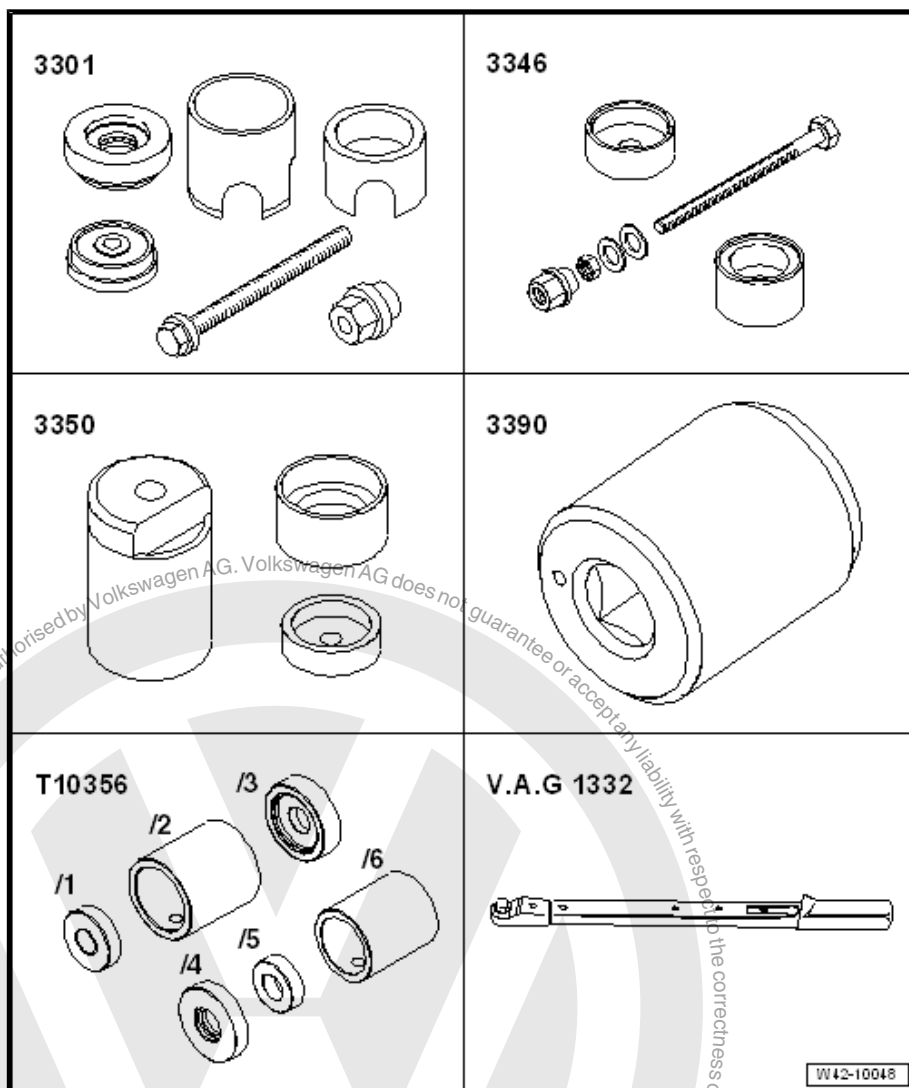


- ◆ Tensioning Strap - T10038-
- ◆ Hydraulic Press - Ball Joint Assembly Tools - T10254-
- ◆ Pneumatic/Hydraulic Foot Pump - Press Kit - T10495-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931- -2- with Universal Support Plate - VAG1359/2-
- ◆ Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit - Pressure Head - T10205/13-



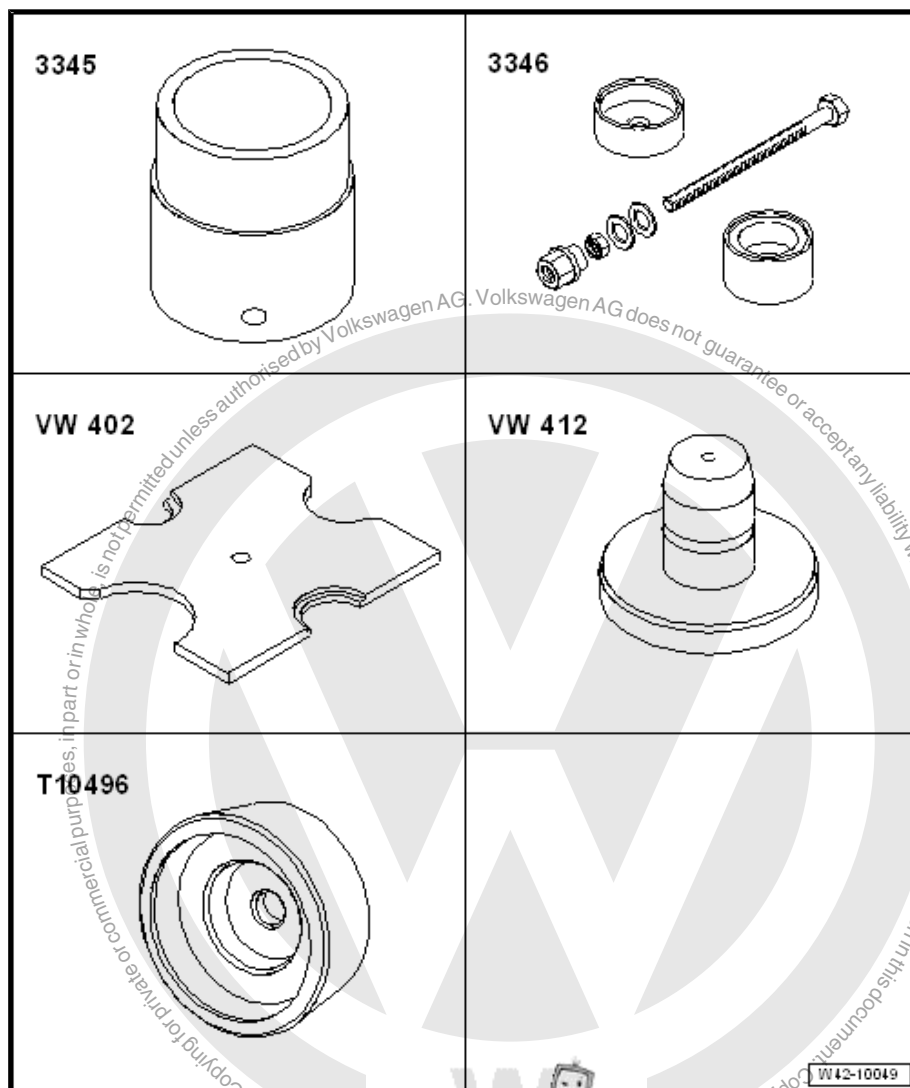


- ◆ Subframe Bushing Tool Kit - 3301-
- ◆ Bearing Installer - Control Arm - 3346-
- ◆ Bearing Installer - Carrier Bearing - 3350-
- ◆ Subframe Bushing Assembly Tool Kit - T10356-
- ◆ Torque Adapter - 3390-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-




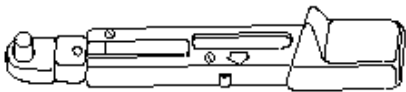
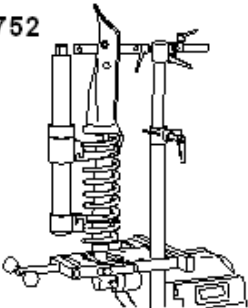
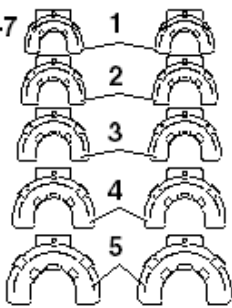


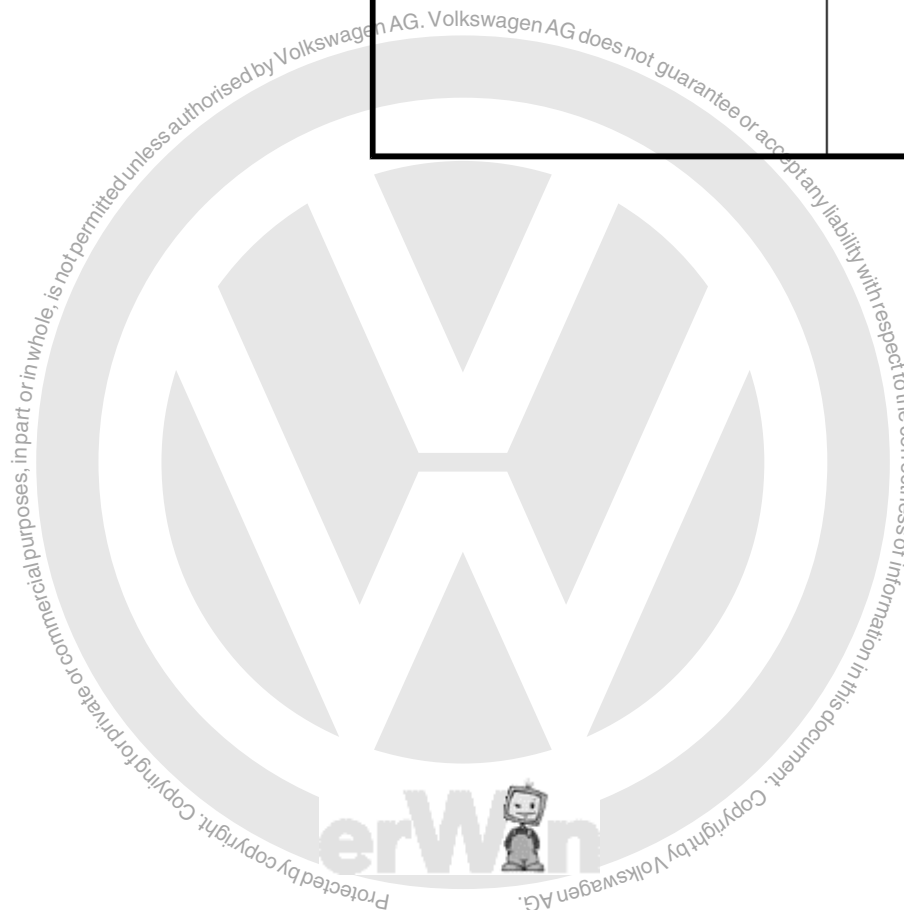
- ◆ Bearing Installer - Wheel Bearing - 3345-
- ◆ Bearing Installer - Control Arm - 3346-
- ◆ Press Plate - VW402-
- ◆ Press Piece - Multiple Use - VW412-
- ◆ Press Piece - Trailing Arm Bushing - T10496-





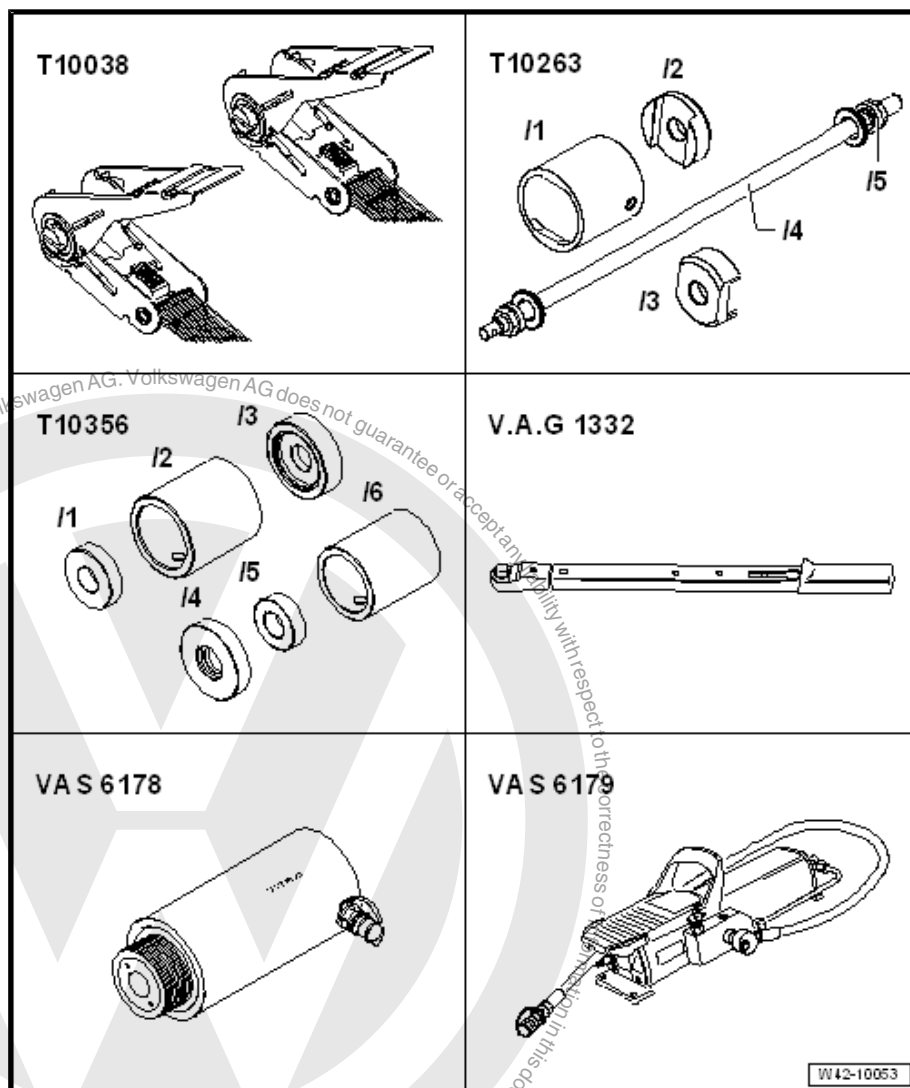
- ◆ Torque Wrench 1332
40-200Nm - VAG1332-
- ◆ Torque Wrench 1410 -
VAG1410-
- ◆ Spring Compressor Kit -
Spring Tensioner -
VAG1752/1-
- ◆ Spring Compressor Kit -
Spring Retainer with Inserts
- VAG1752/3A-

<p>V.A.G 1332</p> 	<p>V.A.G 1410</p> 
<p>V.A.G 1752</p> 	<p>V.A.G 1752/3-7</p> 
	<p style="text-align: right;">W42-10050</p>



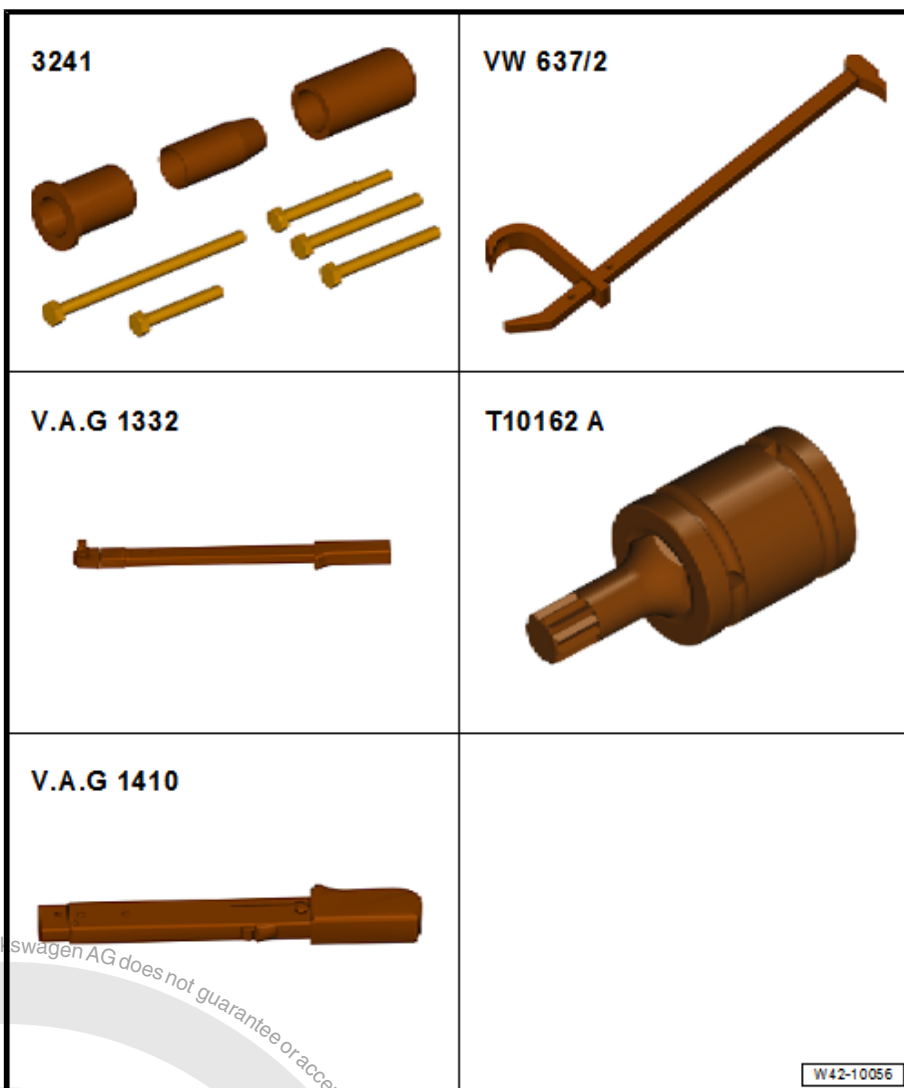


- ◆ Tensioning Strap - T10038-
- ◆ Hydraulic Press - Rear Subframe Bushing Tool Kit - T10263-
- ◆ Subframe Bushing Assembly Tool Kit - T10356-
- ◆ Engine and Gearbox Jack - VAS6931-
- ◆ Hydraulic Press - VAS6178- with Bearing Installer - Wheel Hub/Bearing Kit - Pressure Head - T10205/13-
- ◆ Pneumatic/Hydraulic Foot Pump - VAS6179-

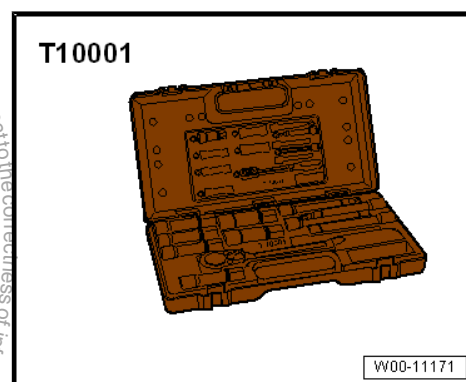




- ◆ Seal Installer - Camshaft
Installer Kit - Sleeve -
3241/4-
- ◆ Puller - Grease Cap -
VW637/2-
- ◆ Torque Wrench 1332
40-200Nm - VAG1332-
- ◆ Socket - XZN 18mm -
T10162A-
- ◆ Torque Wrench 1410 -
VAG1410-

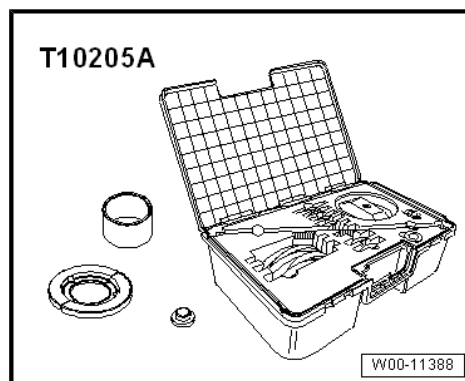


- ◆ Shock Absorber Set - T10001-

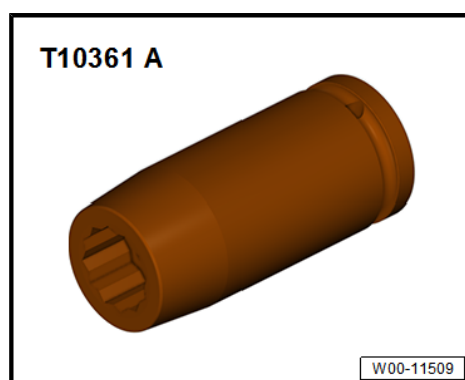




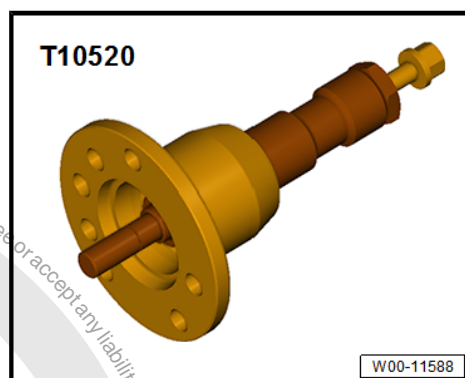
◆ Bearing Installer - Wheel Hub/Bearing Kit - T10205A-



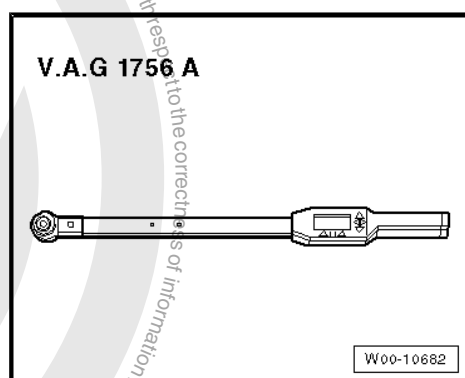
◆ Socket AF 24 mm - T10361A-



◆ Drive Shaft Remover - T10520-



◆ Digital Torque Wrench - VAG1756A-





43 – Level Control System

1 Electronic Damping

⇒ [“1.1 Overview - Electronic Damping”, page 267](#)

⇒ [“1.2.1 Electronic Damping Control Module J250 , Removing and Installing, Golf”, page 272](#)

⇒ [“1.3 Left/Right Front Body Acceleration Sensor G341 / G342 , Removing and Installing”, page 274](#)

⇒ [“1.4 Left Rear Body Acceleration Sensor G699 , Removing and Installing”, page 275](#)

1.1 Overview - Electronic Damping

⇒ [“1.1.1 Overview - Electronic Damping, Torsion Beam Axle, Golf”, page 267](#)

⇒ [“1.1.2 Overview - Electronic Damping, Multi-Link Suspension, Golf”, page 269](#)

⇒ [“1.1.3 Overview - Electronic Damping, Multi-Link Suspension, Golf Wagon”, page 271](#)

1.1.1 Overview - Electronic Damping, Torsion Beam Axle, Golf





1 - Right Front Level Control Sensor - G289-

- ❑ Removing and installing. Refer to
⇒ ["2.3 Left/Right Front Level Control System Sensor G78 / G289 , Removing and Installing", page 280](#)

2 - Right Front Body Acceleration Sensor - G342-

- ❑ Removing and installing. Refer to
⇒ ["1.3 Left/Right Front Body Acceleration Sensor G341 / G342 , Removing and Installing", page 274](#)

3 - Left Rear Body Acceleration Sensor - G699-

- ❑ Component location: in the luggage compartment on the left shock absorber tower behind the left side trim panel
- ❑ Removing and installing. Refer to
⇒ ["1.4 Left Rear Body Acceleration Sensor G699 , Removing and Installing", page 275](#)

4 - Electronic Damping Control Module - J250-

- ❑ Removing and installing. Refer to
⇒ ["1.2.1 Electronic Damping Control Module J250 , Removing and Installing, Golf", page 272](#)
- ❑ Component location: the Electronic Damping Control Module - J250- is installed in the luggage compartment behind the left side trim panel
- ❑ 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 the front camera for the driver assistance systems must be calibrated.

5 - Left Rear Level Control System Sensor - G76-

- ❑ Removing and installing. Refer to
⇒ ["2.4.1 Left Rear Level Control System Sensor G76 , Removing and Installing, Torsion Beam Axle", page 282](#)

6 - Left Front Body Acceleration Sensor - G341-

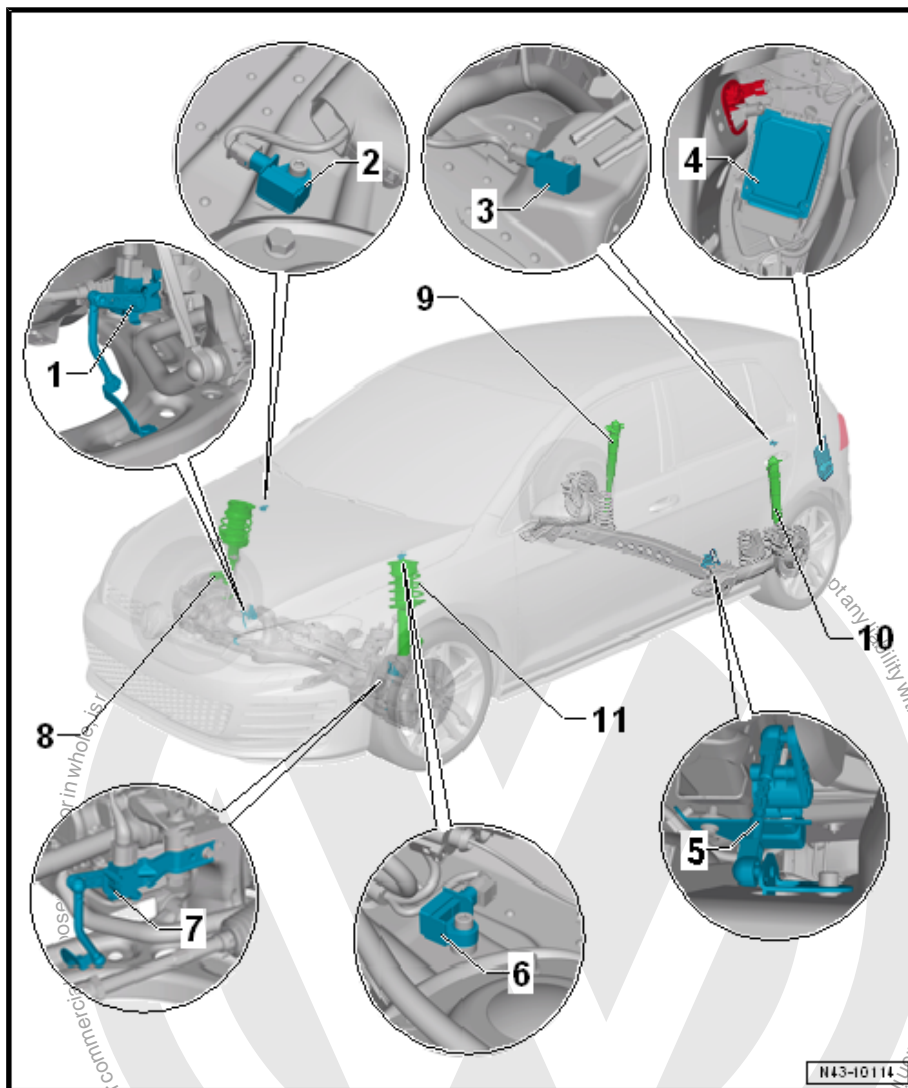
- ❑ Removing and installing. Refer to
⇒ ["1.3 Left/Right Front Body Acceleration Sensor G341 / G342 , Removing and Installing", page 274](#)

7 - Left Front Level Control System Sensor - G78-

- ❑ Removing and installing. Refer to
⇒ ["2.3 Left/Right Front Level Control System Sensor G78 / G289 , Removing and Installing", page 280](#)

8 - Shock Absorber with Right Front Damping Adjustment Valve - N337-

- ❑ Removing and installing the suspension strut. Refer to
⇒ ["3.2 Suspension Strut, Removing and Installing", page 45](#) .
- ❑ Servicing the suspension strut. Refer to ["3.3 Suspension Strut, Servicing", page 51](#) .





9 - Shock Absorber with Right Rear Damping Adjustment Valve - N339-

- ❑ Shock absorber, removing and installing. Refer to
⇒ [“6.2 Shock Absorber, Removing and Installing”, page 193](#) .
- ❑ Shock absorber, servicing. Refer to ⇒ [“6.3 Shock Absorber, Servicing”, page 200](#) .

10 - Shock Absorber with Left Rear Damping Adjustment Valve - N338-

- ❑ Shock absorber, removing and installing. Refer to
⇒ [“6.2 Shock Absorber, Removing and Installing”, page 193](#) .
- ❑ Shock absorber, servicing. Refer to ⇒ [“6.3 Shock Absorber, Servicing”, page 200](#) .

11 - Shock Absorber with Left Front Damping Adjustment Valve - N336-

- ❑ Removing and installing the suspension strut. Refer to
⇒ [“3.2 Suspension Strut, Removing and Installing”, page 45](#) .
- ❑ Servicing the suspension strut. Refer to ⇒ [“3.3 Suspension Strut, Servicing”, page 51](#) .

1.1.2 Overview - Electronic Damping, Multi-Link Suspension, Golf

1 - Right Front Level Control Sensor - G289-

- ❑ Removing and installing. Refer to
⇒ [“2.3 Left/Right Front Level Control System Sensor G78 / G289, Removing and Installing”, page 280](#)

2 - Right Front Body Acceleration Sensor - G342-

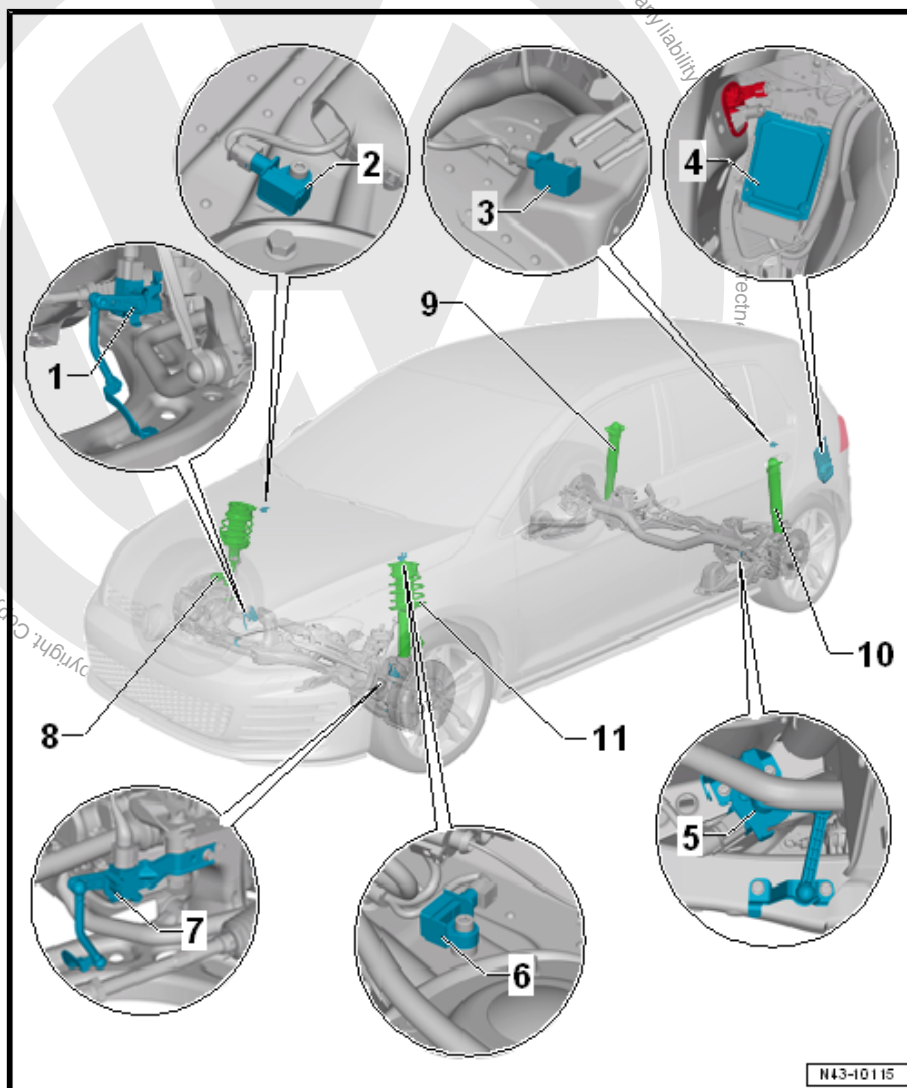
- ❑ Removing and installing. Refer to
⇒ [“1.3 Left/Right Front Body Acceleration Sensor G341 / G342, Removing and Installing”, page 274](#)

3 - Left Rear Body Acceleration Sensor - G699-

- ❑ Component location: in the luggage compartment on the left shock absorber tower behind the left side trim panel
- ❑ Removing and installing. Refer to
⇒ [“1.4 Left Rear Body Acceleration Sensor G699, Removing and Installing”, page 275](#)

4 - Electronic Damping Control Module - J250-

- ❑ Removing and installing. Refer to
⇒ [“1.2.1 Electronic Damping Control Module J250, Removing and Installing, Golf”, page 272](#)
- ❑ Component location: the Electronic Damping Control Module - J250- is installed in the luggage compartment behind the left side trim panel.
- ❑ If the Electronic Damping Control Module - J250- is being replaced, the Replace control module function must be performed using the ⇒ [“3.3 Suspension Strut, Servicing”, page 51](#) .





- ❑ If the control position was reprogrammed and if the vehicle has lane assist, then the front camera for the driver assistance systems must be calibrated.

5 - Left Rear Level Control System Sensor - G76-

- ❑ Removing and installing. Refer to
⇒ ["2.4.2 Left Rear Level Control System Sensors G76 , Removing and Installing, Multi-Link Suspension", page 283](#) .

6 - Left Front Body Acceleration Sensor - G341-

- ❑ Removing and installing. Refer to
⇒ ["1.3 Left/Right Front Body Acceleration Sensor G341 / G342 , Removing and Installing", page 274](#) .

7 - Left Front Level Control System Sensor - G78-

- ❑ Removing and installing. Refer to
⇒ ["2.3 Left/Right Front Level Control System Sensor G78 / G289 , Removing and Installing", page 280](#) .

8 - Shock Absorber with Right Front Damping Adjustment Valve - N337-

- ❑ Removing and installing the suspension strut. Refer to
⇒ ["3.2 Suspension Strut, Removing and Installing", page 45](#) .
- ❑ Servicing the suspension strut. Refer to ⇒ ["3.3 Suspension Strut, Servicing", page 51](#) .

9 - Shock Absorber with Right Rear Damping Adjustment Valve - N339-

- ❑ Shock absorber, removing and installing. Refer to
⇒ ["6.2 Shock Absorber, Removing and Installing", page 193](#) .
- ❑ Shock absorber, servicing. Refer to ⇒ ["6.3 Shock Absorber, Servicing", page 200](#) .

10 - Shock Absorber with Left Rear Damping Adjustment Valve - N338-

- ❑ Shock absorber, removing and installing. Refer to
⇒ ["6.2 Shock Absorber, Removing and Installing", page 193](#) .
- ❑ Shock absorber, servicing. Refer to ⇒ ["6.3 Shock Absorber, Servicing", page 200](#) .

11 - Shock Absorber with Left Front Damping Adjustment Valve - N336-

- ❑ Removing and installing the suspension strut. Refer to
⇒ ["3.2 Suspension Strut, Removing and Installing", page 45](#) .
- ❑ Servicing the suspension strut. Refer to ⇒ ["3.3 Suspension Strut, Servicing", page 51](#) .

1.1.3 Overview - Electronic Damping, Multi-Link Suspension, Golf Wagon

1 - Right Front Level Control Sensor - G289-

- ❑ Removing and installing. Refer to
⇒ ["2.3 Left/Right Front Level Control System Sensor G78 / G289 , Removing and Installing", page 280](#) .

2 - Right Front Body Acceleration Sensor - G342-

- ❑ Removing and installing. Refer to
⇒ ["1.3 Left/Right Front Body Acceleration Sensor G341 / G342 , Removing and Installing", page 274](#) .

3 - Left Rear Body Acceleration Sensor - G699-

- ❑ Component location: In the luggage compartment on the left shock absorber tower behind the left side trim panel
- ❑ Removing and installing. Refer to
⇒ ["1.4 Left Rear Body Acceleration Sensor G699 , Removing and Installing", page 275](#) .

4 - Electronic Damping Control Module - J250-

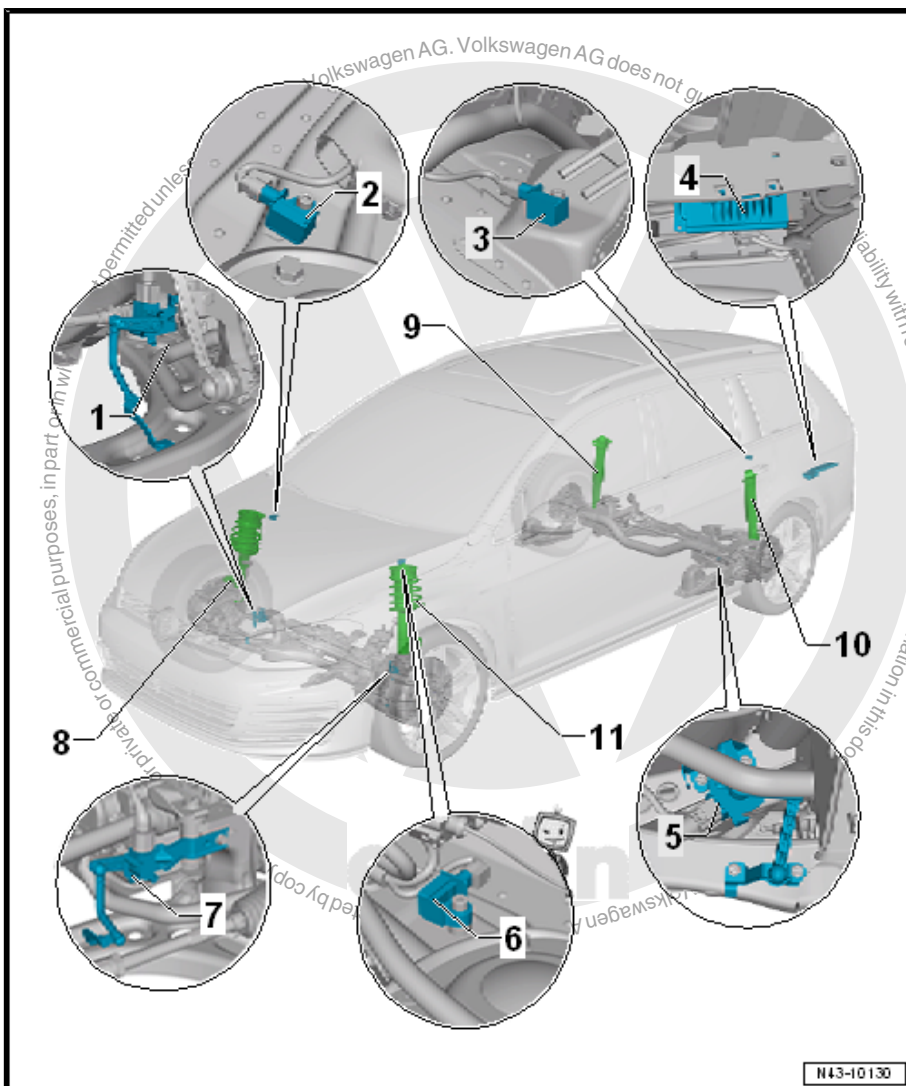
- ❑ Removing and installing. Refer to
⇒ ["1.2.2 Electronic Damping Control Module J250 , Removing and Installing, Golf Wagon", page 273](#) .
- ❑ Component location: the Electronic Damping Control Module - J250- is installed in the luggage compartment behind the left side trim panel.
- ❑ If the Electronic 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
⇒ ["6.1 Driver Assistance Systems Front Camera, Calibrating", page 327](#) .

5 - Left Rear Level Control System Sensor - G76-

- ❑ Removing and installing, FWD. Refer to
⇒ ["2.4.2 Left Rear Level Control System Sensors G76 , Removing and Installing, Multi-Link Suspension", page 283](#) .
- ❑ Removing and installing, AWD. Refer to
⇒ ["2.4.3 Left Rear Level Control System Sensors G76 , Removing and Installing, Multi-Link Suspension, AWD", page 284](#) .

6 - Left Front Body Acceleration Sensor - G341-

- ❑ Removing and installing. Refer to
⇒ ["1.3 Left/Right Front Body Acceleration Sensor G341 / G342 , Removing and Installing", page 274](#) .





7 - Left Front Level Control System Sensor - G78-

- ❑ Removing and installing. Refer to
⇒ [“2.3 Left/Right Front Level Control System Sensor G78 / G289, Removing and Installing”, page 280](#) .

8 - Shock Absorber with Right Front Damping Adjustment Valve - N337-

- ❑ Removing and installing the suspension strut. Refer to
⇒ [“3.2 Suspension Strut, Removing and Installing”, page 45](#) .
- ❑ Servicing the suspension strut. Refer to ⇒ [“3.3 Suspension Strut, Servicing”, page 51](#) .

9 - Shock Absorber with Right Rear Damping Adjustment Valve - N339-

- ❑ Shock absorber, removing and installing. Refer to
⇒ [“6.2 Shock Absorber, Removing and Installing”, page 193](#) .
- ❑ Shock absorber, servicing. Refer to ⇒ [“6.3 Shock Absorber, Servicing”, page 200](#) .

10 - Shock Absorber with Left Rear Damping Adjustment Valve - N338-

- ❑ Shock absorber, removing and installing. Refer to
⇒ [“6.2 Shock Absorber, Removing and Installing”, page 193](#) .
- ❑ Shock absorber, servicing. Refer to ⇒ [“6.3 Shock Absorber, Servicing”, page 200](#) .

11 - Shock Absorber with Left Front Damping Adjustment Valve - N336-

- ❑ Removing and installing the suspension strut. Refer to
⇒ [“3.2 Suspension Strut, Removing and Installing”, page 45](#) .
- ❑ Servicing the suspension strut. Refer to ⇒ [“3.3 Suspension Strut, Servicing”, page 51](#) .

1.2 Electronic Damping Control Module - J250- , Removing and Installing

⇒ [“1.2.1 Electronic Damping Control Module J250 , Removing and Installing, Golf”, page 272](#)

⇒ [“1.2.2 Electronic Damping Control Module J250 , Removing and Installing, Golf Wagon”, page 273](#)

1.2.1 Electronic Damping Control Module - J250- , Removing and Installing, Golf

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester

Removing

Component location: the Electronic Damping Control Module - J250- is installed in the luggage compartment behind the left side trim panel.

- Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .
- Remove the ignition key.

Vehicles with “Keyless Access” Keyless Locking and Starting System

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

Continuation for All Vehicles

- Remove the left luggage compartment side trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Luggage Compartment Trim Panels; Luggage Compartment Side Trim Panel, Removing and Installing .

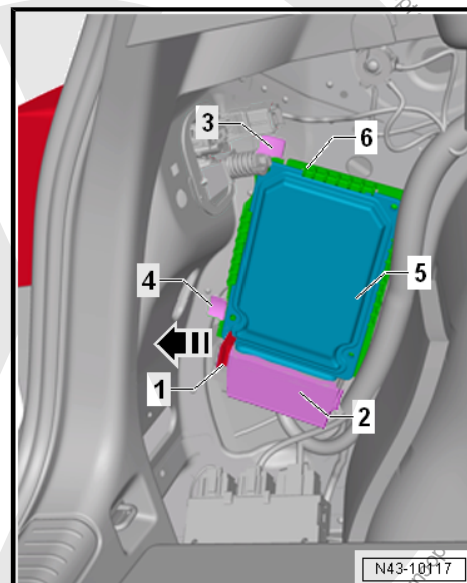


- Release the release lever -1- in direction of -arrow-.
- Remove the connector -2-.
- Push the tabs -3 and 4- to the rear.
- Slide the Electronic Damping Control Module - J250- -5- downward from the bracket -6-.

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 [⇒ "6.1 Driver Assistance Systems Front Camera, Calibrating", page 327](#) .



1.2.2 Electronic Damping Control Module - J250- , Removing and Installing, Golf Wagon

Special tools and workshop equipment required

- ◆ Vehicle Diagnostic Tester

Removing

Component location: the Electronic Damping Control Module - J250- is installed in the luggage compartment behind the left side trim panel.

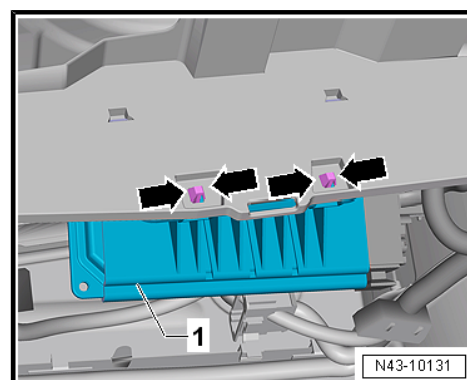
- Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .
- Remove the ignition key.

Vehicles with "Keyless Access" Keyless Locking and Starting System

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

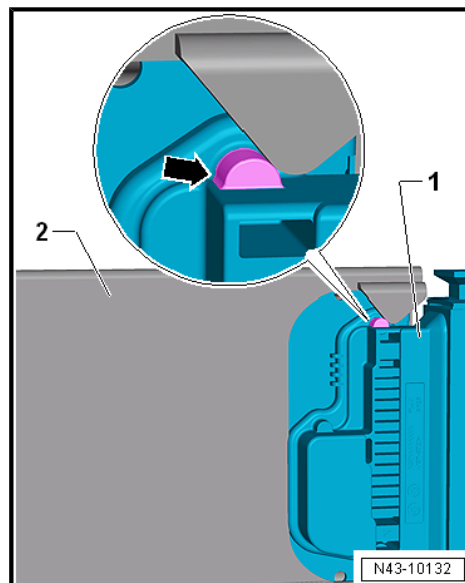
Continuation for All Vehicles

- Remove the left luggage compartment side trim panel. Refer to ⇒ Body Interior; Rep. Gr. 70 ; Luggage Compartment Trim Panels; Luggage Compartment Side Trim Panel, Removing and Installing .
- Remove the tool bag.
- Release the tabs -arrows-.
- Remove the bracket -1-.





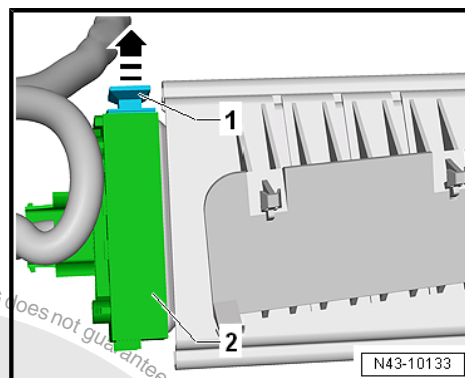
- Remove the control module -1- from the bracket -2-.



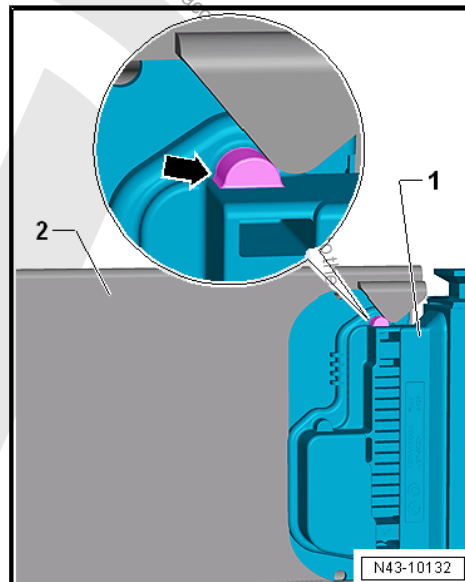
- Remove the release -1- in direction of -arrow-.
- Remove the connector -2-.

Installing

Install in reverse order of removal and note the following:



- Push the control module -1- as far as possible in the bracket -2- until the tab -arrow- engages in the bracket.
- 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 [⇒ "6.1 Driver Assistance Systems Front Camera, Calibrating", page 327](#) .



1.3 Left/Right Front Body Acceleration Sensor -G341- / -G342-, Removing and Installing

Special tools and workshop equipment required

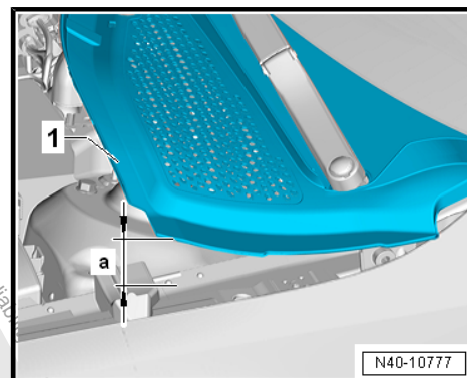
- ◆ Torque Wrench - VAG1410-



Removing

- Remove the seal from the entire length of the plenum chamber cover.
- Remove the clips.
- Lift the plenum chamber cover -1- to maximum 60 mm.

a - 60 mm



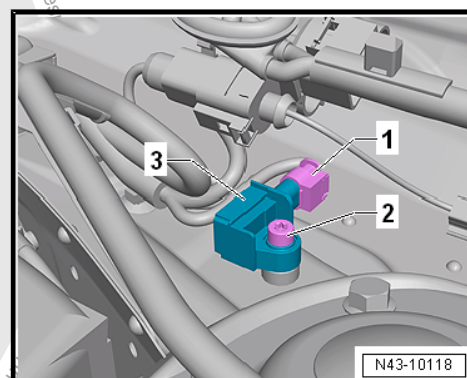
Release and disconnect the connector -1-.

Remove the bolt -2-.

Remove the Front Body Acceleration Sensor .

Installing

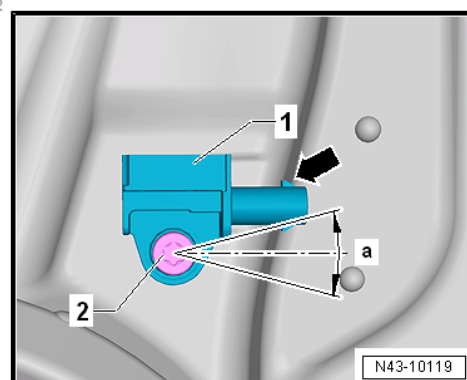
Installation is the reverse of removal, with special attention to the following:



- Insert the Front Body Acceleration Sensor -1- so that the connector connection -arrow- faces opposite the direction of travel.
- Secure the Front Body Acceleration Sensor -1- with the bolt -2-.

Installation position: angle tolerance -a- is $\pm 10^\circ$. The installation position of the Front Body Acceleration Sensor may deviate around this angle from the vehicle longitudinal axis.

- Perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .



Tightening Specifications

Component	Tightening Specification
Front Body Acceleration Sensor to body	8 Nm

1.4 Left Rear Body Acceleration Sensor - G699- , Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench - VAG1410-
- ◆ Vehicle Diagnostic Tester

Removing

- Remove the left luggage compartment side trim panel. Refer to ➤ Body Interior; Rep. Gr. 70 ; Luggage Compartment Trim



Panels; Luggage Compartment Side Trim Panel, Removing and Installing .

- Release and disconnect the connector -1-.
- Remove the bolt -2- and then remove the Rear Body Acceleration Sensor - G343- -3-.

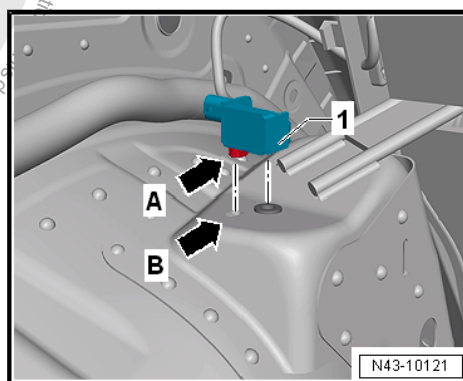
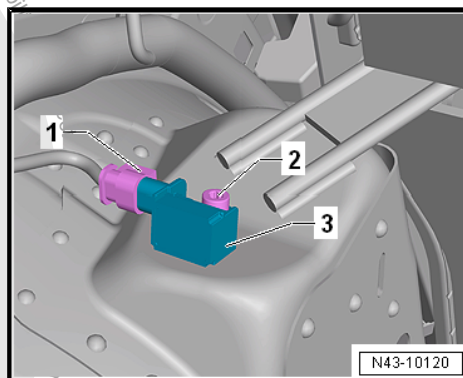
Installing

Installation is the reverse of removal, with special attention to the following:

- Insert the Rear Body Acceleration Sensor - G343- -1- so that the tab -arrow A- engages in the hole -arrow B-.
- Perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .

Tightening Specifications

Component	Tightening Specification
Rear Body Acceleration Sensor - G343- to body	8 Nm





2 Level Control System Sensor

⇒ [“2.1 Overview - Front Level Control System Sensor”, page 277](#)

⇒ [“2.2 Overview - Rear Level Control System Sensor”, page 278](#)

⇒ [“2.3 Left/Right Front Level Control System Sensor G78 / G289, Removing and Installing”, page 280](#)

⇒ [“2.4 Left/Right Rear Level Control System Sensor G76 / G77, Removing and Installing”, page 282](#)

2.1 Overview - Front Level Control System Sensor



Note

A replacement Left Front Level Control System Sensor - G78- / Right Front Level Control Sensor - G289- only comes complete with the coupling rod and the upper and lower retaining plate.

1 - Control Arm

2 - Subframe

3 - Connector

4 - Left Front Level Control System Sensor - G78- and Right Front Level Control Sensor - G289-

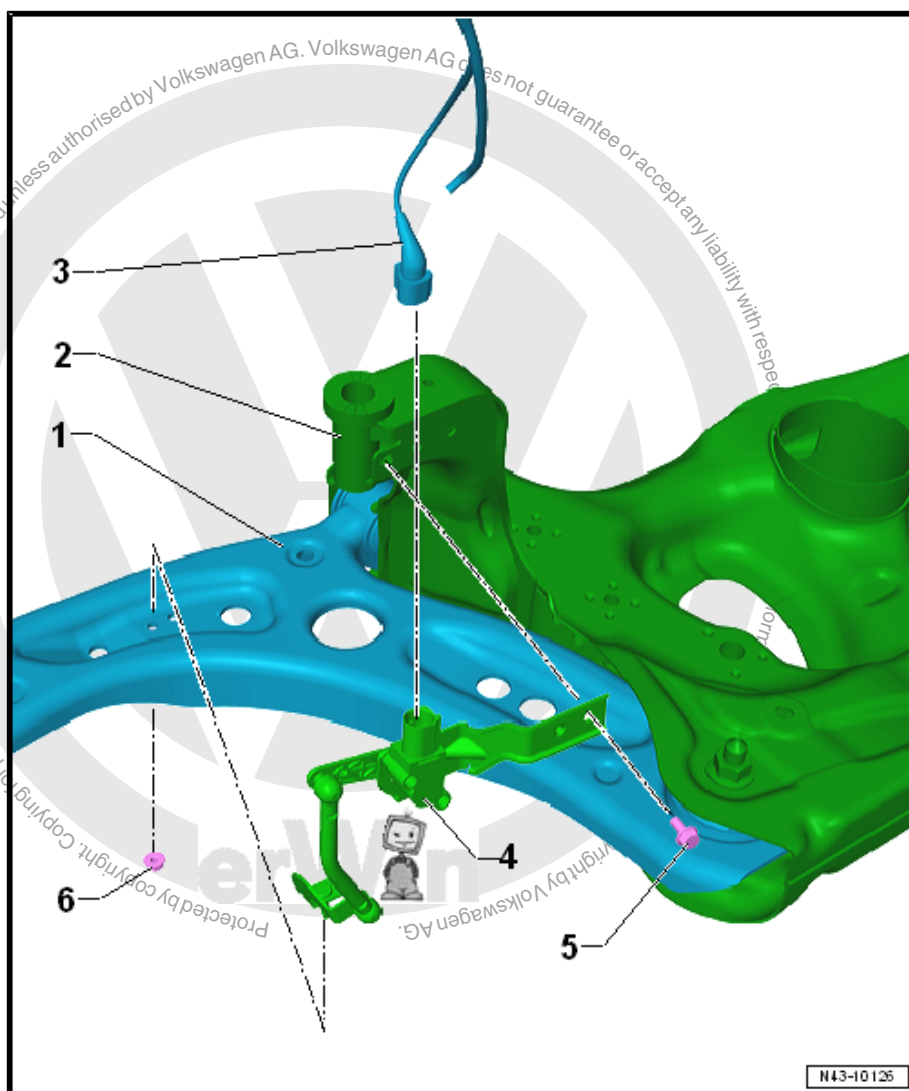
- ☐ Complete with components
- ☐ The lever must face toward outside of vehicle
- ☐ Removing and installing. Refer to ⇒ [“2.3 Left/Right Front Level Control System Sensor G78 / G289, Removing and Installing”, page 280](#)
- ☐ Perform the basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

5 - Bolt

- ☐ 8 Nm

6 - Nut

- ☐ 8 Nm
- ☐ Replace after removal





2.2 Overview - Rear Level Control System Sensor

⇒ [“2.2.1 Overview - Rear Level Control System Sensor, Torsion Beam Axle”, page 278](#)

⇒ [“2.2.2 Overview - Rear Level Control System Sensor, Multi-Link Suspension”, page 279](#)

⇒ [“2.2.3 Overview - Rear Level Control System Sensor, Multi-Link Suspension, AWD”, page 280](#)

2.2.1 Overview - Rear Level Control System Sensor, Torsion Beam Axle



Note

A replacement Left Rear Level Control System Sensor - G76- only comes complete with the coupling rod and the upper and lower retaining plate.

1 - Connector

2 - Bolt

□ 5 Nm

3 - Left Rear Level Control System Sensor - G76-

□ Removing and installing. Refer to
⇒ [“2.4.1 Left Rear Level Control System Sensor G76, Removing and Installing, Torsion Beam Axle”, page 282](#)

– Perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .

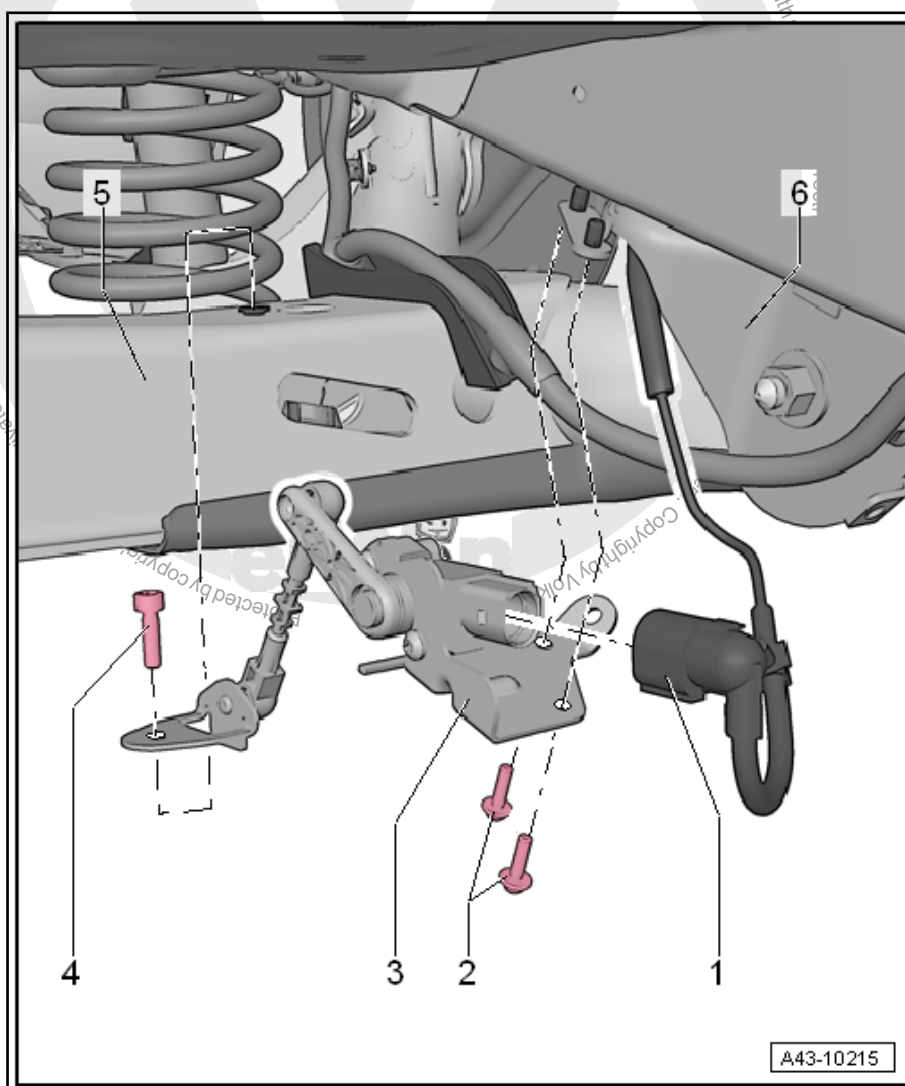
□ Perform the basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

4 - Bolt

□ 8 Nm

5 - Axle Beam

6 - Mounting Bracket





2.2.2 Overview - Rear Level Control System Sensor, Multi-Link Suspension



Note

A replacement level control system sensor only comes complete with the coupling rod and the upper and lower retaining plate.

1 - Bolt

- 5 Nm

2 - Left Rear Level Control System Sensor - G76-

- Complete with components
- The lever must face toward outside of vehicle
- Removing and installing. Refer to [⇒ "2.4 Left/Right Rear Level Control System Sensor G76 / G77, Removing and Installing", page 282](#).
- Perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester.
- Perform the basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting.

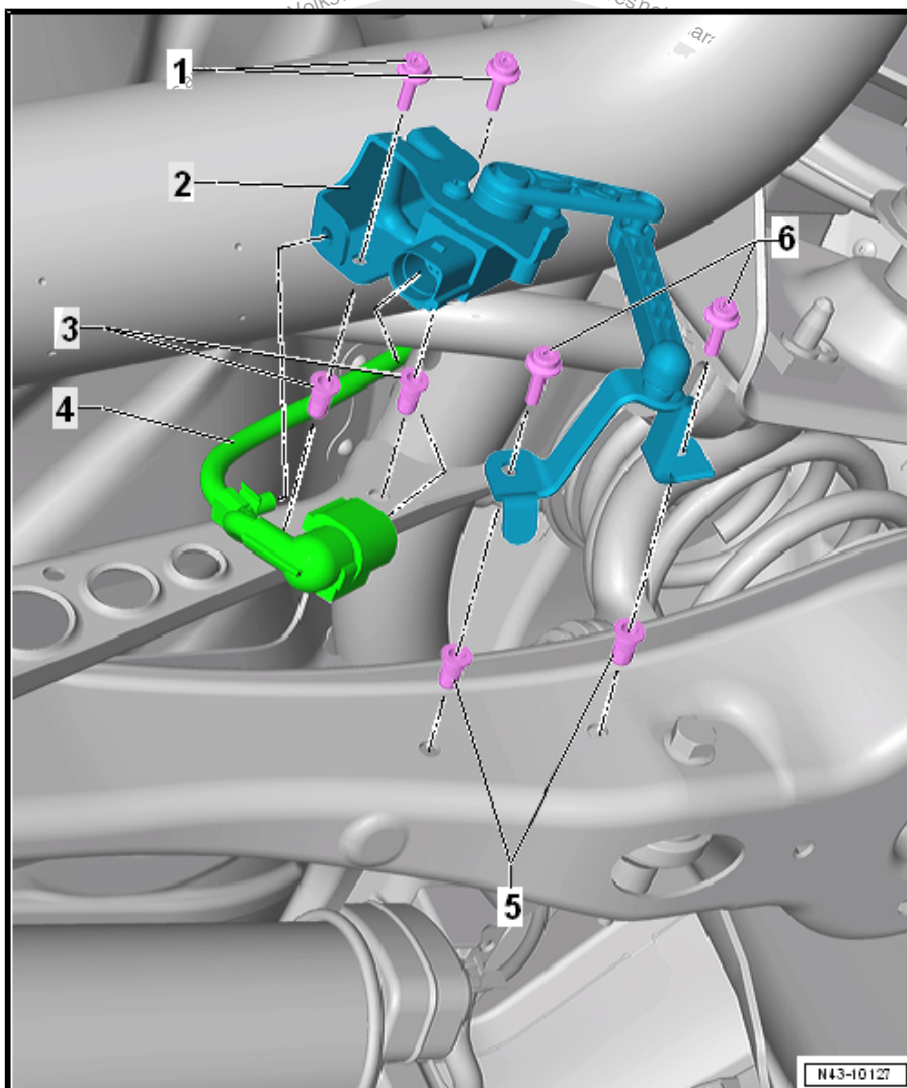
3 - Internally Threaded Pop Rivet

4 - Connector

5 - Internally Threaded Pop Rivet

6 - Bolt

- 5 Nm





2.2.3 Overview - Rear Level Control System Sensor, Multi-Link Suspension, AWD



Note

A replacement level control system sensor only comes complete with the coupling rod and the upper and lower retaining plate.

1 - Internally Threaded Pop Rivet

2 - Connector

3 - Internally Threaded Pop Rivet

4 - Bolt

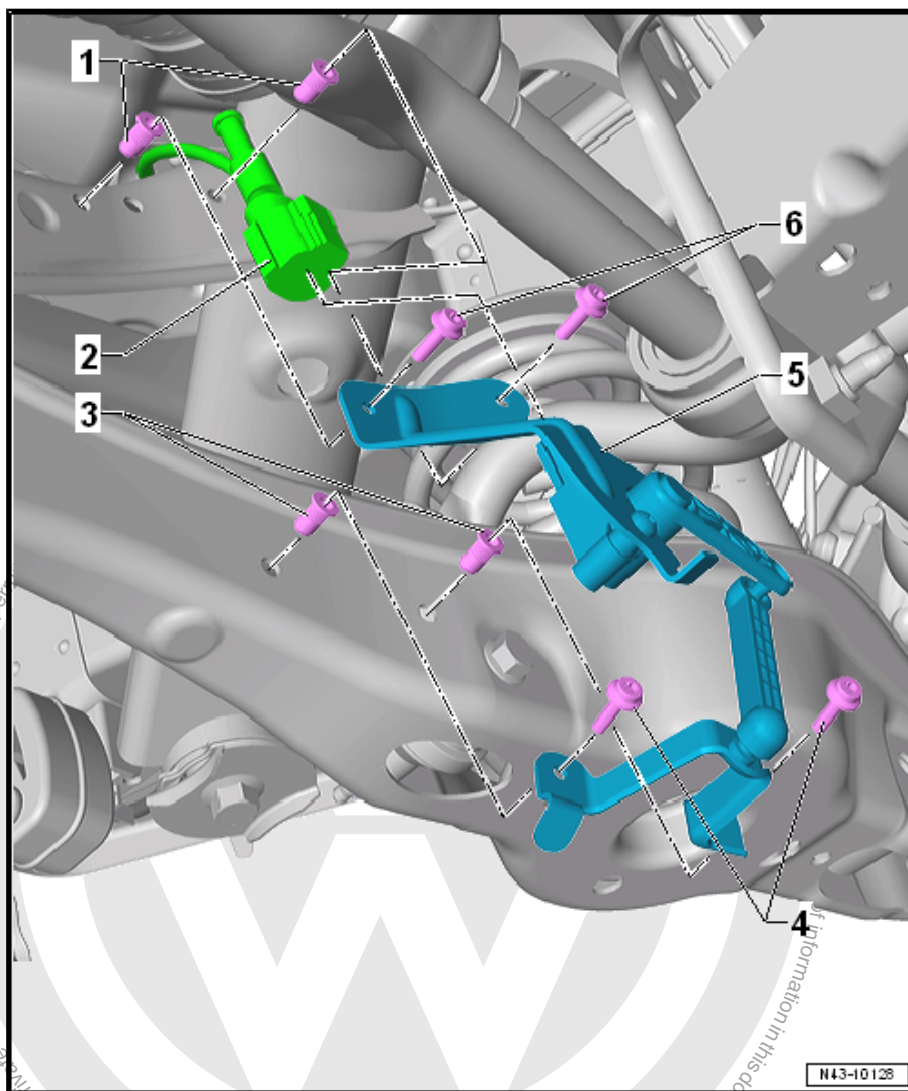
- 5 Nm

5 - Rear Level Control System Sensor

- Complete with components
- The lever must face toward outside of vehicle
- Removing and installing. Refer to ⇒ ["2.4 Left/Right Rear Level Control System Sensor G76 / G77, Removing and Installing", page 282](#).
- Perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester.
- Perform the basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting.

6 - Bolt

- 5 Nm



2.3 Left/Right Front Level Control System Sensor -G78- / -G289- , Removing and Installing



Special tools and workshop equipment required

- ◆ Torque Wrench 1410 - VAG1410-
- ◆ Vehicle Diagnostic Tester



Caution

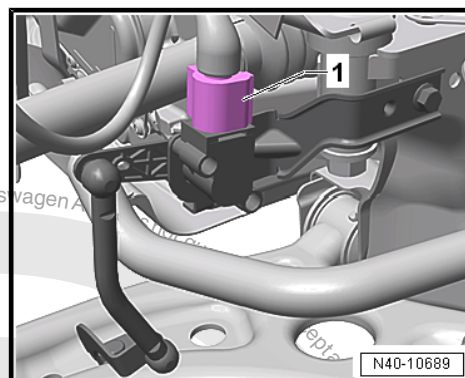
This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

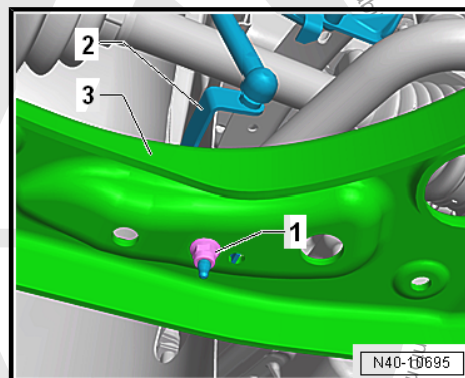
- ◆ Nut - Control Arm to Front Level Control System Sensor

Removing

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



- Remove nut -1-.
- Remove the bracket -2- for the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- from the control arm -3-.





- Remove the bolt -1-.
- Remove the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- .

Installing

Installation is the reverse of removal, with special attention to the following:



Note

- ♦ *The level control system sensor lever must point toward vehicle exterior.*
- ♦ *The thread on the level control system sensor must be installed in the outer hole in the control arm. The tab on the level control system sensor must fit into the inner hole to assure that the installation position is correct.*
- Perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .
- If the control position was reprogrammed and if the vehicle has lane assist, then the front camera for the driver assistance systems must be calibrated.
- Perform the basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

Tightening Specifications

- ♦ Refer to
⇒ [“2.1 Overview - Front Level Control System Sensor”, page 277](#)

2.4 Left/Right Rear Level Control System Sensor -G76- / -G77- , Removing and Installing

⇒ [“2.4.1 Left Rear Level Control System Sensor G76 , Removing and Installing, Torsion Beam Axle”, page 282](#)

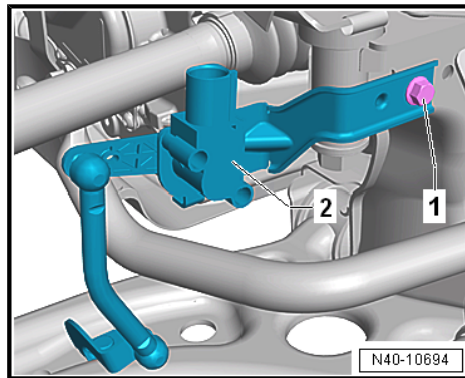
⇒ [“2.4.2 Left Rear Level Control System Sensors G76 , Removing and Installing, Multi-Link Suspension”, page 283](#)

⇒ [“2.4.3 Left Rear Level Control System Sensors G76 , Removing and Installing, Multi-Link Suspension, AWD”, page 284](#)

2.4.1 Left Rear Level Control System Sensor - G76- , Removing and Installing, Torsion Beam Axle

Special tools and workshop equipment required

- ♦ Torque Wrench 1410 - VAG1410-
- ♦ Vehicle Diagnostic Tester





Removing

- Disconnect the connector -1-.
- Remove the bolts -2 and 4-.
- Remove the Left Rear Level Control System Sensor - G76- -3-.

Installing

Installation is the reverse of removal, with special attention to the following:



Note

The Left Rear Level Control System Sensor - G76- lever must face opposite the direction of travel.

- Perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .
- Perform the basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

Tightening Specifications

- ◆ Refer to
⇒ ["2.2.1 Overview - Rear Level Control System Sensor, Torsion Beam Axle", page 278](#)

2.4.2 Left Rear Level Control System Sensors - G76- , Removing and Installing, Multi-Link Suspension

Special tools and workshop equipment required

- ◆ Torque Wrench 1410 - VAG1410-
- ◆ Vehicle Diagnostic Tester

Removing

- Disconnect the connector -1-.
- Remove the bolts -2 and 3-.
- Remove the Left Rear Level Control System Sensor - G76- -4-.

Installing

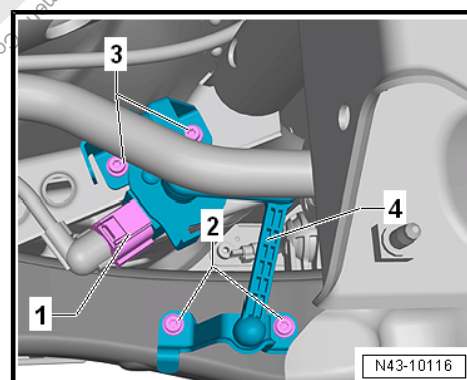
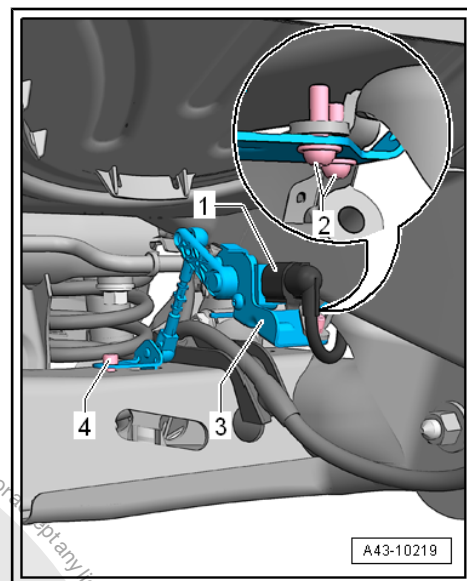
Installation is the reverse of removal, with special attention to the following:

The level control system sensor lever must point toward vehicle exterior.

- Perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .
- Perform the basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

Tightening Specifications

- ◆ Refer to
⇒ ["2.2.2 Overview - Rear Level Control System Sensor, Multi-Link Suspension", page 279](#)





2.4.3 Left Rear Level Control System Sensors - G76- , Removing and Installing, Multi- Link Suspension, AWD

Special tools and workshop equipment required

- ◆ Torque Wrench 1410 - VAG1410-
- ◆ Vehicle Diagnostic Tester

Removing

- Disconnect the connector -1-.
- Remove the bolts -2 and 3-.
- Remove the Left Rear Level Control System Sensor - G76-4-.

Installing

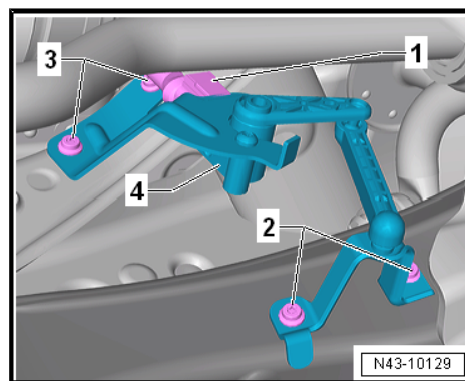
Installation is the reverse of removal, with special attention to the following:

The level control system sensor lever must point toward vehicle exterior.

- Perform the basic setting for the wheel damping electronics. Refer to Vehicle Diagnostic Tester .
- Perform the basic setting of the headlamps. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Headlamp; Headlamp, Adjusting .

Tightening Specifications

- ◆ Refer to
⇒ ["2.2.2 Overview - Rear Level Control System Sensor, Multi-Link Suspension", page 279](#)

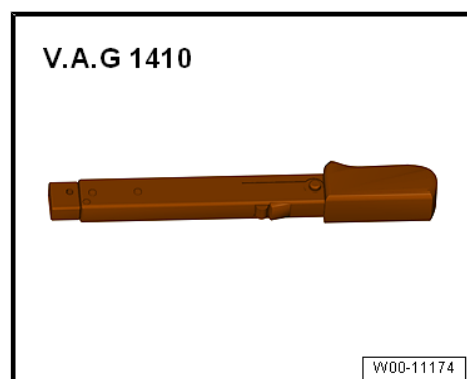




3 Special Tools

Special tools and workshop equipment required

- ◆ Torque Wrench - VAG1410-



- ◆ Vehicle Diagnostic Tester





44 – Wheels, Tires and Vehicle Alignment

1 Wheels and Tires

⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)

⇒ [“1.2 Tires, Dismounting”, page 286](#)

⇒ [“1.3 Tires, Dismounting”, page 287](#)

⇒ [“1.4 Tires, Mounting”, page 287](#)

⇒ [“1.5 Wheel, Changing”, page 288](#)

⇒ [“1.6 Tire Sealant, Disposing”, page 292](#)

⇒ [“1.7 Vehicles with Tire Mobility Kit”, page 292](#)

1.1 Wheel Bolt Tightening Specifications

Wheel bolt to wheel hub for all vehicles:

Tightening specification: 120 Nm

- Apply corrosion protection to the wheel centering seat before mounting the wheel. Refer to
⇒ [“1.5.1 Wheel Changing, Protecting Wheel Centering Seat Against Corrosion”, page 288](#).
- ◆ Positioning the anti-theft wheel bolts on steel wheels. Refer to
⇒ [“1.5.5 Wheel Changing, Position of Anti-Theft Wheel Bolts on Steel Wheels”, page 291](#).
- ◆ Install the anti-theft wheel bolts using the Wheel Bolt Master Set.

1.2 Tires, Dismounting



Note

- ◆ *Since MY 2005, all vehicles have new rims with revised contour.*
- ◆ *When mounting tires, tire dismounting/mounting machine must be equipped with tire mounting fixture intended for these rims.*



WARNING

Otherwise the rim could get damaged.

If the tire mounting unit has not been modified, contact the equipment manufacturer.

Safety Precautions for Removing and Installing Tires

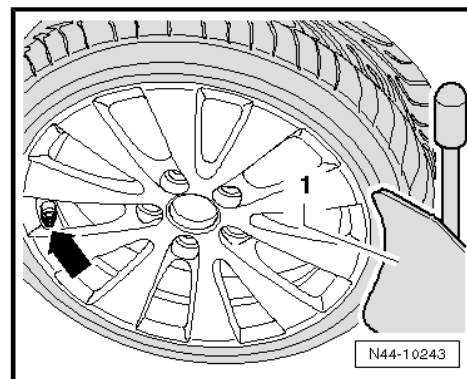
- Always note the instructions and danger warnings identified in the following description!
- Remove the nickel plated valve insert and let the air out of the tire.



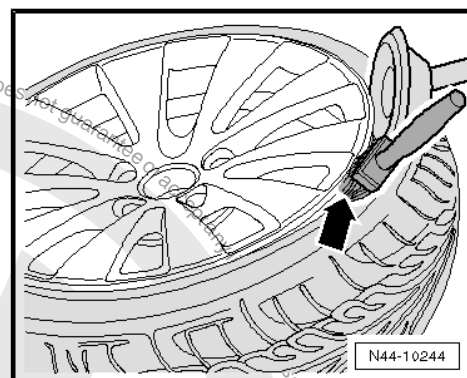
- Make sure the tire valve -arrow- is on the opposite side of the press-off blade -1- when dismounting a tire using a tire dismounting/mounting machine.

The press-off blade must be applied at maximum 2 cm away from rim flange.

- Remove the balance weight and any dirt from the rim.



- Press off both tire beads around circumference while thoroughly applying tire mounting paste between tire and rim flange -arrow-.



1.3 Tires, Dismounting

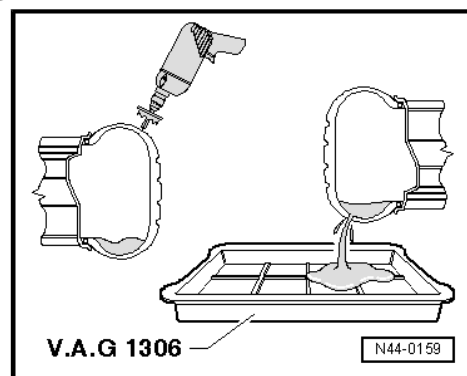
Tires which have been filled or sealed with tire sealant, must be drained before removing from wheel.



Caution

- ◆ **Do not let tire sealant come in contact with your eyes or skin.**
- ◆ **It is harmful to health, can cause eye irritation and allergies.**
- ◆ **Wear safety gloves and protective eyewear.**

- Place the wheel on a flat surface.
- Remove the valve insert.
- Using a suitable drill bit or cutting bit, carefully drill a hole in the bead seat area of tire.
- Hold the wheel over a catch tray and let the sealant flow out.
- Remove the tire from the rim.
- Clean the rim with a damp cloth.

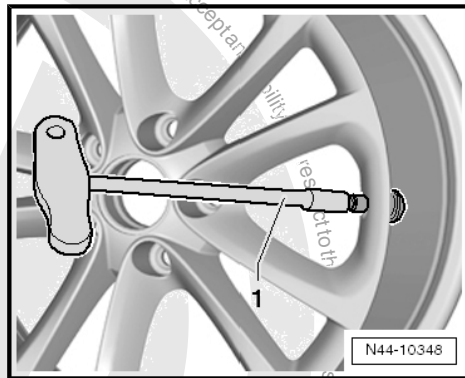


1.4 Tires, Mounting

- Make sure wheel rim is clean.



- Using the Valve Fitting Tool VAS6459- -1-, insert a new tire valve.
- Remove the valve insert.
- Inflate tire to approximately 3 to 4 bar (43 to 58 psi), tire bead must slip audibly over rim hump when doing this.
- Install the valve insert.
- Check the tire pressure for specified pressure.
- Balance the tire.



1.5 Wheel, Changing

⇒ ["1.5.1 Wheel Changing, Protecting Wheel Centering Seat Against Corrosion", page 288](#)

⇒ ["1.5.2 Wheel Changing", page 289](#)

⇒ ["1.5.3 Wheel Changing Instructions", page 290](#)

⇒ ["1.5.4 Wheel Changing and Wheel Installation", page 291](#)

⇒ ["1.5.5 Wheel Changing, Position of Anti-Theft Wheel Bolts on Steel Wheels", page 291](#)

1.5.1 Wheel Changing, Protecting Wheel Centering Seat Against Corrosion

Applies to Light-Alloy and Steel Wheels

When a wheel is changed, the centering seat should be sprayed with Wax Spray to prevent corrosion between the centering seat and the wheel rim. Refer to the Parts Catalog.

- Remove the wheel.
- Thoroughly clean the centering seat on the wheel hub and the centering surface on the rim.
- Apply wax in area of centering -arrow- using a brush.



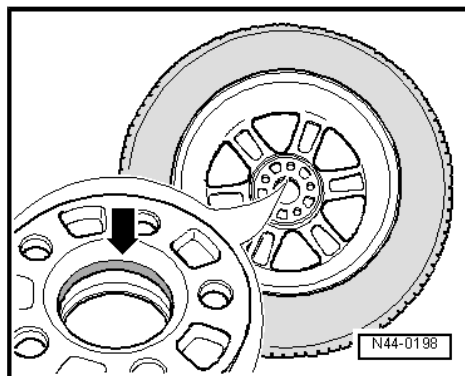
Note

Always make sure that only centering -arrow- is waxed and not rim contact surfaces. As a consequence, the brakes would become contaminated while driving and thereby result in poor braking.



WARNING

Wheel bolts, contact surfaces of wheel/wheel hub and the threads in the wheel hubs must not have wax applied to them. Never apply lubricants or anti-corrosion treatment to threads in wheel hubs.



- Install the wheel and tighten. Refer to
⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#) .



1.5.2 Wheel Changing

Warm Up Cold Tires to the Minimum Mounting Temperature



Note

This applies also to ultra high performance tires (height- / width ratio smaller/same 45% and speed rating symbol larger than/same as V).



WARNING

The minimum mounting temperature for a tire should be between 15 °C and 30 °C (59 and 86 °F) in the center of the tire.

- For injury-free mounting, the upper sidewall and the upper bead inside must be minimum 15 °C (59 °F).
- The internal temperature is called the core temperature.
- Rubber is a poor heat conductor, and for this reason, a cold tire must be exposed to a temperature controlled environment until the inner rubber layers have warmed up to at least 15 °C (59 °F).
- The temperature of the tire surface during the warm-up phase should not be considered as the temperature on the inside of the tire.
- So that the cold tires warm up quickly, never stack them one on top of the other. They should be stored separated from each other so that the warm air can "circulate" around them.
- Never use a room heater or a hot air gun to warm up tires because the surface temperature will heat up very quickly to a critical temperature.
- Using warm water or warm air (maximum 50 °C (122 °F)) is the only way to warm a tire safely.
- If cold tires (below 0 °C (32 °F)) are brought into a warm environment (above 0 °C), then a layer of ice will form on the surface of the tire. This layer, caused by the condensation of the humidity, shows that the tire has begun to absorb the warmth.
- Once the layer of ice starts to melt, wipe up the water with a rag so that the warming up process will not be slowed down.

Warm-Up Time

- ◆ Tires warmer than 0 °C (32 °F) must be stored at minimum 19 °C (66.2 °F) for at least 2 hours.
- ◆ Tires colder than 0 °C (32 °F) must be stored at minimum 19 °C (66.2 °F) for at least 2.5 hours.

Recommendations:

- ◆ If possible, let the tires stand in the shop for 1 day before mounting them
- ◆ Store them on an insulated surface, a wood pallet or something similar.
- ◆ Position the tires so that they can be "surrounded" by the warm air.
- ◆ Wipe off the sweat



- ◆ Never heat the tires with a room heater or a hot air gun!

1.5.3 Wheel Changing Instructions



WARNING

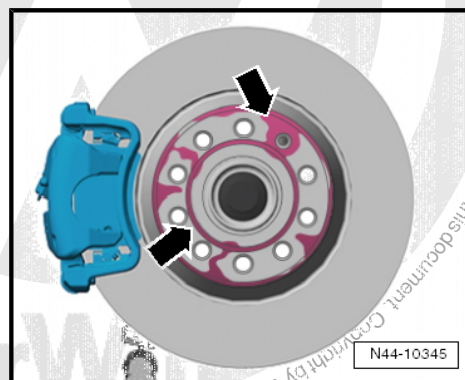
The secure seating of the wheel bolts and the wheels is only ensured if the instructions and checks below are followed.



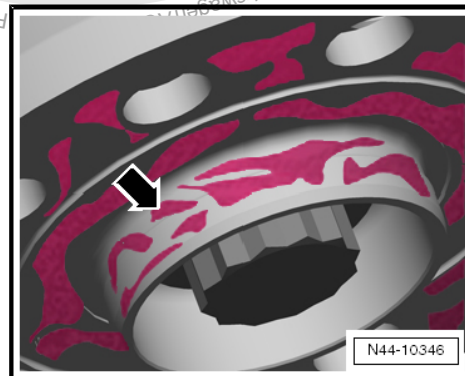
Note

After removing or installing one or multiple tires, the tire pressure monitoring system must be calibrated for vehicles with tire pressure monitoring system. Refer to ➔ [page 295](#).

- Make sure the contact surfaces -arrows- on the brake disc are free from corrosion and dirt.

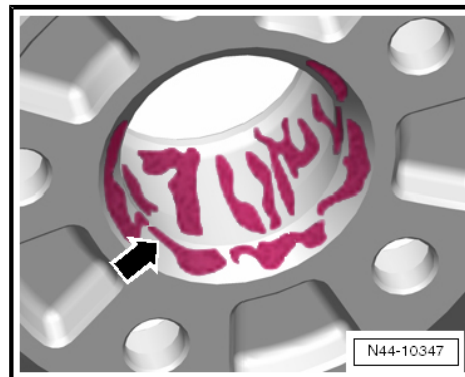


- Make sure the contact surfaces -arrow- on the brake disc center seat are free of corrosion and dirt.



- Make sure the contact surface -arrow- on the wheel inner side (rim) as well as the central seat in the rim is free of corrosion and dirt.
- The spherical caps * in the wheel bolt openings and the wheel bolt threads must likewise be free of corrosion, dirt, oil or grease.

* The spherical cap is the curved surface of a section of a sphere.





- Check whether the wheel bolts can be easily screwed in by hand. The threads of the wheel bolts must not touch the holes in the brake disc -arrow-.

If the thread of the wheel bolt touches the hole -arrow-, turn the brake disc relative to the wheel accordingly.

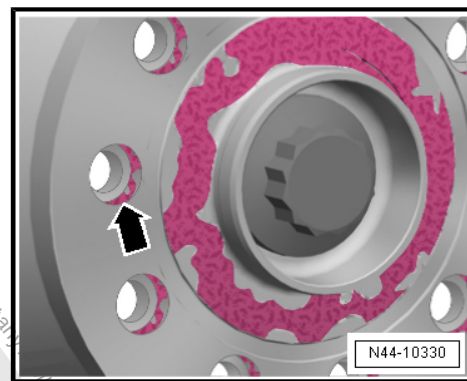
Remove Any Dirt or Corrosion if Necessary

- ◆ Oil or grease from the contact surfaces
- ◆ Oil or grease from the threads on the wheel hub
- ◆ Oil or grease from the threads on the wheel bolts



WARNING

Heavily corroded, difficult to turn or damaged wheel bolts must be replaced.



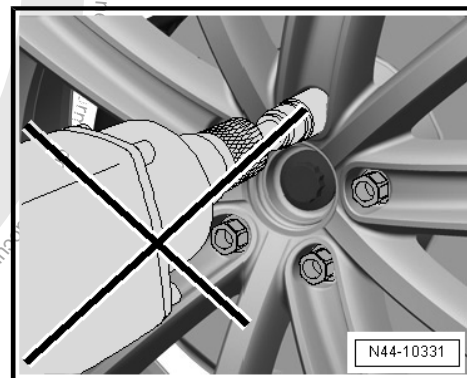
1.5.4 Wheel Changing and Wheel Installation

- Coat the wheel centering seat with protective material. Refer to
➔ [“1.5.1 Wheel Changing, Protecting Wheel Centering Seat Against Corrosion”, page 288](#).
- 1 - When mounting a wheel, tighten all wheel bolts uniformly by hand.
- 2 - Tighten the wheel bolts diagonally to approximately 30 Nm.
- 3 - Lower the vehicle to the ground. Tighten all the wheel bolts diagonally to the tightening specification using the torque wrench. Refer to
➔ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#).



WARNING

Do not use an impact wrench to install the wheel bolts.



1.5.5 Wheel Changing, Position of Anti-Theft Wheel Bolts on Steel Wheels



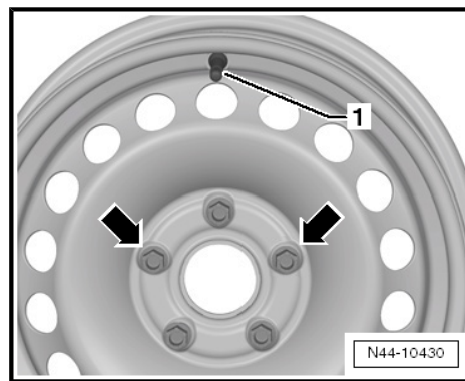
Caution

It is absolutely necessary to maintain the position of the anti-theft wheels bolts to the tire valve on steel wheels.



The anti-theft wheel bolt must be installed either to the right or to the left -arrows- of the valve -1- on steel wheels.

The decorative wheel hubcap can be installed on the steel wheel securely only when the anti-theft wheel bolt is installed in this position.



1.6 Tire Sealant, Disposing

- ◆ Tire sealant or residue from it must not be mixed with other wastes/fluids
- ◆ Accumulating fluid residue from tire sealant must be collected and placed in a plastic container. The plastic containers can be sent for recycling together with the tire sets (if the expiration date has passed).
- ◆ The return or recycling can take place using the existing shop disposal systems
- ◆ Check with the company responsible for trash pickup for the dealership.

1.7 Vehicles with Tire Mobility Kit

⇒ ["1.7.1 Vehicles with Tire Mobility Kit, Golf", page 292](#)

⇒ ["1.7.2 Vehicles with Tire Mobility Kit, Golf Wagon", page 292](#)

1.7.1 Vehicles with Tire Mobility Kit, Golf

Depending on the vehicle equipment, the vehicles are equipped with a tire mobility kit.

The tire mobility kit is located in the tool compartment -3- in the luggage compartment on the right side.

The tire mobility kit contains a bottle of tire sealant -1- and a compressor -2-.

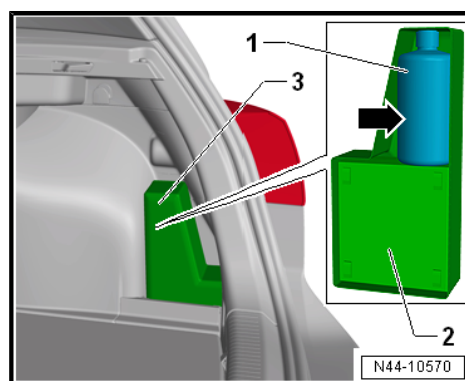
Tire sealant in the bottle has a limited storage life.

Therefore the minimum shelf life date -arrow- is marked on the bottle -1-.

Replace tire sealant when minimum shelf life date has been reached (tire sealant must not be older than 4 years).

If the bottle was opened, for example, for a punctured tire, it must also be replaced.

Observe the disposal regulations. Refer to
⇒ ["1.6 Tire Sealant, Disposing", page 292](#) .



1.7.2 Vehicles with Tire Mobility Kit, Golf Wagon

Depending on the vehicle equipment, the vehicles are equipped with a tire mobility kit.



The tire mobility kit is located in the tool compartment -3- in the luggage compartment on the left side.

The tire mobility kit contains a bottle of tire sealant -1- and a compressor -2-.

Tire sealant in the bottle has a limited storage life.

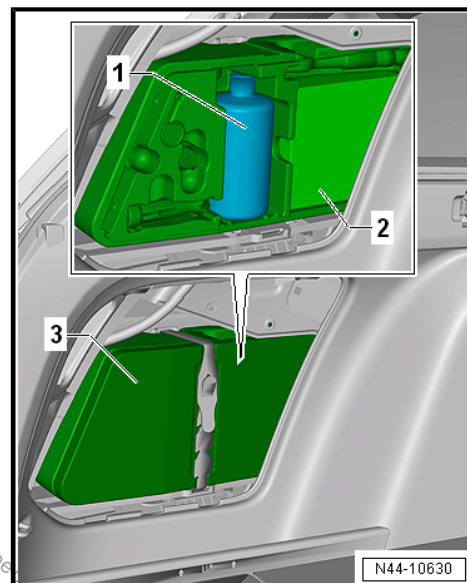
Therefore the minimum shelf life date is marked on the bottle -1-.

Replace tire sealant when minimum shelf life date has been reached (tire sealant must not be older than 4 years).

If the bottle was opened, for example, for a punctured tire, it must also be replaced.

Observe the disposal regulations. Refer to

⇒ ["1.6 Tire Sealant, Disposing", page 292](#).





2 Tire Pressure Monitoring System

⇒ **"2.1 Tire Pressure Monitoring System Description", page 294**

2.1 Tire Pressure Monitoring System Description

General Information

The tire pressure monitoring system is included in the software in the ABS Control Module - J104- . The system will recognize a slow and gradual decrease in tire pressure on a wheel. Diagnostic Trouble Code (DTC) memory faults for tire pressure monitoring are stored in the ABS Control Module - J104- . With the help of the ABS speed sensors, the Tire Pressure Monitoring System (TPMS) compares the speed and rolling circumference of the individuals wheels.

After the following work and/or changes and with the ignition switched on, the Tire Pressure Monitoring Display Button - E492- must be pressed until the confirmation chime sounds:

- ◆ Change in the tire pressures
- ◆ A change in one or more tires
- ◆ Changing a tire, for example, from front to rear
- ◆ Removing or installing one or multiple tires

If the rolling circumference of a wheel changes, the Tire Pressure Monitoring Display Indicator Lamp - K220- lights up in the instrument cluster. The rolling circumference can change by:

- ◆ Insufficient tire pressure
- ◆ Structural damage on tires
- ◆ Vehicle is loaded heavily on one side
- ◆ High load on one axle, when towing trailer for example
- ◆ When snow chains are used
- ◆ Spare wheel is mounted
- ◆ One wheel is replaced



System Malfunction in the Anti-Lock Braking System

If a malfunction in the ABS is displayed by the ASR/ESP Indicator Lamp - K155- , then the Tire Pressure Monitoring Display Indicator Lamp - K220- will also illuminate. A malfunction in the tire pressure monitoring system has not been stored.

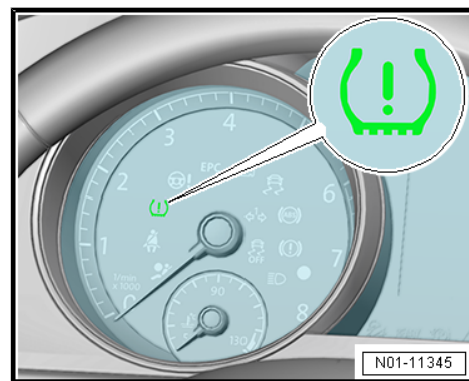
The indicator lamp cannot be turned off. In this case, perform the following:

- Connect Vehicle Diagnostic Tester and select “Guided Fault Finding” on the Vehicle Diagnostic Tester .

Follow the instructions on the screen to perform the basic setting.

Basic Setting with the Infotainment System, Performing

- Turn on the ignition.
- Switch on the Infotainment system.
- Press the Infotainment button **CAR**.
- Press **Setup**.
- Press **Tires**.
- Press **Set**.
- Press **Confirm**.





3 Vehicle Alignment

- ⇒ [“3.1 Axle Alignment Information”, page 296](#)
- ⇒ [“3.2 Test Prerequisites”, page 296](#)
- ⇒ [“3.3 Measurement Preparations”, page 297](#)
- ⇒ [“3.4 Axle Alignment Specified Values”, page 298](#)
- ⇒ [“3.5 Axle Alignment Procedure”, page 302](#)
- ⇒ [“3.6 Evaluating Need for Axle Alignment”, page 304](#)
- ⇒ [“3.7 Vehicle Data Label”, page 306](#)
- ⇒ [“3.8 Front Axle Camber, Adjusting”, page 306](#)
- ⇒ [“3.9 Rear Axle Camber, Adjusting”, page 307](#)
- ⇒ [“3.10 Rear Axle Toe, Adjusting”, page 308](#)
- ⇒ [“3.11 Front Axle Toe, Adjusting”, page 309](#)
- ⇒ [“3.12 Wheel Run-Out Compensation”, page 309](#)
- ⇒ [“3.13 Maximum Steering Angle, Checking”, page 310](#)

3.1 Axle Alignment Information

Wheel alignment must only be performed using VW/Audi-approved wheel alignment equipment.

Wheel alignment checks must always include both the front and rear axles.

- Perform the alignment using the wheel alignment computer.

The wheel alignment computer has all the information for the vehicle alignment.



Note

- ◆ *An alignment should not be done until the vehicle has been driven 1,000 to 2,000 km (621 to 1242 miles), since it takes this long for the coil springs to settle.*
- ◆ *The individual specifications should be followed as exactly as possible when making adjustments.*
- ◆ *If adjustments were performed on the suspension, check if the driver assistance systems must be calibrated.*

Vehicles pulling to one side and vehicles involved in an accident

The cause for this could be that steering rack in steering gear does not stand exactly in the center when steering straight ahead.

The steering support may pull slightly to the left or to the right. The result is a vehicle which pulls to the side.

If a vehicle is aligned due to a complaint “vehicle pulls to one side or pulls askew”, center position of steering rack must always be checked.

3.2 Test Prerequisites

- Check suspension, wheel bearing and steering for excessive play and damage.
- Tread depth difference may be no more than 2 mm on an axle.
- Tires inflated to prescribed pressure



- Vehicle curb weight
- Fuel tank must be full.
- Spare tire and vehicle tools are installed in appropriate position in vehicle.
- The windshield washer fluid reservoir must be full.
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.



Note

The test equipment must be properly adjusted and attached to the vehicle; observe device manufacturer operating instructions.

If necessary, contact the manufacturer of the alignment equipment for familiarization with the proper use of the equipment.

The vehicle alignment platforms and wheel alignment computer can lose their calibration over a period of time.

Wheel alignment platforms and wheel alignment computers should be serviced and calibrated at least once a year.

- Handle highly sensitive units with care.

3.3 Measurement Preparations

⇒ [“3.3.1 Measurement Preparations, Axle Alignment without Driver Assistance Systems”, page 297](#)

⇒ [“3.3.2 Measurement Preparations, Axle Alignment with Driver Assistance Systems”, page 298](#)

3.3.1 Measurement Preparations, Axle Alignment without Driver Assistance Systems

Special tools and workshop equipment required

- ◆ Wheel Alignment Computer - VAG1813F- or VW/Audi approved wheel alignment devices
- ◆ Brake Pedal Actuator - VAG1869/2- .
- ◆ Insert Tool - 18mm - T10179-
- ◆ Shock Absorber Set - T10001-

The lateral run-out of the wheel must be compensated for. Otherwise, measurement will result in false readings.

A correct toe-in adjustment will not be possible without performing lateral run-out compensation!

Follow the operating instructions provided by the manufacturer of the alignment equipment.

- Carry out wheel run-out compensation.
- Install the Brake Pedal Actuator - VAG1869/2- .
- Actuate the brake pedal using brake pedal actuator.



Preparation Work for Calibrating Driver Assistance Systems

3.3.2 Measurement Preparations, Axle Alignment with 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 calibrating device. The distance between the calibrating device and the vehicle: 120 cm ± 2.5 cm (47.2 ± 0.98 inches).
- If there is not enough space, back the vehicle onto the vehicle alignment platform so that there will be enough space.
- Check the Diagnostic Trouble Code (DTC) memory and correct any malfunctions before beginning the calibration.
- Vehicle accurately aligned, suspension bounced and rocked several times
- Make sure that the sliding plate and turntable are not touching the end stop during the measurement.
- Connect the battery charger. Refer to ➤ Electrical Equipment General Information; Rep. Gr. 27 ; Battery, Charging .
- Position the front wheels so they are straight.
- Connect 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.

3.4 Axle Alignment Specified Values

⇒ [“3.4.1 Axle Alignment Specified Values, Torsion Beam Axle, Golf”, page 298](#)

⇒ [“3.4.2 Axle Alignment Specified Values, Torsion Beam Axle, Golf Wagon”, page 299](#)

⇒ [“3.4.3 Axle Alignment Specified Values, Multi-Link Suspension, Golf”, page 300](#)

⇒ [“3.4.4 Axle Alignment Specified Values, Multi-Link Suspension, Golf Wagon”, page 301](#)

3.4.1 Axle Alignment Specified Values, Torsion Beam Axle, Golf

Specified values valid for all engine versions.

PR number explanations. Refer to
⇒ [“3.7 Vehicle Data Label”, page 306](#) .

Front Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
PR numbers	G03, G01+0N4+2UA, G12, G07+0N4+2UA	G04, G01+0N4+2UA	G10, G01+0N4+2UF, G14, G07+0N4+2UF	G04, G03+2UH
Total toe (wheels not pressed)	10' ± 10'	10' ± 10'	10' ± 10'	10' ± 10'
Camber (wheels in straight-ahead position). Refer to ¹⁾ .	-30' ± 30'	-41' ± 30'	-16' ± 30'	-36' ± 30'



Front Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
PR numbers	G03, G01+0N4 +2UA, G12, G07+0N4 +2UA	G04, G01+0N4 +2UA	G10, G01+0N4 +2UF, G14, G07+0N4 +2UF	G04, G03+2UH
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Toe differential angle at 20° steering angle. Refer to ²⁾ .	1° 19' ± 20'	1° 30' ± 20'	1° 09' ± 20'	1° 26' ± 20'
Caster	7° 23' ± 30'	7° 38' ± 30'	7° 09' ± 30'	7° 33' ± 30'
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Standing height	383 ± 10 mm	368 ± 10 mm	398 ± 10 mm	373 ± 10 mm

1) Camber corrections are not possible. It can only be slightly corrected by pushing the subframe.

2) The toe angle difference can also be indicated negatively in alignment computer, depending on manufacturer.

Rear Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
Camber	-1° ± 10'	-1° ± 10'	-1° ± 10'	-1° ± 10'
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Total toe (at specified camber)	20' ± 12'	24' ± 12'	16' ± 12'	23' ± 12'
Maximum permissible deviation from direction of rotation	maximum 20'	maximum 20'	maximum 20'	maximum 20'
Standing height	385 ± 10 mm	370 ± 10 mm	400 ± 10 mm	375 ± 10 mm

3.4.2 Axle Alignment Specified Values, Torsion Beam Axle, Golf Wagon

Specified values valid for all engine versions.

PR number explanations. Refer to
⇒ **"3.7 Vehicle Data Label", page 306**.

Front Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
PR numbers	G03, G01+0N4 +2UA, G12, G07+0N4 +2UA	G04, G01+0N4 +2UA	G10, G01+0N4 +2UF, G14, G07+0N4 +2UF	G04, G03+2UH
Total toe (wheels not pressed)	10' ± 10'	10' ± 10'	10' ± 10'	10' ± 10'
Camber (wheels in straight-ahead position). Refer to ³⁾ .	-30' ± 30'	-41' ± 30'	-16' ± 30'	-36' ± 30'
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Toe differential angle at 20° steering angle. Refer to ⁴⁾ .	1° 19' ± 20'	1° 30' ± 20'	1° 09' ± 20'	1° 26' ± 20'
Caster	7° 23' ± 30'	7° 38' ± 30'	7° 09' ± 30'	7° 33' ± 30'
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Standing height	383 ± 10 mm	368 ± 10 mm	398 ± 10 mm	373 ± 10 mm

3) Camber corrections are not possible. It can only be slightly corrected by pushing the subframe.



4) The toe angle difference can also be indicated negatively in alignment computer, depending on manufacturer.

Rear Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
Camber	$-1^{\circ} \pm 10'$	$-1^{\circ} \pm 10'$	$-1^{\circ} \pm 10'$	$-1^{\circ} \pm 10'$
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Total toe (at specified camber)	$20' \pm 12'$	$24' \pm 12'$	$26' \pm 12'$	$23' \pm 12'$
Maximum permissible deviation from direction of rotation	maximum 20'	maximum 20'	maximum 20'	maximum 20'
Standing height	385 ± 10 mm	370 ± 10 mm	400 ± 10 mm	375 ± 10 mm

3.4.3 Axle Alignment Specified Values, Multi-Link Suspension, Golf

Specified values valid for all engine versions.

PR number explanations. Refer to
⇒ "3.7 Vehicle Data Label", page 306 .

Front Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
PR numbers	G07, G01+0N4 +2UA G15, G07+0N4 +2UA	G08, G01+0N4 +2UA	G11, G01+0N4 +2UF, G17, G07+0N4 +2UF	G04, G03+2UH
Total toe (wheels not pressed)	$10' \pm 10'$	$10' \pm 10'$	$10' \pm 10'$	$10' \pm 10'$
Camber (wheels in straight-ahead position). Refer to ⁵⁾ .	$-30' \pm 30'$	$-41' \pm 30'$	$-16' \pm 30'$	$-36' \pm 30'$
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Toe differential angle at 20° steering angle. Refer to ⁶⁾ .	$1^{\circ} 19' \pm 20'$	$1^{\circ} 30' \pm 20'$	$1^{\circ} 09' \pm 20'$	$1^{\circ} 26' \pm 20'$
Caster	$7^{\circ} 23' \pm 30'$	$7^{\circ} 38' \pm 30'$	$7^{\circ} 09' \pm 30'$	$7^{\circ} 33' \pm 30'$
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Standing height	383 ± 10 mm	368 ± 10 mm	398 ± 10 mm	373 ± 10 mm

Specified values valid for all engine versions.

PR number explanations. Refer to
⇒ "3.7 Vehicle Data Label", page 306 .

Front Axle	GTI	GTI Heavy Duty		
PR numbers	G05, G06+2UC G09, G06+2UJ	G06, G06+2UN		
Total toe (wheels not pressed)	$10' \pm 10'$	$10' \pm 10'$		
Camber (wheels in straight-ahead position). Refer to ⁵⁾ .	$-41' \pm 30'$	$-30' \pm 30'$		
Maximum permissible difference between both sides	maximum 30'	maximum 30'		
Toe differential angle at 20° steering angle. Refer to ⁶⁾ .	$1^{\circ} 30' \pm 20'$	$1^{\circ} 19' \pm 20'$		
Caster	$7^{\circ} 38' \pm 30'$	$7^{\circ} 23' \pm 30'$		
Maximum permissible difference between both sides	maximum 30'	maximum 30'		



Front Axle	GTI	GTI Heavy Duty		
PR numbers	G05, G06+2UC G09, G06+2UJ	G06, G06+2UN		
Standing height	368 ± 10 mm	383 ± 10 mm		

5) Camber corrections are not possible. It can only be slightly corrected by pushing the subframe.

6) The toe angle difference can also be indicated negatively in alignment computer, depending on manufacturer.

Rear Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
Camber	-1° 20' ± 30'	-1° 20' ± 30'	-1° 20' ± 30'	-1° 20' ± 30'
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Total toe (at specified camber)	10' ± 10'	10' ± 10'	10' ± 10'	10' ± 10'
Maximum permissible deviation from direction of rotation	maximum 20'	maximum 20'	maximum 20'	maximum 20'
Standing height	385 ± 10 mm	370 ± 10 mm	400 ± 10 mm	375 ± 10 mm

Rear Axle	GTI	GTI Heavy Duty		
Camber	-1° 45' ± 30'	-1° 20' ± 30'		
Maximum permissible difference between both sides	maximum 30'	maximum 30'		
Total toe (at specified camber)	16' ± 10'	10' ± 10'		
Maximum permissible deviation from direction of rotation	maximum 20'	maximum 20'		
Standing height	370 ± 10 mm	385 ± 10 mm		

3.4.4 Axle Alignment Specified Values, Multi-Link Suspension, Golf Wagon

Specified values valid for all engine versions.

PR number explanations. Refer to
⇒ "3.7 Vehicle Data Label", page 306.

Front Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
PR numbers	G07, G01+0N4 +2UA, G15, G07+0N4 +2UA	G08, G01+0N4 +2UA	G11, G01+0N4 +2UF, G17, G07+0N4 +2UF	G04, G03+2UH
Total toe (wheels not pressed)	10' ± 10'	10' ± 10'	10' ± 10'	10' ± 10'
Camber (wheels in straight-ahead position). Refer to ⁷⁾ .	-30' ± 30'	-41' ± 30'	-16' ± 30'	-36' ± 30'
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Toe differential angle at 20° steering angle. Refer to ⁸⁾ .	1° 19' ± 20'	1° 30' ± 20'	1° 09' ± 20'	1° 26' ± 20'
Caster	7° 23' ± 30'	7° 38' ± 30'	7° 09' ± 30'	7° 33' ± 30'
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Standing height	383 ± 10 mm	368 ± 10 mm	398 ± 10 mm	373 ± 10 mm



7) Camber corrections are not possible. It can only be slightly corrected by pushing the subframe.

8) The toe angle difference can also be indicated negatively in alignment computer, depending on manufacturer.

Rear Axle	Basic Suspension	Sport Suspension	Raised Suspension	DCC Suspension
Camber	$-1^{\circ} 20' \pm 30'$	$-1^{\circ} 20' \pm 30'$	$-1^{\circ} 20' \pm 30'$	$-1^{\circ} 20' \pm 30'$
Maximum permissible difference between both sides	maximum 30'	maximum 30'	maximum 30'	maximum 30'
Total toe (at specified camber)	$10' \pm 10'$	$10' \pm 10'$	$10' \pm 10'$	$10' \pm 10'$
Maximum permissible deviation from direction of rotation	maximum 20'	maximum 20'	maximum 20'	maximum 20'
Standing height	385 ± 10 mm	370 ± 10 mm	400 ± 10 mm	375 ± 10 mm

3.5 Axle Alignment Procedure

Observe the following work sequence!

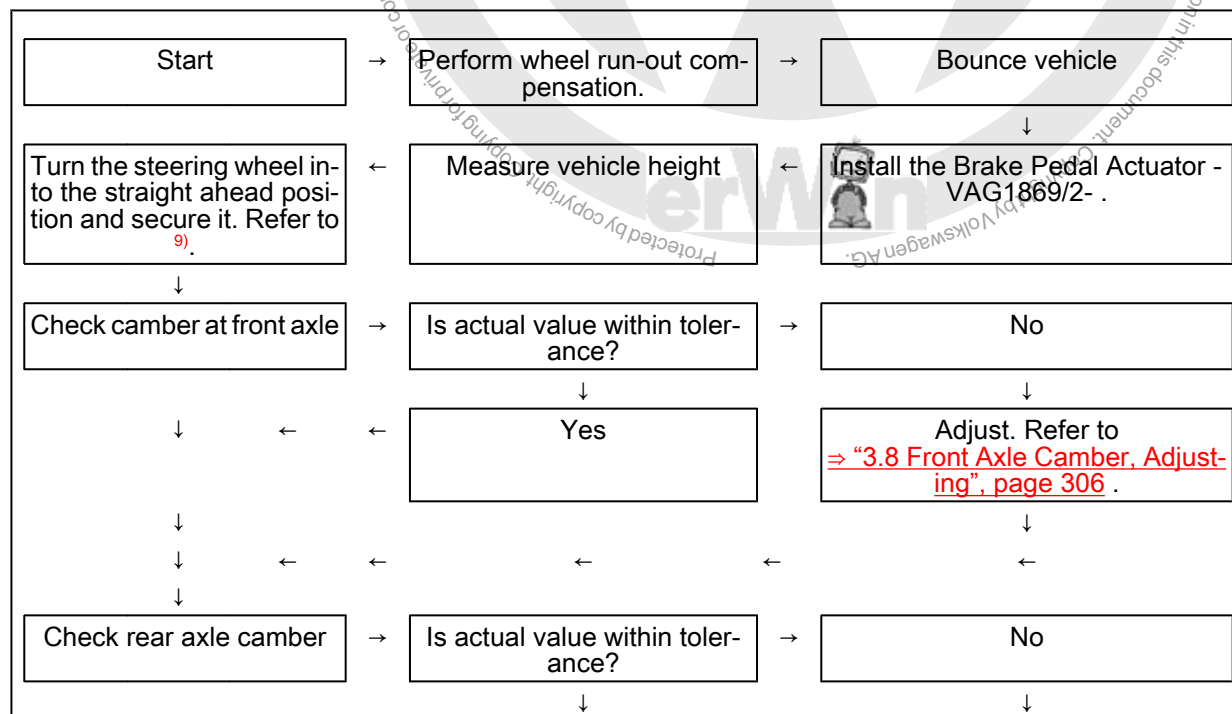


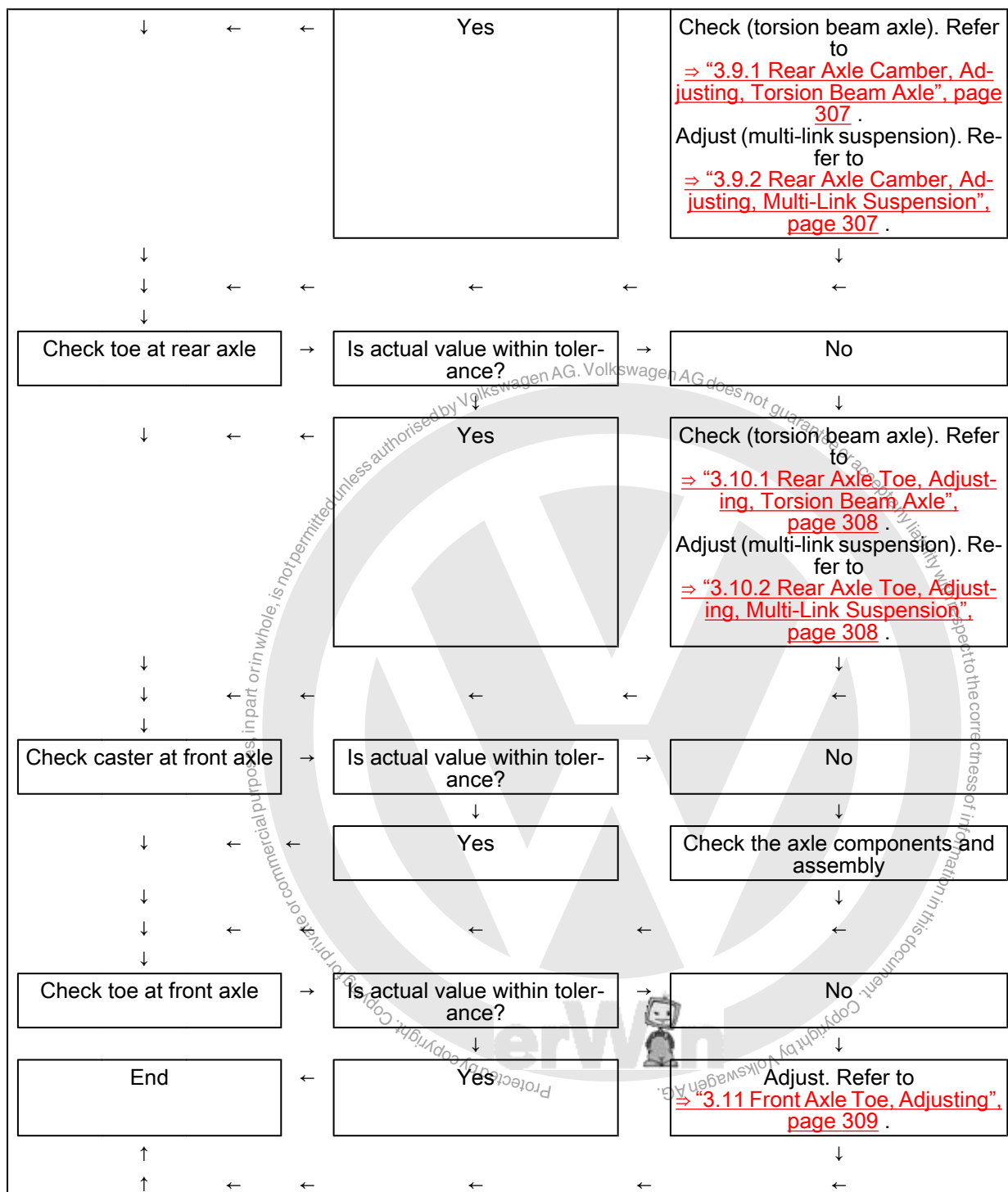
Note

Vehicle may only be measured in the curb weight position.

- Note the information in the alignment equipment.

Measuring Procedure





9) If the steering wheel is crooked, it must be straightened at the end of the axle alignment. Then perform a basic setting on the Steering Angle Sensor - G85- using the Vehicle Diagnostic Tester



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
⇒ ["6.1 Driver Assistance Systems Front Camera, Calibrating", page 327](#) ,
- ◆ Adaptive Cruise Control (ACC). Refer to
⇒ ["5.1.1 Adaptive Cruise Control \(ACC\), Calibrating", page 321](#) .

3.6 Evaluating Need for Axle Alignment

⇒ ["3.6.1 Evaluating Need for Axle Alignment, Torsion Beam Axle", page 304](#)

⇒ ["3.6.2 Evaluating Need for Axle Alignment, Multi-Link Suspension", page 305](#)

3.6.1 Evaluating Need for Axle Alignment, Torsion Beam Axle

When Vehicle Alignment is Necessary

- ◆ Vehicle shows handling problems.
- ◆ There is an accident damage and components were replaced.
- ◆ Axle components have been removed or replaced.
- ◆ Tire wear patterns are uneven.

Components Replaced

Front Axle Component Replaced	Wheel Alignment Check Required		Rear Axle Component Replaced	Wheel Alignment Check Required	
	Yes	No		Yes	No
Lower Control Arm		X	Shock Absorber		X
Bonded rubber bushings for control arm		X	Coil Spring		X
Wheel bearing housing	X		Axle Beam		X
Tie rod/tie rod end	X				
Steering Gear	X				
Subframe		X			
Suspension Strut		X			
Stabilizer Bar		X ¹⁰⁾			

10) Requirement: Subframe and brackets were secured before removal.

Components Removed and Installed

Components Of Front Axle Removed And Installed	Wheel Alignment Check Required		Components Of Rear Axle Removed And Installed	Wheel Alignment Check Required	
	Yes	No		Yes	No
Lower Control Arm		X ¹¹⁾	Shock Absorber		X
Wheel bearing housing		X	Coil Spring		X



Components Of Front Axle Removed And Installed	Wheel Alignment Check Required		Components Of Rear Axle Removed And Installed	Wheel Alignment Check Required	
	Yes	No		Yes	No
Tie rod/tie rod end	X		Axle Beam		X
Steering Gear		X			
Subframe		X ¹¹⁾			
Suspension Strut		X			
Stabilizer Bar		X ¹¹⁾			

11) Requirement: Subframe and brackets were secured before removal.

3.6.2 Evaluating Need for Axle Alignment, Multi-Link Suspension

When Vehicle Alignment is Necessary

- ◆ Vehicle shows handling problems.
- ◆ There is an accident damage and components were replaced.
- ◆ Axle components have been removed or replaced.
- ◆ Tire wear patterns are uneven.

Components Replaced

Front Axle Component Re- placed	Wheel Alignment Check Required		Rear Axle Component Re- placed	Wheel Alignment Check Required	
	Yes	No		Yes	No
Lower Control Arm		X	Lower transverse link	X	
Bonded rubber bushings for control arm		X	Upper Transverse Link	X	
Wheel bearing housing	X		Tie rod	X	
Tie rod/tie rod end	X		Wheel bearing housing	X	
Steering Gear	X		Subframe	X	
Subframe		X	Coil Spring		X
Suspension Strut		X	Shock Absorber		X
Stabilizer Bar		X ¹²⁾	Stabilizer Bar		X
			Trailing Arm	X	

12) Requirement: Subframe and brackets were secured before removal.

Components Removed and Installed

Components Of Front Axle Removed And Installed	Wheel Alignment Check Required		Components Of Rear Axle Removed And Installed	Wheel Alignment Check Required	
	Yes	No		Yes	No
Lower Control Arm		X ¹³⁾	Lower transverse link	X	
Wheel bearing housing		X	Upper Transverse Link	X	
Tie rod/tie rod end	X		Tie rod	X	
Steering Gear		X	Wheel bearing housing	X	
Subframe		X ¹³⁾	Subframe	X	
Suspension Strut		X	Coil Spring		X
Stabilizer Bar		X ¹³⁾	Shock Absorber		X
			Stabilizer Bar		X



Components Of Front Axle Removed And Installed	Wheel Alignment Check Required		Components Of Rear Axle Removed And Installed	Wheel Alignment Check Required	
	Yes	No		Yes	No
			Trailing Arm	X	

13) Requirement: Subframe and brackets were secured before removal.

3.7 Vehicle Data Label

Explanation of "PR numbers" on the Vehicle Data Label

Depending on engine and equipment, various suspensions are installed. They are identified by the PR numbers.

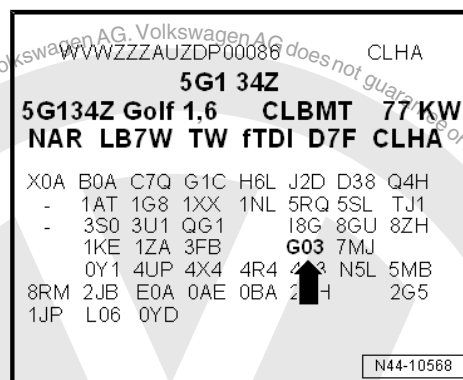
The PR numbers are needed for the allocation of vehicle specified values.

Suspension version installed in vehicle is indicated on vehicle data plate by corresponding PR number for the front axle.

There is a vehicle data label in the spare wheel well and also one in the customer Maintenance booklet.

Sample Vehicle Data Label

In this example, the vehicle is equipped with the sport chassis G03 -arrow-.



3.8 Front Axle Camber, Adjusting

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-



Note

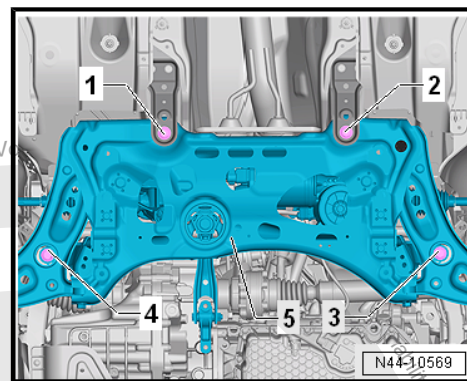
- ◆ *Correct the camber according to Body Collision only. Camber corrections are not possible. The camber is not adjustable, however it can be rearranged by sliding the subframe!*
- ◆ *Slide subframe only toward left or right, under no circumstances in or against direction of travel!*
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .



- Remove the bolt -1- and loosely install a new bolt.
- Remove the bolt -2- and loosely install a new bolt.
- Remove the bolt -3- and loosely install a new bolt.
- Remove the bolt -4- and loosely install a new bolt.

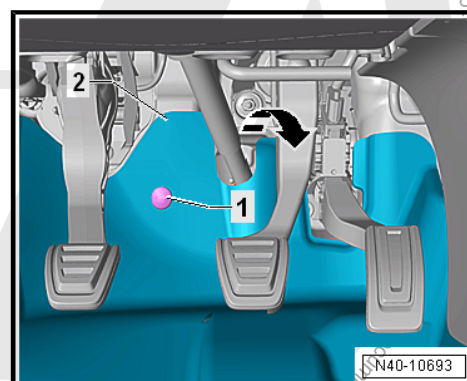
Adjusting the camber is limited by the tolerances in the subframe bores. If the specification is not attained by sliding the subframe, then the camber and the assembly must be checked.

- By moving the subframe, only the specified value of the camber can be adjusted.
- Slide the subframe -5- to the side until the camber is even on both sides. Refer to
⇒ [“3.4 Axle Alignment Specified Values”, page 298](#) .
- Tighten the subframe bolts -1, 2, 3, and 4-.



After moving the subframe, check the clearance between the steering column universal joint and the cutout in the plenum chamber bulkhead.

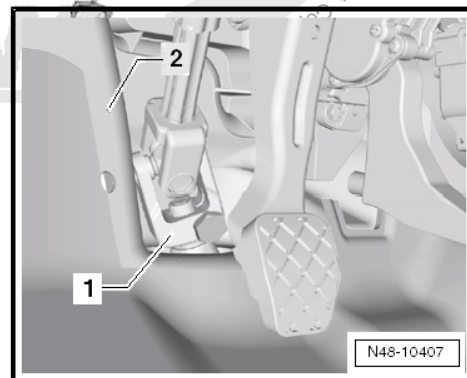
- Remove the bolt -1- and fold the footwell trim panel -2- in the direction of the -arrow- into the vehicle interior.



There must be at least 5 mm of free space all around between universal joint -1- and cutout of bulkhead -2-.

Tightening Specifications

- ◆ Refer to ⇒ [“2.1 Overview - Subframe”, page 16](#)
- ◆ Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .



3.9 Rear Axle Camber, Adjusting

⇒ [“3.9.1 Rear Axle Camber, Adjusting, Torsion Beam Axle”, page 307](#)

⇒ [“3.9.2 Rear Axle Camber, Adjusting, Multi-Link Suspension”, page 307](#)

3.9.1 Rear Axle Camber, Adjusting, 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.

3.9.2 Rear Axle Camber, Adjusting, Multi-Link Suspension

Special tools and workshop equipment required

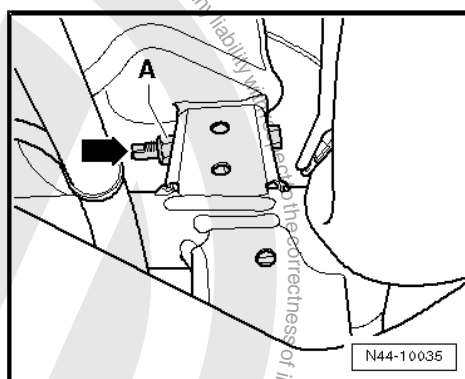
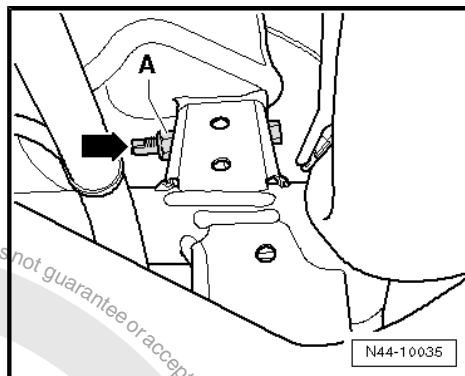


- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Insert Tool - 18mm - T10179-
- Loosen nut -A- of threaded connection of upper transverse link at subframe.
- Adjust camber by turning hex of eccentric bolt -arrow-.



Note

The maximum adjustment range is 90° to left or right of center position.



- Tighten the nut -A-.

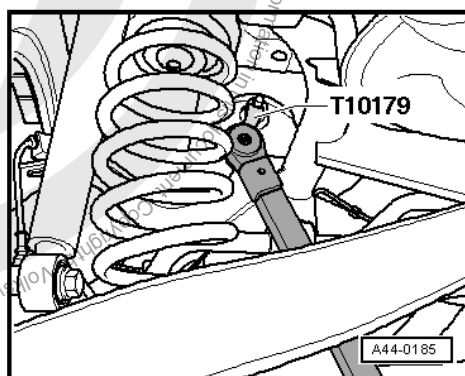
- Use the Insert Tool - 18mm - T10179- for this.

Tighten the nut to 80 Nm using the Insert Tool - 18mm - T10179- .

- Check the camber value again after tightening the nut -A-.
- After the nut -A- is tightened, check the camber value once more. Refer to
⇒ ["3.4 Axle Alignment Specified Values", page 298](#) .

Tightening Specifications

- ◆ Refer to ⇒ ["5.1 Overview - Transverse Link", page 181](#)



3.10 Rear Axle Toe, Adjusting

⇒ ["3.10.1 Rear Axle Toe, Adjusting, Torsion Beam Axle", page 308](#)

⇒ ["3.10.2 Rear Axle Toe, Adjusting, Multi-Link Suspension", page 308](#)

3.10.1 Rear Axle Toe, Adjusting, Torsion Beam Axle

The toe cannot be adjusted.

If measured values are not within the specified range, check the axle beam for damage and replace if necessary.

3.10.2 Rear Axle Toe, Adjusting, Multi-Link Suspension

Special tools and workshop equipment required



- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- Loosen nut -1-.
- Turn the eccentric bolt -2- until the specified value is reached.



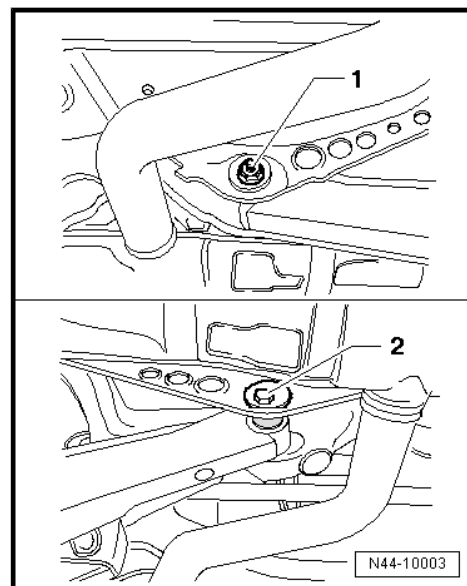
Note

The maximum adjustment range is 90° to left or right of center position.

- Tighten the nut -1-.
- After the nut -A- is tightened, check the toe value once more. Refer to ➔ [“3.4 Axle Alignment Specified Values”, page 298](#).

Tightening Specifications

- ◆ Refer to ➔ [“5.1 Overview - Transverse Link”, page 184](#)



3.11 Front Axle Toe, Adjusting

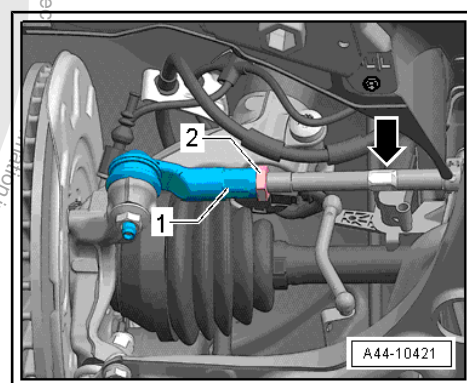
Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Torque Wrench 1332 Insert - Open Ring Wrench - 24mm - VAG1332/9-
- 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-hand wheels at hex -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 ➔ [“3.4 Axle Alignment Specified Values”, page 298](#).

Tightening Specifications

- ◆ Refer to ➔ [“3.6 Steering Gear, Servicing”, page 363](#)

3.12 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 compensated for. Otherwise, measurement will result in false readings.



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.

Follow the operating instructions provided by the manufacturer of the alignment equipment.

3.13 Maximum Steering Angle, Checking

The wheel alignment computer determines the maximum steering angle.

- If the value for the maximum steering angle is outside of the tolerance, then observe the following parameters:

- ◆ Is there damage to or distortion of steering- and suspension components?
- ◆ Are the tie rods visually OK?
- ◆ Is the tie rod symmetry correct?

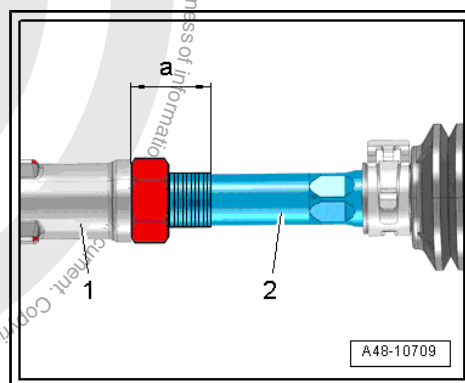
Damaged components are to be replaced.

- If the steering wheel is crooked, then observe the following parameters:
 - ◆ Check the steering components for damage and distortion. If necessary, the damaged parts are to be replaced.
 - ◆ Check the suspension components for damage and distortion. If necessary, the damaged parts are to be replaced.
 - ◆ Check the tie rod symmetry as well.
- Measure the dimension -a- on the "shorter" tie rod end. Shorten the "longer" tie rod end to the same dimension. To do this, install the tie rod end -1- deeper 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 must be < 2.5 mm.

- When the steering wheel returns to its center position, let the steering wheel "come to its center" using even movements.





4 Wheel/Tire Vibration, Causes and Solution

⇒ [“4.1 Vibration Causes”, page 311](#)

⇒ [“4.2 Road Test, Performing Before Balancing”, page 311](#) .

⇒ [“4.3 Wheel, Balancing”, page 312](#)

⇒ [“4.4 Vibration Control System”, page 316](#)

⇒ [“4.5 Tire and Wheel Radial and Lateral Run-Out, Checking”, page 316](#)

⇒ [“4.6 Rim Radial and Lateral Run-Out, Checking”, page 317](#)

⇒ [“4.7 Wheels and Tires, Matching”, page 318](#)

⇒ [“4.8 Flat Spots in Tires From Standing, Determining”, page 319](#)

4.1 Vibration Causes

There are many causes for vibration. Vibration can also be caused by tire wear, among other things. Tire wear caused by driving does not always develop evenly over the entire tread. Due to this, a slight imbalance develops which disturbs the smoothness of the formerly accurately balanced wheel.

This slight imbalance cannot yet be felt in the steering wheel, but it is present. It increases the tire wear and consequently reduces the service life of the tire.

Recommendation

In order to guarantee over the entire service life of a tire a

- Optimal safety,
- Optimal smoothness and
- Uniform wear

It is recommended that wheels/tires be balanced at least two times within the tire's service life.

4.2 Road Test, Performing Before Balancing

If a vehicle comes to the shop with the complaint “vibration”, a road test must be performed before balancing the wheels.

- ◆ That way, information about the type of vibration can be obtained.
- ◆ Observe at which speed range the disturbance takes place.
- Raise the vehicle on the platform immediately after the road test.
- Mark the component location on the tire.

Component Location of Tire	Identification with ...
Left front tire	LF
Right front tire	RF
Left rear tire	LR
Right rear tire	RR

- Remove the wheels from the vehicle.
- Balance the wheels.



4.3 Wheel, Balancing

⇒ [“4.3.1 Wheel, Balancing”, page 312](#)

⇒ [“4.3.2 Wheel, Balancing on Stationary Balancing Machine”, page 312](#)

⇒ [“4.3.3 Wheel, Balancing with Finish Balancer”, page 315](#)

4.3.1 Wheel, Balancing

Before beginning balancing, the following requirements must be fulfilled.

- The tire pressure must be OK.
- The tire tread must not be worn down on one side and should be at least 4 mm deep.
- The tires must not have any damage such as cuts, holes, foreign bodies, etc.
- The suspension and steering, including the shock absorber, must be in perfect condition.
- A road test has been performed.

4.3.2 Wheel, Balancing on Stationary Balancing Machine

- Test drive performed. Refer to
⇒ [“4.2 Road Test, Performing Before Balancing”, page 311](#) .

Tension Wheel on Balancing Machine



Note

Please keep in mind that cleanliness is the most important when balancing as well, just as for any other repairs you perform. Only then can a proper result be obtained!

Dirt and rust in the area of the contact surfaces and centering of the wheel distorts the result.

- Clean contact surfaces, centering seat and wheel disc using the Pneumatic Brush Grinder Set - VAS6446- before tensioning wheel on balancing machine. Refer to Workshop Equipment, Catalog.

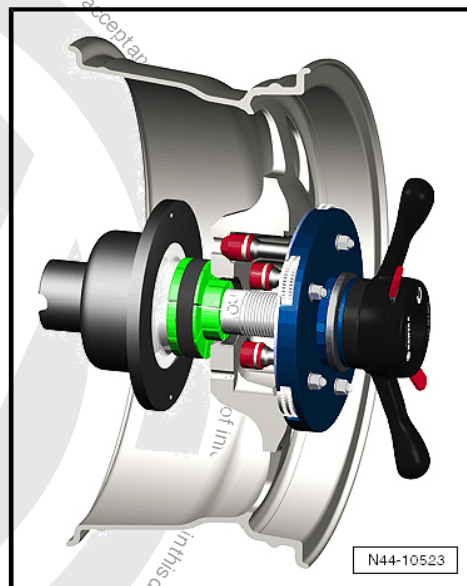


Note

It is very important that the wheel balancing machine uses the correct system for centering and tensioning the tires. Reference the information for the Wheel Balancing Machine Centering System before beginning any work. Refer to Workshop Equipment, Catalog.



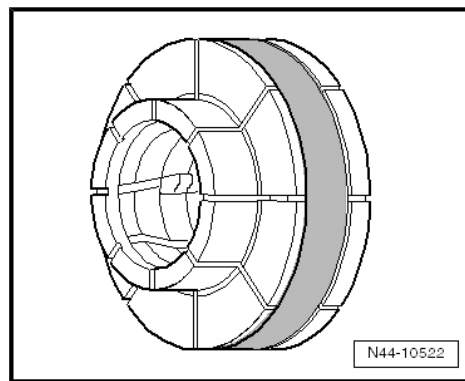
- Tension the wheel with the tire on the balancing machine.





Note

- ◆ To mount wheel on wheel balancer, use for example Wheel Centering System Adapter - VAS5271-.
- ◆ This way a 100% centering of the wheel and gentle mounting is possible!
- ◆ It is not possible to center it 100% on balancing machine with conical tensioners.
- ◆ With a deviation of 0.1 mm outside the center, there is an imbalance of 10 grams on the wheel/tire.



Wheel/Tire Balancing Procedure

- Let the wheel/tire turn on the balancing machine.
- Check the run of the characteristic lines on the sidewall of the tire in the area of the rim flange.
- Check the tire wear pattern while the wheel/tire is turning.



Note

In the event of one-sided wear, flat spots from braking or severe wear spots, smooth running cannot be achieved by balancing. In this case, the tire must be replaced.

- Check the run-out on the wheel/tire. If the wheel with tire runs untrue although there are no flat spots, a radial or lateral run-out may be the cause.
- Check wheel with tire for radial- and lateral run-out. Refer to ⇒ [“4.5.2 Wheels and Tires, Radial and Lateral Run Out, Checking with Tire Dial Gauge”, page 317](#).
- If the radial and lateral run-out are within the specified tolerance, balance the wheel and tire.



Note

- ◆ Do not use more than 60 grams of weight per wheel.
- ◆ If more weight is necessary, a smoother running can be achieved by matched mounting of the tire. Tires matching. Refer to ⇒ [“4.7 Wheels and Tires, Matching”, page 318](#).
- ◆ The display in the balancing machine should show 0 grams.
- ◆ Hunter RFT33VAG Road Force Touch™ Wheel Balancer - VAS6230B4- can be inserted as an alternative to matching. Refer to ⇒ [“4.4 Vibration Control System”, page 316](#).
- Install the wheel on the vehicle.
- First, tighten the lowest wheel bolt hand-tight to approximately 30 Nm.
- Tighten the remaining wheel bolts diagonally to approximately 30 Nm. This process centers the wheel on the wheel hub.
- Lower vehicle onto its wheels.
- Now use a torque wrench to tighten the wheel bolts diagonally to the specified tightening specification.



Road Test, Performing

- Perform a road test after balancing the wheel/tires.

If a vibration is still detected during the road test, the cause may be due to tolerance in the wheel centering.

The component tolerances of wheels and wheel hubs can be additive in unfavorable cases. Vibration can result from this. This can be eliminated using a finish balancer. Refer to
⇒ [“4.3.3 Wheel, Balancing with Finish Balancer”, page 315](#) .

4.3.3 Wheel, Balancing with Finish Balancer



Note

- ◆ *Working with a Finish Balancer requires instruction from the manufacturer of the balancer.*
- ◆ *When balancing, place the wheels of the driven axle on the turntable sensors. On a FWD vehicle, the front wheels must be on the sensors. On AWD vehicles, all four wheels must be on the sensors.*

If it is determined when balancing on the vehicle the remaining imbalance is more than 20 grams, the wheel should be rotated on the wheel hub.

- Mark the point at which the imbalance is indicated.
- Afterwards, unbolt the wheel and rotate its position on the wheel hub so that the marking points downward.



Note

The wheel hub must not turn during this procedure.

- First, tighten the lowest wheel bolt hand-tight to approximately 30 Nm.
- Tighten the remaining wheel bolts diagonally to approximately 30 Nm. This process centers the wheel properly on the wheel hub.
- Check again whether the imbalance is less than 20 grams using the finish balancer.



Note

The imbalance should not be smaller than 20 grams under any circumstances before changing balance weight.

- Loosen the wheel bolts again, if necessary.
- Rotate the wheel relative to the wheel hub once more by one or two wheel bolt holes.
- Tighten the wheels according to the method described above.



Note

Only if the imbalance is less than 20 grams should the imbalance be reduced by changing the balance weight.



- Balance the wheels until the imbalance is below 5 grams.
- Tighten the wheel bolts to the specified tightening specification if you have not already done so.



WARNING

Always tighten the wheel bolt to the tightening specification and using the torque wrench.

4.4 Vibration Control System

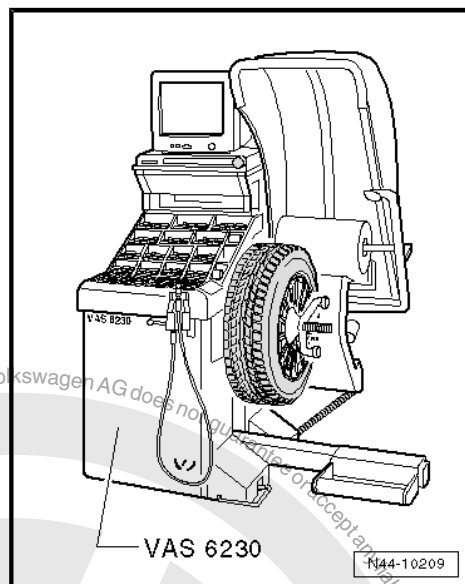
Expanded functions can be performed using Hunter RFT33VAG Road Force Touch™ Wheel Balancer - VAS6230B4- in addition to the previously known balancers.

A special characteristic of this system is testing the radial force of wheel/tire during rolling.

For this purpose, a roller presses a force of approximately 635 kg (1400 lbs) against the wheel. This simulates the tire contact force against the street surface while driving.

Tire contact forces fluctuate due to radial- and lateral run-out and differing rigidity in the tires.

The Hunter RFT33VAG Road Force Touch™ Wheel Balancer - VAS6230B4- detects and stores the position of the maximum measured radial force in the tires. After that, the position of smallest dimension between rim flange and disc wheel center is measured.



4.5 Tire and Wheel Radial and Lateral Run-Out, Checking

⇒ [“4.5.1 Tire and Wheel Radial and Lateral Run-Out, Checking, Tolerances”, page 316](#)

⇒ [“4.5.2 Wheels and Tires, Radial and Lateral Run Out, Checking with Tire Dial Gauge”, page 317](#)

4.5.1 Tire and Wheel Radial and Lateral Run-Out, Checking, Tolerances

Radial and lateral run-out occur when the wheel and tire are not running precisely true.

For technical reasons, 100% true running is not possible.

Therefore the manufacturers of these components allow a precisely specified tolerance.

Mounting the tire in a unfavorable position on the wheel can be the cause for exceeding the maximum allowed tolerance for wheel with tire.

The table shows the maximum permissible tolerance values for the wheel with mounted tire.

Tolerances for Radial and Lateral Run-Out of Rim with Tire

Rim with Tire	Radial Run-Out (mm)	Lateral Run-Out (mm)
Passenger vehicle	0.9	1.1 (1.3 near the lettering)



4.5.2 Wheels and Tires, Radial and Lateral Run Out, Checking with Tire Dial Gauge

Checking Lateral Run-Out

- Preload the Tire Dial Gauge approximately 2 mm.
- Position the Tire Dial Gauge on the side wall of the tire.
- Rotate the wheel slowly.
- Note the smallest and the largest dial readings.



Note

If the difference is greater than 1.3 mm, the lateral run-out is too great.

In this case, lateral run-out can be reduced by matched mounting of the tire. Refer to
⇒ [“4.7 Wheels and Tires, Matching”, page 318](#) .

Peak values on the Tire Dial Gauge due to small irregularities in the rubber may be disregarded.

Checking Radial Run-Out

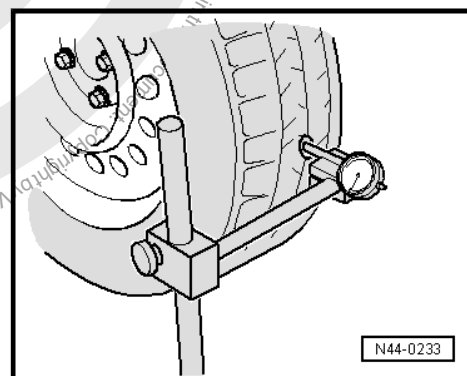
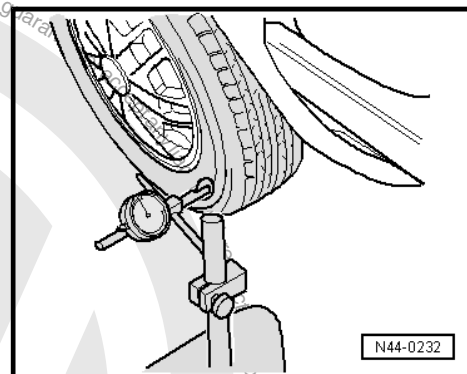
- Preload the Tire Dial Gauge approximately 2 mm.
- Position the Tire Dial Gauge on the tread of the tire.
- Rotate the wheel slowly.
- Note the smallest and the largest dial readings.



Note

If the difference is greater than 1 mm, the radial run-out is too great.

In this case, radial run-out can be reduced by matched mounting of the tire. Refer to
⇒ [“4.7 Wheels and Tires, Matching”, page 318](#) .



4.6 Rim Radial and Lateral Run-Out, Checking

- Mount the rim on the Balancing Machine .
- Use the Wheel Centering System Adapter - VAS5271- .
- Preload the Tire Dial Gauge approximately 2 mm.
- Turn the rim slowly.



- Note the smallest and the largest dial readings.

S - Lateral Run-Out

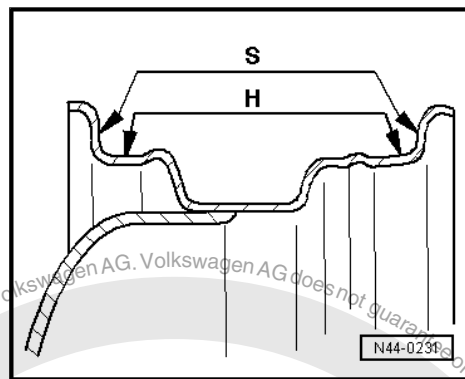
H - Radial Run-Out

- Compare determined value with specifications in the table.
Refer to ➤ [page 318](#) .



Note

Peak values on the Tire Dial Gauge due to small irregularities may be disregarded.



Specified Values for Radial and Lateral Run-Out on the Rim

Rim	Radial Run-Out (mm)	Lateral Run-Out (mm)
Steel wheel	0.5	0.5
Light alloy wheel	0.5	0.8



Note

If the measured value exceeds the specified value, no acceptable smooth running can be attained.

4.7 Wheels and Tires, Matching

General Information

If radial or lateral run-out from rim or tire meet each other, the untrue running of the wheel and tire is increased.

For technical reasons, 100% true running is not possible. Refer to

➤ ["4.5.1 Tire and Wheel Radial and Lateral Run-Out, Checking, Tolerances", page 316](#) .

Drive the tires until they are warm before matching them to the tires already on the vehicle. This eliminates flat spots from standing which may exist. Refer to

➤ ["4.8 Flat Spots in Tires From Standing, Determining", page 319](#) .

Work Procedure for Match-Mounting

- Let the air out of the tire.
- Remove the tire bead from the wheel rim flange.
- Coat the tire bead all the way around with Tire Mounting Paste .
- Turn the tire 180° against the rim.
- Inflate the tire to approximately 4 bar (58 psi).
- Tension the wheel with the tire on the balancing machine.
- Check the run-out or the radial and lateral run-out, as necessary.



Note

- ◆ *If the radial and lateral run-out value is not exceeded, the wheel can be balanced to 0 grams. Specifications. Refer to ➔ [page 316](#).*
- ◆ *If the radial and lateral run-out lies outside the specified values, the tire must be turned again.*
- Let the air out and remove the tire beads from the wheel rim flanges.
- Rotate the tire 90° (one quarter of a turn) relative to the rim.
- Inflate the tire to 4 bar (58 psi) again and check the run-out.



Note

- ◆ *If the radial and lateral run-out value is not exceeded, the wheel can be balanced to 0 grams.*
- ◆ *If the radial and lateral run-out is still outside the specified values, the wheel must be turned again.*
- Press the tire beads off the rim flanges.
- Rotate the tire 180° (half a turn) relative to the rim.

If the values for radial or lateral run-out are still outside the specified values, check the rim for radial and lateral run-out. Refer to ➔ [“4.6 Rim Radial and Lateral Run-Out, Checking”, page 317](#).

If the measured values for radial and lateral run-out of the rim are within the specified values, then the tire has excessive radial or lateral run-out. In this case, the tire must be replaced.



Note

- ◆ *Assembly paste from mounting tires is located between tires and rim flanges.*
- ◆ *Avoid strong braking or acceleration maneuvers during the first 100 to 200 km. Otherwise, the tires can rotate on the rims and the work done would then be undone!*

4.8 Flat Spots in Tires From Standing, Determining

What is a Flat Spot from Standing?

Terms like flat portion, flattening, are also used as a term for flat spots from standing.

Flat spots from standing cause vibration, like an incorrectly balanced wheel. It is important to recognize a flat spot in the tread from standing as such!

Flat spots from standing cannot be corrected by balancing, and can occur again at any time under various circumstances. Flat spots from standing can be corrected without complicated special tools, providing that the flat spot was not caused by wheel lock during hard braking. Refer to ➔ Wheel and Tire Guide - General Information; Rep. Gr. 44 ; Tires, Rolling Noises, Wear Spots .



Note

Wear spots due to wheel lock are irreparable! Tires with such damage must be replaced.

Causes of Flat Spots from Standing

- ◆ The vehicle stands for several weeks in a location without being moved.
- ◆ Tire pressure is too low.
- ◆ The vehicle was placed in a paint system drying cabinet after painting.
- ◆ The vehicle was parked with warm tires in a cold garage or similar for a long time. In this case, a flat spot can develop overnight.

Flat Spots, Correcting

- ◆ Flat spots cannot be removed from tires with shop equipment.
- ◆ Such flat spots can be "driven out" only by driving the car until the tires are warm.
- ◆ We do not recommend the following method during cold or winter weather.

Requirements/Conditions

- Check the tire pressure and correct, if necessary.
- If possible, drive the vehicle on an expressway.
- If the traffic and road conditions permit, drive at a speed of 120 to 150 km/h (75 to 93 mph) for a distance of 20 to 30 km (12.4 to 18.6 miles).



WARNING

- ◆ *Do not endanger yourself or other persons during this road test.*
- ◆ *Follow all traffic regulations and speed limits when performing the road test.*

- Lift the vehicle immediately after the performing the road test.
- Remove the wheels from the vehicle.
- Balance the wheels on the stationary balancing machine. Refer to
⇒ ["4.3.2 Wheel, Balancing on Stationary Balancing Machine", page 312](#) .



5 Adaptive Cruise Control (ACC)

⇒ ["5.1 Adaptive Cruise Control \(ACC\), Calibrating", page 321](#)

5.1 Adaptive Cruise Control (ACC), Calibrating

⇒ ["5.1.1 Adaptive Cruise Control \(ACC\), Calibrating", page 321](#)

5.1.1 Adaptive Cruise Control (ACC), Calibrating

Special tools and workshop equipment required

- ◆ Setting Device Basic Set - VAS6430/1-
- ◆ ACC Reflector Mirror - Audi - VAS6430/3-
- ◆ Wheel Alignment Computer
- ◆ Vehicle Diagnostic Tester



Note

- ◆ *Before adjusting the ACC, check the sensor, its mounts, and securing elements for damage, external influences and secure fit. Repair any damaged components, if necessary.*
- ◆ *Prior to adjusting the adaptive cruise control (ACC), check the event memory and correct any malfunctions.*
- ◆ *The ACC control module "adjustment angle measured value" shows whether the sensor is misaligned.*
- ◆ *The ACC adjustment may only be set using a VW/Audi-approved wheel alignment device and adjustment equipment!*
- ◆ *Proper ACC operation requires correct alignment.*



Note

- ◆ *A new adjustment is necessary if:*
- ◆ *The rear axle toe was adjusted.*
- ◆ *The Distance Regulation Control Module - J428- was removed and installed.*
- ◆ *The front bumper carrier was removed and installed.*
- ◆ *The front bumper carrier was loosened or moved.*
- ◆ *The adjustment angle is greater than -0.8° to $+0.8^\circ$.*
- ◆ *The vehicle was moved to the service position.*



Note

- ◆ *Before driving the vehicle onto the alignment stand, make sure there is enough space between the vehicle and the Setting Device Basic Set - VAS6430/1-. The distance between the ACC Reflector Mirror - Audi - VAS6430/3- and the sensor must be $120\text{ cm} \pm 2.5\text{ cm}$ ($47.2 \pm 0.98\text{ inches}$).*
- ◆ *If there is not sufficient space, drive the vehicle backward onto the alignment stand in order to use the corresponding space.*
- ◆ *If the ACC Reflector Mirror - Audi - VAS6430/3- is repositioned on the calibration beam during the adjustment, the Setting Device Basic Set - VAS6430/1- setting must always be checked (for example bubble levels, individual toe settings at the calibration beam, etc.).*
- Before beginning the adjustment, check the Diagnostic Trouble Code (DTC) memory and correct any malfunctions present.

The adjustment procedure is described here using the Setting Device Basic Set - VAS6430/1- .

Follow the sequence for adjusting:

- 1 - Establish a distance of $120\text{ cm} \pm 2.5\text{ cm}$ between the centrally positioned ACC Reflector Mirror - Audi - VAS6430/3- and the sensor in the air grille,
- 2 - Attach the ACC Reflector Mirror - Audi - VAS6430/3- in the center of the calibration beam,
- 3 - Adjust the Distance Regulation Control Module - J428-

Do not perform the steps under "Calibration procedure without a previous axle alignment" if an axle alignment has already been performed.

Calibration Procedure without Previous Axle Alignment

- Select the ACC calibration button on the alignment computer.
- Follow the test requirements for an axle alignment. Refer to [⇒ "3.2 Test Prerequisites", page 296](#) .
- Drive the vehicle onto the vehicle alignment platform.
- Connect the battery charger. Refer to ⇒ Electrical Equipment General Information; Rep. Gr. 27 ; Battery, Charging .
- Connect Vehicle Diagnostic Tester (Guide the diagnostic cable through the open window.)



Note

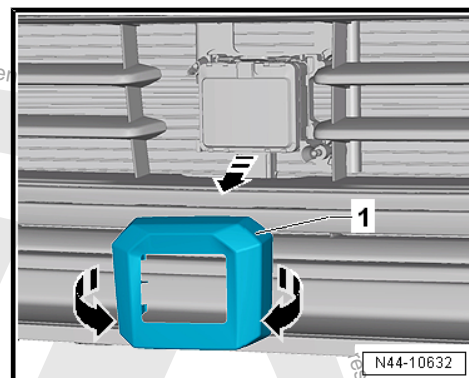
During the adjustment procedure, make sure all the vehicle doors remain closed and the vehicle exterior lamps are switched off.

- Position the front wheels so they are straight.
- Install the quick-action clamps on the rear wheels.
- Install the measurement sensor on the rear wheels.
- Perform a wheel run-out compensation and the rear wheels.



Calibration Procedure with or without Previous Axle Alignment

- Remove the trim -1-.
- Remove the trim -1-.
- Remove any dirt that may be on the sensor lens.



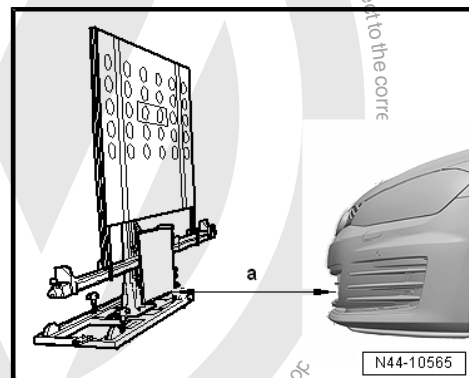
- Position the Setting Device Basic Set - VAS6430/1- at a distance -a- from the centrally positioned ACC Reflector Mirror - Audi - VAS6430/3- in the center and parallel with respect to the Distance Regulation Control Module - J428- .

a - 120 cm \pm 2.5 cm (47.2 \pm 0.98 inches)

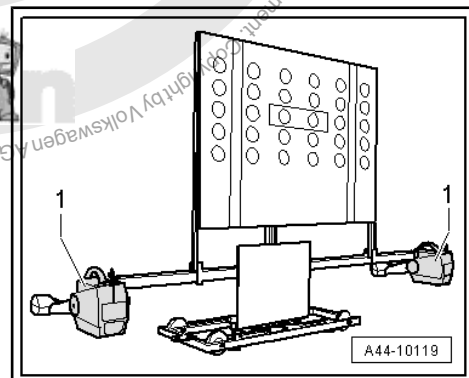


Note

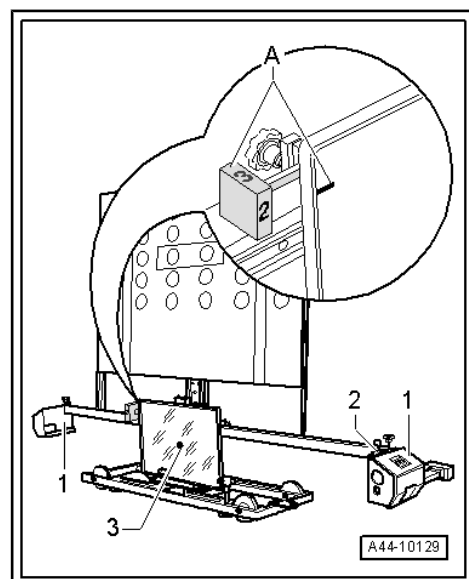
The Setting Device Basic Set - VAS6430/1- must not be moved on the calibration beam.



- Position the front wheel measuring sensors -1- on the calibration beam.

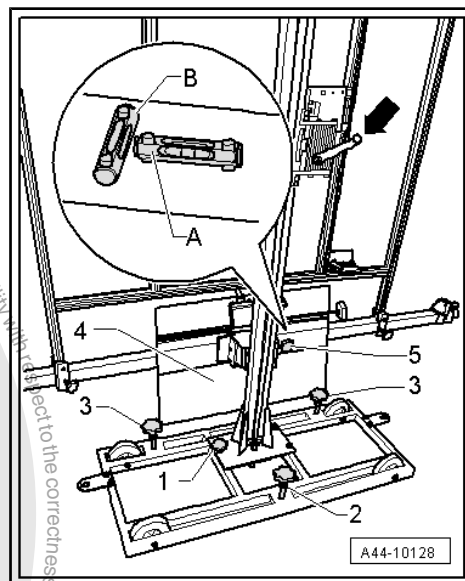


- In area -A-, bring item -2- on the rotary knob into alignment with the marking on the mirror (number 2 on the rotary knob must face the vehicle).

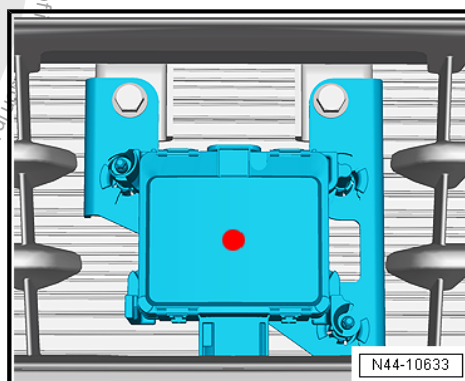




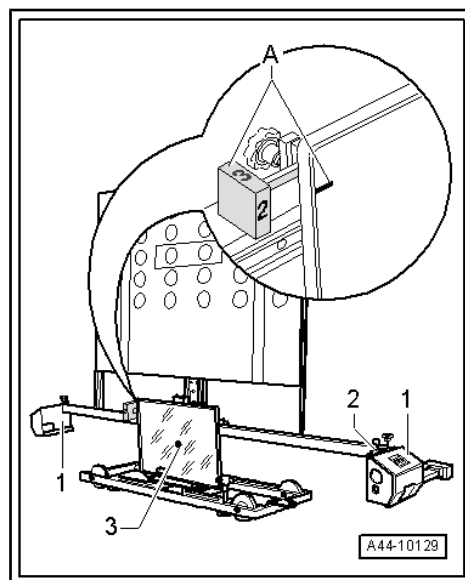
- Level the bubble levels -A and B- on the ACC Reflector Mirror - Audi - VAS6430/3- using the adjusting screws -1, 2, and 3-.
- Adjust the mirror -4- via the crank -arrow- so that the laser beam is in the center of the sensor lens.



- Position the mirror on the side of the calibration beam so that the laser beam is in the center of the sensor lens.

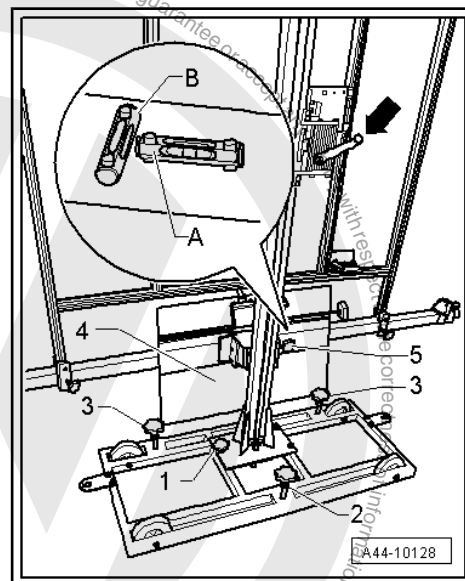


- Level the bubble levels -2- of the measurement sensor -1-.





- Turn the precision adjustment screw -5- until the display on the wheel alignment computer is located within the tolerance range.



- Level the bubble levels -2- of the measurement sensor -1-.
- Using the laser beam -3- on the ACC Reflector Mirror - Audi - VAS6430/3- , check whether the bubble level is level and the laser beam is in the center of the sensor lens.



Note

If the laser beam does not meet the sensor lens, the ACC Reflector Mirror - Audi - VAS6430/3- must be aligned again.

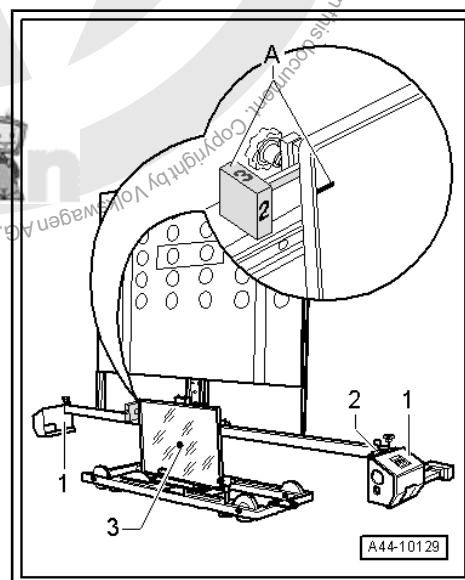
- On the Vehicle Diagnostic Tester , press **GO TO** and select the function **Function/Component Selection**.

Selection on the Vehicle Diagnostic Tester for the adjustment of the Distance Regulation Control Module - J428- :

- Press the following buttons one after another on the screen:

- ◆ **Chassis (Repair Group 01; 40 - 49)**
- ◆ **13 - Distance Control**
- ◆ **01 - OBD-Capable System**
- ◆ **13 - Distance Control**
- ◆ **13 - Distance Control, Functions**
- ◆ **13 - Calibrate**

Follow the instructions on the screen to perform the adjustment.





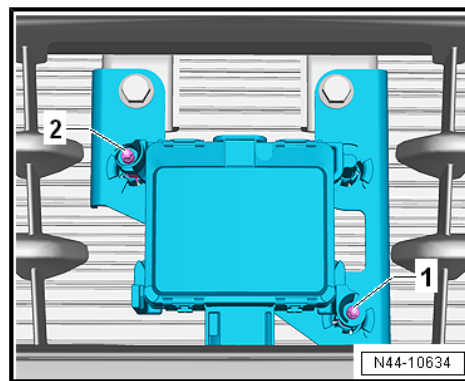
Designation of the Distance Regulation Control Module - J428- adjusting screws

- 1 - Adjusting screw 1
- 2 - Adjusting screw 2
- 3 - Must not be turned - functions only as a pivot point



WARNING

The ACC adjustment is only applied when "Output diagnostic test complete" is displayed on the Vehicle Diagnostic Tester .





6 Driver Assistance Systems Front Camera

⇒ ["6.1 Driver Assistance Systems Front Camera, Calibrating", page 327](#)

6.1 Driver Assistance Systems Front Camera, Calibrating

Special tools and workshop equipment required

- ◆ Setting Device Basic Set - VAS6430/1-
- ◆ Calibration Board For Lane Guard System - VAS6430/4-
- ◆ Wheel Alignment Computer
- ◆ Vehicle Diagnostic Tester



Note

If the camera can no longer recognize the lane markings due to poor visibility, this could be caused by:

- ◆ The camera visual field is dirty or icy. If that is the problem, it should be corrected.
- ◆ The camera view field in fogged over.

If there is a lot of dirt on the inside of the glass in the camera view window, this must be cleaned off by hand. To do this, remove the control module and the lens and clean the glass with washer fluid. To remove the control module and lens. Refer to ⇒ Electrical Equipment; Rep. Gr. 96 ; Driver Assistance Systems Front Camera; Driver Assistance Systems Front Camera, Removing and Installing .

The calibration must be correct for the Driver Assistance Systems Front Camera - R242- to function correctly.

The Driver Assistance Systems Front Camera - R242- must be calibrated again for the following reasons:

- ◆ "No or incorrect basic setting/adaptation" is stored in the event memory.
- ◆ The Driver Assistance Systems Front Camera - R242- was replaced.
- ◆ The windshield was replaced or removed.
- ◆ The rear axle toe was adjusted.
- ◆ Work was performed on the chassis which influences the body height.
- ◆ The vehicle level sensor was readapted on vehicles with damping regulation.



Note

- ◆ *Before calibrating the driver assistance systems front camera, check the Diagnostic Trouble Code (DTC) memory and correct any faults.*
- ◆ *The driver assistance systems front camera may only be calibrated using alignment equipment approved by VW/Audi.*
- ◆ *Only the Setting Device Basic Set - VAS6430/1- may be used to calibrate the driver assistance systems front camera.*



Note

- ◆ *The Driver Assistance Systems Front Camera - R242- must fit correctly in the retainer.*
- ◆ *The camera viewing range must be clean and unobstructed.*
- ◆ *Before driving the vehicle onto the vehicle alignment platform, make sure there is sufficient space between the center of the wheel hub on the front wheels and the Setting Device Basic Set - VAS6430/1- .*
- ◆ *The distance between the Setting Device Basic Set - VAS6430/1- and the center of the wheel hub on the front wheels must be 1,500 mm \pm 25 mm (59 \pm 0.98 in).*
- ◆ *If there is not sufficient space, drive the vehicle backward onto the alignment stand in order to use the corresponding space.*
- ◆ *The calibration board must be positioned in the center of the setting device.*
- ◆ *Before beginning the calibration, check the DTC memory. If necessary, erase any existing entries.*
- Follow the test requirements for an axle alignment. Refer to ➔ ["3.2 Test Prerequisites", page 296](#) .
- Drive the vehicle onto the vehicle alignment platform.
- Connect the battery charger. Refer to ➔ Electrical Equipment General Information; Rep. Gr. 27 ; Battery, Charging .
- Connect Vehicle Diagnostic Tester (Guide the diagnostic cable through the open window.)



Note

During the calibration procedure, make sure all the vehicle doors remain closed and the vehicle exterior lamps are switched off.

- Position the front wheels so they are straight.
- Select calibrating the driver assistance systems front camera in the wheel alignment computer.
- Install the quick-action clamps on all four wheels.
- Install the measuring sensors on the wheels.
- Perform a wheel run-out compensation and the rear wheels.
- Bounce the vehicle.



- Measure and record the height at all four wheels.



Note

- ◆ *The Setting Device Basic Set - VAS6430/1- must not be moved on the calibration beam.*
- ◆ *The alignment stand must be in the lowest level position for the next step.*

- Rotate the Setting Device Basic Set - VAS6430/1- upward just enough so that the calibration beam is parallel to the center of the measuring sensors on the front wheels, so that it is possible to correctly measure the distance measuring unit -1-.

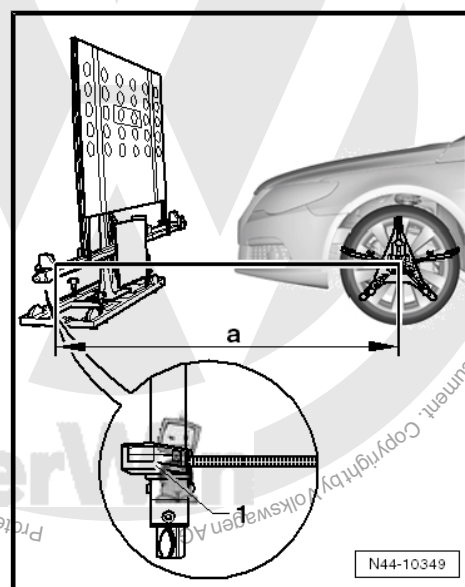
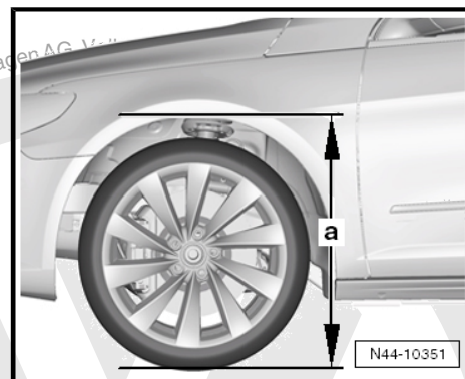
- 1 - Distance measuring unit with spring-tape measure and mounting pin

- Position the Setting Device Basic Set - VAS6430/1- at a distance -a- of 1,500 mm \pm 25 mm (59 \pm 0.98 in) from the center of the wheel hub on the front wheels to the beam on the Setting Device Basic Set - VAS6430/1- .

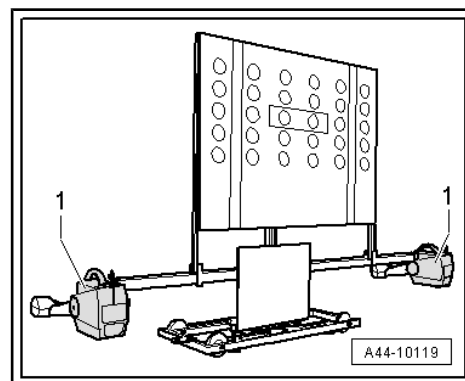


Caution

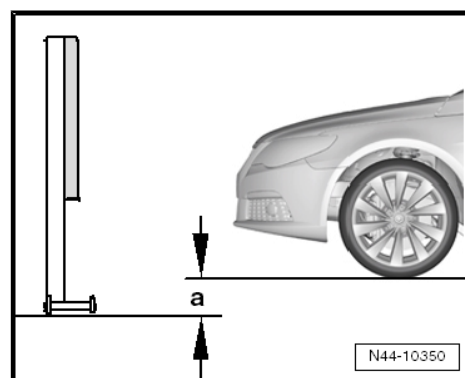
- ◆ *Distance -a- 1,500 mm \pm 25 mm (59 \pm 0.98 in) must be measured on both side of the vehicle and then the Setting Device Basic Set - VAS6430/1- must be aligned.*
- ◆ *Distance -a- must be the same on both sides of the vehicle.*



- Mount the front wheel measuring sensors -1- to the Setting Device Basic Set - VAS6430/1- .

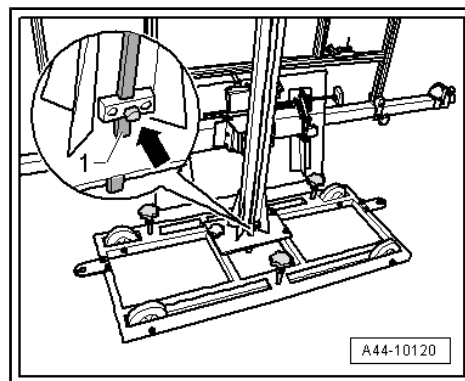


- Determine the height value -a- between the Setting Device Basic Set - VAS6430/1- contact area and the wheel contact surface on the vehicle alignment platform. Enter it in the alignment computer.

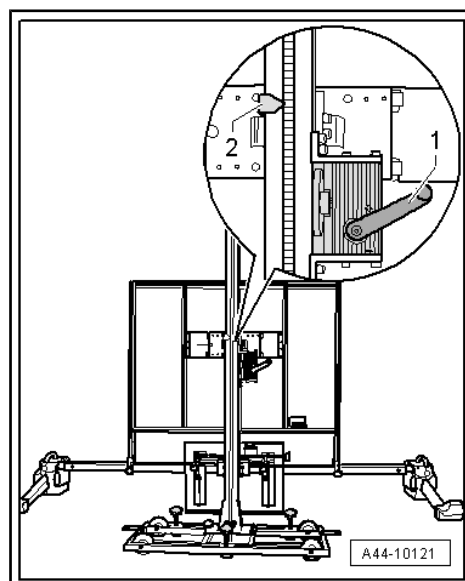




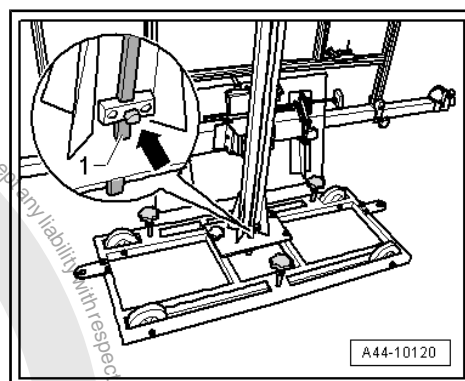
- Loosen the clamping bolt -arrow- and place the measuring bar -1- on the floor.



- Turn the crank -1- to adjust the Calibration Board For Lane Guard System - VAS6430/4- to the height specification -2- and then make a note of it.

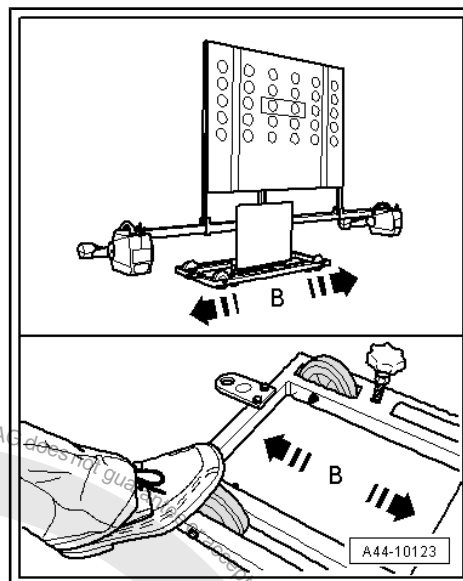


If the specified height was reached, then the measuring bar -1- must be pushed slightly forward and secured with the locking bolt -arrow-.

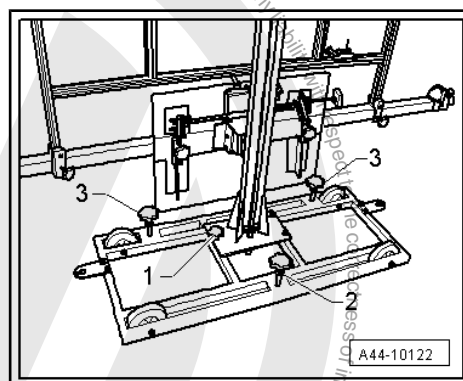




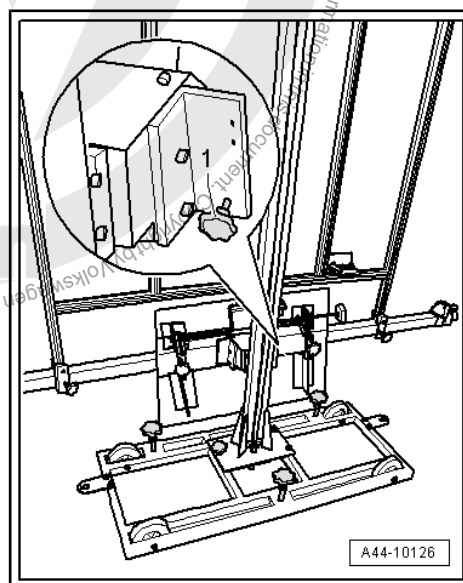
- Slide the Setting Device Basic Set - VAS6430/1- to the side -arrows B-, until the display in the wheel alignment computer is in the tolerance range.



- By gently turning the adjustment screws -2 and 3-, the Setting Device Basic Set - VAS6430/1- is secured from rolling away.

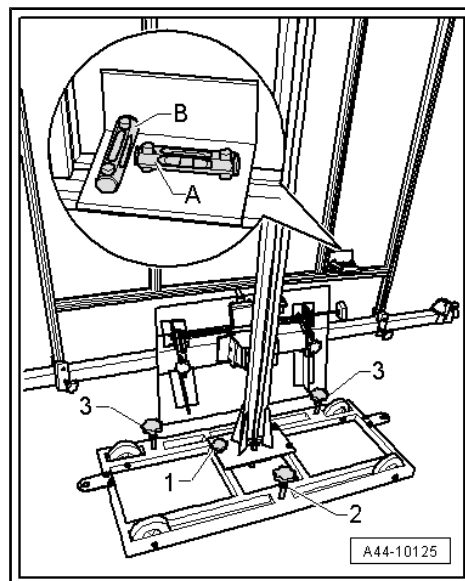


- Turn the precision adjustment screw -1- until the display on the wheel alignment computer is located within the tolerance range.

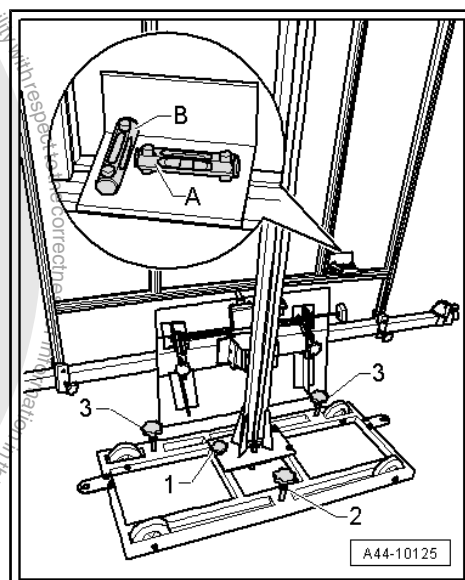




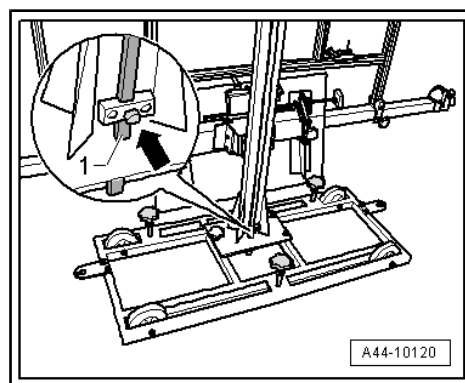
- Level the bubble level -A- using the adjusting screw -1-.



- Level the bubble level -B- using the adjusting screws -2 and 3-.

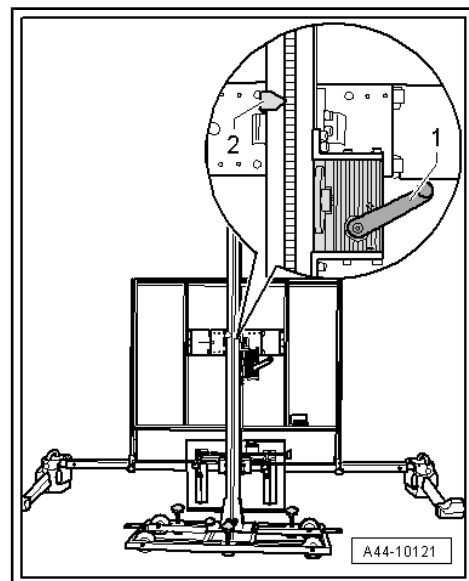


- Loosen the clamping bolt -arrow- and place the measuring bar -1- on the floor.





- Check specified height -2- one more time and adjust if necessary.



If the specified height was reached, then the measuring bar -1- must be pushed slightly forward and secured with the locking bolt -arrow-.

Perform Any Subsequent Work Using Vehicle Diagnostic Tester .

- Turn on the ignition.
- Select “Guided Fault Finding” on the Vehicle Diagnostic Tester .

Body (Repair Groups 01, 27 and 50 through 97)

Electrical System (Repair Groups 01, 27 and 90 through 97)

01_OBD-Capable Systems

Driver Assistance Systems Front Camera -R242-

Driver Assistance System Camera, Functions

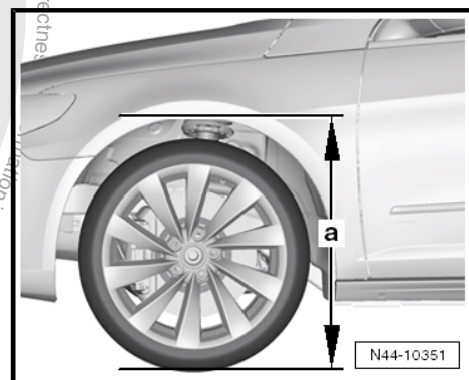
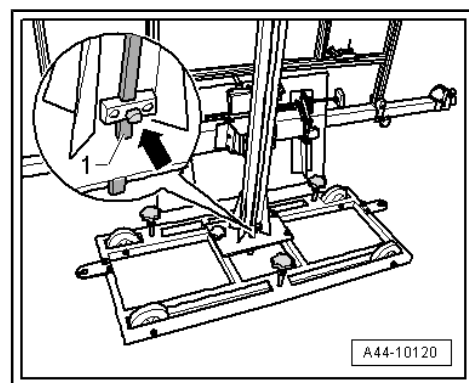
A5/ Calibrate the Control Module (Repair Group 44)

Follow the instructions on the screen to perform the calibration.

i Note

Next, in guided fault finding, determine the height of the body.

- Enter the recorded ride heights.



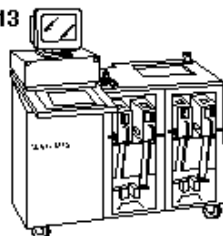


7 Special Tools

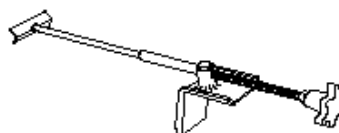
Special tools and workshop equipment required

- ◆ Wheel Alignment Computer - VAG1813F- or VW/Audi approved wheel alignment devices
- ◆ Brake Pedal Actuator - VAG1869/2- .
- ◆ Insert Tool - 18mm - T10179-
- ◆ Shock Absorber Set - T10001-

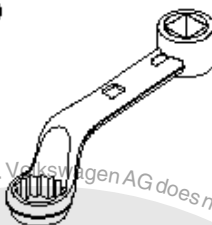
V.A.G 1813



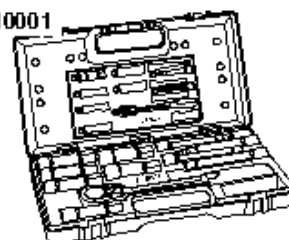
V.A.G 1869/2



T10179



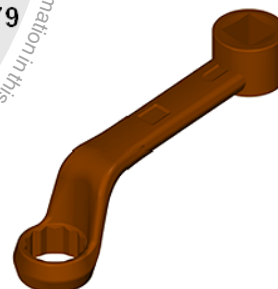
T 10001



G44-0009

- ◆ Insert Tool - 18mm - T10179-

T10179



W00-11316



- ◆ Torque Wrench 1332 40-200Nm - VAG1332-

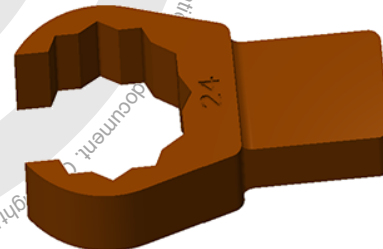
V.A.G 1332



W00-11165

- ◆ Torque Wrench 1332 Insert - Open Ring Wrench - 24mm - VAG1332/9-

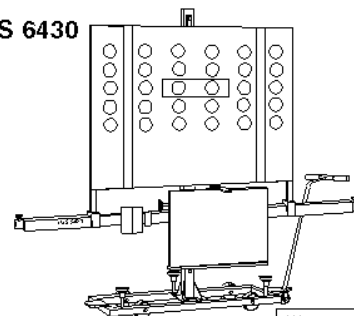
VAG 1332 /9



W00-11590

- ◆ Setting Device Basic Set - VAS6430/1-

VAS 6430



W00-10590

- ◆ ACC Reflector Mirror - Audi - VAS6430/3-



48 – Steering

1 Steering Wheel

⇒ [“1.1 Overview - Steering Wheel”, page 336](#)

⇒ [“1.2 Steering Wheel, Removing and Installing”, page 336](#)

1.1 Overview - Steering Wheel

1 - Steering Column

- ❑ Removing and installing. Refer to
⇒ [“2.4 Steering Column, Removing and Installing”, page 340](#) .
- ❑ The punch points -arrows- on the steering wheel and steering column must be aligned with each other when positioning. Several steering columns are not equipped with a punch point at the factory. For these steering columns, an appropriate punch point must be set before removing the steering wheel. Refer to
⇒ [“1.2 Steering Wheel, Removing and Installing”, page 336](#) .

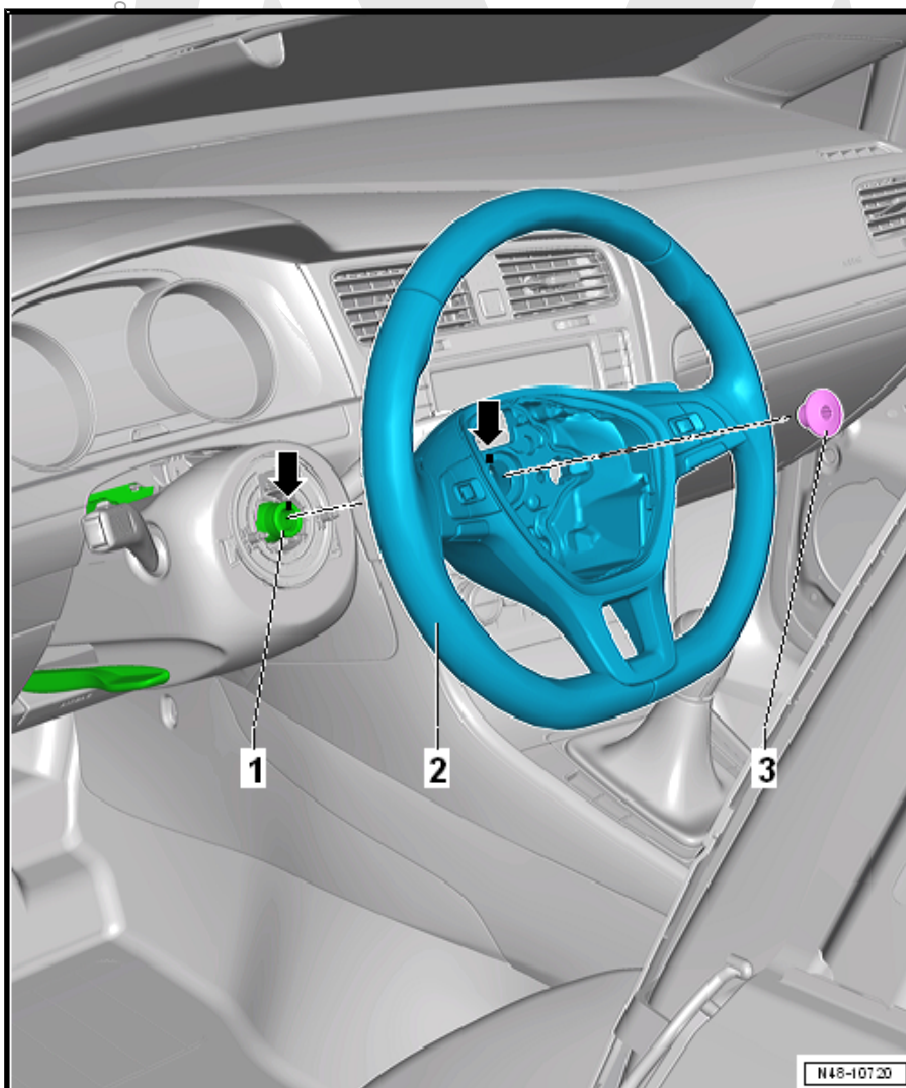
2 - Steering Wheel

- ❑ Removing and installing. Refer to
⇒ [“1.2 Steering Wheel, Removing and Installing”, page 336](#) .
- ❑ There are different versions. For allocation. Refer to the Parts Catalog.
- ❑ The punch points -arrows- on the steering wheel and steering column must be aligned with each other when positioning. Several steering columns are not equipped with a punch point at the factory. For these steering columns, an

appropriate punch point must be set before removing the steering wheel. Refer to
⇒ [“1.2 Steering Wheel, Removing and Installing”, page 336](#) .

3 - Bolt

- ❑ 30 Nm + 90°
- ❑ Replace after removal



1.2 Steering Wheel, Removing and Installing

Special tools and workshop equipment required



◆ Torque Wrench 1331 5-50Nm - VAG1331-

Removing



WARNING

Before performing work on the electrical system and removing the steering wheel, the following conditions must be met:

- ◆ *Disconnect the battery. Refer to ➔ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .*
- ◆ *The wheels must be in the straight position.*

The airbag system may fail during future operation if these warnings are not followed!

- Move the steering column to the center height position.
- Remove the airbag unit. Refer to ➔ Body Interior; Rep. Gr. 69 ; Overview - Driver Side Airbag .
- Bring wheels in the straight position.



Note

Removal and installation of steering wheel must take place in center position (wheels in straight-ahead position).

- If equipped disconnect the steering wheel heating connector.
- Remove the bolt -1-.
- Check if the steering column is equipped with a punch point on the steering column height marking.
- If that is not the case, then the steering wheel/steering column position must be marked with a punch point on the steering column.
- Remove the steering wheel -2- from the steering column.

Installing

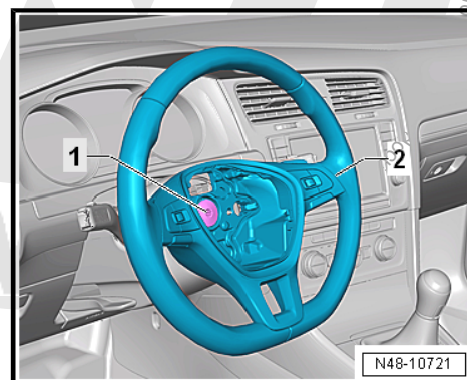
Install in reverse order of removal. Note the following:

Make sure the wheels are in the straight-ahead position before installing the steering wheel.

- 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 steering wheel.
- 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 Overview - Steering Wheel", page 336](#)





2 Steering Column

⇒ [“2.1 Overview - Steering Column”, page 338](#)

⇒ [“2.2 Steering Column, Checking for Damage”, page 339](#)

⇒ [“2.3 Steering Column, Handling and Transporting”, page 339](#)

⇒ [“2.4 Steering Column, Removing and Installing”, page 340](#)

⇒ [“2.5 Electronic Steering Column Lock Control Module J764 , Removing and Installing”, page 348](#)

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 tightening angle.

1 - Instrument Panel Central Tube

2 - Shear Bolt

- ☐ Loosening and tightening. Refer to
⇒ [“2.5 Electronic Steering Column Lock Control Module J764 , Removing and Installing”, page 348](#)

3 - Right Retainer

- ☐ For knee airbag

4 - Electronic Steering Column Lock Control Module - J764-

- ☐ For vehicles with “Keyless Access” keyless locking and starting system
- ☐ Removing and installing. Refer to
⇒ [“2.5 Electronic Steering Column Lock Control Module J764 , Removing and Installing”, page 348](#)

5 - Bolt

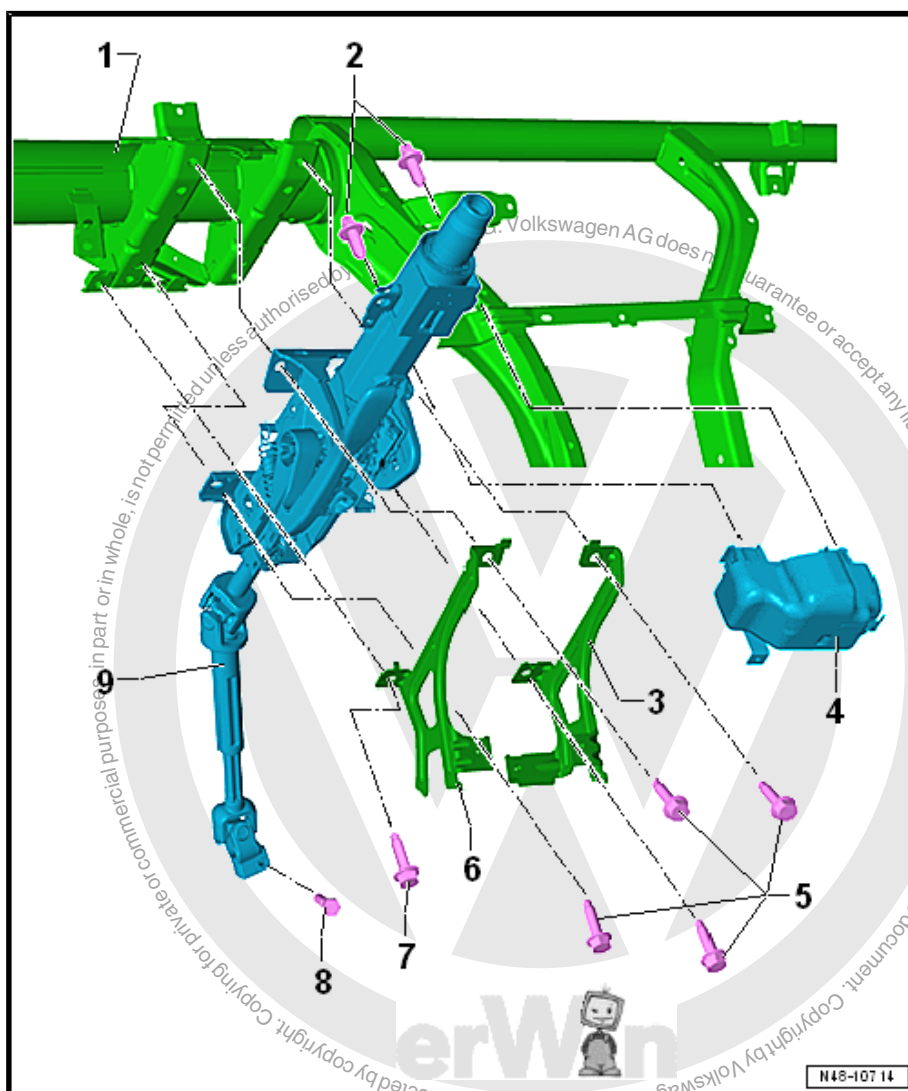
- ☐ 20 Nm
- ☐ Follow the tightening sequence. Refer to
⇒ [page 346](#)
- ☐ Replace after removal

6 - Left Retainer

- ☐ For knee airbag

7 - Bolt

- ☐ 20 Nm





- ☐ Replace after removal

8 - Bolt

- ☐ 20 Nm + 90°
- ☐ Replace after removal

9 - Steering Column

- ☐ Removing and installing. Refer to ⇒ [“2.4 Steering Column, Removing and Installing”, page 340](#) .
- ☐ The steering column must be engaged on the instrument panel central tube bracket when installing (assembly aid).
- ☐ There are different versions. Refer to the Parts Catalog.

2.2 Steering Column, Checking for Damage

Visual Check

- Check whether steering column parts show signs of damage.

Functional Check

- Check that the steering column turns easily without jerking.
- Check whether steering column can be easily adjusted laterally and vertically.

2.3 Steering Column, Handling and Transporting

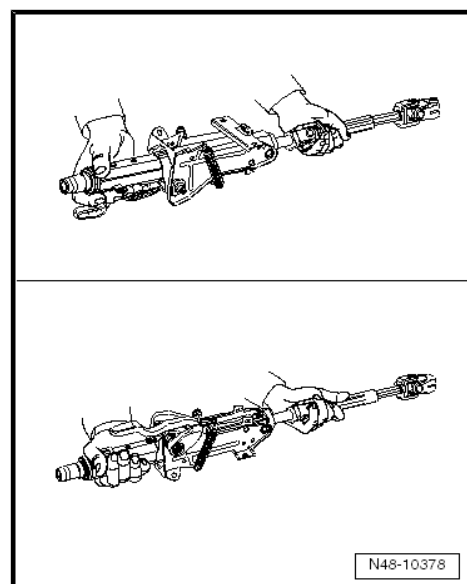


WARNING

- ◆ *The correct handling of the steering column must always be observed.*
- ◆ *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

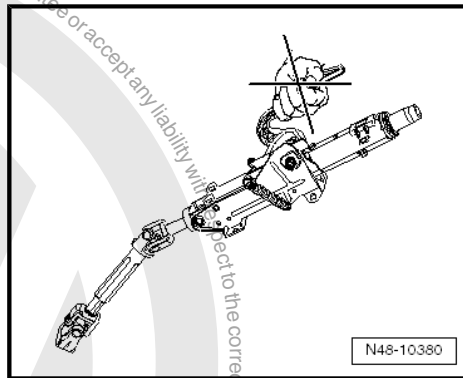
- ◆ Transport the steering column with two hands.
- ◆ Hold the steering column by the upper outer steering column tube and in the area of the upper universal joint.





Incorrect Handling of Steering Column

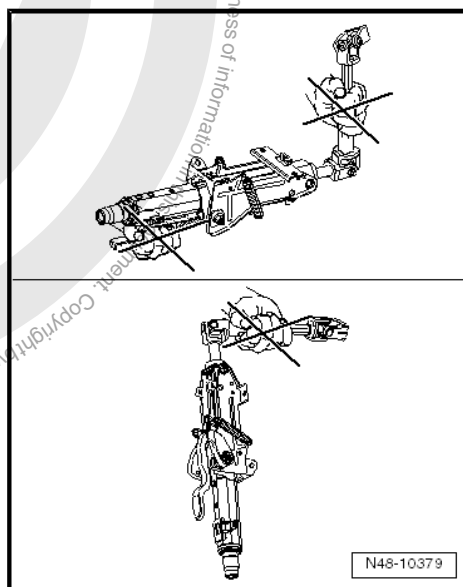
Transporting at the clamping lever leads to pre-damage to the steering column.



Incorrect Handling of Steering Column with Safety Risk

The following handling techniques can lead to damage of the universal joint bushings, the lower steering column bearing and the steering column:

- ◆ Transporting steering column with one hand on joint shaft.
- ◆ Bending joints more than 90°.



2.4 Steering Column, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Bolts - Left Retainer to Steering Column
- ◆ Bolts - Right Retainer to Steering Column
- ◆ Shear Bolts - Steering Column to Electronic Steering Column Lock Control Module
- ◆ Bolt - Steering Column to Steering Gear

Removing

The steering column is delivered only as a complete replacement part. Service is not possible.



Vehicles with Ignition Switch

The steering lock housing can be replaced. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Steering Column Switch Module; Steering Column Switch Module, Removing and Installing .

Vehicle with "Keyless Access" Keyless Locking and Starting System

The Electronic Steering Column Lock Control Module - J764- can be removed and installed. Refer to
⇒ ["2.5 Electronic Steering Column Lock Control Module J764 , Removing and Installing", page 348](#) .

Continuation for All Vehicles



WARNING

Before starting work on electrical equipment and removing steering wheel, the following conditions must be fulfilled:

- ◆ *The technician must electrostatic discharge. This is done by touching a grounded metal part, for example, water lines, heater pipe, metal carriers or a workshop hoist .*

If this not done, the Electronic Steering Column Lock Control Module - J764- could fail later.

- ◆ *Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .*

- ◆ *The wheels must be straight.*

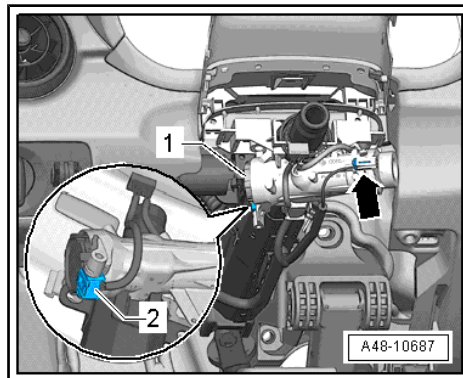
The airbag system may fail at a later time if these warnings are not followed!

- Straighten the wheels.
- Pull the lever on the side of the steering column downward.
- Push the steering column as far down as possible and remove it.
- Push lever under steering column upward again.
- Remove the airbag unit. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Driver Side Airbag; Overview - Driver Side Airbag .
- Remove the steering wheel. Refer to ⇒ ["1.2 Steering Wheel, Removing and Installing", page 336](#) .
- Remove the upper steering column trim panel. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Upper Steering Column Trim Panel, Removing and Installing .
- Remove the lower steering column trim panel. Refer to ⇒ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Lower Steering Column Trim Panel, Removing and Installing .
- Remove the steering column switch module. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Steering Column Switch Module; Steering Column Switch Module, Removing and Installing .
- Remove the knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag .



Vehicles with Ignition Switch

- Remove the connector -1- from the Anti-Theft Immobilizer Reader Coil - D2- .
- Remove the connector -2- from the ignition/starter switch -1-.

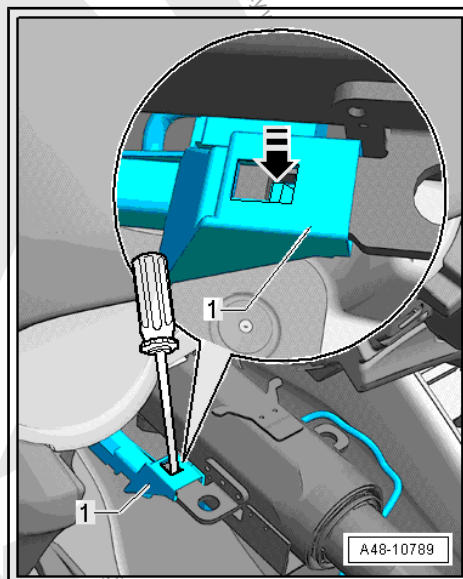
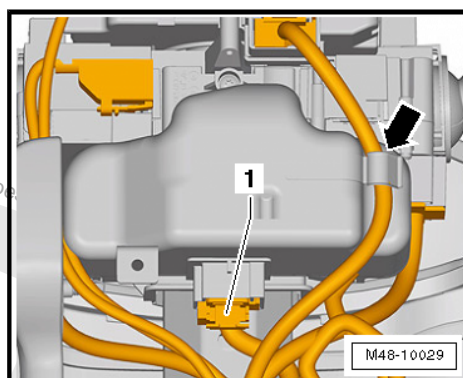


Vehicle with "Keyless Access" Keyless Locking and Starting System

- Disconnect the connector -1-.
- Unclip the wire from the retainer on the Electronic Steering Column Lock Control Module - J764- -arrow-

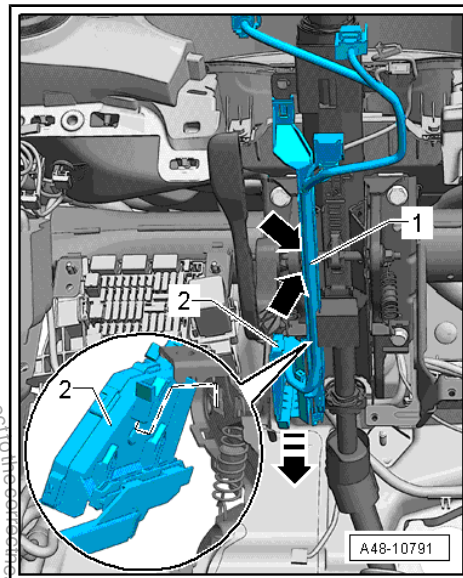
Continuation for All Vehicles

- Remove the footwell vent under the steering column. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87 ; Air Routing; Overview - Air Routing and Air Distribution in Passenger Compartment.
- Release the tab in direction of -arrow- using a small screwdriver.
- Remove the wiring guide -1- forward from the metal tab.

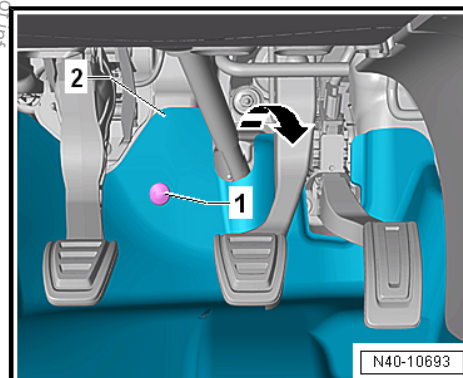




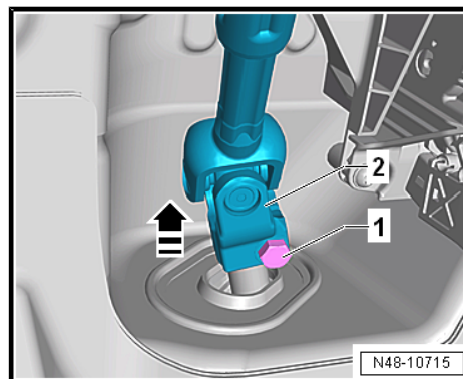
- Release the tabs -arrows- on the wiring guide -1- with a small screwdriver.
- Remove the wiring guide -1- downward from the steering column.
- Release the lower cable bracket -2- and remove it downward.
- Set the wire for the steering column aside.



- Remove the bolt -1- and fold the footwell trim panel -2- in the direction of the -arrow- into the vehicle interior.



- Remove the bolt -1- from the universal joint -2-. Then remove the universal joint in direction of -arrow-.



Caution

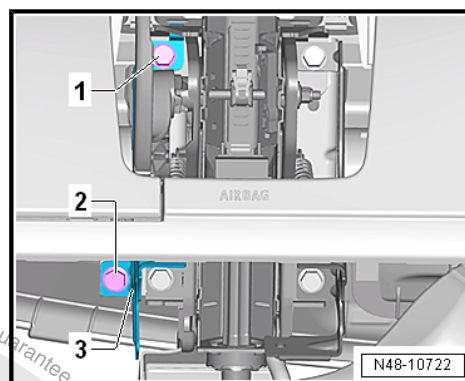
If the universal joint is separated from the steering gear, the following work cannot be performed:

- ◆ ***Connect the battery.***
- ◆ ***Switch on the ignition.***
- ◆ ***Turning the steering gear***
- ◆ ***Turning the steering column***

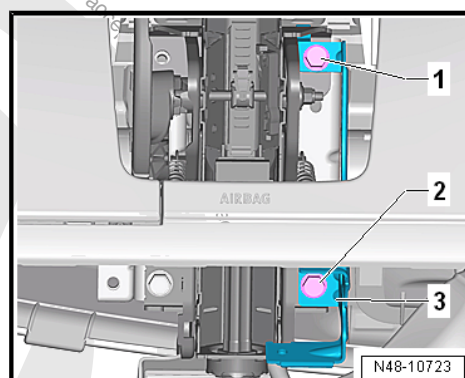
These points must be observed, because otherwise it can cause irreparable damage.



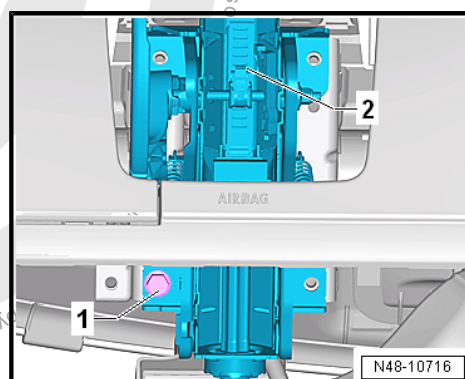
- Remove the bolts -1- and 2-.
- Remove the left bracket for the knee airbag -3-.



- Remove the bolts -1- and 2-.
- Remove the right bracket for the knee airbag -3-.



- Remove the bolt -1- and hold the steering column -2-.



- Disengage the steering column -1- upward from the tabs -2 and 3- on the mounting bracket and remove it.

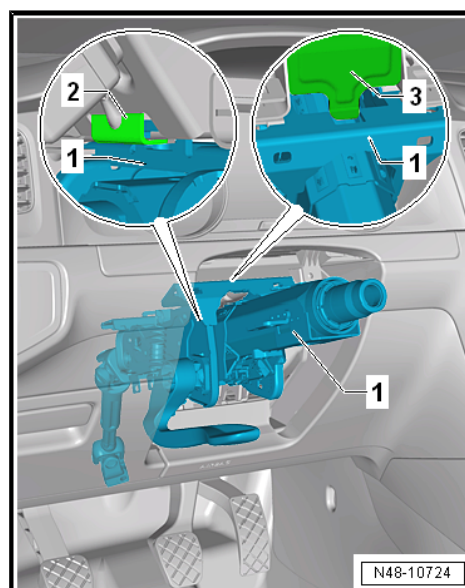


Caution

*For correct handling and transport of steering column. Refer to
⇒ **"2.3 Steering Column, Handling and Transporting"**,
page 339.*

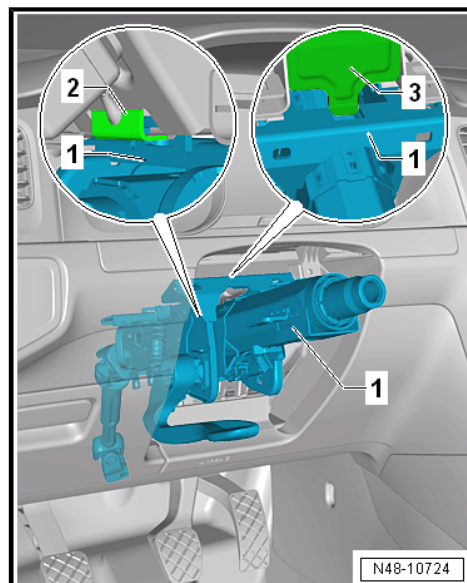
Installing

Install in reverse order of removal. Note the following:

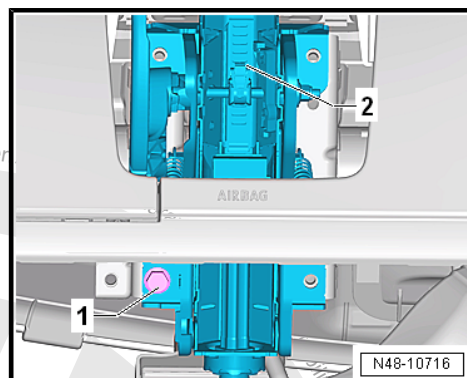




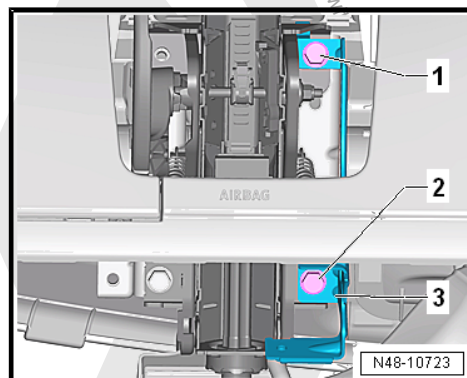
- Engage the steering column -1- in the assembly aids on the mounting bracket at the bottom -2- and at the top -3-.



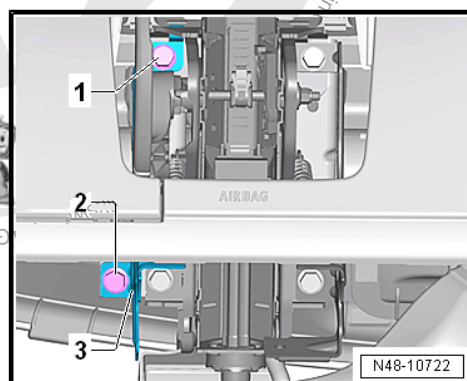
- Align the steering column -2- to the mounting bracket. Install the bolt -1- hand-tight.



- Install the right bracket for the knee airbag -3-.
- Install the bolts -1 and 2- hand-tight.

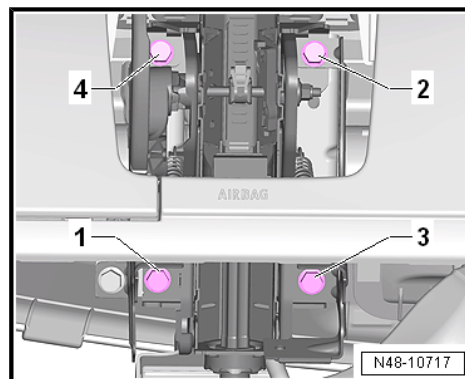


- Install the left bracket for the knee airbag -3-.
- Install the bolts -1 and 2- hand-tight.

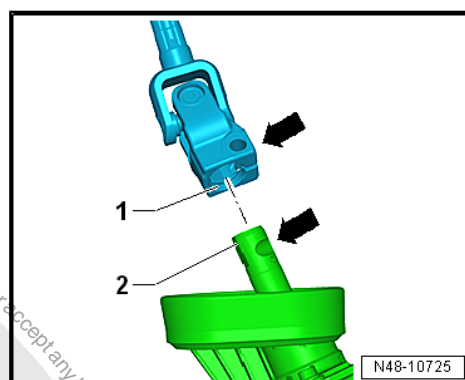




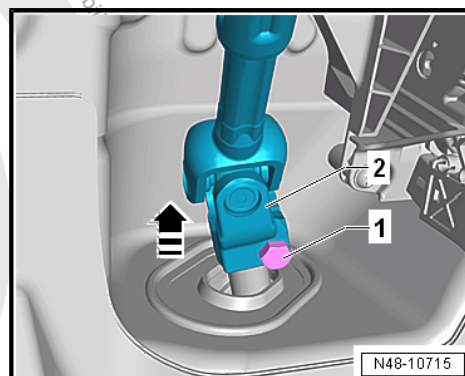
- Tighten the bolts -1, 2, 3, and 4- one after the other to the tightening specification.



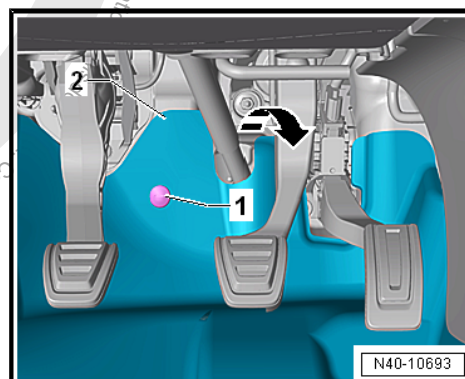
- The flat side of the steering column -1- must be positioned on the flat side of the steering gear -2-. At the same time, the opening on the steering gear must align precisely with the hole for the bolt -arrows-.



- Install the universal joint -2- on the steering pinion in the opposite direction of the -arrow-.
- Install and tighten the new hex bolt -1-.



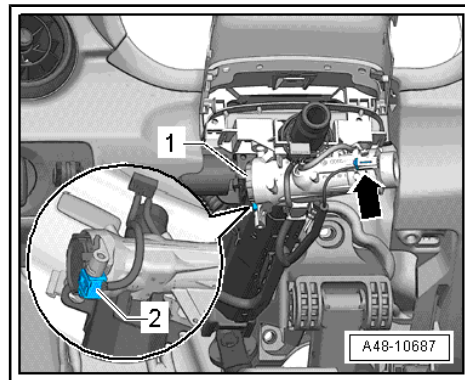
- Fold the footwell trim panel -2- forward and secure it with the bolt -1-.





Vehicles with Ignition Switch

- Connect the connector -arrow- with the Anti-Theft Immobilizer Reader Coil - D2- .
- Connect the connector -2-.

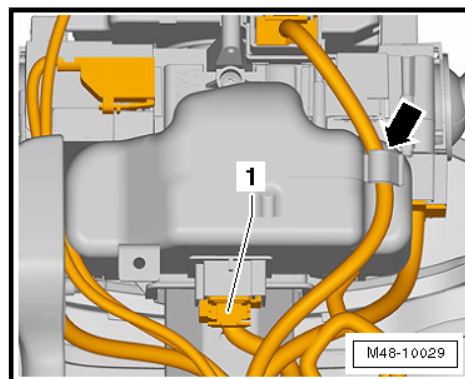


Vehicle with "Keyless Access" Keyless Locking and Starting System

- Connect the connector -1-.
- Clip the wire into the retainer on the Electronic Steering Column Lock Control Module - J764- -arrow-.

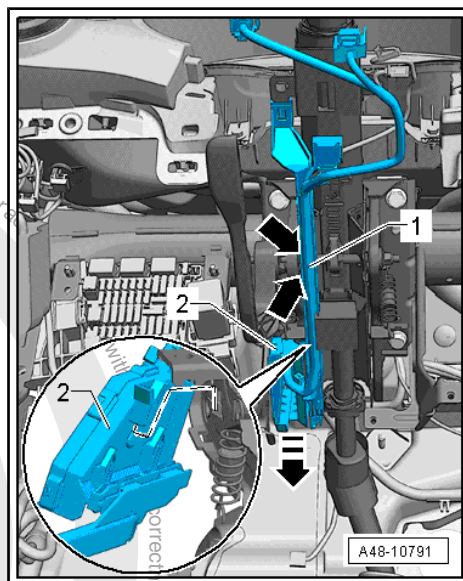
Continuation for All Vehicles

- Install the steering column switch module. Refer to ⇒ Electrical Equipment; Rep. Gr. 94 ; Steering Column Switch Module; Steering Column Switch Module, Removing and Installing .





- Insert the lower wiring bracket -2- so that the tabs engage in the guide on the steering column.
- Insert the wiring guide -1-. The tabs, arrows, must engage on the steering column.
- Install the footwell vent under the steering column. Refer to ➤ Heating, Ventilation and Air Conditioning; Rep. Gr. 87 ; Air Routing; Overview - Air Routing and Air Distribution in Passenger Compartment .
- Install the knee airbag. Refer to ➤ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag .
- Install the lower steering column trim panel. Refer to ➤ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Lower Steering Column Trim Panel, Removing and Installing .
- Install the upper steering column trim panel. Refer to ➤ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Upper Steering Column Trim Panel, Removing and Installing .
- Install the steering wheel. Refer to ➤ ["1.2 Steering Wheel, Removing and Installing", page 336](#) .
- Install the driver side airbag unit. Refer to ➤ Body Interior; Rep. Gr. 69 ; Driver Side Airbag; Overview - Driver Side Airbag .
- Perform a basic setting on the Steering Angle Sensor - G85- using the ➤ Vehicle diagnostic tester.



Tightening Specifications

- ◆ Refer to ➤ ["2.1 Overview - Steering Column", page 338](#)
- ◆ Refer to ➤ Heating, Ventilation and Air Conditioning; Rep. Gr. 87 ; Air Routing; Overview - Air Routing and Air Distribution in Passenger Compartment .
- ◆ Refer to ➤ Electrical Equipment; Rep. Gr. 94 ; Steering Column Switch Module; Steering Column Switch Module, Removing and Installing .
- ◆ Refer to ➤ Body Interior; Rep. Gr. 69 ; Knee Airbags; Overview - Knee Airbag
- ◆ Refer to ➤ Body Interior; Rep. Gr. 69 ; Driver Side Airbag; Overview - Driver Side Airbag .
- ◆ Refer to ➤ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Lower Steering Column Trim Panel, Removing and Installing .
- ◆ Refer to ➤ Body Interior; Rep. Gr. 68 ; Storage Compartments and Covers; Upper Steering Column Trim Panel, Removing and Installing .

2.5 Electronic Steering Column Lock Control Module - J764- , Removing and Installing

Special tools and workshop equipment required

- ◆ 7/16 Inch Extractor - T10424US-
- ◆ Vehicle Diagnostic Tester



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.



Mandatory Replacement Parts

- ◆ Shear Bolts - Steering Column to Electronic Steering Column Lock Control Module



Note

If the control module is being replaced, select the function **Replace** for the respective control module in the mode "Guided Fault Finding" or "Guided Functions" on the Vehicle Diagnostic Tester

Removing

- Remove the steering column switch module. Refer to ➔ Electrical Equipment; Rep. Gr. 94 ; Steering Column Switch Module; Steering Column Switch Module, Removing and Installing .
- Disconnect the connector -2- by sliding the retainer -1- toward the rear and pressing the release down.
- Remove the shear bolt -3- using the 7/16 Inch Extractor - T10424US-
- Remove the Electronic Steering Column Lock Control Module J764- -4-



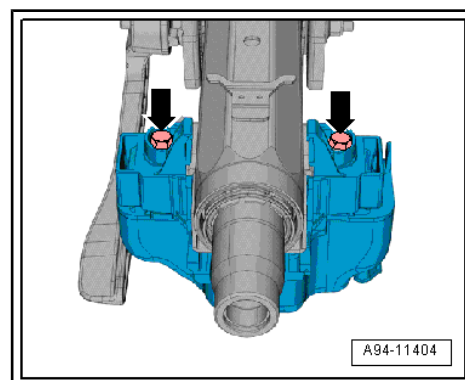
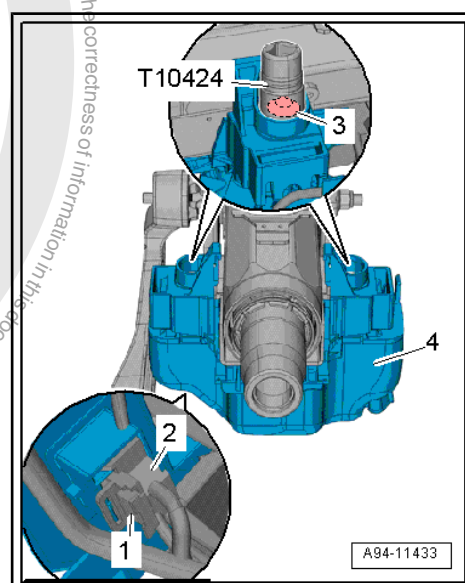
Note

If the shear bolt cannot be removed using the 7/16 Inch Extractor - T10424US-, it must be drilled out using an angle drill and an 8.5 mm diameter drill bit.

Installing

Install in reverse order of removal. Note the following:

- Tighten the new bolts -arrows- until the head break off.





3 Steering Gear

⇒ "3.1 Overview - Steering Gear", page 350

⇒ "3.2 Steering Gear, Removing and Installing", page 351

⇒ "3.3 Boot, Removing and Installing", page 357

⇒ "3.4 Tie Rod, Removing and Installing", page 359

⇒ "3.5 Tie Rod End, Removing and Installing", page 362

⇒ "3.6 Steering Gear, Servicing", page 363

3.1 Overview - Steering Gear



Caution

If the universal joint is separated from the steering gear, the following work cannot be performed:

These points must be observed, because otherwise it can cause irreparable damage.

1 - Expanding Clip

2 - Steering Column

3 - Bolt

- ❑ Tightening specification. Refer to
⇒ "2.1 Overview - Steering Column", page 338

4 - Steering Gear

- ❑ Removing and installing. Refer to
⇒ "3.2 Steering Gear, Removing and Installing", page 351
- ❑ There are different versions. Refer to the Parts Catalog.
- ❑ With Power Steering Control Module - J500-
- ❑ Can be checked in "Guided Fault Finding" using the Vehicle Diagnostic Tester

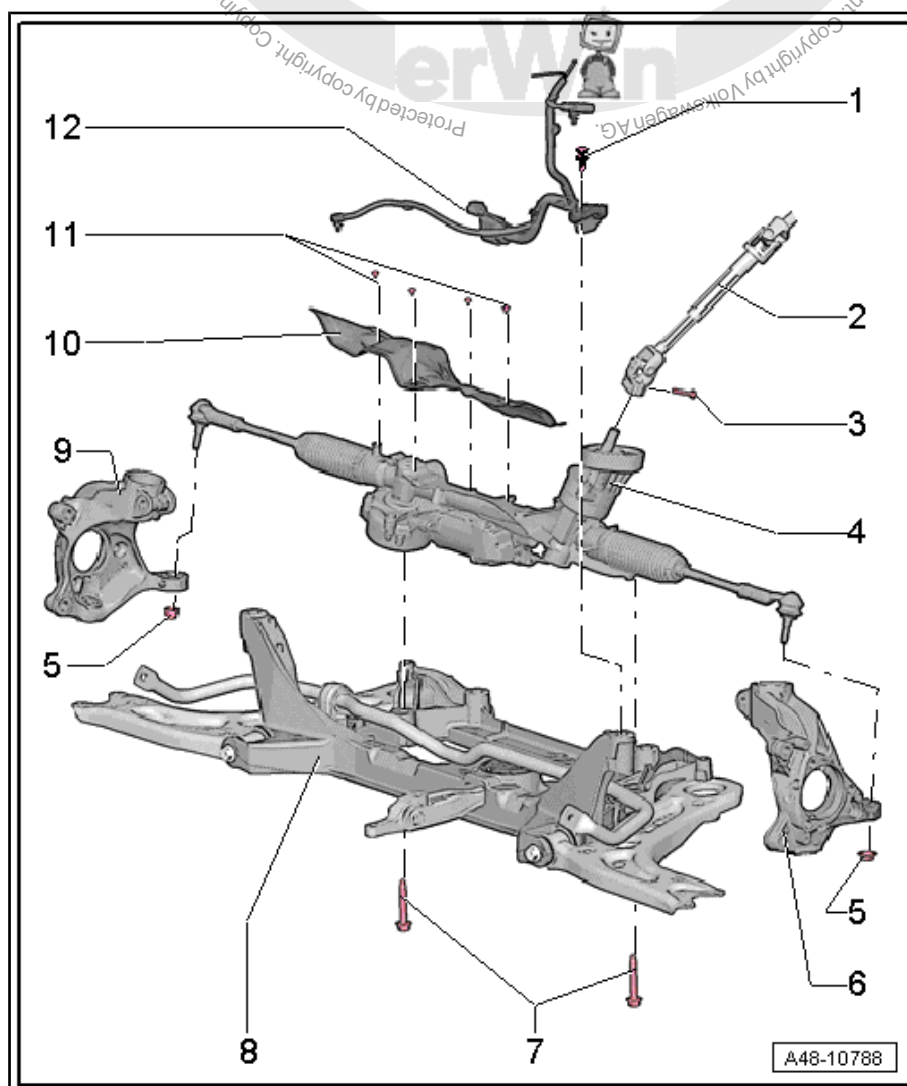
5 - Nut

- ❑ 20 Nm + 90°
- ❑ Replace after removal

6 - Left Wheel Bearing Housing

7 - Bolt

- ❑ 70 Nm + 90°
- ❑ Replace after removal





8 - Subframe

9 - Right Wheel Bearing Housing

10 - Heat Shield

- ☐ Depending on the engine installed, there are different versions. Refer to the Parts Catalog.

11 - Bolt

- ☐ 8 Nm
- ☐ Depending on the engine installed, three or four are installed. Refer to the Parts Catalog.

12 - Wire

3.2 Steering Gear, Removing and Installing

Special tools and workshop equipment required

- ◆ Puller - Ball Joint - T10187-
- ◆ Torque Wrench 1331 5-50Nm - VAG1331-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack - VAS6931-

Removing

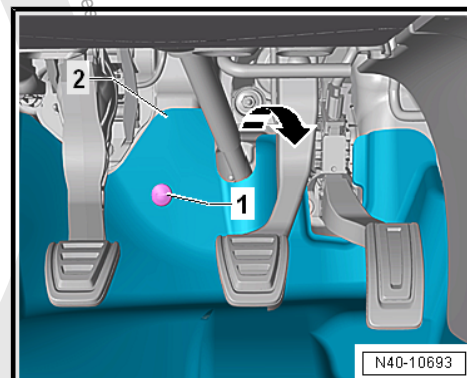
- Turn the steering wheel in the straight position and remove the ignition key so that the steering wheel lock engages.

Vehicles with "Keyless Access" Keyless Locking and Starting System

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

Continuation for all vehicles.

- Remove the bolts -1- and fold the footwell trim panel -2- in the direction of the arrow into the vehicle interior.





- Remove the bolt -arrow- from the universal joint -1-, and then remove the universal joint in the direction of the -arrow-.

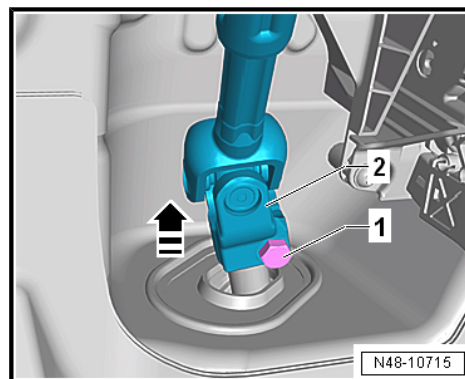


Caution

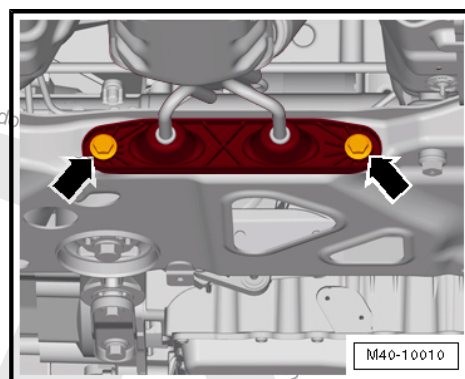
If the universal joint is separated from the steering gear, the following work cannot be performed:

- ◆ *Connect the battery.*
- ◆ *Switching on the ignition*
- ◆ *Turning the steering gear*
- ◆ *Turning the steering column.*

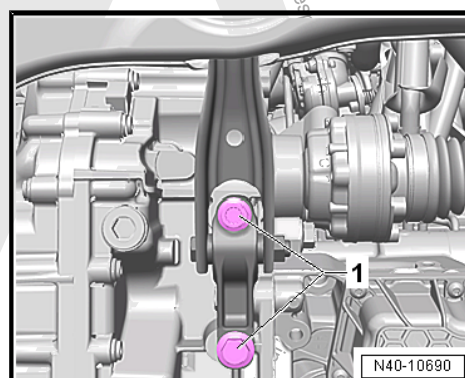
These points must be observed since performing these actions could cause irreparable damage.



- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheels.
- Remove the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .
- Remove the exhaust system bracket from the subframe -arrows-.

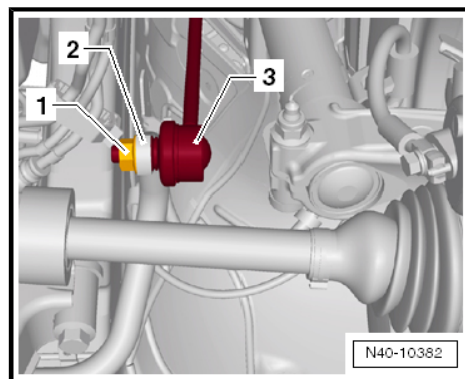


- Remove the pendulum support bolts -1-.

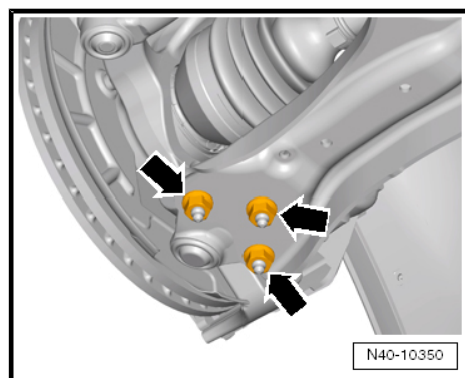




- Remove the hex nut -1- from the right and left coupling rod -3-.
- Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.



- Remove the nuts -arrows- on the left and right side of the vehicle.
- Remove the control arm from the ball joint.



- Loosen the nut from the tie rod end, but do not unscrew yet.

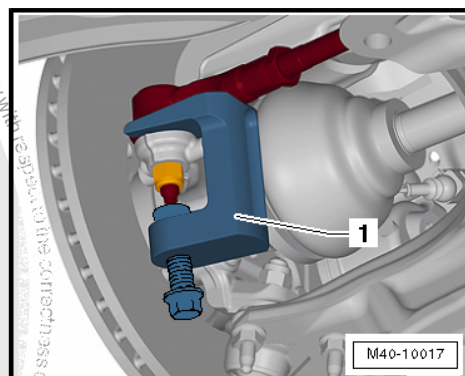


Caution

To protect the thread, screw the nut on the pin a few turns.

- Remove the tie rod end from the wheel bearing housing and remove the nut.

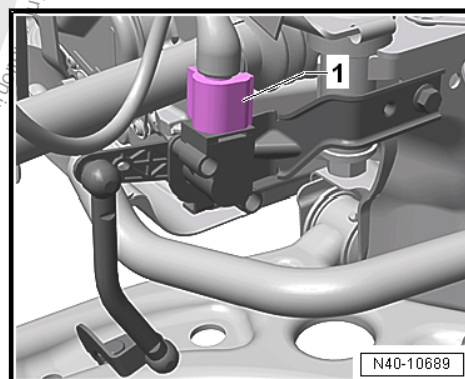
1 - -T10187-



Vehicles with Level Control System Sensor

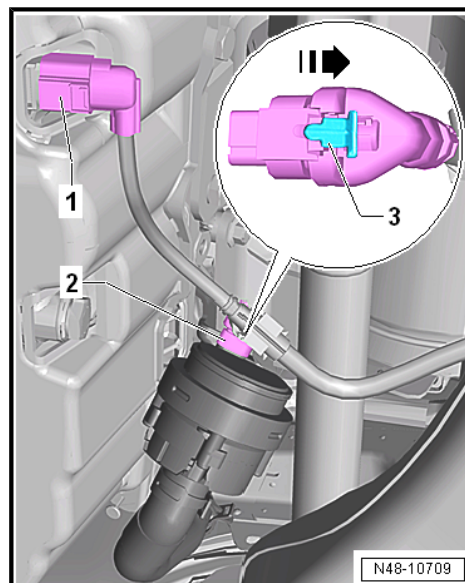
Disconnect the connector -1- from the Left Front Level Control System Sensor - G78- or Right Front Level Control Sensor - G289- .

Continuation for all Vehicles

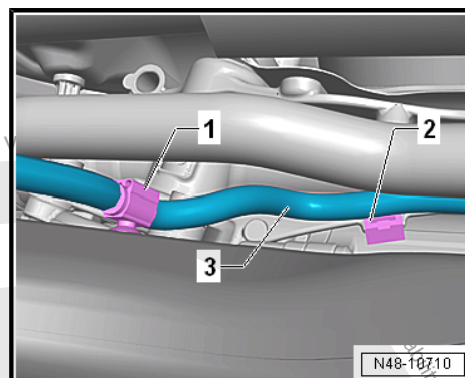




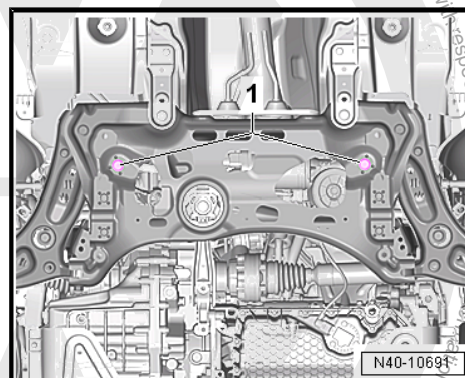
- Disconnect the connector -1- for the Oil Level Thermal Sensor - G266- .
- If equipped, disconnect the connector -2- from the After-Run Coolant Pump - V51- . To do so, open the catch -3- in the direction of the -arrow- and release the connector.



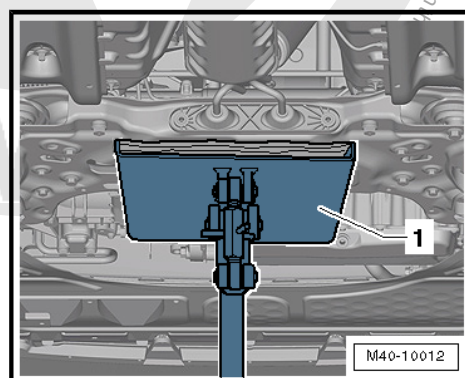
- Remove the clips -1- and -2- for the wiring harness -3- from the subframe and the steering gear.



- Remove the steering gear bolts -1-.



- Place the -VAS6931- -1- under the subframe.
- Secure the subframe and lower it approximately 10 cm.





- Remove the bolts -arrows- and remove the heat shield -1- from the steering gear.



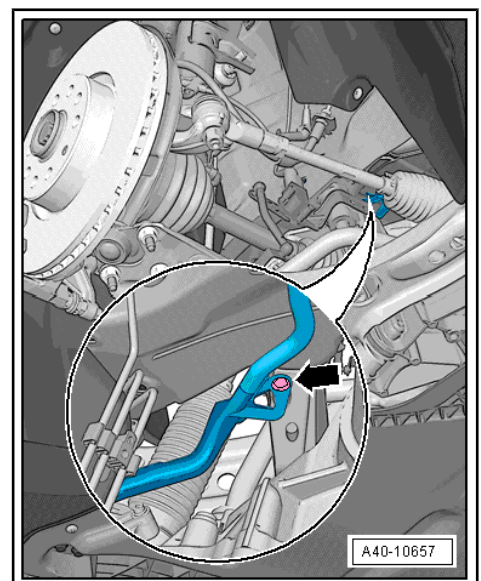
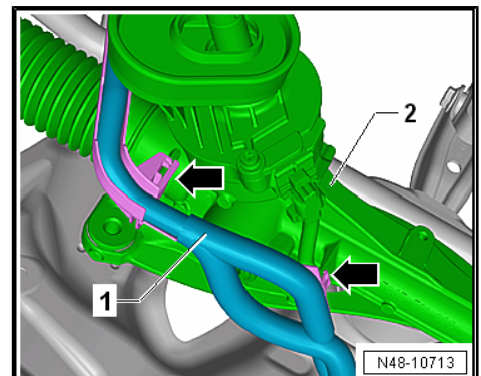
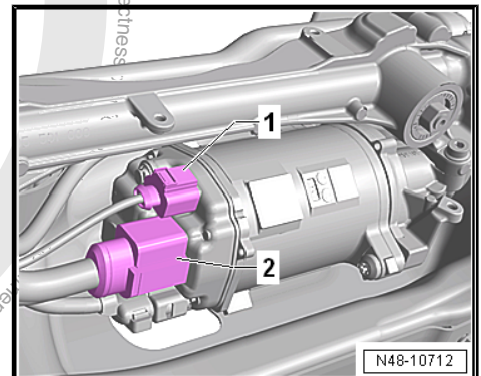
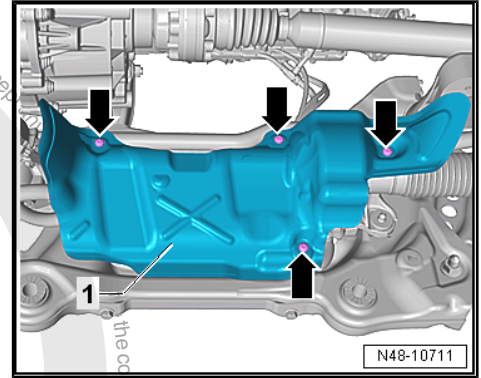
Note

Different heat shields -1- are installed depending on the engine. On some engine versions, the connectors for the steering gear are accessible without having to remove the heat shield.

- Disconnect the connectors -1 and 2- from the steering gear.

- Unclip the wiring harness -1- from the steering gear -2- -arrows-.

- Remove the expanding clip -arrow-.
- Lower the subframe using the -VAS6931- .
- Pry the steering gear off of the subframe, for example, using a large screwdriver and remove it toward the rear.





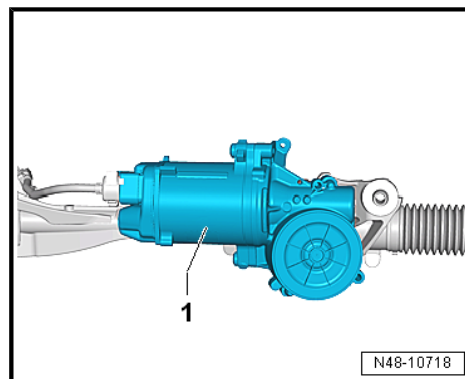
- Set the steering gear down as illustrated.

Avoid damage to the control module -1-.

Installing

Install in reverse order of removal. Note the following:

The steering gear threaded sleeves must be seated in the sub-frame holes.

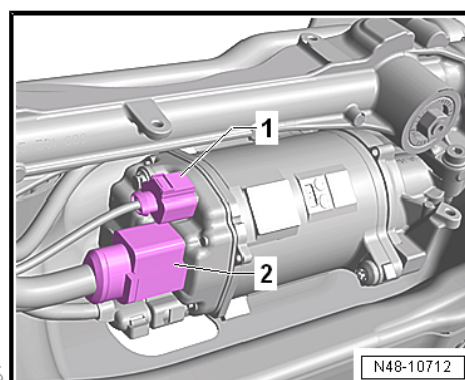


- Connect the connectors -1 and 2- so that they audibly click into place.



Note

- ◆ Coat the seal on the steering gear with lubricant such as soft soap before installing the steering gear.
- ◆ After attaching steering gear to drive axle, make sure that seal on steering gear is positioned on the mounting plate without and kinks and is sealed correctly. The opening to the foot well must sealed correctly. Ingress of water and/or noises may be the result.
- ◆ Make sure sealing surfaces are clean.



Position the steering gear on the subframe.

Attach the bolts for the steering gear and the stabilizer bar.

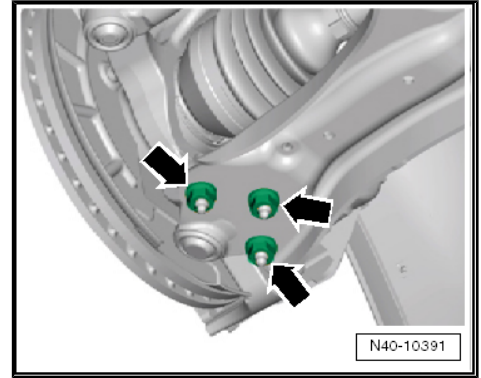


- Tighten nuts -arrows-.



Note

- ◆ Tighten the nuts -arrows- in curb weight position. Refer to ⇒ ["3.8.1 Wheel Bearing in Curb Weight, Lifting Vehicles with Coil Spring, Front Axle", page 6](#).
- ◆ Make sure the ball joint boot is not damaged or twisted.
- Install the lower noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .



Note

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

- Bolt the universal joint to the steering gear.
- Connect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .
- Perform the Steering Angle Sensor - G85- basic setting using the ⇒ Vehicle diagnostic tester.

It is necessary to adapt the electro-mechanical power steering using the Vehicle Diagnostic Tester ⇒ Vehicle diagnostic tester if new steering gear was installed.

Tightening Specifications

- ◆ Refer to ⇒ ["4.1 Overview - Lower Control Arm and Ball Joint", page 54](#)
- ◆ Refer to ⇒ ["2.1 Overview - Subframe", page 16](#)
- ◆ Refer to ⇒ ["3.1 Overview - Steering Gear", page 350](#)
- ◆ Refer to ⇒ ["3.6 Steering Gear, Servicing", page 363](#)
- ◆ Refer to ⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#)
- ◆ Bolts for pendulum support. Refer to ⇒ Rep. Gr. 10 ; Subframe Mount; Overview - Subframe Mount .
- ◆ Exhaust system to subframe. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
- ◆ Noise insulation bolts. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Noise Insulation; Overview - Noise Insulation .

If the steering wheel is still crooked after using the -T10486/1- then an axle alignment is necessary. In this case the record it in the vehicles axle alignment log.

3.3 Boot, Removing and Installing

Special tools and workshop equipment required

- ◆ Hose Clip Pliers - VAG1275A-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Open Ring Wrench - 24mm - VAG1332/11-
- ◆ Locking Pliers - VAS6199-
- ◆ Vehicle Diagnostic Tester



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Clamps - CV Boot

Removing



Note

- ◆ *If the boot is faulty, moisture and dirt will penetrate into steering gear. There must be a noticeable grease film present on steering rack in area of splines. If grease film is not present, steering gear must be replaced.*
- ◆ *Replace the steering gear:*
- ◆ *If there is corrosion.*
- ◆ *If it is damaged.*
- ◆ *If it is worn out.*
- ◆ *If there is dirt on the steering rack.*
- Turn steering wheel into straight ahead position.
- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Mark the location of the nut on the tie rod.
- Remove the tie rod end. Refer to
⇒ ["3.5 Tie Rod End, Removing and Installing", page 362](#) .
- Clean outside of steering gear in area of boot.

While doing this, no dirt must enter the steering gear through the faulty boot.

- Open the clamps.
- Remove the boot from the steering gear and the tie rod.



Note

- ◆ *If corrosion, damage, wear-out or first signs of soiling on steering rack can be seen, complete steering gear must be replaced.*
- ◆ *If no grease film is visible on steering rack, steering gear must also be replaced completely.*

Installing



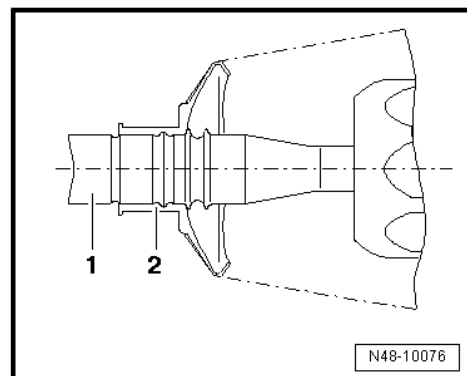
Caution

Do not lubricate the steering rack.

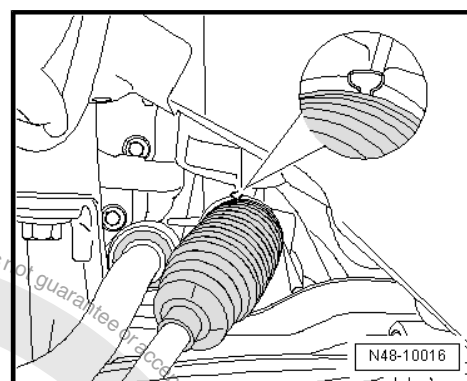
- Turn steering wheel into straight ahead position.



- Guide new clamp and boot onto tie rod.
- Lightly grease the sealing surface of the boot to the tie rod with grease from the repair kit.
- Slide the boot -2- onto the tie rod -1- as illustrated.
- Secure spring clamp on 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.
- Push the boot all the way onto the steering gear housing.



- Tighten the new clamp using the Locking Pliers - VAS6199- to the extent depicted in the illustration.
- Install the tie rod end up to the marking made earlier during the removal. Refer to
⇒ [“3.5 Tie Rod End, Removing and Installing”, page 362](#) .
- Install the front wheel and tighten the bolts.
- Perform vehicle alignment.
- If both tie rods were replaced, then the basic setting for the Steering Angle Sensor - G85- must be performed using the Vehicle Diagnostic Tester.
- Then perform the basic setting to the steering using the Vehicle Diagnostic Tester.



Tightening Specifications

- ◆ Refer to ⇒ [“3.1 Overview - Steering Gear”, page 350](#)
- ◆ Refer to ⇒ [“3.6 Steering Gear, Servicing”, page 363](#)
- ◆ Refer to ⇒ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)

3.4 Tie Rod, Removing and Installing

Special tools and workshop equipment required

- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Torque Wrench Insert - Open Jaw - VAG1923-
- ◆ Puller - Ball Joint - T10187-
- ◆ Locking Pliers - VAS6199-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.



Mandatory Replacement Parts

- ◆ Clamps - Tie Rod

Removing

- Turn steering wheel into straight ahead position.



- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Clean outside of steering gear in area of boot.
- Loosen nut of tie rod ball joint, but do not unscrew yet.



Caution

To protect thread, screw nut on pin a few turns.

- Remove the tie rod end from the wheel bearing housing and remove the nut.

1 - Puller - Ball Joint - T10187-

- Open the clamps and push back boot.

- Turn the steering as follows:

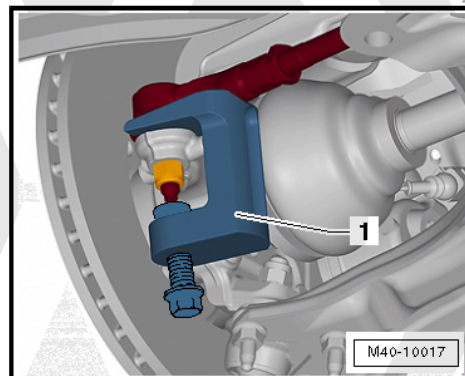
For the left tie rod, turn the steering to the left until stop

For the right tie rod, turn the steering to the right until stop

- Remove tie rod.

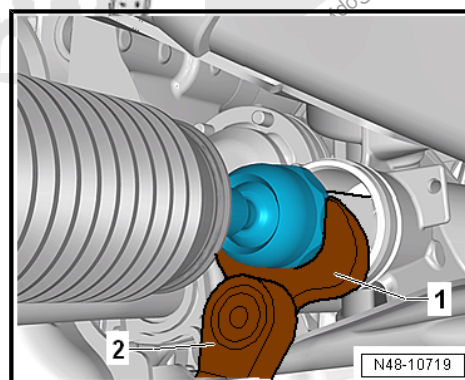
1 - Torque Wrench Insert - Open Jaw - VAG1923-

2 - Torque Wrench 1332 40-200Nm - VAG1332-



Note

- ◆ If corrosion, damage, wear-out or first signs of soiling on steering rack can be seen, complete steering gear must be replaced.
- ◆ If no grease film is visible on steering rack, steering gear must also be replaced completely.



Installing

Installation is the reverse of removal, with special attention to the following:



Caution

Do not lubricate the steering rack.

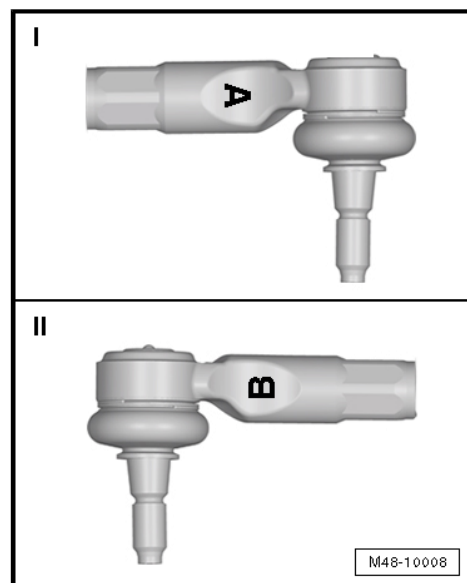


- Make sure the correct tie rod end is installed on each side.

I - Right tie rod end identified with an "A"

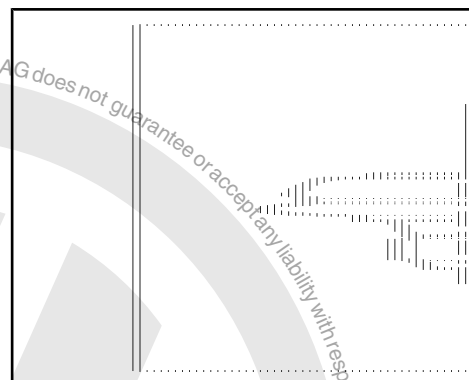
II - Left tie rod end identified with a "B"

- Turn steering wheel into straight ahead position.
- Guide new clamp and boot onto tie rod.



- Twist tie rod far enough into tie rod end until dimension -a- is obtained.

Dimension -a- = 373 ± 1 mm

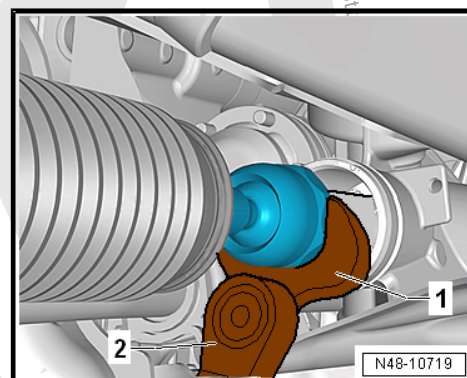


- Tighten the tie rod.

1 - Torque Wrench Insert - Open Jaw - VAG1923-

2 - Torque Wrench 1332 40-200Nm - VAG1332-

- Lightly grease the sealing surface of the boot to the tie rod with grease from the repair kit.

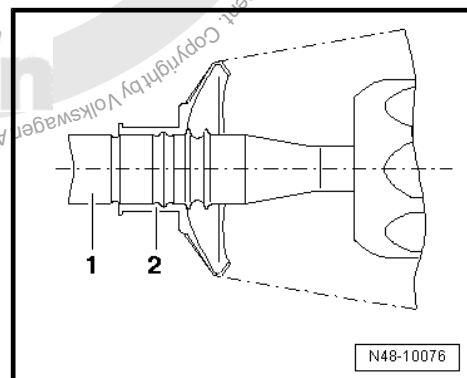


- Slide boot -2- onto tie rod -1-, pay attention to correct position when doing this.

- Secure spring clamp on 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.

- Push the boot all the way onto the steering gear housing.

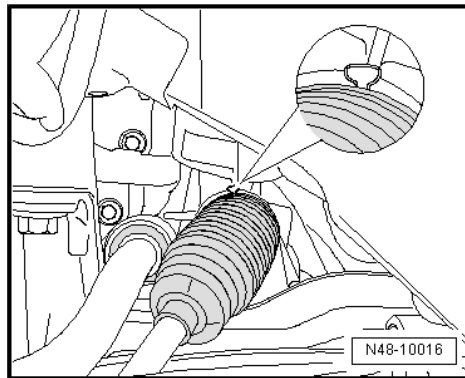




- Tighten new clamp using Locking Pliers - VAS6199- to the extent depicted in the illustration.
- Install wheel and tighten.
- Perform vehicle alignment.
- If both tie rods were replaced, then the basic setting for the Steering Angle Sensor - G85- must be performed using the Vehicle Diagnostic Tester .
- Then perform the basic setting to the steering using the Vehicle Diagnostic Tester .

Tightening Specifications

- ◆ Refer to ➔ [“3.1 Overview - Steering Gear”, page 350](#)
- ◆ Refer to ➔ [“3.6 Steering Gear, Servicing”, page 363](#)
- ◆ Refer to ➔ [“1.1 Wheel Bolt Tightening Specifications”, page 286](#)



3.5 Tie Rod End, Removing and Installing

Special tools and workshop equipment required

- ◆ Puller - Ball Joint - T10187-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-



Caution

This procedure contains mandatory replaceable parts. Refer to component overview prior to starting procedure.

Mandatory Replacement Parts

- ◆ Clamps - Tie Rod

Removing

- Loosen the wheel bolts.
- Raise the vehicle.
- Remove the wheel.
- Loosen nut -1-.
- Mark the position of the tie rod end on the tie rod.
- Loosen the nut -2- from the tie rod end, but do not remove it.



Caution

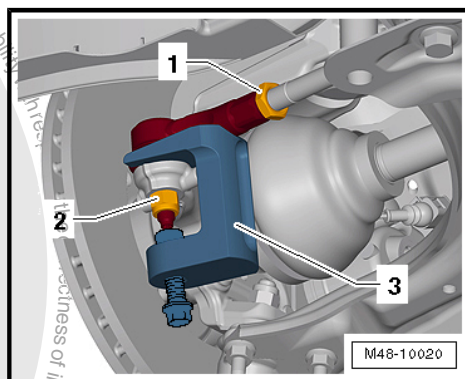
To protect thread, screw nut on pin a few turns.

- Remove the tie rod from the wheel bearing housing and remove the nut.

- Puller - Ball Joint - T10187-
- Remove the tie rod end from the tie rod.

Installing

Installation is the reverse of removal, with special attention to the following:





- Make sure the correct tie rod end is installed on each side.

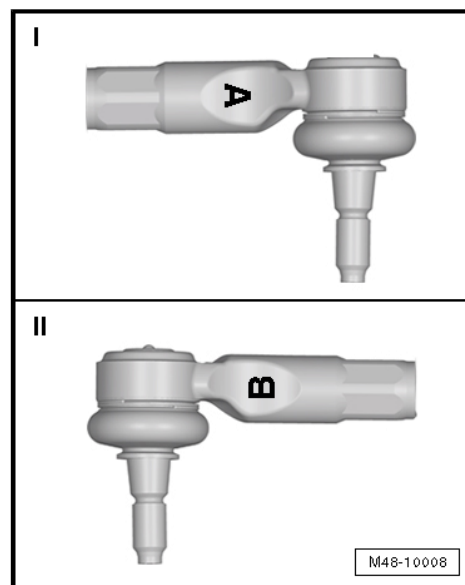
I - Right tie rod end identified with an "A"

II - Left tie rod end identified with a "B"

- Turn the tie rod end to marking made earlier on the tie rod and secure it with a locking nut.
- Install the tie rod end into the wheel bearing housing.
- Install the tie rod end with a new nut.
- Install wheel and tighten.
- Perform vehicle alignment.

Tightening Specifications

- ◆ Refer to ⇒ ["3.1 Overview - Steering Gear", page 350](#)
- ◆ Refer to ⇒ ["3.6 Steering Gear, Servicing", page 363](#)
- ◆ Refer to
⇒ ["1.1 Wheel Bolt Tightening Specifications", page 286](#)



3.6 Steering Gear, Servicing

1 - Right Tie Rod End

- ☐ Identified with "A". Refer to ⇒ [page 361](#)
- ☐ Removing and installing. Refer to ⇒ ["3.5 Tie Rod End, Removing and Installing", page 362](#)
- ☐ Installed position. Refer to ⇒ [page 361](#)
- ☐ Allocation. Refer to the Parts Catalog.

2 - Nut

- ☐ 70 Nm
- ☐ Nut must be counter-held on tie rod end using a wrench when loosening and tightening.

3 - Clamp

4 - Boot

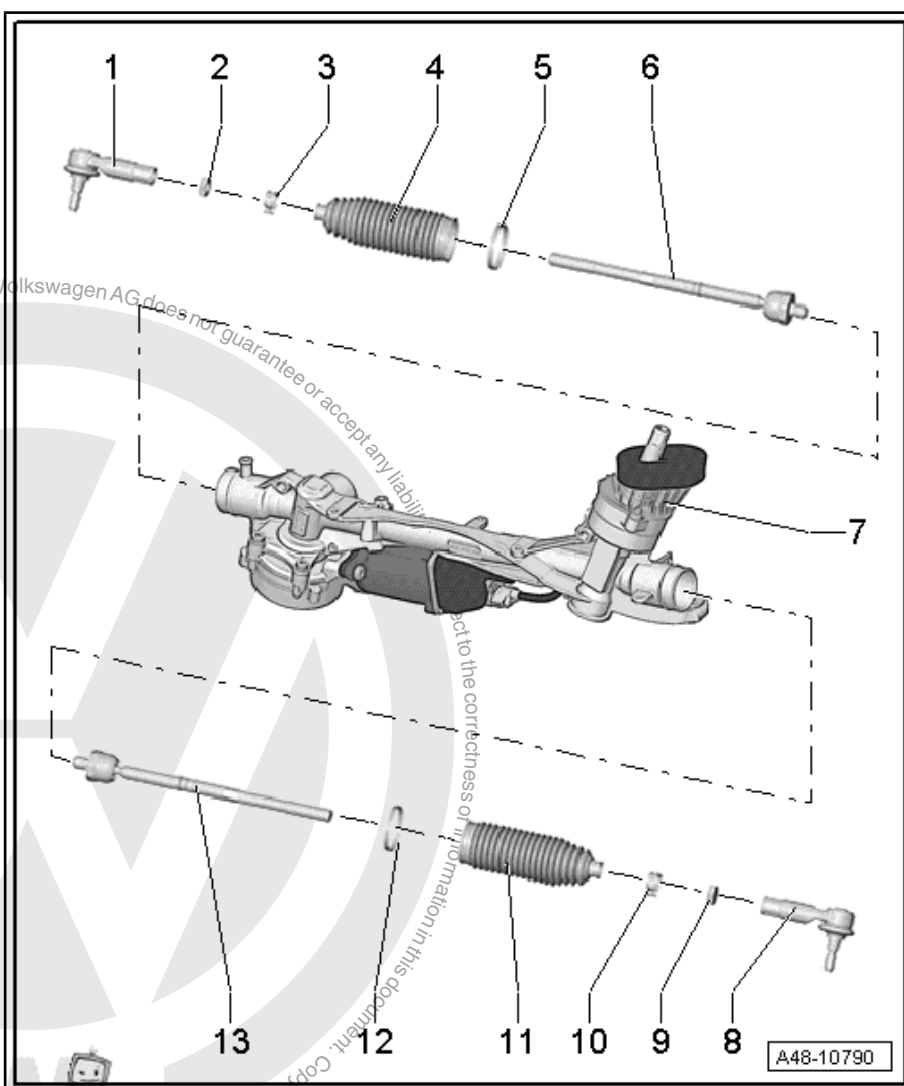
- ☐ Must not be twisted after toe is adjusted
- ☐ Removing and installing. Refer to ⇒ ["3.3 Boot, Removing and Installing", page 357](#).

5 - Clamp

- ☐ Replacing
- ☐ Tensioning. Refer to ⇒ [page 359](#)

6 - Tie rod

- ☐ 100 Nm
- ☐ Removing and installing. Refer to ⇒ ["3.4 Tie Rod, Removing and Installing", page 359](#)





7 - Steering Gear

- ☐ Allocation. Refer to the Parts Catalog.
- ☐ Removing and installing. Refer to ⇒ ["3.2 Steering Gear, Removing and Installing", page 351](#)

8 - Left Tie Rod End

- ☐ Identified with "B". Refer to ⇒ [page 361](#)
- ☐ Removing and installing. Refer to ⇒ ["3.5 Tie Rod End, Removing and Installing", page 362](#) .
- ☐ Installed position. Refer to ⇒ [page 361](#)
- ☐ Allocation. Refer to the Parts Catalog.

9 - Nut

- ☐ 70 Nm
- ☐ Nut must be counterheld on tie rod end using a wrench when loosening and tightening.

10 - Spring Clamp

11 - Boot

- ☐ Removing and installing. Refer to ⇒ ["3.3 Boot, Removing and Installing", page 357](#) .
- ☐ Check for damage
- ☐ Must not be twisted after toe is adjusted

12 - Clamp

- ☐ Replace after removal
- ☐ Install new clamp using Locking Pliers - VAS6199- .

13 - Tie Rod

- ☐ 100 Nm
- ☐ If faulty, replace with tie rod end
- ☐ Removing and installing. Refer to ⇒ ["3.4 Tie Rod, Removing and Installing", page 359](#)



4 Sensors

⇒ ["4.1 Steering Angle Sensor G85 , Removing and Installing", page 365](#)

4.1 Steering Angle Sensor - G85- , Removing and Installing



Note

- ◆ *The Steering Angle Sensor - G85- is a component of the steering gear.*
- ◆ *It cannot be replaced separately.*
- ◆ *The steering gear must be replaced if the Steering Angle Sensor - G85- is faulty. Refer to*
⇒ ["3.2 Steering Gear, Removing and Installing", page 351](#) .

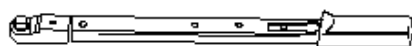


5 Special Tools

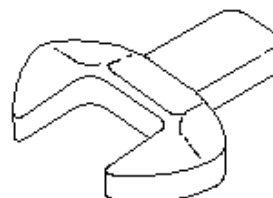
Special tools and workshop equipment required

- ◆ Torque Wrench 1332
40-200Nm - VAG1332-
- ◆ Torque Wrench Insert -
Open Jaw - VAG1923-
- ◆ Puller - Ball Joint - T10187-
- ◆ Locking Pliers - VAS6199-

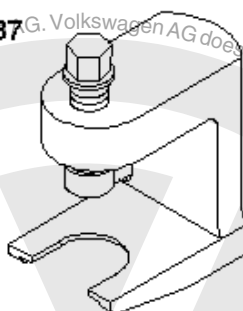
V.A.G 1332



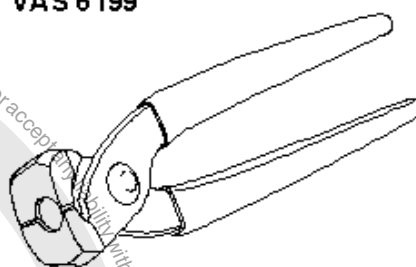
V.A.G 1923



T10187



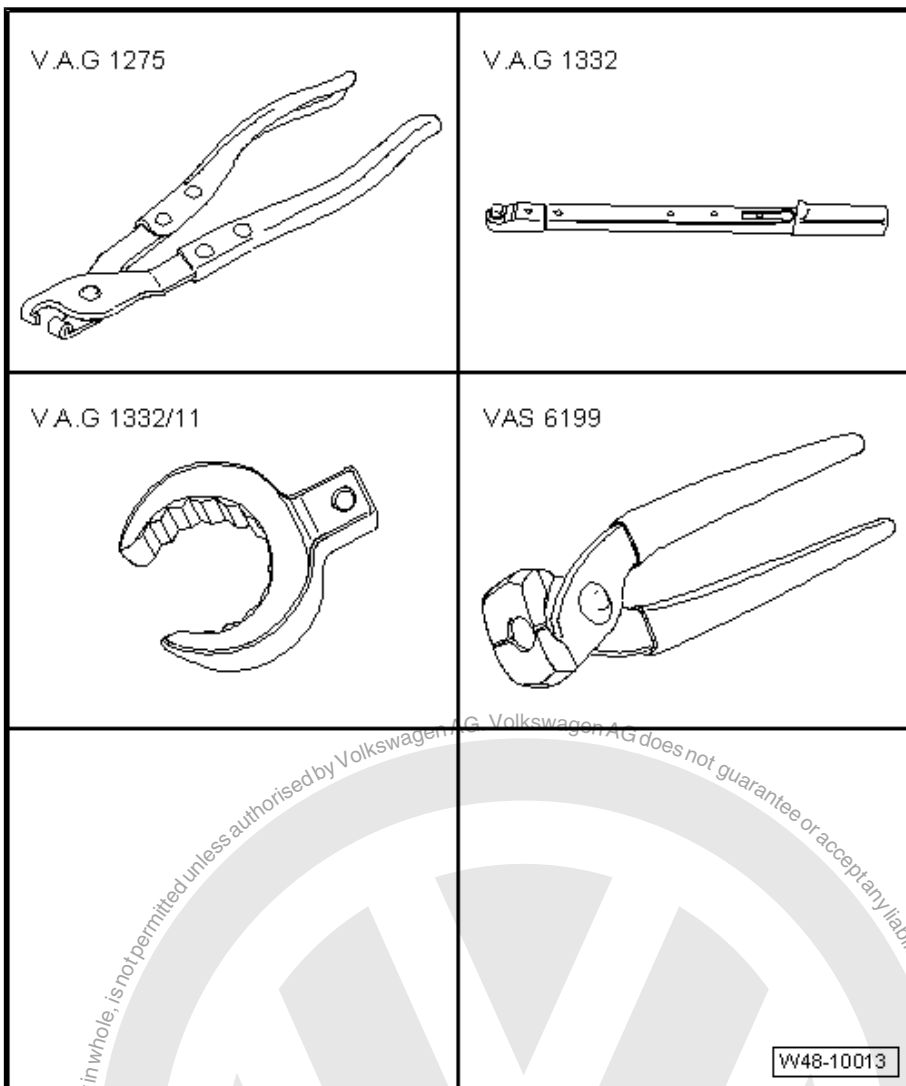
VAS 6199



W48-10000

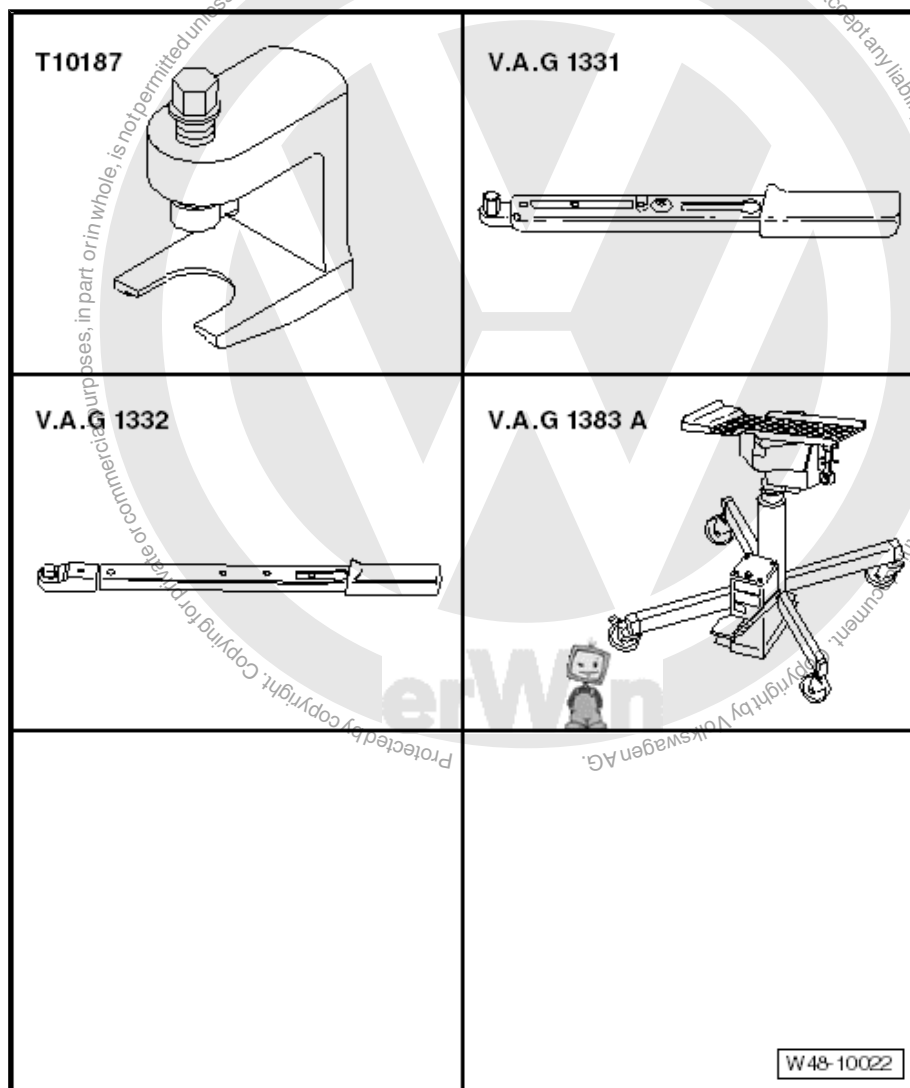


- ◆ Hose Clip Pliers - VAG1275A-
- ◆ Torque Wrench 1332 40-200Nm - VAG1332-
- ◆ Open Ring Wrench - 24mm - VAG1332/11-
- ◆ Locking Pliers - VAS6199-

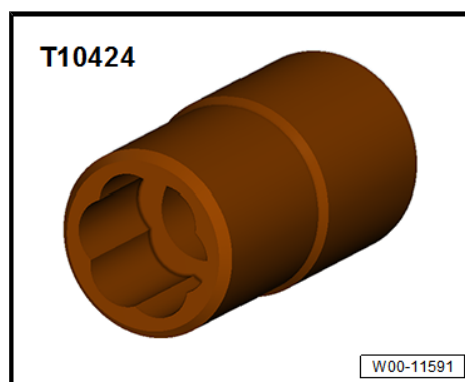




- ◆ Puller - Ball Joint - T10187-
- ◆ Torque Wrench 1331
5-50Nm - VAG1331-
- ◆ Torque Wrench 1332
40-200Nm - VAG1332-
- ◆ Engine and Gearbox Jack -
VAS6931-



- ◆ 7/16 Inch Extractor - T10424US-





6 Revision History

DRUCK NUMBER: K0059241421

Factory Edition	Edit Edition	Job Type	Feedback	Notes	Quality Checked By
03.2 016	04/1 8/20 16	Factory Update	116 378 3	Changed driveshaft to drive axle.	Eric P.
12.2 015	02/0 2/20 16	Factory Update			Joe Y.
02.2 015	8/12/ 2015			Editorial Review	Jim H
02.2 015	05/2 9/20 15	Local Feedback	110 150 3	Metadata did not match German version. BX5 was blocked in ElsaPro	Tom P
	5/4/2 015	Correction	109 564 1		Jim H
	03/3 1/20 15	Factory Update			Jim H
	02/0 5/20 15	Local Feedback	107 751 1	Spelling errors fixes	Tom P
	1/20/ 2015	Factory Update			Jim H
	08/1 4/20 14	Local Feedback	103 639 8	Changed link and link ID to correct location for Driver Side Airbag	Tom P
	4/23/ 2014	Factory New	N/A		Jim H

Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the VAG 1551 ScanTool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the VAG 1551 Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.

